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ROFFEY HOMES LTD

Manor Nursery, Angmering, West Sussex

Ecological and Landscape Management Plan

Planning Issue

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1.0 INTRODUCTION

- 1.1 Lizard Landscape Design and Ecology has been commissioned to produce an Ecological and Landscape Management Plan for the proposed development at Manor Nursery, Angmering, West Sussex (*Grid Reference: TQ 076 042 – hereafter referred to as 'the site'*).
- 1.2 In the first instance, the existing ecological baseline conditions shall be described through reference to ecological surveys submitted as part of the outline planning application. Following this, reasoned prescriptions for initial maintenance requirements and the long-term management of habitat creation and enhancements shall be made, based on recommendations made within the survey reports.
- 1.3 Ecological and Landscape Management Plan shall be read alongside the following documentation:
 - *LLD1275-LAN-DWG-100 – Hard and Soft General Arrangement Drawing;*
 - *LLD1275-LAN-DWG-200- Soft Landscape Layout – Infrastructure Planting;*
 - *LLD1275-LAN-DWG-201 - Detailed Planting Plan (Sheet 1);*
 - *LLD1275-LAN-DWG-202 - Detailed Planting Plan (Sheet 2);*
 - *LLD1275-LAN-DWG-203 - Detailed Planting Plan (Sheet 3);*
 - *LLD1275-LAN-DWG-204 - Detailed Planting Plan (Sheet 4);*
 - *LLD1275-LAN-SCH-001 - Detailed Plant Schedule and NPS Specification.*

1.4 The following Ecological and Landscape Management Plan has been prepared through reference to the following documentation:

- *Preliminary Ecological Appraisal - LLD1275-ECO-REP-001-PEA (prepared by Lizard Landscape Design and Ecology, Oct 17);*
- *Reptile Presence / Absence Survey Report - LLD1275-ECO-REP-002-Reptile Survey Report (prepared by Lizard Landscape Design and Ecology, Oct 17);*
- *Tree Constraints Plan - LLD1275-ARB-DWG-001 page 1 and 2 (prepared by Lizard Landscape Design and Ecology, March 18);*
- *Tree Retention and Protection Plan - LLD1275-ARB-DWG-001 page 1 and 2 (prepared by Lizard Landscape Design and Ecology, March 18);*
- *Arboricultural Impact Assessment - LLD1275-ARB-REP-001-AIA (prepared by Lizard Landscape Design and Ecology, March 18);*
- *Existing Tree Schedule - LLD1275-ARB-SCH-001 (prepared by Lizard Landscape Design and Ecology, March 18).*

1.5 The Ecological and Landscape Management Plan includes the following:

- *Information on the Existing Site;*
- *Ecological Baseline;*
- *Habitat Enhancement;*
- *Habitat & Landscape Management Prescriptions;*
- *Annual and Long-Term Management Schedule.*

2.0 EXISTING SITE

Existing Site Information

2.1 The site is located to the east of the village of Angmering, which itself is in an agricultural setting just north of the A27, and outside of the heavily built-up coastal plain. The local area contains a mixture of land uses, dominated by arable agriculture to the east and north, and residential areas to the west and further south.

2.2 The site consists of a former nursery and garden centre. The majority of the buildings, grow beds and glasshouses on the site have been demolished. This has resulted in large areas of hard surface, and bare ground now colonised by tall ruderal and scattered scrub vegetation. The boundaries are lined with mature introduced shrubs, dense scrub, and trees. The site is fenced to other aspects and is fully enclosed. Soils on site are described as freely draining, slightly acid loamy soils.

Surrounding Landscape

2.3 The local area is sparsely wooded to the south, and more densely wooded further north; the nearest area listed on The National Forest Inventory is Groom's Copse, a 7.97 ha plot of broadleaved woodland also designated as Ancient Woodland. The surrounding area is largely arable land, with trees being present mainly within hedgerows.

Development Proposal

2.4 The development proposals consist of the construction of a residential development of 32 no. dwellings within the site. Dwellings would be of a style commensurate with other local residential dwellings and would be a mixture of 2-bed, 3-bed, 4-bed and 5-bed dwellings. The dwellings would be accompanied by associated hard landscape access road and footpaths, soft landscape areas and gardens.

3.0 ECOLOGICAL BASELINE

3.1 The following section outlines the ecological context of the development site, describing any designated nature conservation sites in the vicinity of the development site.

Statutory and Non-Statutory Designated Sites

Statutory Sites

3.2 The only statutory protected site within 2.0 km of the proposal site is the *South Downs National Park*, which is almost immediately adjacent to the eastern boundary of the site. The site is separated from the *South Downs National Park* by the A280 link road, which clearly delineates the built-up areas outside of the *South Downs National Park* from the more rural areas of the *South Downs National Park* itself. The development falls within the Impact Risk Zones (IRZ) of Climping Beach SSSI. The development is not of a type and scale which would require consultation with Natural England.

Non-Statutory Sites

3.3 *Sites of Nature Conservation Importance (SNCI)* are designations applied to the most important non-statutory nature conservation sites. They are recognised by the *National Planning Policy Framework (2012)* and as such are material considerations when assessing planning applications. The development site is not located within any non-statutory protected area; however, there are a number located within with a 2km radius of the site (see *Table 1 below*).

Table No. 01 – SNCI's within the Local Area.

<i>Name</i>	<i>Reason for Designation</i>	<i>Distance from site</i>
<i>Highdown Park North Field.</i>	<i>Chalk Downland with a good flora, including orchids.</i>	<i>1190.0 m E</i>
<i>Ferring Rife and Meadows SNCI.</i>	<i>A wide channel between two high grassy banks, which also includes grassy fields beyond the banks.</i>	<i>1810.0 m NW</i>
<i>Kingston Park.</i>	<i>A grassland park with a number of mature trees and small copses.</i>	<i>2000.0 m N</i>

Field Survey

3.4 A preliminary ecological appraisal (PEA) of the site was undertaken by Lizard Landscape Design and Ecology on 12th September 2017 to appraise the existing ecological resource within the site and surrounding area. The following habitats and features were recorded within the development site and the extended survey area.

On Site Habitats

3.5 Through reference to the *Preliminary Ecological Appraisal* report, the following habitats were recorded within the site area:

- *Hard Surfaces*;
- *Semi-improved Grassland*;
- *Dense Scrub*;
- *Scattered Scrub*;
- *Scattered Trees*;
- *Intact Ornamental Hedgerows*;
- *Ephemeral and Short Perennial Vegetation*;
- *Tall Ruderal Vegetation*;
- *Introduced Shrubs*.

Protected Species

3.6 The suitability of the on-site habitats to support species was evaluated in terms of its potential for biodiversity and the contribution the area makes as part of the wider landscape. The findings and recommendations are summarised below.

Reptiles

3.7 The semi-improved grassland, tall ruderal and scattered scrub identified during the PEA were considered to offer 'good' habitat potential for widespread species of reptile, therefore a Reptile Population Class Assessment Presence / Absence Survey was recommended. A survey took place during the active season, during a time of appropriate weather conditions, to ascertain whether reptiles were present within the site, and their population size. No reptiles were recorded during the survey; the results suggested that reptiles were not an ecological constraint to the development proposals. There was deemed to be a 'negligible' risk of killing and / or injuring reptiles during the construction process.

Badgers

3.8 No evidence of badgers using the site or surrounding area were noted, and the site presents limited foraging resources for badgers. No further surveys with regards to badgers were required. Should evidence of badgers or their setts be discovered during construction, work should cease and a Suitably Qualified Ecologist be consulted.

Bats

3.9 There were no trees offering bat roost potential within the site; the larger deciduous trees and treelines, surrounding but outside of the site would represent the most significant bat foraging and commuting habitat locally. Lighting proposals could have the potential to impact bats commuting and foraging along trees and treelines surrounding but outside of the site; lighting design should therefore be sensitive and aim to project light down and into the site, away from vegetation.

Birds

3.10 No rare or protected bird species were seen or heard during the site visit, however a number of common species were noted. Areas of dense scrub, trees and hedgerows are considered to offer '*good*' bird nesting potential. It was advised that any site clearance work of vegetation should take place outside the bird nesting season (*March-August*) or after thorough inspection by a Suitably Qualified Ecologist.

Great Crested Newts

3.11 The likelihood of encountering great crested newts on the proposal site was considered to be '*negligible*' and no further surveys or assessments of the watercourses with regards to great crested newts were required.

Dormice

3.12 The likelihood of encountering dormice on the site was considered to be '*negligible*' and no further survey with regards to dormice was required.

4.0 HABITAT ENHANCEMENT

4.1 The habitat enhancement proposals have been detailed in the following drawings:

- *LLD1275-LAN-DWG-200-204 - Detailed Planting Plans;*
- *LLD1275-LAN-DWG-100 – Hard and Soft General Arrangement Drawing.*

4.2 In accordance with Paragraph 109 of *National Planning Policy Framework*, which recognises that the planning system should contribute to and enhance the natural environment, a series of habitat enhancement measures are outlined below which would be incorporated into the design scheme.

4.3 The objective:

Enhance biodiversity across the site with the introduction of new wildlife features, such as: native species tree, shrub and hedgerow planting; flowering grassland areas; flowering amenity grassland; planting areas including ornamental tree and shrub planting; and the installation of bird and bat boxes.

4.4 Habitat enhancements within the proposed landscape scheme are as follows:

- *P1 – Existing Mature Trees and Vegetation;*
- *P2 – Proposed Native and Ornamental Specimen Tree Planting;*
- *P3 – Proposed Native Hedgerow Planting;*
- *P4 – Proposed Native Shrub Planting;*
- *P5 – Proposed Ornamental Hedgerow Planting;*
- *P6 – Proposed Flowering Grassland Areas;*
- *P7 – Proposed Flowering Amenity Grassland;*
- *P8 – Proposed Feature Ornamental Planting;*
- *P9 – Proposed Installation of Bird Boxes;*
- *P10 – Proposed Installation Bat Boxes.*

P1 - Existing Mature Trees and Vegetation

4.5 The existing site trees and vegetation have been surveyed for condition. For the purposes of the development proposal, all tree protection measures shall be in accordance with the arboricultural package produced by *Lizard Landscape Design and Ecology*. It is good management practice to maintain regular inspections of the arboricultural resource on site – it is the responsibility, in law, of the land manager to take reasonable care to avoid acts or omissions that cause a reasonably foreseeable risk of injury to persons or property.

<https://www.forestry.gov.uk/safetreemanagement>

P2 – Proposed Native and Ornamental Specimen Tree Planting

4.6 Native species tree planting is proposed to the open space areas and incorporated within areas of native shrub to the site boundaries. Additionally, a coordinated scheme of ornamental species trees is proposed to several areas of open space as well as throughout the built development and the street scene, incorporated within feature planting areas containing ornamental shrub, groundcover and accent planting. Together with the other proposed enhancements, tree planting would provide habitat and foraging opportunity for species of birds, bats, small mammals, and invertebrates.

P3 – Proposed Native Hedgerow Planting

4.7 Native species hedgerow planting is proposed to the site edges.

P4 – Proposed Native Shrub Planting

4.8 A mix of native species shrub planting is proposed to the site edges. Together with native hedgerow planting, the soft landscape proposals would aim to provide an effective ecological corridor through the site and would provide valuable habitat and food source for local wildlife.

P5 – Proposed Ornamental Hedgerow Planting

4.9 Ornamental species hedgerow planting is proposed to edge areas of open space, as well as to the frontages of several residential properties. As well as providing delineation between amenity areas, access roads and residential front gardens, the hedgerow planting would be wildlife friendly, comprising flowering shrubs providing a food source for invertebrates and further potentially increase the biodiversity across the site.

P6 – Proposed Flowering Grassland

4.10 The landscape proposals would seek to establish areas of UK provenance wildflower grassland meadows. The areas of wildflower meadow would offer plant diversity which would attract insects and other invertebrates including butterflies, bees, spiders and millipedes, as well as birds and mammals.

P7 – Proposed Flowering Amenity Grassland

4.11 A flowering lawn mix would be sown to the open space areas of the site, abutting areas of flowering grassland as specified above. The mix would contain slow growing grasses with a selection of wild flowers which would be beneficial to wildlife and respond well to the regular mowing which would be anticipated to these areas.

P8 – Proposed Feature Ornamental Planting

4.12 Ornamental Planting through the residential part of the development has been designed to be wildlife friendly comprising flowering shrubs and herbaceous accent planting. Many of the selected species feature on the RHS 'Perfect for Pollinators' plant list to provide a food source for invertebrates and further potentially increase the biodiversity across the site.

P9 – Proposed Installation of Bird Boxes

4.13 Additional bird nesting provision shall be incorporated into the design proposals. Bird boxes are to be installed at appropriate locations on new buildings. These would provide a nesting resource for a variety of species including sparrow.

P10 - Proposed Installation of Bat Boxes

4.14 A bat box would provide roosting opportunity for a variety of species including Common pipistrelle bats. This would be sited between the southern and eastern aspects of a proposed building.

4.15 For locations of the proposals stated in, P9 and P10 refer to drawing: *LLD1275-LAN-DWG-100 – Hard and Soft General Arrangement Drawing*.

5.0 HABITAT AND LANDSCAPE MANAGEMENT PRESCRIPTIONS

5.1 All Management prescriptions for the proposed development site are illustrated on the following drawings:

- *LLD1275-LAN-DWG-200-204 - Detailed Planting Plans;*
- *LLD1275-LAN-DWG-100 – Hard and Soft General Arrangement Drawing.*

5.2 P1 - Existing Mature Trees and Vegetation

General - Protection and Retention of Existing Vegetation During Construction

5.2.1 The Contractor shall exercise extreme care when performing operations beneath the canopy of existing mature trees and vegetation designated for protection and avoid at all times damage to the roots, trunk and branches. All trees to be retained on site shall be protected with fencing erected around the area of mature vegetation in accordance with BS 5837; 2012 – Trees in Relation to Design, Demolition and Construction – Recommendations. The fencing is to be erected according to the specified and dimensioned Root Protection Areas in accordance with the Tree Protection Plan (LLD1275-ARB-DWG-002- TRPP Page 1 and 2).

5.2.2 P1 - Existing Mature Trees and Vegetation - Management Prescriptions

- *All existing trees are to be inspected every year for dead, dying, or damaged branches; including any diseased wood or wounds;*
- *Any dead, dying, or damaged branches should be cleaned from the tree trunk by a Qualified Tree Surgeon, in accordance with BS3998:2010 Tree work; Recommendations removing all dead wood back to the tree trunk;*
- *The condition of the existing mature trees to the development site boundaries shall need to be monitored each year, in order to identify any dead or dying branches within the existing canopy or any areas of significant die-back.*

5.3 P2 - Proposed Specimen Native and Ornamental Tree Planting

Proposal

5.3.1 The proposals incorporate a coordinated scheme of native and ornamental specimen tree planting.

Sizes:

Native:

- 12 - 14 cm girth size; 3.50 – 4.00 m height; Standard (Heavy) stock;
- 16 - 18 cm girth size; 4.50 – 5.00 m height; Standard (Extra Heavy) stock;

Ornamental:

- 14 - 16 cm girth size; 4.00 – 4.50 m height; Standard (Extra Heavy) stock;
- 18 - 20 cm girth size; 4.50 – 5.00 m height; Standard (Extra Heavy) stock;

Preparation

5.3.2 For trees planted in grassland; all grass seeded areas shall be cut before any pit preparation is undertaken to a maximum height of 75 mm. All tree planting pits are to be cut by removing the existing grass or vegetation. Planting pits shall be dug by hand and any major existing tree or shrub roots found within the pits shall not be severed prior to seeking arboricultural advice (*in accordance with BS5837:2012*).

5.3.3 Refer to '*BS 8545: 2014 - Trees: from Nursery to Independence in the Landscape - Recommendations*' for details on tree planting. Any source of topsoil (including soils to be retained on site), whether natural or manufactured, should be investigated carefully with respect to its suitability for the intended use, and certified in accordance with *BS 3882:2015*.

Tree Planting

5.3.4 Proposed specimen tree planting shall be in accordance with the following guidance:

- *Planting pits should be excavated to the same depth as the tree root system with the root flare / root collar to be level with the surface of surrounding soil;*
- *The planting pit shall have a slightly raised centre and be broken up to a depth of 150 mm. The width of the tree pit should be excavated to be 150 - 300 mm larger than the root ball or container;*
- *If the tree pit sides are compacted, smooth or smeared they should be scarified to loosen the soil. During excavation the soil should be separated into topsoil and subsoil in order that during backfilling the soil can be replaced in the same order;*
- *The trees root system should be lightly wetted prior to planting;*
- *The tree should be planted at the correct depth ensuring the root flare is just visible above the soil level and allowance made for any settling of soil levels;*
- *Backfilling should be added gradually in layers of 150mm ensuring the tree is held upright;*
- *Each layer should be firmed down to remove air pockets within the soil and to aid tree stability, but not to excessively compact the soil. The final layer of backfilling should not be consolidated, but should be of a sufficient depth to allow for settlement and mulching.*

Water

5.3.5 In order to ensure successful establishment, the newly planted trees must be watered for a minimum of three years following the planting. Watering should occur weekly throughout the early to late summer period; May / June / July / August / September with 20 litres applied at each watering visit. Thereafter, water as deemed necessary only where natural precipitation levels are insufficient in order to maintain healthy dense growth.

Tree Staking

5.3.6 Stakes are an aid to the successful establishment of new tree planting; ensuring the tree retains good root / soil contact, which might be otherwise compromised through lateral movement of the canopy normally caused by strong wind.

Long Double Staking

5.3.7 Tree staking is to be Long Double Staking for the following tree stock sizes:

- 12 - 14 cm girth size; 3.50 – 4.00 m height; Standard (Heavy) stock;
- 16 - 18 cm girth size; 4.50 – 5.00 m height; Standard (Extra Heavy) stock;
- 14 - 16 cm girth size; 4.00 – 4.50 m height; Standard (Extra Heavy) stock.

5.3.8 Stakes shall be driven vertically to a minimum of 300mm into the bottom of the pit on either side of tree position before planting. The stakes should be placed to allow the fixing of the cross bar to the windward side of the tree and as close to the stem as possible. Backfilling should seek to consolidate material around stakes. The stake shall extend above ground level to a maximum 600mm. The crossbar shall be no more than 40mm away from the stem of the planted tree and the tree shall be tied firmly but not rigidly to the cross bar with one adjustable tie plus spacer within 50mm of the top of the stake, and secured in place with a 25 mm long galvanised clout nail.

5.3.9 The tree stakes should be removed following successful establishment, whereby the roots have extended within the surrounding soils and the tree is self-supporting. Failure to remove the tree stakes may lead to stem abrasion and potential failure.

Underground Guying for 18 - 20 cm girth size; Standard (Extra Heavy) trees

5.3.10 Tree securement is to be by an underground guying system for the following tree stock size:

- 18 - 20 cm girth size; 4.50 – 5.00 m height; Standard (Extra Heavy) stock.

5.3.11 The underground guyed trees shall be centrally positioned within the excavated tree planting pit to the correct height – the tree is positioned correctly and vertically prior to tightening guy line tensioners. The rootball shall be secured with 3 no. S41 anchors with delta links, 4.0 metres of 25mm strap; 1 no. ratchet tensioner and 3no. Plati-Mats; as specified by Platipus Anchors Limited (Tel: +44 (0) 1737 762300). Backfilled to consolidate material.

Tree Ties

5.3.12 All rubber tree ties should be checked bi-annually; Spring / Autumn. Tree ties should accommodate the tree girth and should not draw the tree stake into the trunk of the tree, potentially causing abrasion. Tree ties should be fitted so that the tree trunk and tree stake are located comfortably side by side and aligned. Replace and refit rubber tree ties / tree stakes and tree guards if necessary.

Pruning

5.3.13 Trees should be checked bi-annually for shape, form and should be formatively pruned accordingly during the Spring and Autumn, whilst they are still in leaf. Pruning tools should be clean and sterile to prevent potential spread of disease between specimens; and carried out in such a manner as to avoid excessive damage / wounding which would be detrimental to the health and vigour of the tree.

Weeding

5.3.14 A 500 - 700mm diameter weed / grass-free zone should be achieved by either hand-weeding or application of a non-residual herbicide. This should be undertaken bi-annually; Spring / Autumn. The use of a suitable mulch may additionally assist.

Mulching

5.3.15 Tree planting may be located within mulched planting beds. Beds should be topped up with a bark mulch to assist with the suppression of weeds to these planting areas. A mulch top-up should be undertaken and checked annually in the autumn. Mulch levels should be maintained at a consistent depth of 75mm.

Litter Collection

5.3.16 Tree planting areas should be checked on a fortnightly basis for litter and leaf collection. All planting areas should be maintained clear of litter.

Tree Works

5.3.17 The tree is to be inspected every year during the spring for dead, dying, or damaged branches; including any diseased wood or wounds. Any dead, dying, or damaged branches should be removed from the tree trunk by a Qualified Tree Surgeon, removing all dead wood back to the tree trunk; the works shall be conducted in accordance with *BS3998: 2010 Tree Work – Recommendations*.

Defects

5.3.18 Replace all failures: irrecoverably damaged, diseased / dead trees within the next planting season with stock of similar size and species.

5.3.19 P2 – Proposed Specimen Tree Planting Management Prescriptions:

- **Watering:** Water Tree Planting weekly throughout May / June / July / August / September; and as deemed necessary after the establishment period, only where natural precipitation levels are insufficient; provide 20 ltr / tree / visit;
- **Tree Stakes and Tree Ties:** Check position and fitting of tree stakes and rubber tree ties; check bi-annually in Spring / Autumn and after strong winds; remedy and replace where necessary;
- **Pruning:** Prune dead and damaged branches bi-annually; Spring and Autumn whilst the trees are still in leaf;
- **Weeding:** Maintain a weed / grass free zone at the base of the tree; weeding should be undertaken bi-annually; Spring / Autumn;
- **Mulching:** Trees should be maintained with a mulch zone 500 – 700mm diameter to the base of the trees. Mulch layer to be checked annually; maintained at a consistent depth of 75mm;
- **Defects:** Replace failed / dead / and irrecoverably damaged trees.

5.4 P3 – Proposed Native Hedgerow Planting

Proposal

5.4.1 The Native species hedgerow planting is proposed to the site edges.

Sizes:

- Native hedgerow planting; 60 - 80 cm height; Multi- Branched.

Preparation

5.4.2 Hedgerow transplants shall be planted in mulched beds; flowering grassland; or grass seeded areas, which should be kept clear of all weeds at the base of the plant material.

Hedgerow Planting

5.4.3 The size of hedgerow planting pits shall be as follows;

- Transplant 300 x 300 x 300mm;
- Or 20% wider in any direction than the root ball whichever is the greater.

5.4.4 The contractor shall form a planting pit for bare rootstock to a sufficient depth and width to allow roots to spread without cutting or bending. The hedgerow plant material is to be inserted into the planting pit, firming the soil by treading with the heel, ensuring that the plant material remains in an upright position.

Mulching

5.4.5 Hedgerow plant material beds should be topped up with an ornamental bark mulch to assist with the suppression of weeds to these hedgerow planting areas. A mulch top-up should be undertaken and checked annually in the Autumn. Mulch levels should be maintained at a consistent depth of 75mm.

Watering

5.4.6 To ensure establishment, the plants should be watered fortnightly throughout the summer season in the first year of establishment during May / June / July / August / September. Quantity of water to be 10 litres per metre square during each visit. Thereafter, water as necessary where natural precipitation levels are insufficient in order to maintain healthy dense growth.

Trimming / Pruning

5.4.7 Hedge planting should be lightly trimmed to maintain shape and form. Light trimming shall encourage vigorous and dense growth. Formative trimming during the first three years of establishment should be undertaken annually during the late Winter (February). Long-term maintenance pruning should be carried at the same time of the year to avoid bird nesting season and enable successful flowering and fruit formation to encourage local wildlife.

Weeding

5.4.8 Hedge planting areas should be kept clear of all weeds at the base of the plant material. The hedge planting should be kept weed free by hand weeding twice a year in the Spring and Autumn.

Litter Collection

5.4.9 All hedge planting areas should be checked on a fortnightly basis for litter and leaf collection. All hedge planting areas should be cleared of litter; all litter to be removed from the site.

Long-term Management

5.4.10 Where the hedgerow is a newly established feature the management objective for the hedgerow planting should be to achieve a dense hedgerow of approximately 1.8 metres height.

Defects

5.4.11 Replace all dead / dying plant material. Replacement planting should be undertaken on an annual basis.

5.4.12 P3 - Proposed Native Mixed Species Hedgerow Planting Management Prescriptions:

- ***Mulching:*** Maintain mulching to hedge planting areas at a consistent depth of 75 mm. Mulch layer to be checked annually; Autumn;
- ***Watering:*** Water fortnightly during May / June / July / August / September for the first year of establishment; and as deemed necessary after the establishment period, only where natural precipitation levels are insufficient; provide 10 ltr/ m²/ visit;
- ***Pruning:*** Carry out formative pruning annually; Prune in February;
- ***Weeding:*** Maintain hedge planting areas as weed free; check and weed bi-annually, Spring / Autumn;
- ***Litter Collection:*** Litter collection on a fortnightly basis;
- ***Defects:*** Replace all dead / dying plant material. Replacement planting should be undertaken on an annual basis.
- ***Long-term Management:*** Maintain hedgerow at 1.8m height; check annually; Prune in February.

5.5 P4 – Proposed Native Shrub Planting

Proposal

5.5.1 A mix of native species shrub planting is proposed to the site edges. Together with native hedgerow planting, the soft landscape proposals would aim to provide an effective ecological corridor through the site and would provide valuable habitat and food source for local wildlife. The planting would comprise the following species and stock sizes:

- *Cornus sanguinea*; (60 - 80cm height; bare root; transplants; 1.0m centres);
- *Corylus avellane*; (60 - 80cm height; bare root; transplants; 1.0m centres);
- *Crataegus monogyna*; (60 - 80cm height; bare root; transplants; 1.0m centres);
- *Sambucus nigra*; (60 - 80cm height; bare root; transplants; 1.0m centres);
- *Viburnum lantana*; (60 - 80cm height; bare root; transplants; 1.0m centres).

Native Shrub Planting

5.5.2 The size of shrub planting pits shall be as follows;

- *Whips / Transplant / Shrubs 300 x 300 x 300mm;*
- *Or 20% wider in any direction than the root ball whichever is the greater.*

5.5.3 The contractor shall form a planting pit for bare rootstock to a sufficient depth and width to allow roots to spread without cutting or bending. The shrub plant material is to be inserted into the planting pit, firming the soil by treading with the heel, ensuring that the plant material remains in an upright position.

Weeding

5.5.4 Native shrub plant material would be planted in planting pits, which should be kept clear of all weeds at the base of the plant material. The native shrub plant material should be kept weed free by either hand weeding or application of a non-residual herbicide application, taking care not to spray or scorch existing plant material. The Native Shrub plant material to the site boundaries should be cleared of all weeds bi-annually; Spring and Autumn.

Pruning

5.5.5 During the first three years of establishment the native shrub transplants should be lightly trimmed to maintain shape and form. Light trimming should encourage vigorous and dense growth. Trimming during the first three years of establishment should be undertaken annually; during the Spring to maintain size, shape, and vigorous growth.

Watering

5.5.6 In order to establish the native shrub planting, the transplants should be watered fortnightly throughout the summer season in the first year of initial establishment during May / June / July / August / September. Quantity of water to be 10 litres per metre square during each visit, for the first initial year of establishment only.

Long-Term Management

5.5.7 Long-term, the management objective for the native shrub plant material should be to achieve a boundary screen / habitat area approximately 2.5 to 3.0 metres height. After three years of establishment and light trimming, the Native Understory Shrub plant material should be managed on a rotational basis. Hard pruning only some of the plants annually, over a 3 - 4-year management period, would mean fruit would be retained as much as possible.

5.5.8 Native shrub plant material should be trimmed in winter months, preferably February, to retain fruit for wildlife, unless ground conditions prevent this.

5.5.9 Native shrub planting areas once established are to be thinned on a routine basis. The proposed native shrub planting mix includes a number of larger shrub species. The native shrub species should be selectively thinned out to allow a selection of shrub specimens to emerge and establish as the dominant understory specimens. Selective shrub thinning should be undertaken every five years to assist establishment.

Litter Collection

5.5.10 All planting areas should be checked on a regular basis for litter and leaf collection. All hedge planting areas should be cleared of litter; all litter to be removed from the site.

Defects

5.5.11 Replace all dead / dying plant material. Replacement planting should be undertaken on an annual basis.

5.5.12 P4 - Native Shrub Planting Management Prescriptions

- **Weeding;** mulched planting pits to be kept clear of weeds to the base of each plant. Planting pits to be cleared of weeds bi-annually; Spring and Autumn;
- **Pruning;** during the first three years of establishment the native shrubs should be lightly trimmed to encourage vigorous and dense re-growth. Trimming during the first three years of establishment should be undertaken annually; during January or February, to retain fruit for wildlife.
- **Watering;** transplants should be watered fortnightly throughout the summer season in the first year of establishment during May / June / July / August / September. Quantity of water to be 10 litres per metre square during each visit;
- **Litter Collection;** Collect litter from planting areas on a fortnightly basis;
- **Defects;** Replace all dead / dying plant material. Replacement planting should be undertaken on an annual basis.
- **Long-Term Management;** Native Shrub plant material should be trimmed in winter months, preferably January or February, to retain fruit for wildlife, unless ground conditions prevent this;
- **Long-Term Management;** Hard-Trimming; after three years of establishment and light trimming, shrub plant material should be maintained to a maximum height of 2.5 – 3.0 metres; Shrub plant material should be managed on a rotational basis. Hard pruning only some of the plants annually, over a 3 - 4 year management period, would mean fruit would be retained as much as possible;
- **Long-Term Management;** Thinning; planting areas to be thinned on a routine basis. Native shrub species should be selectively thinned out. Selective shrub thinning should be undertaken every five years.

5.6 P5 – Proposed Ornamental Hedgerow Planting

Proposal

5.6.1 Ornamental species hedgerow planting is proposed to edge areas of open space, as well as to the frontages of several residential properties. As well as providing delineation between amenity areas, access roads and residential front gardens, the hedgerow planting would be wildlife friendly, comprising flowering shrubs providing a food source for invertebrates and further potentially increase the biodiversity across the site.

5.6.2 Ornamental evergreen hedgerow stock shall be:

- *Choisya ternata*; *Container grown stock*;
- *Cornus alba*; *Container grown stock*;
- *Escallonia 'Apple Blossom'*; *Container grown stock*;
- *Griselinia littoralis*; *Container grown stock*.

Preparation

5.6.3 Any source of topsoil (including soils to be retained on site), whether natural or manufactured, should be investigated carefully with respect to its suitability for the intended use. The supplier should consult the customer regarding the intended use of the topsoil, in accordance with *BS 3882:2015*.

Mulching

5.6.4 Planting areas are to be mulched with an ornamental bark mulch, checked and maintained to a consistent depth of 75mm. The mulch cover should assist with suppressing weed growth and reduce evaporation from soil. Mulch layer should be checked and topped up annually in the Autumn.

Watering

5.6.5 To ensure establishment, the plants should be watered fortnightly throughout the summer season in the first three years of establishment during May / June / July / August / September. Quantity of water to be 10 litres per metre square during each visit. Thereafter, water as necessary where natural precipitation levels are insufficient in order to maintain healthy dense growth.

Trimming / Pruning

5.6.6 Pruning / trimming shall take place just before they are ready to produce a new flush of growth. By doing this they are able to feed normally through the winter and are able to cope better if the weather turns really cold and inclement; Prune / trim in March / April.

Weeding

5.6.7 Hedge planting areas should be maintained weed free throughout the maintenance period. It is recommended that hedge planting areas should be cleared of all weed growth either by hand weeding or by the application of a non-residual herbicide application. Maintain planting areas weed free from Spring to Autumn; March / April / May / June / July / August / September / October.

Litter Collection

5.6.8 All ornamental hedgerow planting areas should be checked on a regular basis for litter and leaf collection. All hedge planting areas should be cleared of litter; all litter to be removed from the site.

Long-Term Management

5.6.9 Where the hedgerow is a newly established feature the management objective for the hedgerow planting should be to achieve a dense evergreen hedgerow of approximate heights:

- *Choisya ternata* – 1.2 metres;
- *Cornus alba* - 1.2 metres;
- *Escallonia* - 1.2 metres;
- Griselinia littoralis* - 1.2 metres.

Defects

5.6.10 Replace all dead / dying plant material. Replacement planting should be undertaken on an annual basis.

5.6.11 P5 - Proposed Ornamental Single Species Hedgerow Planting Management
Prescriptions:

- **Watering:** Water all plant material fortnightly during the summer season for the first three years of establishment and as deemed necessary after the establishment period where natural precipitation levels are insufficient; provide 10 ltr/ m2/ visit;
- **Pruning / trimming:** Trim hedge to shape in March / April;
- **Weeding:** Maintain planting areas weed free; Spring to Autumn. Hand-weed throughout the Spring / Summer; March / April / May / June / July / August / September / October; repeat where necessary;
- **Mulching:** Organic Mulch Top Up; Maintain organic mulch to all planting areas; check annually; Autumn.
- **Litter Collection:** Collect litter from planting areas on a fortnightly basis.
- **Defects:** Replace all dead / dying plant material. Replacement planting should be undertaken on an annual basis.
- **Long-term management:** Maintain ornamental hedgerows at 1.2m height; check annually; Prune in March / April.

5.7 P6 – Proposed Flowering Grassland

Proposal

5.7.1 The landscape proposals would seek to establish areas of UK provenance wildflower grassland meadow areas. The areas of wildflower meadow would offer plant diversity which would attract insects and other invertebrates including butterflies, bees, spiders and millipedes, as well as birds and mammals. The flowering grassland; the mixture / application method; and establishment and management prescriptions (through reference to guidance on Emorsgate Seeds website) are outlined below:

- *Edging open space areas: EM7 – Meadow Mixture for Sandy Soils.*

Preparation of Seedbed for Flowering Grassland – Generally

5.7.2 Aim to control weeds and produce a good quality seed bed before sowing. Sandy soils are usually infertile, well drained and easy to work. Remove weeds using repeated cultivation or a herbicide. Plough or dig to bury the surface vegetation, harrow or rake to produce a medium tilth, and roll, or tread, to produce a firm surface.

Sowing - EM7 – Meadow Mixture for Sandy Soils

5.7.3 Sow in the autumn to give sown species a chance to establish and root before the dry summer months arrive. The seed shall be surface sown and can be applied by machine or broadcast by hand. Do not incorporate or cover the seed, but firm in with a roll, or by treading, to give good soil/seed contact.

First Year Management - EM7 – Meadow Mixture for Sandy Soils

5.7.4 Most sown meadow wild flower and grass species are perennial; they will be slow to germinate and grow and will not usually flower in their first growing season. There will often be a flush of annual weeds from the soil in the first growing season which may grow up and obscure the meadow seedlings beneath. This annual weed growth is easily controlled by topping or mowing. Mow newly sown meadows regularly throughout the first year of establishment to a height of 40-60mm, removing cuttings if dense. This will control annual weeds and help maintain balance between faster growing grasses and slower developing wild flowers. Residual perennial weeds shall be dug out or spot treated.

Management once established - EM7 – Meadow Mixture for Sandy Soils

5.7.5 In the second and subsequent years EM7 grassland is not cut from spring through to late July/August to give the sown species an opportunity to flower. After flowering in July or August take a 'hay cut': cut back with a scythe, petrol strimmer to 50mm. Leave the 'hay' to dry and shed seed for 1-7 days then remove from site. Mow the re-growth through to late autumn / winter to 50mm, and again in spring if needed.

Litter Collection

5.7.6 Collect litter from wildflower areas on a fortnightly basis.

5.7.7 P6 – Flowering Grassland Management Prescriptions

- **Seed Bed Preparation:** Control weeds and produce a good quality seed bed before sowing in; Autumn;
- **Sowing:** Sow seed in Autumn;
- **Management Year 1:** Mow newly sown meadows regularly throughout the first year of establishment to a height of 40-60mm, removing cuttings if dense;
- **Management Once Established:** After flowering in July or August take a 'hay cut' to 50mm;
- **Arisings:** The 'hay' shall be left to dry and shed seed for 1-7 days before it is completely removed from the site. For all other cuts, arisings are to be removed immediately after cutting;
- **Litter Collection:** Collect litter from wildflower areas on a fortnightly basis.

5.8 P7 – Proposed Flowering Amenity Grassland

Proposal

5.8.1 A flowering lawn mix would be sown to the open space areas of the site, abutting areas of flowering grassland as specified above. The mix would contain slow growing grasses with a selection of wild flowers which would be beneficial to wildlife and respond well to the regular mowing which would be anticipated to these areas. The flowering grassland; the mixture / application method; and establishment and management prescriptions (through reference to guidance on Emorsgate Seeds website) are outlined below:

- Open space areas: *EL1 – Flowering Lawn Mixture.*

Preparation of Seedbed for Flowering Lawn – Generally

5.8.2 To prepare a seed bed first remove weeds using repeated cultivation or a herbicide. Then dig to bury the surface vegetation, harrow or rake to produce a medium tilth, and roll or tread to produce a level firm surface.

Sowing - Flowering Lawn

5.8.3 Sow seed in the autumn. The seed shall be surface sown and can be applied by machine or broadcast by hand. The seed shall be surface sown and can be applied by machine or broadcast by hand. Do not incorporate or cover the seed, but firm in with a roll, or by treading, to give good soil/seed contact.

First Year Management - EL1 - Flowering Lawn Mixture

5.8.4 The wild flower and grass species in this mix are perennial; they will be slow to germinate and grow and will not usually flower in their first growing season. There will often be a flush of annual weeds from the soil in the first growing season. This annual weed growth is easily controlled by repeated mowing.

5.8.5 Newly sown flowering lawns shall be mown regularly (every 7 -10 days during growing season) throughout the first year of establishment. Cut to a height of 40-60mm, removing cuttings if dense. This will gradually develop a good sward structure, help maintain balance between faster growing grasses and slower developing wild flowers, and control annual weeds. Carefully dig out or spot treat any residual perennial weeds such as docks.

Management Once Established - EL1 - Flowering Lawn Mixture

5.8.6 Mow regularly as a lawn but not too short (25-40mm). To permit flowering, mowing can be relaxed from late June. Cut again when the sward gets untidy (after 4-8 weeks). Mowing may be suspended earlier in the year to allow cowslips to flower. Heavy quantities of cuttings should be collected and removed from site.

Litter Collection

5.8.7 Collect litter from wildflower areas on a fortnightly basis.

5.8.8 P7 – Flowering Amenity Grassland Prescriptions:

- **Seed Bed Preparation:** Control weeds and produce a good quality seed bed before sowing in; Autumn;
- **Sowing:** Sow seed in Autumn;
- **Management Year 1:** Mow newly sown flowering lawns regularly (every 7-10 days during growing season). Cut to a height of 40-60mm, removing cuttings if dense;
- **Management Once Established:** Mow regularly as a lawn but not too short (25-40mm). To permit flowering, mowing can be relaxed from late June. Cut again when the sward gets untidy (after 4-8 weeks);
- **Arisings:** Heavy quantities of cuttings should be collected and removed from site.
- **Litter Collection:** Collect litter from Flowering Lawn areas on a fortnightly basis.

5.9 P8 – Proposed Feature Ornamental Planting

Proposal

5.9.1 Ornamental Planting through the residential part of the development has been designed to be wildlife friendly comprising flowering shrubs and herbaceous accent planting. Many of the selected species feature on the RHS 'Perfect for Pollinators' plant list to provide a food source for invertebrates and further potentially increase the biodiversity across the site.

Mulching

5.9.2 Planting areas are to be mulched with an ornamental bark mulch, checked and maintained to a consistent depth of 75mm. The mulch cover should assist with suppressing weed growth and reduce evaporation from soil. Mulch layer should be checked and topped up annually in the Autumn.

Watering

5.9.3 To ensure establishment, the planting material should be watered fortnightly throughout the summer season in the first two years of establishment during May / June / July / August / September; 10 litres per metre square should be applied fortnightly throughout the summer season at each maintenance visit. Thereafter, water as required necessary, only where natural precipitation levels are insufficient to maintain healthy dense growth.

Pruning

5.9.4 Shrub plant material should be lightly trimmed and pruned to maintain vigorous and dense growth during early establishment. Thereafter, pruning and trimming should be undertaken annually, according to individual species requirements, generally this is as follows:

- *Shrubs flowering in Winter – prune in Spring;*
- *Shrubs flowering in Spring and early Summer – prune immediately after the flowering period;*
- *Shrubs flowering in Summer and Autumn – prune back to old wood in Winter.*

Weeding

5.9.5 Planting areas should be maintained weed free throughout the maintenance period. It is recommended that shrub planting areas should be cleared of all weed growth either by hand weeding or by the application of a non-residual herbicide application. Maintain planting areas weed free from Spring to Autumn; March / April / May / June / July / August / September / October.

Litter Collection

5.9.6 All planting areas should be checked on a regular basis for litter and leaf collection. All hedge planting areas should be cleared of litter; all litter to be removed from the site.

5.9.7 P8 - Proposed Feature Planting Area Management Prescriptions:

- **Watering:** Water all plant material fortnightly during the summer season for the first year of establishment and as deemed necessary after the establishment period where natural precipitation levels are insufficient; provide 10 ltr/ m2/ visit;
- **Pruning:** Lightly prune plant materials to all soft landscape areas annually; Winter-flowering shrubs – prune in Spring; Shrubs flowering in Spring and early Summer – prune immediately after the flowering period; Shrubs flowering in Summer and Autumn – prune back to old wood in Winter;
- **Weeding:** Maintain planting areas weed free; Spring to Autumn. Hand-weed throughout the Spring / Summer; March / April / May / June / July / August / September / October; repeat where necessary;
- **Mulching:** Organic Mulch Top Up; Maintain organic mulch to all planting areas; check annually; Autumn;
- **Litter Collection:** Collect litter from planting areas on a fortnightly basis;
- **Defects:** Replace all dead / dying plant material. Replacement planting should be undertaken on an annual basis.

5.10 P9 - Proposed Installation of Bird Boxes

Proposal

5.10.1 Additional bird nesting provision shall be incorporated into the design proposals. For locations of bird boxes refer to the following drawing: *LLD1275-LAN-DWG-100 – Hard and Soft General Arrangement Drawing*.

Specification

5.10.2 The following types of bird nesting boxes shall be incorporated

- 4 no. Avianex (1MR); Manufacturer: Schwegler; Available from: NHBS Ltd; Web: <https://www.nhbs.com/>; Tel: 01803 865913; Size: Height: 270mm; Width: 190mm; Depth: 230mm; Entrance diameter: 32mm; Material: Woodcrete.

Installation

5.10.3 All boxes shall be installed as per manufactures instructions.

Maintenance

5.10.4 One annual clean in October / November. It is important not to clean out nest boxes before August as they may still be occupied. Contents of the boxes shall be removed, scattering them on the ground some way from the box to help prevent parasites re-infesting the nest box. A small brush or scraper shall be used to remove debris from the corners. Boiling water shall be used to kill any parasites remaining in the box.

5.10.5 P8 - Proposed Installation of Bird Boxes Management Prescriptions

- *Cleaning – One annual clean in the October / November.*

5.11 P10 - Proposed Installation Bat Boxes

Proposal

5.11.1 Additional bat nesting provision shall be incorporated into the design proposals. For locations of bat boxes refer to the following drawing: *LLD1275-LAN-DWG-100 – Hard and Soft General Arrangement Drawing.*

Specification

5.11.2 The following types of bat nesting boxes shall be incorporated:

- *1 no. Enclosed Bat Box (B); Manufacturer: Ibstock Brick Ltd; Web: <http://www.ibstock.com>; Tel: 0844 800 4576; Size Length: 215mm; Height 65mm;*

Installation

5.11.3 All bat boxes shall be installed as per manufactures instructions.

Maintenance

5.11.4 No maintenance required. However, if the bat boxes do require inspection, this should be carried out by a licensed bat ecologist.

6.0 LANDSCAPE MAINTENANCE AND MANAGEMENT SCHEDULE

Operation	Frequency	Year 1												Year 2	Year 3	Year 4	Year 5	
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec					
<i>P1 – Existing Trees / Vegetation</i>																		
Monitoring of existing trees	1 x year																	
<i>P2 – Proposed Specimen Tree Planting</i>																		
Watering	1 x every week																	
Weeding	2 x year																	
Mulching	1 x year																	
Checking Tree Ties / Stakes	2 x year																	
Pruning	2 x year																	
Litter Collection	1 x every 2 weeks																	
<i>P3 – Proposed Native Hedgerow Planting</i>																		
Watering	1 x every 2 weeks																	
Weeding	2 x year																	
Mulching	1 x year																	
Litter Collection	1 x every 2 weeks																	
Pruning	1 x year																	
Long-term Management	1 x year															Maintain to 1.8m height thereafter		

Operation	Frequency	Year 1												Year 2	Year 3	Year 4	Year 5
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
P4 – Proposed Native Shrub Planting																	
Watering	1 x every 2 weeks					x	x	x	x	x				As demanded	As demanded		
Weeding	2 x year			x					x				x	x	x	x	
Litter Collection	1 x every 2 weeks	x	x	x													
Pruning	1 x year		x										x	x			
Long-term Management	1 x year		x												Maintain to 2.5m to 3.0 height thereafter		
P5 – Proposed Ornamental Hedgerow Planting																	
Watering	1 x every 2 weeks				x	x	x	x	x				x	x	As demanded	As demanded	
Weeding	2 x year			x			x	x	x	x							
Mulching	1 x year									x			x	x	x	x	
Litter Collection	1 x every 2 weeks	x	x	x													
Pruning	1 x year			x	x								x	x			
Long-term Management	1 x year			x	x									Maintain to 1.2m to height thereafter			

Operation	Frequency	Year 1												Year 2	Year 3	Year 4	Year 5
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
P6 – Proposed Flowering Grassland																	
EM7 - Preparation	Dig in the autumn										✗						
EM7 - Sowing	Sow in the spring										✗						
EM7 - Management Year 1	Cut regularly in Year 1					✗	✗	✗	✗	✗	✗						
EM7 - Management Once Established	Cut 1 x a year							✗						✗	✗	✗	✗
P7 – Proposed Flowering Amenity Grassland																	
EL1 - Preparation	Prepare in the autumn										✗						
EL1 - Preparation / Sowing	Sow in the spring										✗						
EL1 - Management Year 1	Mow every 7 – 10 days				✗	✗	✗	✗	✗	✗	✗						
EL1 - Management Once Established	Mow regularly as lawn				✗	✗	✗	✗	✗	✗	✗			✗	✗	✗	✗
Litter Collection	1 x every 2 weeks	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗

Operation	Frequency	Year 1												Year 2	Year 3	Year 4	Year 5
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
P8 – Proposed Feature / Ornamental Planting																	
Pruning: Species flowering in Winter	1 x every 2 years				x									x	x	x	x
Pruning: Species flowering between March and July	1 x every 2 years				x	x	x							x	x	x	x
Pruning: Species flowering between July and October	1 x every 2 years													x	x	x	x
Weeding	1 x month			x			x	x	x	x							
Debris Removal	1 x month				x	x	x	x	x					x	x	x	x
Mulching	1 x year									x				x	x	x	x
Watering	1 x every 2 weeks				x	x	x	x	x	x			x	As required	As required	As required	
Litter Collection	1 x every 2 weeks	x	x	x													
P9 – Proposed Installation of Bird Boxes																	
Cleaning	Once before Sowing										x			x	x	x	x
P10 – Proposed Installation of Bat Boxes																	
No maintenance required	If boxes require inspection this should be carried out by a licensed bat ecologist																