
**LAND TO THE REAR OF WILLOW COURT,
LITTLETON PANELL, DEVIZES, WILTSHIRE**

LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN

FOR

**REDEVELOPMENT OF LAND FOR VEHICLE STORAGE
(APP REF: PL/2024/00626)**

Prepared by:

WHLandscape

On behalf of:

Grist Environmental

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Revision:

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APPOINTMENT

WH Landscape Consultancy Ltd (WHLandscape) has been appointed by Grist Environmental to produce a Landscape and Ecological Management Plan (LEMP) to enable the discharge of Condition 3 for the redevelopment of land for vehicle storage to the rear of Willow Court, Littleton Panell, Devizes, Wiltshire.

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1. INTRODUCTION

1.1 This document, along with the associated illustrative material, provide the landscape and ecological management detail to enable the discharge of Condition 3 of Planning Permission PL/2024/00626. The Condition is reproduced in full below:

CONDITION 3

Prior to the start of construction, a Landscape and Ecology Management Plan (LEMP) shall be submitted to and approved in writing by the Local Planning Authority. The LEMP will include:

- a) Long term objectives and targets for the management plan.***
- b) Management responsibilities and maintenance schedules for each ecological feature within the development for a period of no less than 30 years from the commencement of the scheme as identified in:***
 - Ecological Appraisal (20th December 2023).***
 - Landscape Strategy (Drawing no: WHL-1411-03 A).***
- c) The mechanism for monitoring success of the management prescriptions.***
- d) A procedure for review and necessary adaptive management in order to attain targets.***
- e) Details of the legal and funding mechanism(s) by which long-term implementation of the plan will be secured.***
- f) A site plan showing the locations of the proposed wildlife piles and six bat boxes.***

The LEMP shall be implemented in full and for the lifetime of the development in accordance with the approved details.

REASON: To ensure the long-term management of landscape and ecological features retained and created by the development, for the benefit of visual amenity and biodiversity for the lifetime of the scheme.

1.2 This document has been compiled by WHLandscape in conjunction with Malford Environmental Consulting. The document should be read alongside existing ecological documents (Land at Willow Court, Littleton Panell, Wiltshire - Ecological Appraisal, Malford Environmental Consulting, 20th December 2023) and information including the landscape plans prepared by WHLandscape (included within the illustrative material).

1.3 The aim is to not only integrate the proposed development into the landscape but also provide landscape and ecological enhancements through a comprehensive scheme of new planting and management of existing vegetation, as well as the creation of new habitat areas.

1.4 Appointment of a suitably qualified contractor(s) to complete the role of implementing the landscape scheme, and the management of the landscaping thereafter will be undertaken by the client/project manager prior to the commencement of development. Planting will be undertaken during the first planting season after the completion of the proposed development and the implementation of hard landscaping proposals.

1.5 The specification tables included below show the total number of plants for the whole site, while the accompanying illustrative material shows the specific number of plants required for the public and private realms respectively. Furthermore, it is important to note that the specification tables show the sizes of vegetation at planting. Their eventual size will depend on growing conditions and appropriate management.

2. ECOLOGY

2.1 ECOLOGICAL BASELINE

2.1.1 The development site is a field of unmanaged, tussocky semi-improved grassland, which although not particularly scarce and does not support any significantly notable plants is nonetheless of local value. No non-native / invasive plant species are present.

2.1.2 Boundary habitats include native scrub and a line of hybrid black poplar trees along the eastern boundary, with the trees and some scrub being removed. There is a small pond located 30m to the east of the development site. The poplar tree line along the eastern boundary and part of the northern scrub boundary will be removed, while other scrub boundaries will be retained and protected.

2.1.3 There are no structures or trees with potential to support roosting bats within the development site. The development site supports bat foraging/commuting with most bat activity restricted to the scrub boundaries. There is no badger sett within the development site, but there is a low level; of badger foraging while hedgehog and other common mammals could use the site.

2.1.4 Boundary shrubs are very likely to support common nesting birds, but the development site does not support ground nesting birds. A small population of slow worm and common lizard is associated with the development site, but great crested newt is highly likely to absent.

2.1.5 The compensation habitat area located north of the railway line comprises arable land of negligible ecological value, with all boundary trees and shrubs retained. There are no wildlife constraints associated with this area.

2.2 OBJECTIVES

2.2.1 The overall aim of creation, aftercare and management of the habitats set out within this LEMP is to 'establish and/or enhance a range of semi-natural habitats that will potentially allow a wider diversity of wildlife to inhabit and use the habitats on-site'.

2.2.2 The following key principles developed by Natural England underpin the habitat creation and management prescriptions:

- Restore and/or create habitat links and stepping stones between different habitat types and/or parcels;

- Manage the site habitats to provide optimal conditions for target wildlife species thereby boosting effective population size and increasing the likelihood of species expansion; and
- Increase the extent of habitat parcels by habitat creation or restoration to reduce likelihood of local species extinction.

2.2.3 The main objective of habitat creation and management during the first 5 years after scheme completion is to ‘ensure the successful establishment of the different habitat types within the application site’.

2.2.5 Longer-term management objectives are to ‘maintain species and structurally diverse, robust and maturing habitats for the benefit of a wide range of wildlife’.

2.2.6 The specific habitat targets of this LEMP are as follows, with details on habitat condition targets provided in Appendix 1.

Habitat type	Target Condition	Years to Condition
Individual Trees	Moderate	27
Native species-rich hedgerow with trees	Good	20
Native species-rich hedgerow	Good	12
Native scrub	Good	10
Wildflower (Other Neutral) Grassland	Good	10

2.2.6 The above objectives will be achieved by the establishment and growth / maturity of individual trees, shrubs, planted and seeded areas, through appropriate management operations as detailed in the chapters below.

2.3 LANDSCAPE AND ECOLOGICAL FEATURES

2.3.1 Provided below is a summary of the landscape and ecological features currently on site that are to be retained, protected and managed, as well as those that are to be created as part of the development.

2.3.2 Retained habitats to be protected and managed are:

- Native Scrub along western boundary

2.3.3 New habitats/features to be created, protected and managed are:

- Individual trees (native and domestic)
- Native species-rich hedgerow with trees
- Native species-rich hedgerow
- Native scrub
- Wildflower Grassland
- Six Bat boxes
- Wildlife habitat piles

2.4 RESPONSIBILITIES AND GENERAL MAINTENANCE

2.4.1 Upon practical completion of each landscape area, the Landscape Contractor will hand over to the Grist Environmental who will be responsible for implementation of the management and maintenance measures detailed in this document.

2.4.2 The landscape and ecological management measures set out in this LEMP will be implemented and funded by Grist Environmental, or their appointed contractor, as part of the ongoing operation and management of the development. All management, monitoring and adaptive management measures described in this LEMP will be carried out in accordance with the approved details for a minimum period of 30 years from the commencement of the development.

2.4.3 The costs associated with implementing the management prescriptions, monitoring requirements and any necessary remedial actions will be met by Grist Environmental through the routine operational management of the site.

2.4.4 A formal record/log of management activities undertaken will be kept, along with details of vegetation establishment (and any informal records of associated wildlife use where appropriate), which should be used to inform and provide suitable justification for any alterations to the management activities undertaken. An annual summary of the measures undertaken, and any snags or deviations should be prepared. Should measures not have been undertaken in line with the requirements, or other issues identified, the annual summary should include actions to remedy these, including dates, timelines and responsibility. A copy of the annual summary should be kept with the log/record and made available upon request for inspection.

2.4.5 All landscape maintenance operations, where they do not conflict with ecology operations, will be conducted in accordance with BS 4428:1989 'Code of practice for general landscape operations'. Ongoing landscape maintenance operations are to be in accordance with sound ecological principles, and where relevant to be in accordance with BS 7370-4:1993 'Grounds Maintenance Recommendations for maintenance of soft landscape'.

2.4.6 All relevant Acts of Parliament and the manufacturer's instructions must be followed, and containers and other contaminated equipment must be cleared from the site after each day's work.

2.4.7 During routine maintenance visits, Grist Environmental shall:

- Check all plants for damage, security, firmness, fixing and support, and replant in an upright position and re-firm if required;
- Keep all planting areas free from weed growth and hoe over and level all cultivated areas and remove weeds to tip, reinstating mulch as necessary;
- Remove encroaching scrub growth from grassland areas;
- Re-fix displaced, ease where necessary, or replace where damaged, tree ties and tree and shrub shelters; and
- Remove any waste or surplus discarded materials from the above within planted areas including riparian areas.

2.4.8 At the end of each growing season, an inspection of all new planting areas shall be carried out to identify plants that are dead/dying or are failing to thrive. Any dead plants shall be removed and replaced with plant material of the same size and species as specified in Section 5 Landscape and Ecological Enhancement.

2.4.9 Replacement tree, hedge and shrub planting shall be carried out by Grist Environmental in the current/first planting season following the discovery of the defect.

2.4.10 Any waste created as part of the general or habitat specific landscape management operations will either be disposed of appropriately off-site, composted on-site or used to create discrete brash piles or used to restock existing habitat piles.

3. MANAGEMENT OF EXISTING VEGETATION AND HABITATS

3.1 TREES AND SCRUB

3.1.1 In March 2022 WHLandscape undertook a survey of the trees around the Willow Court development site (Project Reference: 22.1411). The survey served two purposes: firstly, to explore the feasibility of the scheme, guide the design proposals and outline any constraints that the trees on site pose to its development. Secondly, the tree survey indicates measures required to protect those trees to be retained during any construction process, as well as identifies any remedial work, (e.g. thinning, crown raising, pruning, etc) and felling, that should be undertaken as part of the development in the interest of site safety and general management.

3.1.2 The tree survey identified 16 individual trees and 3 tree groups within and around the proposed development area, all on land under the applicant's control. Of the surveyed trees, 11 of the individual trees (T1 – T11), and the group of hybrid black poplars along the eastern boundary (G1) will require removal to accommodate the development. T12 and T13, as well as G2 and G3, all to the south of the site, will be retained and managed as appropriate, with them being integrated into the landscape scheme for the proposed development.

Note: The following maintenance operations primarily cover remedial work, with felling of additional trees beyond the scope of this application only being recommended if absolutely necessary (i.e. in the interests of safety). No additional tree works should be carried out until the applications have been favourably determined. It is the responsibility of the Grist Environmental to ensure that a felling or thinning licence is not required for any of the work to be undertaken.

See: <<https://www.gov.uk/guidance/tree-felling-licence-when-you-need-to-apply>> for further details.

Existing Trees – Pre-Development Maintenance Operations

- a. All trees will be inspected before development begins on the site, and remedial work, (e.g. thinning, crown raising, etc), will be undertaken where necessary in the interest of site safety and general management.
- b. Removal of any trees marked for felling will take place before any demolition or development takes place on site.

Existing Trees – Post-Development Maintenance Operations

- a. Trees within or bordering publicly accessible areas must be checked at least once every two years, and after severe inclement weather, for signs of deterioration or distress, and the appropriate actions taken where a potential safety hazard is identified.
 - Heavy branches should be removed in sections and undercut to avoid the tearing of the bark, and thereafter lowered by slings. No branch stumps should be left and no cuts should be capable of holding water.
 - Any dense ivy infestation should be removed if evident on site or during the maintenance period.
 - All diseased wood, pruning's and rubbish should be removed from the site, and the site left clean and tidy.
- b. All works shall be carefully carried out to avoid damage to the tree being treated, or neighbouring trees. No trees to be retained shall be used for anchorage or winching.
- c. Under the terms of the Wildlife and Countryside Act 1981 (as amended), the Countryside Rights of Way Act 2000 and the Conservation of Habitats and Species Regulations 2010, it is an offence to disturb any protected species, including their habitat or resting place. It may, therefore, be necessary to obtain expert ecological advice prior to the commencement of any works. This is particularly relevant to nesting birds, bats and their roosts. Contractors must be reminded of their responsibilities and should contact the relevant authorities if any signs of bats are found.
- d. Tree management will take place outside of the bird nesting season. The nesting season for most birds runs from 1st March to 31st August. However, this can vary depending on the species and location. During these months, careful inspection must be made before any work commences and works must be postponed if active nests are found.
- e. All tree works will be undertaken by a suitably qualified arborist in accordance with the BS 3998:2010 British Standard Tree Work - Recommendations. Proof of experience and insurance provision will be required. All work shall be undertaken at the appropriate time and with the consent of Grist Environmental.

Existing Scrub – Pre-Development Maintenance Operations

- a. Any scrub marked for removal will be cleared before any demolition or development takes place on site.

Existing Scrub – Post-Development Maintenance Operations

- a. Scrub should be managed to create tall bushy plants with maximum wildlife potential.
- b. Under the terms of the Wildlife and Countryside Act 1981 (as amended), the Countryside Rights of Way Act 2000 and the Conservation of Habitats and Species Regulations 2010, it is an offence to disturb any protected species, including their habitat or resting place. It may, therefore, be necessary to obtain expert ecological advice prior to the commencement of any works. This is particularly relevant to nesting birds, bats and their roosts. Contractors must be reminded of their responsibilities and should contact the relevant authorities if any signs of bats are found.
- c. Scrub management taking place between mid-December and early March. This will avoid the dormice active period and bird-nesting season and allow berries to be used for foraging wildlife.
- d. The nesting season for most birds runs from 1st March to 31st August. However, this can vary depending on the species and location. During these months, careful inspection must be made before any work commences and works must be postponed if active nests are found.

4. PROTECTION OF EXISTING VEGETATION

4.1 The retained trees and scrub are vulnerable to damage during demolition and construction and shall be protected during the construction period. Trees and scrub will be protected in accordance with the requirements of BS5837 (2012) taking account of the Root Protection Areas (RPAs) calculated by WHLandscape (See Tree Constraints Plan submitted with the Tree Survey).

- Protection Barriers will be used to provide a Construction Exclusion Zone (CEZ) to prevent construction activity within the RPAs of the retained trees and scrub both on-site and off-site directly boarding construction areas.
- The protection barriers are to be constructed from weldmesh panels of at least 2.00m height and securely fixed with wire or scaffold clamps fixed to a rigid framework. This framework must be constructed from horizontal and vertical scaffold tubes during the construction period, in accordance with the requirements of BS5837:2012.
- Where protection fencing falls outside of the RPAs of the retained trees and other vegetation, a robust high visibility plastic mesh barrier is recommended in place of the above-mentioned fencing. This will create a visual deterrent and signify the extent of the CEZ.
- All services should be directed outside the retained tree's RPAs.
- No unplanned construction activity whatsoever must be allowed within the RPAs of trees to be retained. This includes the storage of materials, unplanned re-routing of underground services or incursions by vehicles or site operative unless specified and accompanied by specialist protection measure.
- Mixing of concrete or cement, or the storage of fuels must not take place within 10m of the retained trees, nor in any location where a slope in the ground could lead to the contamination of the RPA of any tree to be retained.
- Fires must not be lit in a position where flames could extend within 10m of the foliage, branch framework or trunk of any tree to be retained.
- Landscape works undertaken within the RPAs must be done so as not to damage shallow roots and are to be agreed by the arboricultural consultant. Heavy mechanical cultivation of the soil must not be undertaken within the RPAs of trees to be retained.
- Changes in soil levels should not be undertaken within the RPAs of retained trees, unless otherwise agreed in writing with the Local Planning Authority (LPA). This is in order to ensure that the rooting systems, including the delicate non-woody roots, are not inadvertently severed, or the rooting zones are not compromised by compaction.

4.2 The undertaking of the above measures will ensure that the biodiversity of the site is protected in accordance with the Wildlife and Countryside Act 1981.

5. LANDSCAPE AND ECOLOGICAL ENHANCEMENT

5.1 LANDSCAPE AND HABITAT ENHANCEMENT

5.1.1 Management practices are proposed that will safeguard and enhance key habitats (e.g. mature trees) for the benefit of wildlife and the landscape resource. The design and long-term management of the land seeks to provide meaningful and appropriate mitigation for the development, as well as habitat creation and encouraging species diversity around the site.

5.1.2 The proposed planting will largely consist of a large area of wildflower grassland, alongside the strategic planting of trees, scrub and hedgerows around the development area and to the north of the site.

5.2 PRELIMINARIES

GENERAL

- Appointment of a suitably qualified contractor(s) to complete the role of implementing the landscape scheme, and the management of the landscaping thereafter will be undertaken by Grist Environmental / the project manager prior to the commencement of development.
- Planting will be undertaken during the first planting season after the completion of the proposed development and the implementation of hard landscaping proposals.
- Failure of Plants (pre-practical completion): the Contractor entirely at his own cost shall replace any trees, shrubs or other plants other than those found to be missing or maliciously damaged.
- Malicious Damage or Theft prior to Practical Completion: the Contractor at his own expense shall make all loss and damages arising from theft or malicious damage prior to practical completion of the entire project good.
- Grist Environmental shall ensure that any landscape contractor they employ shall carry out the periodic maintenance of all planted areas, other than any areas for which Grist Environmental becomes responsible during the said Maintenance Period. Inspection checks shall be carried out at monthly intervals and the appropriate work carried out.
- Grist Environmental shall ensure that any landscape contractor they employ shall carry out, in all areas any tree, shrub, grass and other plants replacements that may be necessary until transfer of responsibility to the Grist Environmental.

- Post Practical Completion: the contractor will carry out the maintenance of trees, shrubs and grasslands after the date of practical completion until the responsibility is transferred to Grist Environmental.
- Thereafter, Grist Environmental shall be responsible for all periodic maintenance and replacement for all planted areas to which its management agreement relates and shall ensure that any landscape contractor employed by it carries out periodic maintenance of all such areas in accordance with the general management details provided. Either inspection checks shall be carried out by a competent person, a member of British Association of Landscape Industries (BALI) or the Landscape Institute (LI), acting for Grist Environmental, at minimum monthly intervals and the appropriate work carried out.
- Replacements of plants shall take place as many times as is necessary in order to maintain a complete cover of plants and to maintain the scheme as designed by the Landscape Architect, and within the correct season for the type of plant, tree, shrub and grassland mix.

TREE ROOT BARRIERS

5.2.1 Where necessary, to protect services, structures and surfaces Root barriers (GreenBlue Urban or similar approved) will be used. Root barriers are to be installed as directed by the Project Structural Engineer where trees are proposed within 3.00m of services, structures and surfaces or are located closer to site features than the offsets recommended in Table A.1 of BS 5837:2012 'Trees in Relation to Design, Demolition and Construction'. However, in the first instance the location of trees and services should be designed to minimise conflicts.

5.2.2 If required, root barriers are to be installed to supplier specification on the tree side along the back edge of the kerb/edging restraint to the adjacent hardstanding and are to extend a minimum 3.00m in each direction from a point taken perpendicular from the tree trunk to the kerb/edging face.

5.2.3 The following root barriers specifications outlined below are to be used, dependent on the depth of underground services (if present):

- Where no services present – GreenBlue Urban – ReRoot300 (or similar approved)
- For services 450mm deep – GreenBlue Urban – ReRoot600 (or similar approved)
- For services 800mm deep – GreenBlue Urban – ReRoot1000 (or similar approved)
- For services deeper than 800mm – GreenBlue Urban – ReRoot2000 (or similar approved)

IRRIGATION

5.2.6 This document is not able to give precise recommendations with regard to species-specific watering requirements; however, the following should be considered in respect of watering for all new planting:

- Use a watering can with a rose attachment on the end to water or a sprinkler or other such method that will administer water slowly and at a low pressure, mimicking rainfall.
- Water should be applied to the base of the plant, evenly distributed over the entirety of the root-ball to encourage even root development.
- Ensure that water is draining well away after 10 minutes of application of water.
- A newly planted tree/shrub should be watered in when planted, and at the point of bud burst in the spring and should be continued throughout the spring and summer until the leaves have fallen in autumn (for deciduous trees).
- Watering is advised for the first 3 summers after planting, further to this the trees and shrubs should be able to access water from the surrounding soil. (**Note:** *Be mindful that newly planted trees do need watering, even if it has been raining as often rainwater will not reach the rootball*).
- Evergreens may need to be watered a little during the winter months if it is particularly dry, this does not need to be done routinely and can be a response to a period of dry weather.
- Use organic mulch at the base of the plants to help retain water, prevent weed growth and also give you an indication of where you need to water.

5.2.7 The table (below) provides a guide to the necessary irrigation period.

Irrigation Schedule: Years 1 to 3		
Size of nursery stock	Irrigation Frequency	Irrigation Rates**
<50mm girth (Shrubs & hedge plants)	Daily for 2 weeks; every other day for 2 months; weekly until established.	Water will be applied to trees at a rate of 8-12 litres of water per 25mm of trunk diameter; Water will be applied to shrubs at a rate of 4-8 litres of water per 25mm of trunk diameter.
50-100mm girth (Standard trees)	Daily for 1 month; every other day for 3 months*; weekly until established.	
>100mm girth (Selected Standard + trees)	Daily for 6 weeks; every other day for 5 months*; weekly until established.	
* When planting in winter, the irrigation frequency can be reduced to 2-3 times each week (after the initial period of daily watering) instead of every other day. ** During the period between May to September weekly watering rates will be no less than 20 litres per tree and 10 litres per individual shrub/linear metre of hedgerow unless ample rainfall renders this unnecessary. During extended dry periods (i.e. 10 days with no rain), plants will be watered every other day.		

5.3 INDIVIDUAL TREE PLANTING AND MANAGEMENT

5.3.1 All tree locations and species must be taken into consideration by the Project Structural Engineer to ensure that foundation design accords with the specifications set out under Chapter 4.2 of the NHBC Standards. It is the Contractors responsibility to ensure that all underground services have been located and identified in advance of tree pit excavation. Root barriers are to be installed as directed by the Project Structural Engineer where trees are within 3.00m of services, structures and surfaces or are located closer to site features than the offsets recommended in Table A.1 of BS 5837:2012 'Trees in Relation to Design, Demolition and Construction'. Supply and aftercare of trees shall be in accordance with BS 8545: 2014 'Trees: from nursery to independence in the landscape', with aftercare proposals detailed below.

5.3.2 All tree pits must be backfilled with topsoil in accordance with BS 3882: 2015 'Specification for topsoil' and BS 8601:2013 'Specification for subsoil and requirements for use'. If soil has not been supplied by site then approved soil must be imported to site, all certificates must be handed to the Site Manager on delivery. All trees will comprise pot grown or root-balled stock.

Ground Preparation and Planting

General

- a. All trees are to be pit-planted in minimum 1.00m² square pits, which have been cleared of all vegetation. The base and side of tree pits are to be 'broken' to assist root penetration and improve drainage.
- b. Trees will be planted during the first planting season following completion of development (i.e. between November and March) when the ground is neither frozen nor waterlogged. If the ground is dry, the plants will be watered to ground capacity on planting.
- c. Trees are to be planted a minimum of 3.00m from any existing and proposed drainage channels and service runs that cross the site. (The precise routes of drainage, and any service points, are to be determined before planting commences to prevent conflicts.)
- d. Trees are to be planted a minimum of 1.00m from any fencing or boundary walls to prevent future conflicts.
- e. Root barriers (GreenBlue Urban or similar approved) should be used where necessary to protect services, structures and surfaces if trees cannot be suitably repositioned in their immediate locality (see 5.2.1 to 5.2.4 for full details).
- f. All trees will be watered to capacity once planted.

Tree Pits

- a. Tree pits are to be excavated to a depth of 750mm and backfilled with:
 - 300mm of good quality subsoil to meet the specification as set out in BS 8601:2013 'Specification for subsoil and requirements for use'.
 - 450mm depth of topsoil to meet the specification as set out in BS 3882:2015 'Specification for topsoil'.
- b. The Dimensions of the tree pit are to be at least 75mm greater than the root-ball, but no more than 200mm wider in diameter and 200mm deeper than the root spread.
- c. A general-purpose slow-release fertiliser (at the rate of 75gm/m²) and Tree Planting and Mulching Compost (at the rate of 20litres/m²) are to be incorporated into the top 150mm of topsoil during its final cultivation.

Staking

- a. 'Standard' and 'Selected Standard' trees will be single staked using (Ht) 1200mm (Dia) 50mm tree stakes. Trees are to be secured with tree buckle and rubber block, attached to the stakes with flat headed wood nails.
- b. All trees will be mesh guarded to prevent damage by vermin.

Planting Specifications

Native Tree Species							
Plan Ref.	Scientific name	Common name	Specification	Girth (cm)	Approx. height (m)	Clear stem height (m)	No.
Ac	<i>Acer campestre</i>	Field Maple	Standard	8-10	2.50/3.00	1.75/2.00	19
Bp	<i>Betula pendula</i>	Silver birch	Light Standard	6-8	2.50/3.00	1.50/1.75	5
Cb	<i>Carpinus betulus</i>	Hornbeam	Selected Standard	12-14	3.50/4.00	Min 2.00	8
Ms	<i>Malus sylvestris</i>	Wild crabapple	Light Standard	8-10	2.50/3.00	1.50/1.75	8
Pa	<i>Prunus avium</i>	Wild cherry	Light Standard	8-10	2.50/3.00	1.50/1.75	9
Qr	<i>Quercus robur*</i>	English Oak	Selected Standard	10-12	3.00/3.50	Min 2.00	8
St	<i>Sorbus torminalis</i>	Wild service tree	Standard	8-10	2.50/3.00	1.75/2.00	3
Total:							60
* Quercus robur is <u>not</u> to be planted on the proposed bunding.							

Maintenance Operations

- a. The planting will be checked at regular intervals and any damaged stakes, canes and ties replaced. Plants will be firmed up following planting and, if necessary, until established. Any plants which die, become diseased or damaged will be replaced.
 - Years 0 – 2: Tree will be checked quarterly and after inclement weather.
 - Years 3 – 5: Tree will be checked annually and after inclement weather.
 - Years 5+: Trees will be checked at least once every two years and after severe inclement weather.
- b. For the first three years, trees will be watered. For subsequent years, during extended dry periods (i.e. 10 days with no rain), trees will be watered to ground capacity on a weekly basis until dry conditions are alleviated.
- c. Weeding around trees will be carried out monthly by hand until the plants are well established. Mulch will be applied annually, using 50mm of matured wood bark, or wet straw, for the first three years after planting to suppress weed growth and contain the moisture.
- d. Limited formative pruning will be necessary to ensure that healthy and balanced crowns develop, avoiding 2 weeks either side of bud burst and leaf fall, at which time the stakes, guards and tree ties will be checked to ensure that the trees are not being damaged by them.
- e. Stakes and guards will be removed when the trees are established, after approximately 3 to 5 years depending on species.
- f. Any losses will be replaced during the following planting season to achieve a stocking rate of 100% by the end of the 30-year period.
- g. Mature and established trees will be inspected at least once every two years and after severe inclement weather, and any necessary remedial work performed.

5.4 HEDGE PLANTING AND MANAGEMENT

Ground Preparation and Planting

- a. Bare-rooted hedging material will be planted during the first planting season following completion of development (i.e. between November and March) when the ground is neither frozen nor waterlogged. If the ground is dry, the plants will be watered to ground capacity on planting.
- b. All invasive and pernicious weeds will be removed from the site before works commence. Clearance will be restricted to non-residual herbicide in accordance with manufacturers specifications and hand weeding. All planting beds will be free from weeds and waste materials.

- c. All mixed native hedging material will be notch planted as bare-rooted transplants and are to be planted in a double staggered row at 45cm centres using 5 plants per linear metre, taking care to ensure species are mixed and not heavily grouped.
- d. Planting areas will be mulched using 50mm of matured wood bark, or wet straw
- e. Plants will be individually staked using (Ht) 600mm bamboo canes and guarded with spiral guards to prevent damage by vermin.
- f. All hedgerow plants will be watered in once planted.

Planting Specifications

Mixed Native Hedge Species – Total Length: 317.50m						
Plan Ref.	Scientific name	Common name	Specification	Approx. height (cm)	%	No.
2	<i>Acer campestre</i>	Field maple	1 + 1 transplants	80-100	5	79
	<i>Corylus avellana</i>	Hazel	1 + 1 transplants	80-100	20	318
	<i>Crataegus monogyna</i>	Hawthorn	1 + 1 transplants	80-100	60	954
	<i>Euonymus europaeus</i>	Spindle	1 + 1 transplants	80-100	5	79
	<i>Prunus spinosa</i>	Blackthorn	1 + 1 transplants	80-100	5	79
	<i>Viburnum latana</i>	Wayfaring tree	1 + 1 transplants	80-100	2.5	40
	<i>Viburnum opulus</i>	Gelder rose	1 + 1 transplants	80-100	2.5	40
Total Plants:						1589

Maintenance Operations

- a. The planting will be checked at regular intervals and any damaged stakes, canes and ties replaced. Plants will be firmed up following planting and, if necessary, until established. Any plants which die, become diseased or damaged will be replaced.
 - Years 0 – 2: Hedging plants will be checked quarterly and after inclement weather.
 - Years 3 – 5: Hedging plants will be checked biannually and after inclement weather.
 - Years 5+: Hedging plants will be checked be checked annually and after severe inclement weather.
- b. For the first three years, hedge plants will be watered. For subsequent years, during extended dry periods (i.e. 10 days with no rain), plants will be watered to ground capacity on a weekly basis until dry conditions are alleviated.

- c. Weeding around hedges will be carried out monthly by hand until the plants are well established. Mulch will be applied annually, using 50mm of matured wood bark, or wet straw, for the first three years after planting to suppress weed growth and contain the moisture.
- d. Pruning will be required to ensure the growth of strong, dense hedging and will be carried out once the plants are well established, normally in the second year, but dependant on growth rates.
- e. Hedgerow management will take place between mid-December and early March. This will avoid the dormice active period and bird-nesting season and allow berries to be used for foraging wildlife.
- f. Mixed native hedging will be maintained at a minimum of 2.50m in height once established.
- g. Guards and stakes will be removed once the plants are well established.
- h. Any losses will be replaced during the following planting season to achieve a stocking rate of at least 95% by the end of the 30-year period.

5.5 SCRUB PLANTING AND MANAGEMENT

Ground Preparation and Planting

- a. Bare-rooted scrub material will be planted during the first planting season following completion of development (i.e. between November and March) when the ground is neither frozen nor waterlogged. If the ground is dry, the plants will be watered to ground capacity on planting.
- b. All invasive and pernicious weeds will be removed from the site before works commence. Clearance will be restricted to non-residual herbicide in accordance with manufacturers specifications and hand weeding. All planting beds will be free from weeds and waste materials.
- c. All scrub material will be planted in a hole just deep and wide enough to set the rootball in, leaving the bases of the stems, or the shoots above ground. Hand firm soil back around stem.
- d. Scrub species will be planted at 2.50/3.50m (avg. 3.00m) centres (grouping 4-7 specimens of the same species) and avoiding a 'grid structure'.
- e. Plants will be individually staked using (Ht) 600mm bamboo canes and guarded with spiral guards to prevent damage by vermin.
- f. All scrub plants will be watered in once planted.

Planting Specifications

Native Scrub Species – Total Area: 2945.00m²						
Plan Ref.	Scientific name	Common name	Specification	Approx. height (cm)	%	No.
1	<i>Acer campestre</i>	Field maple	1 + 1 transplants	80-100	5	20
	<i>Cornus sanguinea</i>	Dogwood	1 + 1 transplants	60-80	10	40
	<i>Corylus avellana</i>	Hazel	1 + 1 transplants	60-80	22.5	89
	<i>Crataegus monogyna</i>	Hawthorn	1 + 1 transplants	60-80	25	99
	<i>Euonymus europaeus</i>	Spindle	1 + 1 transplants	60-80	10	40
	<i>Ligustrum vulgare</i>	Wild privet	1 + 1 transplants	60-80	5	20
	<i>Prunus spinosa</i>	Blackthorn	1 + 1 transplants	60-80	10	40
	<i>Rosa canina</i>	Dog rose	1 + 1 transplants	60-80	5	20
	<i>Viburnum lantana</i>	Wayfaring tree	1 + 1 transplants	60-80	7.5	30
Total Plants:						398

Maintenance Operations

- a. The planting will be checked at regular intervals and any damaged stakes, canes and ties replaced. Plants will be firmed up following planting and, if necessary, until established. Any plants which die, become diseased or damaged will be replaced.
 - Years 0 – 2: Scrub plants will be checked quarterly and after inclement weather.
 - Years 3 – 5: Scrub plants will be checked biannually and after inclement weather.
 - Years 5+: Scrub plans will be checked be checked annually and after severe inclement weather.
- b. For the first three years, scrub plants will be watered. For subsequent years, during extended dry periods (i.e. 10 days with no rain), plants will be watered to ground capacity on a weekly basis until dry conditions are alleviated.
- c. Weeding around scrub plants will be carried out monthly by hand until the plants are well established. Mulch will be applied annually, using 50mm of matured wood bark, or wet straw, for the first three years after planting to suppress weed growth and contain the moisture.
- d. Pruning will be required to ensure the growth of strong, dense scrub and will be carried out once the plants are well established, normally in the second year, but dependant on growth rates.

- e. Scrub management will take place between mid-December and early March. This will avoid the dormice active period and bird-nesting season and allow berries to be used for foraging wildlife.
- f. Guards and stakes will be removed once the plants are well established.
- g. Any losses will be replaced during the following planting season to achieve a stocking rate of at least 95% by the end of the 30-year period.

5.6 WILDFLOWER GRASSLAND PLANTING AND MANAGEMENT

Translocated Grassland – Ground Preparation

5.6.1 The existing grassland within the development site will be translocated onto the land to the north of the site, which is currently in arable use. The turfs will be translocated onto bare ground that will have had topsoil scraped to create the shallow bund.

Grassland Translocation

5.6.2 The grassland within the development area will be translocated to the compensation habitat area located to the north of the railway line, which is currently an arable field, to create compensatory wildflower grassland.

5.6.3 The existing grassland will be translocated by first strimming-back the grassland and then moving the grassland as turfs (vegetation and roots), which will be dug out using digger bucket and moved to the off-site compensation area using a tipper truck. The turfs will be carefully laid vegetation side up, spread out by digger bucket and then carefully rolled to ensure good contact between the new turfs and soil (preventing frost damage to the roots).

5.6.4 The off-site compensation area being arable land will first be prepared by stripping topsoil which is very likely nutrient rich. This soil will be used to landscape the compensation area to create a shallow south-facing embankment, which replicates as closely as possible the sloping, grassland of the development site.

Bund Grassland – Ground Preparation

5.6.5 After the formation of the bund, weeds must first be removed using repeated cultivation or a herbicide. The ground should be dug to bury any unwanted ground cover, then cultivated with a rotovator, finally the soil should be harrowed or raked to produce a medium tilth. It may be necessary

to return to site even after seeing in order to remove any invasive species such as docks, thistles, mare's tail or brambles; These should either be manually removed or individually chemically treated.

5.6.6 Once prepared the ground should be raked and tamped, moving soil if needed to smooth out minor humps and depressions, to produce a firm surface. The final raking and tamping should produce a seed bed with a medium-fine tilth ready for seeding. Cultivation work will be carried out when the soil moisture level is reasonably low, allowing the soil to crumble.

Sowing Specifications

Special General Purpose Meadow Mixture – Total Area: 13002.00m²			
Seed Mix	% (by weight)	Sowing Rate (g/m²)*	Quantity (g)
Emorsgate EM3 (or equivalent)	20% native wildflowers 80% slow growing grasses	4	≈52,008
* The sowing rates for overseeding the translocated grassland and establishing new grassland on the bund will be the same			

Sowing

- Seed will be sown in spring when there is sufficient warmth and moisture in the soil.
Moisture may be supplied artificially by watering but must be thorough enough to penetrate at least 100mm.
- Seed should be surface sown onto a freshly prepared seed bed and can be applied by machine or broadcast by hand (do not drill). To get an even distribution, divide the seed into two or more parts and sow in overlapping sections.
- After sowing lightly rake or harrow the surface to settle the seed in, taking care not to bury the seed at depth. Firm with a roller, or by treading, to give good soil/seed contact.
- Protect the newly sown seed from birds and prevent public access onto the soil. Weed the area by hand, removing any weeds before they flower.

Maintenance Operations

First Year

- Growth and establishment of wildflowers and grasses may be slow initially, and there will often be a flush of annual weeds from the soil in the first growing season. While weeds can look unsightly, they will offer shelter to the sown seedlings, and are of a benefit to bugs.
- Resist cutting the annual weeds until mid to late summer (early August is recommended), especially if the mixture contains Yellow Rattle, then remove and compost. This will reveal the

young meadow, which can then be kept short by mowing every 4-8 weeks through to the end of March of the following year, with the clippings removed after each cut; a minimum of three cuts will be undertaken in the first year. This regime may also be required in the second year.

- c. Dig out any residual perennial weeds such as docks.

Translocated Grassland – Continued Management

5.6.7 Once established, the grassland will be allowed to develop a tussocky sward structure to replicate the grassland found in the development site.

- a. Once established, tussocky grassland requires minimal maintenance.
- b. Cut sections only as needed to control invasive perennial weeds (docks, thistles) or contain scrub and bramble invasion.
- c. Do not cut until after 1 August to protect any nesting invertebrates and beneficial insects. For wildlife this cutting is best done on a rotational 2-3 year cycle so that no more than half the area is cut in any one year leaving part intact as an undisturbed refuge.
- d. Additional weed control may be required. This will involve hand pulling of self-set, young woody species, as well as the targeted use of herbicide for docks/thistles or other invasive or undesirable species which could appear.

Bund Grassland – Continued Management

- a. Each spring if plant growth is more than c 150mm in height cut (and remove cuttings if dense) to achieve a plant height of c 50mm tall. Cut before the end of March.
- b. Do not cut or disturb grassland from the end of March to mid-August to provide flowers, habitat and foraging sites for invertebrates (including wild pollinators) and birds.
- c. After flowering in July or August take a 'hay cut': cut back with a scythe, petrol strimmer or tractor mower to c 50mm. Leave the 'hay' to dry and shed seed for 1-7 days then remove from site so not to leave a mulch and to help reduce soil fertility; this is important so as to maintain flower numbers in subsequent years.
- d. Mow the re-growth through to late autumn/winter to c 50mm and again in spring if needed. Remove cuttings if they are too dense to disperse easily and quickly.

6. FAUNA SPECIFIC FEATURE CREATION AND MANAGEMENT

6.1 BATS

CREATION

6.1.1 To enhance the local area for bats, six bat boxes will be erected on mature trees in appropriate locations either around the development site or on land to the north of the railway line. Bat boxes will include:

- Four general purpose bat boxes such as Schwegler 2F and/or Schwegler 1FF or equivalent; and
- Two Vincent Pro bat boxes that are specifically designed to target barbastelle bats.

6.1.2 The bat boxes will be installed as far above the ground as possible (minimum 3m above ground level) and orientated in a southerly direction receiving partial sunlight under guidance of a bat ecologist.

MANAGEMENT

6.1.3 The bat boxes are robust and long lasting and require no specific maintenance. Nonetheless, an inspection of the bat boxes will be undertaken to ensure they remain secured. This inspection can be conducted at any time of year and combined with on-going management or monitoring practices.

6.1.4 Should the repair or replacement of a bat box be required; a suitably qualified bat ecologist will be consulted to ensure compliance with the relevant legislation as bats may be present throughout the year and must not be disturbed. Adjustment of boxes would typically be undertaken in autumn or winter months when bats are less likely to be present.

6.2 WILDLIFE HABITAT PILES

CREATION

6.2.1 To enhance the habitat niches available within the site for a range of wildlife, wood habitat piles (wildlife hibernacula) will be created within land to the north of the railway line within grassland adjacent to hedgerow or scrub belts. Locations of habitat piles will be agreed with an ecologist within the first 3 years after habitat establishment.

6.2.2 The habitat piles will be constructed from arisings from site management of woody vegetation by stacking 1.00-2.00m lengths of cut tree, shrub or brashwood. Openings into the wood piles will be maintained at ground level, providing access for wildlife to seek refugia within the interior of the piles.

6.2.3 These decaying wood piles provide ideal habitat for saproxylic invertebrates (feed on deadwood), fungi and mosses, while also providing shelter for a variety of wildlife including small mammals and common amphibians.

MANAGEMENT

6.2.4 The habitat piles are reasonably long lasting, and their gradual decay is important to ensure they continue to provide benefits to a range of wildlife. As such, they do not require regular ongoing maintenance. Nonetheless, the habitat piles should be inspected every 3-5 years and topped up with woody arisings from ongoing site management as required.

7. ADAPTIVE MANAGEMENT AND MONITORING

7.1 PRINCIPLES OF ADAPTIVE MANAGEMENT

7.1.1 Adaptive management is an iterative process whereby management decisions and implemented actions are continually reviewed and any lessons learnt from their outcomes feedback into management aims and prescriptions, allowing management of habitats / ecology systems where uncertainty is present.

7.1.2 Adaptive management involves a cycle of designing, implementing, monitoring and evaluating actions, to improve understanding and effectiveness of the proposed management over time. This approach is useful when the proposed management outcomes or end points cannot be fully predicted at the outset, which allows for adjustments to be made as new information becomes available.

7.1.3 The key components of adaptive management are:

- **Design:** Identify the habitat creation and management actions to be taken based on current baseline knowledge and anticipated outcomes (e.g. habitat establishment and maturity, wildlife response).
- **Implement:** Carry out the planned habitat creation and management actions (e.g. habitat planting and aftercare).
- **Monitor:** Collect and analyse information and data on the system / habitats / species response to the implemented habitat creation and management actions (e.g. complete habitat condition assessments).
- **Evaluate:** Assess the results of the monitoring to understand the effectiveness and desirability of the implemented habitat creation and management actions (e.g. are habitat condition targets being met?).
- **Adjust:** Modify decisions and feed into habitat creation / management actions based on the evaluation process and any new information generated to create a cycle of continuous improvement.

7.1.4 Adaptive management, responding to evolving and changing habitat conditions, is embedded within this LEMP.

7.1.5 Any significant discrepancies between or deviations from the expected and observed habitat conditions (within acceptable boundaries) will be reviewed and, where necessary, management remedial actions will be implemented to address any identified issues.

7.2 MONITORING

7.2.1 The habitats being created, enhanced and managed as part of this LEMP will take varying amounts of time to establish and reach maturity. It is difficult to predict accurately the rate and direction of change/establishment of habitats, due to variations in various abiotic and biotic factors such as climate, weather, micro-topography, ground and soil conditions, water levels/inundation frequency, availability of seedbank, grazing pressure etc.

7.2.2 The main objective of habitat creation and management during the first five years is to ensure the successful establishment of the target habitat-types, whereas longer-term management relates to maintaining a species-rich, structurally diverse and robust habitat mosaic for the benefit of a wide range of wildlife.

7.2.3 The focus in the early stages of habitat management is therefore to ensure the survival of restored, enhanced or newly created habitats and vegetation by providing suitable growing conditions, suppressing more vigorous and less desirable (e.g. non-native or invasive) plant species, and encouraging a more diverse species rich environment using appropriate management techniques.

7.2.4 To identify whether nature conservation objectives and targets are being achieved it is essential to develop a robust monitoring and appraisal programme, which include auditable, site-specific success criteria as well as identified remedial actions and their triggers if the habitats are not establishing as planned.

7.2.5 The principles of ‘adaptive-management’ will be applied, which is to say that habitat creation and management actions will be continuously assessed and reviewed, while also allowing habitats to naturally adjust and develop through time (within agreed boundary limits) as opposed to being viewed as a static system or constrained within narrowly defined boundaries.

7.2.6 Monitoring is an integral component of the LEMP implementation, and the following habitats will be monitored against set habitat condition targets:

- Other Neutral (Wildflower) Grassland: Good Condition

- Native mixed Scrub: Good Condition
- Native Species-rich Hedgerow: Good Condition
- Native Species-rich Hedgerow with Trees: Good Condition
- Individual Trees: Moderate Condition

7.2.7 Specific Habitat Condition Targets and monitoring requirements for each habitat type are presented in Appendix 1.

7.2.8 Monitoring of each habitat type will be undertaken in **Years 1, 2, 3, 5, 10, 15, 20 and 30** after establishment (translocation, planting or sowing) of defined habitats.

7.2.9 Monitoring will link to clear habitat targets which, via adaptive management, will trigger altered management or remedial actions as required. Management deviation or intervention will generally only be undertaken if the site is not establishing or maturing as predicted / wanted or if unexpected / undesirable changes have occurred that create a significant and unwanted risk / outcome. For example: failure of habitat establishment or vegetation colonisation; or presence of invasive, exotic or undesirable plant species.

7.2.10 Monitoring targets should lead to careful management procedures which will not adversely impact upon successfully restored habitats or protected species. Monitoring targets and potential remedial management actions are presented in the table below.

Monitoring Component	Monitoring Target	Possible Remedial Action
Habitats and botany	Maintain minimum amount, diversity and quality of created target habitat based on scheme design and habitat condition assessment monitoring data.	Habitat creation or restoration (e.g. new or supplementary planting or seeding; habitat / plant removal to open up areas) Habitat management (e.g. altered cutting or grazing regime; creation of buffers; installing exclusion fencing) Weed control (e.g. shallow ploughing; hand pulling; herbicide application)
Invasive plant species	Identify presence/absence and if required extent, numbers and density	Weed control (e.g. cutting, pulling and/or herbicide application)

7.2.11 A monitoring report will be produced presenting information on:

- a record of habitat after-care and management actions undertaken during the previous monitoring period (e.g. after 1 year, after 2 years, after 3 years, after 5 years, after 10 years etc.)
- a review of the monitoring results assessed against baseline data / previous monitoring results and habitat condition targets (adaptive management)
- a programme of planned habitat management actions for the forthcoming management period (until the next monitoring review period)

7.2.12 Where monitoring identifies non-compliance with habitat condition targets or a significant undesirable change, then the report will identify recommendations for future adaptive management/remedial action to address any identified issues.

7.2.13 The monitoring report format must be consistent throughout the monitoring programme to allow comparative analysis from one monitoring period to the next.

TABLES

TABLE 1: WOODY PLANTS (1) – LANDSCAPE MANAGEMENT SCHEDULE

Year/Season/ Month	Tree
Planting <i>November - March</i>	Plant new trees to specification. Irrigate as necessary. If planted in November – December check plants twice before Spring (March). If planted in January – February check plants once before Spring (March).
Year 1 <i>Spring (March – May)</i>	Weed monthly. Check trees (including stakes and guards). Check for damage. Irrigate new planting as necessary in dry weather.
<i>Summer (June – August)</i>	<u>As Spring Year 1</u> Be aware of additional irrigation requirements in dry conditions.
<i>Autumn (September – November)</i>	<u>As Spring Year 1</u>
<i>Winter (December – February)</i>	Check all trees and replace failures. Check guards and stakes.
Year 2 <i>Spring (March – May)</i>	<u>As Spring Year 1</u> Continue irrigation schedule for new planting.
<i>Summer (June – August)</i>	<u>As Summer Year 1</u> Continue irrigation schedule for new planting, being aware of additional irrigation requirements in dry conditions.
<i>Autumn (September – November)</i>	<u>As Autumn Year 1</u>
<i>Winter (December – February)</i>	<u>As Winter Year 1</u> Prune all deciduous trees.
Year 3 <i>Spring (March – May)</i>	Weed monthly. Continue irrigation schedule for new planting.
<i>Summer (June – August)</i>	<u>As Spring Year 3</u> Be aware of additional irrigation requirements in dry conditions.
<i>Autumn (September – November)</i>	<u>As Spring Year 3</u>
<i>Winter</i>	Check all trees and replace failures. Check guards and stakes. Remove guards and stakes on vigorous plants.

<i>(December – February)</i>	Prune all deciduous trees.
Year 4 – 5 <i>Spring</i> <i>(March – May)</i>	Weed monthly. Only Irrigate during extended dry periods (i.e. 10 days with no rain), when plants will be watered every other day.
<i>Summer</i> <i>(June – August)</i>	<u>As Spring Year 4</u> Be aware of additional irrigation requirements in dry conditions.
<i>Autumn</i> <i>(September – November)</i>	<u>As Spring Year 4</u>
<i>Winter</i> <i>(December – February)</i>	Check all trees and replace failures. Check guards and stakes. Remove guards and stakes on vigorous trees in year 4 and any remaining guards and stakes in year 5.
Years 5 – 10	Weed monthly from Spring to Autumn and replace failures. Only Irrigate during extended dry periods (i.e. 10 days with no rain), when plants will be watered every other day. Established trees will be checked in winter every two years, starting in year 6, and any necessary remedial work will be performed in winter.
Years 10 – 30	Weed monthly from Spring to Autumn and replace failures. Established trees will continue to be checked in winter every two years, and any necessary remedial work will be performed in winter.

TABLE 2: WOODY PLANTS (2) – LANDSCAPE MANAGEMENT SCHEDULE

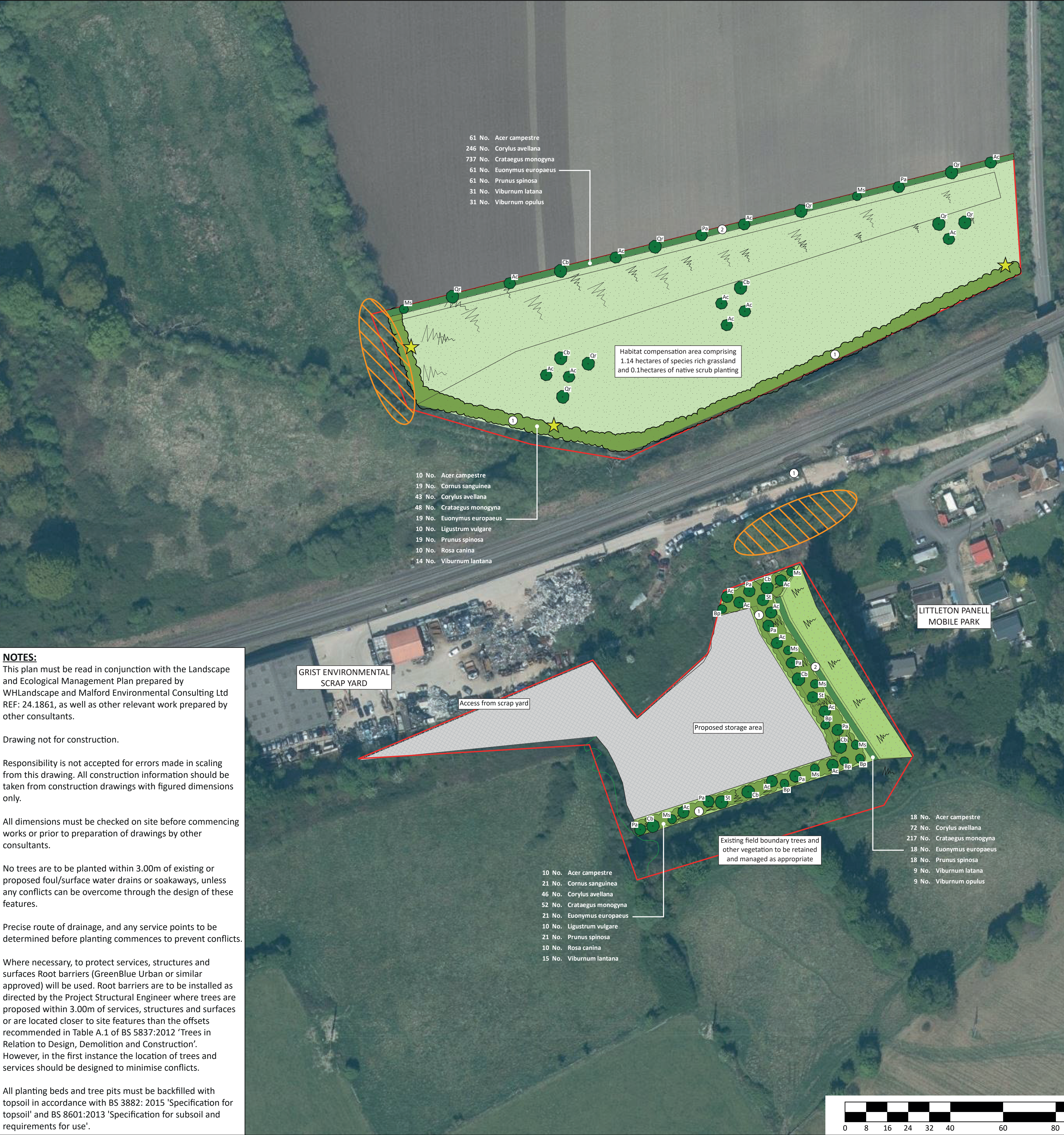
Year/Season/ Month	Hedges	Scrub
Planting <i>November - March</i>	Plant new hedges to specification. Irrigate as necessary. If planted in November – December check plants twice before Spring (March). If planted in January – February check plants once before Spring (March).	Plant new shrub plants to specification. Irrigate as necessary. If planted in November – December check plants twice before Spring (March). If planted in January – February check plants once before Spring (March).
Year 1 <i>Spring (March – May)</i>	Weed monthly. Check hedges (including stakes and guards). Check for damage. Irrigate new planting as necessary in dry weather.	Weed monthly. Check plants (including stakes and guards). Check for damage. Irrigate new planting as necessary in dry weather.
<i>Summer (June – August)</i>	<u>As Spring Year 1</u> Be aware of additional irrigation requirements in dry conditions.	<u>As Spring Year 1</u> Be aware of additional irrigation requirements in dry conditions.
<i>Autumn (September – November)</i>	<u>As Spring Year 1</u> Firm plants as necessary.	<u>As Spring Year 1</u> Firm plants as necessary.
<i>Winter (December – February)</i>	Check all hedging plants and replace failures. Check guards and stakes.	Check all scrub plants and replace failures. Check guards and stakes. Carry out formative pruning if required
Year 2 <i>Spring (March – May)</i>	<u>As Spring Year 1</u> Continue irrigation schedule for new planting.	<u>As Spring Year 1</u> Continue irrigation schedule for new planting. Trimming of dead or damaged branches can be undertaken.
<i>Summer (June – August)</i>	<u>As Summer Year 1</u> Continue irrigation schedule for new planting, being aware of additional irrigation requirements in dry conditions.	<u>As Summer Year 1</u> Continue irrigation schedule for new planting, being aware of additional irrigation requirements in dry conditions.
<i>Autumn (September – November)</i>	<u>As Autumn Year 1</u>	<u>As Autumn Year 1</u>
<i>Winter (December – February)</i>	<u>As Winter Year 1</u> Lightly trim top growth from mid-December to encourage dense low growth.	<u>As Winter Year 1</u> Carry out pruning as necessary.
Year 3 <i>Spring (March – May)</i>	Weed monthly. Continue irrigation schedule for new planting.	Weed monthly. Continue irrigation schedule for new planting.
<i>Summer (June – August)</i>	<u>As Spring Year 3</u> Check hedges (including stakes and guards). Check for damage. Be aware of additional irrigation requirements in dry conditions.	<u>As Spring Year 3</u> Be aware of additional irrigation requirements in dry conditions.
<i>Autumn</i>	<u>As Spring Year 3</u>	<u>As Spring Year 3</u>

<i>(September – November)</i>		
<i>Winter (December – February)</i>	Check all hedging plants and replace failures. Check guards and stakes. Remove guards and stakes on vigorous plants. Lightly trim top growth from mid-December to encourage dense low growth.	Check all scrub plants and replace failures. Check guards and stakes. Remove guards and stakes on vigorous plants. Carry out pruning as necessary.
Year 4 – 5 <i>Spring (March – May)</i>	Weed monthly. Only Irrigate during extended dry periods (i.e. 10 days with no rain), when plants will be watered every other day.	Weed monthly. Only Irrigate during extended dry periods (i.e. 10 days with no rain), when plants will be watered every other day.
<i>Summer (June – August)</i>	<u>As Spring Year 4</u> Check hedging plants (including stakes and guards). Remove guards and stakes on vigorous hedging plants in year 4 and year 5. Be aware of additional irrigation requirements in dry conditions.	<u>As Spring Year 4</u> Check plants (including stakes and guards). Remove guards and stakes on vigorous scrub plants in year 4 and year 5. Be aware of additional irrigation requirements in dry conditions.
<i>Autumn (September – November)</i>	<u>As Spring Year 4</u>	<u>As Spring Year 4</u>
<i>Winter (December – February)</i>	Check all hedging plants including guards and stakes. Remove guards and stakes on vigorous hedging plants in year 4 and any remaining guards and stakes in year 5. Trim hedge to shape annually from mid-December and gap up as necessary to achieve a minimum 95% stocking rate.	Check all plants including guards and stakes. Remove guards and stakes on vigorous hedging plants in year 4 and any remaining guards and stakes in year 5. Carry out pruning as necessary and replace failures
Years 5 – 30	Weed monthly from Spring to Autumn and replace failures as necessary to achieve a minimum 95% stocking rate. Only Irrigate during extended dry periods (i.e. 10 days with no rain), when plants will be watered every other day. Established hedges will be inspected on an annual basis in winter, and any necessary remedial work will be performed from mid-December to March.	Weed monthly from Spring to Autumn and replace failures as necessary to achieve a minimum 95% stocking rate. Only Irrigate during extended dry periods (i.e. 10 days with no rain), when plants will be watered every other day. Established scrub will be inspected on an annual basis in winter, and any necessary remedial work will be performed from mid-December to March.

TABLE 3: WILDFLOWER GRASSLAND – LANDSCAPE MANAGEMENT SCHEDULE

Year/Season/ Month	Translocated Grassland	Bund Grassland
Sowing <i>September - March</i>	In September, prepare soil to specification. Second cultivation if needed. Sow seed and rake or harrow and firm with roller. Protect seed from birds and prevent public access. Irrigate as necessary.	In September, prepare soil to specification. Second cultivation if needed. Sow seed and rake or harrow and firm with roller. Protect seed from birds and prevent public access. Irrigate as necessary.
Year 1 <i>Spring (March – May)</i>	Allow flush of annual weed in spring to offer shelter to the sown seedlings, as well as benefits for bugs.	Allow flush of annual weed in spring to offer shelter to the sown seedlings, as well as benefits for bugs.
<i>Summer (June – August)</i>	From early August cut back annual weeds to reveal the young meadow. Establish a mowing regime (every 4 – 8 Weeks) until the end of March the following Year. Remove cuttings and dig out any residual perennial weeds as required.	From early August cut back annual weeds to reveal the young meadow. Establish a mowing regime (every 4 – 8 Weeks) until the end of March the following Year. Remove cuttings and dig out any residual perennial weeds as required.
<i>Autumn (September – November)</i>	<u>As Summer Year 1</u>	<u>As Summer Year 1</u>
<i>Winter (December – February)</i>	<u>As Summer Year 1</u>	<u>As Summer Year 1</u>
Year 2 <i>Spring (March – May)</i>	Remove brambles and scrub from the more shaded area inside hedge or woodland boundaries	From March, if plant growth is more than 150mm cut to a height of c 50mm tall and remove cuttings if dense. Do not cut or disturb grassland from the end of March to July or August to allow flowers to bloom.
<i>Summer (June – August)</i>	Cut back from part of the less shaded areas outside hedge boundaries after flowing in July or August. Cut back to 50mm. Allow hay to dry, shed seed, then remove.	Cut back the main summer growth from mid-August to a height of c 50mm. Leave the 'hay' to dry and shed seed for 1-7 days then remove from site.
<i>Autumn (September – November)</i>	N/A	Cut to the end of October aiming to leave a plant height of c 50mm. Remove cuttings if they are too dense to disperse easily and quickly.
<i>Winter (December – February)</i>	N/A	N/A
Year 3	N/A	<u>As Year 2</u>
Year 4	Manage areas that were left in year 2.	<u>As Year 2</u>
Years 5 – 30	Continue the management on a rotational 2-3 year cycle so that no more than half the area is cut in any one year.	<u>As Year 2</u>

ILLUSTRATIVE MATERIAL



NOTES:
This plan must be read in conjunction with the Landscape and Ecological Management Plan prepared by WHLandscape and Malford Environmental Consulting Ltd REF: 24.1861, as well as other relevant work prepared by other consultants.

Drawing not for construction.

Responsibility is not accepted for errors made in scaling from this drawing. All construction information should be taken from construction drawings with figured dimensions only.

All dimensions must be checked on site before commencing works or prior to preparation of drawings by other consultants.

No trees are to be planted within 3.00m of existing or proposed foul/surface water drains or soakaways, unless any conflicts can be overcome through the design of these features.

Precise route of drainage, and any service points to be determined before planting commences to prevent conflicts.

Where necessary, to protect services, structures and surfaces Root barriers (GreenBlue Urban or similar approved) will be used. Root barriers are to be installed as directed by the Project Structural Engineer where trees are proposed within 3.00m of services, structures and surfaces or are located closer to site features than the offsets recommended in Table A.1 of BS 5837:2012 'Trees in Relation to Design, Demolition and Construction'. However, in the first instance the location of trees and services should be designed to minimise conflicts.

All planting beds and tree pits must be backfilled with topsoil in accordance with BS 3882: 2015 'Specification for topsoil' and BS 8601:2013 'Specification for subsoil and requirements for use'.

Native Tree Species							
Plan Ref.	Scientific name	Common name	Specification	Girth (cm)	Approx. height (m)	Clear stem height (m)	No.
Ac	<i>Acer campestre</i>	Field Maple	Standard	8-10	2.50/3.00	1.75/2.00	19
Bp	<i>Betula pendula</i>	Silver birch	Light Standard	6-8	2.50/3.00	1.50/1.75	5
Cb	<i>Carpinus betulus</i>	Hornbeam	Selected Standard	12-14	3.50/4.00	Min 2.00	8
Ms	<i>Malus sylvestris</i>	Wild crabapple	Light Standard	8-10	2.50/3.00	150/1.75	8
Pa	<i>Prunus avium</i>	Wild cherry	Light Standard	8-10	2.50/3.00	150/1.75	9
Qr	<i>Quercus robur</i> *	English Oak	Selected Standard	10-12	3.00/3.50	Min 2.00	8
St	<i>Sorbus torminalis</i>	Wild service tree	Standard	8-10	2.50/3.00	1.75/2.00	3
Total:							60
* <i>Quercus robur</i> is <u>not</u> to be planted on the proposed bunding.							

Native Scrub Species – Total Area: 2945.00m ²						
Plan Ref.	Scientific name	Common name	Specification	Approx. height (cm)	%	No.
1	<i>Acer campestre</i>	Field maple	1 + 1 transplants	80-100	5	20
	<i>Cornus sanguinea</i>	Dogwood	1 + 1 transplants	60-80	10	40
	<i>Corylus avellana</i>	Hazel	1 + 1 transplants	60-80	22.5	89
	<i>Crataegus monogyna</i>	Hawthorn	1 + 1 transplants	60-80	25	99
	<i>Euonymus europaeus</i>	Spindle	1 + 1 transplants	60-80	10	40
	<i>Ligustrum vulgare</i>	Wild privet	1 + 1 transplants	60-80	5	20
	<i>Prunus spinosa</i>	Blackthorn	1 + 1 transplants	60-80	10	40
	<i>Rosa canina</i>	Dog rose	1 + 1 transplants	60-80	5	20
	<i>Viburnum lantana</i>	Wayfaring tree	1 + 1 transplants	60-80	7.5	30
Total Plants:						398

Mixed Native Hedge Species – Total Length: 317.50m						
Plan Ref.	Scientific name	Common name	Specification	Approx. height (cm)	%	No.
2	<i>Acer campestre</i>	Field maple	1 + 1 transplants	80-100	5	79
	<i>Corylus avellana</i>	Hazel	1 + 1 transplants	80-100	20	318
	<i>Crataegus monogyna</i>	Hawthorn	1 + 1 transplants	80-100	60	954
	<i>Euonymus europaeus</i>	Spindle	1 + 1 transplants	80-100	5	79
	<i>Prunus spinosa</i>	Blackthorn	1 + 1 transplants	80-100	5	79
	<i>Viburnum latana</i>	Wayfaring tree	1 + 1 transplants	80-100	2.5	40
	<i>Viburnum opulus</i>	Guelder rose	1 + 1 transplants	80-100	2.5	40
Total Plants:						1589

Special General Purpose Meadow Mixture – Total Area: 13002.00m ²			
Seed Mix	% (by weight)	Sowing Rate (g/m ²)*	Quantity (g)
Emorsgate EM3 (or equivalent)	20% native wildflowers 80% slow growing grasses	4	=52,008
* The sowing rates for overseeding the translocated grassland and establishing new grassland on the bund will be the same			

KEY:

- Site
- Proposed storage area
- Proposed Planting**
- Native trees
- Mixed native scrub
- Mixed native hedge
- Wildflower grassland area
- Translocated grassland (overseeded with wildflower grassland mix)
- Wildlife Habitat Piles and Bat Boxes**
- Habitat Pile
- Location of 3x bat boxes (2x general purpose & 1x Vicent Pro)

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Project: Land to the Rear of Willow Court		
On behalf of: Grist Environmental		
Drawing title: Landscape Proposals		
Drawing number: WHL-1861-01	Rev: 	Date: Feb 26
Scale: 1:750 @ A0	DB: GH	CB: WH

APPENDICES

APPENDIX 1: HABITAT CONDITION TARGETS

	Individual Trees
A	The tree is a native species (or at least 70% within the block are native species)
Monitoring	Species list and tree numbers
B	The tree canopy is predominantly continuous, with gaps in canopy cover making up < 10% of total area and no individual gap being > 5m wide (individual trees automatically pass this criterion)
Monitoring	Measure number and width of gaps
C	The tree is mature (or more than 50% within the block are mature)
Monitoring	Tree age and tree numbers
D	There is little or no evidence of an adverse impact on tree health by human activities (such as vandalism, herbicide or detrimental agricultural activity). And there is no current regular pruning regime, so the trees retain > 75% of expected canopy for their age range and height
Monitoring	Record signs of adverse tree health and number of trees affected
E	Natural ecological niches for vertebrates and invertebrates are present, such as presence of deadwood, cavities, ivy or loose bark
Monitoring	Record type of ecological niches per tree
F	More than 20% of the tree canopy area is oversailing vegetation beneath
Monitoring	Measure area of vegetation beneath tree canopy

Condition Score	Condition Class
Passes 5 or 6 criteria	Good (3)
Passes 3 or 4 criteria	Moderate (2)
Passes 2 or fewer criteria	Poor (1)

	Hedgerow (With Trees)
A1	> 1.5m average height along length
Monitoring	Measure hedgerow height
A2	> 1.5m average width along length
Monitoring	Measure hedgerow width
B1	Gap between ground and base of canopy < 0.5m for > 90% of length
Monitoring	Measure gap between ground and base of canopy
B2	Gaps make up < 10% of total length; and no canopy gaps > 5m wide Note: Gaps are complete breaks in the woody canopy
Monitoring	Measure number and width of gaps
C1	> 1m width of undisturbed ground with perennial herbaceous vegetation for > 90% of length: - measured from outer edge of hedgerow; and - is present on one side of the hedgerow (at least)
Monitoring	Measure width and extent of undisturbed ground flora adjacent to hedgerow
C2	Plant species indicative of nutrient enrichment of soils dominate < 20% cover of the area of undisturbed ground
Monitoring	Species list of plants within undisturbed ground strip
D1	> 90% of the hedgerow and undisturbed ground is free of invasive non-native plant species (including those listed on Schedule 9 of WCA) and recently introduced species
Monitoring	Species list of plants within undisturbed ground strip and measure extent
D2	> 90% of the hedgerow and undisturbed ground is free of damage caused by human activities
Monitoring	Measure extent of damaged areas
E1	There is more than one age-class (or morphology) of tree present (for example: young, mature, veteran and or ancient), and there is on average at least one mature, ancient or veteran tree present per 20 – 50m of hedgerow
Monitoring	Record tree numbers and age-classes
E2	At least 95% of hedgerow trees are in a healthy condition (excluding veteran features valuable for wildlife). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity
Monitoring	Record signs of adverse tree health and number of trees affected

Condition Score	Condition Class
No more than 2 failures in total: AND No more than 1 failure in any functional group	Good (3)
No more than 5 failures in total: AND <u>Does not fail both attributes</u> in more than one functional group	Moderate (2)
Fails a total of more than 5 attributes: OR <u>Fails both attributes</u> in more than one functional group	Poor (1)

	Hedgerow (Without Trees)
A1	> 1.5m average height along length
Monitoring	Measure hedgerow height
A2	> 1.5m average width along length
Monitoring	Measure hedgerow width
B1	Gap between ground and base of canopy < 0.5m for > 90% of length
Monitoring	Measure gap between ground and base of canopy
B2	Gaps make up < 10% of total length; and no canopy gaps > 5m wide Note: Gaps are complete breaks in the woody canopy
Monitoring	Measure number and width of gaps
C1	> 1m width of undisturbed ground with perennial herbaceous vegetation for > 90% of length: - measured from outer edge of hedgerow; and - is present on one side of the hedgerow (at least)
Monitoring	Measure width and extent of undisturbed ground flora adjacent to hedgerow
C2	Plant species indicative of nutrient enrichment of soils dominate < 20% cover of the area of undisturbed ground
Monitoring	Species list of plants within undisturbed ground strip
D1	> 90% of the hedgerow and undisturbed ground is free of invasive non-native plant species (including those listed on Schedule 9 of WCA) and recently introduced species
Monitoring	Species list of plants within undisturbed ground strip and measure extent
D2	> 90% of the hedgerow and undisturbed ground is free of damage caused by human activities
Monitoring	Measure extent of damaged areas

Condition Score	Condition Class
No more than 2 failures in total: AND No more than 1 failure in any functional group	Good (3)
No more than 4 failures in total: AND <u>Does not fail both attributes</u> in more than one functional group	Moderate (2)
Fails a total of more than 4 attributes: OR <u>Fails both attributes</u> in more than one functional group	Poor (1)

	Scrub
A	The parcel represents a good example of its habitat type – the appearance and composition of the vegetation closely matches its UKHab description (where in its natural range) - At least 80% of scrub is native - There are at least three native woody species - No single species comprises more than 75% of the cover (except hazel, common juniper, sea buckthorn [only in its restricted native range] or box, which can be up to 100% cover)
Monitoring	Species list and percentage cover of each species
B	Seedlings, saplings, young shrubs and mature (or ancient or veteran) shrubs are all present
Monitoring	Record shrub / tree numbers and age-classes
C	There is an absence of invasive non-native plant species (as listed on Schedule 9 of WCA) and species indicative of sub-optimal condition make up less than 5% of ground cover
Monitoring	Species list and percentage cover of non-native / undesirable species
D	The scrub has well-developed edge with scattered scrub and tall grassland and or forbs present between the scrub and adjacent habitat
Monitoring	Record scrub edge form and habitats / vegetation surrounding scrub parcel
E	There are clearings, glades or rides present within the scrub, providing sheltered edges
Monitoring	Record scrub interior form

Condition Score	Condition Class
Passes 5 criteria	Good (3)
Passes 3 or 4 criteria	Moderate (2)
Passes 2 or fewer criteria	Poor (1)

	Other Neutral Grassland
A	The parcel represents a good example of its habitat type, with a consistently high proportion of characteristic indicator species present relevant to the specific habitat type (and relative to Footnote 3 suboptimal species which may be listed in the UKHab description). Note - this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.
Monitoring	Full species list with DAFOR & 5 x 1m ² quadrats recoding species
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for vertebrates and invertebrates to live and breed.
Monitoring	Measure sward height
C	Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens).
Monitoring	Measure extent of bare ground
D	Cover of bracken <i>Pteridium aquilinum</i> is less than 20%.
Monitoring	Measure extent of bracken
E	Combined cover of species indicative of suboptimal condition and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area. If any invasive non-native plant species (as listed on Schedule 9 of WCA) are present, this criterion is automatically failed.
Monitoring	Full species list with DAFOR & measure extent of areas supporting sub-optimal species or excessive physical damage
F	There are 10 or more vascular plant species per m² present, including forbs that are characteristic of the habitat type (species referenced in Footnote 3 and 5 cannot contribute towards this count). Note - this criterion is essential for achieving Good condition for non-acid grassland types only.
Monitoring	Full species list with DAFOR & 5 x 1m ² quadrats recoding species

Condition Score	Condition Class
Passes 5 or 6 criteria including essential criterion A and additional criterion F	Good (3)
Passes 3 - 5 criteria including essential criterion A	Moderate (2)
Passes 2 or fewer criteria; OR Passes 3 or 4 criteria excluding criterion A and F	Poor (1)