

Ecological Management & Monitoring Plan (EMMP)

Land Adjacent to Twycross Zoo, Burton Road, Atherstone

A Report To: Henry Brothers Construction Ltd

Report Number: RT-MME-181945-02

Date: April 2025



Quality Assurance

Date	Version	Author	Checked and approved by
02/04/2025	Final	Thomas Weston MSc (Ecological Project Officer)	James Calow MPhil, CEnv, MCIEEM, MIEMA (Principal Biodiversity Consultant)

Declaration of Compliance

This study has been undertaken in accordance with all current British Standards, Natural England Guidelines and Codes of Professional Conduct relating to Biodiversity, Ecology, and/or Arboriculture. The information which we have prepared is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

Disclaimer

The contents of this report are the responsibility of Middlemarch Environmental Ltd. It should be noted that, whilst every effort is made to meet the client's brief, no site investigation can ensure complete assessment or prediction of the natural environment. Middlemarch Environmental Ltd accepts no responsibility or liability for any use that is made of this document other than by the client for the purposes for which it was originally commissioned and prepared.

Non-Technical Summary

Project Background

In February 2025 Henry Brothers Construction Ltd commissioned Middlemarch to prepare an Ecology Management and Monitoring Plan (EMMP) to detail how the biodiversity value of the Land Adjacent to Twycross Zoo could be uplifted to support the National Conservation Science Centre development at Twycross Zoo, near Atherstone.

This Biodiversity Offset will:

- Allow for the development to deliver both no-net-loss and enhancement to biodiversity¹,
- Demonstrate that the Biodiversity Gain Objective (+10% minimum) can be achieved for the baseline Habitat Unit and Hedgerow Unit value of the development site², and
- Demonstrate the delivery of biodiversity, ecological and priority habitat and species gain in concurrence with the Hinckley and Bosworth Borough Council's Local Plan 2020 - 2039³

This EMMP details the methods of habitat creation, and the ongoing management and monitoring of the habitats onsite which are to be retained, enhanced or established.

The EMMP is informed by:

- A Baseline Ecological Walkover Survey (see appendix C for Drawing C180537-01), and,
- The Biodiversity Metric Assessment Report (see Report RT-MME-160474-04 Rev D),

These reports have been submitted to the council as part of the current planning application. This EMMP should be considered in tandem with the information provided within the Baseline Ecological Walkover Survey.

These reports/assessments highlighted protected and priority species which may use the habitats onsite, or else could be encouraged to use them in the future; recommended habitat enhancements/creation which could increase the sites biodiversity value and identify opportunities for the site's greater integration into the local habitat and ecological networks.

The EMMP provides management prescriptions for areas of habitat to be retained, enhanced and created to achieve the targeted habitat conditions and increases in biodiversity value detailed within the developments submitted Biodiversity Metric 4.0 (see Report RT-MME-160474-04 Rev D). Metric version 4.0 was the most recent metric version at the time of planning submission for this project.

Throughout this report, sections headings may be followed by bracketed reference numbers. These reference numbers correspond to the comparable sections within the Natural England Habitat Management and Monitoring Plan Template (JP058)⁴. These reference numbers are provided solely to aid Natural England's review of this report, upon its submission to Biodiversity Gains Site Register to register the identified area as a biodiversity offset and allocate its offsite gains to the development.

Scope of Appraisal

This EMMP provides information regarding the long-term management and monitoring of this site across a 30-year period (considered to likely be 2025-2055)

This is a live document and should therefore be subject to periodic review once every 5 years (see monitoring schedule). Based on the findings of annual monitoring, and the determined success of management prescriptions to achieve habitat target condition, the management may need to be adjusted in the future.

¹ Natural Environment and Rural Communities (NERC) Act, 2006, (as amended), Section 40, the Duty to Conserve and Enhance Biodiversity, Available at: <https://www.legislation.gov.uk/ukpga/2006/16/section/40>

² Town and Country Planning Act, 1990, (as amended), Schedule 7A, Biodiversity Gain in England, Available at: <https://www.legislation.gov.uk/ukpga/1990/8/schedule/7A>

³ Hinckley and Bosworth Borough Council's Local Plan, available at: https://www.hinckley-bosworth.gov.uk/download/downloads/id/7702/hinckley_and_bosworth_pre-submission_local_plan_regulation_19.pdf

⁴ Natural England, (2024), Habitat Management and Monitoring Plan Template (JP058), Available at: <https://publications.naturalengland.org.uk/publication/5813530037846016>

Therefore, the habitat creation, enhancement and management prescriptions within the EMMP focus on the first 10 years of management with the understanding that this span could cover up to two review periods before the EMMP would need to be updated and/or extended.

On-site or Adjacent Material Ecological Considerations,

Statutory Sites:

No statutory sites lie within the site boundary, or adjacent to it. The habitat management prescriptions detailed in this report are not considered likely to impact upon any statutory nature conservation sites.

Non-Statutory Sites:

Twycross Zoo Wetland Nature Reserve, a candidate Local Wildlife Site (cLWS) sits adjacent to the off-site offsetting areas north-eastern and south-eastern boundaries. The habitat management prescriptions detailed in this report are not considered likely to impact upon the adjacent candidate non-statutory nature conservation site. The proposals for the off-site offsetting area have the potential to provide connectivity from the existing nature reserve to new ecologically valuable habitats once they are established.

Habitats:

No protected (i.e. irreplaceable) or priority habitats are situated within the boundaries of the off-site area. However, the site does contain habitats of ecological value such as species-rich hedgerow and semi-mature trees.

Protected/Notable Species:

The off-site area contains habitats that hold value for the following protected/notable species:

- Badger;
- Foraging and commuting bats;
- Birds,
- Common amphibians and;
- Hedgehog

Summary of Aims, Objectives and Ecological Enhancements

- Create 0.342 ha of other broad-leaved woodland (UK Hab type w1g) to be managed to achieve at least Moderate Condition.
- Retain 0.0774 ha (two medium size trees) of individual trees, maintaining them in at least Moderate Condition.
- Retain 0.0366 ha (one large size tree) of individual trees, maintaining it in Good Condition.
- Retain 0.125 km of line of trees, maintaining it in at least Poor Condition.
- Create 0.037 ha of modified grassland (UK Hab type g4).
- Create 0.598 ha of mixed scrub (UK Hab type h3h) to be managed to achieve at least Moderate Condition.
- Enhance 0.345 km of existing Species-rich hedgerow (UK Hab type h2a5) by improving the habitats Condition from Moderate to Good.
- Create 0.585 ha of neutral grassland (UK Hab type g3c) to be managed to achieve at least Moderate Condition.

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1. Site Information

[Natural England HMMP Template (JP058) codes: PB-B01, PB-B09, PB-B10, PB-B11, PB-B12 & PB-F01]

1.1 Site Overview

Table 1.1 provides an overview of the site.

Attribute	Description
Project type	Off-site
Development name and address	Twycross Zoo, Atherstone
BNG project name and address	Twycross Zoo, Atherstone
Author organisation	Middlemarch Environmental Ltd.
Ecological organisation responsible for EMMP	Middlemarch Environmental Ltd.
Landowner of area considered	East Midland Zoological Society
Land Manager of area considered	East Midland Zoological Society
Responsible person / organisation for creating or enhancing the habitat and implementing the EMMP	Henry Brothers Construction Ltd
Period covered by this management plan	2025 - 2055
Planning authority	Hinckley and Bosworth Borough Council
LPA or Responsible Body responsible for reviewing the EMMP	Hinckley and Bosworth Borough Council
Planning reference (if applicable)	23/00948/FUL
BNG register reference (if applicable)	To be confirmed once registration is complete
Central OS grid reference	SK 32301 06057
Metric revision / title	Biodiversity Metric Version 4.0, December 2024, Report RT-MME-160474-04 Rev D.
Are any Irreplaceable Habitats present on-site	No

Table 1.1: Brief Overview of the Site

The off-site areas Baseline Ecological Walkover Survey Map (C160474-04 Rev E) and proposed Biodiversity Metric Assessment Plan (C180537-01) are provided within Appendix C.

1.2 Current Site Ecology

[Natural England HMMP Template (JP058) codes: PB-B13, PB-B14, PB-F03 & PB-T01]

Current Habitats and Land Use Summary

An overview of the site's current habitat composition (including site photographs), its current land usage and its future proposed usage is provided in the supporting Baseline Ecological Walkover Survey (see Drawing C180537-01 within Appendix C).

Statutory and Non-Statutory Sites

The following statutory sites and non-statutory sites are present within the sites boundary or are directly adjacent to it.

Statutory Sites:

- No statutory sites lie within the site boundary, or adjacent to it. The habitat management prescriptions detail in this report are not consider likely to impact upon any statutory site.

Non-Statutory Sites:

- Twycross Zoo Wetland Nature Reserve, a candidate Local Wildlife Site (cLWS) sits adjacent to the off-site offsetting areas north-eastern and south-eastern boundaries. The habitat management prescriptions detailed in this report are not considered likely to impact upon the adjacent candidate non-statutory nature conservation site. The proposals for the off-site offsetting area have the potential to provide connectivity from the existing nature conservation site to new ecologically valuable habitats once they are established.

On-site Species Presence

An overview of the protected and priority species identified on-site or are considered to potentially be present is informed by a Baseline Ecological Walkover Survey. Details for the habitats that were recorded during the survey are shown on the following ecological survey drawing:

- Baseline Ecological Walkover Survey Drawing C180537-01 (see appendix C)

A short summary of the protected / priority species that have been confirmed on-site or considered to potentially be present is provided in Table 1.2.

Species / Species Group	Present or Potentially Present	Notes
Aquatic Mammals	No	The site and the immediately adjacent land does not contain habitats that are suitable for protected aquatic mammal species such as otter <i>Lutra lutra</i> and water vole <i>Arvicola amphibius</i> .

Table 1.2: Confirmed or Potential Protected Species On-site (continues)

Species / Species Group	Present or Potentially Present	Notes
Great Crested Newts	Yes	The site itself is currently predominantly composed of actively cultivated arable land which is unsuitable habitat for great-crested newt <i>Triturus cristatus</i> . However, the adjacent cWLS contains several ponds which may provide suitable breeding habitat for this species and would have connectivity to the site. Suitability of the site for this species is expected to improve as proposed habitats establish.
Bats	Yes	The site's boundary habitats consist of a mix of scrub, line of trees, individual trees and species-rich hedgerow which provide opportunities for foraging and commuting bats.
Nesting Birds	Yes	The site's boundaries hold suitable nesting and foraging habitat for range of generalist nesting bird species, in the form of dense scrub, line of trees, individual trees and species-rich hedgerow.
Dormouse	No	There are no habitats located within or adjacent to the site that are suitable for dormice <i>Muscardinus avellanarius</i> .
Terrestrial Mammals	Yes	The site's existing boundary habitats offer opportunities for foraging and commuting badger <i>Meles meles</i> in addition to refuge opportunities for small terrestrial mammals such as hedgehog <i>Erinaceus europaeus</i> .
Reptiles	Yes	As the site is currently largely comprises actively cultivated arable land, it considered unlikely that reptiles are utilising the site in a meaningful capacity. However, the wetland habitats within the adjacent cWLS may provide opportunities for reptile species such as grass snake <i>Natrix helvetica</i> . Suitability of the site for this species is expected to improve as proposed habitats establish.
Common amphibians	Yes	The site is currently largely composed of actively cultivated arable land which is considered to be unsuitable for amphibians. However, the adjacent cWLS contains several ponds and wetland habitat that would provide suitable breeding habitat for common amphibian species. Suitability of the site for this species is expected to improve as proposed habitats establish.
Protected / Priority Invertebrates	No	The site does not contain, or have connectivity to, suitable habitats for protected/priority invertebrate species such as white-clawed crayfish <i>Austropotamobius pallipes</i> . Habitats present on site are also likely to only support populations of common and widespread species of terrestrial invertebrates.
Protected / Priority fish	No	The site does not contain, or have connectivity to, suitable habitats for protected/priority fish species.

Table 1.2 (continued): Confirmed or Potential Protected Species On-site (continues)

Species / Species Group	Present or Potentially Present	Notes
Protected / Priority plant species	No	No protected, priority or notable plant species have been recorded within the site. Habitats within the site are likely to only host a range of common and widespread species.
Invasive non-native	No	No invasive non-native species have been recorded within, or along the boundaries of the site during survey work.

Table 1.2 (continued): Confirmed or Potential Protected Species On-site

1.3 Future Management Context and Considerations

[Natural England HMMP Template (JP058) codes: PB-B05, PB-B06, PB-B07, PB-B08 & PB-T01]

Table 1.3 outlines the management context (including constraints) that are likely to impact on the prescription details in this EMMP.

Subject	Consideration for Management
Future Site Usage / Amenity	The site's primary function will be the provision of a Biodiversity Offset to support development of the new National Science Conservation Centre at Twycross Zoo, near Atherstone, planning reference number 23/00948/FUL There is no current public access to this site; it is not the intention of the Biodiversity Offset scheme to deliver new public access or additional amenity value.
Required Consents and Licences	Any consents and licences associated with the delivery of the biodiversity offset site will be determined by Hinckley and Bosworth Borough Council and secured as either planning conditions or planning obligation of planning approval (Planning reference number 23/00948/FUL). All required pre-commencement consents and licences will be attained and submitted to the council prior to the implementation of the EMMP.
Funding	The habitat creation, enhancement, management and monitoring proposals will be funded through the provision of an appropriate sum from the developer (development site owner) to the offset provider. This funding will be secured via a separate financial agreement between the responsible parties.
Planning Conditions and Legal Agreements	Middlemarch Environmental Ltd. is not aware of any planning conditions or current legal agreements which relate to the sites habitats or would affect their future management.
Phasing Strategy	There is no phasing strategy associated with the habitat's delivery.
Climate change	The UK Climate Change Projections suggest that the UK could experience: • Hotter drier summers - with temperature increases of between 3.7 °C and 6.8 °C by 2070 and the frequency of hot spells (daytime temperatures exceeding 30 °C for more than 2 consecutive days) increasing. • Higher precipitation – with increases in hourly rainfall and an increase in the likelihood of extreme rainfall events. • More extreme events - with decreases in average summer rainfall and increases in winter rainfall. Incremental reviews of all management plan measures may be required to ensure that the aim of objectives of this plan are resilient to future climatic changes.
Protected Species	To avoid potential harm to protected species identified in Table 1.2 as either confirmed or potentially present, a precautionary approach to management activities and their timings should occur. This is to ensure the management works are delivered in a manner which reduces the risk of harming protected species and demonstrates accordance with UK Wildlife Legislation. In this instance this should involve:

Table 1.4: Management Context for the EMMP (continues)

Subject	Consideration for Management
Protected Species (continued)	Bats – Contacting a suitably qualified ecologist prior to any works affecting established trees. Nesting Birds – Works within areas that could support nesting birds should avoid bird nesting season (March -August, inclusive). Should work need to occur during nesting season all potential nesting areas should be fully checked by suitably qualified ecologist prior to any works commencing. Badgers – Check that active badger setts are not present in any areas of dense growth (i.e., brambles scrub, tall ruderals, etc.) before its clearance. Signs of recent badger activity include fresh spoil and bedding material near the sett entrance, footprints, badger scat, animal runs leading from the sett. If a badger sett is located and there is any uncertainty if it remains active, the advice of a suitably qualified ecologist should be sought prior to any works occurring within its vicinity. Hedgehogs – The burning of piles of cut material (soft or woody vegetation) created during habitat management works should always be avoided. Any cut vegetation that is not to be used to create ‘habitat piles’ should be removed from site immediately after been cut. Where/if it is desired that pre-existing piles of cut vegetation should be cleared from site, these piles should first be deconstructed by hand to allow for the detection of sheltering hedgehogs, especially during their hibernation period of October – April (inclusive). Herpetofauna – When cutting vegetation within other areas likely to be used by reptiles and amphibians for foraging and commuting (grassland and tall ruderal) this should not be cut below a height of 150 mm to help minimise the risk of harm to reptiles and amphibians.

Table 1.4 (continued): Management Context for the EMMP

2. Management Aims and Objectives

[Natural England HMMP Template (JP058) codes: PM-B01, PM-T01 & PM-F01]

Table 2.1 details the proposed changes in habitat types and their management condition on-site. The depicted changes in habitat type and condition correspond to the submitted Biodiversity Metric 4.0 (Biodiversity Metric Assessment, Report RT-MME-160474-04 Rev D). Table 2.1 does not include any areas of the site that comprise hardstanding or built form (either to be retained or to be created).

Table 2.1 depicts how the green and blue habitats on site will be assigned to an appropriate management area. The aims and objectives for each management area are detailed in Table 2.2, the management prescriptions for each management area are detailed in Table 3.1, and the years that each prescription will be enacted for each area is detailed in Table 3.2. For ease of reference, each management area is colour coordinated across all four tables as well as on the Management Area Map and Delivery Plan Map.

Parcel Ref Number*	Baseline Habitat Type	Target Habitat Type	Baseline Condition	Targeted Condition	Area / Length (hectares /km)	Habitat Management Area
Habitats Retained						
TN1	Species-rich native hedgerow	N/A	Moderate	N/A	0.345	Species-rich hedgerow
TN3	Bramble scrub	N/A	N/A	N/A	0.148	Scrub
TN4	Line of trees	N/A	Poor	N/A	0.125	Individual Trees and Line of Trees
TN5	Individual trees (rural) (Trees T1 and T2)	N/A	Moderate	N/A	0.0774	
TN5	Individual trees (rural) (Tree T3)	N/A	Good	N/A	0.0366	
TN19	Other neutral grassland	N/A	Moderate	N/A	0.06	Broadleaved Woodland
Habitats Enhanced						
TN1	Species-rich native hedgerow	Species-rich native hedgerow	Moderate	Good	0.345	Species-rich hedgerow
Habitats Created						
TN2	N/A	Other neutral grassland	N/A	Moderate	0.585	Wildflower grassland (neutral)
	N/A	Mixed scrub	N/A	Moderate	0.598	Scrub
	N/A	Other broadleaved woodland (includes canopy species, shrub layer species and woodland ground flora species mix)	N/A	Moderate	0.342	Broadleaved Woodland
	N/A	Modified grassland	N/A	Poor	0.037	Modified grassland

Table 2.1: Target Habitat Types, Conditions, Areas and Management Areas

*Parcel Reference Numbers within table 2.1 refer to the habitats that were recorded as part of baseline surveys to give context to where creation, retention and enhancement will take place in relation to what habitats were originally present. Please refer to both Preliminary Ecological Appraisal Report 160474-02 Rev A and Baseline Ecological Walkover Survey Drawing 180537-01 (see appendix C) for details on the classification and location of the site's original habitats.

Table 2.2 sets out the aims and management objectives for all habitat features described in Table 2.1. The location and extent of all management areas detailed below is depicted on Middlemarch Drawing C181945-02-01.

Management reference	Habitat Type / Landscape Feature	Aim	Management Objectives
Broadleaved Woodland			
W	Other broadleaved woodland	Create 0.282 ha of other broad-leaved woodland (UK Hab type w1g) ⁵ to be managed to achieve at least Moderate Condition .	- No loss of woodland area. - Low intensity management. - Support the establishment of tree and shrub planting. - Encourage the development of a varied age structure among the canopy and shrub layers. - Establish and maintain a diverse woodland ground flora. - Monitoring and control of non-native invasive/undesirable species. - Retain any fallen and standing deadwood if possible. - Monitor the health of trees and shrub species. - Provide good habitat for nesting birds and bats. - Management activities to be undertaken in winter months (outside of nesting bird season).
Individual Trees and Line of Trees			
T	Individual tree (Rural) and Line of trees	Retain 0.0774 ha of individual trees, maintaining them in at least Moderate Condition . Retain 0.0366 ha of individual trees, maintaining them in at least Good Condition . Retain 0.125 km of line of trees, maintaining it in at least Poor Condition .	- No overall loss of retained trees. - Low intensity management. - Monitor the health of existing trees. - Retain features such as deadwood, cavities, ivy or loose bark on existing trees. - Management activities to be undertaken in winter months (outside of nesting bird season).
Modified Grassland			
MG	Modified grassland	Create 0.058 ha of modified grassland (UK Hab type g4).	- No loss of modified grassland area. - Manage encroachment of adjacent scrub and woodland species to threshold levels (<20% cover of those species to be maintained). - Keep physical damage to modified grassland areas from access/management activities to a minimum (<5% total area subject to physical damage). - Monitor and control non-native invasive and undesirable plant species.
Scrub			
S	Mixed scrub	Create 0.595 ha of mixed scrub (UK Hab type h3h) to be managed to achieve at least Moderate Condition .	- No loss of mixed scrub areas. - Plant a range of UK native scrub species and reduce/maintain coverage of bramble to threshold levels (<10% cover to be maintained in all scrub parcels). - Support establishment of new scrub planting. - Manage encroachment into adjacent grassland habitats. - Introduce and create varied age structure. - Monitor and control non-native invasive plant species. - Management activities to be undertaken in winter months (outside of nesting bird season).
Species-rich Hedgerows			
H	Species-rich hedgerow	Enhance 0.345 km of existing Species-rich hedgerow (UK Hab type h2a5) by improving the habitats Condition from Moderate to Good .	- No loss of species-rich hedgerow. - Maintain an average height and width of 1.5m along hedgerow length. - Maintain linear connectivity along hedgerow length (no more than 10% gaps along length and none greater than 5m). - Minimum 1m buffer of undisturbed vegetation either side of hedgerow. - Monitoring of non-native and undesirable species and removal if necessary. - Improve hedgerow ground flora diversity. - Enhance ecological connectivity for small mammals. - Improve the sites' ability to support nesting birds and foraging bats. - Management activities to be undertaken in winter months (outside of nesting bird season).

Table 2.2: Aims and Management Objectives (continues)

⁵ Butcher, B. Carey P., Edmonds, R., Norton, L. and Treweek, J. (2020). The UK Habitat Classification User Manual Version 1.1. Available <http://www.ukhab.org/>

Management reference	Habitat Type / Landscape Feature	Aim	Management Objectives
Wildflower Grassland (Neutral)			
WG	Other neutral grassland	Create 0.572 ha of neutral grassland (UK Hab type g3c) to be managed to achieve at least Moderate Condition .	• No loss of neutral grassland areas. • Low intensity management, following bi-yearly hay cut methodology. • Increase diversity of grass species and flowering plants. • Manage sward to promote varied heights. • Create areas of bare ground (1% - 5%). • Control scrub encroachment and undesirable weed (nettles, docks and thistles) at threshold values (<5%). • Monitor and control non-native invasive species. • Improve the sites' ability to support invertebrates, small mammals, and birds.

Table 2.2 (continued): Aims and Management Objectives



C181945-02-01

Legend

Site boundary

T - Individual Trees and Line of Trees

H - Species-rich hedgerows

W - Broadleaved woodland

MG - Modified Grassland

S - Scrub

WG - Wildflower Grassland (Neutral)

Building and hardstanding

Project

Land Adjacent to Twycross Zoo,
Atherstone

Drawing

Habitat Management Areas Map

Client

Henry Brother Construction

Drawing Number

C181945-02-01

Revision

00

Scale @ A3

1:800

Date

March 2025

Approved By

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3. Delivery Plan

[Natural England HMMP Template (JP058) codes: PM-03, PM-04, PM-TO2, 'Habitat Ref Code'-TO1, 'Habitat Ref Code'-BO1, 'Habitat Ref Code'-TO2 & 'Habitat Ref Code'-TO3]

Table 3.1 describes the management prescriptions that will be implemented on-site. Table 3.2 details the years within which these management prescriptions should be enacted (considering years 1-10). The management prescriptions are designed to deliver the aims and management objectives detailed in Section 2. Management timings provide a guide as to the recommended months for carrying out the proposed management prescriptions. The tables below also include measures to be implemented to protect retained habitats and incorporate methods of working to be used to avoid accidental harm to protected and priority species which may occur on-site.

Ref	Management Activity	Duration	J	F	M	A	M	J	J	A	S	O	N	D	Notes
Broadleaved Woodland															
W1	Planting of a selection of appropriate native tree species with appropriate guards in place. Planting should be scattered to create the appearance of a semi-natural woodland.	Once (In Year 1)										X	X		Trees to be planted with tree guards and must receive supplementary watering during any dry periods of their establishment period (up to five years post planting).
W2	Woodland understory to be planted at a low density of UK native tree and shrub species. Planting should be scattered to create the appearance of a semi-natural woodland.	Once (In Year 1)			X										Tree and shrub species to be planted with tree guards and must receive supplementary watering during any dry periods of their establishment period (up to five years post planting).
W3	Seeding of the whole woodland area with an appropriate UK native woodland ground flora seed mix ⁶ .	Once (In Year 2)			X										Once seed is applied it should be over-raked to encourage germination and reduce losses to foraging birds and small mammals.
W4	Removal of any non-native invasive (i.e cherry laurel) and undesirable (i.e nettles, thistles, docks and ruderals) vegetation from the woodland understory and ground layers. Non-woody species to be removed by hand. All woody arisings to be chipped and removed from site.	Once (In Year 1 and then to done as required)										X	X	X	Vegetation clearance to occur in late autumn / winter to avoid nesting bird season. All stumps to be treated with an approved herbicide to prevent re-growth.
W5	Inspect all trees and shrubs for disease and carry out remedial works as appropriate. Replace lost trees and shrubs as necessary.	Once Annually (Years 1 – 10)	X	X								X	X	X	Inspections and remedial works to be undertaken in the winter months to avoid bird nesting season.
W6	Replace any failed planting stock within the first five years of establishment.	Once Annually (Years 2 – 6)										X			Tree species should be replaced like-for-like with specimens of similar size.
W7	Aftercare for newly planted trees. Trees and shrubs to be watered (as required) through the growing season and periodically 'haloed' with all vegetation with 0.5 m of the trees base cut to a height 100 mm.	As required. (Years 6 - 10)				X	X	X	X	X	X				
W8	Monitor planted woodland areas. Check all stakes, ties and trees guards and replace any that have been broken/damaged during early establishment. From Year 5 and remove any tree/shrub protection that has become otherwise unnecessary.	As Required (Years 6 – 10)	X	X	X	X	X	X	X	X	X	X	X	X	All unnecessary tree protection to be removed from site and disposed of appropriately.
W9	Selective coppicing of no greater than 25% of whips to create varied age structure.	Annually (Years 6 - 10)										X	X	X	Cut plants to remain untreated, all arisings to be stored onsite.
W10	Litter to be collected and removed from site	As and when required (Years 1 – 10)	X	X	X	X	X	X	X	X	X	X	X	X	
W11	Retain fallen and standing deadwood throughout woodland as it matures, improving potential habitat opportunities for small mammals, bats, birds and invertebrates.	Every Year (Years 1 - 10)	X	X	X	X	X	X	X	X	X	X	X	X	
Individual Trees and Line of Trees															
T1	Inspect trees for disease or health and safety issues and carry out remedial works as appropriate.	Once Annual (Years 1 – 10)	X	X								X	X	X	Inspections and remedial works to be undertaken in the winter months to avoid bird nesting season.
T2	Replace any lost or damaged trees.	As required (Years 1 – 10)	X	X	X	X	X	X	X	X	X	X	X	X	Trees should be replaced on a like for like basis or selected from the recommended tree mix and planting specifications in Appendix A.
T3	Retain features that provide habitat for species such as bats, birds, small mammals and invertebrates (i.e deadwood, ivy cover, holes and fissures ect).	Every Year (Years 1 - 10)	X	X	X	X	X	X	X	X	X	X	X	X	

Table 3.1: Management Prescriptions (continues)

⁶ Such as Emorsgate Seed, EW1, Woodland Mix, available at: <https://wildseed.co.uk/product/mixtures/complete-mixtures/special-habitat-mixtures/woodland-mixture/>

Ref	Management Activity	Duration	J	F	M	A	M	J	J	A	S	O	N	D	Notes
Modified Grassland															
MG1	Cut all modified grassland areas to a height of 50 mm.	Twice/month Annually (Years 1 – 10)			X	X	X	X	X	X	X	X			Cutting to be undertaken monthly during the growing season.
MG2	Pull and remove weed species (nettles, thistles and docks) that exceed a threshold of 5% cover of the grassland area or individual stands greater than 5 m² using hand tools.	As and when required (Years 2 – 10)			X	X	X	X	X	X	X	X			
MG3	Monitor and control encroachment of adjacent scrub and woodland species from relevant adjacent habitats if the exceed the threshold of 20% cover of grassland area.	As Required (Years 3 – 10)				X	X	X	X	X	X				Encroaching scrub and woodland species to be controlled by hand. Woody species should be chipped and removed from site.
MG4	Inspect the area for invasive non-native plant species (Schedule 9 species). If found cut, dig-out or chemically treat (as appropriate dependent on species).	One Annual Inspection Treatment as Required (Years 1 – 10)	Site inspection in May, treatment times vary dependent on invasive species.											Site inspection should occur in May. All cut vegetation and contaminated soils are controlled waste, and as such must be disposed of at a suitably licensed or permitted landfill.	
Scrub															
S1	Planting of appropriate native scrub species whips ⁷ with appropriate tree guards.	Once (In Year 1)										X			Planting to be at low density, not greater than one plant 1m².
S2	Aftercare for newly planted whips. Whips to be watered (as required) through the growing season and periodically 'haloed' with all vegetation with 0.5 m of the trees base cut to a height 100 mm.	As required. (Years 2 - 6)					X	X	X	X					Cutting of vegetation around base of establishing tree should be completed using hand tools (i.e., strimmer).
S3	Stakes, ties and tree guards checked during early establishment and replaced, removed as necessary.	Once Annually (Years 2 – 6)										X	X	X	All unnecessary tree guards to be removed from site.
S4	Monitor and control the cover of encroaching bramble and other dominating scrub species and keep to below threshold values (Keep each species to roughly 20% cover).	As required (Years 3 - 10)	X	X								X	X	X	Vegetation management works should occur outside of the nesting bird season.
S5	Coppicing of scrub (up to 20% of total plants) to establish diversity within age structure. Coppiced plants to be cut back to ground level.	Once Annually (Years 7 - 10)	X	X											Stumps to be left untreated to allow for regrowth. Coppicing to occur outside of bird nesting season. All arisings to be stacked to form habitat piles within appropriate locations within woodland on site.
S6	Litter to be collected and removed from site.	As and when required (Years 1 – 10)	X	X	X	X	X	X	X	X	X	X	X	X	
Species-rich Hedgerow															
H1	Occasional management of the hedgerow to a height of (approx.) 1.5 m along length.	As required (Years 6 - 10)	X	X								X	X	X	Woody material not re-incorporated within the hedgerow creation to be removed from site or could be used to make 'habitat piles' in appropriate locations in the created woodland once it is established.
H2	Create and maintain a minimum 1 m buffer of undisturbed vegetation either side of the hedgerow.	Once in Year 1, then maintain as required (Years 1 - 10)								X	X				Hedgerow buffer habitats should be managed in a similar way to the Wildflower Grassland habitats.
H3	Enhance the diversity of ground flora beneath with appropriate shade tolerant wild-flower seed mixture for hedgerows ⁸	Once (In Year 1)			X										
H4	Cut, pull, or use herbicide 'spot' treatments to control the spread of weed species (docks, nettles and thistles) if they exceed threshold of 5% cover of the grassland area or individual stands greater than 5 m².	As and when required (Years 1 – 10)				X	X	X	X	X	X				Treat species with an approved translocated herbicide and apply through a weed wiper / wand or spot spraying with a narrow application.
H5	Litter to be collected and removed from site.	As and when required (Years 1 – 10)	X	X	X	X	X	X	X	X	X	X	X	X	
Wildflower Grassland (Neutral)															
WG1	Soil inversion ploughing of proposed wildflower grassland areas to bring nutrient-poor soils to the surface and to bury the existing seed bank of undesirable species.	Once (In Year 1)		X	X										End of February but depending on weather could occur in early March.

Table 3.1 (continued): Management Prescriptions (continues)

⁷ See Appendix A for proposed tree / scrub planting species

⁸ Such as, Emorsgate Seeds, Wild Flowers for Hedgerows EH1F or Hedgerow Mixture EH1 Details of appropriate seed mixes and species compositions can be found at: <https://wildseed.co.uk/mixtures/wild-flower-only-mixtures/>

Ref	Management Activity	Duration	J	F	M	A	M	J	J	A	S	O	N	D	Notes
Wildflower Grassland (Neutral) (continued)															
WG2	Seeding of proposed wildflower grassland area with appropriate wildflower mix ⁹ at an appropriate rate.	Once (In Year 1)			X										Once seed is applied it should be over-raked to encourage germination and reduce losses to foraging birds and small mammals.
WG3	To reduce soil nutrient levels, twice a year cut all grassland areas between 100 and 150 mm. Cuttings should then be removed from site.	Twice Annually (Years 2 and 3)				X	X		X	X					End of April or early March for first cut, mid-July to mid-August for second cut.
WG4	Cut all grassland areas to between 100– 150 mm. Cuttings should be left on site for one week and then removed.	Once Annually (Years 4 – 10)								X	X				Cutting can be brought forward to late-August in drier years. Cuttings to be removed from site.
WG5	Creation of bare ground scrapes (1% - 5% of total area). Scrapes are to be different sizes varying from approx. 2m ² – 10m ² . Topsoil to be removed to a depth of 50 mm.	Once Annually (Years 3, 5, 7 and 9)										X	X		Cleared topsoil to be removed from grassland area
WG6	Monitor and control encroachment/colonisation of adjacent scrub and woodland species from relevant adjacent habitats if they exceed the threshold of 5% cover of grassland area or individual stands greater than 5 m ² .	As Required (Years 3 – 10)				X	X	X	X	X	X				Encroaching scrub and woodland species to be controlled by hand. Woody species should be chipped and removed from site.
WG7	Cut, pull or chemically control the spread of weed species (docks, nettles, and thistles) if they exceed threshold of 5% cover of the grassland area or individual stands greater than 5 m ² .	As Required (Years 3 – 10)				X	X	X	X	X	X				Weeds should be pulled prior to their flowering. Remove pulled weeds from site. If chemical control is to be used it should be reserved for large monoculture stands only and should only consist of Glyphosate.
WG8	Inspect the area for invasive non-native plant species (Schedule 9 species). If found cut, dig-out or chemically treat (as appropriate dependent on species).	One Annual Inspection Treatment as Required (Years 1 – 10)	Site inspection in May, treatment times vary dependent on invasive species.												Site inspection should occur in May. All cut vegetation and contaminated soils are controlled waste, and as such must be disposed of at a suitably licensed or permitted landfill.

Table 3.1 (continued): Management Prescriptions

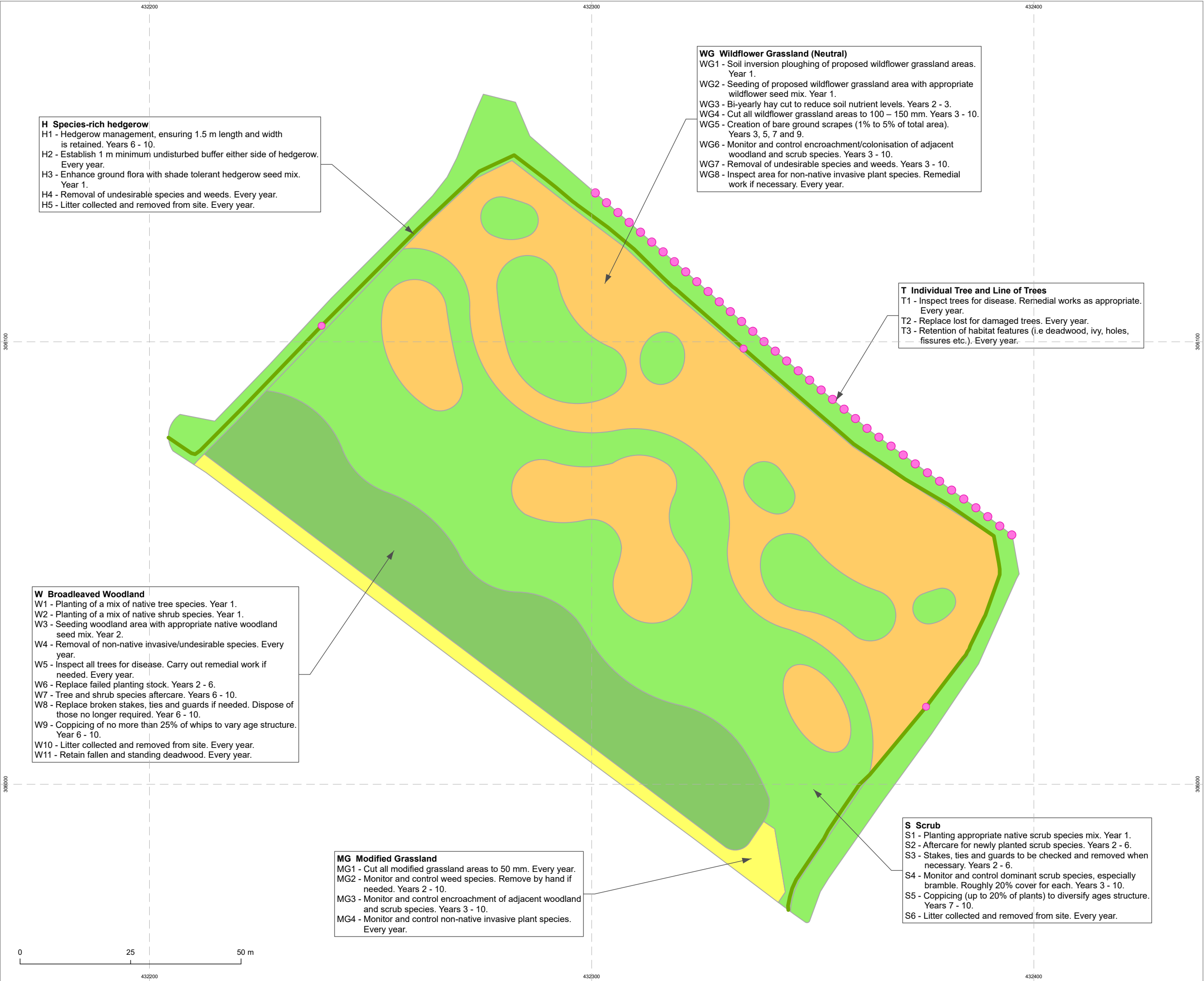
		Year / s Management Activity Occurs									
Ref	Management Activity	1	2	3	4	5	6	7	8	9	10
Broadleaved Woodland											
W1	Planting of a mix of native tree species	X									
W2	Planting of a mix of native shrub species	X									
W3	Seeding woodland area with appropriate native woodland seed mix		X								
W4	Removal of non-native invasive/undesirable species	Every Year									
W5	Inspect all trees for disease. Carry out remedial work if needed										
W6	Replace failed planting stock		X	X	X	X	X				
W7	Tree and shrub species aftercare						X	X	X	X	X
W8	Replace broken stakes, ties and guards if needed. Dispose of those no longer required						X	X	X	X	X
W9	Coppicing of no more than 25% of whips to vary age structure						X	X	X	X	X
W10	Litter collected and removed from site	Every Year									
W11	Retain fallen and standing deadwood										
Individual Trees and Line of Trees											
T1	Inspect trees for disease. Remedial works as appropriate	Every Year									
T2	Replace lost for damaged trees										
T3	Retention of habitat features (i.e deadwood, ivy, holes, fissures ect.)										
Modified Grassland											
MG1	Cut all modified grassland areas to 50 mm	Every Year									
MG2	Monitor and control weed species. Remove by hand if needed										
MG3	Monitor and control encroachment of adjacent woodland and scrub species		X	X	X	X	X	X	X	X	X
MG4	Monitor and control non-native invasive plant species			X	X	X	X	X	X	X	X
Every Year											
Scrub											
S1	Planting appropriate native scrub species mix	X									
S2	Aftercare for newly planted scrub species		X	X	X	X	X				
S3	Stakes, ties and guards to be checked and removed when necessary		X	X	X	X	X				
S4	Monitor and control dominant scrub species, especially bramble. Roughly 20% cover for each			X	X	X	X	X	X	X	X
S5	Coppicing (up to 20% of plants) to diversify ages structure							X	X	X	X
S6	Litter collected and removed from site	Every Year									

Table 3.2: Years Management Prescriptions Enacted (continues)

⁹ Such as, Emorsegate Seeds, Standard General Purpose Meadow Mixture EM2, Special General Purpose Wild Flowers Mix EM3F or Wild Flowers for Loamy Soils Mixture EM5F. Details of approximate species percentages within seed mixtures is available at: <https://wildseed.co.uk/mixtures/wild-flower-only-mixtures/>

Ref	Management Activity	Year / s Management Activity Occurs									
		1	2	3	4	5	6	7	8	9	10
Species-rich hedgerow											
H1	Hedgerow management, ensuring 1.5 m length and width is retained						X	X	X	X	X
H2	Establish 1 m minimum undisturbed buffer either side of hedgerow	Every Year									
H3	Enhance ground flora with shade tolerant hedgerow seed mix	X									
H4	Removal of undesirable species and weeds	Every Year									
H5	Litter collected and removed from site										
Wildflower Grassland (Neutral)											
WG1	Soil inversion ploughing of proposed wildflower grassland areas	X									
WG2	Seeding of proposed wildflower grassland area with appropriate wildflower seed mix	X									
WG3	Bi-yearly hay cut to reduce soil nutrient levels		X	X							
WG4	Cut all wildflower grassland areas to 100 – 150 mm			X	X	X	X	X	X	X	X
WG5	Creation of bare ground scrapes (1% to 5% of total area)			X		X		X		X	
WG6	Monitor and control encroachment/colonisation of adjacent woodland and scrub species			X	X	X	X	X	X	X	X
WG7	Removal of undesirable species and weeds			X	X	X	X	X	X	X	X
WG8	Inspect area for non-native invasive plant species. Remedial work if necessary	Every Year									

Table 3.2: Years Management Prescriptions Enacted



C181945-02-02

Legend

Site boundary

T - Individual Trees and Line of Trees

H - Species-rich hedgerows

W - Broadleaved woodland

MG - Modified Grassland

S - Scrub

WG - Wildflower Grassland (Neutral)

Building and hardstanding

Project

Land Adjacent to Twycross Zoo, Atherstone

Drawing

Habitat Management Delivery Plan Map

Client

Henry Brother Construction

Drawing Number

C181945-02-02

Revision

00

Scale @ A3

1:800

Date

April 2025

Approved By

TW

Drawn By

KB

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4. Monitoring Schedule

[Natural England HMMP Template (JP058) codes: MS-B01, MS-B02, PB-B04, MS-T01, MS-T02]

To deliver BNG, a robust monitoring strategy is essential to determine if planned habitat creation / enhancement is progressing in accordance with the proposed plans, and that the condition of those habitats continues to improve at a temporal rate which is reflective of the 'target condition year' detailed within the accompanying Statutory Metric (See Biodiversity Metric Assessment, Report RT-MME-160474-04 Rev D). Routine monitoring is also integral to informing the regular review of the management plan (every 5 years), allowing for management prescriptions to be added, removed or amended as necessary as part of an iterative approach to achieving the planned BNG uplift within the management area.

Monitoring of the delivery of the EMMP will comprise of two routine actions:

- An Annual Management Audit; and,
- Periodic Field Survey Monitoring.

4.1 Annual Management Audit

An annual summary of management works will be compiled by the principal contractor at the end of each year. The annual management review will list all actions that were proposed, and were to be carried out, in any given year and provide evidence to demonstrate that the works have been carried out. Acceptable evidence of works could include:

- Invoices/receipts from enhancement/management contractors; and,
- Timestamped photos of any management works taken before and after implementation.

Information relating to the above will be compiled using the Annual Management Review form template, provided in Appendix B.

The party responsible for compiling the Annual Management review is:

East Midland Zoological Society, or their appointed contractor

4.2 Field Survey Monitoring

Monitoring will comprise field surveillance visits carried out at regular intervals during the management period by a suitably qualified ecologist. These visits will be carried out in scheme years **1, 3, 5, 10, 15, 20, 25** and **30**, and will comprise two principal components:

- A habitat survey completed using a standard habitat survey method (e.g., UK Habitat Classification); and,
- A habitat condition assessment using standardised condition criteria.

Field visits will principally be carried out in between late May - June to align with the optimal period for habitat surveys.

Data compiled during this surveillance visit will be summarised within a Field Monitoring Report. Each habitat will be assessed against the relevant habitat type description and condition criteria to

establish if the target habitat type, extent and condition are fulfilled within the time threshold proposed.

The party responsible for field surveillance is:

East Midland Zoological Society, or their appointed contractor/ecologist.

Upon completed of each field survey monitoring reports it will be submitted to:

- Both the Local Planning Authority, **Hinckley and Bosworth Borough Council**, and **Natural England** via the Offsite Biodiversity Gains Register.

4.3 Adaptive Management

A summary of how adaptive management and the risks have been incorporated into the design of this management plan is detailed in this section.

A review of the EMMP will be undertaken **every 5 years**, or before if monitoring shows that the target habitat or condition thresholds are not achieved or maintained by the target date. Information from the both the Annual Management Audits and all completed Field Survey Monitoring will feed into the review to determine the relevant management response, which could include short-term contingency measures (e.g., compensatory mowing due to disrupted growing season) or longer-term changes to the EMMP.

This will ensure that:

- The provisions of the management prescriptions are fulfilled in accordance with the terms of habitat management proposals; and,
- The management remains appropriate and adaptable to achieve the targeted Aims and Objectives for each management area.

Should it be determined that management prescriptions within the EMMP need to be amended (either in works prescribes, time of year enacted, frequency, etc.) a revised version of the EMMP will be submitted to the Local Planning Authority / Responsible Body with which the management plan was agreed and bound to be enacted on the site via either a Section 106 agreement or Conservation Covenant.

The revised EMMP is to be approved in writing by the Local Planning Authority / Responsible Body and then enacted thereafter by the **East Midland Zoological Society**.

Appendix A

Proposed Planting Species and Seeding Mixtures

Proposed Native Tree Species for Other Broadleaved Woodland

- Aspen, *Populus tremula*;
- Beech, *Fagus sylvatica*;
- Downy birch, *Betula pubescens*;
- Goat willow, *Salix caprea*;
- Hornbeam, *Carpinus betulus*;
- Silver birch, *Betula pendula*;
- Sessile oak, *Quercus petraea*;
- Pedunculate oak, *Quercus robur*; and,
- Wild cherry *Prunus avium*.

Within the first five years after planting, dead or unhealthy plants should be replaced with appropriate specimens.

Proposed Native Shrub Layer Species for Other Broadleaved Woodland

- Black alder, *Alnus glutinosa*;
- Blackcurrant, *Ribes nigrum*;
- Dogwood, *Cornus sanguinea*;
- Field maple, *Acer campestre*;
- Goat willow, *Salix caprea*;
- Hazel, *Corylus avellana*;
- Rowan, *Sorbus aucuparia*; and,
- Wild cherry, *Prunus avium*.

Within the first five years after planting, dead or unhealthy plants should be replaced with appropriate specimens.

Proposed Native Scrub Mix

- Blackthorn, *Prunus spinosa*;
- Broom, *Cytisus scoparius*;
- Buckthorn, *Rhamnus cathartica*;
- Dog rose, *Rosa canina*;
- Dogwood, *Cornus sanguinea*;
- Gorse, *Ulex europaeus*;
- Guelder rose, *Viburnum opulus*;
- Hawthorn, *Crataegus monogyna*;
- Hazel, *Corylus avellana*; and,
- Honeysuckle, *Lonicera periclymenum*.

Within the first five years after planting, dead or unhealthy plants should be replaced with appropriate specimens.

Proposed Wildflower Grassland Species Mix

- Autumn hawkbit, *Scorzoneroide autumnalis*
- Bird's-foot trefoil, *Lotus corniculatus*
- Common cat's-ear, *Hypochaeris radicata*
- Meadow crane's-bill, *Geranium pratense*
- Meadow vetchling, *Lathyrus pratensis*
- Ox-eye daisy, *Leucanthemum vulgare*
- Red clover, *Trifolium pratense*
- Ribwort plantain, *Plantago lanceolata*
- Tufted vetch, *Vicia cracca*
- Yellow rattle, *Rhinanthus minor*
- Sweet vernal grass, *Anthoxanthum odoratum*
- Crested dog's-tail, *Cynosurus cristatus*
- Common bent, *Agrostis capillaris*
- Meadow fescue, *Festuca pratensis*
- Red fescue, *Festuca rubra*
- Rough meadow grass, *Poa trivialis*

Other species mixes

Example appropriate species mixes for woodland ground flora and hedgerow ground flora are the Emorsgate Seeds EW1 and EH1/EH1F seed mixes respectively. More details on these species' mixes can be found on the Emorsgate website: <https://wildseed.co.uk/mixtures/wild-flower-only-mixtures/>

To be completed by the principal contractor at the end of each management year.

Table 1.1 below outlines the habitat management prescriptions proposed for Add in Year / Period.

Table 1.1 – Habitat enhancement/management proposed for year / period

This section highlights if any of the above management prescriptions could not be delivered and why and what if any, additional contingency measures or long-term EMMP changes are needed to remedy any management shortfalls.

Were all habitat enhancement/management works scheduled for this year carried out?

Yes/No - If no, list which measures that weren't completed.

What works were not complete, explain reasons why (reference evidence)?

Yes/No - If no, list which measures that weren't complete

What contingency measures are proposed in the next management year to address management constraints this year?

Yes/No - If no, list which measures that weren't completed

Appendix C

Drawings

Drawing C180537-01-01 Rev A – Twycross Zoo Offsetting Area, Baseline Ecological Walkover Survey Map

Drawing C180537-01-02 – Twycross Zoo Offsetting Area, Biodiversity Metric Assessment Plan Map (adapted from TWZ-HLM-00-00-DR-L-00008 P01 / Proposed Offsite Bio-diversity Net Gain Plan)



C180537-01-01

Legend

Site boundary

Scattered tree - Medium

Fence

Line of trees

Species-rich intact hedgerow

A

Dense scrub

Target note - habitat parcel

Project

Twycross Zoo Offsetting Area

Drawing

Phase 1 Habitat Map

Client

Baker Mallet LLP

Drawing Number

C180537-01-01

Revision

Rev A

Scale @ A3

1:800

Date

March 2025

Approved By

CH

Drawn By

BD/AW

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C180537-01-02

Legend

Site boundary

Retained tree

Retained hedgerow

Retained line of trees

Proposed native woodland planting

Proposed native shrub planting

Proposed semi-neutral grassland

Proposed modified grassland

Retained habitat

Project

Twycross Zoo Offsetting Area

Drawing

Biodiversity Metric Assessment Plan

Client

Baker Mallet LLP

Drawing Number

C180537-01-02

Revision

00

Scale @ A3

1:800

Date

March 2025

Approved By

CH

Drawn By

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