

Graven Hill, Bicester –

Biodiversity Enhancement and Management Plan

LNT Care Property Developments

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Ecus Ltd

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1. Introduction

1.1 Background

- 1.1.1 This Biodiversity Enhancement and Management Plan (BEMP) has been produced by Ecus Ltd on behalf of LNT Care Property Developments, to inform a current planning application to Cherwell District Council (reference: 24/0258/F) for the proposed development of a care home at Graven Hill, Bicester, OX25 2BF, hereafter referred to as ‘the Site’.
- 1.1.2 The detailed proposals include the erection of a care home with associated parking spaces, surrounded by a newly created garden area, comprising of a mosaic of developed land paving with areas of modified grassland, other neutral grassland, introduced shrub and mixed scrub.
- 1.1.3 An objection letter to the development was submitted by Cherwell District Councils ecology officer in August 2024. The objection related to the Biodiversity Net Gain Assessment, eDNA surveys for great crested newt (both of which have been dealt with in separate reports) and the production of a Biodiversity Enhancement Method Statement. This BEMP has been produced in relation to the last comment in the objection letter which states “*A Biodiversity Enhancement Method Statement should be provided to outline recommendations for protected species including reptiles, nesting birds, bats, amphibians and hedgehogs.*”

1.2 Previous surveys, On Site Ecological Trends and Constraints

- 1.2.1 The structures and the habitats to be directly impacted by the proposed works within the Site were surveyed for any signs of protected species and assessed for their potential to support protected species during previous surveys carried out by Ecus in 2024. This included;
- A Preliminary Ecological Appraisal (PEA), which included a Preliminary Bat Roost Assessment (PBRA) (Ecus Ltd, 2024),
 - Habitat Suitability Index (HSI) assessments and eDNA surveys undertaken at four waterbodies located within 250 m of the Site following recommendations provided within the Preliminary Ecological Appraisal (PEA) (Ecus Ltd, 2024), and
 - A BNG Baseline Assessment in July 2024 (subsequently updated in November of 2024).
- 1.2.2 As a result of this combined survey effort, a number of potential ecological constraints to the proposed works were recorded, including;
- Loss of suitable habitats for amphibians including great crested newts (GCN) *Triturus cristatus*, badger *Meles meles*, birds, reptiles and hedgehogs *Erinaceus europaeus*;

- Damage to suitable habitats for amphibians including GCN, badger, birds, reptiles and hedgehogs;
- Killing and injury of amphibians including GCN, birds, reptiles and hedgehogs; and
- Disturbance to foraging and commuting badger and bat species.

1.2.3 Measures for protecting retained habitats during the construction phase are provided in **Section 2.4**. Detailed recommendations to minimise risk to protected species during the proposed works and future maintenance can be found in full within the appropriate ecological reports produced by Ecus, but include;

- Liaison with NautreSpace Partnership due to the presence of GCN within nearby ponds and entering into the District Level Licencing (DLL) scheme prior to any works.
- Works which impact suitable habitat for badgers, hedgehog and hare will follow appropriate best practice guidelines.
- A sensitive lighting scheme will be implemented throughout the construction phase and post development to minimise disturbance to foraging and commuting bats.
- Clearance of suitable habitat for nesting birds (scrub, scattered trees and buildings) will aim to avoid the core nesting bird season (March – September, inclusive). If this is not possible, a suitably experienced ecologist will be required to inspect any nesting bird habitat within the Site, for breeding birds and their active nests, no more than 48 hours prior to any clearance works being undertaken.
- For reptiles, vegetation clearance works should be conducted under a Precautionary Method of Working (PMW), such as the vegetation removal being carried out in stages and having an Ecological Clerk of Works (ECoW) present to hand search any vegetation prior to clearance works.

1.3 Site Context – Baseline Conditions

1.3.1 The Site is located at central National Grid Reference (NGR): SP 58894 21247 and is approximately 1.11 ha in size. The Site is located in the south of Bicester, on the edge of a widely urban area. The surrounding area to the north of the Site comprises mainly residential and industrial buildings with associated roads. To the south of the Site are arable fields with pockets of woodland and hedgerows. Further surrounding habitats comprised of more arable fields with pockets of woodland and hedgerows.

1.3.2 The baseline of the Site comprised of a large area of bare ground with sparse vegetation. Vegetated habitat within the Site included areas of bramble scrub *Rubus fruticosus* interspersed with scattered trees across the northern aspect. A strip of willow *Salix sp* scrub was found present along the eastern boundary. A line of trees was also recorded along the western extent of the Site. Within the southern aspect of the Site two large patches of modified grassland are separated by a section of bramble scrub containing some ruderal and ephemeral plants. A single ditch was recorded along the northern extent of the Site. Three semi-mature/ immature trees were recorded within the Site boundary with a single mature oak *Quercus* along the southern boundary of the Site.

1.3.3 Baseline habitats on the Site comprise:

- Urban – Sparsely vegetated land – ruderal/ephemeral - (0.845 ha)
- Dense scrub – Bramble scrub – (0.068 ha)
- Dense scrub – Willow Scrub – (0.007 ha)
- Grassland – Modified Grassland (0.086 ha)
- Urban – Other developed land – sealed surface (0.107 ha)
- Individual trees – Urban trees (0.0326 ha)
- Line of trees (0.071 ha)
- Single ditch (0.084 km)

1.3.4 Full habitat descriptions and species lists are provided in the Preliminary Ecological Appraisal (PEA) produced by Ecus (Ecus, 2024).

1.4 Site Context - Proposed Landscaping Post-Development

1.4.1 The finalised landscaping plans are detailed within '24_330_101_B Detailed Soft Landscape Proposals (North). Sheet 1 of 2' and '24_330_102_B Detailed Soft Landscape Proposals (South) 2 of 2' provided by Mood Landscape on 6th November 2024.

1.4.2 Post-development habitats on the Site comprise:

- Urban – Developed land; sealed surface – Buildings (0.181 ha)
- Urban – Developed land; sealed surface – Other developed land (0.321 ha)
- Grassland – Modified grassland (0.284 ha)

- Grassland – Other neutral grassland (0.170 ha)
- Dense scrub – Mixed scrub (0.112 ha)
- Urban – Introduced shrub (0.049 ha)
- Individual trees (excluding trees associated with hedgerows or introduced shrub) – Urban trees (0.1832 ha)
- Single ditch (0.084 km)

1.4.3 Full habitat descriptions are provided in the Biodiversity Net Gain Assessment (BNG) produced by Ecus (Ecus, 2024).

1.4.4 Post-development plans include the development of a H-shaped care home located centrally within the Site with associated parking spaces and driveway located towards the south of the building.

1.4.5 Surrounding the care home to the north-west and north-east will be a newly created secure garden area which will comprise of a mosaic of developed land paving with patches of introduced shrub, modified grassland and mixed scrub.

1.4.6 The proposals also include the maintenance of moderate quality other neutral grassland on Site. The other neutral grassland borders the heavily maintained modified grassland surrounding the care home.

1.4.7 Mixed scrub will be planted, within three main locations on the Site including the south-east, south-west and north-western corners of the Site.

1.4.8 Native hedgerows will be planted in various locations across the Site which will provide privacy across the development as well as delivering connectivity and a foraging resource for wildlife..

1.4.9 Tree planting is proposed throughout the Site with the majority of the trees to be planted within the area of other neutral grassland located to the south and west of the proposed care-home building.

1.4.10 A small section of the ditch which crosses into the northern boundary on Site will be enhanced, including annual management to remove undesirable species and thinning/coppicing of shrubs and trees which cause excess shade.

2. Habitats Enhancement and Management Plan

2.1 Aims and Objectives of Management

- 2.1.1 Once construction has occurred on Site, it is important to ensure that a net gain of biodiversity units (BU) is achieved as set out in the Ecus 2024 report (Graven Hill, Bicester - Biodiversity Net Gain Assessment, V4.0, Ref 24349, dated November 2024).
- 2.1.2 The key Enhancement, Ecological and Management objectives in order to achieve this aim are described as follows:
- Retention and/or enhancement of key habitat types to retain existing habitat structure for use by foraging/commuting bats and birds, and potential wildlife corridor links for invertebrates and small mammals. The functionality of the existing retained habitat will also be maintained for nocturnal wildlife, namely bats, via the implementation of a sensitive lighting strategy; and
 - Long-term management, involving producing a habitat management plan (HMP) which details a long-term (30 years) monitoring and management regime. Works undertaken in accordance with good industry practice guidance.

2.2 General Measures

- 2.2.1 Signage such as information boards at the Site will be used to promote awareness of local wildlife and key habitat features and any species-specific or habitat enhancement will be provided within the redevelopment (e.g. log piles, bat and bird boxes, new native planting).
- 2.2.2 A minimum of 1 x A3 sized interpretation sign will be installed on the Site. This will inform users of local wildlife and habitats and enhancement for protected species on Site.

2.3 Habitat Installation and Management - On Site Habitats

Hedgerows

- 2.3.1 Approximately 0.51 km of hedgerows will be planted across the Site as part of the proposed development. The majority of the hedgerows will be planted to border the paved walkways within the proposed secure garden located to the north and east of the new care home.
- 2.3.2 The hedgerow which will encompass most of the Sites boundary will be planted and managed as a species rich hedgerow as it will contain over five native or non-native woody species within a 30m section.
- 2.3.3 Hedgerow plant species selected will comprise a minimum of 80% native species and ideally be of local provenance. Both mixed native hedgerows and a single species hedgerows have been proposed within the landscape plans, which are to be planted in cultivated beds 450 mm deep.

- 2.3.4 For the mixed native hedgerows, bare root plants are to be planted in a double staggered row, with seven plants per metre and rows 450 mm apart. Species include field maple *Acer campestre*, common dogwood *Cornus sanguinea*, common hazel *Corylus avellana*, common hawthorn *Crataegus mongyna*, common holly *Ilex aquifolium*, dog-rose *Rosa canina* and guelder-rose *Viburnum opulus*.
- 2.3.5 For the proposed single species hedgerows, transplants are to be planted in a double staggered row with seven plants per metre and rows 450mm apart, in addition to container-grown plants to be planted in a single row, with three plants per metre. Species include European hornbeam *Carpinus betulus*, redclaws 'Apple Blossom' *Escallonia sp.* and wild privet *Ligustrum vulgare*.
- 2.3.6 Once established, tree guards can be removed, usually after the first five years. The hedgerow will be cut on a three-year rotation, maintaining a minimum height and width of 1.5 m but a range of heights between 2 and 4 m is preferable. Tops of hedges will be cut on a diagonal rather than horizontal cut to provide more shelter for nesting birds.
- 2.3.7 A 1 m wide verge is to be maintained on one or both sides of the hedge (dependent on location of the hedge) containing tussocky grasses and wildflowers. The margins can either have an annual cut in August, after the flowers have seeded, or be cut bi-annually in rotation to ensure some over-wintering vegetation is always provided. The base of the hedgerows is to be kept free of undesirable species and injurious weeds

Trees

- 2.3.8 Individual trees (45 native and ornamental) will be planted on Site as part of the landscape proposals, not including those planted within the introduced shrub and associated with hedgerows on Site.
- 2.3.9 The trees will consist of a mixture of native and wildlife friendly pollen, fruit and berry producing species: field maple *Acer campestre*, Streetwise field maple *Acer campestre* 'Streetwise', paperbark maple *Acer griseum*, black alder *Alnus glutinosa*, Robin Hill serviceberry *Amelanchier* 'Robin Hill', Fascination birch *Betula albosinensis* 'Fascination', downy birch *Betula pubescens*, Turkish hazel *Corylus colurna*, Evereste crab apple *Malus* 'Evereste', double flowering wild cherry *Prunus avium* 'Plena', north Japanese hill cherry *Prunus sargentii*, snow goose cherry *Prunus* 'Snow Goose', English oak *Quercus robur* and rowan *Sorbus aucuparia*.
- 2.3.10 Newly planted trees will be supported by tree stakes, ties and shelters to deter damage or disease. Trees will be inspected at annual intervals to assess tree health and if replacement is required. Further details are provided within the Maintenance and Implementation Schedule.
- 2.3.11 Throughout construction retained trees T1, T3 & T4, located immediately adjacent to the Sites

boundary will be protected in accordance with British Standard 5837:2012 'Trees in relation to construction'. This will include clearly marking retained trees and establishing suitable buffer zones through the erection of heras fencing around retained trees. This will restrict the movement of plant and the storage of materials material within buffer protection zones.

Other Neutral Grassland

- 2.3.12 Three areas (0.17 ha) of neutral grassland surrounding the Site are to be created as part of the development. These patches of neutral grassland are positioned as a buffer between the modified, more maintained grassland and the denser thicket mix located within the southeastern, southwestern and northwestern corners of the Site. The target condition for the neutral grassland is moderate.
- 2.3.13 Maintenance of moderate quality grassland on Site will provide significant aesthetic value across the site from flowering plants, as well as the potential to support and enhance biodiversity through providing shelter and foraging opportunities for a range of wildlife, including many pollen and nectar-dependent insects.
- 2.3.14 A species rich meadow seed mix, such as Emorsgate Special General-Purpose Meadow Mixture EM3 or similar will be used. This contains a mix of 80% slow growing grasses (five species) and 20% wildflowers (28 species).
- 2.3.15 Seed is best sown in the autumn or spring but can be sown at other times of the year if there is sufficient warmth and moisture. August-September and March-April usually produce the best conditions for sowing. The seed must be surface sown and can be applied by machine or broadcast by hand. To get an even distribution and avoid running out, the seeds will be divided into two or more parts and will be sown in overlapping sections. The seeds should not be incorporated into the soil, but firmed in with a roll, or by treading, to give good soil/seed contact.
- 2.3.16 Soon after sowing, there will likely be a flush of annual weeds arising from the soil seed bank, depending on the soil origin and previous management. The weeds will die before the end of the first year. These weeds will offer shelter to the sown seedlings, and are good for biodiversity of invertebrates, therefore it is important not to cut these weeds until mid to late summer. The cuttings will then be removed and composted within early August.
- 2.3.17 A 2-6 m margin must be left uncut around the edge of the grassland. This creates a refuge for insects and small mammals when a hay cut is taken. Ideally try to cut one side of this margin each year, so in a roughly square field the margin will be cut once every 4 years. When taking a hay cut, cut from the middle towards the outside, to prevent the trapping of small mammals in the centre. Taking a hay cut later in the summer is beneficial for most wildflower species as this allows them

to set seed. Ideally from mid-July onwards.

- 2.3.18 In the second growing season, and each year thereafter, the grassland must be uncut from the end of March to mid-summer, allowing the sown species to flower in June and July. After flowering, the vegetation must be cut and removed. This may be taken off as hay or cut and stacked nearby to rot. The grassland may then be kept mown through to the end of March in the following year. Flowering in the second growing season will be very good, consecutive years, with good management, species diversity will increase.
- 2.3.19 Cutting dates can be varied from year to year, bringing it forward to early July if the grassland becomes rank, or taking a later cut in early August if the structure is good. Cutting ideally is to be carried out on a rotational basis with only a third of the area cut in any one year to allow certain areas to remain undisturbed throughout the year.
- 2.3.20 On most soils there will be some initial problems with perennial weeds. Most grassland weeds such as docks and thistles are suppressed by the annual hay cut in July and will gradually decline with good management. Low level weed populations may be selectively scythed or pulled (e.g., ragwort). Selective herbicides are only worth using as a last resort for serious infestations as they will result in the loss of many wildflower species.

Mixed Scrub – Native Thicket Mix

- 2.3.21 Native thicket mix (0.112 ha) is to be planted within the edges of the Site as part of the development. The target condition for this habitat is moderate.
- 2.3.22 The areas of new scrub will be planted using 2 -3-year-old whips of local provenance, and with a variety of native species (at least three) with no, one species comprising more than 75% cover. Transplants are to be planted in groups of 3-9 of the same species on a 0.75 m grid to produce a natural looking habitat with small clearings.
- 2.3.23 Whips will be protected with a non-plastic tree spiral/guard until they are sufficiently established and robust enough (usually the first five years). Species planted on Site will consist of a mixture of native pollen, fruit and berry producing species: common hazel *Corylus avellana*, common hawthorn *Crataegus mongyna*, common dogwood *Cornus sanguinea*, common holly *Ilex aquifolium*, wild privet *Ligustrum vulgare*, dog-rose *Rosa canina* and guelder-rose *Viburnum opulus*.
- 2.3.24 Ongoing management will be required to ensure the scrub habitats do not develop into woodland over time through the process of succession. Clearings within the thicket mix will be mown annually to keep them open. Areas of new scrub will also require trimming every two to three years until

established. A margin of tall herbs is to be allowed to develop at the edge of the scrub habitat to increase diversity.

- 2.3.25 Bramble and buddleia *Buddleja davidii* will be managed within the first five years to prevent them dominating establishing species. Undesirable species will be eradicated at the earliest opportunity.
- 2.3.26 Cutting of scrub encourages re-growth and presents succession, and scrub typically takes 15 years to mature. Once established, scrub to be cut on rotation so for example cut 1/15th of the scrub area every year and cut small coupes rather than larger areas to maintain scrub at a variety of ages and structure. Scrub species that produce berries will be cut in late winter only (January), to avoid the bird nesting season (February to August) but also ensure that there are sufficient berries in autumn and early winter to feed overwintering birds and mammals.
- 2.3.27 Tree species will be carefully managed to prevent succession. Some tree species will be allowed to establish to increase structural diversity and provide foraging and sheltering opportunities for various species, but management will aim to keep the scrub in a mid-successional state, through the thinning of larger tree species or coppicing. Felled/ thinned trees are to be retained in situ to provide valuable deadwood habitat.

Urban habitats – Introduced Shrub

- 2.3.28 Introduced shrubs (0.049 ha) are proposed within the Site as per the current landscape strategy plan ('proposed shrubs, specimen shrubs and herbaceous perennials'). These shrubs are to be planted in cultivated beds 450mm deep.
- 2.3.29 The soft landscaping proposals, produced by Mood Landscape includes a mixture of native and non-native, wildlife friendly planting to providing good aesthetic value whilst also providing resources for pollinators.
- 2.3.30 During the establishment phase shrubs will require protection from damage. Further details are provided within the Maintenance and Implementation Schedule in Table 1.

Ditch (D3) – 15 m section which falls within the Site boundaries.

- 2.3.31 Approximately 15 m of D3 crosses into the northeastern corner of the Site. This section of the ditch will be enhanced as part of the post development works. The target habitat of 'moderate' condition ditch habitat will result from enhancement from poor condition to moderate condition.
- 2.3.32 Annual management will include the removal of any undesirable species, thinning or coppicing of shrubs and trees causing excess shade and monitoring, particularly in areas where the dense vegetation is restricting water flow / storage. Less than 10% of the ditch is to be heavily shaded.

2.3.33 The ditch on Site will require a good rotational management plan to ensure that there is continuity of habitat at all stages. Good practice in ditch management allows ditches to be stagger cleared so that only short sections are cleared in any one year, allowing cleared areas to be recolonised from adjacent uncleared sections. Cutting to be undertaken in late autumn or winter, if required.

2.3.34 The profile of the ditch on Site to be sculpted to provide diverse habitat conditions at all water levels. Installing berms (a shelf at about water level) can add to the variety of conditions within a ditch. Hard-edged ditches with vertical sides support very few invertebrate species, although if the ditch sides provide loose, damp soil they may be good for some ground beetles. In general, reducing the angle of slope from 45° to 35° or less will greatly benefit many wetland invertebrates and allowing cattle access to ditch margins will soften the bank profile and provide muddy margins.

2.3.35 A buffer strip of aquatic marginal vegetation is to be created along the 15 m ditch within the Site by supplementary planting of a range of floating, emergent and submerged plants, where required.

2.3.36 Marginal planting is to include:

- yellow flag iris *Iris pseudacorus* 20%
- bogbean *Menyanthes trifoliata* 5%
- amphibious bistort *Persicaria amphibia* 5%
- flowering rush *Butomus umbellatus* 5%
- arrowhead *Sagittaria sagittaria* 5%
- water mint *Mentha aquatica* 5%
- water speedwell *Veronica anagallis-aquatica* 5%
- gypsywort *Lycopus europaeus* 10%
- meadowsweet *Filipendula ulmaria* 10%

Submerged/floating species:

- Native pondweed *Potamogeton crispus* 10% and *Potamogeton natans* 10%
- frogbit *Hydrocharis morsus-rana* 10%

2.3.37 A buffer strip of vegetation is to be planted on either side of the ditch to provide permanent vegetation cover and reduce pollution risk. Supplementary planting of a range of floating, emergent and submerged plants will be undertaken (minimum of 10 species planted per 20m length).

2.3.38 Assuming the conditions of species composition, shading and nutrient levels are maintained appropriate, the habitat will be allowed to naturally regenerate.

3. Biodiversity Ecological and Management Plan

3.1 Aims and Objectives of Management

- 3.1.1 An objection letter was submitted by Cherwell District Councils ecology officer in August 2024 which states “A *Biodiversity Enhancement Method Statement* should be provided to outline recommendations for protected species including reptiles, nesting birds, bats, amphibians and hedgehogs.”
- 3.1.2 The key Ecological and Management objectives in order to address this comment are described as follows:
- Creation of new habitats to benefit bats, birds, amphibians, invertebrates and small mammals through the provision of foraging and sheltering opportunities;
 - Incorporation of additional biodiversity enhancements to enhance the value of the Site for specific species groups, such as reptiles, nesting birds, bats, amphibians and hedgehogs.

3.2 Protected Species

Amphibians and Reptiles

- 3.2.1 The provision of brush piles (untreated timber) or alternative dead wood piles with an overall dimension of 2 m length by 1 m width and up to 1 m height, will be created in order to provide additional habitat for amphibians and reptiles. Log piles will also provide shelter and foraging opportunities for invertebrates such as stag beetle *Lucanus cervus* and small mammals and contribute to a gain in biodiversity at the Site.
- 3.2.2 Two log piles will be created within the vegetation in the north east and north west corners of the Site, near the species rich hedgerow and ditches running within and adjacent to the Site (D1 & D3), as depicted within **Figure 1**. These locations would be optimal as it would encourage protected species (with particular focus on reptiles and amphibians) utilising these habitat features to make use of the log piles on Site. It would also benefit invertebrate species that utilise both dead wood and aquatic habitats.
- 3.2.3 A third log/brush pile will be created within the native thicket mix and species rich hedgerow located along the southern boundary.
- 3.2.4 Due to the size of the Site, it is thought that three log piles would be sufficient hibernacula for both reptiles, amphibians and other wildlife species utilising the habitats on Site.
- 3.2.5 There is no management directly associated with this feature however they are to be monitored every year to ensure they are maintained to a suitable standard for the use for protected species,

with particular focus on reptiles and amphibians.

Roosting Bats

- 3.2.6 The provision of bat roosting opportunities will contribute towards biodiversity enhancement at the Site and to enhance the value of the site for bats.
- 3.2.7 Four integrated bat boxes/ bat tubes (e.g. Habibat Integrated Bat boxes, 1FR/2FR Schwegler integrated Bat Tube or similar) will be installed into the new building. Having integrated boxes/ tubes will provide suitable habitat for species such as pipistrelle bats (which are a priority species within the Cherwell Biodiversity Action Plan (BAP)) as well as being more discrete and aesthetically pleasing than wall mounted boxes.
- 3.2.8 Most integrated bat boxes consist of a self-contained concrete roost chamber; however, others allow bats access into the roof space or wall cavity of the target building (NHBS, 2024). A variety of suitable options can be found here: <https://www.nhbs.com/>
- 3.2.9 In accordance with Bat Conservation Trust guidance, the boxes/bricks should be installed:
- At least 4 m high to avoid predation including from cats.
 - Away from artificial light sources.
 - Sheltered from strong winds and exposed to the sun for part of the day.
 - In a south, south-east or south-west direction (as depicted within **Figure 1**)
- 3.2.10 Finalised positions will be micro sited to avoid being installed above doorways or windows, avoiding external light and with a clear flight path to the box entrances free from clutter. Final locations will be provided alongside advice by a suitably qualified ecologist.
- 3.2.11 No specific maintenance is required as any droppings from boxes occupied by bats will roll out from the box at the base and will rapidly disintegrate when exposed to the weather.
- 3.2.12 There is no management directly associated with this feature however the boxes/ tubes should be monitored via a visual assessment from the outside to check their ongoing suitability for bats. Once it has been installed, only a bat licenced ecologist can check inside the box as there is a danger of disturbing bats.

Foraging and Commuting Bats

Hedgerow enhancement

- 3.2.13 Hedgerows can be a vital habitat for bats by providing food and shelter. A good hedge for bats is one that has tall mature trees, a diverse shrub layer and a wide field margin, and is continuous with other hedges, providing continuity of habitat across the new development.

- 3.2.14 It is important to allow the hedgerow to maintain a good structural diversity with a diverse shrub layer attracts many different invertebrates. If the shrub layer is allowed to grow tall enough it will also act as a windbreak, attracting more invertebrates and offering more feeding opportunities for bats.
- 3.2.15 Tall mature trees like oak *Quercus robur*, beech *Fagus sylvatica* and ash *Fraxinus excelsior* can be used as a roost (at any time in the year), as a route-marker for bats flying through the landscape at night and attract large numbers of flying invertebrates, which bats feed on. A minimum of one tree every 20 m per hedgerow is recommended. These trees will be allowed to develop in hedges by tagging or marking them to be left uncut when the hedge is trimmed in the winter.
- 3.2.16 Uncut margins are to be retained around the bases of hedges allows more flowers to bloom, more structure to develop and therefore more insects to thrive close to the hedge. The base of hedges is used by bats to a limited extent, as flying along them at low level provides shelter and also a means of navigation.
- 3.2.17 Eventually all hedges need managing and both coppicing and laying allow them to remain under control but thick and bushy. Instead of flailing the top of the hedge, the sides are to be trimmed and allowed to grow upwards to provide shelter for bats.
- 3.2.18 A 'hedge management plan' to ensure that hedges on the development are managed rotationally over a number of years. The plan would include rotationally managing hedges and their margins at different times over the course of a number of years. This would allow hedge and margin plants to flower and produce berries to attract in a host of wildlife.

Nesting Birds

General

- 3.2.19 Bird boxes are to be provided within the development to enhance the value of the Site for nesting birds. Suggested locations are displayed on **Figure 1**.
- 3.2.20 A total of six bird nesting boxes will be installed on the new building, both integrated and affixed to wall of the building. These will include a mixture of boxes for house sparrow, starling and swifts (which are either a species of conservation concern or a local character species within the Cherwell BAP),
- 3.2.21 All bird boxes are to be inspected annually, and any waste and/or debris to be removed. Repairs should be made where required.
- 3.2.22 Foraging and nesting opportunities will also be enhanced for a range of species through the

creation of new native hedgerow/s and the planting of new trees at the Site.

3.2.23 The following bird boxes are deemed suitable for this development:

House Sparrow Terraces

3.2.24 House sparrows *Passer domesticus* nest communally in gardens and may be encouraged onto the Site following construction given the newly planted hedgerows and thicket mix on Site. These terraces can be fixed on to the surface incorporated into a suitable wall of the development. The 1SP Schwegler Sparrow Terrace or box of a similar design will be installed. (<https://www.nhbs.com/1sp-schwegler-sparrow-terrace>).

3.2.25 The terrace will be erected between 2 m and 5.5m above ground. Direct/constant sunlight will be avoided, and will be positioned on the east/west side of the building or the front of the building facing north, preferably sheltered by the roof eaves.

3.2.26 The terrace can be cleared of nesting material in winter each year (October to December) as this will encourage the birds to nest again. This type of box also occasionally attracts blue tit *Cyanistes caeruleus*, redstarts *Phoenicurus phoenicurus* and spotted flycatchers *Muscicapa striata*.

Starling Boxes

3.2.27 Starlings *Sturnus vulgaris* have recently become a conservation concern due to their drastic decline in numbers by as much as 50% in the last 25 years (RSPB 2024). Erecting a nestbox for starlings will provide a safe and dry nest site to use when natural resources may be scarce. The following model or similar is recommended: <https://www.nhbs.com/woodpeckerstarling-nest-box>

3.2.28 The terrace will be erected between 3 to 4 m above ground here there is easy flight access and where it cannot be reached by cats or other potential predators and avoids direct/constant sunlight or prevailing wind/rain.

3.2.29 As starlings are gregarious birds and often nest in a loose colony, two of these boxes are to be placed along the same face of the building, see **Figure 1** for suggested locations.

3.2.30 The terrace can be cleared of nesting material in winter (October/November ideally) each year as this will encourage the birds to nest again. This type of box also occasionally attracts other bird species such as great spotted woodpecker *Dendrocopos major*.

Swift Bricks

3.2.31 Given the significant decline of swift *Apus apus* numbers in the UK, likely due to the loss of suitable nesting Sites across the country, swift bricks are to be included into the new development.

3.2.32 Swift nest bricks (hollow blocks sized to hold a nest) are an excellent way to provide swifts with

nesting opportunities. Two bricks will be fixed or integrated either on a side of the building that get some shade during the day, or under an overhang or under the eaves, to give protection from heat, but not over windows or near to vents.

3.2.33 The brick are to be fixed at least 5 metres above ground, with clear adjacent airspace so the swifts can access them in high-speed direct flight. The proposed locations on the building as displayed on **Figure 1** will provide clear flight lines and suitable conditions.

3.2.34 Examples of suitable swift bricks can be found here: <https://www.wildcare.co.uk/10724-t-genesis-swift-nest-box-triple.html>. Swift bricks do not require any maintenance.

West European Hedgehog

3.2.35 If any closed board fencing is used within the development, holes (at least 13 cm x 13 cm) will be created to allow passage for hedgehog thereby creating “hedgehog highways” through the development.

3.2.36 Once cut, a fence plate such as <https://www.nhbs.com/search?q=hedgehog+hole&qtview=219953> will be installed, indicating the purpose of the hole to deter homeowners/ tenants from blocking the hole in future.

3.2.37 The hedgehog hole will be checked annually for blockages.

3.2.38 Further information and examples of such fencing gaps put into practice can be found in the following webpage <https://www.hedgehogstreet.org/help/hedgehogs/link-your-garden>.

4. Management Responsibilities

4.1 Introduction

4.1.1 As required by BNG legislation this Site will be subject to 30 years of monitoring by a suitably qualified ecologist and / or grounds maintenance operative. Monitoring of the Site allows for the management to be assessed to see how the management actions are affecting the Site and whether they are successful. Monitoring will help to ensure the proposed habitats deliver the predicted Habitat Units and ensure that an overall Net Gain is achieved in respect of the consented development.

4.2 Plant Replacement

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

4.2.2 Any trees, shrubs or other planting that die, become damaged or are removed within a period of 5 years following the first occupation of the development are to be replaced in the next planting season with other plants of similar size and species as the failed specimens, unless written consent is provided by the Local Planning Authority to vary the approved details.

4.2.3 Five years after planting has been completed an initial Site inspection will be undertaken and a report prepared by a suitably qualified and experienced ecologist to record Site conditions and to determine whether replacement planting or over-seeding is required to maintain a high-quality landscape scheme that is consistent with the original objectives.

4.2.4 After the initial five-year period, the maintenance schedule will be reviewed annually and as required updated to reflect the situation and inform management for future years. Full management will be detailed within a planting schedule.

4.2.5 With the correct management it is anticipated that the introduced shrub and modified grassland will reach its target condition after the first year and the other neutral and mixed scrub after the fifth year. Due to individual trees requiring more determined maintenance they are unlikely to reach their target condition until year 27, as specified within the BNG metric (Ecus 2024).

4.2.6 All habitats are to be reviewed at the end of the year detailed above to ensure that they have or are on track to reach their target condition as set out within the Biodiversity Net Gain Assessment.

4.3 Ongoing Monitoring and Remedial Measures

4.3.1 This management plan will be continually monitored and reviewed annually with any resulting changes incorporated into the subsequent years' programme. The review will be in consultation

with the local planning authority and other interested parties and will provide an updated management plan for on-going management. The updated management plan shall be submitted to and agreed by the Local Planning Authority.

- 4.3.2 It is recommended that monitoring takes place annually in Years 1 - 5 and then every 5 years until Year 30, or in accordance with the local Council's requirements.

5. Implementation and Maintenance Schedule

5.1 Introduction

- 5.1.1 The following schedule in **Table 1** outlines the key implementation and management objectives for each created or enhanced feature within the Site.
- 5.1.2 The schedule outlines recommended operations, the appropriate times of year they will be undertaken and the recommended frequency each year in order to achieve these objectives. The schedule details operations that are recommended for the establishment phase up to five years following implementation and those operations required in the mid to long-term.
- 5.1.3 The management plan is to be carried out as approved to ensure the successful aftercare of the enhancement features.

5.2 Standards and References

- 5.2.1 All work and maintenance operations will be undertaken in accordance with the following best practice guidance:
- BS3998:2010 Tree Works Recommendations;
 - BS7370-4: 1993 Grounds maintenance. Recommendations for maintenance of soft landscape (other than amenity turf); and,
 - Any other current UK and EU standards.

5.3 Funding of the Implementation and Maintenance Works

- 5.3.1 Planting will be maintained by the landscape contractor for a minimum of 12 months following planting, with any defective planting replaced by the end of the first year.
- 5.3.2 Implementation and maintenance of the landscape areas shall be undertaken by a competent Landscape Contractor, registered with the British Association of Landscape Industries (BALI).
- 5.3.3 Maintenance visits shall be undertaken at minimum monthly intervals (i.e. 12 visits per annum). An increased number of visits may be required at certain times of the year.
- 5.3.4 The landscape implementation and maintenance of the Site is to be carried out to a high standard at all times and in accordance with the schedule and specifications within this management plan and specific details provided within the detailed landscape scheme when this is available.
- 5.3.5 The contractor shall ensure that the Site is left tidy and safe following all works. All arisings will, as appropriate, be incorporated into or removed from the Site in accordance with the maintenance

schedule.

- 5.3.6 The contractor shall programme their visits to coincide with appropriate weather conditions for carrying out operations including the use of any chemicals and the mowing of grass. Grass mowing in excessively wet conditions is prohibited.
- 5.3.7 A record of all maintenance visits will be completed by the maintenance contractor, and these must be submitted to the Client for review every six months.
- 5.3.8 The maintenance contractor shall ensure that any chemical application is undertaken by trained personnel only with the appropriate NPTC certificates and in accordance with the manufacturer's recommendations. The use of any chemicals shall be included within the maintenance visit records as described above.
- 5.3.9 The Contractor should notify the Client immediately to any significant pest or disease problem affecting plant stock and a suitable strategy for treatment should be discussed and agreed with the Client.

Table 1: Implementation and Maintenance Schedule

General maintenance requirements to all planted areas, unless otherwise stated in the detailed schedule below.	To maintain high standard planting scheme across Site and ensure healthy establishment of plants to achieve landscape character and benefit biodiversity.	A	Inspection.	March – September	Annually
		B	Inspect tree stakes, ties and shelters and replace where necessary. Remove in Year 5.	February and after strong winds	Annually. In Year 5- Remove
		C	Watering - during establishment and to ensure continued thriving.	As necessary during dry spells, or indicated in the detailed schedule below	As required- daily in dry spells mainly April- September
		D	Reaffirm new tree / shrub planting.	February and after strong winds	Annually and as required following inspection
		E	Removal of debris and litter.	Throughout	Each maintenance visit
		F	Plant replacements and reinstatement to Year 5 when instructed.	November to March	Annually next following planting season
		G	Fertiliser.	March	Annually
		H	Top up mulch to 60 mm or 75 mm depth (bark or gravel - refer to specification).	November	Annually
Maintained Garden – Modified Grassland	Creation of 'species rich' lawns.	A	Prepare surface for species rich turf installation. Install turf on levelled surface and water in well to aid root establishment	September - October	Year 0 (no further management plan required)
Non-native shrubs (not within hedgerows)	Planting of non-native shrubs to provide more fruit, berries, flowers and nesting opportunities. To protect from rabbit damage during establishment phase.	A	Ground preparation for easier planting via topping / mowing of existing vegetation and digging of appropriately sized planting holes. Plant shrubs and install guards and	November - March	Year 0 (no further management plan required)

			stakes where required.		
Hedgerows	<p>Creation of new hedgerows.</p> <p>To ensure the healthy establishment of new hedgerows.</p> <p>To encourage bushy side growth of hedgerow and maintain A- shaped profile once established.</p> <p>To provide more fruit, berries, flowers and nesting opportunities.</p> <p>To protect from rabbit damage during establishment phase.</p>	A	<p>Prepare ground by turning over a 0.8 m wide strip.</p> <p>Plant up with 2- to 3-year-old whips, in a staggered double row approximately 45 cm apart with 45 cm centres (5 per linear meter).</p> <p>Protect planted whips with non-plastic tree guards until established.</p> <p>Remove undesirable species.</p>	November- March	Year 0
		B	<p>Establishment pruning- heavy trim sides first year to encourage bushy side growth followed by light trimming to sides until established.</p> <p>Replace any failed whips in the following winter season.</p>	November- February	Year 1
		C	<p>Water new planting as required between April & October. Two visits a month will likely be required, depending on rainfall.</p>	April - October	Annually (Year 0 - 5)
		D	<p>Management regime of cutting hedgerows no more than every three years to be adopted.</p> <p>A range of heights to be maintained –</p>	November- February	Year 3 onwards

			<p>between 2 m and 4 m.</p> <p>Trimming- alternate sides on an annual basis to promote berries / fruit.</p> <p>Cut crown of hedge on a diagonal.</p> <p>Cutting should be conducted with circular saw rather than flail.</p> <p>Maintain minimum 1 m strip on one or both sides to create tussocky ecotone.</p>		
Newly planted scattered trees	To plant and ensure that trees establish and remain in a healthy condition	A	<p>Ground preparation for easier tree planting via topping / mowing of existing vegetation and digging of appropriately sized planting holes.</p> <p>Plant trees and install tree guards and stakes where required.</p>	November - March	Year 0
		B	<p>Water new planting as required between April & October. Two visits a month will likely be required, depending on rainfall.</p>	April - October	Annually (Year 0 - 5)
		C	<p>Suppress weeds through the installation of biodegradable weed suppression mats or via hand pulling, strimming and mulching, as required.</p> <p>If non-biodegradable weed suppression mats are used these will be removed during year 5.</p>	As necessary following inspection	Annually (Year 0 - 5)
		D	<p>Removal of competitive species (hand pulling, strimming and mulching), as</p>	As necessary following inspection	Annually (Year 0 - 5)

			<p>required.</p> <p>Replacement of tree guards and support stakes as required.</p> <p>Check for failures in summer growing season. Replant failures in winter.</p> <p>Check condition of tree guards and canes for replanted trees. Replace as needed and remove after five years.</p> <p>Annual pruning as required to maintain trees in healthy condition.</p>		
Other neutral grassland creation.	<p>Creation of species rich neutral grassland and maintain to achieve the greatest species diversity.</p> <p>Prevent future encroachment by scrub/ saplings.</p> <p>Control coarse grasses from outcompeting perennial wildflowers</p>	A	<p>Soil sampling to determine fertility levels of the land to inform the need for nutrient stripping. If required, invert existing topsoil to expose more nutrient poor sub-soil.</p> <p>Prepare surface for species rich turf installation.</p>	September - October	Year 0
		B	<p>Year 1 Establishment cut (mow all plant growth to a height of 40-60 mm). Don't cut until mid-late summer. Remove cuttings if dense.</p>	July – August	Year 1
		C	<p>Continue cutting through to the end of March the next year. Dig out any residual perennial weeds such as docks.</p>	September-March Up to 6 times	Year 1
		D	<p>Cutting to 50 mm (after establishment). More suitable for deeper soils July - August: After flowering take a 'hay cut'. Leave 'Hay' to dry and shed seed for 1-7 days then remove from site.</p>	July / August, September / October and March / April	Annually






			<p>September - October: Mow the regrowth and remove clippings. March - April: Mow the re-growth and remove clippings.</p> <p>On poor shallower soils one or two cuts at the end of the summer, may be all that is required to maintain diversity and interest.</p>		
Bird boxes	To provide new nesting opportunities for birds	A	<p>Installation or integration of bird boxes on suitable walls of the completed development.</p> <p>See text 3.2.19 – 3.2.34 for further information on installation. All boxes should avoid areas of prolonged direct sunlight or prevailing wind exposure.</p>	During construction	As required
		B	Inspect bird boxes and clean as required to remove waste, debris and potential fleas/ ticks etc.	October/ November	Annually
		C	Make repairs to mounted boxes.	September-February	As required
Bat boxes *Any monitoring should be non-invasive conducted from a distance. Any invasive checks to be undertaken by a licensed bat worker.	To provide roosting opportunities.	A	<p>Installation of integrated bat boxes. Boxes should be fixed at least 4 m above ground level, be free from obstruction and free from direct illumination from artificial lights.</p> <p>Four Habibat Bat Box 001 (or similar) to be incorporated into the fabric of completed building.</p>	During construction	As required

		B	Monitor* bat boxes to ensure they are not inhabited by pests such as wasps.	As required. Remove wasp nests in late winter / early spring.	As required
		C	Make repairs to tree mounted boxes (not building integrated boxes).	Only when not inhabited. Careful monitoring* to ensure they are empty beforehand	As required

Figure 1: Post Development Habitats and Faunal Enhancements Map

Legend

BEMP Enhancements

-  Log Pile
-  Integrated Bat Box
-  House Sparrow Terrace
-  Starling Boxes
-  Swift Brick

Post Development Habitats

-  g3c - other neutral grassland
-  g4 - modified grassland
-  h3h - mixed scrub
-  u1b5 - buildings
-  u1b6 - other developed land
-  u1d - suburban mosaic of developed and natural surface
-  r1e - canal or ditch
-  h2a - native hedgerow
-  h2a5 - species-rich native hedgerow
-  u1e - built linear feature

LNT Construction

24349 Graven Hill Bicester
Biodiversity Enhancement Management Plan
(BEMP)

Figure 1
Post-Development Habitats and
Faunal Enhancements Map

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