

Land to the East of Stratfield Brake and West of Oxford Parkway Station, Known as the Triangle

Oxford United Football Club

Draft Habitat Management and Monitoring Plan





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1. Introduction and Site Background

- 1.1. Ecology Solutions was instructed by Ridge and Partners LLP on behalf of Oxford United Football Club in October 2024 to prepare a draft Habitat Management and Monitoring Plan (HMMP) to support a full planning application (Ref: 24/00539/F) for the erection of a 16,000 capacity stadium (Use Class F2) with associated flexible commercial and community facilities for conferences, exhibitions, education and other events (including club shop, public restaurant, bar, health and wellbeing facility/clinic, and gym) (Use Class E), a 180-bed hotel (Use Class C1), external concourse/fanzone, car and cycle parking, and associated access, highways, utilities, public realm, landscaping and other supporting infrastructure, hereafter referred to as 'the Site'.
- 1.2. The Site is predominantly a willow plantation bounded by hedgerows and trees, with a strip of other neutral grassland located between the boundaries and plantation. A woodland is present off-site along the southern boundary and an area of planted scrub is present within the northern section of the Site. The Site was formerly a motorcycle track (conversion from agricultural land), granted in 1998. The Site boundary also includes the highway works within the application, which extends the boundary along Frieze Way, including the verge entrance of Stratfield Brake Sports Ground, and south along Oxford Road which continues over the A34 and a railway line, where it is bordered to the east by Oxford Parkway and Oxford Golf Club to the west.
- 1.3. Ecology Solutions have produced various documents to support the initial application submission including the production of an Ecology and Nature Conservation chapter for an Environmental Statement¹ (ES) with the associated Technical Appendix² and Biodiversity Net Gain Report³.
- 1.4. Since the submission of the planning application in February 2024, Cherwell District Council (CDC) considered that additional information was required, under Regulation 25 of the EIA Regulations, in order to reach a reasoned conclusion on the likely significant effects of the development described in the application. The salient points raised have been addressed within an ES Addendum (ESA) Chapter, with all ecology and nature conservation matters addressed within The ESA Chapter 8⁴ and associated ESA Technical Appendix 8.1⁵.
- 1.5. This draft HMMP document has been produced in response to the Regulation 25 letter to demonstrate how the habitats and targets can be achieved. This document will be updated and finalised as part of a condition subsequent to determination.
- 1.6. This document sets out the management and monitoring of features of ecological interest due to be retained and created within the Site and describes the mitigation strategies to be implemented during the first five years after project completion. It addresses the enhancement and mitigation measures recommended in the Main ES

¹ Ecology Solutions (February 2024). ES Chapter 8 – Ecology and Nature Conservation.

² Ecology Solutions (February 2024). ES Technical Appendix 8.1. Ref:10736.ES Technical Appendix.vf4

³ Ecology Solutions (February 2024). Biodiversity Net Gain Assessment. Ref:10736.BiodiversityNetGain.vf4

⁴ Ecology Solutions (December 2024). ESA Chapter 8 – Ecology and Nature Conservation

⁵ Ecology Solutions (December 2024). ESA Technical Appendix 8.1. Ref:10736.ESA Technical Appendix 8.1.vf



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Technical Appendix 8.1 produced by Ecology Solutions in February 2024 and it should be read in conjunction with this report.

- 1.7. This HMMP has been written in accordance with BS 42020:2013 Section 11.1, with reference to published guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM)⁶ and in accordance with Natural England guidelines for protected species.
- 1.8. The document is set out as follows:
 - Ecological baseline and evaluation of important features within the site;
 - Objectives of the HMMP in order to maximise the ecological potential of features due to be retained and established within the site;
 - Management prescriptions in order to achieve objectives. These include any monitoring and remedial requirements;
 - Details of the body or organisation responsible for implementation of the plan;
 and
 - The work schedule, capable of being rolled forward over the minimum required 30-year period.

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⁶ CIEEM (2022). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.2 – Updated April 2022. Chartered Institute of Ecology and Environmental Management, Winchester.



2. Ecological Baseline and Evaluation

- 2.1. The site was initially subject to an Ecological Assessment in August 2022 by Ecology Solutions. For this, detailed walkovers of the site were undertaken in order to ascertain the general ecological value of the site and to identify the main habitats and associated plant species.
- 2.2. The site was originally surveyed in October 2022 using Extended Phase 1 methodology⁷. The survey results were later updated to reflect the latest UK Habitat Classification (UKHab)⁸ as recommended by Natural England for the purposes of Biodiversity Net Gain and to better reflect the current state of baseline habitats.
- 2.3. Using the above method, the site was classified into areas of similar habitats following the UKHab guidelines, where possible, and species lists for the broad habitat areas were compiled.
- 2.4. In addition, a preliminary assessment for protected, notable and invasive species was also conducted. This included an assessment of the potential suitability of the on-site habitats and landscape setting to support these species.
- 2.5. Full details of the survey methodology and findings are located within the Main ES Technical Appendix 8.1, with any updates to the baseline detailed in the ESA Technical Appendix 8.1, both produced by Ecology Solutions and are referenced herein, where necessary.

Ecological Features

- 2.6. The Site is located between Kidlington village and Oxford City and forms part of a wider area of land isolated on all sides by main roads (A4260, A34 and A4165). The Site is bounded by the Kidlington roundabout to the north with Frieze Way (A4260) located adjacent to the site's western boundary and Stratfield Brake Sports Ground and open countryside beyond. To the east, the Site is bordered by Oxford Road (A4165) with Oxford Parkway Railway Station and agricultural fields beyond. The southern boundary is bordered by an isolated strip of woodland with an agricultural field and the A34 beyond.
- 2.7. The site comprises a mixture of low and medium distinctiveness habitats, including cropland, mixed scrub, other neutral grassland, modified grassland and urban tree habitats and also developed land; sealed surface. The Site also comprises hedgerows that vary between low and very high distinctiveness linear habitats. Plan BNG1 shows baseline habitats.
- 2.8. No statutory designated sites are located immediately adjacent to the site, however the woodland located off-site adjacent to the southern boundary is listed as a Priority Deciduous Woodland that is part of the Stratfield Brake Cherwell District Wildlife Site (DWS), which is designated for its range of habitats including woodland, grassland, ponds and scrub. The closest statutory designated site for its biodiversity is Oxford

⁷ Joint Nature Conservation Committee (2010). *Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit*. England Field Unit, Nature Conservancy Council, reprinted JNCC, Peterborough.

⁸ UKHab Ltd (2023) *UK Habitat Classification Version 2.0* (at https://ukhab.org)



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Meadows Special Area of Conservation (SAC) which includes the constituent Site of Special Scientific Interest (SSSI) Pixey and Yarnton Meads SSSI, located approximately 1.9km southwest of the site at its closest point. Other constituent SSSIs nearby include Port Meadow with Wolvercote Common & Green SSSI, which is located approximately 2km south at its closest point, and Wolvercote Meadows SSSI, located approximately 2.1km southwest. In addition, the non-statutory site Meadows West of the Oxford Canal is an Oxfordshire Local Wildlife Site (LWS) which lies approximately 0.6km west of the Site.

Biodiversity Net Gain

- 2.9. The Statutory Metric was used to calculate the pre-development baseline units. Overall, the proposed scheme results in a total net unit change of 0.25 habitat units. This results in a gain of 1.74% from pre- to post-development. There is also a gain in linear features (i.e. hedgerows) of +2.61 hedgerow units (+32.37%), and a gain in watercourse units with a total net unit change of +0.83 (+82.98%) which are percentage changes significantly above the minimum 10% net gain.
- 2.10. A total of 14.52 habitat units, 10.65 hedgerow units and 1.83 watercourse units will be provided on Site post-development. Plan BNG2 shows proposed habitats.

Ecological Constraints

2.11. General observations were made, during the initial surveys, of any faunal use of the site, with specific attention paid to the potential presence of protected or notable species.

Flora

2.12. Notable plant species have been recorded on Site, confined to edges or small patches, including Common-spotted Orchid *Dactylorhiza fuchsia*, Pyramidal Orchid *Anacamptis pyramidalis* and Corn Mint *Mentha arvensis*, along with Narrow-leaved Bird's-foot-trefoil *Lotus tenuis* which was recorded by an independent ecologist.

Bats

2.13. Activity recorded during transect and static monitoring surveys was largely attributed to common and widespread species, with low and infrequent usage from rare / regionally restricted species (e.g. Barbastelle *Barbastella barbastellus*), using the boundary features for foraging and navigating purposes. Two trees along the western hedgerow support Potential Roosting Features (PRFs) for roosting bats.

Badgers

2.14. No Badger *Meles meles* setts or field signs were recorded during the survey work by Ecology Solutions, however this species is known to the local area. The mixed scrub, hedgerows, trees and offsite broadleaved woodland habitats, and to an extent the willow plantation, provide seasonal opportunities for badgers.

Other Mammals

2.15. Owing to the varied habitats present, it is considered that the site supports a range of common mammal species. A Roe Deer *Capreolus capreolus* was observed within the offsite woodland during the site visit in July 2023.



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2.16. Priority Species Brown Hare *Lupus lupus* and European Hedgehog *Erinaceus europaeus* are known to the local area. The Site provides limited opportunities for these species and it is not considered that they would be reliant on the Site (Brown Hare usually associated with more open agricultural habitats types, albeit usually a mosaic including a woodland edge).

Birds

2.17. Breeding and wintering bird surveys recorded typically common and widely occurring bird species to utilise the Site, with low and infrequent usage from birds of elevated conservation concern (e.g. Priority Species Song Thrush *Turdus philomelos*). Habitats such as the hedgerows and trees, mixed scrub and, to an extent, the willow plantation, offer suitable foraging and nesting habitat.

Reptiles

2.18. The site supports potential reptile habitat in the form of hedgerows, mixed scrub, willow plantation, and to an extent, the neutral grassland, may provide potential opportunities for reptile species, however the Site is noted to be relatively isolated from other suitable habitats within the local area and no evidence of reptiles have been recorded on Site during dedicated surveys.

Amphibians (Great Crested Newts)

2.19. No amphibians were recorded on-site during Ecology Solutions' survey work. The site is considered to offer sub-optimal opportunities for Great Crested Newt *Triturus cristatus*. The presence of hedgerows, mixed scrub and willow plantation support very limited opportunities for local amphibians during their terrestrial phase, however the Site is noted to be relatively isolated from other suitable terrestrial and aquatic habitats within the local area, by the presence of main roads on all sides.

Invertebrates

- 2.20. The Site comprises a range of floral species, including pollinator species supporting nectar sources, all of which provide suitable feeding opportunities for a varied assemblage of common invertebrate species. Some notable invertebrate species have been recorded by Ecology Solutions and an independent ecologist; however, an insufficient number of species was recorded per each habitat type, and it is not considered that the Site is of significant invertebrate interest. The habitats on Site provide seasonal feeding opportunities for local invertebrates.
- 2.21. No other protected or notable species were identified during the survey work undertaken or are considered likely to be present.



3. Aims and Objectives of Management

- 3.1. The aim of the HMMP is to set out strategies, techniques and practices to enhance retained habitats and establish new areas of ecologically valuable natural and seminatural habitats.
- 3.2. Defining a set of objectives is central to the effectiveness of this strategy, given that it is intended to provide a framework that will safeguard existing nature conservation interest and provide guidance on enhancement and future management.
- 3.3. Specific objectives for the conservation of particular species or groups and particular habitats of nature conservation interest are set out in the relevant sections to follow. The nature of these objectives has been guided by the principles set out in UK and European wildlife legislation, notably the Wildlife & Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2017. Furthermore, the formulation of these objectives has also been influenced by national and local biodiversity and conservation targets, as set out in the UK Post-2010 Biodiversity Framework and the Cherwell Biodiversity Action Plan (BAP).
- 3.4. The overarching objectives for nature conservation are as follows:
 - Objective 1: Maintain and enhance retained and newly created habitats within the site ensuring targeted habitat conditions are met as outlined in the Biodiversity Net Gain Report by Ecology Solutions;
 - Objective 2: Maintain populations of protected species identified within the site area at a favourable conservation status; and
 - Objective 3: Increase biodiversity by maximising opportunities for flora and fauna.
- 3.5. Appropriate management and monitoring prescriptions for achieving these objectives are set out in the following sections of this documents and will be subject to regular review (5 yearly). Iterations to the prescribed management principles will only be permitted for sound ecological reasons or reasons overriding public interest. Where required, iterations to the management proposals will be agreed with the Local Planning Authority.



4. Management Measures

4.1. Management prescriptions and monitoring requirements have been described below, in relation to each of the three objectives. The locations of proposed habitats can be viewed at Plan BNG2.

Objective 1: Maintain or Enhance Retained and Newly Created Habitats within the Site Ensuring Targeted Habitat Conditions are Met

Retained and Enhanced Baseline Habitats

Hedgerows and Trees

4.2. Sections of hedgerows and trees, along with two individual urban trees along Oxford Road will be retained post-development, with trees maintained in "Moderate' condition and hedgerows surrounding the Triangle enhanced to 'Good' condition. The hedgerow adjacent to Oxford Parkway will be maintained in 'Moderate' condition.

Works Undertaken During Construction/Establishment

4.3. Where appropriate, the retained hedgerows within the Site will be bolstered through new native species planting. This will serve to thicken the hedgerow and provide enhanced habitats for a range of species. For example, planting of Blackthorn will provide continued opportunities to the Priority Species Brown Hairstreak *Thecla betulae* butterfly. Bolster planting in any gaps should be undertaken in autumn or spring. Proposed hedgerow species are shown at Table 1.

Table 1: Proposed hedgerow species

| Hedgerow Planting / Bolster Planting Species | |
|--|--------------------|
| Common Name | Scientific Name |
| Blackthorn | Prunus spinosa |
| Hawthorn | Crataegus monogyna |
| Hazel | Corylus avellana |
| Holly | Ilex aquifolium |
| Hornbeam | Carpinus betulus |
| Field Maple | Acer campestre |

- 4.4. Retained trees and hedgerows will be retained and protected as per the current British Standards before construction work commences. Installed protective fencing will be subject to regular checks and maintenance when required.
- 4.5. Monitoring will be undertaken during establishment and remedial works implemented where required (e.g. replacement planting).

Long-term Management Aims and Principles

- 4.6. Arboricultural management will be carried out outside the bird nesting season (March August inclusive) to avoid any potential offence, or after a suitably qualified ecologist has undertaken checks to ensure no nesting birds are present.
- 4.7. Crown thinning of trees within the development site will be undertaken, as required, in accordance with BS 3998 2010 to remove inward growing, crossing, rubbing, dead or damaged branches.



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- 4.8. Remedial tree surgery will be administered, as necessary, to remove any dead, dying or diseased branches and to allow trees to achieve full stature. All works to be carried out by an Arboricultural Association approved contractor, in accordance with BS3998: Recommendations for Tree Work.
- 4.9. In order to retain the structure of hedgerows in the long-term, it may be necessary for alternative management such as coppicing or hedge laying to be undertaken. Such management practices will allow for new vegetative growth to develop low down in the hedgerows and prevent gaps forming at the base of these features. On-going monitoring will inform the commencement and extent of this management in the future.
- 4.10. Where possible, verges of hedgerows are to be managed to promote wildflower edges. Management will include a relaxed cutting regime and will be cut no more than twice in any one season, with one cut undertaken in late July / August and a further cut in suitable weather conditions in October (where required).
- 4.11. Litter and rubbish will be removed as necessary during the on-going management of the site.

Other Neutral and Modified Grassland

4.12. An area of other neutral grassland will be retained and enhanced along the southern boundary of the Site, along with small areas associated with the Site hedgerows, and an area located adjacent to Oxford Parkway. Strips of modified grassland will be retained and enhanced along associated grass verges of Frieze Way and Oxford Road.

Works Undertaken During Construction/Establishment

4.13. The retained modified grass verges along Frieze way and Oxford Road will be oversown with a suitable native wildflower seed mixture (such as EM1F Basic General-Purpose Wildflowers mix, or similar). For the initial sowing of seed, the ground will be prepared beforehand by cutting and gaps in grass cover created either with harrows or by raking. This example mix contains wildflower species such as those outlined at Table 2.

Table 2: Seed mix for enhanced grassland verges

| EM1F Basic General Purpose Wildflowers mix | | |
|--|--------------------------------------|--|
| Common Name | Scientific Name | |
| Common Knapweed | Centaurea nigra | |
| Wild Carrot | Daucus carota | |
| Lady's Bedstraw | Galium verum | |
| Oxeye Daisy | Leucanthemum vulgare | |
| Musk Mallow | Malva moschata | |
| Ribwort Plantain | Plantago lanceolata | |
| Salad Burnet | Poterium sanguisorba ssp sanguisorba | |
| Meadow Buttercup | Ranunculus acris | |
| Yellow Rattle | Rhinanthus minor | |
| Red Campion | Silene dioica | |

4.14. The retained areas of other neutral grassland within the Triangle Site will also be oversown with a suitable seed mixture for wetlands (such as Emorsgate EM8 Meadow Mixture for Wetlands, or similar) which is suitable for seasonally wet soils. Areas where



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notable species have been recorded and are proposed to be retained will be avoided. EM8 contains the following seed mix:

Table 3: Seed mix for enhanced grassland within the Triangle

| Emorsgate EM8 Meadow Mixture for Wetlands | | |
|---|------------------------------|--|
| Common Name | Scientific Name | |
| Yarrow | Achillea Millefolium | |
| Agrimony | Agrimonia eupatoria | |
| Wild Angelica | Angelica sylvestris | |
| Betony | Betonica officinalis | |
| Common Knapweed | Centaurea nigra | |
| Meadowsweet | Filipendula ularia | |
| Hedge Bedstraw | Galium album | |
| Lady's Bedstraw | Galium verum | |
| Meadow Vetchling | Lathyrus pratensis | |
| Rough Hawkbit | Leontodon hispidus | |
| Oxeye Daisye | Leucanthemum vulgar | |
| Birdsfoot Trefoil | Lotus corniculatus | |
| Greater Birdsfoot Trefoil | Lotus pedunculatus | |
| Black Medick | Medicago lupulina | |
| Ribwort Plantain | Plantago lancelata | |
| Cowslip | Primula veris | |
| Selfheal | Prunella vulgaris | |
| Meadow Buttercup | Ranunculus acris | |
| Yellow Rattle | Rhinanthus minor | |
| Rough-stalked Meadow-grass | Poa trivialis | |
| Tall Fescue | Schedonorus arundinaceus | |
| Common Sorrel | Rumex acetosa | |
| Great Burnet | Sanguisorba officinalis | |
| Ragged Robin | Silene flos-cuculi | |
| Dandelion | Taraxacum officinale | |
| Tufted Vetch | Vicia cracca | |
| Common Bent | Agrostis capillaris | |
| Sweet Vernal-grass | Anthoxanthum odoratum | |
| Grey Sedge | Carex divulsa subsp. divulsa | |
| Crested Dogstail | Cynosurus cristatus | |
| Tufted Hair-grass | Deschampsia cespitosa | |
| Red Fescue | Festuca rubra | |
| Meadow Barley | Hordeum secalinum | |
| Smaller Cat's-tail | Phleum bertolonii | |

- 4.15. The seed mixes detailed on Tables 2 and 3 contain yellow rattle, which is a hemiparasite on grass and will help to reduce the dominance of the grasses that grow up, to allow more space for wildflowers to grow.
- 4.16. The management of retained areas of grassland will include the retention of Common Fleabane. If required, the oversown seed mixture will be inclusive of Common Fleabane *Pulicaria dysenterica* to ensure the Site continues to provide opportunities for invertebrates that rely on this plant, such as the notable species *Myopites inulaedyssentericae*.
- 4.17. In addition, areas of retained grassland along the southern boundary comprise Corn Mint and Narrow-leaved Bird's-foot-trefoil specimens, which will be retained and safeguarded during the site clearance and habitat creation phases. Where these specimens are found elsewhere on the site, these will be translocated to suitable retained areas along this boundary, where the ground conditions are suitable and where disturbance will be minimal.



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- 4.18. In addition, orchid specimens (i.e. Pyramidal Orchid and Common-spotted orchid) will be translocated within retained, safeguarded areas of grassland where footfall is not anticipated.
- 4.19. After initial soil preparation, a modified seed hopper will be used to scatter the seeds to replicate natural processes. The scattered seeds need to be put in contact with the soil to germinate. This will be done by rolling the area straight after the seed has been spread.
- 4.20. The seed is best sown in the autumn but can be sown at other times of the year if there is sufficient warmth and moisture.
- 4.21. Vegetation will be cut with a topper in early and late autumn of the first year to prevent grasses from competing and covering newly germinating seeds.
- 4.22. Completion of regular health checks of planted stock during adverse weather periods.
 - Long-term Management Aims and Principles
- 4.23. Following establishment, management of meadow grassland should involve cuts being completed up to two times a year, once in March/April (where required) and again in September/October (after flowering). These cuts should be completed once the sward has reached a height in excess of 150mm, and cutting should be completed to a height of 100mm.
- 4.24. Selective removal of invasive or overly aggressive grassland and ruderal species will be conducted as required following annual inspections in order to retain and enhance the ecological and structural diversity of habitats present. In particular, careful management and monitoring of Common Fleabane will need to be ensued to prevent this plant species from invading the local area.
- 4.25. Arisings from the above management (excluding invasive/undesirable species) will be retained on site for a period of 5 days to allow seed to set, following which will be removed from site.
- 4.26. Small patches of bare ground may also be created within drier areas of grassland. Whilst of negligible intrinsic floristic value, this habitat provides important opportunities for invertebrates.
- 4.27. The above management will be informed by annual monitoring with iterations to the strategy made where required to ensure the diversity of this habitat is retained and enhanced in the long term.
- 4.28. Any intrusive management of the grassland should give due regard to the potential presence of nesting birds (with checks undertaken by an ecologist as required).

Mixed Scrub

4.29. An area of scrub will be retained adjacent to Oxford Parkway, and an area of mixed scrub within the tip of the Triangle will also be retained and will be enhanced.



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Works Undertaken During Construction/Establishment

- 4.30. Works undertaken will be carried out outside the bird nesting season (March August inclusive) to avoid any potential offence, or after a suitably qualified ecologist has undertaken checks to ensure no nesting birds are present.
- 4.31. Retained areas of mixed scrub along the northern boundary will be protected within the same area of hedgerow protection before construction work commences. Installed protective fencing will be subject to regular checks and maintenance when required.

Long-term Management Aims and Principles

- 4.32. The belt of scrub will be retained along the northern/north-western boundary which will be subject to ongoing management that will prevent establishment of non-native and undesirable species and will over time deliver diversity in terms of seedlings, saplings, young shrubs and mature shrubs.
- 4.33. The ongoing management of areas of native scrub will be undertaken on a rotational basis, with no more than 20% of scrub subject to works in any given year. The focus will be to deliver diversity both in terms of species coverage and age profile (including seedlings / saplings through to mature scrub). Openings within the scrub (scalloped edges) will be created by cutting crescent-shaped wedges, which will provide a diversity of habitat niches suitable for use by invertebrate and reptile species. If there is vigorous growth of undesirable species such as Common Nettle *Urtica dioica* then selective removal should take place.
- 4.34. Management will be carried out outside the bird nesting season (March August inclusive) to avoid any potential offence, or after a suitably qualified ecologist has undertaken checks to ensure no nesting birds are present.

Ditches

4.35. The ditches on site and the off-site ditch that runs adjacent to the southern boundary, between the Site and the off-site woodland, will be retained. The ditches are expected to hold water more frequently throughout the year as it will be built into the drainage strategy of the Site. The ditches will be managed so that they are of good water quality and will avoid pollution from surface run-off etc. In particular, the southern off-site ditch will benefit from an extensive green buffer, which is proposed alongside the Site boundary which will help with filtration.

Works Undertaken During Construction/Establishment

- 4.36. The ditches will be cleared as part of the implementation of the drainage strategy for the Site and will be sown with an appropriate planting that is tolerant of wet conditions and that will benefit local biodiversity.
- 4.37. It is understood that the ditch will continue to be susceptible to shading from the offsite woodland. Where feasible, any tree limbs that are extensively overhanging the southern ditch should be trimmed back to avoid significant shading.
- 4.38. The southern ditch will follow a similar planting scheme as the proposed waterbody features, outlined from paragraph 4.120 onwards. The ditch will also benefit from the



- seed mix that will be sown as part of the retained other neutral grassland, detailed above, as this will be part of the ditch margin (Site side).
- 4.39. Seed mixtures will be sown during either the spring (March to May) or autumn (August September) to ensure best results. The seed will be rolled after sowing to ensure good contact with the soil.
- 4.40. The ditches will be subject to a sensitive management regime such that the floristic diversity is maximised provided in further detail within the waterbodies section below (paragraph 4.120 onwards).
 - Long-term Management Aims and Principles
- 4.41. Ongoing management will be undertaken annually, with a single cut of marginal grassland undertaken in late August / September on a rotational basis.
- 4.42. Submerged and emergent aquatic/marginal plants will be hand cut on 25% per year rotational basis and removal of dead plant growth prior to start of growing season. Removal of algae growth in stagnant water in summer.
- 4.43. The control of invasive species will be required on a periodic basis.
- 4.44. Herbicides will not be applied within / near the ditches.
- 4.45. All arisings will be removed from site. The litter will be removed prior to each cut and leaves raked off grass prior to autumn cuts.
- 4.46. After 5 years, overhanging trees may have to be pruned, to avoid excessive shading.

Newly Created Habitats

Specimen Tree Planting

- 4.47. A total of 143 new specimen trees will be provided as part of the development. All newly planted trees are categorised as small in size and set to achieve 'Moderate' condition. Trees bordering scrub habitat will be managed appropriately to ensure they mature overtime and continue to provide ecological benefits for the site.
- 4.48. The trees will offer some replacement foraging opportunities for birds and invertebrates, as well as new nesting opportunities for birds. Overall, there will be an increase in tree coverage on-site when compared to pre-development conditions.

Works Undertaken During Construction/Establishment

4.49. Proposed tree species are shown at Table 4.

Table 4: Tree planting schedule

| Table 4. The planting schedule | | |
|-----------------------------------|---------------------------------------|--|
| Proposed Tree Species | | |
| Common Name | Scientific Name | |
| Black Poplar | Populus nigra | |
| Midland Hawthorn 'Paul's Scarlet' | Crataegus laevigata 'Paul's Scarlet' | |
| Mimosa | Acacia dealbata | |
| Golden Willow | Salix alba 'Vitellina | |
| Lombardy Poplar | Populus nigra 'Italica' | |
| Tulip Tree | Liriodendron tulipifera 'Fastigiatum' | |



| Chinese Privet | Ligustrum lucidum |
|-----------------------|---------------------------|
| Common Hazel | Corylus avellana |
| Cypress Oak | Quercus robur 'Fastigiata |
| Common Hawthorn | Crataegus monogyna |
| Flowering Cherry | Prunus 'Amanogawa; |
| Cherry Plum | Prunus cerasifera |
| Cherry Plum variant | Prunus cerasifera 'Rosea' |
| Lime | Tilia cordata |
| River Birch | Betula nigra |
| Aspen | Populus tremula |
| Field Maple 'Elsrijk' | Acer campestre 'Elsrijk' |
| Yoshino Cherry | Prunus yedoensis |

- 4.50. Planting of the new trees will be undertaken during the autumn, winter or spring, with subsequent monitoring required in order to identify if the tree saplings have not survived.
- 4.51. Tree guards and stakes should be used to protect the planted trees from damage and increase the survival rate. These shall be removed in May when this initial support is no longer required, typically after three to five years following planting.
- 4.52. Where required, a weed-free ring (500mm) can be maintained around each tree planted for the first five years to reduce competition from weed-species for light and nutrients. This can be achieved by maintaining a layer of mulch around the base of each tree.
- 4.53. The new trees will be inspected every six months for the first two years to ensure that they are healthy, not diseased or damaged, or dead. After the first two years, trees can be inspected annually if found to be establishing well.
- 4.54. The young trees should be watered in drought conditions within the first five years following planting to ensure satisfactory establishment and then only when necessary to avoid death.
- 4.55. Any newly planted specimen which dies should be replaced in the following season, with the same species, to the same specification and quality.
 - Long-term Management Aims and Principles
- 4.56. Remedial tree surgery will be administered, as necessary, to remove any dead, dying or diseased branches and to allow the tree to achieve full stature. All works to be carried out by an Arboricultural Association approved contractor in accordance with BS3998: Recommendations for Tree Work.
- 4.57. Crown thinning of trees within the development site shall be undertaken, as required, in accordance with BS 3998 2010 to remove inward growing, crossing, rubbing, dead or damaged branches.
- 4.58. Arboricultural management will be carried out outside the bird nesting season (March August inclusive) to avoid any potential offence, or after a suitably qualified ecologist has undertaken checks to ensure no nesting birds are present.
- 4.59. All dead wood produced from required works will be retained as an ecological feature within boundary planting, offering new habitat for saproxylic invertebrates and Hedgehogs.



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- 4.60. Litter and rubbish will be removed, as necessary, during the on-going management of the site.
- 4.61. Trees interplanted along scrub planting along the south and north boundaries should be allowed to mature overtime, providing a varied canopy structure along the shelterbelt corridors

Native Hedge Planting

4.62. New native hedgerows will be planted across the site. Hedgerows will increase the floristic diversity of the site and provide replacement and new foraging opportunities for bats and birds. The hedgerow proposed along the southern boundary will also provide additional screening and protection to wildlife, and provide a buffer to the offsite woodland, from activities occurring from the developed area. Species composition of proposed hedgerows is provided at Table 1.

Works Undertaken During Construction/Establishment

- 4.63. Planting of new hedgerows will be undertaken during the autumn, winter or spring, with subsequent monitoring required in order to identify any potential gaps where plants have not survived.
- 4.64. Hedgerows will be watered between March and September and only as required outside these months for the first year. After the first year, water as required between March and September only.
- 4.65. Hedgerows will be stock planted in double rows and trees protected with a 600mm spiral Rabbit guard and staked. Mulch matting will be used during establishment to keep the area free of weeds.
- 4.66. Monitoring will be undertaken during establishment. Hedgerow planting will be inspected monthly to ensure that they are healthy, not diseased or damaged, or dead. Any failed species will be removed and replaced with the same species and size.

Long-term Management Aims and Principles

- 4.67. Hedgerow trimming will be carried out outside the bird nesting season (March to August inclusive) to avoid any potential offence, or after a suitably qualified ecologist has undertaken checks to ensure no nesting birds are present.
- 4.68. Management will aim to ensure continued good structure, where appropriate to do so. Once established, hedgerows should be subjected to cutting on a two- or three-year rotation, targeting different sections each year to ensure flowers are always available for pollinators in Spring and berries for birds in Autumn.
- 4.69. Where possible, verges of hedgerows are to be managed to promote wildflower edges. Management will include a relaxed cutting regime and will be cut no more than twice in any one season, with one cut undertaken in late July / August and a further cut in suitable weather conditions in October (where required).
- 4.70. Litter and rubbish will be removed as necessary during the on-going management of the site.



Other Neutral Grassland

New created areas of other neutral grassland will be established across the site. These areas will comprise species of benefit to invertebrates, such as *Variimorda villosa*, along with a wide variety of other invertebrate species, which will in turn provide benefits to faunal groups such as birds and mammals.

Works Undertaken During Construction/Establishment

4.71. New areas of other neutral grassland will be sown with EL1 Flowering Lawn Mixture, or similar. Table 5 below provides a list of species for this seed mixture. This mixture has been selected for the wildflowers that respond well to a level of footfall / regular mowing regime.

Table 5: Seed mixture for created areas of other neutral grassland within the Triangle

| EL1 Flowering Lawn Mixture | | |
|-----------------------------|----------------------|--|
| Common Name | Scientific Name | |
| Yarrow | Achillea millefolium | |
| Kidney Vetch | Anthyllis vulneraria | |
| Betony | Betonica officinalis | |
| Common Knapweed | Centaurea nigra | |
| Hedge Bedstraw | Galium album | |
| Lady's Bedstraw | Galium verum | |
| Field Scabious | Knautia arvensis | |
| Rough Hawkbit | Leontodon hispidus | |
| Oxeye Daisy | Leucanthemum vulgare | |
| Black Medick | Medicago lupulina | |
| Ribwort Plantain | Plantago lanceolata | |
| Hoary Plantain | Plantago media | |
| Cowslip | Primula veris | |
| Selfheal | Prunella veris | |
| Meadow Buttercup | Ranunculus acris | |
| Bulbous Buttercup | Ranunculus bulbosus | |
| White Clover | Trifolium repens | |
| Common Bent | Agrostis capillaris | |
| Crested Dogstail | Cynosurus cristatus | |
| Red Fescue | Festuca rubra | |
| Smaller Cat's-tail | Phleum bertolonii | |
| Smooth-stalked Meadow-grass | Poa pratensis | |

- 4.72. The seed mixture will be sown in autumn, allowed to grow and flower, before being cut in early August.
- 4.73. These areas will be mown regularly between March andApril, once temperatures reach >10°C. The sward will be maintained at 30-50mm in height. The grass will then be left until July / August. A cut will then be taken and the grass then cut in mid-autumn and mid-spring.
- 4.74. Any invasive/non-native weeds will be removed. Health checks will occur four times a year on a bi-monthly basis and should any areas of grassland be found to have not effectively established these areas will be re-seeded with the same mix.
- 4.75. From year two onwards, the wildflower meadow will be managed to allow for species to establish, flower and seed from May through to July / August. A cut will then be taken and the grass then cut in mid-autumn and mid-spring.



Long-term Management Aims and Principles

- 4.76. Following establishment, management of meadow grassland should involve cuts being completed up to two times a year, once in March/April (where required) and again in September/October (after flowering). These cuts should be completed once the sward has reached a height in excess of 150mm, and cutting should be completed to a height of 100mm.
- 4.77. Arisings from the above management (excluding invasive/undesirable species) will be retained on site for a period of 5 days to allow seed to set, following which will be removed from site.
- 4.78. Selective removal of invasive or overly aggressive grassland and ruderal species will be conducted as required following annual inspections in order to retain and enhance the ecological and structural diversity of habitats present.
- 4.79. Small patches of bare ground may also be created within drier areas of grassland. Whilst of negligible intrinsic floristic value, this habitat provides important opportunities for invertebrates.
- 4.80. The above management will be informed by annual monitoring with iterations to the strategy made where required to ensure the diversity of this habitat is retained and enhanced in the long term.
- 4.81. Any intrusive management of the grassland should give due regard to the potential presence of nesting birds (with checks undertaken by an ecologist as required).

Mixed Scrub Planting

4.82. A band of mixed native scrub planting will be planted along the northern and southern areas, and also centrally to the Stratfield Brake entrance. A range of native species of local provenance is proposed, including flowering and fruiting species, to maximise opportunities for invertebrates – see Table 6.

Works Undertaken During Construction/Establishment

4.83. Works undertaken will be carried out outside the bird nesting season (March – August inclusive) to avoid any potential offence, or after a suitably qualified ecologist has undertaken checks to ensure no nesting birds are present.

Long-term Management Aims and Principles

Table 6: Proposed native scrub species

| Mixed Scrub Species | |
|---------------------|--------------------|
| Common Name | Scientific Name |
| Hawthorn | Crataegus monogyna |
| Hornbeam | Carpinus betulus |
| Goat Willow | Salix caprea |
| Wild Cherry | Prunus avium |
| Cherry Plum | Prunus cerasifera |

Works Undertaken During Construction/Establishment



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- 4.84. The species mixtures proposed, and the instigation of management will prevent establishment of non-native and undesirable species and will over time deliver diversity in terms of seedlings, saplings, young shrubs and mature shrubs, and ensure a well-developed edge between this habitat and adjoining habitats.
- 4.85. Planting of new shrubs will be undertaken in Autumn, Winter or Spring, avoiding the dry conditions during the summer months. Regular checks of new planting will be undertaken during the establishment phase (between Autumn and Spring), with replacement planting undertaken if specimens do not survive.
- 4.86. Once planted, shrubs will be watered and covered with 75mm bark mulch to inhibit weed growth. Where required, weeding will be undertaken by hand during the first year.

Long-term Management Aims and Principles

- 4.87. Once established, the management of areas of native scrub will be undertaken on a rotational basis, with no more than 20% of scrub subject to works in any given year. The focus will be to deliver diversity both in terms of species coverage and age profile (including seedlings / saplings through to mature scrub) and encouraging the establishment of some scattered scrub along the edge. A scalloped edge will provide a diversity of habitat niches suitable for use by invertebrate and reptile species. Ruderal growth within this area should be encouraged by leaving a 1m margin of uncut grass where this meets scrub. If there is vigorous growth of undesirable species such as Common Nettle then selective removal should take place.
- 4.88. Coppicing and some removal of small sections of scrub so that a scalloped edge is created that incorporates a variety of ages and heights of scrub, should be undertaken of a long rotation (for example, every 5-7 years) to maintain this habitat as scrub. Scrub should not significantly encroach onto habitats. It is recommended that no more than 15% of any adjacent grassland should be encroached by scrub.
- 4.89. Ongoing management of new planting will be undertaken with regard to the presence of nesting birds, either outside of the main nesting bird season (March August inclusive) or following to a nesting bird check undertaken by a suitably qualified ecologist which confirms that there are no nesting birds within or in close proximity to the area to be affected.

Planting Beds / Ornamental Planting

4.90. Several areas of new ornamental planting will be established in groups around the site, comprising a number of native and non-native species that provide visual amenity for the site and seasonal foraging opportunities for local wildlife.

Works Undertaken During Construction/Establishment

- 4.91. Species proposed within the planting bed areas include native species such as Hemp Agrimony *Eupatorium cannabinum* (known to be of benefit to invertebrates such as Priority Species Brown Hairstreak), Wood Forget-me-not *Myosotis sylvatica*, English Bluebell *Hyacinthoides non-scripta* and Male Fern *Dryopteris filix-mas*.
- 4.92. Planting across the site will also include native shrubs such as Grey Willow *Salix cinerea* and Osier *Salix viminalis*, which are presently recorded within the Site and thus will



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continue to provide opportunities for invertebrates that are associated with these species, such as the Brown Willow Beetle *Galerucella lineola*) previously recorded on Site. This will in turn provide benefits to other wildlife, such as birds.

- 4.93. Non-native species that will be of benefit to native wildlife include Winter Honeysuckle Lonicera fragrantissima, which will provide wintering resource for invertebrates, such as to winter-active bumblebees⁹ (e.g. Buff-tailed Bumblebee Bombus terrestris, previously recorded on Site). Other species of benefit to wildlife include Geranium macrorrhizum 'Spessart' and Peppermint Mentha x piperita, which are known to attract pollinators.
- 4.94. Planting of shrubs should be undertaken during the autumn, winter or spring, with subsequent monitoring required in order to identify any potential gaps where plants have not survived.
- 4.95. Planting will be inspected every six months to ensure that they are healthy, not diseased or damaged, or dead. After the first two years, shrubs can be inspected annually if found to be establishing well.
- 4.96. Designated ornamental planting areas are to be mulched to a depth of 75mm. Mulched areas will be topped up as necessary.
- 4.97. Watering will be required during periods of drought to ensure satisfactory establishment. Watering will be undertaken, as required, to maintain healthy plant growth.

Long-term Management Aims and Principles

- 4.98. Ornamental planting will be maintained through the removal of undesirable species on a monthly basis. The use of pesticides (herbicides, insecticides, fungicides and slug pellets etc.) will be avoided, and any removal will be undertaken by hand.
- 4.99. Litter and rubbish will be removed from the ornamental planting as necessary during the on-going management of the site.
- 4.100. Shrubs will be subject to regular pruning every six months, where considered necessary (after three to five years of growth), to encourage an even and healthy growth and develop a dense understorey for wildlife use. Without pruning, most shrubs revert to trees or lose their dense structure and their wildlife value.
- 4.101. As with the other habitats above, any ornamental shrub management will be undertaken outside the bird nesting season (March to August inclusive) to avoid any potential offence, or after a suitably qualified ecologist has undertaken checks to ensure no nesting birds are present.

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⁹ Bumblebee Conservation Trust. *Winter active bumblebees.* Available at: https://www.bumblebeeconservation.org/winter-active-bumblebees/



Biodiverse and Other Green Roofs

4.102. The stadium roof and the roofs of small buildings (e.g. bike sheds) will have biodiverse green roofs installed which will comprise a mixture of sedum and native wildflowers, whilst the substations will have sedum roofs installed. Green roofs will provide multiple benefits to invertebrates, supporting a wide range of opportunities for pollinator species, as well as provide foraging opportunities for birds and bats, and potential bird nesting opportunities.

Works Undertaken During Construction/Establishment

- 4.103. The biodiverse green roofs will have a ratio of 60:40 dry grassland wildflower to sedum species with a varying depth of substrate between 80 150mm (with at least 30% at 150mm) see Tables 7 and 8 for suitable mixes.
- 4.104. The biodiverse green roofs will incorporate additional habitats of value to invertebrates, such as 'bee banks' (Appendix 4), deadwood piles (Appendix 5) and insect boxes (Appendix 6) that will be of benefit to a wide range of invertebrates. Bee banks are particularly beneficial for Solitary bees and wasps, whilst deadwood provides habitat for saproxylic species. The sedum green roofs will also incorporate additional habitats such as insect boxes, providing additional refuge for aerial/climbing invertebrates.
- 4.105. In addition, the site will be subjected to an 'Orchid and Notable Flora Translocation Strategy', and the biodiverse green roof on the stadium will be designed to provide a suitable space for specimens to be relocated to. The translocation strategy will include relocating plant specimens along with surrounding turf and will also include inoculating the receptor site's soil/substrate with mycorrhizal fungus to allow a symbiotic relationship to form with plant roots. Further specific details of the strategy, such as storage and maintenance of plant specimens during the construction phase, and specific locations of translocation, will be outlined as part of a planning condition.
- 4.106. The substations will also have green roofs installed which will comprise sedum species (such as those provided at Table 8) which also provide a variety of benefits to wildlife along with providing a hard-wearing and drought tolerant solution to green infrastructure.

Table 7: Recommended native wildflower species for biodiverse green roofs

| Mixed Scrub Species | |
|---------------------------|----------------------|
| Common Name | Scientific Name |
| Yarrow | Achillea millefolium |
| Agrimony | Agrimony eupatoria |
| Kidney Vetch | Anthyllis vulnearia |
| Wild Carrot | Daucus carota |
| Viper's Bugloss | Echium vulgare |
| Lady's Bedstraw | Galium verum |
| Horseshoe Vetch | Hippocrepis comosa |
| Perforate St. John's Wort | Hypericum perforatum |
| Rough Hawkbit | Leontodon hispidus |
| Oxeye Daisy | Leucanthemum vulgare |
| Common Toadflax | Linaria vulgaris |
| Bird's-foot-trefoil | Lotus corniculatus |
| Hoary Plantain | Plantago media |
| Cowslip | Primula veris |
| Selfheal | Prunella vulgaris |
| Common Sorrel | Rumex acetosa |



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| Salad Burnet | Sanguisorba minor |
|----------------------|-----------------------|
| Small Scabious | Scabiosa columbaria |
| Bladder Campion | Silene vulgaris |
| Wild Thyme | Thymus praecox |
| Red Clover | Trifolium pratense |
| Wild Marjoram | Origamum vulgare |
| Sweet Vernal Grass | Anthoxanthum odoratum |
| Common Quaking Grass | Briza media |
| Crested Dog's-tail | Cynosurus cristatus |

Table 8: Recommended native sedum species for all green roofs.

| Sedum Species | |
|-------------------|-------------------|
| Common Name | Scientific Name |
| White stonecrop | Sedum album |
| Biting stonecrop | Sedum acre |
| English stonecrop | Sedum anglicum |
| Rock stonecrop | Sedum fosterianum |

- 4.107. After completion of the installation, it will be necessary to keep the biodiverse green roof substrate and blanket damp for a minimum period of 10 weeks using temporary surface mounted sprinklers, or alternatively a permanent irrigation system should be installed. Watering should be proactively carried out during this period as required, but only if the substrate/ blanket begins to dry out. It is equally important to ensure that the green roof substrate does not become totally saturated by either excessive watering through periods of cool, wet weather. To encourage the plants to survive without too much irrigation and to harden them off in readiness to survive winter, it is important to start cutting back on watering from early September.
- 4.108. The green roofs will initially be inspected monthly and also during periods of adverse weather for the first two years to ensure successful establishment. Remedial action will be put into place where necessary, such as reseeding areas of vegetation that have not established.
- 4.109. Bee banks will be incorporated into the design of the stadium's biodiverse green roof. Crescent moon-shaped soil banks should be created (where roof weight requirements allow) with a mix of aggregate should be created. The bank should be capped with sand with a depth of at least 30cm and at varying depths to provide structural variety. Sand should also cover the border around the bee bank to provide additional habitat for ground nesting bees. A 'clifflet' can be incorporated into the design of the bank to create vertical nesting space. Bee banks do not require planting and seeding of seed mixture / sedum planting should be avoided.
- 4.110. Log piles will be placed both in sunny and sheltered locations around the biodiverse green roofs. Shaded locations would provide for saproxylic species, whilst sunny locations provide habitat for invertebrates such as solitary bees, wasps and beetles.
- 4.111. Insect boxes should be installed on the biodiverse green roofs. Similarly to log piles, these will be placed either in sunny or sheltered locations which will provide opportunities for different types of invertebrates.
 - Long-term Management Aims and Principles
- 4.112. In the late autumn the vegetation is to be strimmed back to a 50-70mm height, and the unwanted waste matter removed and lowered to ground level for composting/disposal. Unwanted leaf litter that has fallen onto the roof surface from



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- overhanging trees should be removed in the spring and autumn, to ensure that this does not smother the vegetation beneath.
- 4.113. With the exception of saplings, which should always be removed, selective removal of invasive or overly aggressive grassland and ruderal species will be conducted as required following annual inspections in order to retain and enhance the ecological and structural diversity of habitats present.
- 4.114. The provision of sufficient watering points at roof level to allow for only occasional watering in periods of prolonged drought should be sufficient, however this should be reviewed annually during the first five years and remedial action put into place where necessary.
- 4.115. Small patches of bare ground should be maintained. Whilst of negligible intrinsic floristic value, this habitat provides important opportunities for invertebrates.
- 4.116. The use of pesticides (herbicides, insecticides, fungicides etc.) will be avoided, and any removal of weeds will be undertaken by hand.
- 4.117. The above management will be informed by annual monitoring with iterations to the strategy made where required to ensure the diversity of this habitat is retained and enhanced in the long term.
- 4.118. Any intrusive management should give due regard to the potential presence of nesting birds (with checks undertaken by an ecologist as required).
- 4.119. The translocated notable specimens will be subject to specific long-term management that will be provided within the Translocation Strategy and will follow advice of appropriately qualified experts.
- 4.120. The bee banks should maintain sparse vegetation so that bare ground is always visible. It may be necessary to annually clear a section back to bare ground. Any weeding or vegetation management should be conducted on no more than 50% of the total bee bank area, with the other 50% managed the year after. This will minimise disturbance to invertebrates.
- 4.121. Log piles require little maintenance, and management should only be considered during prolonged periods of drought, where watering should be undertaken to maintain damp conditions. When a sufficient quantity of log piles has been produced from arboricultural works on Site, these will be checked periodically and replenished when necessary.

Green Walls

4.122. Green walls are proposed to be installed onto walls of the stadium (fascade-bound) and small buildings (ground-based) which will be created for aesthetic and ornamental purposes as well as providing a nectar source for invertebrates such as bees, moths and butterflies.

Works Undertaken During Construction/Establishment

4.123. Planting of 'vertical meadows' should incorporate a species-rich mixture - see Table 7 above for suitable species. The creation of the green wall should be undertaken during



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the autumn, winter or spring, with subsequent monitoring required in order to identify any potential gaps where plants have not survived.

- 4.124. After completion of the installation, it will be necessary to keep the walls damp for a minimum period of 10 weeks. Watering should be proactively carried out during this period as required, but only if the substrate begins to dry out. It is equally important to ensure that the green walls do not become totally saturated by either excessive watering through periods of cool, wet weather. To encourage the plants to survive without too much irrigation and to harden them off in readiness to survive winter, it is important to start cutting back on watering from early September.
- 4.125. The green walls will initially be inspected monthly and also during periods of adverse weather for the first two years to ensure successful establishment. Remedial action will be put into place where necessary, such as replacing areas of vegetation that have not established.

Long-term Management Aims and Principles

- 4.126.In the late autumn the vegetation is to be cut back to a 50-70mm height, and the unwanted waste matter removed.
- 4.127. With the exception of saplings, which should always be removed, selective removal of invasive or overly aggressive grassland and ruderal species will be conducted as required following annual inspections in order to retain and enhance the ecological and structural diversity of habitats present.
- 4.128. The use of pesticides (herbicides, insecticides, fungicides etc.) will be avoided, and any removal of weeds will be undertaken by hand.
- 4.129. Litter and rubbish will be removed from the planting as necessary during the on-going management of the site.
- 4.130. Depending on the proposed irrigation system, watering will at least be required during periods of drought to ensure satisfactory establishment. Watering will be undertaken as required to maintain healthy plant growth.
- 4.131. The above management will be informed by annual monitoring with iterations to the strategy made where required to ensure the diversity of this habitat is retained and enhanced in the long term.

Waterbodies (SuDS and Pond)

4.132. Sustainable Drainage Systems (SuDS) are proposed as part of the development within the Site, and a pond will be created within the northern area of the site. These waterbodies will create new aquatic habitat for a variety of plants and wildlife.

Works Undertaken During Construction/Establishment

4.133. Where practical, the SuDS basins will include permanently wet land, with the remainder, including the banks, sown with wetland grassland species. These areas, including the margins and banks of the pond, will be seeded with a native wildflower grassland seed mixture (such as Emorsgate's Meadow Mixture for Wetland EM8 – see



Table 3) that is tolerant of wet / damp conditions, with the perimeter sown with a suitable mixture such as Emorsgate EP1 Pond Edge Mixture - Table 9.

Table 9: Emorsgate EP1 Pond Edge Mixture for waterbodies.

| Pond Edge Mixture Species | | |
|------------------------------|---------------------------|--|
| Common Name | Scientific Name | |
| Wild Angelica | Angelica sylvestris | |
| Grey Sedge | Carex divulsa ssp divulsa | |
| Common Knapweed | Centurea nigra | |
| Crosswort | Cruciata laevipes | |
| Wild teasel | Dipsacus fullonum | |
| Hemp Agrimony | Eupatorium cannabinum | |
| Meadowsweet | Filipendula ulmaria | |
| Hedge Bedstraw | Galium album | |
| Water Avens | Geum rivale | |
| Hedgerow Crane's-bill | Geranium pyrenaicum | |
| Yellow Iris | Iris pseudacorus | |
| Meadow Vetchling | Lathyrus pratensis | |
| Purple Loosestrife | Lythrum salicaria | |
| Gypsywort | Lycopus europaeus | |
| Corky-fruited Water-dropwort | Oenanthe pimpinelloides | |
| Ribwort Plantain | Plantago lanceolata | |
| Selfheal | Prunella vulgaris | |
| Meadow Buttercup | Ranunculus acris | |

4.134. Permanently wet areas will comprise planting species such as reeds, sedges *Carex* spp., rushes *Juncus* spp., and wetland-tolerant grasses such as *Deschampsia* alongside flowering species. Example species are detailed in Table 8 below.

Table 10: Proposed aquatic species for permanently wet areas

| Table 10. I Toposed addatic species for permanently wet areas. | | | | |
|--|------------------------|--|--|--|
| Aquatic Species | | | | |
| Common Name | Scientific Name | | | |
| Bogbean | Menyathes trifoliata | | | |
| Hornwort | Ceratophyllum demersum | | | |
| Water Soldier | Stratiotes aloides | | | |
| Bur-reed | Sparganium erectum | | | |
| Broad-leaved Pondweed | Potamogeton natans | | | |
| Water Crowfoot | Ranunculus aquatilis | | | |
| Lesser Spearwort | Ranunculus flammula | | | |
| Water Mint | Mentha aquatica | | | |

- 4.135. Seed mixtures will be sown during either the spring (March to May) or autumn (August September) to ensure best results. The seed will be rolled after sowing to ensure good contact with the soil.
- 4.136. The creation of new dead wood piles from any arboricultural management along the banks of the waterbodies will provide new opportunities for invertebrates and potential shelter and hibernation opportunities for reptiles and amphibians.
- 4.137. The waterbodies will be subject to a sensitive management regime such that the floristic diversity is maximised. In the first year after sowing, the grassland will be cut regularly, with the grassland topped in early May, again in June / July, and later in the year if required. The grassland will be cut to a height of 40-60mm and arisings will be removed. Surveys for ground nesting birds will be undertaken by a suitably qualified ecologist before cutting.



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Long-term Management Aims and Principles

- 4.138.Ongoing management will be undertaken annually, with a single cut of grassland undertaken in late August / September on a rotational basis.
- 4.139. Submerged and emergent aquatic/marginal plants will be hand cut on 25% per year rotational basis (at a minimum of 0.1m above pond base) and removal of dead plant growth prior to start of growing season. Removal of algae growth in stagnant water in summer.
- 4.140. The control of invasive species, such as Greater Reedmace *Typha latifolia* and Common Fleabane, will be required on a periodic basis.
- 4.141. Herbicides will not be applied within / near the waterbodies.
- 4.142. The introduction of fish is to be strictly avoided, and these areas are to be managed sympathetically for wildlife.
- 4.143. The use of pesticides (herbicides, insecticides, fungicides etc.) will be avoided.
- 4.144. All arisings will be removed from site. The litter will be removed prior to each cut and leaves raked off grass prior to autumn cuts.
- 4.145. In SuDS schemes which are exposed to a relatively high pollutant burden, removal of sediments may help to improve water quality. Dredging of silt every 3-5 years in autumn may be beneficial, especially where it is possible to dredge out polluted sediments from deeper water areas, whilst leaving shallower wildlife-rich edges, with little accumulated sediment, intact.
- 4.146. After 5 years, any bankside trees and shrubs may have to be coppiced/pollarded, to avoid excessive shading along the shoreline. Aim to achieve 50% sunlight and 50% dappled shade.

Rain Gardens

4.147. New rain gardens (shallow depressions) will include a robust and adaptive plant mixture suited to seasonally wet soils with tall grasses and flowering perennials dominating. Rain gardens will provide new nectar-feeding resources for invertebrates and serve as a 'stepping stone' habitat for local wildlife.

Works Undertaken During Construction/Establishment

- 4.148. Areas where rain gardens are proposed will be sown with native wildflower grassland seed mixture that are tolerant of wet conditions, such as Emorsgate's Meadow Mixture for Wetland EM8 Table 3 above.
- 4.149. Occasional weeding (by hand) may be required during the first two years of rain garden establishment.

Long-term Management Aims and Principles

4.150.Ongoing management will be undertaken annually, with a single cut of grassland undertaken in late August / September on a rotational basis.



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- 4.151. During winter months and outside nesting bird season, remove any dead, untidy and unwanted plants. Leave dead stems and seed heads to provide a further foraging resource for wildlife.
- 4.152. The rain gardens may benefit from cutting, if required, cutting should be undertaken outside the nesting bird season in late summer or autumn with a scythe or strimmer and arisings removed.
- 4.153. All arisings will be removed from site. The litter will be removed prior to each cut and leaves raked off grass prior to autumn cuts.

Grasscrete Car Park and Sports Pitch

- 4.154. A section of the car park will have 'grasscrete' installed, which is a permeable paving system that incorporates grass into reinforced cellular concrete systems. Grasscrete provides a more environmentally friendly solution to areas of built form and contributes towards sustainable drainage systems.
- 4.155. The sports pitch playing surface is proposed to be hybrid that combines natural grass with synthetic fibres to create a surface that's durable and suitable for sports. The fibres protect the grass stems from wear and aid the plant in its recovery.
 - Works Undertaken During Construction/Establishment
- 4.156. The amenity style grass areas will include hard wearing grass species that will be managed solely for amenity / functional purposes.
 - Long-term Management Aims and Principles
- 4.157. The sports pitch will be subject to a specific and intensive management regime that will maintain coverage of grasses and prohibit the colonisation of any 'weed' species.
- 4.158. The grasscrete car park has the ability to allow for flowering herbaceous species to establish. A varied mowing regime should be allowed across the growing season (typically March to October), with it preferable that a month without management is provided in this management cycle.
- 4.159. Amenity grassland will be cut as and when is necessary. Checks of the grasscrete will be made monthly, and grass will be cut maintaining a range of 30 to 55mm. The grass cuttings will be collected and removed in order to reduce nutrient enrichment and encourage low-growing plants to flourish.



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Objective 2: Maintain Populations of Protected Species Identified within the Site Area at a Favourable Conservation Status

- 4.160. Habitat creation and the introduction of a management regime will provide high-quality wildlife habitat areas within the site. This will be of benefit to key species, such as bats, birds, invertebrates and notable flora and will also provide new opportunities for reptiles and amphibians.
- 4.161. Precautionary measures will be undertaken for existing ecological constraints, as detailed for each species group below.
- 4.162. Plan HMMP1 details locations of ecological enhancements specific to notable species. Exact locations of certain elements, such as translocated notable plant species and invertebrate habitats on green roofs, have not been provided as these placements will be decided by a suitably qualified ecologist during the habitat creation process, and through coordination with engineers. These measures can be outlined further within the final HMMP post-determination, where required.

Notable Flora

- 4.163. A bespoke 'Orchid and Notable Plant Translocation Strategy' will be created that can be conditioned and implemented prior to clearance works to ensure a successful and sufficient strategy is agreed, along with advice from orchid / flora translocation experts, to preserve populations of Common-Spotted Orchid, Pyramidal Orchid, Corn Mint and Narrow-leaved Bird's-foot-trefoil (where required). This will enable successful retention and reestablishment where these plants will be moved to post-development. Where notable plants can remain *insitu* post-development (e.g., along southern boundary), these will be retained and safeguarded wherever possible to minimise disturbance.
- 4.164. The strategy will outline specific measures, such as translocation timing constraints, specific relocated areas suitable for each specimen and inoculating the receptor area's soil/substrate with mycorrhizal fungus. The strategy will also outline long-term management and monitoring measures to ensure the success of the translocation exercise, including outlining appropriate remedial measures, if/where required. Notable plants that have not been translocated but which will be subject to retention and safeguarding will also be included in the strategy.

Bats

- 4.165. Suitable buffers have been put in place at the design stage to ensure the offsite woodland is protected during construction and operational phases.
- 4.166. The hedgerow network around the Site is to be retained where possible to ensure that impacts on commuting bats are minimised. The enhancement of the hedgerows around the Site will improve overall opportunities for this group and facilitate dispersal around the Site and wider landscape.
- 4.167. The provision of newly created hedgerows, trees, other neutral grassland, mixed scrub, ornamental planting, biodiverse and other green roofs, green walls, waterbodies and associated wetlands will realise a qualitative enhancement in habitats present post-development, and the implementation of a suitable management regime will ensure that enhancements are realised for the local bat population post-development.



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- 4.168. The inclusion of native wildflowers and fruit and nut-bearing shrub species, along with specific creation of habitat for invertebrates (e.g. bee banks) will be of value to invertebrates and will, therefore, provide foraging resources for bats.
- 4.169. The development will have due consideration to the Institute of Lighting Professionals (ILP) Guidance Note 08/23 Bats and Artificial Lighting at Night to limit light spill onto vegetation used by bats.
- 4.170.In addition, three bat boxes will be installed which provide new opportunities for roosting bats see Plan HMMP1 for example locations and Appendix 2 for suitable bat boxes.

Mammals

- 4.171. The new buffer planting along the southern of the site will discourage visitors to the proposed development from entering the southern area of the Site and off-site woodland, which will provide continued opportunities for dispersal and foraging along this area for a variety of mammals, including Badgers and Hedgehogs.
- 4.172. Any trenches or deep pits associated with construction will either be infilled at night or any that are to be left open overnight will be provided with a means of escape in case a Badger or Hedgehog (or other mammals) enters. A roughened plank of wood placed in the trench as a ramp to the surface This is particularly important if the trench fills with water.

Birds

- 4.173. Management of habitats will be undertaken with due consideration for their potential use by birds. Any necessary management of suitable nesting vegetation, such as of trees, native hedgerows, scrub and green roofs, which will provide important nesting habitats, will be undertaken outside the bird breeding season (March to August inclusive), or after a suitably qualified ecologist has undertaken checks to ensure no nesting birds are present. If nests are recorded, a subsequent buffer zone of 5m surrounding each active nest will be set-up prior to ecological works until fledglings have fledged.
- 4.174. New landscape planting shall include a number of fruit-bearing species to offer a seasonal foraging resource. New native tree and scrub planting, native hedgerows and ornamental planting, along with the creation of waterbodies, grassland and wetland areas will increase opportunities for foraging and nesting birds.
- 4.175. As a further enhancement, four nesting boxes will be provided on retained suitable trees within hedgerows and along the woodland edge. See Plan HMMP1 for example locations and Appendix 3 for suitable nest boxes.
- 4.176. All bird boxes will be orientated away from any significant artificial lighting ideally southeast facing approximately 4-6m from the ground, in semi-sheltered positions.
- 4.177. Bird boxes will be checked periodically (once per year in February or March) for the first five years following installation, by a suitably experienced ecologist to ensure that they are still in situ and are not damaged. Boxes will be replaced if found to be damaged. No future monitoring of the boxes to determine if they are occupied (past the five-year period) is considered necessary for this site.



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Amphibians (Great Crested Newts) and Reptiles

- 4.178. Reasonable Avoidance Measures (RAMs) will be implemented during the construction / site clearance phase to avoid any impacts to reptiles and amphibians. Specifically, removal of scrub adjacent to Oxford Parkway will be carried out under a RAMs method statement which will include an initial thorough search of the habitat by a suitably qualified ecologist and supervision of clearance to ensure no Great Crested Newts are present, and no mortality of amphibians (or other wildlife) occur. If a Great Crested Newt is recorded, works will stop and a licence will be obtained from Natural England, or district licensing will be obtained before works continue.
- 4.179. Clearance works will also undergo a RAMs methodology in regard to the potential presence of reptiles, including measures such as a habitat manipulation exercise to avoid any direct impacts to reptiles.
- 4.180.Although the Site is relatively isolated from other suitable habitat for amphibians and reptiles, with the adjacent roads serving as significant dispersal barriers, the creation of a mosaic of habitats across the Site, including waterbodies and suitable areas of refugia amongst hedgerows and scrub, will provide significant enhancements for this group post-development if able to colonise the Site in the future.

Invertebrates

- 4.181. Resources for invertebrates will be provided in the form of retained and created hedgerows, trees, other neutral grassland, mixed scrub, ornamental planting, biodiverse and other green roofs, green walls, waterbodies and associated wet grasslands.
- 4.182. Planting species have been largely selected for their value to invertebrates, with specific consideration for notable species included, such as retaining and providing Common Fleabane and Willow species. While non-native ornamental shrub planting is not of local provenance, they will nonetheless offer nectar resources for invertebrates.
- 4.183. Within areas of grassland and scrub, management will seek to retain pockets of structurally varied habitat, with the edge zones between these comprising further micro-habitats.
- 4.184. Patches of mature scrub will also be important in providing a foraging (nectar and pollen) resource as well as important areas of shelter for a wide range of species. Likewise, the planting of individual trees throughout the site will also provide important opportunities to invertebrate communities.
- 4.185. Pockets of bare ground will be created within areas of grassland which will provide opportunities for burrowing invertebrates such as solitary bees and wasps.
- 4.186.The provision of a range of new wetland habitats on site will realise significant enhancements for a range of aquatic invertebrates, such as Damselflies and Dragonflies.
- 4.187. The provision of log piles, bee banks and insect boxes as part of the development proposals will provide additional opportunities for a range of invertebrate species within



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the site. Where suitable, areas of deadwood may be drilled with holes of varying size and depth to encourage use by a range of solitary insects.

Objective 3: Increase Biodiversity by Maximising Opportunities for Flora and Fauna

- 4.188. The establishment of new habitats within the site and with suitable management will maximise opportunities for a range of faunal species. Further protected species provisions will be incorporated into the site design including bat boxes, bird boxes, bee banks, insect boxes and log piles.
- 4.189. The proposals will deliver enhancements to biodiversity for the wider development site through the creation of a wide variety of structurally and botanically diverse habitats. A range of measures implemented to benefit specific floral/faunal groups are set out where relevant above, however the key aspects are also highlighted here.
- 4.190.Once created, the proposed habitats across the site will be brought under an ecologically sensitive management regime which will seek to retain and enhance the biodiversity value of the site in the long-term.
- 4.191. A mosaic of grassland and scrub habitats, biodiverse green roofs and green walls, waterbodies and associated wetland habitats and further natural and semi-natural habitats will seek to deliver habitats which are of high ecological value in their own right, but also provide opportunities for a range of faunal groups.
- 4.192. New areas of shrub and hedge planting will include the provision of berry/nut bearing varieties of shrubs and trees which will provide enhanced foraging opportunities for birds and mammals within the Site.
- 4.193. An 'Orchid and Notable Plant Translocation Strategy' will be created and implemented to protect notable populations of Common-Spotted Orchid, Pyramidal Orchid, Corn Mint and Narrow-leaved Bird's-foot-trefoil.
- 4.194. A total of three bat boxes will be provided along the southern boundary, delivering an overall increase in roosting opportunities.
- 4.195. Similarly, a total of four bird boxes will be provided to deliver a significant increase in the opportunities for nesting birds compared to the baseline situation.
- 4.196.Bee banks will be incorporated into the design of the stadium's biodiverse green roof which will provide significant enhancements to a wide range of invertebrate species. Insect boxes will also be provided on other biodiverse green roofs proposed within the Site which will provide shelter and habitat for a range of invertebrates.
- 4.197.Log-piles will be also established using timber taken from management of trees and hedgerows. A proportion of dead wood will be produced in the operational phase will be retained as an ecological feature, offering new habitat for saproxylic invertebrates as well as potential hibernacula for amphibian or reptile species, should either of these faunal groups colonise the site in the future. When a sufficient quantity of log piles has been produced, these will be checked periodically and replenished when necessary.



5. Implementation and Responsibilities

- 5.1. The site owner(s) / occupier(s) have the ultimate responsibility for implementation of the measures detailed in the final HMMP and securing the necessary funding.
- 5.2. It is the responsibility of the site owner(s) to instruct appropriate experienced landscaping contractors to establish the various features and habitats proposed, and also to instruct appropriate experienced ecologists to review the habitats implemented as set out in this management plan. The contractors will be provided with the Landscaping Scheme to ensure the planting lists are adhered to.
- 5.3. The site owner(s) will assign an accredited landscape contractor to manage and maintain the areas of new planting within the site.
- 5.4. Clear channels between these parties and their associates on the ground will be in operation at all times, by email and telephone as appropriate.
- 5.5. All materials used during the development of the site, as well as any operations, will be in accordance with British Standards, Codes of Practice and legislation.
 - Ecologist Responsibilities and Ecology Reporting
- 5.6. An ecologist will be appointed to undertake the following:
 - Monitoring of species populations during the operational phase;
 - Monitoring of habitats and their management in-line with the Landscape Plan and Biodiversity Net Gain Report; and
 - Checks of species provisions to ensure they are fit for purpose as stated in the HMMP.
- 5.7. Monitoring findings will be detailed in a technical report or equivalent for each of the first five years. The document will report on progress of the HMMP and detail any appropriate remedial actions to be undertaken, such as replacement or additional planting and improvements to the management of habitats if required.
- 5.8. A review and update of the HMMP will be undertaken after five years: discussions between the site owner(s), assigned landscape contractor and assigned ecologist will take place to determine its success and to support the maintenance of the ecological value of the site.
- 5.9. Any further deviations or iterations made to the HMMP will need to be agreed between the appointed landscape contractor, ecologist and site owner(s).
- 5.10. All evidence of monitoring and discussions between all parties will be made available to the Local Planning Authority (LPA).
 - Funding Responsibilities
- 5.11. A legally binding agreement (s106, planning condition and/or conservation covenant where appropriate) between all parties will detail the allocation of funding for proposed habitat management regimes, remedial measures and monitoring exercises as detailed within the final HMMP.





6. Management and Monitoring Schedule

| Habitats | | | | | | |
|----------------------------------|--|--|---|---|---|--|
| Item | Objective | Key Management Tasks | Timing | Monitoring | Remedial Actions | Responsibilities |
| Hedgerows, Scrub and Trees | Sections of retained hedgerows and trees, mixed scrub and two individual urban trees retained along Oxford Road. | Retention and Protection | During construction (Year 0) until completion phase | Periodic checks of protective fencing | Maintenance of fencing where required | Appointed Construction Site Manager / Landscape Contractor |
| | | Bolster planting of retained hedgerows | Year 0 | Check on health of bolster planted hedgerow specimens. | Replacement or adjustment of supporting stakes, ties and / or spiral rabbit guards. Replacement of any unsuccessful trees. | Appointed Landscape Contractor |
| | | Health inspections | Standard periodic health checks, where appropriate. Any management works outside nesting bird season (March – August inclusive) | Check on health of retained hedgerows. Checks of any colonisation of non-native / undesired species. | Removal of unwanted species following best practice methodologies. Remedial tree surgery will be administered, as necessary, to remove any dead, dying or diseased branches and to allow trees to achieve full stature. Where necessary ecological advice in relation to bats and nesting birds will be sought in relation to the arboricultural works. | Appointed Landscape Contractor |
| | | Arboricultural management | Outside nesting bird season (March – August inclusive) Hedgerows cut at three- to-five-year intervals, with coppicing and | | | |



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| Habitats | | | | | | |
|----------|---|-------------------------|---|---|--|--------------------------------------|
| Item | Objective | Key Management Tasks | Timing | Monitoring | Remedial Actions | Responsibilities |
| | | | laying utilised where gaps become present. | | | |
| | | Ecology inspections | Annually, beginning commencement of operational phase – during summer months when plants in flower | Ensure habitats are still insitu and of favourable habitat condition, with reference made to the Statutory Biodiversity Metric Condition Assessments. | Any habitats not meeting their targeted conditions must be addressed. Liaison with the appointed management company to advise on any specific remedial actions. | Appointed Ecologist |
| | To provide additional tree, hedge and scrub resource on site providing new habitats of ecological value and offer a 'stepping stone' habitat. | Tree planting | Year 0, during autumn, winter or spring. | Check on health of trees / shrubs. | Replacement of any unsuccessful trees / shrubs. | Appointed Landscape |
| | | Hedgerow planting | _ | Checks of any colonisation of non-native / undesired species at base. | Replace tree guards and stakes where necessary. Removal of unwanted species | Contractor |
| | | Mixed scrub planting | | | following best practice methodologies. | |
| | | Ornamental planting | | | Remedial tree surgery will be administered, as necessary, to remove any dead, dying or diseased branches and to allow trees to achieve full stature. | |
| | | Health inspections | Year 1+ Standard periodic health checks, where appropriate. Any management works outside nesting bird season (March – August inclusive) | Check on health of tree, hedge and scrub planting. Checks of any colonisation of non-native / undesired species. | Removal of unwanted species following best practice methodologies. Replace tree guards and stakes where necessary. | Appointed Landscape Contractor |



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| Habitats | Habitats | | | | | | |
|----------------------------|--|--|---|---|--|--|--|
| Item | Objective | Key Management Tasks | Timing | Monitoring | Remedial Actions | Responsibilities | |
| | | Hedge cutting | Year 1+ Outside nesting bird season (March – August inclusive) Year 5+ Hedgerows cut at three-to-five-year intervals, with coppicing and laying utilised where gaps become present. | | Replacement of any unsuccessful trees / shrubs. Remedial tree surgery will be administered, as necessary, to remove any dead, dying or diseased branches and to allow trees to achieve full stature. Where necessary ecological advice in relation to bats and nesting birds will be sought in relation to the arboricultural works. Hedgerows cut at three-to-five-year intervals, with coppicing and laying utilised where gaps become present. | | |
| | | Ecology inspections | Year 1+, annually | Ensure habitats are still insitu and of favourable habitat condition, with reference made to the Statutory Biodiversity Metric Condition Assessments. | Any habitats not meeting their targeted conditions must be addressed. Liaison with the appointed management company to advise on any specific remedial actions. | Appointed Ecologist | |
| Other Neutral Grassland | Offer benefits for birds, bats, mammals and invertebrates | Protection of retained grassland areas (including areas with notable flora) | Year 0 until completion of construction phase | Periodic checks of protective fencing | Maintenance of fencing where required | Appointed Construction Site Manager / Landscape Contractor | |



| Habitats | | | | | | | | |
|----------|-----------|---|--|--|--|--|--|--|
| Item | Objective | Key Management Tasks | Timing | Monitoring | Remedial Actions | Responsibilities | | |
| | | Creation of other neutral grassland | Year 0 Initially sown in autumn or early spring. Mown through winter and early Spring. Weeds removed. | Checks of any colonisation of non-native / undesired species. Checks of unsuccessful establishment | and leaf litter following best practice methodologies. Landscape Contractor | Appointed Landscape Contractor / Appointed Ecologist | | |
| | | Translocation of notable species to suitable retained areas | Year 0 To follow Orchid and Notable Species Translocation Strategy | Checks of unsuccessful establishment. | | | | |
| | | Health inspections | The sections Year 1+ Four times a year health checks. Any management works to have regard to nesting bird season (March – August inclusive) Annual, during the summer, with any remedial works required. Removal of non-native / undesired species. Watering applied, when necessary, during drought periods. | | | | | |
| | | Management | Year 1+ Up to two cuts a year, March/April and September/October | | | | | |



| Habitats | Habitats | | | | | | | | |
|---|---|--|--|---|--|--------------------------------------|--|--|--|
| Item | Objective | Key Management Tasks | Timing | Monitoring | Remedial Actions | Responsibilities | | | |
| | | Ecology Inspections | Year 1+ Annually – during summer months when plants in flower | Ensure habitats are still insitu and of favourable habitat condition, with reference made to the Statutory Biodiversity Metric Condition Assessments. | Any habitats not meeting their targeted conditions must be addressed. Liaison with the appointed management company to advise on any specific remedial actions. | Appointed Ecologist | | | |
| Waterbodies (Retained ditches, SuDS, Rain Gardens and Pond) | Retained litches, SuDS, Rain Gardens and Pond) habitat on site which will expand opportunities for wildlife Creatio | Creation of SuDS and ditch enhancement Creation of Rain Gardens | Year 0 Basins to include permanently wet areas. Seed mixes / planting sown and rolled either Spring or Autumn. Year 0 Created rain gardens to | with any remedial works required. Checks of any colonisation of non-native / undesired species. | following best practice methodologies. Removal of dead plant growth | Appointed Landscape Contractor | | | |
| | | | undergo sowing of wetland seed mix | | | | | | |
| | of wetland se | Pond to undergo sowing of wetland seed mix and planting of rushes, | | | | | | | |
| | | Management | Year 1+ Grassland to be topped early May, June/July and later if required | | | | | | |



| Habitats | -labitats | | | | | | | |
|----------|-----------|-------------------------|---|------------|------------------|------------------|--|--|
| Item | Objective | Key Management Tasks | Timing | Monitoring | Remedial Actions | Responsibilities | | |
| | | | Year 2+ Grassland to be undertaken annually in August / September on a rotational basis | | | | | |
| | | | Rain Gardens: | | | | | |
| | | | Year 1+ cutting undertaken late summer / autumn when required with arisings removed. | | | | | |
| | | | SuDS and Pond: | | | | | |
| | | | Year 1+ Submerged and emergent aquatic/marginal plants hand cut 25% per year rotational basis. | | | | | |
| | | | Removal of dead plant growth prior to each growing season. | | | | | |
| | | | Removal of algae growth in summer. | | | | | |
| | | | Year 5 any significantly overhanging tree limbs from off-site woodland to be trimmed back to avoid significant shading on southern ditch | | | | | |



| Habitats | | | | | | | | |
|-----------------------|---|---|---|---|--|--------------------------------------|--|--|
| Item | Objective | Key Management Tasks | Timing | Monitoring | Remedial Actions | Responsibilities | | |
| | | Health inspections | Year 1+ Annually | Annual, during the summer, with any remedial works required. | Removal of unwanted species following best practice methodologies. | | | |
| | | | | Removal of non-native / undesired species. | Removal of dead plant growth and leaf litter. | | | |
| | | | | Watering applied, when necessary, during drought | Reseeding of any barren or deteriorated areas. | | | |
| | | | | periods. Ensure no fish colonise waterbodies. Monitor shade levels along southern ditch / off-site woodland | Removal of fish from waterbodies if required. Trim back tree limbs substantially shading southern ditch. | | | |
| | | Ecology Inspections | Year 1+ Annually | Ensure habitats are still insitu and of favourable habitat condition, with reference made to the Statutory Biodiversity Metric Condition Assessments. | Any habitats not meeting their targeted conditions must be addressed. Liaison with the appointed management company to advise on any specific remedial actions. | Appointed Ecologist | | |
| Modified Grassland | Permeable, green infrastructure to intensively used urban spaces. | Creation of 'grasscrete' car park Creation of sports pitch | Year 0 installation of infrastructure and sowing of grass | Checks of any colonisation of non-native / undesired species. | Removal of unwanted species and leaf litter following best practice methodologies. | Appointed Landscape Contractor | | |
| | | | Year 0 installation of infrastructure and sowing of grass | Checks of unsuccessful establishment | Reseeding of any barren or deteriorated areas. | | | |



| Habitats | | | | | | | | | |
|---|--|---|--|--|---|--------------------------------------|--|--|--|
| Item | Objective | Key Management Tasks | Timing | Monitoring | Remedial Actions | Responsibilities | | | |
| | | Health inspections | Year 1+ Annual, during the summer, with any remedial works required including plugging gaps. | | | | | | |
| | | Management | Year 1+ Grasscrete to be topped early May, June/July and later if required | | | | | | |
| | | | Sports pitch will be subject to ongoing bespoke intensive management. | | | | | | |
| | | Ecology Inspections | Year 1+ annual during summer months when plants in flower | Ensure habitats are still insitu and of stated habitat condition, with reference | Any habitats not meeting their targeted conditions must be addressed. | Appointed Ecologist | | | |
| | | | | made to the Statutory Biodiversity Metric Condition Assessments. | Liaison with the appointed management company to advise on any specific remedial actions. | | | | |
| Biodiverse Green Roofs and Green Walls | Providing additional foraging and refuge opportunities for aerial species, such as birds and invertebrates across built-form | Creation of Biodiverse Green Roof and Other Green Roof and translocation of notable species | Year 0 installation of infrastructure and creation of wildflower and / or sedum areas on roofs Keep substrate damp for minimum 10 weeks if | Checks of any colonisation of non-native / undesired species. Checks of unsuccessful establishment. Check condition success during periods of drought. | Removal of unwanted species and leaf litter following best practice methodologies. Reseeding of any barren or deteriorated areas. Reevaluate watering provision if necessary. | Appointed Landscape Contractor | | | |
| | | | required | | | | | | |



| Habitats | Habitats | | | | | | | |
|----------|-----------|---|---|--|---|------------------------|--|--|
| Item | Objective | Key Management Tasks | Timing | Monitoring | Remedial Actions | Responsibilities | | |
| | | Creation of bee banks, installation of insect boxes and log piles | Year 0 | | | | | |
| | | Health inspections | Year 0 – 2 Monthly inspections and during periods of drought | | | | | |
| | | | Year 3+ Annual, during the summer, with any remedial works required | | | | | |
| | | Management | Year 1+ | | Remove saplings and and | | | |
| | | | Cutting of vegetation in late autumn | | invasive / aggressive grassland and ruderal species | | | |
| | | | Retention of small areas of bare ground | | | | | |
| | | | No more than 50% of bee banks to be managed in any one year. | | | | | |
| | | | Allow for occasional watering in periods of prolonged drought | | | | | |
| | | | Nesting bird checks during any management (March-August inclusive) | | | | | |
| | | Ecology Inspections | Year 1+ annual during summer months when plants in flower | Ensure habitats are still insitu and of favourable habitat condition, with reference made to the | Any habitats not meeting their targeted conditions must be addressed. | Appointed Ecologist | | |



| Habitats | Habitats | | | | | | |
|----------|-----------|-------------------------|--------|------------------------|---|------------------|--|
| Item | Objective | Key Management Tasks | Timing | Monitoring | Remedial Actions | Responsibilities | |
| | | | | Condition Assessments. | Liaison with the appointed management company to advise on any specific remedial actions. | | |

| Protected Species | | | | |
|-------------------------|---|---|---|--|
| Item | Objective | Monitoring | Remedial Actions | Responsibilities |
| Notable Plant Species | To maintain populations of notable flora | Bespoke Orchid and Notable Plant Translocation Strategy will be implemented prior to site clearance and will include reestablishment and long-term management and monitoring measures to ensure successful longevity of populations. | To be outlined within the Translocation Strategy. | Appointed Ecologist / Appointed Landscape Contractor |
| Bats | To maintain existing dark corridor along the southern site boundary | The development will have regard to the Institute of Lighting Professionals (ILP) Guidance Note 08/23 Bats and Artificial Lighting at Night to limit light spill onto vegetation ideal for bats. | N/A | Landowner / Appointed Landscape Contractor |
| | Provide additional roosting opportunities | Three bat boxes will be delivered which provide new opportunities for roosting bats. | Replacement of damaged / missing boxes as required. | Appointed Landscape Contractor |
| Badgers / Other mammals | To ensure favourable opportunities for any locally present Badgers | Checks of the site for any new Badger activity will be undertaken in conjunction with future habitat monitoring surveys of the HMMP. | N/A | Appointed Ecologist |
| | To ensure favourable opportunities for local mammals | Any trenches or deep pits associated with construction will either be infilled at night or any that are to be left open overnight will be provided with a means of escape in case a Badger or Hedgehog (or other mammals) enters. A roughened plank of wood placed in the trench as a ramp to the surface. This is particularly important if the trench fills with water. | Advice sought from Appointed Ecologist if Badgers found on Site during construction. | Appointed Landscape Contractor |
| Birds | To increase nesting opportunities within the site. | Provision of four bird boxes to provide additional nesting opportunities. | Replace any damaged boxes prior to nesting bird season (March – August inclusive). | Appointed Landscape Contractor |



| Amphibians and Reptiles | To ensure no harm to these species | Reasonable Avoidance Measures (RAMs) will be implemented during the construction / site clearance phase to avoid any impacts to reptiles and amphibians. | If Great Crested Newts are recorded, works will cease and advice sought. A licence may be required. | Appointed Landscape Contractor / Appointed Ecologist |
|----------------------------|--|---|---|--|
| Invertebrates | To increase refuge and foraging opportunities for invertebrates. | Checks of bee banks, insect boxes and log piles to ensure they are not damaged and reflect original specifications. Sympathetic management will minimise disturbance / mortality. | Replace / replenish where necessary. Bee banks subject to annual management, | Appointed Landscape Contractor |



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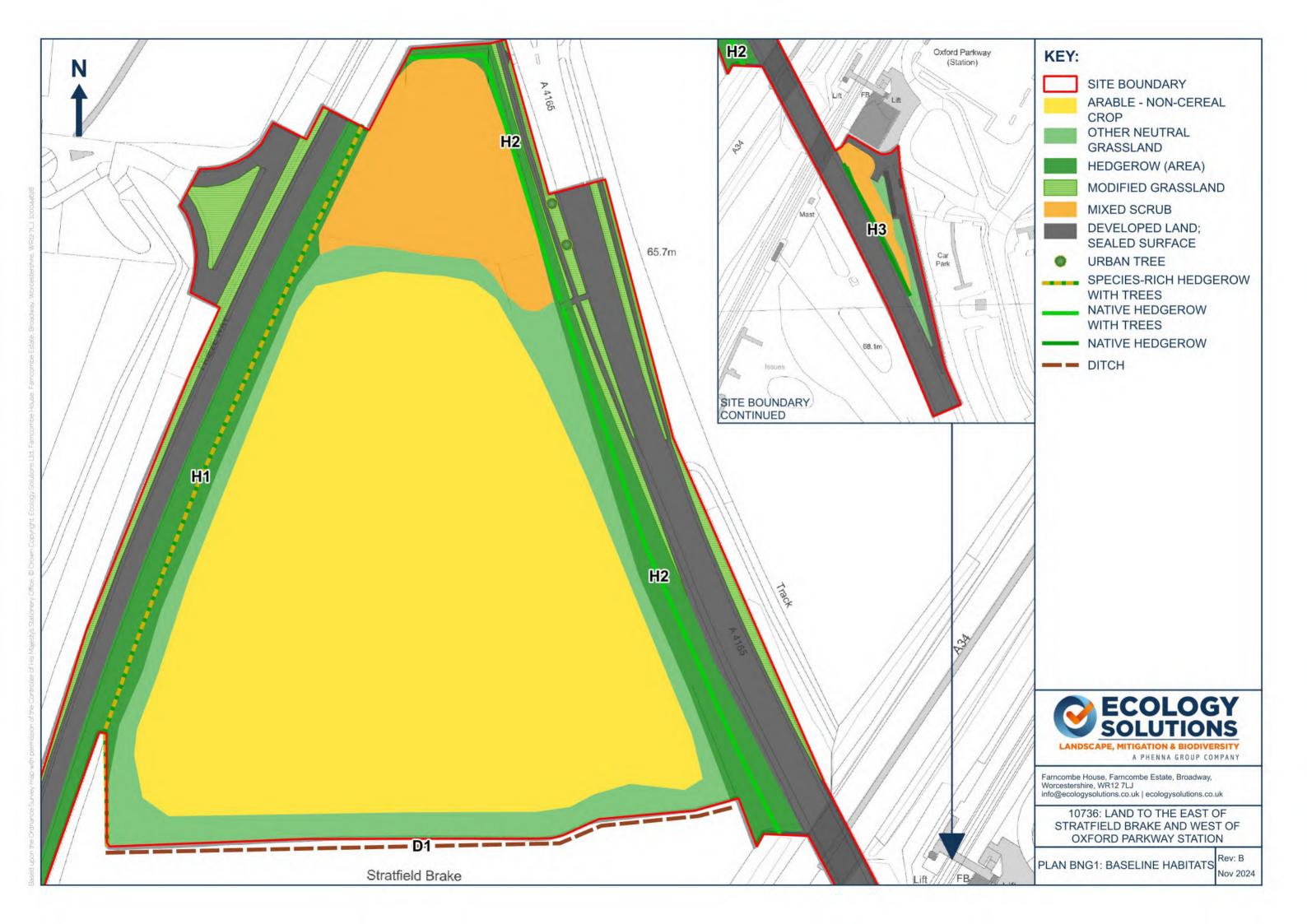
7. Summary and Conclusions

- 7.1. Ecology Solutions was instructed by Ridge and Partners LLP on behalf of Oxford United Football Club in October 2024 to prepare a Habitat Management and Monitoring Plan (HMMP) for a full planning application (Ref: 24/00539/F) for the erection of a 16,000 capacity stadium (Use Class F2) with associated flexible commercial and community facilities for conferences, exhibitions, education and other events (including club shop, public restaurant, bar, health and wellbeing facility/clinic, and gym) (Use Class E), a 180-bed hotel (Use Class C1), external concourse/fanzone, car and cycle parking, and associated access, highways, utilities, public realm, landscaping and other supporting infrastructure.
- 7.2. This draft HMMP document has been produced in response to the Regulation 25 letter to demonstrate how the habitats and targets can be achieved. This document will be updated and finalised as part of a condition subsequent to determination.
- 7.3. New habitats to be created and managed with wildlife in mind include hedgerows, trees, other neutral grassland, mixed scrub, ornamental planting, biodiverse and other green roofs, green walls, waterbodies and associated wetlands and areas of modified grassland.
- 7.4. Once the habitats establish and mature, opportunities for wildlife within the site will be enhanced, gradually improving over time.
- 7.5. Specific provisions, including bat boxes, bird boxes, bee banks, insect boxes and log piles, will provide gains for specific groups of wildlife within the site.
- 7.6. Overall, it is considered that, by following the management, mitigation and enhancement recommendations in this report, the proposed development will deliver an overall gain in ecological enhancements post-development.



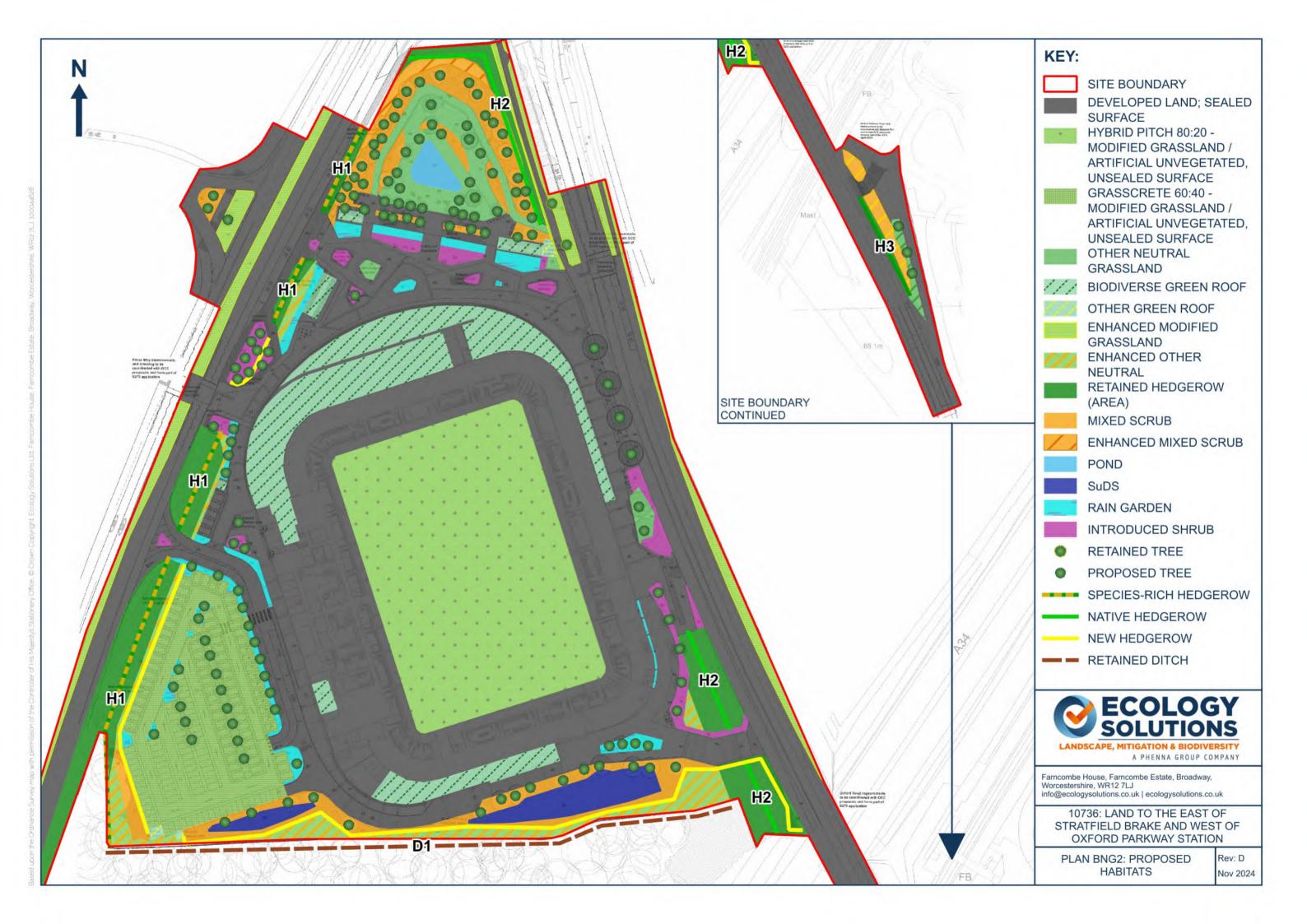
PLAN BNG1

Baseline Habitats



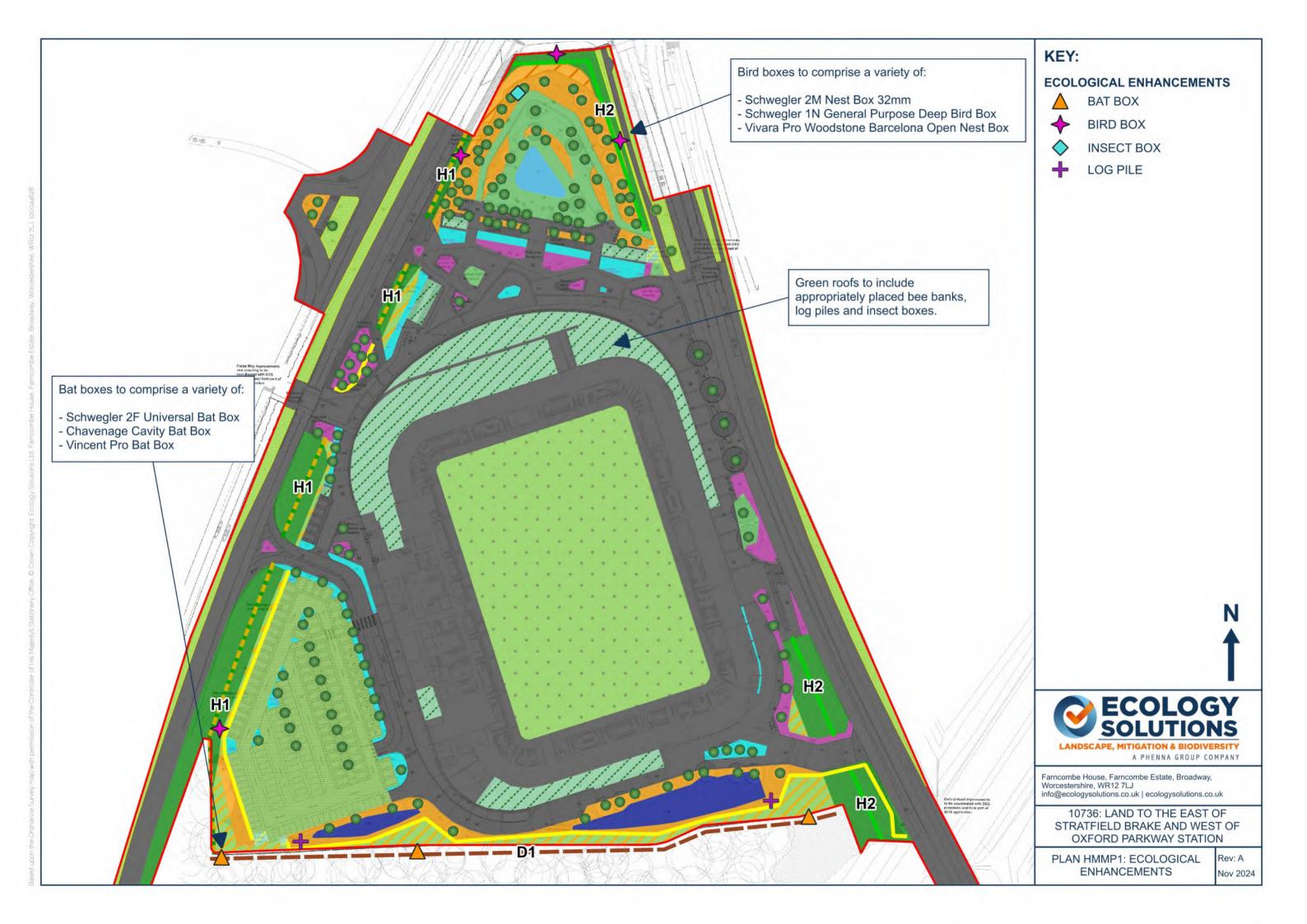
PLAN BNG2

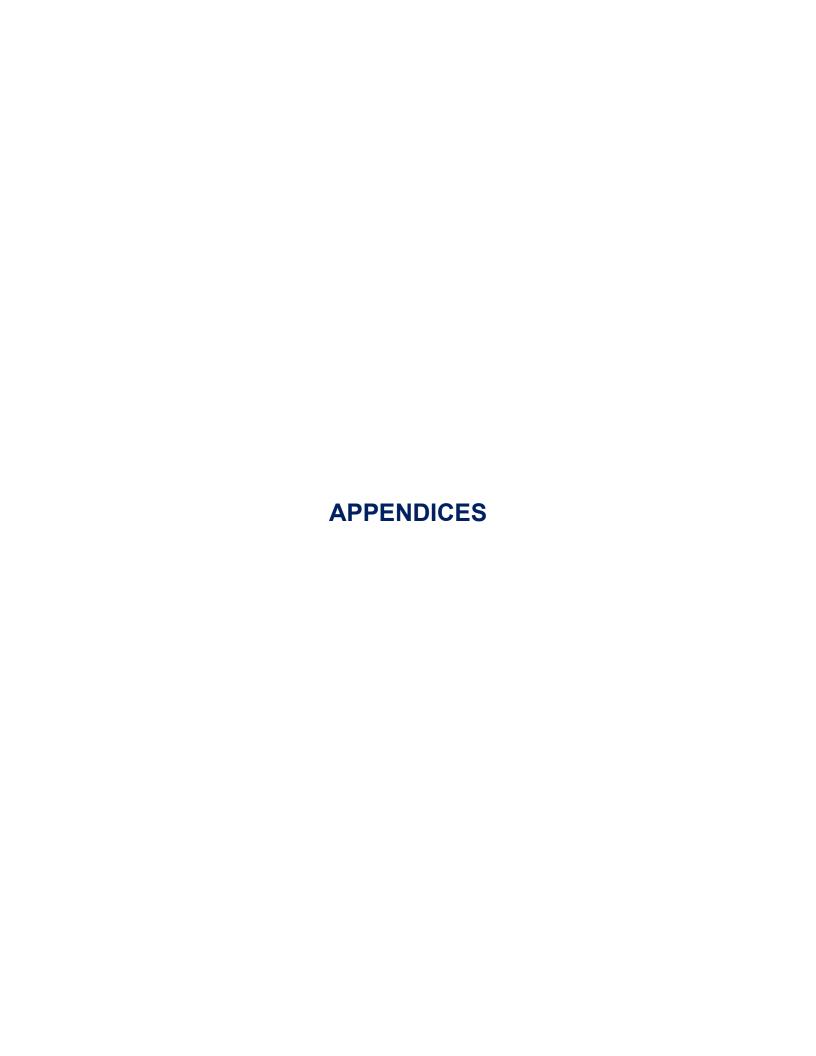
Proposed Habitats




PLAN HMMP1

Ecological Enhancements





Landscape Plan



Bat Box Specifications

Bat Boxes

Bat boxes should be located where bats are known to feed and navigate, ideally at least 4m above the ground and away from artificial light sources. Bat boxes should also be sheltered from strong winds and exposed to sun for part of the day.



Schwegler 2F Universal Bat Box

A standard bat box, attractive to the smaller British bat species and suitable for summer use.

Simple design with a narrow entrance slit on the front.

Woodcrete construction, 16cm diameter, 33cm height.

Chavenage Cavity Bat Box

A natural timber bat box designed to provide a roost for a variety of crevice dwelling species including Pipistrelle, Noctule, Leisler's, Natterer's, Daubenton's and Brown Long-eared bats.

Natural timber construction.

Width: 178mm, Height: 425mm, Weight: 1.22kg



Vincent Pro Bat Box

Designed by the Vincent Wildlife Trust, this bat box has been proven as highly successful with at least 7 species of bat, including Barbastelle, Leisler's, Common Pipistrelle, Soprano Pipistrelle, Brown Longeared, Natterer's and Whiskered, and possibly also Brandt's.

FSC timber, recycled plastic

Height: 720mm, width 180mm, depth 235mm

Images and text adapted from supplier's website:

https://wildcare.co.uk. Other suppliers are available.



Bird Box Specifications

Bird Boxes

Bird boxes should be placed approximately 1-3m above ground depending on box type and preferred species usage and should be placed appropriately to deter opportunistic predators such as cats.



Schwegler 2M Nest Box 32mm

A nest box suitable for a range of bird species such as tits, Redstarts and House Sparrows. Should be placed 1.5m-3m high.

Woodcrete, 160mm width 350mm height.

Schwegler 1N General Purpose Deep Bird Box

The twin oval-shaped holes allows light into the box and the depth allows nesting to the back of the box which discourages predators such as Magpies and cats.

Woodcrete, width: 200mm, Height: 200mm, depth 300mm





Vivara Pro Woodstone Barcelona Open Nest Box

Suitable for supporting birds such as Robins, Wrens, Pied and Grey Wagtails, Song thrushes and Blackbirds. Placement for Robin or Wren is advised at 1m within a dense bush. Placement on a tree should be a minimum height of 2m.

Woodcrete, height: 190mm, width 110mm, depth 120mm



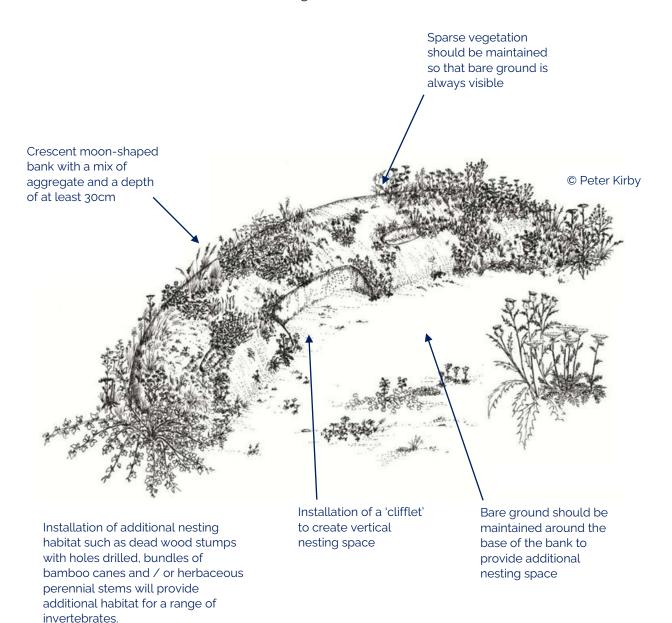
Bee Bank Specifications

Bee Banks

Provides warm, sheltered patches of bare ground where solitary mining bees and other invertebrates' nest. Made from sand, stones and other loose aggregates. Vegetation will be cut on a rotational basis so bare ground is always visible. Bee banks will be positioned in a wildflower meadow area to provide a nearby source of nectar and pollen for bees. The bee bank will be aligned to face south or south-east for maximum sunshine.

Management should include clearing a section of the bank back to bare ground every year. Removal on invasive/unwanted plants should be undertaken on no more than half of the bank in one year to minimise disturbance.

Planting / sowing of seed mixes should be avoided on the bee banks themselves as natural colonisation will occur, and bare ground should be maintained.





Insect Box Specifications

Insect Boxes

Placement of a variety of insect boxes will allow opportunities for different types of invertebrates. Boxes should be placed in sheltered locations to avoid strong winds and ideally placed in a warm, dry place near to vegetation.



Schwegler Clay and Reed Insect Nest

An attractive insect nest which can be hung or placed in any sunny, sheltered spot. Reeds on either side of a clay central section provide a range of environments to suit different insects.

Made from Woodcrete, clay and reeds. Dimensions: 290 x 225 x 205 mm

Green&Blue Beeblock

A freestanding bee nest for solitary bees. Should be positioned in a warm sunny spot, south facing, with no vegetation infront of the holes.

Made from cast concrete. Available in various sizes.





Butterfly and Bee Hotel

This insect box, endorsed by the invertebrate conservation charity Buglife, has three compartments. The lower section will attract beetles and lace-wings, the middle section includes round openings which will appeal to invertebrates such as solitary bees, and the upper section will attract butterflies.

Made from FSC Certified Wood. Dimensions 160mm x 145mm x 290 mm.

Images and text derived from supplier websites, https://www.wildcare.co.uk and https://www.birdfood.co.uuk. Other suppliers are available.



Log Pile Specifications

Log Piles

These deadwood habitats can provide a habitat for many invertebrates, including woodlice, wood-boring beetles, slugs, worms, and moths. Log piles can also provide habitat for amphibians, reptiles and small mammals.

There is no minimum size required but it should be large enough to attract a good invertebrate population and provide adequate shelter to herpetofauna (where accessible).

A good log pile will be placed in a shady spot using logs arranged in a pyramid structure. Vertical logs can be placed into the ground (at a depth of at least 10cm) at either end to prevent logs from falling. Gaps between logs should contain dry leaves, these gaps can also contain bark and/or sticks. The log pile will ideally be placed in a damp location and be kept so during dry spells to encourage a good invertebrate community for foraging reptiles.

