Harworth

Gateway 36, Rockingham
Unit 7

Landscape and Ecological Management Plan

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Produced by

URBAN WILDERNESS

CONTENTS

SECTION	TITLE	PAGE
1	Introduction	3
2	Background	4
3	Vision & Site Wide Aims	4
4	Landscape Character Areas	5
5	Prescriptions	10
6	Enhancements (for Notable Species)	27
7	Monitoring and Managing the Site for Biodiversity in the Long-term	29
8.	Responsibility for implementation	29
9.	Appendix A - Standard Details	30

1. INTRODUCTION

1.1 The following Landscape and Ecological Management Plan (LEMP) has been prepared by Urban Wilderness Ltd in collaboration with FPCR on behalf of the Harworth Group in accordance with BS42020 & the BNG Good Practice Principles (CIEEM, IEMA & CIRIA).

1.2 The document has been produced to support a Reserved Matters application for Unit 7 of the development at Gateway 36, Rockingham, Barnsley. The LEMP provides details which promote the successful establishment and maintenance of the landscape proposals within the phase boundary and should be read in conjunction with the Planting Proposals shown on drawing 334-UW-P-081, the Arboricultural Impact Assessment (TEP, 2020) and both the Habitat Creation, Biodiversity Mitigation and Enhancement Scheme (FPCR, 2024) and Biodiversity Impact Assessment (FPCR, 2024). The drawn planting proposals detail the positioning and extent of the soft landscape features within the site-wide areas of the Reserved Matters application boundary including woodland, scrub, mature trees, hedgerows, meadow and the retained landscape areas. Also submitted as part of the Reserved Matters application and of relevance to this document are the following drawings:

- 334-UW-P-004 Landscape Masterplan – Rendered Landscape Masterplan;
- 334-UW-P-082 Landscape Mitigation Plan – Plan showing proposals to mitigate visual impacts identified.

1.3 The site wide landscape proposals have been developed by Urban Wilderness in collaboration with FPCR (Ecologists). On-plot landscape design proposals have been undertaken by others (Vector DC – Landscape Architects). A separate Management and Maintenance Plan has been produced by Vector for the on-plot landscape treatments.

1.4 The management of the site-wide landscape features will be completed in accordance with the agreed prescriptions within this document and will be undertaken by a specific management company with the aim of achieving long-term ecological and placemaking benefits on site. The LEMP has been produced to cover a 30-year period demonstrating the Biodiversity Net Gain over this period. Within this document, a working programme of an initial 15-year period is detailed. Following this period, the works should be reviewed at the end of the fifteenth year following an assessment of the site.

1.5 A further 15-year working programme should be created based on the results of that assessment if it is considered that any element within this document needs updating to best achieve and maintain the desired habitat condition.

1.6 This LEMP will be revised / and or supplemented alongside the subsequent landscape phases of the development to come forward (later phases within Phase 2).

1.7 The following points set out the site-specific landscape aspirations that are considered within this management plan:

- The retention, enhancement and management of existing woodland;
- The establishment of native woodland planting to both assist in screening the development and provide enhanced linkages for wildlife;
- The establishment of well-managed scrub areas to support a range of wildlife and managed to create a rich mosaic with varied age, species and structure;
- The creation of a wet meadow area for the catchment of water run-off from the new sloped landform. The wet meadow mix selected will reflect the surrounding landscape character, with suitable tolerance to fluctuating conditions;
- A range of specimen trees will be planted across the site to provide focal features and assist in screening the development as well as providing greater structural diversity at year-0.

2. BACKGROUND

2.1 The Reserved Matters application site covers an area of approximately 7.3ha, and previously comprised of established woodland planting and compartmentalised open pasture. The earthworks have now been completed, and majority of the landscape infrastructure planting is being carried out during winter of 2024-2025. There are areas of retained landscape outwith these approved works , which include a small section of woodland along the southern boundary of the site, adjacent to the Public Right of Way (Hoyland Nether UD:1).

2.2 In addition, a much larger area of retained landscape is present to the south west where both woodland and grassland habitats have been retained. Enhancements for these areas are detailed later in this document.

3. VISION & SITE WIDE AIMS

3.1 The overarching aim of the report is to ensure that the high-quality environment embodied within landscape drawings is implemented and maintained. This document is a key part in ensuring the successful establishment and enduring success of the landscape proposals.

3.2 The management of the landscape typologies described in Section 4 below will be completed in accordance with the prescriptions agreed within this document (Section 5, Management Prescriptions) and will be undertaken by a suitably qualified landscape management company.

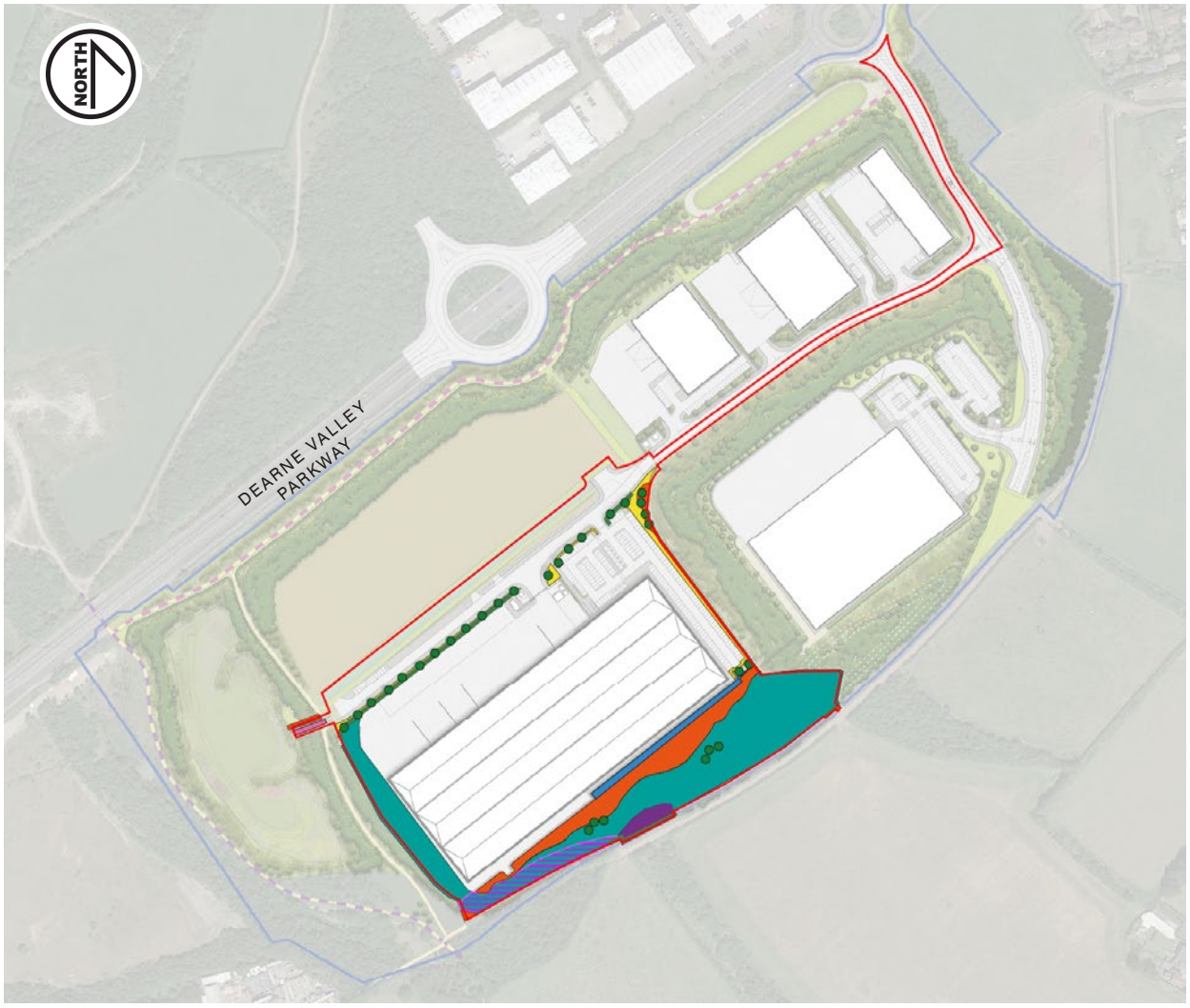
3.3 There are four long-term landscape and ecological management aims for the site:

- **Aim 1:** Maintain and enhance the existing landscape and ecological features within the development to support the aims of the BREEAM UK Strategic Ecology Framework.
- **Aim 2:** Create new habitats to increase site-wide diversity, compensate for the loss of previous habitats; and provide habitat connectivity to the wider landscape, which supports the aims of the BREEAM UK Strategic Ecology Framework.
- **Aim 3:** To monitor and manage retained and created landscape features and habitats throughout the management period to ensure increasing ecological diversity is maintained in the long-term; and
- **Aim 4:** Provide landscape structure through appropriate hard and soft landscape interventions. These will provide (i) a strong sense of place, (ii) visual containment for the individual commercial sites and (iii) visual screening over the medium to long term to mitigate visual impacts identified in the Landscape and Visual Impact Assessment and associated Landscape Mitigation Strategy (both Urban Wilderness, 2024).

4. LANDSCAPE CHARACTER AREAS

4.1 The landscape proposals include large areas of new native woodland, scrub and meadow. These will be supplemented with mature tree planting and lengths of native hedging. There are also areas of retained landscape within the Reserved Matters Application boundary which will be managed to improve their ecological condition, by enhancing structural and species diversity. These Landscape Typologies are shown on the plan below with related detailed planting drawing 334-UW-P-081.

4.2 This section of the document outlines the hard and soft landscape features that are intended to occur across the site. Design and management objectives then describe how these landscape features will be managed and maintained to achieve the desired landscape quality/character and ecological value.



Landscape Typologies

- Retained Landscape
- Woodland
- Scrub
- Mature Trees
- Hedgerow
- Wildflower Meadow
- Wet Meadow
- Mown Strips and Mown Grass

RETAINED LANDSCAPE

An area of woodland and hedgerow planting have been retained outside of the approved earthworks. These retained landscapes already provide valuable habitat something which should be maintained by protecting valuable ecological receptors, including woodland area.

Woodland belts within these areas will assist in screening the proposals at year-0, interrupting existing views toward the site from a number of viewpoints and create a valuable source of immediate landscape structure.

NATIVE WOODLAND

An area of proposed native woodland mix planted as whips and transplants within a 1m matrix. This planting will be supplemented with semi-mature multi-stem trees in the area highlighted as pink hatch on the plan, which will provide additional screening towards the development from visual receptors from the southwest (Viewpoint 5, 6 and 7) at Year 0. The objectives of the woodland planting are detailed below:

- Located towards the top of the newly created slopes on site to reduce the visual massing of proposed built development and create an attractive landscape setting;
- Screen the development through the creation of a dense body of woodland;
- Include scalloped edges and glades to increase woodland edge habitat. Open space to be targeted to between 10 and 20% of each distinct area;
- Plant more than 3 different native tree and shrub species in an average 10m radius; and
- Planting to be set out in lazy-S rows to avoid standard linear rows.

SCRUB

Well-managed scrub and its margins will support a range of wildlife. Diverse scrub is the most valuable to wildlife and includes scrub of varied age, species and structure. It is important to maintain all growth stages, from bare ground through young and old growth to decaying wood.

- Establish a naturalistic woodland edge habitat;
- Establish a diverse mosaic of native scrub which forms the transition between woodland and the ground layer vegetation; and
- Provide structural diversity through the inclusion of glades and rides, and a varied age structure.

MATURE TREES

The use of mature tree stock will provide instant impact in key areas of the soft landscape proposals. Mature trees will help provide valuable habitat and connectivity for a range of bat and bird species from an early stage, prior to other habitats establishing.

- Used along the proposed road access to create an instant sense of establishment with avenue style planting layout;
- Mature trees will be strategically located and managed to promote ecological connectivity.

HEDGEROW

Native hedgerow will provide key structural features and are proposed to assist in defining space, enclosing landscape typologies and the creation of wildlife corridors. The use of native species is prioritised on site. Hedgerow planting should include pollinator friendly species, increase habitat connectivity and improve long term site-wide biodiversity; and

- New native hedgerow planting along the access road will provide structure with associated ditches, providing valuable seasonally wet habitats for local amphibian species.
- The native hedgerows along the site boundary will effectively fill any gaps and enhance the existing hedgerow. This will help mitigate issues related to littering and fly-tipping.

WET MEADOW

The proposed wet meadow area, to the south of Unit 7, will experience changes in water level due to its role in the sustainable drainage systems on site. This will result in the basin filling during peak events and being dry during periods of drought. The meadow mixture needs to be varied to ensure that as some species decline others thrive. Wildflower and grassland mixes should be sourced from within the UK.

MOWN STRIPS

Mown areas along pedestrian routes increase openness and prevent overspill from the neighbouring scrub and woodland areas in between maintenance visits.

- Maintain a mown grass strip along perimeter edges of paths and roadways create a ‘tidy’ appearance; and
- Mown areas that are not close to main site access can be left to grow longer to increase biodiversity.

WILDFLOWER MEADOW

The wildflower meadow flanks the steps leading to the SuDs pond. It provides a soft transition from the scrub defining the 1:3 slope. It will form part of a differential mowing regime.

- The meadow will naturally grow to a maximum height of approximately 600mm. This will ensure clear sightlines and ensure safety as one walks down.
- The meadow mixture needs to be varied to ensure that as some species decline others thrive. Wildflower and grassland mixes should be sourced from within the UK.

5. PRESCRIPTIONS

5.1 The management prescriptions that follow set out practically the operations and regimes required to achieve the site wide aims and the objectives set out above.

5.2 The following sections should be read in conjunction with the Planting Proposals (334-UW-P-081).

5.3 The Landscape and Ecological objectives are detailed in Table 1 along with a monitoring regime and indicators that Ecological Objective has been achieved.

Table 1

Landscape Feature	Landscape Ecological Objective	Monitoring Regime and Indicators that Ecological Objective has been achieved
Retained Woodland	The proposals include the retention of a small area of woodland. The retained woodland will be adopted into the wider woodland management plan in order to improve its condition in the long term and to reach the target condition of 'good',	Monitoring Regime: • The existing woodland will be managed to meet all the criteria stated on page. 2-3 of the Habitat Creation, Biodiversity Mitigation and Enhancement Scheme. Key Indicators that the Objective is being acheived: • An area of trees with complete canopy cover, with diverse age and height structure of the trees. • Trees are free from damage • Evidence of tree regeneration such as seedlings, saplings and young trees. • Standing and fallen dead wood of over 20 cm diameter are present including fallen large dead branches/stems and stumps • No evidence of inappropriate management • Invasive non-native plants are below 5%. • No signs of significant nutrient enrichment present. Remedial Actions • The area is protected from damage by adjacent operations. • Trees are protected from damage • Appropriate woodland management as described in pg.18 of this document

Landscape Feature	Landscape Ecological Objective	Monitoring Regime and Indicators that Ecological Objective has been achieved
Retained hedgerows Enhanced hedgerows and new native species-rich hedgerow	A healthy native species of boundary hedgerow resource is being maintained that provides structure to the development and potential suitability for foraging and commuting bats and foraging and nesting birds. The woodland will be managed to target moderate condition in the BNG Metric.	Monitoring Regime: • Every years in the first five years. Every three years after that. Up to 5% failure rate will be allowed, but if more than 5% failure of supplementary planting occurs, replacement planting of the same species will be provided with an aim of attaining an 85% success rate after 5 years. The hedgerows will be managed to meet all the criteria stated on page.3 of the Habitat Creation, Biodiversity Mitigation and Enhancement Scheme. Indicators that the Objective is being achieved: • The hedge has an average height of at least 1.5 m along its length and width. • The hedgerow is not too short and gappy nor is developing into a line of trees. • The hedgerow has not been damaged. • There are no invasive species present. Remedial actions: • Ensure hedgerow has only native woody species– replace plants as necessary to achieve this. • Top out hedgerow to a height of between 3m and 4m (where possible) to increase habitat suitability and maintain a width of at least 3m • Ensure that there is a rich variety of herbaceous plants at its base by leaving an uncut buffer of 1m within the conservation grassland adjacent to it. • Ensure that the hedgerow has an A shape profile – review trimming techniques if it has not been achieved. • Not too short, gappy or developing into a line of trees. If necessary, gaps to be filled on a 2 for 1 basis with appropriate native species. • If the hedgerow has been damaged such as from excessive cutting, pollution and dumping of rubble etc., review management techniques, remove sources of pollution. • Invasive species should be removed following current regulations. • Appropriate hedgerow management as described on pg.18-19 of this report.

Landscape Feature	Landscape Ecological Objective	Monitoring Regime and Indicators that Ecological Objective has been achieved
Proposed Native Woodland	Woodland planting will link into the wider site provision and existing habitats to provide connectivity and buffering to offsite habitats. The proposed woodland will be managed to target good condition in the BNG Metric.	Monitoring Regime: • The existing woodland will be managed to meet all the criteria stated on page. 2-3 of the Habitat Creation, Biodiversity Mitigation and Enhancement Scheme. Key Indicators that the Objective is being acheived: • An area of trees with complete canopy cover, with diverse age and height structure of the trees. • Trees are free from damage • Evidence of tree regeneration such as seedlings, saplings and young trees. • Standing and fallen dead wood of over 20 cm diameter are present including fallen large dead branches/stems and stumps • No evidence of inappropriate management • Invasive non-native plants are below 5%. • No signs of significant nutrient enrichment present. Remedial Actions • The area is protected from damage by adjacent operations. • Trees are protected from damage • Appropriate woodland management as described on pg.18-20 of this document

Landscape Feature	Landscape Ecological Objective	Monitoring Regime and Indicators that Ecological Objective has been achieved
Mature trees	A healthy tree resource is being maintained that provides potential suitability for foraging and commuting bats and foraging and nesting birds. The trees will be managed to target moderate condition in the BNG Metric.	Monitoring Regime - every year • The trees will be managed to meet all the criteria stated on page.3 of the Habitat Creation, Biodiversity Mitigation and Enhancement Scheme. Indicators that the Objective is being achieved: • Trees are healthy and will achieve their target size (< 300mm Diameter at Breast Height). • The line of trees should maintain a continuous canopy, with gaps <10% of the total • length and on canopy gaps >5m. • The trees will be protected from damage during establishment. Remedial actions • Trees are not healthy – remove diseased/dead wood – arisings to be removed from site. • Dead tree – replace with an appropriate native species that will achieve the target size. • Should a tree become diseased and need to be replaced, a replacement tree should be planted so that the above conditions will be met once the tree is 1/3 of its expected fully mature height. • Appropriate tree management as described on pg.20 of this document

Landscape Feature	Landscape Ecological Objective	Monitoring Regime and Indicators that Ecological Objective has been achieved
Mixed scrub	To create a habitat with a diversity of structure to provide potential resources for wildlife. The edge should be scalloped to create more edge habitat. The mixed scrub will be managed to target good condition in the BNG Metric.	Monitoring Regime Every two years in the first five years. Every five years after that. The scrub will be managed to meet all the criteria stated on page. 3 of the Habitat Creation, Biodiversity Mitigation and Enhancement Scheme Indicators that the Objective is being achieved: • Healthy plants with more than 3 native species within habitat • Structurally diverse • Maintain a well-developed scalloped edge of mixed density where possible. • Pernicious weeds and invasive speciesNB3 make up less than 5% of the ground cover. • The scrub has a well-developed edge with un-grazed tall herbs. Remedial actions • Plant is not healthy – remove diseased parts – replace if necessary with native species. Ensure that there are more than 3 native species present. • The habitat benefits from being structurally diverse - employ more severe pruning where necessary. • No one species to dominate over 75% of species composition – remove and replant with alternative native species as necessary. • Undesirable and invasive species to be spot treated, following any invasive species regulations if applicable. • Appropriate tree management as described on pg.22 of this document

Landscape Feature	Landscape Ecological Objective	Monitoring Regime and Indicators that Ecological Objective has been achieved
Wet Meadow	To provide a biodiverse grassland suitable for seasonally wet areas, creating a tussocky habitat suitable for wildlife. The proposed wet meadow will be managed to target moderate condition in the BNG Metric.	Monitoring Regime Every year in the first five years. Every five years after that. Indicators that the Objective is being achieved: The seasonally wet grassland should comprise 20% wildflowers and 80% slowgrowing grasses. Rye-grass cover is less than 25% cover. Encroachment of undesirable species less than 5% ground cover. Remedial actions The meadows will require minimal management during establishment. Excessive growth of unwanted plants can be removed by hand to allow establishment of sown/planted speci If grassland does not maintain its diversity, management should be reviewed, depending on what species is becoming prominent. Encroachment of undesirable species may require a change to the management regime or targeted removal. Base levels may need to be re-dug if wet meadow area permanently dry and re-seeding may be required if establishment does not occur within two years (10% of bed only). Appropriate meadow management as described on pg.22 of this document
Mown Strip	Mown areas along pedestrian routes increase openness and prevent overspill from the neighbouring scrub and woodland areas in between maintenance visits. Mown areas that are not close to main site access can be left to grow longer to increase biodiversity. Target condition under the BNG metric is poor.	Monitoring Regime Every two years in the first five years. Every five years after that. Mown area should have a maximum height of 70mm. Indicators that the Objective is being achieved: • Healthy grassland with limited unwanted plants, invasive non-native species and scrub. Remedial actions • Where grass is not healthy it may need resowing to maintain its visual objective. • Encroachment of unwanted species (see BNG criteria) may require a change to the management regime or targeted removal. • If range of species is becoming dominated by a few perennial grasses review management regime. • Refer to Mown areas on page 25 of this document for management detail.

Landscape Feature	Landscape Ecological Objective	Monitoring Regime and Indicators that Ecological Objective has been achieved
Wildflower meadow	To provide florisitic diversity and suitability for invertebrates, birds and mammals. The proposed meadow will be managed to target moderate condition in the BNG Metric.	Monitoring Regime Every two years in the first five years. Every five years after that. The meadow will be managed to meet all the criteria stated on page. 2 of the Habitat Creation, Biodiversity Mitigation and Enhancement Scheme under Neutral Grassland. Indicators that the Objective is being achieved: • Grassland contains diverse species, with wildflowers and sedges no more than 30% of total area. • Rye-grass cover is less than 25% cover. • Encroachment of undesirable species less than 5% ground cover. Remedial actions • If grassland does not maintain its diversity, management should be reviewed, depending on what species is becoming prominent. • Encroachment of unwanted species (see BNG criteria) may require a change to the management regime or targeted removal. • Refer to Wildflower meadow on page 25 of this document for management detail.

General Maintenance Prescriptions

5.4 The appointed contractor will visit the site a minimum of once a month throughout the year, and additionally as necessary, to undertake the operations required to fulfill the prescriptions listed below and the management objectives of the site.

5.5 Management and maintenance operations will be carried out by competent landscape contractors, to the highest possible standards and in accordance with industry best practice, all relevant codes of practice and British Standards. All tools and machinery employed will be fit for purpose, suitable for site conditions and only used in accordance with the manufacturer's recommendations. All operations are to fully comply with relevant Health & Safety regulations.

Cleanliness

5.6 At the end of each visit, the contractor shall remove from site all litter/rubbish, arisings, trimmings, and superfluous materials, leaving the works in a clean and tidy condition. Particular attention shall be paid to ensuring all areas of hard surfacing, drains and gullies are left in a clean condition, free from any soil, mud, leaves, cuttings, and plant pruning. In the event of reported and substantial litter accumulation (e.g., fly tipping) the contractor shall remove material from site within two days.

Weed and Pest Control

5.7 All areas shall be kept free from weeds, pests and diseases. Planting is to be inspected on a monthly basis and any remedial action taken immediately. Weeding & the removal of self set seedlings (within the meadow areas) may be carried out by hand, with chemical, or through a combination of both methods in a manner consistent with the requirements of this management plan. Chemical treatments are to be applied in accordance with manufacturer's instructions and relevant safety regulations. Application of chemicals must be restricted to affected areas and spray drift or spillage must be prevented. Weeds and other debris will be removed from site at the end of each visit.

Mulch

5.8 Mulch is to be applied to the base of mature tree planting and should be inspected on a monthly basis and restored to the original depth (50mm) where levels have diminished. Medium grade bark mulch should be maintained to original levels (50mm) in perpetuity.

Watering

5.9 Planting (particularly Mature Trees) should be monitored for signs of drought stress every two weeks during dry periods for the first five years of planting. Specimen trees showing signs of drought stress are to be watered to field capacity until signs of drought stress are no longer visible.

5.10 Replacement Planting: An audit of all planting should be made in August/September of each year in the first five years. Where plants fail, they should be replaced in accordance with the original specification. Planting should be replaced in suitable weather conditions during the next winter planting season.

Fertiliser

5.11 Any approved and appropriate fertiliser to be applied to the planted areas listed below in Years 1, 2 and 3 in early spring to ensure rapid establishment.

- Native Woodland
- Native hedgerow
- Specimen Tree planting

5.12 The wildflower meadow area and wet meadow area should be avoided.

Replacement Planting/Hard Landscape Defects

5.13 An audit of all planting should be made in August/September of each year in the first five years. Where plants fail, they should be replaced in accordance with the original specification on the drawings. Planting should be replaced in suitable weather conditions during the next winter planting season and maintained in accordance with this report.

5.14 Damaged furniture and surfaces to be made good within one month, with areas made safe in the meantime.

LANDSCAPE FEATURES TO BE RETAINED, PROTECTED AND ENHANCED

Aim 1: Maintain and enhance the existing landscape and ecological features within the development;

5.15 Existing landscape features have been retained where possible within the development and will be protected through the construction and operational phases.

Existing Trees/Woodland

5.16 The ongoing management of the retained woodland areas may result in the requirement to fell dead, damaged or diseased limbs. Arisings, where possible should be used to provide opportunities for invertebrates and bryophytes by forming micro-habitats from piles of dead wood or recumbent dead logs. Where possible, and where health and safety constraints permit, standing dead wood will be left in-situ to provide additional dead wood habitats to maximise saproxylic invertebrate biodiversity. Any fallen deadwood above 10cm girth should be left in situ where reasonably safe to do so.

5.17 All log piles created should meet a minimum size of at least 3m long, by 1m wide by 0.75m high. Log piles will also be created using material on site where trees have been felled as a result of the proposed development. The logs used will, where possible, have a minimum diameter of 100mm with the bark retained. Twigs and scrub off-cuttings can also be added with stakes used to prevent the pile from collapsing. Log piles will provide further shelter and hibernation habitat for reptiles and amphibians as well as other wildlife.

5.18 Root Protection Areas (RPA's) established by a qualified arboriculturist will be incorporated with the use of Heras fencing or similar to ensure no accidental encroachment during the construction period. Refer to Arboricultural Impact Assessment (ref: 7890.001 Version 2, February 2020) for details.

5.19 Management prescriptions (throughout the initial 15-year period) include:

- Checks on safety and condition of trees annually, or as required (e.g., after high winds) to ensure continued health of trees and safety of site;
- Prune any diseased or rotten wood (including the removal of main stems and limbs) back to sound wood;
- Any ash trees within the site will be monitored for ash dieback, and where this occurs will be reported to the forestry commission, specimens would need to be cut down and burnt onsite, to avoid spreading;
- Any tree management and/or removal will require the assessment for bat roosting potential by a licenced bat ecologist;
- Where publicly accessible remove from tree all stems and limbs which are unsafe or are in danger of falling or breaking during gales. Use removed material (if suitable) to create wood piles and hibernaculum;
- Any necessary tree surgery should (ideally) be undertaken within the dormant season (November-February)
- Undertake works as recommended by Arboriculturist to ensure continued health and safety of trees.

Existing Hedgerows

5.20 The proposed design looks to retain existing hedgerow where possible. The hedgerows to be retained, will be protected from damage and from soil compaction during the construction period via the use of fenced RPA's of at least 4m width, which is in accordance with guidance in British Standard 5837 (2012) – Trees in Relation to Construction.

5.21 The retained hedgerows will be subjected to three-year rotational management to encourage the establishment of tall, bushy hedgerows. Management processes throughout the 15-year period are as follows:

- Top out hedgerow to a height of between 3m and 4m (where possible) to increase habitat suitability;
- Maintain a width of at least 3m;
- Prune any diseased or rotten wood (including the removal of main stems and limbs) back to sound wood;
- Remove all stems and limbs which are unsafe or are in danger of falling or breaking during gales;
- Prune annually between October to March, ideally in January and February to ensure that fruiting bodies can be used by birds;
- Cutting will be on a three-year rotational basis ideally with only one side cut;
- Trees located within the hedgerows will be allowed to mature into standard trees to provide nesting and foraging opportunities for local wildlife and a varied habitat structure; and
- A minimum of 1m adjacent the hedgerows will be managed as 'undisturbed' ground where possible within the site boundary

5.22 Gaps within any retained hedgerows will be filled

where possible via supplementary planting using a mix of native species to increase the diversity of hedgerows and to provide increased foraging opportunities for local wildlife.

5.23 The recommended period for planting of woody species is between October and March. However, it is recommended that hedgerow species are planted in October and November before the onset of colder weather to avoid periods of inundation or prolonged ground frost. During the first five years of establishment selective 'spot' spraying or strimming of weeds is required to reduce competition.

5.24 New infill planting will be inspected 12 months after planting. Any failed planting will be identified and replaced, with inspections taking place annually for the first 5 years from initial planting. Up to 5% failure rate will be allowed, but if more than 5% failure of supplementary planting occurs, replacement planting of the same species will be provided with an aim of attaining an 85% success rate after 5 years.

5.25 Native tree species will be included within the hedgerow mix and allowed to mature into standard trees to increase canopy cover and diversity.

PROPOSED LANDSCAPE FEATURES

Aim 2: Create new habitats to increase site-wide diversity, compensate for the loss of previous habitats; and provide connectivity to the wider landscape.

5.26 The following are general management operations that apply to all soft landscape features within the site:

- All clippings and grass cuttings are to be either composted on site at a designated location or removed to a composting area off site; and
- All specimen trees are to be watered as required during the summer months of years 1-5, particularly during periods of drought.

Woodland

5.27 The first few years after planting are critical and successful management and maintenance during this period will result in an established woodland that requires minimal ongoing work. The main management aims within the establishment period for the woodland areas are:

- Controlling weeds
- Protecting against wildlife damage
- Replacing losses

Controlling Weeds

5.28 Until they are tall enough to shade out other vegetation competing with other plants for light, water and nutrients is the main challenge for newly planted trees. It is vital that the woodland areas are weeded to achieve successful establishment. Weed-free prepared ground gives trees a good start, but measures need to be in place to keep weeds at bay.

Spot Spraying

5.29 Use of a knapsack sprayer to treat a circle, roughly 1m diameter, around each tree. Extra care needs to be taken when applying systemic herbicides to avoid contact with the tree. One application should be applied in the spring and, depending on the vigour of the weeds, another in mid-late summer.

5.30 Plastic shelters provide some protection but if weeds establish inside the tube, they can quickly smother the tree. A selective liquid or granule herbicide should be applied inside the tube.

5.31 The list of herbicides approved for use in forestry is constantly changing so always seek up-to-date professional advice. Herbicide use must follow label instructions, comply with the Control of Substances Hazardous to Health (COSHH) Regulations 2002 and only by done by people with Certificates of Competence for spraying.

Protecting Against Damage by Grazing Animals

5.32 To protect against animal browsing, the site is to adopt two separate approaches. One, used predominantly in large areas of matrix tree planting, will employ rabbit-proof fencing to protect and two, will use individual spiral guards for whips.

Tree Protection:

5.33 Each plant will require a spiral fixed to a wooden stake. The housing has the added benefit of creating a greenhouse effect that encourages rapid growth. Spirals also expand as the trees grow removing the risk presented with a fixed diameter tube.

5.34 Check spirals regularly for damage by weather or vandalism. If the spiral comes loose, or the stake is broken, the plant can lean, resulting in a tree with poor stem form. Ensure all spirals are correctly positioned to prevent plant failure.

Fencing for all other areas:

5.35 Fencing the woodland areas is a very effective

method of protecting young woodlands from wildlife damage, as long as they are well maintained. The fence line should be inspected regularly for damage. Gates can be particularly vulnerable and require a self- closing mechanism to maintain the closed perimeter. It is especially worth checking potential weak points following bad weather.

5.36 If there is evidence of wildlife (specifically, rabbit and deer) inside the fenced area, damaged lengths of fencing and/or gates will need to be removed and the fence repaired. Check twice yearly.

5.37 Fencing needs to be maintained for the first five years or until the planting stock has established sufficiently to allow bark around tree stems to harden. Once risk of damage to plants has been mitigated, fencing can be removed and recycled off-site. This will also facilitate future tree thinning and removal by creating unimpeded access in and around the tree planting areas.

Replacing Losses

5.38 Losses of 5-10% are normal for new woodland planting but they must be replaced. Planting contractors should walk along each row and plant a new tree next to every dead one.

Species Selection

5.39 Species selection will be in accordance with the Planting Proposals shown on drawing 334-UW-P-081.

5.40 All planting will be undertaken in accordance with British Standard 8545.

Planting Site Preparation

5.41 Prior to planting, an inspection of each planting site would be undertaken and the ground would be prepared. Grass and persistent ruderal herbs such as bramble would be strimmed or mown. For specimen trees, planting pits would be prepared in accordance with BS 8545 and vegetation would be sprayed with a glyphosate based herbicide within a 1m radius of the planting pit. For hedgerow, planting trenches would be turned over. Organic matter or other ameliorants may be incorporated as required.

Woodland Planting

5.42 Woodland planting is proposed to create new and connected habitats and landscape screening. The establishment of tree height, understorey and structural diversity will be prioritised.

5.43 Woodland planting will include 75% high canopy species and 25% small tree and understorey species.

5.44 Planting to discourage pedestrian access in areas of sensitivity and adjacent to footpaths will include spiky species such as hawthorn, blackthorn, buckthorn and holly.

5.45 All planting will be implemented between November and March while plants are dormant.

5.46 The distribution of species within planting areas will be diffuse with no block planting. Clusters of individuals will be planted to ensure establishment of all species present. Canopy species will be planted in clusters of up to 3 individuals; understorey species will be planted in clusters of up to 5 individuals.

5.47 New woodland planting will be inspected three times per year. Any failures within the first 5 years will be replaced. Damage to planting tubes, ties and stakes will be rectified as required.

5.48 Strimming to reduce weed competition, checking of guards, watering, and formative pruning will be undertaken as required.

5.49 Woodland thinning would be undertaken once in the first 10 years, removing some 25% of trees whilst maintaining species diversity. Thereafter, thinning will be undertaken as required at intervals of between 5 and 10 years removing decreasing proportions of trees to promote a balanced age and species structure.

5.50 Planting tubes, ties and stakes will be removed as required.

Mature Multi-stemmed Trees Planting

5.51 The area of native woodland planting to the southwest of the site will be supplemented with mature multi-stem trees planting. This aims to achieve the following:

- Provide additional screening towards the development from visual receptors from the southwest at Year 0.
- Improve ecological diversity and provide a suitable habitat to encourage the growth of the local Willow tit population.

Accelerated Woodland Development

5.52 In order to accelerate the establishment of structural diversity in woodland, additional planting will be undertaken following the second thinning. This will include additional understorey species to augment the density of understorey and to add a secondary layer to it.

5.53 Understorey planting will comprise whips or pot grown plants in single-species clusters of 10 to 20 individuals at a rate of 5 clusters per hectare.

5.54 No two clusters in a planting compartment will comprise the same species.

5.55 The locations for understorey clusters and the specification of temporary protection and establishment measures such as stakes, tubes, mulch or weed suppressant matting will be determined by and in consideration of the prevailing conditions.

5.56 New understorey planting will be inspected three times per year. Any failures within the first 5 years will be replaced. It will thereafter be managed as part of its parent woodland.

Species Dominance

5.57 Areas in which one species begins to dominates the canopy will be thinned to reduce the dominance of the most abundant species.

5.58 Non-native and non-naturalised species will be targeted for removal from the woodland.

5.59 No more than 30% of trees in any area will be removed during any one thinning operation.

5.60 Surveys of all woodland to monitor the results of thinning operations and identify additional areas requiring thinning works will be undertaken biennially.

Understorey Improvement

5.61 Areas with poor understorey will be restocked either by coppicing, layering or planting. Restocking will be undertaken after all thinning and clearance operations have been completed to avoid damage to new plants.

5.62 Where suitable trees are available, they will be coppiced to convert them to an understorey form that is bushier and increases low level foliage. This practice will be used on maiden trees up to a diameter of 250mm or those with natural or previously coppiced multi-stemmed form. The broadleaved species to be coppiced in our proposed woodland planting area include oak, alder, birch, maple and hazel. Most coniferous species do not coppice.

5.63 Trees will be coppiced with clean, outward-sloping cuts, as close to ground level as practicable unless dictated by stool form.

5.64 Where the understorey is sparse but individuals are present, layering will be used to accelerate the colonisation of vacant areas or augment the understorey. Suitable side branches will be selected and layered. Once established, propagated specimens may be transplanted within the immediate area or left in-situ to develop.

5.65 Where there are no suitable specimens or conditions for coppicing or layering, areas of poor understorey will be improved by new planting. The species selected will seek to build existing native populations to sustainable levels in the first instance and also to increase diversity.

Aerodynamic Resilience

5.66 New woodland edges will be created by the removal of trees during the Construction Phase. The remaining trees will be subject to increased exposure and therefore increased risk of failure by windthrow or breakage.

5.67 In order to improve aerodynamic resilience and also aesthetically soften new woodland margins, management of the edges will be undertaken. Typically, management activities will occur within the first 10m of the woodland as measured from the newly exposed edge. New woodland planting will not be managed in this way.

5.68 Woodland edge works for aerodynamic resilience also tend to increase light penetration, which can increase biodiversity.

5.69 Works to improve aerodynamic resilience will include thinning, scalloping and height reduction. In some areas, new planting will also contribute to woodland edge improvements but this effect cannot be relied upon in the short term.

5.70 Thinning reduces the density of the exposed edge

and increases wind penetration, particularly where wind is perpendicular to the woodland edge. By allowing wind to penetrate the woodland edge, loading is distributed between greater numbers of trees. Thinning also creates a gradient of wind speed at the woodland edge and increases aerodynamic complexity.

5.71 Scalloping is the removal of the outermost trees from intermittent sections along the woodland edge within a 'D' shape (in plan). This turns straight or uniform perimeters into a 'scalloped' shape with increased surface area. This increases the aerodynamic roughness to wind travelling along the woodland edge and creates areas of low pressure and eddies that can reduce peak loading on edge trees. Scallops should principally be used on east-west rides or edges and should be wider than the height of the surrounding trees.

5.72 Height reduction is the most important aspect of aerodynamic resilience. The profile of new woodland edges tends to be abrupt and square because it comprises trees with woodland form that developed in response to conditions within the woodland. These are typically more slender and upright than open grown or edge trees and with fewer low branches.

5.73 An ideal woodland edge is graduated from small scrub to high canopy within a continuum. To replicate this effect, the tallest or most vulnerable trees within the woodland edge corridor would be removed so that shorter trees and understorey become the exposed canopy. Where the form and distribution of trees is not conducive to this practice, height reduction by pruning will be done instead.

5.74 The final scope of works in each area will comprise a combination of thinning, scalloping and height reduction. Since all options include the targeted removal or reduction of trees, it is often possible to achieve all three outcomes by careful selection of trees. The final scope of works at each woodland edge will be determined on site and trees for pruning or removal will be marked up by the Forest Manager. The total number of trees that would be removed within the woodland edge would not typically exceed 10%.

Scrub

5.75 Scrub management for wildlife should create and maintain a range of features; a diversity of shrub species, age and structure is essential. Scrub areas require periodic maintenance to retain its character and value to wildlife and if left unmanaged, scrub will develop into woodland.

5.76 Similarly, to the woodland areas the main aims of the maintenance regime during establishment are weeding out competitors and protection from wildlife browsing.

Spot Spraying

5.77 During the first-year spot spraying should be undertaken around each plant to suppress weed competition (to a one-metre radius). Avoid spraying any self-set wildflowers as they are important for nectar-feeding. Instead, consider using a herbicide that only controls grasses.

5.78 The list of approved herbicides is constantly changing so always seek up-to-date professional advice. Herbicide use must follow label instructions, comply with the Control of Substances Hazardous to Health (COSHH) Regulations 2002 and only by done by people with Certificates of Competence for spraying.

Protection Against Damage by Grazing Animals

5.79 Shrubs are vulnerable to browsing by livestock, deer and rabbits during establishment. Use of tree shelters a biodegradable spirals fixed to a wooden stake will protect plants from grazing. They have the added benefit of creating a greenhouse effect that encourages rapid growth.

5.80 Check shelters regularly, shelters can be damaged by weather or vandalism. If the shelter comes loose, or the stake is broken, the whole thing can lean, resulting in a tree with poor stem form.

5.81 Fencing the scrub areas is a very effective method of protecting young woodlands from wildlife damage, as long as they are well maintained. Check the fence line for damage as often as you can.

5.82 If there is evidence of wildlife (specifically, rabbit and deer) inside the fenced area, they need to be removed and the fence repaired.

5.83 Cutting most species of scrub encourages re-growth and is useful for maintenance and restoration. Cut areas of scrub in a rotation, aiming to retain all ages. Detailed descriptions of management operations for Year 6-15 are set out below:

- Trimming following establishment period including maintenance of a sinuous edge with a graded margin down to field layer;
- Following establishment (year 5) introduce glades/clearings/rides and apply woodland seed mix to these opened up areas;
- Selective thinning of some stands and creation of open areas within/between stands to allow light to reach ground flora and promote regeneration of young shrubs;
- Selective clearing of scrub edge (roughly 1/3 to 1/5 every 2-3 years) down to ground to reduce dominance of species such as blackthorn and hawthorn and promote regeneration of young shrubs/herb edge. Cut between September and February, to avoid the bird breeding season; and
- Annual mowing of herb/grass margin at scrub edge to maintain herb margin free of scrub growth and encourage flowering herbs.

Specimen Trees

5.84 Specimen trees will be planted within the development for amenity and to provide habitats associated with mature open grown trees. Species selection will be in accordance with the Planting Proposals shown on drawing 334-UW-P-081.

5.85 Specimen trees will generally be planted as standards. A range of sizes will be used, depending on their location and context. For some species, feathered specimens may be appropriate.

5.86 Specimen trees will be bareroot or rootballed. They will fixed in position using underground guying with a woodchip mulch applied to a depth of 50m.

5.87 Trees will be inspected at least three times per year and any failures replaced during the next planting season. Woodchip mulch will be topped up and herbicide spray used as required to prevent weed growth through the mulch. Trees will be watered as necessary during the first 2 years to ensure full establishment. Stakes, tubes and ties will be removed as appropriate.

5.88 Specimen trees will be formatively pruned to develop a clear stem or stems to at least 2.5m.

5.89 The recommended period for planting of woody species is between November and March, but also avoiding periods of inundation or prolonged ground frost.

5.90 Specimen tree planting situated alongside footpaths will be maintained with clear stems to maximise visual permeability. Prune annually in late November (after the leaves have started to drop) to maintain long, clear views through tree planting along pedestrian corridors.

5.91 Detailed descriptions of management operations for Year 1-5 are set out below:

- Specimen trees should be watered as required to ensure that they establish and thrive. During the first 5 years following planting, trees will be watered during periods of extreme drought (2 or more weeks without substantial rainfall). Water in the morning or in the evening to restrict water evaporation;
- Top up mulch levels annually to original levels (50mm);
- Prune back any diseased or rotten wood back to sound wood. A suitably skilled and qualified Arboriculturist shall carry out such pruning. All cut material will be used on the site for hibernaculum;
- Keep trees upright and examine tree stakes and ties for their effectiveness and requirement. If the tree has yet to establish, replace or adjust ties, spacers and tree tubes as appropriate. If the tree has established well, then remove all stakes, ties, spacers, tubes etc. and make good surfaces disturbed, filling any holes with suitable topsoil; and
- Any tree that dies or is necessarily felled as a result of storm damage, vandalism, mechanical damage, fungal decay or other such cause, shall be replaced like for like. Such replacement shall be with a tree of either the same species or similar species as those existing. This is to allow some flexibility and to avoid problems encountered with 'Same Tree Disease.'

5.92 Detailed descriptions of management operations for Year 6-15 are set out below:

- After establishment continue to water only if deemed to be required;
- Checks on safety and condition of trees annually, or as required (e.g., after high winds) to ensure continued health of trees and safety of site;
- Safe removal of dangerous or potentially dangerous trees; and
- All checks and reports on trees to be carried out by a qualified Arboriculturist. Undertake works as recommended to ensure continued health and safety of trees.

Special Measures (LONG TERM – post 15 years)

5.93 Targeted areas either side of the new access road should be reinforced with native species planting. Standard trees adjacent to the road allowed to grow to be above the level of vehicle movement. The lower branches of such trees should be regularly pruned back to the trunk in order to ensure that the most suitable flight line is above the maximum traffic height.

5.94 In the 30th year a small number of targeted trees with a trunk of at least 20cm will be selected for ringbarking. As well as thinning the canopy these will provide valuable standing dead wood. Trees should be spread out throughout the woodland block as to maximise over distribution.

Hedgerows

5.95 New hedgerows will be planted during the planting season (October to March inclusive) and will comprise of species that attract wildlife, planted at a density of five plants per linear metre, with plants arranged in an off-set double staggered row in species groups of five to eleven within the native hedgerow (formal hedgerow - hornbeam and escallonia should be mixed).

5.96 The following are management operations that apply to the proposed native hedgerow (Years 1-5).

5.97 Undertake to ensure the creation and maintenance of healthy, attractive and dense boundary, with seasonal and ecological interest.

- Individual spiral guards and canes will be required to prevent damage to saplings by browsing wildlife;
- Apply herbicide to base of hedge using knapsack sprayer. Extra care needs to be taken when applying systemic herbicides to avoid contact with the plant. One application made in spring and, depending on the vigour of the weeds, another in mid-late summer;
- Trim hedge to a height not greater than 2m during the establishment period to encourage dense growth.
- Prune between October to March, ideally in January and February to ensure that fruiting bodies can be used by local fauna;
- Remove any dead, damaged, or diseased growth;
- Trim hedge in February (outside of bird nesting season and allowing for fruit to remain over winter) to a height not greater than 2m. During the establishment period trim to encourage dense growth; and
- A minimum of 1m adjacent the hedgerow will be managed as 'undisturbed' ground where possible within the site boundary

5.98 Detailed descriptions of management operations for Year 6-15 are set out below:

- Apply herbicide spray to areas only where required to keep base of planting free of weeds;
- Prune in spring and autumn as necessary to remove any dead, damaged or diseased growth;
- Trim hedge in February (outside of bird nesting season and allowing for fruit to remain over winter) to a height of 2m; and
- Maintain a width of at least 3m.

Special Measures

5.99 The wet meadow area should be cleaned out on rotation, to prevent being filled with plant or woody debris while ensuring there is continuity of habitat.

5.100 Vegetation adjacent to ditches to be trimmed/cut to prevent the ditches becoming overshadowed.

Sowing Wet Meadow and Wildflower Meadow mixture

5.101 Seed is best sown in the autumn or spring but can be sown at other times of the year if there is sufficient warmth and moisture. Seed will need to be sown without risk of inundation of the basin which will wash the seed away. The seed must 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

5.102 Most sown meadow wildflower 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.

5.103 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 wildflowers.

5.104 Dig out any residual perennial weeds such as docks.

Management once Established

5.105 In the second and subsequent years sowings can be managed in a number of ways which, in association with soil fertility, which will determine the character of the grassland. The best results are usually obtained by traditional meadow management based around a main summer hay cut in combination with autumn and possibly spring mowing or grazing.

5.106 Meadow 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 cut back with a petrol strimmer or tractor mower to c. 50mm. Leave the arisings to dry and shed seed for 1-7 days then remove from site.

5.107 Mow the re-growth through to late autumn/winter to c. 50mm and again in spring if needed.

Wet Meadow and Wildflower Meadow management

5.108 Management and maintenance during the establishment period for the wet meadow varies depending on the method used to plant the area. The techniques all have advantages and disadvantages. Each site needs to be assessed and the techniques chosen on a site-by-site basis, with water level and degree of control (as well as the time of year) often determining the technique used.

5.109 The techniques include:

- Sowing seed
- Planting seedlings
- Planting cuttings
- Spreading rhizomes
- Turf transplants

5.110 Detailed descriptions of management operations for Year 1-5 are set out below:

- The meadows will require minimal management during establishment. Excessive growth of unwanted plants can be removed by hand to allow establishment of sown/planted species;
- They should be monitored annually for their establishment;
- Base levels may need to be re-dug if wet meadow area is permanently dry and re-seeding may be required if establishment does not occur within two years (10% of bed only); and
- Following successful establishment (expected approximately 2 year) growth should be checked annually.

5.111 Detailed descriptions of management operations for Year 6-15 are set out below:

- Winter cutting and removing different areas of meadow species on a 4–7-year rotation to prevent the build-up of the nutrients and dead plant material.
- Removing dead plants to prevent decomposition, litter build-up and nutrient enrichment and to keep some reed young and healthy.

Mown Areas

5.112 The following are management operations that apply to the amenity grassland areas. Undertake as required to achieve a good sward of even colour and a maximum height of 70mm.

5.113 Detailed descriptions of management operations for Year 1 post seeding are set out below:

- Once seedling grasses are established, (typically in good growing conditions about three to four weeks after sowing), lightly roll or tread to firm and level the soil around the grass roots ready for the first cut. (Do not roll if the ground is wet and saturated with water);
- When the grass has picked up (typically after a few days), the lawn will be ready for its first cut. Cut with the mower set on a high setting (+50mm), aiming to trim the sown grass back by about one-third of its height;
- Thereafter, mow the new lawn regularly as needed, progressively reducing the mowing height over its first spring/summer to the desired height; and
- A new sown lawn will take a full year or more to reach full strength, complete ground cover and knit together as a turf. It can be walked on

during this establishment phase but avoid heavy use that might cause excessive wear and tear.

5.114 Detailed descriptions of management operations for Year 2 onwards are set out below:

- Remove litter and debris at every visit before each cut;
- Cut back to 50mm and remove arisings. Maintain to between 50-70mm;
- Where bulbs are located in grass, only cut the affected grass once the bulbs have flowered, and the foliage and flowers have withered and turned brown;
- Repair eroded areas as required. Rotovate to 150mm, 100mm topsoil and reseed between May-September;
- Lightly scarify in March annually as required;
- Grass areas may be treated to control invasive or unsightly weed growth in spring and late summer;
- Water as required during dry spells to ensure establishment; and
- Fertilise in spring (up until Year 3).

Proposed Hard Landscape Elements

Fencing and Gates

5.115 Ensure all fencing and gates are secure, undamaged and in a good state of repair. Should any part of a fence or gate be deemed below standard obtain guidance and/ or repair or replace as required. Carry out a twice annual inspection in spring and autumn. Record inspections/any actions arising from inspections.

Pathways and Hard Surfacing:

5.116 General: ensure all pathways and hard surfaces are free from weeds, trip hazards, debris, litter, chewing gum, snow and ice or other obstructions throughout the year. Carry out inspections at each site visit and as required by the weather/likely conditions on site.

5.117 Make good damaged surfaces to maintain safe and accessible routes that are fit for use throughout the year as required.

5.118 Pathways which are bound by a 1m mown grass strip should be mown regularly to maintain a sward height of 40-60mm. All cuttings to be removed.

Structures

5.119 Ensure bird and bat boxes are structurally sound. Make good any damage that has occurred due to weathering or vandalism. Maintain visual appearance, any graffiti to be removed.

6. ENHANCEMENTS FOR NOTABLE SPECIES

6.1 Habitat creation and enhancement specific to Unit 7 will have the following aims:

- Retain habitat connectivity for a range of species Habitat will be enhanced to provide a more graded wood-edge habitat which will support a wider range of invertebrate species to optimise foraging opportunities for a range of fauna (including bats).
- Provide habitat connectivity to the wider landscape through hedgerow and woodland creation.
- Provide a sensitive and diverse planting scheme to attract a range of invertebrates, especially lepidoptera (butterflies and moths).
- Further enhancements will include log piles, bird box, and bat box provision.
- Further enhancements will include log piles, bird box, and bat box provision.
- Biodiversity condition targets for new and retained.
- habitats are provided in the Habitat Creation, Biodiversity Mitigation and Enhancement Scheme (FPCR, 2024).
- The ecological value will be developed over time. e.g. As the planting matures, opportunities for invertebrates such as beetles and butterflies will increase due to the increase in food sources such as nectar. This will in turn create additional foraging opportunities for the local bird and bat populations. Generalist bird species will also benefit as tree and shrub planting matures and provides nesting and nutrient resources. The maturing habitats will also provide foraging, commuting and shelter resources for small mammals and herptofauna.

Bats

6.2 Enhancement measures will aim to increase potential roosting opportunities, this will comprise of telegraph style pole mounted bat boxes. The bat boxes should be placed facing South to provide decent exposure to sunlight in an area sheltered from the wind where possible.

6.3 Recommended boxes comprise:

- 2x suitable size woodden poles (minimum height 3m above ground) each supporting:
- 1x Schewegler 2F Bat Box or similar, suitable for smaller bat species
- 1x Vincent Pro Bat Box or similar, suitable for a range of bat species.

6.4 Bat boxes will be checked bi-annually to ensure that they are functional and structurally sound, but also to assess their occupancy rate. These will need to be undertaken by a licenced bat ecologist between May to August. Where they are damaged, they will be replaced on a like for like basis, or if they are not be used a different type or position maybe required.

6.5 The creation of and hedgerow pollinator corridors will maintain bat foraging opportunities within the site, and the successful management will ensure that resources are available in the future.

6.6 Refer to the Habitat Creation, Biodiversity Mitigation and Enhancement Plan (FPCR, 2024) for locations of the features..

Birds

6.7 The provision of meadow species, linear woodland features and a new native hedgerow will provide breeding and foraging habitat for a range of bird species.

6.8 2 x1B Schewegler Nest Box with 26mm Holes and 2 x1B Schewegler Nest Box with 32mm Holes boxes will be placed within retained woodland at a height of c.1.5m facing bertween North and East to prevent exposure to the prevailing wind and rain. These boxes generally have a high uptake rate.

6.9 Refer to the Habitat Creation, Biodiversity Mitigation and Enhancement Plan (FPCR, 2024) for locations of the features.

Herpetofauna (Reptiles and Amphibians)

6.10 To ensure that these species are protected and that their Favourable Conservation status is maintained, log piles are proposed.

6.11 These should be located between the Native Woodland and Scrub planting and the Grassland. North facing micro-climates should be avoided.

6.12 Areas of approximately 1x3m should be selected to house the log piles. Top soil / turf to 300mm should be removed from the footprint of the log pile so that it can used to cover the completed construction.

6.13 Larger logs and root balls initially to provide structure, followed by the remaining materials. The piles will be created with a diverse structure containing a mixture of sizes, shapes and wood species, with some small-diameter material present, and reach at least 0.75 m high.The wood piles should be secured using sturdy wire to discourage their removal by members of the public.

6.14 Following the completion of the timber core, topsoil will be spread across the surface of the pile and the stripped turf replaced.

6.15 The logs will be left in contact with the ground in dappled shade and built into a compact pile to maintain humidity. Stakes should be driven into the ground either side of the log pile to prevent the pile from collapsing.

6.16 Refer to the Habitat Creation, Biodiversity Mitigation and Enhancement Plan (FPCR, 2024) for locations of the features.

6.17 Within the broadleaved woodland, arisings from any tree management activity will, where appropriate, be retained on site in piles to create wood habitat to maximise invertebrate and bryophyte biodiversity. Where it accords with health and safety inspection, standing dead wood will be left in-situ to provide additional dead wood habitats.

6.18 The wet meadow area is expected to provide seasonally wet habitats of benefit for commuting amphibians. Management will prevent this area from becoming filled with debris or overshadowed by scrub.

Hedgehogs

6.19 Wildlife friendly boundaries will be installed with the Green Infrastructure, this is to allow the free movement of hedgehog and other small mammals. This can be achieved by removing a section of timber or cutting a hole in the bottom of fences. Holes should be approximately 13cm^2 and provide linkages to the wider areas. Each hole will have an attached sign, designating the holes purpose.

6.20 Holes will be instated immediately following the erection of the fence boundaries. The site occupier will be issued with information about management of the site for wildlife including information about hedgehog highways.

7. MONITOR SITE FOR BIODIVERSITY IN THE LONG TERM

Aim 3: To monitor and manage retained and created landscape features and habitats throughout the management period to ensure increasing ecological diversity is maintained in the long term.

7.1 In order to ensure that the landscape features created within the site reach and maintain their maximum recreational, educational and aesthetic value, all landscape features are recommended to be monitored annually by a qualified landscape architect.

7.2 In order to ensure that habitat created within the site reaches and maintains it's maximum value to nature conservation, habitat should be monitored every year by a qualified ecologist.

7.3 Conditions will be assessed as set out in the Biodiversity Metric 2.0 guidance and technical supplement (Natural England Joint Publication JP029, 2019), by a suitably qualified ecologist, with recommendations made to inform annual management practices.

7.4 Results of this monitoring should be used to inform changes to the management plan and five year work programme. The prescriptions provided here should be altered if required to reflect any change in needs of the local community or habitats and species of interest. Changes to the procedures that have been set out in this report must ensure the site wide aims set out in this report are achieved.

7.5 The management plan should run for a period of fifteen years. The work programme should be fully reviewed at the end of a five year period by a suitably qualified and experienced ecologist, arboriculturist and landscape architect, working collaboratively.

7.6 Five year reports will be made to Barnsley Council over a period of fifteen years. After fifteen years, a full review and update of the LEMP, for another fifteen year period, should be undertaken by a qualified and experienced ecologist, arboriculturist and landscape architect, working collaboratively

7.7 The LEMP has been produced to cover a 30-year period demonstrating the Biodiversity Net Gain over this period. Within this document, a working programme of an initial 15-year period is detailed. Following this period, the works should be reviewed at the end of the fifteenth year following an assessment of the site.

7.8 A further 15-year working programme should be created based on the results of that assessment if it is considered that any element within this document needs updating to best achieve and maintain the desired habitat condition.

8. RESPONSIBILITY FOR IMPLEMENTATION

8.1 The implementation and delivery of this management plan will be the responsibility of the Developer - Harworth Group plc's Asset Management Team - up until practical completion. Harworth and CBRE (appointed as property manager) will incorporate the management plan items proposed here into a future landscape management contract. After handover, it will become the responsibility of the future development owner, Kuehne+Nagle, to ensure the ongoing management plan measures are upheld.

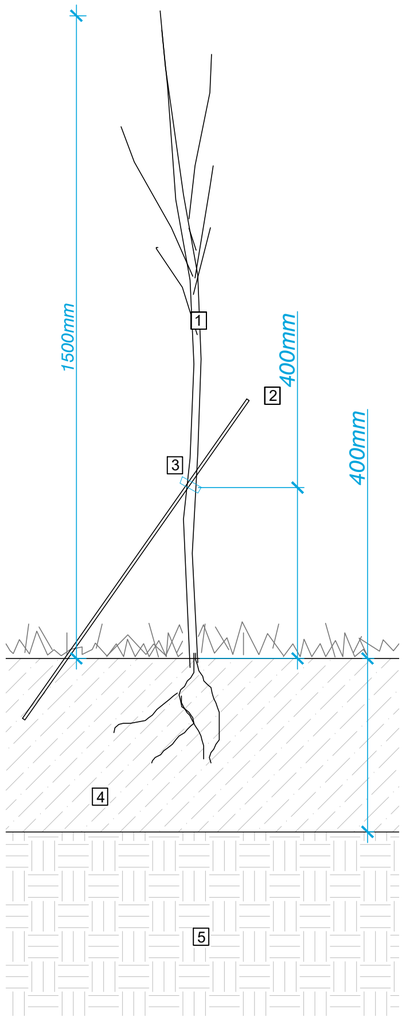
9. Appendix A Standard details

1. 334-UW-C-060 - Typical Transplant Detail - 22 Nov 24

2. 334-UW-C-065 - Rabbit Proof Fencing Detail - 7 Nov 24

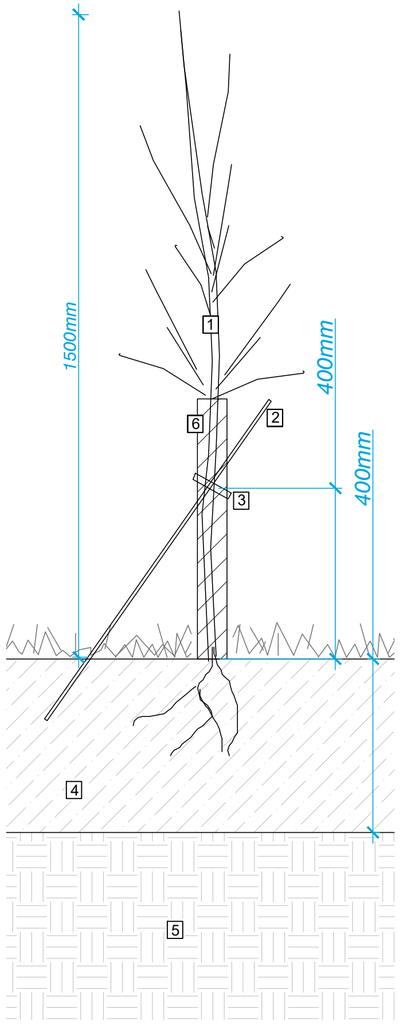
01 060 TYPICAL SCRUB TRANSPLANT DETAIL WITHIN RABBIT PROOF FENCING

1. Transplant, to be staked vertically
2. 900mm Cane tied at 400mm above ground
3. Tree tie as per contractors specification
4. Topcut (Not BS BS3882 compliant) as laid, 400mm depth
5. Site-won Grey Shale subgrade



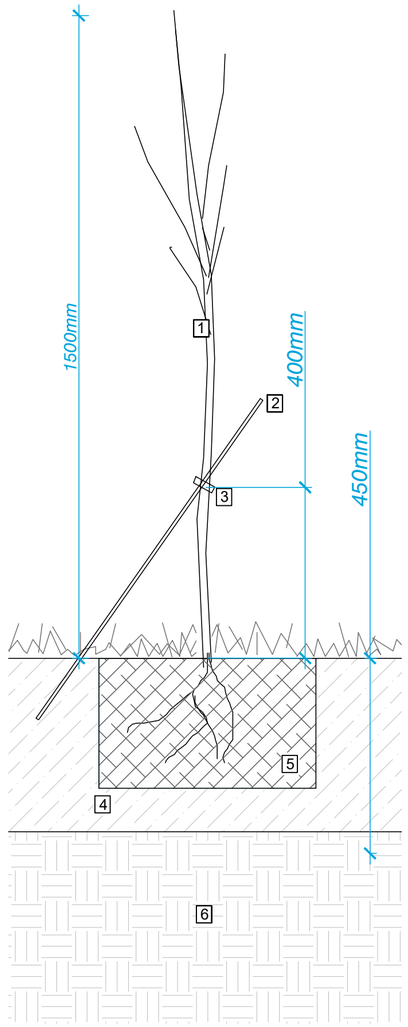
02 060 TYPICAL SCRUB TRANSPLANT DETAIL OUTSIDE RABBIT PROOF FENCE

1. Transplant, to be staked vertically
2. 900mm Cane tied at 400mm above ground
3. Tree tie as per contractors specification
4. Topcut (Not BS BS3882 compliant) as laid, 400mm depth
5. Site-won Grey Shale subgrade
6. Green-Tech; Tubex EcoWrap; 600x38mm



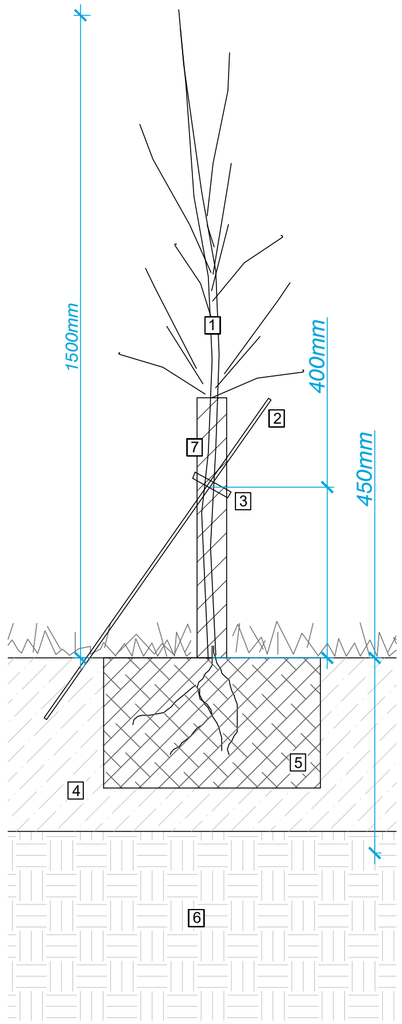
03 060 TYPICAL WOODLAND MATRIX TRANSPLANT DETAIL WITHIN RABBIT PROOF FENCING

1. Transplant, to be staked vertically
2. 900mm Cane tied at 400mm above ground
3. Tree tie as per contractors specification
4. Topcut (Not BS BS3882 compliant) as laid, 400mm depth
5. Ameliorated top-cut to be mixed in situ; Excavated at 500x500x300mm; Green-Tree Soil Improver to PAS-100 (Product Code: 180MG3219), to be mixed with top-cut in an application ratio of 20% Soil Improver to 80% topcut. N-Mag Lite 4-12-10+4MgO fertiliser (Product Code: 100FE1021-PRO) to be applied as top dressing at 100-140g/m^2
6. Site-won Grey Shale subgrade



04 060 TYPICAL WOODLAND MATRIX TRANSPLANT DETAIL OUTSIDE RABBIT PROOF FENCE

1. Transplant, to be staked vertically
2. 900mm Cane tied at 400mm above ground
3. Tree tie as per contractors specification
4. Topcut (Not BS BS3882 compliant) as laid, 400mm depth
5. Ameliorated top-cut to be mixed in situ; Excavated at 500x500x300mm; Green-Tree Soil Improver to PAS-100 (Product Code: 180MG3219), to be mixed with top-cut in an application ratio of 20% Soil Improver to 80% topcut. N-Mag Lite 4-12-10+4MgO fertiliser (Product Code: 100FE1021-PRO) to be applied as top dressing at 100-140g/m^2
6. Site-won Grey Shale subgrade
7. Green-Tech; Tubex EcoWrap; 600x38mm



NOTES

All dimensions to be verified on site. Do not scale this drawing. All discrepancies to be clarified with project Landscape Architect.

Refer to UW drawings:

334-UW-C-058 - Softworks General Arrangement

334-UW-C-064 - Fencing & Tree Protection Plan

rev	details	date
-	First Issue	22 Nov 24

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client	Harworth Group PLC
project	Gateway 36 Phase 2B
drawing title	Typical Transplant Details
drawing status	CONSTRUCTION

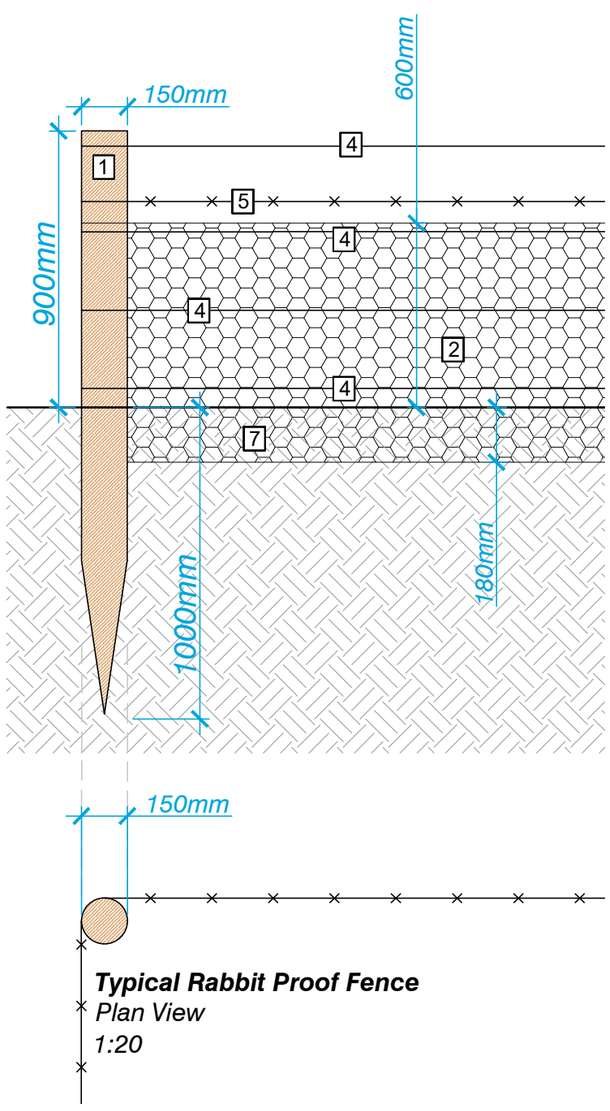
drawn by	checked by	date
HLP	TBR	22 Nov 24
scale		paper size
1:10		A2
job/dwg no.		rev.
334-UW-C-060		-

01 065 TYPICAL RABBIT PROOF FENCE ELEVATION

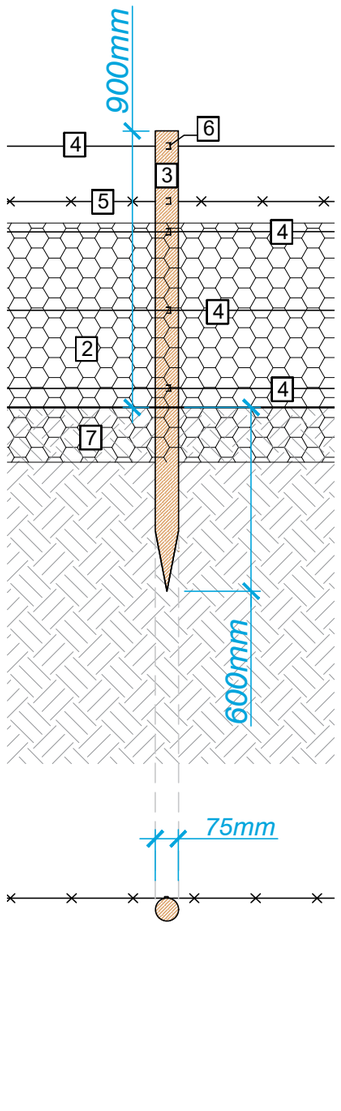
1. Strainer Posts; Round; min.Ø150mm; (min. 1900mm); Located at 25m centres or every change of direction; driven at 1000m
2. Rabbit proof chicken mesh fencing, galvanised; 22 guage (0.7mm) thick; min. height 900mm. Mesh: 25mm diameter
3. Intermediate posts; Round; 1500 x 75mm diameter; Driven (min.600mm); set at 5m centres
4. Galvanisd steel fence wire, 2.5mm dia. single strand; tensioned; with Gripple fixings for breaks in wire and fastened with galvanised steel staples
5. Galvanised steel barbed wire, 2-strand; tensioned; using gripple fixings for breaks in wire and fastened with galvanised steel staples.
6. 30mm fencing staples (galvanised). Not fully driven to allow tensioning
7. Rabbit proof fencing buried in trench sloping outwards to a minimum depth of 180mm and and folded to extend 250mm beyond the fence line 30mm fencing staples (galvanised)

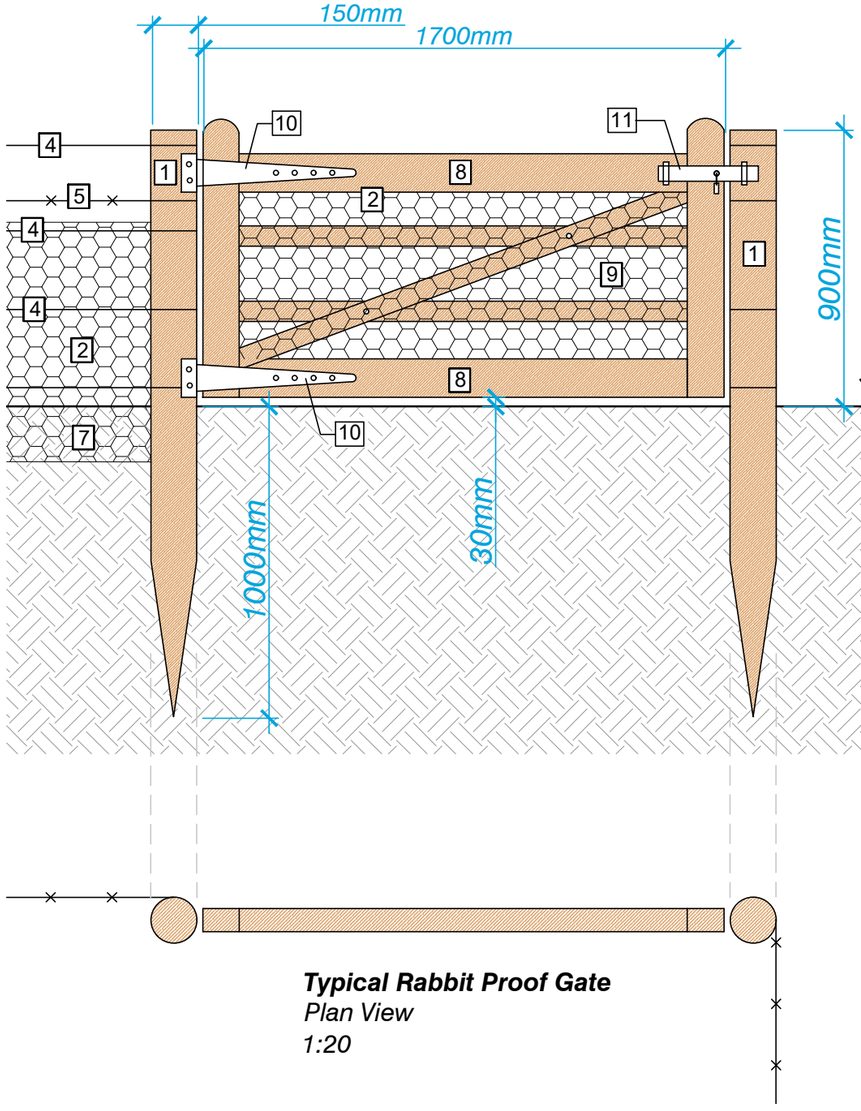
02 065 TYPICAL RABBIT PROOF GATE ELEVATION

8. Proprietary timber Post and Rail Gate - Pedestrian Access Size: 1700mm(l) x 75mm (w) x 900mm (h); c/w galvanised hinges, lock bolt and keeper; contractor's choice
9. Rabbit proof chicken mesh fencing, galvanised; 22 gauge (0.7mm) thickfencing. Mesh should be 25mm diameter
10. Hinges; Galvanised steel hinges; contractor's choice
11. Gate Latch; Galvanised Steel, contractor's choice



Typical Rabbit Proof Fence
Plan View
1:20





Typical Rabbit Proof Gate
Plan View
1:20

NOTES

All dimensions to be verified on site. Do not scale this drawing. All discrepancies to be clarified with project Landscape Architect.

Refer to UW drawings:

334-UW-C-064 - Fence & Tree Protection Plan

334-UW-C-066 - Rabbit Rooof Fence and Hedge Detail

334-UW-C-100-115 - Setting Out Plans

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Gateway 36 Phase 2B		
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Rabbit Proof Fencing Detail		
drawing status		
CONSTRUCTION		
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Gateway 36, Rockingham

Unit 7

Landscape and Ecological Management Plan

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