

Land at Westside Close, Old Sarum

Landscape & Ecological and Management Plan (LEMP)

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Client:

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EXECUTIVE SUMMARY

Ecosupport Ltd were commissioned by Dandara Southern Ltd to produce a Landscape and Ecological Management Plan, as required by an expected condition of the planning approval, PL/2023/04526for the development called 'Land at Westside Close' in Old Sarum.

A previous Preliminary Ecological Appraisal and addendum was provided by Ecosupport Ltd. (2021 and 2023, respectively). Additionally, a Phase II report was provided by Ecosupport Ltd. (2022) covering the results of the reptile surveys as well as the results of the bat activity and static monitoring surveys. They include a series of management prescriptions included within the reports to enhance the site for biodiversity. The measures within the reports have been incorporated into this report.

This management strategy covers the prescription management of the habitats within the site post-development in perpetuity (defined by Natural England as 80+ years) as well as the biodiversity mitigation and enhancements to be included within the site.

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1.0 INTRODUCTION

1.1 Aim

The aim of this report is to provide a prescription of the management of habitats in perpetuity (as defined by Natural England as 80+ years) within the site and to bring together all relevant sections of the previous ecological reports associated with the site called 'Land at Westside Close' in Old Sarum and use them to inform a site-wide Landscape Ecological Management Plan. This will ensure the creation and management of habitats is suitable and beneficial to biodiversity within the site and all features of ecological are protected. This report will meet the requirement of the condition of the outline planning approval for the site with ref PL/2023/04526. The draft condition states:

"Before development commences, a Landscape and Ecology Management Plan (LEMP) shall be submitted to and approved in writing by the Local Planning Authority. The LEMP will include long term objectives and targets, management responsibilities and maintenance schedules for each ecological feature within the development, together with a mechanism for monitoring success of the management prescriptions, incorporating review and necessary adaptive management in order to attain targets. The LEMP shall also include confirmation of the details of the S106 legal agreement funding mechanism(s) by which long-term implementation of the plan will be secured."

The management outlined within this report includes the following:

- Creation and management of mown species-rich grassland
- Creation, enhancement and management of other neutral grassland
- Enhancement and management of the other woodland; broadleaved
- Creation and management of native scrub planting mix
- Creation, retention and management of trees
- Installation of bat and bird bricks / boxes
- Provision of gaps within garden fencing for Hedgehogs

The baseline assessments relevant to this report were undertaken by Ecosupport Ltd. in 2021 and 2023. This report has incorporated the recommendations from the Phase II Report (Ecosupport Ltd.), which was submitted as part of the development application.

1.2 Objectives

The following objectives are considered for this report in order to protect and enhance the ecology on site:

1. To preserve existing habitat and create and manage new habitats to provide the greatest benefit to bats, badgers, invertebrates and birds.
2. To ensure the created and enhanced habitats within the site fulfil their ecological function and remain in good condition to provide a benefit to biodiversity.
3. To protect retained trees and provide suitable planting compensation.

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4. To create and maintain new habitat features for bats, badgers, invertebrates and birds.
5. To detail management responsibilities and practices, including ongoing monitoring and remedial measures.

1.3 Description

The site is a mixed habitat of grassland, scrub and trees located within the settlement of Old Sarum (**Fig 1**) (central on OS Grid Reference SU 15201 33801). It is bound by the football club to the north, residential development to the east and west and an industrial estate to the south. The surrounding is a mixture of rural comprising of agricultural land, patches of woodland and surrounding residential developments.

The planning application is for the development of 46 dwellings and associated landscaping.

Figure 1. Location of the site with approximate redline boundary (Google Satellite, 2023).



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2.0 BASELINE DATA

2.1 Habitats

An 'extended' Phase 1 habitat survey of the site was completed by Ashley James BSc (Hons) in June 2021 (Ecosupport Ltd.) and an updated walkover of site was completed by Philip Hemborough in March 2023 (Ecosupport Ltd.). Prior to the most recent site visit, Dandara South contacted Ecosupport Ltd., and under recommendations from the Project Ecologist, cleared the site to just above ground level (**Figs 4 & 7**). These recommendations were made due to the unchanged state of the habitats on site, previous survey data and the correct season being in place to minimize any risk to nesting birds.

The vegetation within the site has been described below using the broad Phase I habitat classification terminology as described with JNCC (2010) as provided by Ecosupport Ltd (2021) (with the corresponding UK Habs habitat type also provided using Habitat Definitions Version 2.0 (UKHab Ltd., 2023):

2.1.1 Semi improved calcareous grassland (Other neutral grassland, g3c)

"The grass species were dominant including False Oat Grass (Arrhenatherum elatius), Cocksfoot (Dactylis glomerata) and Timothy (Phleum pratense). Common Vetch (Vicia sativa), Red and White Clover (Trifolium pratense and repens) and Meadow Buttercup (Ranunculus acris) were abundant. Frequent Hedge Bedstraw (Galium album), Yarrow (Achillea millefolium), Ribwort Plantain (Plantago lanceolata), Forget-me-not (Myosotis Sp.) were recorded. Occasional Field Scabious (Knautia arvensis) and Wild Carrot (Daucus carota) and Perforate St John's Wort (Hypericum perforatum) were noted, all of which are indicators of chalky grassland, along with Teasel (Dipsacus fullonum), Cinquefoil (Potentilla reptans), Ragwort (Senecio jacobaea), Hedgerow Cranesbill (Geranium molle), Sow Thistle (Sonchus asper), Ivy (Hedera helix). Finally, Tufted Vetch (Vicia cracca) and White Campion (Silene latifolia) was rare in the sward." (**Figs 3 & 4**)

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Figure 3. View of the other neutral grassland (g3c) present previously on site (taken June, 2021).



Figure 4. View of the other neutral grassland (g3c) mown to a very short sward height under recommendations of the Project Ecologist (taken March, 2023).



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2.1.2 Scrub (Mixed scrub, h3h and Bramble scrub, h3d)

*"The majority of the western extent of the site is dominated by successional scrub. Bramble (Rubus fruticosus), Blackthorn (Prunus spinosa), Sycamore (Acer pseudoplantanus), Hawthorn (Crataegus monogyna), Elder (Sambucus nigra) and Dog rose (Rosa canina) were all recorded (**Fig 5**). Elsewhere on-site linear Bramble scrub was recorded (**Fig 6**)."*

Figure 5. View of the mixed scrub (h3h) previously present to the western portion of the site (taken June 2021).



Figure 6. View of the Bramble scrub (h3d) previously present on site (taken June 2021).



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Figure 7. View of the cleared bramble scrub (h3d) as seen during the updated walkover (taken March 2023).



2.1.3 Tree Belt (Line of trees, w1g6)

"*A line of trees, leading into a small patch of woodland, was recorded behind the northwest hedgerow. Species included mature Sycamore, White Beam (Sorbus aria), Lime (Tilia x europaea), Silver Birch (Betula pendula), Rowan (Sorbus aucuparia) and Hawthorn. The understorey was limited dominated by umbelifers, Common Nettle (Urtica dioica), grasses and bare ground."*

2.1.4 Scattered Trees (Other woodland; broadleaved, w1g)

"Within the southern and western extent of the site Ash (Fraxinus excelsior), Silver Birch and Sycamore trees were recorded ***(Fig 8).****"*

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Figure 8. View of the other woodland; broadleaved (w1g) present within the southern and western portions of the site (taken June 2021).



2.1.5 Improved Grassland (Modified grassland, g4)

*"A small patch of improved grassland was recorded in the western most corner of the site (**Fig 9**). Species included common grass species Daisy, Clover and Dandelion. This area is subject to continual management."*

Figure 9. Modified grassland (g4) present in the western corner of the site (taken June 2021).



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2.2 Reptiles

Due to the presence of habitat considered suitable to support reptiles, a Phase II Reptile Survey was undertaken following best practice guidelines published by Froglife (1999). Artificial refugia were distributed across the site. The refugia were left to 'bed in' for two weeks as per best practice guidelines, and then checked a total of seven times by experienced Ecologists of Ecosupport Ltd during September 2021. Each check was made during suitable weather conditions (between 9 and 18 degrees Celsius with full sun or sunny spells). The survey was undertaken during September to coincide with the optimum survey season for reptiles in the UK. The results of the surveys confirmed a likely absence of reptiles to be present on site due to none being observed during the survey effort.

It was not considered necessary to update the reptile surveys as the habitats present on site have not significantly changed and the populations are unlikely to have migrated onto site given its isolated location from suitable reptile habitat.

2.3 Bats

2.3.1 Foraging and Commuting Bats

Monthly bat activity surveys including transects and static loggers were carried out within the site between July - October 2021.

Activity transects – A total of four species of bat were recorded during the activity transect surveys including Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Noctule (*Nyctalus noctula*) and Long-eared bat species (*Plecotus* spp.). The activity was relatively evenly spread across the site with no particular area considered more favorable for bats.

Static loggers - A total of six species of bat were recorded during the static monitoring survey including all four aforementioned species, in addition to Serotine (*Eptesicus serotinus*) and *Myotis* bat species (*Myotis* spp.).

"Activity was dominated by Noctule (Nyctalus noctula) with regular recordings of Common Pipistrelle (Pipistrellus pipistrellus) and occasional Soprano Pipistrelle (Pipistrellus pymaeus) and Long-eared (Plecotus Sp.).", "…activity was relatively evenly spread across the site be no particular area considered more favourable for bats."

"The same assemblage of bat species was recorded during the transect surveys with the addition of Serotine and Myotis Sp. having also been registered. Common Pipistrelle were the most recorded."

"Common and Soprano Pipistrelle and Brown Long-eared bats are within the Common category of bats whilst the other species all fall under the Rarer category (Wray et al 2010). No roosts were identified on site although it is considered there may be potential for roosts nearby." (Ecosupport Ltd., 2022)

Given that the habitats have not changed since the bat activity surveys were undertaken in 2021, it is not considered that likely that the bat activity on site will have significantly changed. Therefore, it was not considered necessary to update these works, especially given the existing body of information available for the scheme (and the wider area from other applications.

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3.0 MITIGATION, COMPENSATION AND ENHANCEMENTS

The chapter addresses the relevant mitigation, compensation and enhancement required to provide appropriate protection to species found within the site. Mitigation refers to measures that can be undertaken to avoid or reduce ecological impacts. Compensation refers to measures taken in order to offset potential significant impacts and finally enhancements result in a net gain for ecology. Measures relating to habitat creation and management are addressed in **Section 4.0**.

3.1 Protective Fencing

Tree protective fencing will protect boundary vegetation and retained trees from direct impact and from severance or asphyxiation of the roots. Fences must be installed at the distance of the branch spread away from the tree trunk (British Standard 5837:2012 Trees in relation to construction) at a distance half the height of the tree and be of chestnut paling or of another similarly robust style of fencing. No vehicles should enter the protective ring fencing and no materials should be stored within their circumference. All protective fencing must be in place prior to any construction machinery arriving on site, before any works on site get underway, and will remain in place until all work is completed. This will minimise the level of disturbance within the boundary vegetation during construction.

3.2 Bats

3.2.1 Maintaining Connectivity

Many bat species are reluctant to leave the cover of features such as tree lines and hedges as they move between their roost and foraging grounds. Fragmentation of the landscape can therefore be a serious issue for bats. To address these issues, key areas of suitable habitats for foraging and commuting bats are being retained (such as the woodland, some areas of scrub and grassland) along with enhancements provided to increase invertebrate biomass (key recommendations annotated within the Green Landscape Studio Limited detailed planting plan). This includes the provision of new native scrub planting mix, tree planting, species rich grassland and ornamental hedge and shrubs.

3.2.2 Lighting

During the construction phase of the development, no works are to be undertaken between dusk and dawn, with lighting also limited to daylight hours where necessary.

3.2.2.1 Operational

Where possible the ideal scenario would be to have no light at all at locations used by bats. Where lighting is necessary lighting guidelines (2013) have informed the following mitigation and avoidance measures.

Type of Light

As people perceive areas illuminated with white light as safer, brighter and more comfortable than areas lit with yellow light (Knight, 2010) there has been a shift towards the use of white lights in outdoor lighting applications. Those lights with the lowest negative impacts include

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narrow spectrum lights with no UV content, Low pressure sodium and warm white LED and directional down lights, which illuminate below the horizontal plane. The following key principles can also reduce potential negative impacts on bats and wildlife in general:

- Avoid blue-white short wavelength lights: these have a significant negative impact on the insect prey of bats. Use alternatives such as warm-white (long wavelength) lights as this will reduce the impact on insects and therefore bats
- Avoid lights with high UV content: (e.g. metal halide or mercury light sources), or reduce/completely remove the UV content of the light. UV has a high attractiveness to insects leading to direct insect mortality at street lights thereby reducing the availability of insect prey (Frank 2006; Bruce-White & Shardlow 2011). Use UV filters or glass housings on lamps which filter out a lot of the UV content.

Spacing and height of units

Increasing the spacing between light units will reduce the intensity and spread of the light to minimise the area illuminated and give bats an opportunity to fly in relatively dark areas between lights. Reducing the height of light units will keep the light as close to the ground as possible, reducing the volume of illuminated space. This will also give bats a chance to fly over the light units in the dark area above the light (as long as the light does not spill above the vertical plane).

Reducing spill

Attention will be paid to avoid the upward spread of light near to and above the horizontal plane to minimise trespass and sky glow. It is important to avoid lighting above 90^{o} and 100^{o}.

3.2.3 Enhancement Bat Tubes / Boxes

Bat boxes will be incorporated into at least 10% of the new dwellings. The 1FR Bat Tube (at least 3 No) is designed to be installed on the external walls of buildings, either flush or beneath a rendered surface. It has been specifically designed to meet the requirements of the species of bats that inhabit buildings, including those which what been recorded on site. It has an integrated wooden panel onto which bats can cling, and a ridged entrance slope that makes it easy for bats to enter and leave the box safely. The design maintains stable climatic conditions, providing bats with a safe and stable roosting environment. This style of bat box requires no maintenance as droppings fall out of the entrance ramp.

The Enclosed Bat Box 'C' from Ibstock (at least 2 No) is designed for Pipistrelle species, and can be integrated directly into the brickwork of new buildings. The inside of the box is designed to create several roosting zones that are ideal for crevice-dwelling bats. The bottom entrance means that no maintenance is required as droppings simply fall out of the bottom.

In general, bats seek warm spaces when rearing young. For this reason, bat boxes should be located where they will receive at least partial sunlight (facing south, south-west or south-east). However, by installing bat boxes in more than one orientation will allow for a choice of

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roosting conditions. To increase the chances of bats roosting in a bat box, the bat boxes will be placed adjacent to boundary vegetation.

The boxes will be positioned a minimum of 2m above ground, although 5-7m is preferable to prevent disturbance from people and/or predators. The features should be positioned near the eaves or gable apex of buildings to minimise disturbance.

In addition the following boxes (or similar) should be erected within mature trees on site:

- Schwegler 2F (2 No) bat boxes provide ideal quarters for bats that inhabit crevices.

- Schwegler 1FF (2 No) bat boxes are spacious enough for bats to use as a summer roost or nursery site. The inner dimensions of the 1FF have a reducing width making it ideal for bat species which inhabit crevices such as Pipistrelle bats but also larger bats such as Noctule (*Nyctalus noctula*).

- Schwegler 1FD (2 No) bat boxes have a domed roof to increase the interior height whilst the two grooved internal wooden front panels provide a crevice. Both the cooler woodcrete surface and the warmer wooden panel means bats have a choice of different temperatures in different parts of the box.

Bat boxes will be sited on trees using the galvanized steel hanger and aluminium nail provided. They should be positioned at a height of between three to six metres from ground level. Bat boxes should ideally be sited in open sunny positions. The arrangement of the bat boxes has them facing different directions to provide a variety of micro-habitats. To increase the chances of bats roosting in the new features, the bat boxes will be placed adjacent to vegetation features as bats will be more likely to discover the artificial roosts if it is placed close to an existing flight path.

The indicative location of these habitat features is shown in the Plan attached in **Appendix A.**

3.6 Mammals – Avoidance of Entrapment

Although no evidence of Badgers was recorded on site during the most recent walkover, the site does still provide potential for foraging and commuting badgers. Therefore, during the construction phase, any open excavations left overnight should either be covered to prevent commuting Badgers falling in or escape ladders should be used to prevent them from becoming trapped. Any open pipework should be checked and then capped nightly.

3.7 Breeding and nesting birds

3.7.1 Avoidance of nesting birds

To avoid disturbance of nesting birds or damage to their nests, clearance of any trees and shrub should be undertaken outside of the bird-nesting season (typically March – August, dependant on weather). If this is not possible, the area to be cleared should be thoroughly

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checked by an ecologist immediately prior to clearance. If any active nests are found they should be left undisturbed with a suitable buffer of undisturbed vegetation (ca. 5 m) until nestlings have fledged.

3.7.2 Enhancement Bird Bricks / Boxes

To act as biodiversity enhancement, 10% of the newly built dwellings will incorporate one Swift brick (total No. 6). The Ibstock 'Eco Home for Swifts' bricks will be installed (**Fig 10**) as they are a discreet and attractive box ideal for new dwellings. The boxes should be installed under the eaves or in high walls in shaded areas out of direct sunlight and away from windows. The installation of such boxes has also been shown to be beneficial for House Sparrows (*Passer domesticus*) which are a nationally declining species.

Figure 10. Ibstock eco home for swifts that will be incorporated into the newly built dwellings



Habitat management on site (see **Section 4.0**) will also compensate and increase opportunities for birds within the site. In addition, integrated bird nesting provision will be provided along the dwellings adjacent to the bund.

Additionally, 10 No nest boxes will be erected in trees around the site that will provide compensation for the loss of trees, scrub and unmanaged grassland on site. Using nest boxes of varying designs would maximise the species complement attracted to the site, and where possible these could be tailored to provide opportunities for red listed/BAP species known from the local area. Schwegler 1B (4 No), 2H (3 No) and 2M (3 No) bird boxes will be used (10 in total) will be erected on suitable trees around the site's boundaries. The 1B is the most popular box for garden birds and appeals to a wide range of species. The 2H is attractive to Robins, Pied Wagtails, Spotted Flycatcher, Wrens and Black Redstarts whilst the 2M is an example of a general-purpose design (***NB is there are issues obtaining these boxes, alternatives can be used if first agreed with the ecologist***).

The indicative location of these habitat features is shown in the Plan attached in **Appendix A.**

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3.8 Hedgehogs

Works which could potentially affect hedgehogs, should they be present, during the construction phase of the development may include the removal of brash piles or clearing scattered scrub and vegetation where hedgehogs may seek shelter. Any such work will be undertaken outside of the hedgehog hibernation period (October to April, inclusive, dependent on weather conditions). If removal becomes necessary during this hibernation period, any clearance will be preceded by a hand search of the piles or vegetation by a suitably qualified ecologist. Should any hedgehogs be encountered during the site clearance of construction works they will be safely removed by hand from the construction area and placed in suitable and similar habitat to where they were found, out of harm's way.

3.10.1 Connectivity

In addition to the sensitive clearance of habitat, garden fences within the site will also ensure at least 2 gaps are present within the gravel boards / bases of each fence line to allow for movement of Hedgehogs between gardens and into the wider area. The gaps should be at least 15 cm high by 15 cm wide with permeability for small mammals.

Small signage could be installed at these points to ensure they remain open upon completion of the development. The People's Trust for Endangered Species provide such signage, the purchase of which also supports conservation efforts (**Fig 11**).

Figure 11. Example of Hedgehog Highway signage to be placed above fence gaps provided to allow movements between gardens (PTES, 2019).



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4.0 HABITAT CREATION, ENHANCEMENT & MANAGEMENT

4.1 Introduction

As part of the proposed development, extensive habitat creation, enhancement and management will be undertaken within the site. A habitat creation plan (shown in **Appendix B**) shows the detailed areas of created habitat to be undertaken within the site. This section includes details on how habitat creation works will be carried out, managed, and monitored for long-term biodiversity improvement. The following habitat creation and management works will be undertaken:

- Creation and management of mown species-rich grassland
- Creation, enhancement and management of other neutral grassland
- Enhancement and management of the other woodland; broadleaved
- Creation and management of native scrub planting mix
- Creation, retention and management of trees

4.2 Mown Species-Rich Grassland (Modified grassland)

4.2.1 Proposed Planting

The open space/grassland parkland areas will be sown with Emorsgate EL1 – Flowering Lawn Mixture. This seed mixture includes but is not limited to Common Knapweed (*Centaurea nigra*), Birdsfoot Trefoil (*Lotus corniculatus*), Ribwort Plantain (*Plantago lanceolata*), Cowslip (*Primula veris*), Meadow Buttercup (*Ranunculus acris*), Tufted Vetch (*Vicia cracca*), Common Bent (*Agrostis capillaris*), Crested Dogstail (*Cynosurus cristatus*) and White Clover (*Trifolium repens*). Recommended species planting of grass species for this habitat may also include Rye grasses (*Lolium* spp.,), Timothy (*Phleum pratense*), Yorkshire-fog (*Holcus lanatus*), and Cock's-foot (*Dactylis glomerata*). Grass cover is usually over 75% for this habitat type. Broadleaved species may include Dandelion (*Taraxacum officinale*), Creeping Buttercup (*Ranunculus repens*) and Greater Plantain (*Plantago major*).

The sowing of these seeds will be completed either during the spring or the autumn when the temperatures are warm, and the ground is dry. The seed must be surface sown at an even distribution throughout the entire landscaped area.

4.2.2 Management

During the first year the landscaped areas must be regularly maintained to a height of 40-60mm every 3-4 weeks during the growing season to prevent the establishment of weeds. All arisings must be taken from site to prevent the addition of too many nutrients into the soil.

Once the seed is established after the first year, a management regime will be adopted to allow the flowering of herbaceous species to provide maximum benefit to local wildlife. Mowing is to be relaxed from late June for 4 – 8 weeks. However, regular mowing is expected within this habitat area which will cause sward height structure to vary throughout the management periods, cutting no lower than 25-40mm. All arisings should be collected and moved from the site.

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4.3 Other Neutral Grassland

4.3.1 Proposed Planting

The open space/grassland parkland areas will be sown with Emorsgate EL1 – Flowering Lawn Mixture. This seed mixture includes but is not limited to Common Knapweed (*Centaurea nigra*), Birdsfoot Trefoil (*Lotus corniculatus*), Ribwort Plantain (*Plantago lanceolata*), Cowslip (*Primula veris*), Meadow Buttercup (*Ranunculus acris*), Tufted Vetch (*Vicia cracca*), Common Bent (*Agrostis capillaris*), Crested Dogstail (*Cynosurus cristatus*) and White Clover (*Trifolium repens*). Recommended species planting of grass species for this habitat may also include Rye grasses (*Lolium* spp.,), Timothy (*Phleum pratense*), Yorkshire-fog (*Holcus lanatus*), and Cock's-foot (*Dactylis glomerata*). Grass cover is usually over 75% for this habitat type. Broadleaved species may include Dandelion (*Taraxacum officinale*), Creeping Buttercup (*Ranunculus repens*) and Greater Plantain (*Plantago major*).

Recommended species planting of grass species for this habitat type may also include Perennial Rye-grass (*Lolium perenne*), Common Bent (*Agrostis capillaris*), False Oat-grass (*Arrhenatherum elatius*), Yorkshire-fog (*Holcus lanatus*), Rough Meadow-grass (*Poa trivialis*) and Cock's-foot (*Dactylis glomerata*). Herb planting may include Yarrow (Achillea millefolium), Ribwort Plantain (*Plantago lanceolata*), Red Clover (*Trifolium pratense*), Common Knapweed (*Centaurea nigra*), Bird's-foot Trefoil (*Lotus corniculatus*), Common Mouse-ear (*Cerastium fontanum*), Meadow Buttercup (*Ranunculus acris*), Self-heal (*Prunella vulgaris*) and Creeping Thistle (*Cirsium arvense*)

The sowing of these seeds will be completed either during the spring or the autumn or spring when the temperatures are warm, and the ground is dry. The seed must be surface sown at an even distribution throughout the entire landscaped area.

4.3.2 Management

Wildflower areas do not require any additional watering or fertilizer. Cutting a meadow and removing the clippings retains low nutrient levels in the soil and suppresses coarse grasses which would otherwise out-compete the wildflowers. It is recommended the wildflower grassland undergoes two annual cuts. The growth should be cut back to a height of 50-75mm. The cut grass should be dried on site. Cuttings should be left in situ for approximately one week, after this the arisings are to be removed from site.

First year management: Perennial species take at least a full year to establish. For newly sown areas the first summer will be dominated by annual weeds arising from the soil seed bank and by grass growth. This should be controlled by mowing throughout the first year to minimise competition and weed seed production.

Management Once Established: During the second year it is recommended that the grassland left to flower and will be cut in mid-summer. However, if a retained buffer area is established, this should not be cut in May or early June due to nesting birds. Mowing in mid-June brings a premature end to the flowers and can compromise nesting birds, which do not fledge until

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late July, insects and other wildlife. If some mowing has to take place at this time, sections should be cut at different dates to prolong the overall flowering season and give wildlife a chance to move. The second annual cut should be undertaken during late Autumn.

Grassland which is consistently cut late in the season, in August and September, year on year reduces species diversity as late cutting gives more time for coarse grasses and other dominant plants to grow unchecked. To maintain maximum diversity and flowering interest the buffer should be managed in sections at different times from late June to the end of August. Varying the mowing times from year to year is the best way to maintain a diverse balanced sward.

4.4 Retained and Created Trees / Scrub

4.4.1 Proposed Woodland Planting

The existing woodland on site will be enhanced from 'moderate' to 'good' condition in accordance with the BNG assessment that has been undertaken for site by Ecosupport Ltd.

It is recommended the woodland is enhanced through understorey planting, recommended species to be planted as woodland understorey comprise; Hazel (*Corylus avellana*), Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Holly (*Ilex aquifolium*), Wild Privet (*Ligustrum vulgare*), and climbers such as, Dog Rose (*Rosa canina*), Honeysuckle (*Lonicera periclymenum)*, Alder Buckthorn (*Frangula alnus*), Common Broom (*Cytisus scoparius*), Field Maple (*Acer campestre*), Guelder Rose (*Viburnum opulus*) and Wayfaring Tree (*Viburnum lantana*).

4.4.2 Proposed Scrub Planting

The proposed scrub planting will help provide a matrix of habitats and additional opportunities for a variety of species. The scrub planting will not be dense to avoid areas becoming overly vegetated, but it will be allowed to establish in sparse patches.

The following native species will be used:

- Dogwood (*Cornus sanguinea*)
- Hazel (*Corylus avellana*)
- Spindle (*Euonymus europaeus*)
- Dog Rose (*Rosa canina*)
- Elder (*Sambucus nigra*)
- Guelder Rose (*Viburnum opulus*)

The best time to plant is late autumn and it is recommended to avoid freezing temperatures or heat. The scrub plants will be planted with large spacing to avoid creating dense clusters. The scrub will become denser and more connected as it grows up.

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4.4.3 Proposed Tree Planting

The proposed tree planting is recommended across site and includes River Birch (*Betula nigra*), European Hornbeam (*Carpinus betulus*), Turkish Hazel (*Corylus colurna*), Crab Apple (*Malus sylvestris*), Whitebeam (*Sorbus aria*) and Rowan (*Sorbus aucuparia*).

4.4.2 Tree / Woodland Management

4.4.2.1 Mycorrhizal Treatment

To ensure a successful establishment of the newly planted trees, it is recommended that mycorrhizal treatment to the tree roots is conducted **during the planting**, this would reduce the risk of tree mortality and increase the long-term tolerance of these trees to periods of drought or adverse soil conditions thus ensuring a higher chance of successful long-term establishment.

4.4.2.2 Weed Management & Tree Guards

All newly planted trees must have a 1-metre exclusion zone whereby weeds are routinely and pro-actively removed for the **first 2 – 3 years**. Bark mulch is recommended around each tree and will act as an effective management method to also supress weed colonisation.

Whilst it is recommended that the mesh is approximately 12.5mm x 12.5mm aperture of 0.61m in height; however, due to the suitability on site and the surrounding habitats, this site may be at risk of Roe Deer. Therefore, it is recommended that the form of tree guards suitable to mitigate excessive foraging from this species is installed at a height above 1.2m and comprised of a guard such as weld mesh tree shelter or a suitable alternative.

During aforementioned weed removal, all aspects of the tree guards should also be routinely checked to ensure they are maintained in good condition and are firmly positioned within the soil. If the guards begin to split, they must be removed and disposed of responsibly and consequently replaced where required.

The trees and newly planted shrubs on site will also be protected through the implementation of mesh rabbit guards, along with bark mulch at the base to suppress any grass and weed colonisation. Monthly inspections on the newly planted trees will be undertaken, with weed removal / tree guard replacement as required. The bark mulch will also be maintained at a minimum level of 50mm for the **first 2 years** of establishment.

4.4.2.3 Coppicing

Occasional rotational coppicing may be required of the newly planted or retained trees on site to prevent overcrowding and promote natural new growth. All Hazel present on site will be managed on a rotational coppicing scheme. This involves cutting young trees down to a low level to promote new growth and prevent over-shading. This will be rotationally implemented, with only a small portion approximately 30% of Hazel coppiced **every 3 years** during winter months (November to March), but only once the Hazel has grown to a size that will be beneficial and appropriate.

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Coppice management is best carried out on a rotation of approximately **every 6-10 years** for each tree, with timing staggered for plants to ensure there is continued connectivity at any given time. Retain some of the dead wood. Include some larger horizontal trunks and limbs as well as log piles and discarded brash. Leave wood piles in shady areas.

4.4.2.4 Selective Thinning

Once the newly planted trees / shrubs are established, selective thinning of retained or established trees will be conducted to promote regeneration and a vigorous, dense regrowth. Such work must be undertaken during the period October – February to avoid the breeding bird season. It is considered likely a botanical survey will identify areas of highest botanical value and this will influence the location of thinning, conducted by a suitably qualified botanist. Meanwhile the woodland will be thinned (i.e. trees removed) to benefit retained trees and promote regeneration. The optimal canopy target is 75% cover, which allows greater development of the understory to create a more diverse woodland. Selective thinning will be carried out **every 5 years** to maintain a canopy target of 75% cover.

The target trees to be removed are those showing signs of disease or poor growth; The specific target trees and areas of woodland will be determined by the supervising ecologist or arborist.

It is considered likely a botanical survey will identify areas of highest botanical value and this will influence the location of thinning. The recommended botanical survey should be undertaken during the optimum survey season during the first year of woodland management to identify areas of botanical interest. It is recommended this is repeated every five years. Where practical to do so, as determined by the arborist, some potential selected trees may be cut at 3-5m height and the stumps will be left in situ to rot as habitat for saprophytic invertebrates.

4.4.2.5 Invasive Species Management

Any invasive species, such as Japanese Knotweed (*Fallopia japonica*) Himalayan Balsam (*Impatiens glandulifera*), Rhododendron (*Rhododendron ponticum*), Giant Hogweed (*Heracleum mantegazzianum*), will be removed from the site, as these could have deleterious effects on native species. The removal of such species would open-up ground for restoration for natural re-generation. Invasive species will generally be removed by a combination of cutting back and removal of cut material from the site. This process may need to be repeated over the course of several years.

Contractors will need to be shown the locations of the species and mark these where needed to help avoid native species being removed accidentally. Areas of bare ground created by this work will be left for natural regeneration (described below).

4.4.2.6 Natural Regeneration

Recommendations may also include that any plants (newly planted or retained) that are removed, die or become seriously damaged or defective during the 30-year monitoring period shall be replaced like for like in the next planting season. If any of the plants fail, they will be replaced like-for-like.

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Similarly, scope for tree and shrub species to establish by natural regeneration should be permitted where possible e.g. by creating space for new regeneration around existing specimens of the desired trees and shrub species. Ash regeneration could be an important part of the mix, it should not be cut out or destroyed unless suffering from Ash Dieback, and would benefit from being protected.

4.4.3 Scrub Management

Following establishment, scrub management will be undertaken annually (as needed) to maintain a suitable matrix between grassland, scrub and other habitats. This can be achieved by manual cutting as well as mechanical clearance in winter months that can be carried out to ensure the area does not become overgrown.

4.4.4 Monitoring

All the newly planted and retained trees / scrub within the site in communal areas (i.e., excluding all trees within privately owned gardens) are to be managed post-development for a period of at least 30 years. It is recommended tree inspections are conducted.

This will be carried out by a suitably experienced arborist **during late winter – early spring of each year when required**. These monitoring visits will assess the general health of the trees and determine if any remedial action is required, including noting any presence of disease. As part of these monitoring visits, the arborist will produce a monitoring report which will be sent to the LPA outlining the results and appropriate recommendations (i.e. remedial works, removal /replacement).

NB Please note, all mature trees recommended for removal, remedial works or selective thinning will need to be surveyed for (potential roost features PRFs) that may be suitable for roosting bats. If any trees have PRFs, it is recommended they are retained if possible and alternative trees are selected where possible. This will be conducted by a suitably qualified ecologist.

4.5 Safeguarding

The developer and project manager will be responsible for briefing all site personnel of the ecological sensitivities of the site and implementing the mitigation measures outlined above. If any protected species are encountered during the construction works, it will be the responsibility of the project manager to cease works and immediately contact an ecologist for advice.

4.6 Post-Construction Habitat Creation

Section 5.0 below depicts the indicative timings associated with the habitat creation and enhancements to be undertaken prior to first occupation on the development site. This is considered to be year 1 of the management plan. For those activities that can be undertaken at any time of year, the earliest possible time is recommended

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4.7 Compliance Check and Management Responsibilities

A compliance visit will be completed by a suitably qualified ecologist prior to first occupation of the development site. The check will be conducted annually for the first 5 years post completion, and every 5-years thereafter until year 30. The compliance check will be carried during a suitable time of year and in suitable weather conditions. The ecologist will check all biodiversity ecological enhancements set out to assess if they have been completed and make an assessment if any recommended changes are required to management.

Management and maintenance of the newly created and enhanced habitats will initially be the responsibility of the client to ensure all management works are completed and qualified ecologists, arborists or landscape managers are contracted, where required. All management works as described above should be secured through an appropriate Section 106 agreement for the site that will legally oblige the client or other agreed party to carry out the works. An annual management timeline of all habitats has been provided in **Section 5.0**, management works should continue in perpetuity.

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5.0 IMPLEMENTATION PLAN SUMMARY

Schedule of monitoring and management from Year 1 with outlined elements in perpetuity (for 80+ years) for all habitats / ecological enhancements.

General Activity	Year	Specific Activity	Dates / Timing	Description
Protection of Trees	1	Arboricultural Fencing (**Section 3.1**)	Set up pre-commencement to works and retained throughout the works.	● The existing tree line will be retained will be protected from damage during the works. They will be protected using the methods outlined within **Section 3.1**.
Bats	1	Installation of Bat Tubes and Boxes (**Section 3.2.3**)	Anytime prior to site operation.	● Bat boxes will be incorporated into at least 10% of the new dwellings. The 1FR Bat Tube is designed to be installed on the external walls of buildings, either flush or beneath a rendered surface. ● The Enclosed Bat Box 'C' from Ibstock is designed for Pipistrelle species, and can be integrated directly into the brickwork of new buildings. ● In addition the 10 No bat boxes will be erected within mature trees on site:
	Year 2, then once Annually	Bat Tube / Box Integrity Checks	Winter	● All ecological enhancements will be checked to ensure they do not require replacement.
Badgers	1	Covering any open excavations (**Section 3.6**)	During the construction phase	● During the construction phase, any open excavations left overnight should either be covered to prevent commuting Badgers falling in or escape ladders should be used to prevent them from becoming trapped. Any open pipework should be checked and then capped nightly.

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Birds	1	Vegetation Removal (**Section 3.7.1**)	During the construction phase (Ideally September – February)	● In order to avoid disturbance of nesting birds or damage to their nests, clearance of any vegetation will be undertaken outside of the bird nesting season (typically March – August dependent on weather). If this is not possible, sections to be cleared should be thoroughly checked by a suitability qualified ecologist immediately prior to clearance. If any active nests are found they should be left undisturbed with a suitable buffer of vegetation (5m) until the nestlings have fledged.
		Bird Bricks / Boxes (**Section 3.7.2**)	Anytime prior to site operation (integrated bird boxes) Prior to the commencement of works (bird boxes on trees)	● 10 No nest boxes will be erected in trees around the site that will provide compensation for the loss of trees, scrub and unmanaged grassland on site. ● To act as biodiversity enhancement, 10% of the newly built dwellings will incorporate one Swift brick (total No. 6).
	Year 2, then once Annually	Bird Brick / Box Integrity Checks	Winter	● All ecological enhancements will be checked to ensure they do not require replacement.
Hedgehogs	1	Removal of brash piles / clearing scattered scrub / log piles etc. (**Section 3.10**)	May – September (outside of Hedgehog hibernation period)	● Works which could potentially affect hedgehogs, should they be present, during the construction phase of the development may include the removal of brash piles or clearing scattered scrub and vegetation where hedgehogs may seek shelter. Any such work will be undertaken outside of the hedgehog hibernation period (October to April, inclusive, dependent on weather conditions).

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				● If removal becomes necessary during this hibernation period, any clearance will be preceded by a hand search of the piles or vegetation by a suitably qualified ecologist.
		Gaps in garden fencing and implementation of hedgehog homes (**Section 3.10**)	Anytime prior to site operation	● Garden fences within the site will also ensure at least 2 gaps are present within the gravel boards / bases of each fence line to allow for movement of Hedgehogs between gardens and into the wider area. ● The gaps should be at least 15 cm high by 15 cm wide with permeability for small mammals.
Modified Grassland (**Section 4.2**)	1	Creation of grassland	Ideally Autumn or Spring	● The open space/grassland parkland areas will be sown with Emorsgate EL1 – Flowering Lawn Mixture.
	1	Year 1 Management	July - August	● Annual weeds may be arising from the soil seed bank and by grass growth during the first year. ● This should be controlled by mowing to 40-60mm throughout the first year to minimise competition and weed seed production
	2 - 30	Regular mowing	Anytime	● Regular mowing is expected within this habitat area which will cause sward height structure to vary throughout the management periods, cutting no lower than 25-40mm ● All arisings should be collected and moved from the site.
	2 - 30	Relaxed mowing period	Late June for 4 – 8 weeks	● Once the seed is established after the first year, a management regime will be adopted to allow

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				the flowering of herbaceous species to provide maximum benefit to local wildlife.
Other Neutral Grassland (**Section 4.3**)	1	Creation of grassland	Ideally Autumn or Spring	• The area of wildflower grassland to the south of site are to be established through the sowing of a wildflower mixture or sourcing a local grassland donor from a nearby site
	1	Year 1 Management	July - August	• Annual weeds may be arising from the soil seed bank and by grass growth during the first year. • This should be controlled by mowing to 40-60mm throughout the first year to minimise competition and weed seed production.
	2 - 30	Two annual cuts	1: Spring cut or left to flower until mid-Summer 2: Late autumn	• The growth should be cut back to a height of 50-75mm. The cut grass should be dried on site. • Cuttings should be left in situ for approximately one week, after this the arisings are to be removed from site. • The second annual cut is to be undertaken during late Autumn
	2 - 30	Retained buffer left to flower	May or early June	• If a retained buffer area is established, this should not be cut in May or early June due to nesting birds. • Maintain maximum diversity and flowering interest the buffer should be managed in sections at different times from late June to the end of August
Retained and Created Trees / Scrub (**Section 4.4**)	Prior to commencement	Enhancement of hedgerows Tree planting on site	Late Autumn ideally, in suitable weather	• Planting of tree / shrub species • Mycorrhizal treatment of tree roots should be undertaken at time of planting

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				• Installation of tree guards suitable to mitigate against Roe Deer, rabbit and extreme weather.
	1 – 3	Weed Management	Monthly, where required	• All trees must have a 1-metre exclusion zone whereby weeds are routinely and pro-actively removed for the first 2 – 3 years. Bark mulch is recommended around each tree and will act as an effective management method to also supress weed colonisation. • Tree guards should also be routinely checked to ensure they are maintained in good condition and are firmly positioned within the soil. If the guards begin to split, they must be removed and disposed of responsibly and consequently replaced where required. • Bark mulch will be maintained at a minimum level of 50mm for the first 2 years of establishment.
	2 - 30	Botanical survey	May – July – prior to any selective thinning	• It is considered likely a botanical survey will identify areas of highest botanical value and this will influence the location of thinning, conducted by a suitably qualified botanist.
	2 – 30	Selective thinning (Retained & newly planted trees, once established)	As required, during October - February	• Once the newly planted trees / shrubs are established, selective thinning of retained or established trees will be conducted to promote regeneration and a vigorous, dense regrowth • Where practical to do so, as determined by the arborist, some potential selected trees may be cut at 3-5m height and the standing stumps will be left in situ to rot as habitat for saprophytic

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				invertebrates and a resource for woodland birds such as Woodpeckers and Nuthatch.
	2 - 30	Coppicing	October – February, every 3 years but best carried out every 6-10 years on rotation	• Occasional rotational coppicing may be required of the newly planted or retained trees on site to prevent overcrowding and promote natural new growth. All Hazel present on site will be managed on a rotational coppicing scheme. • This involves cutting young trees down to a low level to promote new growth and prevent over-shading. • This will be rotationally implemented, with only a small portion approximately 30% of Hazel coppiced every 3 years during winter months (November to March), but only once the Hazel has grown to a size that will be beneficial and appropriate. • Coppice management is best carried out on a rotation of approximately every 6-10 years for each tree, with timing staggered for plants to ensure there is continued connectivity at any given time. • Retain some of the dead wood. Include some larger horizontal trunks and limbs as well as log piles and discarded brash. Leave wood piles in shady areas.
	1 - 30	Invasive Species Removal / Management	As required	• Any invasive species, such as Japanese Knotweed (*Fallopia japonica*) Himalayan Balsam (*Impatiens glandulifera*), Rhododendron (*Rhododendron ponticum*), Giant Hogweed (*Heracleum*

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				mantegazzianum), will be removed from the site, as these could have deleterious effects on native species. • The removal of such species would open-up ground for restoration for natural re-generation. • Invasive species will generally be removed by a combination of cutting back and removal of cut material from the site. This process may need to be repeated over the course of several years. • Contractors will need to be shown the locations of the species and mark these where needed to help avoid native species being removed accidentally. Areas of bare ground created by this work will be left for natural regeneration (described below).
	2 - 30	Plant removal / planting	Late Autumn ideally, in suitable weather	• Recommendations may also include that any plants (newly planted or retained) that are removed, die or become seriously damaged or defective during the 30-year monitoring period shall be replaced like for like in the next planting season. • If any of the plants fail, they will be replaced like-for-like. • Similarly, scope for tree and shrub species to establish by natural regeneration should be permitted where possible e.g. by creating space for new regeneration around existing specimens of the desired trees and shrub species. Ash regeneration could be an important part of the mix, it should not be cut out or destroyed unless

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				suffering from Ash Dieback, and would benefit from being protected.
	2 – 30	Monitoring report (Arborist)	During late winter – early spring of each year	• These monitoring visits will assess the general health of the trees and determine if any remedial action is required, including noting any presence of disease. As part of these monitoring visits, the arborist will produce a monitoring report which will be sent to the LPA outlining the results and appropriate recommendations (i.e. remedial works, removal /replacement).
	1 – 30	Preliminary Roost Assessment (PRA)	Anytime but ideally during late winter prior to any remedial works, removal or thinning	• All mature trees recommended for removal, remedial works or selective thinning will need to be surveyed for (potential roost features PRFs) that may be suitable for roosting bats. If any trees have PRFs, it is recommended they are retained if possible and alternative trees are selected where possible. This will be conducted by a suitably qualified ecologist.
Compliance Check (**Section 4.7**)	1 - 30	Monitoring report (Ecologist)	Annually for the first 5 years, then every 5 years until year 30 Must be conducted during a suitable time of year and weather conditions	• A report will be produced by an ecologist to provide details on all management, assessment of habitats, additional management requirements (if required), management to be carried out in the next phase and reporting on any delays ● Each report will be sent to the LPA

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6.0 CONCLUSION

The aim of this report is to provide a description of the management of habitats in perpetuity (defined by Natural England as 80+ years) within the site, and to bring together all relevant sections of the previous ecological reports associated with the site 'Land at Westside Close' in Old Sarum and use them to inform a site-wide Landscape & Ecological Management Plan (LEMP). With the provision of all inclusions within this report, the site is expected to provide excellent biodiversity enhancement for wildlife and provide net gain.

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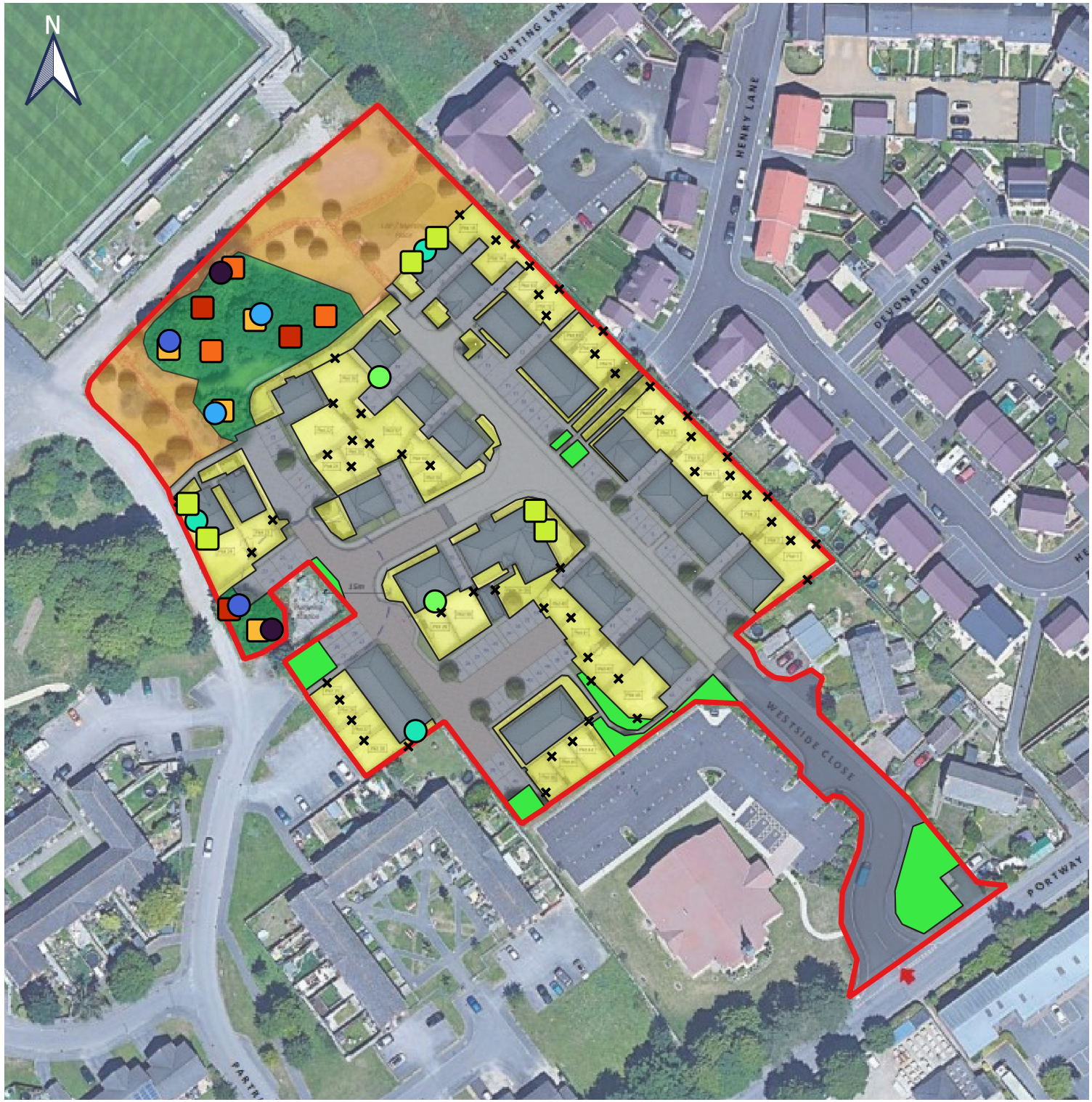
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8.0 APPENDICES

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Legend

- Site boundary
- Schwegler 2F bat box (2 No)
- Schwegler 1FF bat box (2 No)
- Schwegler 1FD bat box (2 No)
- 1FR Bat tube (3 No)
- Ibstock Enclosed Bat box 'C' (2 No)
- Ibstock 'Eco Home for Swifts' (6 No)
- Schwegler 1B bird box (4 No)
- Schwegler 2H bird box (3 No)
- Schwegler 2M bird box (3 No)
- Hedgehog Highway (15cm x 15cm)

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Map	Appendix A - Ecological Enhancements
Site	Land at Westside Close, Old Sarum
Client	Dandara Southern Ltd
Date	31/08/2023

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