



Great Wolf Resorts

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# **BICESTER GOLF COURSE**

Habitat Management and Monitoring Plan



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## Habitat Management and Monitoring Plan

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# 1 INTRODUCTION

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- 1.1.1. Great Wolf Resorts (GWR) propose the construction of a new hotel and leisure complex at Bicester Golf Course, Chesterton, Bicester OX26 1TH, centred approximately at OS Grid Reference SP 54966 21669, hereafter referred to as the 'Proposed Development'. The 'Site', which will form the planning application boundary, includes the footprint of the building and car parks plus areas for landscaping (see Figure 1) which measures 18.6ha in area.
- 1.1.2. The Site affords significant opportunities for habitat creation and enhancement, with areas of managed/amenity grassland of low ecological value amenable to treatments such as pond, woodland or meadow creation. The landscape proposals have been informed using biodiversity metrics such that changes made to habitats at the Site result in a measurable 'biodiversity net gain'. The proposals for landscape creation have also been informed by a range of baseline ecology studies, as summarised in Section 1.3 below.
- 1.1.3. In addition, a range of wildlife installations, including bird boxes, bat boxes, hibernacula for herptiles and features for invertebrates are included within the Proposed Development.

## 1.2 AIMS AND OBJECTIVES

- 1.2.1. This Habitat Management and Monitoring Plan (HMMP) provides an overview of how habitats will be created and managed following the completion of the Proposed Development. It also sets out monitoring proposals for habitats and certain species present on site.
- 1.2.2. One of the aims of this document is intended to accompany an application to use the South Midlands District Licence scheme for great crested newts, administered by *the NatureSpace Partnership*. As part of the requirements for using this licence, a programme of habitat creation is presented in Section 4.
- 1.2.3. It should be noted that the landscape architect/contractor will also advise on specific management of the landscaped areas, whilst adhering to the ecological management activities contained herein.
- 1.2.4. It may be appropriate for this document to be updated following the completion of detailed landscape design, however the overall extents and types of created habitats, and their constituent ecological value, are unlikely to change.
- 1.2.5. Proposals for monitoring may also identify issues requiring remedial measures and alterations to the management prescriptions detailed in this document.

## 1.3 NOTES AND LIMITATIONS

- 1.3.1. The habitat areas detailed within this report (Figure 2) represent an interpretation of the Landscape General Arrangement drawing reference BMD.19.010.DR.P001, based upon translation into Phase 1 (JNCC, 2010) typology. Some minor updates were made to the Landscape General Arrangement subsequent to the translation exercise, including relocation of cycle stands and adding space for entrance signs (which has resulted in a small loss of existing scrub at the entrance). These changes are not considered to have significant implications for this HMMP or habitat areas. Should significant alterations occur to landscape plans, it will be necessary to revisit this HMMP to confirm its content remains valid.

## 1.4 SITE SAFEGUARDING

- 1.4.1. Great Wolf Resorts as the owner and operator of the Proposed Development will be responsible for implementation of this HMMP. The stated management will be undertaken for 25 years. It is envisaged that implementation of the HMMP will be secured by way of planning condition and will therefore be binding upon a future operator or occupier of the Proposed Development in the event that GWR transfers its interest in the Site or ceases to operate the Proposed Development during that 25 year period.
- 1.4.2. They will also undertake safeguarding measures such as reinstatement of habitats or installations such as fire, acute pollution or other major damage, and control and removal of dumped materials.

## 1.5 ECOLOGY BACKGROUND

- 1.5.1. A Preliminary Ecological Appraisal (PEA) was carried out in 2018 by WSP, informed by a desk study and Phase 1 habitat survey. The Phase 1 habitat survey found the Site contains a range of habitat types, many of which are relatively recent in origin, dating back to the construction of the golf course, understood to be during the 1970's. These include extensive areas of managed amenity grassland alongside plantation woodland and several ponds. Further ecological surveys were carried out by WSP in 2018, the results of which are summarised in Table 1-1 below

Table 1-1 - Ecological Baseline Information

Species/ Group	Baseline Survey Result Summary
Bats	<p>Roosting: The trees within the main body of the Site are dominated by young to semi-mature specimens of relatively recent origin, likely planted during landscaping for the golf course complex. Some more mature specimens are present at the peripheries. Within the Site one tree with low bat roosting suitability was noted, T17.</p> <p>Foraging and commuting: At least five bat species were recorded within the Survey Area<sup>1</sup> during the manual transect surveys, dominated by common and widespread species, as well as some calls not identifiable to species level. The results of the activity surveys suggest that the value of the Survey Area for bats is non-uniform, with the majority of high and medium/high activity being concentrated in the north-east, with species assemblages dominated by <i>Pipistrellus spp.</i> and noctule <i>Nyctalus noctula</i>.</p>
Badger	<p>Surveys have identified an active badger sett within the Survey Area that is well separated from the Site (approximately 200m to the south-east).</p> <p>Two possible badger setts have been identified at the Site boundaries which may be affected by the Scheme, as well as evidence of badger using the Site for foraging.</p> <p>Further survey using camera traps is ongoing at the time of writing to confirm whether the possible badger setts are being used by this species or another species.</p>

<sup>1</sup> Various survey areas were used during baseline data collection, all of which focused on 'the Site', with some survey methodologies extended to include adjacent parts of the golf course site.

Species/ Group	Baseline Survey Result Summary
Hazel dormouse	No evidence of dormouse was recorded during the course of surveys, and this species is considered to be absent from the Site.
Other mammals	<p>No records of hedgehog <i>Erinaceus europaeus</i> were returned in the biological data search, although this species is widespread. Habitat within the boundaries of the Site is considered suitable to support hedgehog, providing foraging, shelter and hibernation opportunities. The Site is therefore considered to be of Local level importance for hedgehog.</p> <p>Although there is a stream present within the Site, no evidence of water vole <i>Arvicola amphibus</i> was recorded incidentally, and no local records were returned.</p>
Breeding birds	<p>A total of 54 species were recorded within or over the Survey Area during the breeding bird survey, of these 40 are considered to breed within the Survey Area. A total of 10 species considered to breed within the Survey Area are species of conservation concern.</p> <ul style="list-style-type: none"> <li>• Bullfinch <i>Pyrrhula pyrrhula</i></li> <li>• Dunnock <i>Prunella modularis</i></li> <li>• House martin <i>Delichon urbicum</i></li> <li>• House sparrow <i>Passer domesticus</i></li> <li>• Linnet <i>Carduelis cannabina</i></li> <li>• Mallard <i>Anas platyrhynchos</i></li> <li>• Mistle thrush <i>Turdus viscivorus</i></li> <li>• Mute swan <i>Cygnus olor</i></li> <li>• Song thrush <i>Turdus philomenos</i></li> <li>• Starling <i>Sturnus vulgaris</i></li> </ul>
Reptiles	The survey results indicated a 'low' population of grass snake, concentrated in the north-easterly part of the Site. Two common lizard <i>Zootoca vivipara</i> were also recorded incidentally in 2019 on the western boundary of the wider site, comprising a 'low' population.
Amphibians	<p>Approximately 1ha of standing water is present within the Survey Area, comprising 12 waterbodies. Surveys in 2018 recorded large populations of great crested newt <i>Triturus cristatus</i> in two of these, medium populations in six, a small population in one, eggs only in one and two with no great crested newts. Seven further waterbodies in the wider site (in the rest of the golf course which will remain unaffected) returned between large populations and eggs-only results.</p> <p>Terrestrial habitats, particularly woodland and less managed grassland present across the Site are of importance to amphibians, which spend much of their lifecycle in such habitats.</p> <p>Populations of common toad <i>Bufo bufo</i>, common frog <i>Rana temporaria</i> and smooth newt <i>Lissotriton vulgaris</i> were also identified.</p>



Species/ Group	Baseline Survey Result Summary
Invertebrates	<p>Brown hairstreak butterfly <i>Thecla betulae</i> was confirmed as being present on Site, with eggs being found in suckering blackthorn along the northern boundary of the Site. Black hairstreak butterfly <i>Satyrrium pruni</i> and white-letter hairstreak butterfly <i>Satyrrium w-album</i> eggs were not recorded during the hairstreak survey, but they are known to be locally present.</p> <p>Terrestrial invertebrate surveys identified a limited number of notable invertebrates, indicating that the semi-natural habitats dominating the golf course have some value for invertebrate biodiversity. Scarce or interesting species found included the nationally rare snail-killing fly <i>Dichetophora finlandicam</i> (about which little is known), mottled fly <i>Dorycera graminum</i> (which is closely associated herb-rich unimproved meadows) and picture-winged fly <i>Oxya parietina</i> (which relies on mugwort <i>Artemisa vulgaris</i> in disturbed and waste places).</p>

## 2 HABITAT CREATION AND MANAGEMENT

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### 2.1 OVERVIEW

- 2.1.1. The Proposed Development consists of a new hotel and leisure complex buildings with associated hardstanding for access and a large area of landscaping including grassland, woodland, waterbodies and intermediate habitats.
- 2.1.2. Wildlife installations such as bat and bird boxes, refugia and hibernacula for herptiles and invertebrate features such as sandy scrapes will be distributed throughout the application site.
- 2.1.3. The landscape General Arrangement is provided within Appendix A of this document. Figure 2 provides a translation of this General Arrangement in Phase 1<sup>2</sup> (JNCC, 2010) typology.

### 2.2 GENERAL MEASURES

- 2.2.1. Annual checks should be made of the planted areas to confirm overall condition of the planted habitats. The check should be made between May and August as identification of many plants is easier at this time and should be completed by an individual able to identify plant species. The vegetation planted will be checked against landscape plans and associated species lists to check for any failed planting. Failed planting will be replaced by equivalent species, in consultation with landscape specialists. The annual check should also include an inspection of waterbodies to confirm their condition, including criteria detailed in Table 2-2, which include vegetation coverage and presence of invasive species.
- 2.2.2. Should species composition become dominated by one or very few species, advice will be sought on an appropriate mix to re-plant or otherwise increase the species diversity.
- 2.2.3. Checks will also be made for colonising flora, particularly non-native invasive species that may become naturally established, such as those listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). If undesirable colonising species are present, they will be managed or removed in accordance with relevant good practise. It should be noted that where species listed under Schedule 9 of the Wildlife & Countryside Act are identified, these species are legally controlled and specialist advice should be sought.
- 2.2.4. It is important to note that there will be ecological constraints to habitat creation and management measures detailed in this report, due to the presence of protected species, as detailed in Table 1.1. Implementation of these measures will therefore be undertaken in consultation with professional ecological advice.

### 2.3 EXTENT OF HABITATS TO BE CREATED AND MANAGED

- 2.3.1. The Site covers 18.6ha and will include a total of approximately 11.8ha of soft landscaping upon completion. This will include: habitats that are retained (and enhanced through sensitive management); areas of habitat that are created on habitats of existing low ecological value (such

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<sup>2</sup> The industry standard typology used by ecologists, including for Biodiversity Net Gain Assessments

conversion of amenity grassland to meadow grassland, ponds and woodland) and habitat that will be created following clearance during the construction phase.

2.3.2. The proposed grassland seed mixes to be used in habitat creation are as follows. Shrub and tree species to be used are:

- Emorsgate EM1 Basic General Purpose Meadow Mixture or similar
- Emorsgate EW1 Woodland Mixture or similar (woodland edge)
- Emorsgate EM 8 Meadow Mixture for Wetlands (marshy grassland)
- Emorsgate EG22 Strong Lawn Grass Mixture (amenity grassland)

2.3.3. Species mixes to be used for other areas of habitat creation are presented in Appendix B.

2.3.4. Table 2-1 below provides the areas of habitat that will be retained, enhanced and created. The layout of habitats is shown on Figure 2 with the 'Treatment' (i.e. whether the habitat will be retained, created or enhanced), detailed on Figure 3. In the interest of consistency with the district licence application for great crested newts, a worst-case scenario assumption has been made with regard to temporary loss due to uncertainties regarding the construction process. Accordingly, some areas specified as 'Creation (temporary loss)' may not be directly affected by construction works.

**Table 2-1 – Post development habitat types**

Type of habitat	Area (ha)	Treatment
Plantation Broadleaved Woodland	0.38	Retention & enhancement
Mixed Plantation Woodland	0.44	Retention & enhancement
Standing Water	0.90	Retention & enhancement
Broadleaved Parkland/Scattered Trees	0.04	Retention- no management
Amenity Grassland	0.33	Retention- no management
Plantation Broadleaved Woodland	1.34	Creation
Semi-Improved Neutral Grassland	1.27	Creation
Marsh/Marshy Grassland	0.53	Creation
Standing Water	0.05	Creation
Bare Ground	0.15	Creation
Plantation Broadleaved Woodland	0.81	Creation (temporary loss)

Type of habitat	Area (ha)	Treatment
Mixed Plantation Woodland	0.73	Creation (temporary loss)
Broadleaved Parkland/Scattered Trees	0.17	Creation (Temporary Loss)
Dense/continuous scrub	0.57	Creation (Temporary Loss)
Semi-Improved Neutral Grassland	1.89	Creation (Temporary Loss)
Marsh/Marshy Grassland	0.21	Creation (Temporary Loss)
Amenity Grassland	1.89	Creation (Temporary Loss)
Standing Water	0.14	Creation (Temporary Loss)
Intact species-poor hedge	41.94	Creation
Native species-rich hedge with trees	144.83	Creation
Native species rich intact hedge	636.91	Creation

## 2.4 HABITAT CREATION AND MANAGEMENT PRESCRIPTIONS

2.4.1. Table 2-2 details the creation/enhancement and management methods for the habitats detailed above.

**Table 2-2 – Habitat Creation and Management Prescriptions by Habitat Type**

Habitat Type	Objectives	Creation Methods (where applicable)	Management Methods
Plantation woodland (broadleaved & mixed) Parkland/ Scattered Trees (broadleaved, mixed & coniferous)	To create and maintain woodlands/ parklands with good structural and species diversity. To promote high invertebrate biomass and diversity.	<ul style="list-style-type: none"> <li>- Trees should be planted in spring or autumn when there should be good amounts of rainfall but limited risk of frost.</li> <li>- To be planted with a mix of locally sourced native species, including at least 20 to 30% shrub.</li> <li>- To include wych elm <i>Ulmus glabra</i> and/or the disease-resistant cultivar <i>U. glabra</i> Sapporo Autumn Gold for the benefit of white-letter hairstreak butterfly, a local notable species of butterfly.</li> <li>- Planting to be at irregular spacings with different species planted adjacent to each other.</li> <li>- Prepare ground with appropriate mulching materials.</li> <li>- New trees to be obtained from approved suppliers, to be sturdy and vigorous, free from disease and fully hardened before installation.</li> <li>- Measures, such as tree guards, will be required to prevent pest damage. Ensure weeds/ competitive grasses are controlled around the base of planted trees. This can be achieved by hand pulling or by the careful and targeted use of glyphosate weed killer. Alternatively apply a mulch such as wood chip or mats around base of tree.</li> <li>- Log piles to be created in new and existing woodland from areas of felled woodland during site clearance</li> <li>- Replace failed planting as required.</li> </ul>	<ul style="list-style-type: none"> <li>- Weed control to continue during establishment of new woodland/ parkland areas.</li> <li>- Tree guards to be removed after five to ten years once trees established.</li> <li>- Allow deadwood to remain in the habitat to naturally degrade. Replacement of failed planting to be done in the next suitable season with equivalent plants, or suitable similar specimens.</li> <li>- Ensure that trees and shrubs are not damaged by use of mowers, nylon filament rotary cutters and similar powered tools.</li> <li>- Check and maintain condition of stakes, ties, guys, guards and irrigation and ventilation systems.</li> <li>- Thin and or coppice (no more than 10%) of retained woodlands within 5 years of the completion of the Proposed Development. This will promote structural diversity. Dead wood to be used to create log piles within the woodlands. Such works would need to ensure active birds' nests or potential bat roosting features are not disturbed.</li> </ul>
Hedgerows	To create and maintain hedgerows with good structural and species diversity. Management to promote dense and wide hedgerows. To provide less managed habitat around base of hedge as habitat for fauna.	<ul style="list-style-type: none"> <li>- Initial tree care and planting as per above</li> </ul>	<ul style="list-style-type: none"> <li>- Weed control to continue during establishment of new hedgerows.</li> <li>- Once established, hedgerows to be trimmed on rotation, such that they are trimmed every two to three years, such that only a proportion of hedgerows on site are trimmed in a given year.</li> <li>- Trimming approach to be sensitive such as to promote wider, thicker hedgerows that do not get too tall/ leggy.</li> <li>- An unmown buffer strip of 1-2m will be left around the base of hedgerows. Occasional mowing will be carried out to on an <i>ad-hoc</i> basis prevent scrub encroachment.</li> </ul>
Continuous scrub	To provide and established dense scrub area that will provide cover and resources for a range of fauna, notably birds and herptiles.	<ul style="list-style-type: none"> <li>- Planting should proceed in in spring or autumn when there should be good amounts of rainfall but limited risk of frost.</li> <li>- Utilise a range of native and locally-sourced species.</li> <li>- To be planted with locally-sourced native species, as well as allowed to naturally colonise.</li> <li>- To include blackthorn <i>Prunus spinosa</i> as suitable food plants for the benefit of brown hairstreak butterfly.</li> </ul>	<ul style="list-style-type: none"> <li>- Replace failed specimens where detrimental to the establishment of the habitat.</li> <li>- Avoid use of artificial fungicide, pesticide or fertiliser. Use of such substances should be specially targeted if required.</li> <li>- Allow leaf litter and brash to remain on the ground to improve soil and provide refuge.</li> </ul>

Habitat Type	Objectives	Creation Methods (where applicable)	Management Methods
Semi- neutral grassland	<p>To create and maintain a herb-rich meadow habitat that provides resources for a range of fauna, including herptiles and invertebrates.</p> <p>To provide cover/ refuge for fauna. With at least 30-50% of the grassland uncut each winter to provide some habitat structure for translocated animals.</p>	<ul style="list-style-type: none"> <li>- The ground will be prepared appropriately, with measures taken to reduce soil fertility, such as stripping turf and the top 5 to 10cm of topsoil or deep ploughing the grassland<sup>3</sup>.</li> <li>- A diverse meadow mixture containing native and locally sourced species should be used suited to the soil pH. Yellow rattle <i>Rhinanthus minor</i> will be used, a parasitic species that can help combat competitive grass species.</li> <li>- The optimal time to sow seeds is September/ October, though April/ May are also suitable.</li> </ul>	<ul style="list-style-type: none"> <li>- Mow newly sown meadows regularly throughout the first year of establishment removing cuttings. This will control annual weeds and help maintain balance between faster growing grasses and slower developing wild flowers. Cut once sward is &gt;25cm in height down to approx. 6cm. Leave a buffer of 3m uncut around ponds and reptile hibernacula. Return for second cut in late summer, cut down to approx. 10cm. Cut approximate area of 50% of each field. Use a cut and collect machine (forage harvester) piling arisings in the same locations used for first cut.</li> <li>- If those areas cut in late summer of the 1st season have already grown &gt;25cm by mid-March, return for an early season cut of the same 50% of each field. Thereafter cut circa 70% meadow areas every summer with a mid-summer hay cut.</li> <li>- Reduce use of artificial fungicide, pesticide or fertiliser. Use of such substances should be specially targeted and minimised.</li> <li>- Allow a buffer strip (2-3m deep) to grow long around other woody habitats.</li> <li>- Pile arisings near ponds and hibernacula, as these will provide opportunities for grass snake to lay eggs.</li> </ul>
Marsh/marshy grassland	<p>To create diverse grassland area containing plant species more typical of wetter conditions.</p> <p>To create a grassland with a tussocky structure providing opportunities for fauna such as great crested newt.</p>	<ul style="list-style-type: none"> <li>- Sowing and/ or planting with appropriate locally-sourced species appropriate to the ground conditions, particularly levels of moisture.</li> <li>- The optimal time to sow seeds is September/ October when the seed bed is warm, though the period April/ May are also suitable.</li> </ul>	<ul style="list-style-type: none"> <li>- Low-intensity mowing, annual cut in November (to avoid herptile active season) if required, cut down to no less than 300mm.</li> <li>- Allow a buffer strip (2-3m deep) to grow long around ponds and other woody habitats.</li> <li>- Selective scrub and weed control may be appropriate where encroachment occurs.</li> </ul>

<sup>3</sup> Avoidance based mitigation measures will be implemented to ensure such works proceed in accordance with legislation pertaining to protected species, particularly great crested newt

Habitat Type	Objectives	Creation Methods (where applicable)	Management Methods
Waterbodies	<p>To create ponds of value to fauna including invertebrates and great crested newt.</p> <p>To maintain and enhance value of retained ponds.</p>	<p>Ponds will be designed in accordance with guidance within The Great Crested Newt Mitigation Guidelines (English Nature, 2001) and with reference to the Freshwater Habitats Trust's <i>Pond Creation Toolkit</i>. Specifically, the following criteria will be adhered to in pond design and construction:</p> <ul style="list-style-type: none"> <li>- Constructed with a variable profile, with some shallow slopes to allow animals to enter and exit early.</li> <li>- Measuring between 100m<sup>2</sup> to 800m<sup>2</sup>, including a range of sizes.</li> <li>- Creation of substantial cover of marginal and submerged vegetation. Some natural colonisation allowance is acceptable, and if desired for speed the pond can be planted with suitable species of local provenance.</li> <li>- Absence of shading on south side, and no more than 25% of pond border to be shaded.</li> <li>- Designed to avoid drying every year (occasional drying is acceptable in some ponds).</li> <li>- A range of depths up to 2m, with some shallower ponds.</li> <li>- Ponds will be created for biodiversity benefit and will not receive surface water runoff directly resulting from Site drainage. The Site has a high water table and therefore water will primarily be sourced from ground water.</li> <li>- Ponds may be created at any time of year, though the optimal periods are spring or autumn.</li> </ul>	<ul style="list-style-type: none"> <li>- Clearance of woody vegetation on southern banks (if applicable) to reduce shading.</li> <li>- Reduction of management close to banks by reduced mowing</li> <li>- Periodic check and control for invasive species and colonising fish. Where identified these should be controlled/ removed.</li> <li>- Checking pond condition and remedial action as required</li> <li>- Aquatic vegetation management in water bodies, where they become choked with vegetation.</li> <li>- Ponds should be de-silted and excess leaf litter removed occasionally if required, to maintain clear water areas. Such works if required should ideally be undertaken during autumn season when animals are not hibernating within the vicinity of the pond. Such works should be undertaken following ecological guidance.</li> </ul>
Introduced shrub	Primarily for amenity value, management to provide wildlife resources as a secondary benefit.	<ul style="list-style-type: none"> <li>- Should be planted with non-invasive species of known value to wildlife, such as berry bearing shrubs and species that provide a significant nectar resource.</li> </ul>	<ul style="list-style-type: none"> <li>- Reduce use of artificial fungicide, pesticide or fertiliser. Use of such substances should be specially targeted and minimised.</li> </ul>
Amenity grassland	Primarily for amenity value, management to provide wildlife resources as a secondary benefit.	<ul style="list-style-type: none"> <li>- Will be planted using native grass species of some wildlife value.</li> <li>- Any wildflowers used should be low-growing species tolerant of regular trampling and mowing.</li> </ul>	<ul style="list-style-type: none"> <li>- Where possible, tall margins to be retained to provide cover for fauna. Fertiliser inputs to be minimised where possible.</li> </ul>



## **2.5 WILDLIFE INSTALLATIONS**

- 2.5.1. A number of wildlife-specific installations have been included within the landscape design for the Proposed Development. These are summarised in along with proposed monitoring and maintenance procedures in Table 2-3, whilst the locations and numbers are shown in the landscape general arrangement drawings (Appendix A).



**Table 2-3 – Wildlife Installation Summary**

Target Species/ Group	Installation	Management Methods	No. Proposed
Bats	<p>Bat boxes will be installed on retained and newly planted trees of sufficient size and stability.</p> <p>Boxes should be installed as high as possible (&gt;4m high), near suitable habitat and with a range of orientations. Ideally boxes should receive sun for part of the day and should not be exposed to strong winds.</p>	<p>The boxes should be checked annually for signs of damage.</p> <p><i>Note that intact boxes should not be disturbed or opened by anyone without a Natural England bat survey licence.</i></p>	<p>9 (varied models)</p>
Birds	<p>A variety of bird boxes are to be installed within the Proposed Development:</p> <ul style="list-style-type: none"> <li>- Integral/wall mounted boxes <ul style="list-style-type: none"> <li>– Swift nest cavities</li> <li>– House martin nest boxes</li> <li>– Sparrow terraces</li> </ul> </li> <li>- Tree hung boxes</li> </ul> <p>Nest provision should be made above 2m (and above 2.5m where possible to reduce risk of interference from members of the public), and at a maximum height of 5m.</p> <p>Bird nesting opportunities should be installed in locations that are not in direct sunlight, and that are sheltered from prevailing weather. For example, placing boxes oriented north and east should serve to avoid strong sunlight and wind-driven rain.</p>	<p>Where boxes may be safely accessed, an annual inspection should be undertaken outside of the bird nesting season (i.e. September-January inclusive). In the unlikely event birds are encountered they should be left undisturbed. During the inspection the boxes will be checked for integrity and any faulty or damaged parts will be replaced as required. All fixings will be inspected regularly to ensure the boxes remain securely attached. Any nesting material present will be removed and disposed of, with a record kept where there is evidence that the boxes have been used. Boxes should be replaced or re-hung if they become damaged, break or become loose/ unbalanced. Boxes may also be cleaned.</p>	<p>9 Swift nest cavities</p> <p>4 House martin nest boxes</p> <p>3 Sparrow terraces</p> <p>13 Tree hung boxes (varied models)</p>

Target Species/ Group	Installation	Management Methods	No. Proposed
Herptiles (amphibians and reptiles, including great crested newt)	Hibernacula <sup>4</sup> will be provided within the landscaped areas close to woodland edges and waterbodies (in locations where flooding would be unlikely). These will be constructed using rocks and hardcore topped with logs then covered with soil.	Hibernacula require little management or maintenance, save occasional (e.g. every 5-10 years) topping-up with new rocks, logs and soil. Additionally, new hibernacula can be formed adjacent to older ones in order to maintain sufficient holes and crevices for hibernating herptiles.	5
	Brash piles and grass cutting heaps will also be formed as temporary refuge and protection using clippings from habitat management. These can also function as egg-laying heaps (e.g. for grass snake). These will be sited near to wooded areas and ponds also. Other additional piles could be created as required.	Brash piles and grass cutting heaps should be periodically topped-up up using fresh branches, brash and logs. Addition of fresh brash material (e.g. every 1-2 months) in the active season will allow continued bacterial digestion and heat generation for incubating eggs.	4
Invertebrates	Sandy scrapes or 'bee banks' will be created in suitable open, south-facing locations. These will be formed of soil with balanced sand and clay elements and should be angled towards the south.	Sandy scrapes should be cleared or 'disturbed' every year (or as often as necessary) to prevent colonisation by plants. This should be done by hand-pulling plants and manually loosening the surface of the soil with hand tools.	3

---

<sup>4</sup> In accordance specified within Figure 3 of the Great Crested Newt Mitigation Guidelines (English Nature, 2001)

## 3 MONITORING

---

- 3.1.1. Following the completion of the Proposed Development, a programme of monitoring will be undertaken. Primarily this will focus on great crested newts (in line with guidance in the great crested newt mitigation guidelines, 2001) to comply with requirements under the District Level licence and because of the relatively significant impacts expected. It is also proposed to monitor the installed bird and bat boxes.

### 3.2 GREAT CRESTED NEWT

- 3.2.1. The population status of great crested newt at the site will be monitored following the completion of development. The Natural England GCN Method statement template for the traditional licencing route provides advice on monitoring methods and frequency (Natural England, 2019).
- 3.2.2. Based on a 'high' population undergoing 'high' (as defined within The Great Crested Newt Mitigation Guidelines (English Nature, 2001) impacts, the scheme will require population size class monitoring (i.e. via manual methods) of all ponds, every year for ten years following completion of the Proposed Development. This is in line with requirements of the District Level Licence.
- 3.2.3. If populations decline (assessed only after at least two years of monitoring), the management regime should be reviewed and adjusted accordingly. For example, if ponds are routinely drying out, consideration will be given to physical alterations to help them maintain water through the season.
- 3.2.4. Monitoring would apply to all ponds shown on Figure 2.

### 3.3 BIRDS

- 3.3.1. Bird boxes will be monitored (from ground level) for usage by the target, or other species during the peak breeding season (April – May inclusive). If no uptake is recorded after three years, new boxes and locations shall be considered. The advice of a suitably qualified ecologist will be sought for this.

### 3.4 BATS

- 3.4.1. On at least one occasion in the first five years post-completion, an inspection of the bat boxes will be undertaken by a Natural England (NE) licensed ecologist to record evidence of use by bats, and advise on any necessary repairs to be carried out. The inspection will occur between September and October (avoiding the time when bats are at their most vulnerable, i.e. avoiding the hibernation and maternity season). During this inspection the boxes will also be checked for integrity with any damage made good. If a box has not been used for several years in succession, the installation of new alternative boxes (non-integral) shall be considered following the advice of a suitably qualified ecologist.

## 4 PROGRAMME

---

### 4.1 HABITAT ENHANCEMENT AND CREATION PROGRAMME

- 4.1.1. Habitat creation and enhancement will be undertaken in the first appropriate season following the receipt of planning permission. This will be no later than within 6 months of development commencing. Habitat creation in areas cleared during the construction phase will be completed within 6 months of completion of development activities. Management will continue for 25 years. This management plan will be subject to periodic review (indicatively every 5 years) to ensure it remains fit for purpose.
- 4.1.2. A programme outlining the management and monitoring measures detailed within this document that will be implemented on an annual basis is present in Table 4-1 overleaf.



**Table 4-1 – Indicative Programme. Green denotes recommended period, yellow denotes optional items.**

Feature/ Month	January	February	March	April	May	June	July	August	September	October	November	December
<b>General measures</b>												
Annual inspection (all habitats to check for issues as detailed in Table 2-2)												
<b>Meadow areas - 1st season</b>												
Sowing												
Cut and collect once sward is at least 25cm												
<b>Meadow areas - once established</b>												
Early season cut and collect if >25cm by March												
High summer cut and collect, retaining some areas of longer grassland												
<b>Marshy grassland</b>												
Annual cut and collect arisings												
<b>Trees and scrub</b>												
Planting new/ replacement trees as required												
<b>Waterbodies</b>												
Creation (optimal)												
Management (optimal)												
<b>Bird boxes</b>												
Annual inspection and clean												
Annual monitoring												



<b>Bat boxes</b>												
Recommended season for management and clearing												
<b>Great crested newts and reptiles</b>												
Annual monitoring of ponds												
Brush pile top up												

## 5 CONCLUSIONS

---

- 5.1.1. This HMMP outlines a programme of management and monitoring to be implemented at the Site in order to maintain and improve the biodiversity value of retained, created and enhanced habitats. It is advised that the HMMP should be subject to periodic review (at least every 5 years) by an appropriately qualified individual to confirm management prescriptions are and remain appropriate. Updates should be informed by the results of monitoring, such as that outlined within this document.



## 6 FIGURES

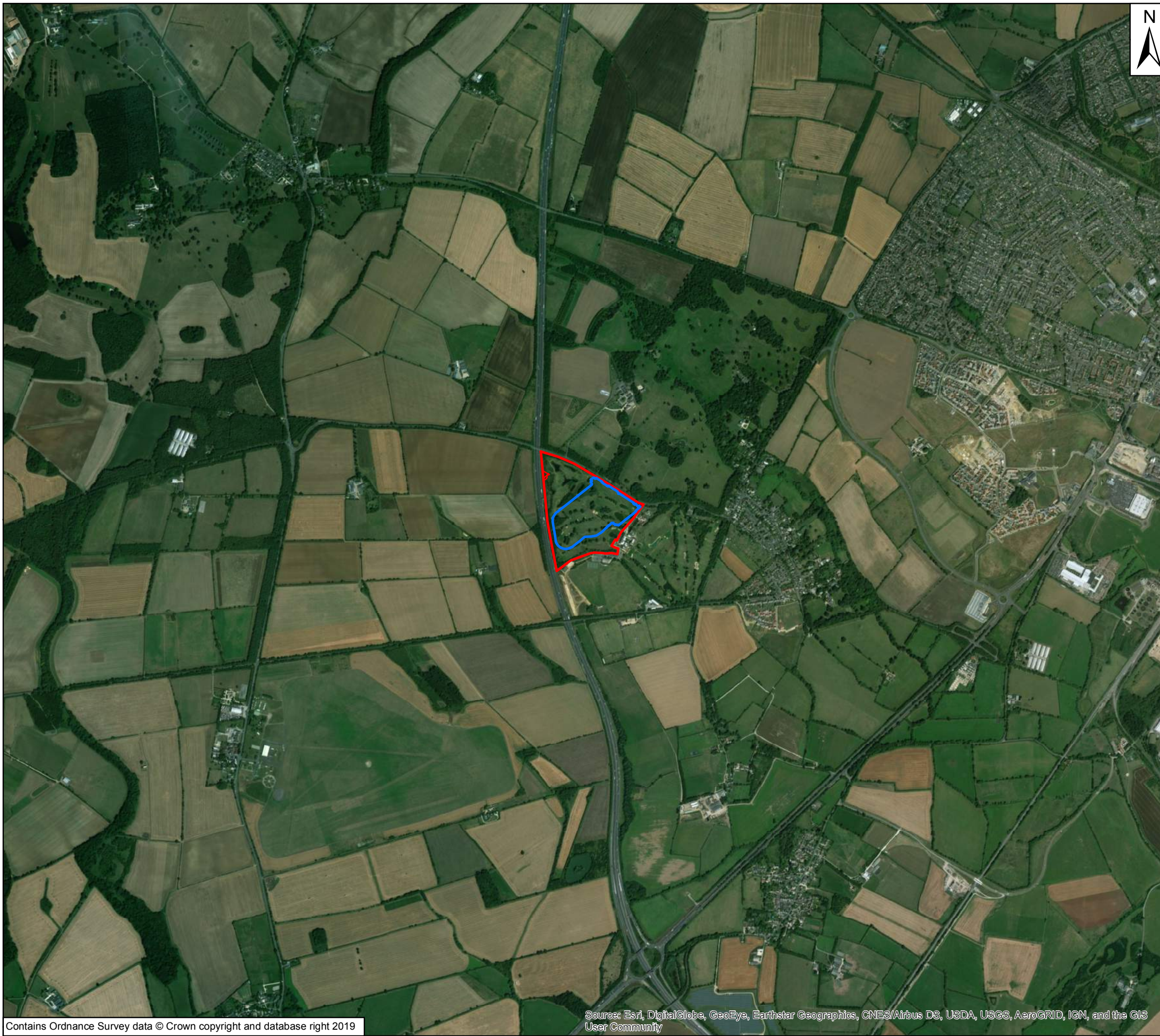
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**Figure 1** - Application Site Location Plan

**Figure 2** - Post-Development Habitat Plan

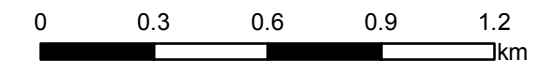
**Figure 3** - GCN Impact Plan





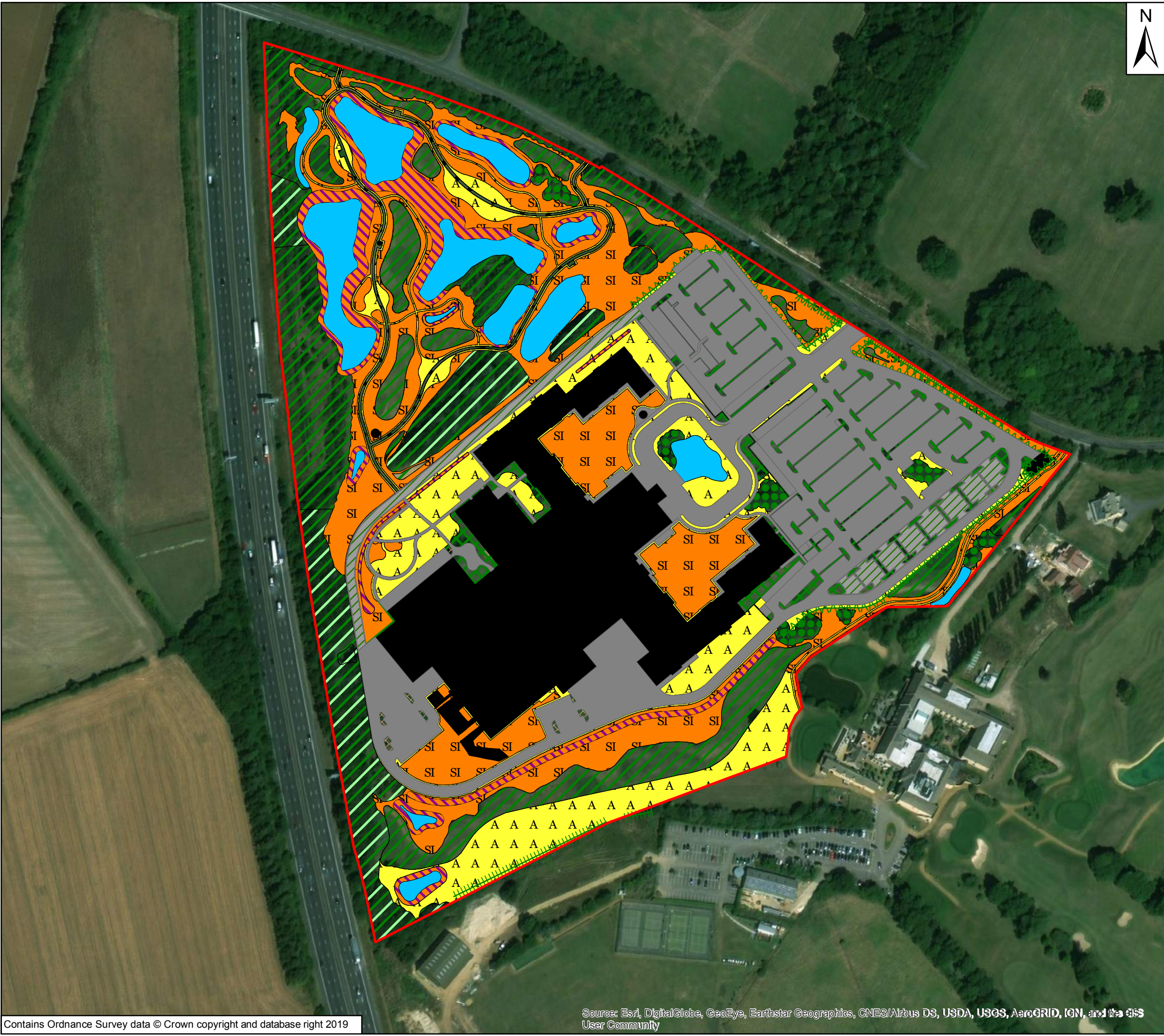
**Key**

- Site Boundary
- Proposed Development Boundary



Client:	Great Wolf Resorts
Project:	Bicester Golf Course
Title:	Site Location Plan

Drawing No: <b>Figure 1</b>	Date: <b>August 2019</b>	Scale: <b>20,000 @ A3</b>	Drawn: <b>RD</b>
			Checked: <b>VD</b>
			Approved: <b>LR</b>



**Key**

Red Line Boundary 090919

**Post Development Phase 1 Line Codes**

- Hedge with Trees - Species-Poor
- Hedge with Trees - Species-Rich
- Intact Hedge - Native Species-Rich
- Intact Hedge - Species-Poor

**Post Development Phase 1 Polygon Codes**

- Amenity Grassland
- Bare Ground
- Broadleaved Parkland/Scattered Trees
- Broadleaved Woodland - Plantation
- Buildings
- Introduced Shrub
- Marsh/Marshy Grassland
- Mixed Woodland - Plantation
- Neutral Grassland - Semi-Improved
- Scrub - Dense/Continuous
- Standing Water

**Post Development Hardstanding**

- Hardstanding
- Grasscrete


0 0.035 0.07 0.105 0.14 km




Client:	Great Wolf Resorts		
Project:	Bicester Golf Course		
Title:	Post Development Habitat Map		
Drawing No:	Figure 2	Drawn:	BW
Date:	September 2019	Checked:	LR
Scale:	2,500 @ A3	Approved:	AH




**Key**

 Red Line Boundary


**Habitat Impact**

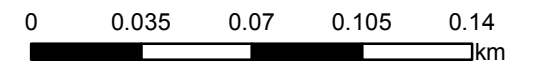
 Created

 Enhanced

 Retained

 Lost

 Temporary Loss and Creation



Client:	Great Wolf Resorts	
Project:	Bicester Golf Course	
Title:	GCN Habitat Impact Map	

Drawing No:	Figure 3	Drawn:	RD
Date:	October 2019	Checked:	LR
Scale:	2,400 @ A3	Approved:	VP

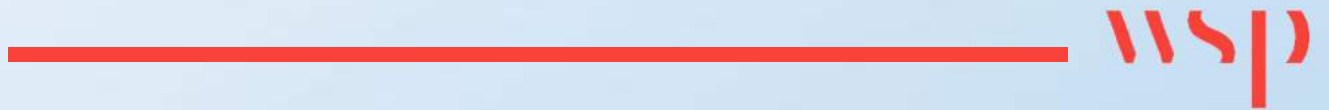
## 7 REFERENCES

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- English Nature (2001). Great Crested Newt Mitigation Guidelines.
- Freshwater Habitats Trust (2019) Pond Creation Toolkit  
<https://freshwaterhabitats.org.uk/projects/million-ponds/pond-creation-toolkit/#Core factsheets>  
[accessed October 2019]
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- Natural England (2019). Template for Method Statement to support application for licence under Regulation 55(2)e of The Conservation of Habitats and Species Regulations 2017 (as amended) in respect of great crested newts *Triturus cristatus*. Form WML-A14-2 (Version March 2019).
- JNCC, (2010). Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit.
- WSP (2019b). Bicester Golf Course, Biodiversity Net Gain Assessment.

# Appendix A

LANDSCAPE GENERAL  
ARRANGEMENT



BMD.19.010.DR.P101 LANDSCAPE GA (SHEET 1 OF 4)  
 BMD.19.010.DR.P301 PLANTING PLAN (SHEET 1 OF 4)

BMD.19.010.DR.P102 LANDSCAPE GA (SHEET 2 OF 4)  
 BMD.19.010.DR.P302 PLANTING PLAN (SHEET 2 OF 4)


BMD.19.010.DR.P104 LANDSCAPE GA (SHEET 4 OF 4)  
 BMD.19.010.DR.P304 PLANTING PLAN (SHEET 4 OF 4)

BMD.19.010.DR.P103 LANDSCAPE GA (SHEET 3 OF 4)  
 BMD.19.010.DR.P303 PLANTING PLAN (SHEET 3 OF 4)

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NOTES:

1. THIS DRAWING IS BASED ON THE FOLLOWING DOCUMENTS:
  - OS DRAWING: (10875-EPR-00-00-M2-A-01-0001-OSmap)
  - EPR BUILDING LAYOUT: (01-0201-PROPOSED SITE PLAN)
  - WSP TREE SURVEY: (705584-TOP-EV-01)
2. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER LANDSCAPE DRAWINGS AND DOCUMENTS
3. THIS DRAWING IS NOT INTENDED FOR CONSTRUCTION
4. DO NOT SCALE FROM THIS DRAWING
5. ANY DISCREPANCIES WITHIN THIS DRAWING OR BETWEEN THIS DRAWING AND ANY OTHER INFORMATION IS TO BE REPORTED TO BMD FOR CLARIFICATION

 **SITE BOUNDARY**  
 FOR FURTHER INFORMATION ON SOFT AND HARD LANDSCAPE DETAILS, REFER TO LANDSCAPE GENERAL ARRANGEMENT DRAWINGS BMD.19.010.DR.P101-104 & PLANTING PLANS BMD.19.010.DR.P301-304

Rev	Description	Date
E	MINOR UPDATE FOLLOWING COMMENTS	08.11.19
D	UPDATED TO ARCHITECTS BASE	01.11.19
C	HMP APPENDIX A UPDATE	14.10.19
B	CYCLESTANDS & EV POINTS ADDED	03.10.19
A	UPDATES FOLLOWING TEAM COMMENTS	01.10.19

**PLANNING**  
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 e: info@bradleymurphydesign.co.uk  
 www.bradleymurphydesign.co.uk  
 Client



**GREAT LAKES UK LIMITED**

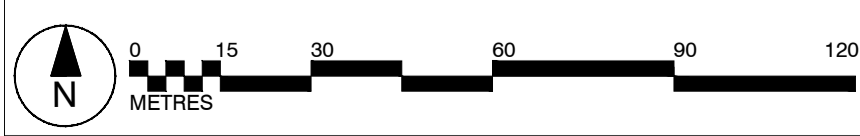
Project  
 PROPOSED GREAT WOLF LODGE, CHESTERTON, BICESTER

Drawing Title  
 OVERALL LANDSCAPE GENERAL ARRANGEMENT

Drawn	Checked	Approved	Date
AW	MP	RW	22/08/2019

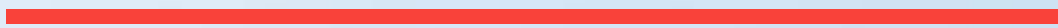
Job No.	Scale	Sheet Size	Revision
19.010	1:1250	A1	E

Drawing Number  
 BMD.19.010.DR.P001



# Appendix B

PLANTING SCHEDULES





# PROPOSED GREAT WOLF LODGE, CHESTERTON, BICESTER

PLANTING SCHEDULES



**BMD.19.010.DR.P305**

**DATE: NOVEMBER - 2019**



Project No: 19.10		Document Reference: BMD.19.010.DR.P305			
Revision	Purpose of Issue	Originated	Checked	Approved	Date
-	DRAFT PLANNING	AW	MP	RW	11/09/19
A	FOR PLANNING	AW	MP	RW	08/11/19

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## Trees

Species	Girth	Height	Specification
Acer campestre	16-18cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Acer campestre	14-16cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Acer campestre	12-14cm	350-425cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Acer campestre 'Elsrijk'	18-20cm	450-500cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Acer campestre 'Elsrijk'	20-25cm	500-550cm	3x :Semi-Mature :Clear Stem min. 200 :RB
Acer campestre 'Streetwise'	16-18cm	400-450cm	3x :Extra Heavy Standard :Clear Stem min. 2m :RB
Acer griseum	14-16cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Betula nigra	25-30cm	550-600cm	4x :Semi-Mature :Clear Stem min. 200 :RB
Betula pendula	12-14cm	350-425cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Betula pendula	16-18cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Betula pendula	14-16cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Betula pendula 'Tristis'	12-14cm	350-400cm	Heavy Standard :2m clear stem :RB
Betula pendula 'Tristis'	14-16cm	400-450cm	3x :Extra Heavy Standard :2m clear stem :RB
Betula pubescens	14-16cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Betula pubescens	16-18cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Betula utilis jacquemontii	14-16cm	400-450cm	3x :Extra Heavy Standard :Clear Stem min. 200 :RB
Betula utilis jacquemontii	12-14cm	350-425cm	3x :Heavy Standard :Clear Stem min. 200 :RB
Carpinus betulus	12-14cm	350-425cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Carpinus betulus 'Fastigiata'	25-30cm	500-550cm	Semi-Mature :3x :Clear Stem min. 2m :RB
Corylus colurna	25-30cm	500-550cm	Semi-Mature :3x :Clear Stem min. 2m :RB
Malus sylvestris	14-16cm	450-500cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Malus sylvestris	16-18cm	450-500cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Malus sylvestris	12-14cm	425-600cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Populus nigra	14-16cm	425-600cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Populus nigra	12-14cm	350-425cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Populus nigra	16-18cm	min. 450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Populus tremula	12-14cm	350-425cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Prunus 'Sunset Boulevard'	16-18cm	400-450cm	3x :Extra Heavy Standard :2m clear stem :RB
Prunus avium	12-14cm	350-425cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Prunus avium	14-16cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Prunus avium 'Plena'	40-45cm	700-900cm	5x :Semi-Mature :Clear Stem min. 200 :RB
Prunus avium 'Plena'	25-30cm	500-550cm	Semi-Mature :3x :Clear Stem min. 2m :RB
Prunus insititia	14-16cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Prunus padus	14-16cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Prunus padus	12-14cm	350-425cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Prunus padus	16-18cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Prunus serrula	14-16cm	400-450cm	3x :Extra Heavy Standard :2m clear stem :RB
Prunus serrula	12-14cm	350-400cm	3x :Extra Heavy Standard :2m clear stem :RB
Prunus yedoensis	12-14cm	350-400cm	3x :Extra Heavy Standard :2m clear stem :RB
Prunus yedoensis	14-16cm	400-450cm	3x :Extra Heavy Standard :2m clear stem :RB
Pyrus calleryana 'Chanticleer'	25-30cm	500-550cm	Semi-Mature :3x :Clear Stem min. 2m :RB
Quercus palustris	40-45cm	700-900cm	5x :Semi-Mature :Clear Stem min. 200 :RB
Quercus petraea	20-25cm	500-550cm	3x :Semi-Mature :Clear Stem min. 200 :RB
Quercus petraea	16-18cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Quercus petraea	12-14cm	350-425cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Quercus petraea	18-20cm	450-500cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Quercus petraea	14-16cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Quercus robur	18-20cm	450-500cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Quercus robur	14-16cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Quercus robur	16-18cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Quercus robur	12-14cm	350-425cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Salix alba	12-14cm	350-425cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Salix alba	14-16cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Salix alba	16-18cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Salix caprea	16-18cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Salix x sepulcralis 'Chrysocoma'	30-35cm	min. 450cm	4x :Semi-Mature :Clear Stem min. 200 :RB
Sorbus 'Sunshine'	14-16cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Sorbus aria	12-14cm	350-425cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Sorbus aria	14-16cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Sorbus aria	16-18cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Sorbus aria 'Lutescens'	25-30cm	500-550cm	Semi-Mature :3x :Clear Stem min. 2m :RB
Sorbus aucuparia	16-18cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Sorbus aucuparia	14-16cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Sorbus aucuparia	12-14cm	350-425cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Sorbus aucuparia 'Cardinal Royal'	14-16cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Sorbus torminalis	12-14cm	350-425cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Sorbus torminalis	14-16cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Sorbus torminalis	16-18cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Tilia cordata	14-16cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Tilia cordata	16-18cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Tilia cordata	12-14cm	350-425cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Tilia x europaea 'Pallida'	16-18cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Ulmus 'Sapporo Autumn Gold'	16-18cm	400-450cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
Ulmus 'New Horizon'	60-70cm	700-800cm	Semi-Mature :5x :Clear Stem min. 2m :RB

## Hedge

Species	Height	Specification	Density
Fagus sylvatica	100-125cm	1+2 : Transplant - seed raised :B	0.3Ctr Double Staggered at 0.175m offset

## Conifers

Species	Specification	Height
Pinus sylvestris	5x :Leader & laterals :RB	350-400cm

## Native Hedgerow

Species	Specification	Height	Density	Mix %
Cornus sanguinea	1+1 :Transplant - seed raised ; :Branched :2 brks ;B	100-125cm	0.3Ctr Double Staggered at 0.5m offset	10%
Corylus avellana	1+1 :Transplant - seed raised :Branched :2 brks :B	100-125cm	0.3Ctr Double Staggered at 0.5m offset	15%
Crataegus monogyna	1+1 :Transplant - seed raised :Branched :2 brks :B	100-125cm	0.3Ctr Double Staggered at 0.5m offset	40%
Ilex aquifolium	Leaders with Laterals :RB	100-125cm	0.3Ctr Double Staggered at 0.5m offset	5%
Rosa arvensis	1+1 :Transplant - seed raised ; :Branched :2 brks ;B	100-125cm	0.3Ctr Double Staggered at 0.5m offset	10%
Rosa canina	1+1 :Transplant - seed raised ; :Branched :2 brks ;B	100-125cm	0.3Ctr Double Staggered at 0.5m offset	5%
Salix nigra	1+1 :Transplant - seed raised ; :Branched :2 brks ;B	100-125cm	0.3Ctr Double Staggered at 0.5m offset	5%
Viburnum opulus	1+1 :Transplant - seed raised ; :Branched :2 brks ;B	100-125cm	0.3Ctr Double Staggered at 0.5m offset	10%

## Native Woodland Core Mix

Species	Specification	Height	Density	Mix %
Acer campestre	1+1 :Transplant - seed raised :B	60-80cm	1Ctr	5%
Acer campestre	Standard: 3 brks: 2x: Clear Stem 175-200cm :B	250-300cm	1Ctr	5%
Betula pendula	1+1 :Transplant - seed raised: B	60-80cm	1Ctr	5%
Betula pubescens	Feathered: 5 brks: 2x: B	125-150cm	1Ctr	5%
Crataegus monogyna	1+1 :Transplant - seed raised: B	60-80cm	1Ctr	15%
Ilex aquifolium	Leader with Laterals :2L :C	40-60cm	1Ctr	15%
Pinus sylvestris	3X: Leader & laterals :B	80-100cm	1Ctr	15%
Populus tremula	1+1 :Seed raised :Transplant :B	60-70cm	1Ctr	5%
Prunus spinosa	1+1 :Transplant - seed raised:branched :2 breaks :B	60-80cm	1Ctr	5%
Quercus robur	2x: Standard; clear stem 175-200cm; 3 breaks :B	250-300cm	1Ctr	5%
Quercus robur	1+2 :Transplant - seed raised :B	60-80cm	1Ctr	5%
Sorbus torminalis	1+1 :Seed raised :Transplant :B	60-70cm	1Ctr	5%
Ulmus glabra	1+1 :Seed raised :Transplant :B	60-70cm	1Ctr	5%

## Native Woodland Edge Mix

Species	Specification	Height	Density	Mix %
Acer campestre	2x :Light Standard :clear stem 150-175cm :3 breaks :B	250-300cm	1Ctr	4%
Acer campestre	1+1 :Transplant - seed raised: B	60-80cm	1Ctr	4%
Betula pendula	1+1 :Transplant - seed raised: B	60-80cm	1Ctr	4%
Cornus sanguinea	1+1 :Transplant - seed raised: Branched: 3 brks: B	60-80cm	1Ctr	5%
Corylus avellana	1+1 :Transplant - seed raised: B	60-80cm	1Ctr	4%
Crataegus monogyna	2x :Light Standard :clear stem 150-175cm :3 breaks :B	250-300cm	1Ctr	4%
Crataegus monogyna	1+1 :Transplant - seed raised: B	60-80cm	1Ctr	4%
Ilex aquifolium	Leader with laterals :2L :C	60-80cm	1Ctr	5%
Juniperus communis	3x :Leader & laterals :C	60-80cm	1Ctr	4%
Ligustrum vulgare	0/2: Cutting: Branched: 3 brks: B	60-80cm	1Ctr	4%
Malus sylvestris	1+1 :Transplant :Seed Raised :B	60-80cm	1Ctr	4%
Malus sylvestris	2x :Light Standard :clear stem 150-175cm :3 breaks :B	250-300cm	1Ctr	4%
Prunus avium	1+1 :Seed raised :Transplant :B	60-70cm	1Ctr	5%
Prunus padus	2x :Light Standard :clear stem 150-175cm :3 breaks :B	250-300cm	1Ctr	4%
Prunus padus	1+1 :Transplant :Seed Raised :B	60-80cm	1Ctr	5%
Prunus spinosa	1+1 :Seed Raised :Transplant :B	60-70cm	1Ctr	5%
Rosa arvensis	1+1 :Transplant - seed raised: Branched: 3 brks: B	60-80cm	1Ctr	4%
Salix caprea	1+1 :Seed raised :Transplant :B	60-70cm	1Ctr	5%
Salix cinerea	1+1 :Seed raised :Transplant :B	60-70cm	1Ctr	5%
Salix viminalis	1+1 :Seed raised :Transplant :B	60-70cm	1Ctr	5%
Taxus baccata	3x :Transplant :Leader & laterals :RB	60-80cm	1Ctr	4%
Ulmus glabra	Transplant : Seed Raised :B	60-80cm	1Ctr	4%
Viburnum opulus	1+2: Transplant - seed raised: Branched: 3 brks: B	60-80cm	1Ctr	4%

## Screening Woodland Core Mix

Species	Specification	Height	Density	Mix %
Acer campestre	2x :Light Standard :clear stem 150-175cm :3 breaks :B	250-300cm	1Ctr	5%
Acer campestre	1+1 :Transplant - seed raised: B	60-80cm	1Ctr	5%
Betula pendula	1+1 :Transplant - seed raised: B	60-80cm	1Ctr	5%
Betula pubescens	1+1 :Transplant - seed raised: B	60-80cm	1Ctr	5%
Crataegus monogyna	1+1 :Transplant - seed raised: B	60-80cm	1Ctr	20%
Ilex aquifolium	Leader with laterals :2L :C	60-80cm	1Ctr	10%
Larix sibirica	2+1 :Leader & laterals :B	125-150cm	1Ctr	5%
Picea abies	2+1 :Leader & laterals :RB	125-150cm	1Ctr	5%
Pinus sylvestris	1+1 :Leader & laterals :B	60-80cm	1Ctr	10%
Prunus spinosa	1+1 :Seed raised :B	60-80cm	1Ctr	20%
Quercus robur	1+1 :Transplant - seed raised: B	60-80cm	1Ctr	5%
Quercus robur	2x :Standard :Clear Stem min. 200 :3 brks :B	100-125cm	1Ctr	5%

## Screening Woodland Edge Mix

Species	Specification	Height	Density	Mix %
Betula pendula	1+1: Transplant - seed raised: B	60-80cm	1Ctr	5%
Corylus avellana	1+1: Transplant - seed raised: B	60-80cm	1Ctr	5%
Crataegus monogyna	1+1: Transplant - seed raised: B	60-80cm	1Ctr	5%
Crataegus monogyna	2x :Light Standard :clear stem 150-175cm :3 breaks :B	250-300cm	1Ctr	5%
Ilex aquifolium	Leader with laterals :2L :C	60-80cm	1Ctr	5%
Juniperus communis	Leader & laterals :C	30-40cm	1Ctr	5%
Ligustrum vulgare	0/2: Cutting: Branched: 3 brks: B	60-80cm	1Ctr	5%
Malus sylvestris	1+1 :Transplant :Seed Raised :B	60-80cm	1Ctr	5%
Malus sylvestris	2x :Light Standard :clear stem 150-175cm :3 breaks :B	250-300cm	1Ctr	4%
Picea abies	Leader & laterals :C	60-80cm	1Ctr	10%
Prunus insititia	1+1 :Seed raised :B	60-70cm	1Ctr	5%
Prunus padus	1+1 :Transplant :Seed Raised :B	60-80cm	1Ctr	5%
Prunus padus	2x :Light Standard :clear stem 150-175cm :3 breaks :B	250-300cm	1Ctr	4%
Ribes odoratum	1+1 :Branched :3 brks :C	40-60cm	1Ctr	5%
Rosa arvensis	1+1 :Transplant - seed raised: Branched: 3 brks: B	60-80cm	1Ctr	5%
Sambucus nigra	Branched :3/6 brks :C	60-80cm	1Ctr	5%
Sorbus aucuparia	1+1 :Seedlings :Transplant :B	60-70cm	1Ctr	5%
Taxus baccata	3x :Transplant :Leader & laterals :RB	60-80cm	1Ctr	4%
Ulmus glabra	Transplant : Seed Raised :B	60-80cm	1Ctr	4%
Viburnum opulus	1+2: Transplant - seed raised: Branched: 3 brks: B	60-80cm	1Ctr	4%

## Amenity Mix 1

Species	Specification	Height	Density	Pot Size	Mix %
Carex oshimensis 'Evergold'	Full Pot :C		4/m <sup>2</sup>	5L	10%
Choisya ternata	Bushy :7 brks :C	40-60cm	4/m <sup>2</sup>	10L	5%
Cornus sanguinea 'Midwinter Fire'	Bushy :5 brks :Branched :5 brks :C	60-80cm	4/m <sup>2</sup>	5L	5%
Euonymus fortunei 'Emerald 'n' Gold'	Bushy :6/9 brks :C	20-30cm	4/m <sup>2</sup>	5L	25%
Hebe 'Mrs Winder'	Bushy :5 brks :C	30-40cm	4/m <sup>2</sup>	5L	25%
Hypericum androsaemum	Bushy :7 brks :C	30-40cm	4/m <sup>2</sup>	5L	20%
Rudbeckia fulgida sullivantii 'Goldsturm'	Full Pot :C		4/m <sup>2</sup>	5-7.5L	10%

## Amenity Mix 2

Species	Specification	Height	Density	Pot Size	Mix %
Carex oshimensis 'Evergold'	Full Pot :C		4/m <sup>2</sup>	5L	10%
Euonymus fortunei 'Silver Queen'	Bushy :7 brks :C	20-30cm	4/m <sup>2</sup>	5L	25%
Hebe 'Red Edge'	Bushy :5/7 brks :C		4/m <sup>2</sup>	5L	25%
Lavandula angustifolia 'Hidcote'	Bushy :7 brks :C	20-30cm	4/m <sup>2</sup>	5L	20%
Miscanthus sinensis 'Morning Light'	Full Pot :C		4/m <sup>2</sup>	10L	5%
Rudbeckia mollis	Full Pot :C		4/m <sup>2</sup>	5L	10%
Veronicastrum virginicum 'Fascination'	Full Pot :C		4/m <sup>2</sup>	5L	5%

## Ornamental Mix 1

Species	Specification	Height	Density	Pot Size	Mix %
Berberis thunbergii 'Atropurpurea'	Branched :5 brks :C	40-60cm	4/m <sup>2</sup>	5L	5%
Dryopteris filix-mas	Full Pot :C		4/m <sup>2</sup>		5%
Fatsia japonica 'Variegata'	Branched :4 brks :C	60-80cm	4/m <sup>2</sup>	10L	5%
Geranium macrorrhizum	Full Pot :C		4/m <sup>2</sup>	10L	5%
Hakonechloa macra 'Aureola'	Full Pot :C		4/m <sup>2</sup>	5L	10%
Helleborus orientalis	Full Pot :C		4/m <sup>2</sup>	10L	5%
Heuchera 'Fireworks'	Full Pot :C		4/m <sup>2</sup>		5%
Hyacinthus orientalis	Full Pot :C		4/m <sup>2</sup>	10L	15%
Pachysandra terminalis 'Green Carpet'	Branched :5 brks :Several shoots :6/9 brks :C		4/m <sup>2</sup>	5L	15%
Pinus mugo	Bushy :C	40-60cm	4/m <sup>2</sup>	10L	5%
Polystichum setiferum	Full Pot :C		4/m <sup>2</sup>	10L	5%
Sambucus nigra Black Lace	Branched :4 brks :C	60-80cm	4/m <sup>2</sup>	10L	5%
Stipa arundinacea	Full Pot :C		4/m <sup>2</sup>	10L	10%
Viburnum davidii	Bushy :4 brks :C	30-40cm	4/m <sup>2</sup>	5L	5%

## Ornamental Mix 2

Species	Specification	Height	Density	Pot Size	Mix %
Allium 'Purple Sensation'	Grade 12/+		4/m <sup>2</sup>		10%
Calamagrostis acutiflora 'Karl Foerster'	Full Pot :C		4/m <sup>2</sup>	5L	10%
Carex comans 'Bronze'	Full Pot :C		4/m <sup>2</sup>	5L	15%
Cornus alba 'Elegantissima'	Branched :4 brks :C	80-100cm	4/m <sup>2</sup>	10L	5%
Deschampsia cespitosa	Full Pot :C		4/m <sup>2</sup>	5L	10%
Hebe 'Green Globe'	Bushy :4 brks :C		4/m <sup>2</sup>	5L	15%
Lonicera pileata	Branched :4 brks :C		4/m <sup>2</sup>	5L	15%
Sarcococca hookerana humilis	Bushy :5/6 brks :C		4/m <sup>2</sup>	5L	15%
Verbena bonariensis	Full Pot :C		4/m <sup>2</sup>	5L	5%

## Pond Planting Mix 1

Species	Specification	Density	Mix %
<i>Alisma plantago-aquatica</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%
<i>Butomus umbellatus</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	15%
<i>Callitriche stagnalis</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%
<i>Caltha palustris</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	10%
<i>Carex pseudocyperus</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%
<i>Carex riparia</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%
<i>Filipendula ulmaria</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%
<i>Iris pseudacorus</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	10%
<i>Juncus effusus</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%
<i>Juncus inflexus</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%
<i>Lemna minor</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%
<i>Lythrum salicaria</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%
<i>Mentha cervina</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%
<i>Myosotis scorpioides</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%
<i>Nymphaea 'Albatross'</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%
<i>Ranunculus lingua</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%

## Swale Planting Mix

Species	Specification	Density	Mix %
<i>Alisma plantago-aquatica</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%
<i>Butomus umbellatus</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	15%
<i>Caltha palustris</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	10%
<i>Carex pseudocyperus</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	10%
<i>Carex riparia</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	10%
<i>Filipendula ulmaria</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%
<i>Iris pseudacorus</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	10%
<i>Juncus effusus</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%
<i>Juncus inflexus</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	10%
<i>Lythrum salicaria</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%
<i>Mentha cervina</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%
<i>Myosotis scorpioides</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%
<i>Ranunculus lingua</i>	7cm Root; Trainer plug :Native British Origin	8/m <sup>2</sup>	5%

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