

Ecological Management & Monitoring Plan (EMMP)

Twycross Zoo, Burton Road, Atherstone

A Report To: Henry Brothers Construction Ltd

Report Number: RT-MME-181945-01

Date: March 2025



Quality Assurance

Date	Version	Author	Checked and approved by
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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 inform the ongoing landscape management works at Twycross Zoo, Atherstone.

This EMMP details the methods of habitat creation, and the ongoing management and monitoring of the habitats on-site which are to be established in accordance with the submitted landscaping scheme Soft Landscape Strategy / Drawing: TWZ-DZU-00-00-DR-L-00400-P05 produced by Dearadh Zú See Appendix C). This EMMP should be considered in tandem with the information provided within the Landscaping Scheme.

This report has been prepared to allow for the discharge of Condition 5 of planning approval for application 23/00948/FUL. The wording of this condition that refers to the production this document is as follows:

*No development shall take place, including ground works or vegetation clearance, until a Habitat management and monitoring plan including timetable for management routines and reviews, and strategy for any remedial measures, if and when required;
Mechanism for securing the implementation of the biodiversity off-setting and its maintenance/management for a period of 30 years in accordance with details approved in the Plan;*

Timetables for implementation.

The Plan shall be implemented in accordance with the approved details and shall be retained thereafter.

Reason: *A pre-commencement condition is required to ensure that the development provide biodiversity enhancement in accordance with Policy DM6 of the Site Allocations and Development Management Policies DPD 2016 and Government guidance contained within the National Planning Policy Framework (Dec 2023).*

The EMMP is informed by several ecological surveys and assessments previously carried out by Middlemarch during 2023 and 2024 the details of which are presented in following reports submitted to the council as part of the approved planning application:

- Report to Inform Habitats Regulations Assessment, 2023, report RT-MME-160474-01;
- Preliminary Ecological Appraisal, 2023, report RT-MME-160474-02 Rev A;
- Preliminary Bat Roost Assessment, 2023, report RT-MME-160474-03 Rev A;
- Biodiversity Metric Assessment, 2024, report, RT-MME-160474-04 Rev D;
- Habitats Suitability Index Assessment for Great Crested Newts, 2023, RT-MME-160474-05 Rev A;
- Great Crested Newt eDNA, 2024, report, RT-MME-162321-01 Rev A;
- Bat Surveys, 2024, report, RT-MME-162321-02 Rev A; and,
- Badger Pre-works check and Monitoring, 2024, report, RT-MME-181541.

Middlemarch has also been commissioned to produce a Construction Ecological Management Plan (RT-MME-180537-02), Lighting Strategy Review (RT-MME-180537-03) and an Ecological Management and Monitoring Plan (RT-MME-181945-02) for an off-site area in relation to this project. This document will detail management and monitoring plans for on-site habitat areas only.

These reports highlighted protected and priority species which may use the habitats onsite, or else could be encouraged to use them in the future. These reports also recommended habitat

enhancements or habitat creation which could increase the sites biodiversity value and identified 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 biodiversity value detailed within the developments submitted Statutory Metric (see Biodiversity Metric Assessment Report RT-MME-160474-04 Rev D).

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)¹. These reference numbers are provided solely to aid Natural England's review of this report, should it be required that it be submitted to the Biodiversity Gains Site Register in order to secure significant onsite gains.

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.

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 River Mease SSSI lies 4385 m to the north-east of the proposed development area. A Habitat Regulations Assessment (see Report RT-MME160474-01 for details) conducted by Middlemarch concluded that the proposed development will not impact on designated site. The habitat management prescriptions detail in this report are not considered likely to impact upon any statutory site.

Non-Statutory Sites:

No non-statutory sites (i.e., Local Wildlife Sites) lie within the site boundary, or adjacent to it. The habitat management prescriptions detail in this report are not considered likely to impact upon any non-statutory site.

Habitats:

No protected (i.e. irreplaceable) or priority habitats were present on site. However, habitats of ecological value are present on site, such as species-rich hedgerows, semi-mature trees and broadleaved plantation woodland. These habitats/portions of these habitats that are to be lost cannot readily be replaced in the short to medium term.

Protected/Notable Species:

The following protected/notable species are known to utilise the site, or the site holds habitats considered to be suitable for them:

- Badger;
- Foraging and commuting bats;
- Birds;
- Great crested newt and common amphibians, and;
- Hedgehog

Summary of Aims, Objectives and Ecological Enhancements

- Create 0.11 ha of introduced shrub (UK Hab type u1d, 1160) planting (includes pleached trees and areas of ornamental and themed planting).
- Create 0.016 ha of vegetated garden (u1, 828) (ornamental grass planting).
- Create 0.256 ha of modified grassland (UK Hab type g4) (enclosure grasslands) to be managed to achieve at least Moderate Condition.

¹ Natural England, (2024), Habitat Management and Monitoring Plan Template (JP058), Available at: <https://publications.naturalengland.org.uk/publication/5813530037846016>

- Create 0.04 ha of modified grassland (UK Hab type g4) (grasscrete) to be managed to achieve Poor Condition.
- Create 0.019 ha of non-native and ornamental hedgerow (UK Hab type h2b) to be managed to achieve Poor Condition.
- Retain 0.093 ha of other broadleaved woodland (UK Hab type w1g) to be maintained in Moderate Condition.
- Retain 0.033 km of ditch (UK Hab type g, 50) to be maintained in Moderate Condition.
- Create 0.06 km of ditch (UK Hab type g, 50) to be managed to achieve Good Condition.
- Retain 0.073 km of species-rich native hedgerow (UK Hab type h2a5) to be maintained in Moderate Condition.
- Retain 0.063 ha of species-rich native hedgerow associated with ditch (UK Hab type h2a5, 50) to be maintained in Good Condition.
- Enhance 0.106 km of species rich native hedgerow to change the habitat to a species-rich native hedgerow with trees (UK Hab type h2a5, 11) and to be maintained in Good Condition.
- Create 0.257 km of species-rich native hedgerow (UK Hab type h2a5) to be managed to achieve Good Condition.
- Retain 0.02 ha of pond (non-priority) (UK Hab type r1g, 41) to be maintained in Moderate Condition.
- Create 0.004 ha of pond (non-priority) (UK Hab type r1g, 41) to be managed to achieve Good Condition.
- Retain 0.091 ha of mixed scrub (UK Hab type h3h) to be maintained in Poor Condition.
- Create 0.148 ha of mixed scrub (UK Hab type h3h) to be managed to achieve at least Moderate Condition.
- Retain 0.026 ha of other neutral grassland (UK Hab type g3c) to be maintained in Moderate Condition.
- Create 0.354 ha of other neutral grassland (UK Hab type g3c) to be managed to achieve at least Moderate Condition.
- Create 0.042 ha of other neutral grassland (UK Hab type g3c) to be managed to achieve Good Condition.
- Retain 0.029 ha of individual trees, maintaining them in at least Moderate Condition.
- Retain 0.272 ha of individual trees, maintaining them in Good Condition.
- Plant 0.566 ha (equivalent to 139 small size trees) of individual trees within grassland, amenity and new enclosure areas across the new development and manage to achieve at least Moderate Condition.
- Plant 0.187 ha (equivalent to 46 small size trees) of individual trees within grassland, amenity and new enclosure areas across the new development to achieve Poor Condition.

Contents

1. Site Information.....	7
1.1 Site Overview.....	7
1.2 Current Site Ecology.....	8
1.3 Future Management Context and Considerations.....	11
2. Management Aims and Objectives	13
3. Delivery Plan.....	18
4. Monitoring Schedule	23
4.1 Annual Management Audit	23
4.2 Field Survey Monitoring.....	23
4.3 Adaptive Management.....	24
Appendix A.....	25
Appendix B.....	28
Appendix C.....	30

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	On-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)	Not yet available
Central OS grid reference	SK 31559 06068
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 Site Boundary Plan is 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 Preliminary Ecological Appraisal (RT-MME-160474-02 Rev A).

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:

- No non-statutory sites (i.e., Local Wildlife 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 non-statutory site.

On-site Species Presence

An overview of the protected and priority species identified on-site, or are considered to potentially be present is provided in detail in the following supporting ecological reports:

- Preliminary Ecological Appraisal, 2023, report RT-MME-160474-02 Rev A;
- Preliminary Bat Roost Assessment, 2023, report RT-MME-160474-03 Rev A;
- Habitats Suitability Index Assessment for Great Crested Newts, 2023, RT-MME-160474-05 Rev A;
- Great Crested Newt eDNA, 2024, report, RT-MME-162321-01 Rev A;
- Bat Surveys, 2024, report, RT-MME-162321-02 Rev A; and,
- Badger Pre-works check and Monitoring, 2024, report, RT-MME-181541.

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 immediately adjacent land do not contain habitats that are suitable for protected aquatic mammal species such as otter <i>Lutra lutra</i> .

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

Species / Species Group	Present or Potentially Present	Notes
Aquatic mammals (continued)	No	Ditches within the site could provide suitable habitat for water vole but lack connectivity to other watercourses within the wider landscape. Water voles <i>Arvicola amphibius</i> are therefore unlikely to utilise the site.
Badger	Yes	A pre-works badger <i>Meles meles</i> check identified foraging activity and a single entrance within the proposed works area. Entrance was subject to a suite of monitoring surveys which concluded that the entrance was not in active use by badger and was soft-blocked. Details can be found within report RT-MME-181541.
Bats	Yes	Two buildings and one tree within the proposed works area that were considered to have potential for roosting bats. The buildings and tree were subject to a suite of dusk emergence surveys and aerial inspection surveys respectively which concluded that they were not in use by roosting bats. Details of these surveys can be found within report RT-MME-162321-02 Rev A. The habitats within the site and on its peripheries are considered to be valuable for foraging bats and provide dispersal opportunities into the wider landscape.
Schedule I Birds	Yes	Red kite <i>Milvus milvus</i> has been recorded incidentally during various survey visits and checks. The species has been observed mainly hovering over adjacent arable fields and tree lines, occasionally coming on to site over the grasslands in the south.
Nesting Birds	Yes	The site holds suitable nesting and foraging habitat for range of generalist nesting bird species, in the form of scattered trees, plantation woodlands, lines of trees, dense scrub, semi-improved grasslands and hedgerows.
Dormouse	No	There are no habitats located within or adjacent to the site that are suitable for dormice <i>Muscardinus avellanarius</i> .
Protected / Priority fish	No	The site does not contain, or have connectivity to, suitable habitats for protected/priority fish species.
Great Crested Newts and Common Amphibians	Yes	One pond is situated within the proposed development area which was assessed as having 'Good' suitability for great crested newts (details within report RT-MME-160474-05 Rev A). Subsequent eDNA analysis (details within report RT-MME-162321-01 Rev A) of the pond returned a negative result for great crested newt. However, the pond and its surrounding habitats still hold value for common amphibian species.

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

Species / Species Group	Present or Potentially Present	Notes
Invasive non-native	Yes	No invasive non-native species have been recorded within, or along the boundaries of the site during survey work. However, desk study data indicates that three-cornered garlic <i>Allium triquetrum</i> has been recorded within the site. This species has been referred to in the Construction and Ecological Management Plan report RT-MME-180537-02. Additionally, please refer to the Non-Native Species Secretariat for more detailed information regarding the species ² .
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 support populations of common and widespread species of terrestrial invertebrates.
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.
Terrestrial Mammals	Yes	The site offers suitable foraging, commuting and refuge habitats for small mammals such as hedgehog.
Reptiles	No	The site does offer some suitable foraging and refuge opportunities for reptiles. However, due to the site only recently becoming suitable, limited desk study records of reptiles (refer to report RT-MME-160474-02 Rev A for details) and the immediate surrounding landscape being subject to intensive management/ high levels of human disturbance, it is considered to be unlikely for reptiles to be utilising the site.

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

² Non-Native Species Secretariat fact-file for non-native *Allium* species including three cornered garlic *Allium triquetrum* https://www.nonnativespecies.org/assets/Uploads/ID_Allium_species_Garlics.pdf

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 will be used to deliver the operational functions of development (Application No. 23/00948/FUL). Management operations will need to be balanced with the practical use of the site and cannot hinder the sites operational activity, reduce staff access or restrict/reduce site usage from its approved level. Habitat prescriptions that will conflict with these principles will be avoided.
Required Consents and Licences	Any consents and licences associated with the delivery of the development site have been determined by Hinckley and Bosworth Borough Council and secured as either planning conditions or planning obligation of planning approval (Application No. 23/00948/FUL). All required pre-commencement consents and licences will be attained and submitted to the council prior to the implementation of the HEMMP.
Funding	The habitat creation, enhancement, management and monitoring proposals will be funded by the Landowner.
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: Bats – Contacting a suitably qualified ecologist if any bats are found during the demolition of buildings or felling of trees with bat potential. 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.

Table 1.4: Management Context for the EMMP (continues)

Subject	Consideration for Management
Protected Species (continued)	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 – Carry out management of pond habitats outside of amphibian activity season which runs from March – August (inclusive). When cutting vegetation within other areas likely to be used by amphibians and reptiles for foraging and commuting (grassland and tall ruderal) this should not be cut below a height of 100 mm to help minimise the risk of harm to 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	Other broadleaved woodland	N/A	Moderate	N/A	0.093	Broadleaved Woodland
TN3	Line of trees	N/A	Poor	N/A	0.057	Line of trees (coniferous)
TN4	Species-rich native hedgerow	N/A	Moderate	N/A	0.073	Species-rich hedgerows
TN7	Ditch	N/A	Moderate	N/A	0.033	Ditches
TN8	Pond (non-priority)	N/A	Moderate	N/A	0.02	Ponds
TN10	Mixed scrub	N/A	Poor	N/A	0.091	Scrub
TN11	Species-rich native hedgerow associated with ditch	N/A	Good	N/A	0.063	Species-rich hedgerows
TN19	Other neutral grassland	N/A	Moderate	N/A	0.026	Wildflower grassland (neutral)
TN28, TN33, TN45	Individual trees (urban)	N/A	Moderate	N/A	0.029	Individual Trees
TN32, TN27, TN36, TN46, TN26, TN30, TN44	Individual trees (urban)	N/A	Good	N/A	0.272	Individual Trees
Habitats Enhanced						
TN12	Species-rich native hedgerow	Species-rich native hedgerow with trees	Good	Good	0.106	Species-rich hedgerows
Habitats Created						
TN5, TN10, TN13, TN14, TN15, TN19, TN23, TN24, TN38, TN39, TN42, TN43	N/A	Introduced shrub (including areas of ornamental planting. pleached trees and themed planting)	N/A	N/A	0.11	Amenity areas
TN5, TN10, TN13, TN15, TN17, TN18	N/A	Vegetated garden (ornamental grass planting)	N/A	N/A	0.016	Amenity areas
TN5, TN6, TN10, TN13, TN14, TN15, TN17, TN18, TN23	N/A	Modified grassland (enclosure grasslands)	N/A	Moderate	0.256	Amenity areas

Table 2.1: Target Habitat Types, Conditions, Areas and Management Areas (continues)

Parcel Ref Number*	Baseline Habitat Type	Target Habitat Type	Baseline Condition	Targeted Condition	Area / Length (hectares /km)	Habitat Management Area
Habitats Created (continued)						
TN19, TN37	N/A	Modified grassland (grasscrete)	N/A	Poor	0.04	Amenity areas
N/A	N/A	Non-native and ornamental hedgerow	N/A	Poor	0.019	Amenity areas
N/A	N/A	Individual trees (urban) (non-native feature trees)	N/A	Poor	0.187	Amenity areas
TN1, TN6, TN10, TN13, TN14, TN16, TN17, TN19, TN23, TN39, TN42, TN43	N/A	Other neutral grassland (hay meadow mixes)	N/A	Moderate	0.354	Wildflower grassland (neutral)
TN5, TN6, TN10, TN15, TN17, TN18	N/A	Other neutral grassland (wetland meadow mix)	N/A	Good	0.042	Wildflower grassland (neutral)
N/A	N/A	Species-rich native hedgerow	N/A	Good	0.257	Species-rich hedgerows
TN1, TN6, TN10, TN13, TN14, TN19, TN23, TN37, TN43	N/A	Mixed scrub (native shrub mix)	N/A	Moderate	0.148	Scrub
TN14	N/A	Pond (non-priority) (with waterbody seed mix)	N/A	Good	0.004	Ponds
N/A	N/A	Ditch		Good	0.06	Ditches
N/A	N/A	Individual trees (urban) (native trees)	N/A	Moderate	0.566	Scattered trees

Table 2.1 (continued): 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 Preliminary Ecological Appraisal Report RT-MME-160474-02 Rev A for full 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 C181945-01-01.

Management reference	Habitat Type / Landscape Feature	Aim	Management Objectives
Amenity Areas			
AA	Modified Grassland, Introduced shrub, Non-native and Ornamental Hedgerow and Vegetated Garden	Create 0.11 ha of introduced shrub (UK Hab type u1d, 1160) planting (includes pleached trees and areas of ornamental and themed planting). Create 0.016 ha of vegetated garden (u1, 828) (ornamental grass planting). Create 0.256 ha of modified grassland (UK Hab type g4) (enclosure grasslands) to be managed to achieve at least Moderate Condition. Create 0.04 ha of modified grassland (UK Hab type g4) (grasscrete) to be managed to achieve Poor Condition. Create 0.019 ha of non-native and ornamental hedgerow (UK Hab type h2b) to be managed to achieve Poor Condition.	- No loss of any proposed amenity habitat areas. - Support establishment of new shrub, tree and hedgerow planting. - Maintain habitats for visual amenity. - Manage encroachment of ornamental species into adjacent habitats.
Ditches			
D	Ditch	Retain 0.033 km of ditch (UK Hab type g, 50) to be maintained in Moderate Condition. Create 0.06 km of ditch (UK Hab type g, 50) to be managed to achieve Good Condition.	- No loss of ditch habitat. - Low intensity management. - Increase diversity of bankside, marginal and aquatic vegetation. - Prevent siltation/infilling of ditch. - Improve habitat's ability to support invertebrates, small mammals, herpetofauna and birds.
Individual Trees			
T	Individual trees	- Retain 0.029 ha of individual trees, maintaining them in at least Moderate Condition. - Retain 0.272 ha of individual trees, maintaining them in Good Condition. - Plant 0.566 ha (equivalent to 139 small size trees) of individual trees within grassland, amenity and new enclosure areas across the new development and manage to achieve at least Moderate Condition. - Plant 0.187 ha (equivalent to 46 small size trees) of individual trees within grassland, amenity and new enclosure areas across the new development to achieve Poor Condition.	- No overall loss of retained trees. - Low intensity management. - Support establishment of new trees; removing and replacing diseased/failed individuals - Manage health and safety of existing trees. - Retain any deadwood, cavities, ivy or loose bark on existing where possible. - Management activities to be undertaken in winter months (outside of nesting bird season).
Ponds			
P	Pond (non-priority)	Retain 0.02 ha of pond (non-priority) (UK Hab type r1g, 41) to be maintained in Moderate Condition. Create 0.004 ha of pond (non-priority) (UK Hab type r1g, 41) to be managed to achieve Good Condition.	- No loss of wetland and pond habitat areas. - Support establishment of aquatic and marginal species. - Improve diversity of bankside vegetation. - Prevent over-shading of pond area. - Prevent habitat succession of pond. - Reduce likelihood of seasonal drying-out of ponds. - Maintain open water. - Maintain vigilance for invasive species. - Improve pond habitat's ability to support invertebrates, herpetofauna, small mammals and birds.
Scrub			
S	Mixed scrub	Retain 0.091 ha of mixed scrub (UK Hab type h3h) to be maintained in Poor Condition. Create 0.148 ha of mixed scrub (UK Hab type h3h) to be managed to achieve at least Moderate Condition.	- No loss of mixed scrub areas. - Support establishment of new scrub planting. - Plant a range of UK native scrub species and reduce/maintain coverage of bramble to <10%. - Manage encroachment into adjacent habitats. - Introduce and create varied age structure. - Management activities to be undertaken in winter months (outside of nesting bird season).

Table 2.2: Aims and Management Objectives (continues)

Management reference	Habitat Type / Landscape Feature	Aim	Management Objectives
Species-rich Hedgerows			
H	Species-rich Native Hedgerow with Trees, Species-rich Native Hedgerow associated within Bank or Ditch and Species-rich Native Hedgerows	Retain 0.073 km of species-rich native hedgerow (UK Hab type h2a5) to be maintained in Moderate Condition. Retain 0.063 ha of species-rich native hedgerow associated with ditch (UK Hab type h2a5, 50) to be maintained in Good Condition. Enhance 0.106 km of species rich native hedgerow to change the habitat to a species-rich native hedgerow with trees (UK Hab type h2a5, 11) and to be maintained in Good Condition. Create 0.257 km of species-rich native hedgerow (UK Hab type h2a5) to be managed to achieve Good Condition.	• Maintain an average height and width of 1.5m along length. • Maintain linear connectivity along length (no more than 10% gaps along length and none greater than 5m). • 1m buffer adjacent to hedgerow to remain undisturbed. • None-native invasive and undesirable ruderals to be removed. • Improve hedgerow ground flora diversity. • Remove and replace any diseased trees / failures. • 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).
Wildflower Grassland (Neutral Grassland)			
WG	Other neutral grassland	Retain 0.026 ha of other neutral grassland (UK Hab type g3c) to be maintained in Moderate Condition. Create 0.354 ha of other neutral grassland (UK Hab type g3c) to be managed to achieve at least Moderate Condition. Create 0.042 ha of other neutral grassland (UK Hab type g3c) to be managed to achieve Good Condition.	• No loss to retained or proposed 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.
Woodland			
W	Other broadleaved woodland	Retain 0.093 ha of other broadleaved woodland (UK Hab type w1g) to be maintained in Moderate Condition .	• No loss of retained woodland area. • Low intensity management • None-native invasive and undesirable ruderal, shrub and tree species to be removed. • Retain any fallen deadwood and standing deadwood if possible. • Manage health and safety of existing trees. • Management activities to be undertaken in winter months (outside of nesting bird season)

Table 2.2 (continued): Aims and Management Objectives



- Legend**
- Site boundary
 - T - Individual Trees
 - D - Ditches
 - H - Species-rich hedgerows
 - AA - Amenity Areas
 - P - Ponds
 - S - Scrub
 - W - Woodland
 - WG - Wildflower Grassland (Neutral Grassland)
 - Building and hardstanding

Project	
Twycross Zoo, Atherstone	
Drawing	
Habitat Management Areas Map	
Client	
Henry Brothers Construction Ltd	
Drawing Number	Revision
C181945-01-01	00
Scale @ A3	Date
1:700	March 2025
Approved By	Drawn By
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C181945-01-01

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.

RefCheck	Management Activity	Duration	J	F	M	A	M	J	J	A	S	O	N	D	Notes
Amenity Areas															
AA1	Cut all modified grassland areas to a height of 50 mm.	Monthly (Years 1 – 30)			X	X	X	X	X	X	X	X			Cutting to be undertaken monthly during the growing season.
AA2	Tree planting aftercare (for pleated trees). During late spring and summer water all new trees during their establishment. Watering rate to be determined by seasonal conditions with watering intensifying during any periods of drought	As Required (Years 2 – 6)					X	X	X	X	X				
AA3	Inspect (pleated) trees for disease or health and safety issues and carry out remedial works as appropriate.	Once Annual (Years 1 – 30)	X	X								X	X	X	Inspections and remedial works to be undertaken in the winter months to avoid bird nesting season.
AA4	Stakes, ties and tree guards checked and replaced, removed as necessary.	As Required (Years 2 – 6)	X	X	X	X	X	X	X	X	X	X	X	X	All unnecessary tree guards to be removed from site.
AA5	Manage ornamental shrub and ornamental hedgerow areas to remove yearly growth and maintain pedestrian access and amenity value.	Once Annually (Years 1 – 10)	X	X								X	X	X	Shrubs to be trimmed in late autumn / winter to avoid nesting bird season.
AA6	Cut or pull to control the spread of weed species (docks, nettles, and thistles) if they exceed individual stands greater than 5 m ² .	As Required (Years 1 – 30)				X	X	X	X	X	X				Weeds should be pulled prior to their flowering. Remove pulled weeds from site.
Ditches															
D1	Monitor and inspect all wet ditches for the presence of invasive non-native species (e.g. Himalayan balsam, Japanese knotweed, Australian stonecrop, parrots feather) and carry out remedial action to control or restrict further spread.	Once Annually (Years 1- 30)						X	X	X	X				Invasive species to be control in accordance with best practice guidelines. ³
D2	Cut all grassland / vegetation on the slopes of the wet ditches (to create a buffer of 1-2 m). Vegetation to be cut to a height of 100 mm. Leave the aquatic vegetation uncut within the watercourse.	Twice Annually (Years 1 – 10)			X					X					Cuttings to be removed from site or translocated into an appropriate location in an adjacent area of woodland ⁴ .
D3	Cut or pull to control the spread of weed species (docks, nettles, and thistles) if they exceed threshold cover of 5% of the grassland (or individual stands of greater than 5 m ² .	Once Annually (Years 1 – 10)						X	X	X	X				Treat species with an approved translocated herbicide and apply through a weed wiper or wand (spraying not permitted).
D4	Where desilting of a wet ditch is required to maintain drainage capacity, remove cleared material to side of the ditch and leave for minimum 2-3 days, to allow aquatic life to return to ditch, before disposing of material.	As required (Once every 3-5 years)										X	X		Wet ditch management works should be carried out in the winter months when aquatic life is dormant and when amphibians are typically in hibernation. Material to be removed from site or translocated into an appropriate location ⁵ .
Individual Trees															
T1	Support young trees to maturity, checking/removing tree guards (as required) and carrying out pruning works to support healthy growth.	As required (Years 1 – 30)	X	X	X	X	X	X	X	X	X	X	X	X	Timing of pruning works to avoid the nesting bird season (March – August inclusive). Where possible deadwood, cavities, and loose bark should be left as these create micro-habitats for invertebrates. All unnecessary or broken tree guards to be removed from site.
T2	Tree planting aftercare. During late spring and summer water all new trees during their establishment. Watering rate to be determined by seasonal conditions with watering intensifying during any periods of drought	As Required (Years 2 – 6)					X	X	X	X	X				

Table 3.1: Management Prescriptions (continues)

³ Gov.UK,(2014), Wildlife Law: Control of Invasive Non-native Species, Available at: <https://www.gov.uk/government/publications/wildlife-law-control-of-invasive-non-native-species>

⁴ An appropriate location for the storage of cuttings being an area within the establish woodland blocks with little / no ground flora value. All arising should be stored (at minimum) 1m away from the trunk of any tree to prevent conditions which would promote rot and poor tree health.

⁵ Any sediment removed from the wet ditches is likely to contain a high nutrient load (especially demobilised phosphates). To prevent surface water run-off resulting in re-siltation and excessive nutrient pollution (leading to algal blooms and anoxia within the water course) all material extracted from the ditches should be either removed from site or translocated a significant distance from the ditches (i.e., >20m).

RefCheck	Management Activity	Duration	J	F	M	A	M	J	J	A	S	O	N	D	Notes
Individual Trees (continued)															
T3	Inspect trees for disease or health and safety issues and carry out remedial works as appropriate.	Once Annual (Years 1 – 30)	X	X								X	X	X	Inspections and remedial works to be undertaken in the winter months to avoid bird nesting season.
T4	Replace any lost or damaged trees.	As required (Years 1 – 30)	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 B.
Ponds															
P1	Planting of an appropriate mix of marginal, submerged, and floating aquatic plants within the pond ⁶ to increase vegetative diversity.	Once (In Year 1)			X	X									Planting should occur within recently cleared areas within ponds.
P2	Thinning of ponds marginal vegetation to create clear area along approximately 30% of bankside. All vegetation should be left on the bankside for 24 hours to allow any aquatic invertebrates to return to the pond. All arising should then be removed from site.	Once Annually (In Year 2, 5 and 8)	X	X											Vegetation should be cleared using either hand tools or small diggers.
P3	An area of open water (between 30% to 50% of the pond surface) should be maintained. All vegetation should be left on the bankside for 24 hours to allow any aquatic invertebrates to return to the pond. All arising should then be removed from site.	As required (Years 1 – 10)	X	X											Vegetation should be cleared using either hand tools or small diggers.
P4	Monitor and inspect all wet ditches for the presence of invasive non-native species (e.g. Himalayan balsam, Japanese knotweed, Australian stonecrop, parrots feather) and carry out remedial action to control or restrict further spread.	Once Annually (Years 1- 30)						X	X	X	X				Invasive species to be control in accordance with best practice guidelines.
P5	Inspect any mature trees with area for disease or health and safety issues and carry out remedial works as appropriate. Remove any overarching branches that cross over ponds/standing water.	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.
P6	Cut all grassland areas to a height of 100– 150 mm. Cuttings should be left on site for one week and then removed.	Once Annually (Years 1 – 10)								X	X				Cutting should occur in early September but can be brought forward to late-August in drier years. All arising to be removed from site to prevent nutrient build-up. or translocated into an appropriate location in an adjacent area of woodland.
Scrub															
S1	Planting of additional scrub species whips ⁷ with appropriate tree guards.	Once (In Year 1)										X			Planting to be at low density, not greater than one plant 1m ² .
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 aground 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	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.
Species-rich Hedgerows															
H1	Planting of tree-whips to establish new hedgerow lengths. At least five woody species to be planted per 30m to establish species rich hedgerow ⁸ .	Once only (Year 1)										X	X		All whips planted with appropriate tree guards. Hedgerows planting comprise of two of three staggered rows of planting, establishing a total width of approx. 2m. All whips planted with appropriate tree guards.
H2	Aftercare for newly planted hedgerow. Woody vegetation to be watered (as required) through the growing season.	As required. (Years 2 - 6)				X	X	X	X	X	X				
H3	Replace any failed planting stock within first five years of establishment.	Once Annually (Years 2 – 6)										X			Tree species should be replaced like-for-like with specimens of similar size.
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 m ² .	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.

Table 3.1 (continued): Management Prescriptions (continues)

⁶ See Appendix B for proposed pond and pond margin planting species

⁷ See Appendix B for proposed tree / scrub planting species

⁸ See Appendix C for proposed hedgerow planting species.

Ref	Check	Management Activity	Duration	J	F	M	A	M	J	J	A	S	O	N	D	Notes
Species-rich Hedgerows (continued)																
H5		Tree protection to be removed in Year 6 if no longer required. Stakes, ties and tree guards checked during early establishment and replaced, removed as necessary.	As required (Years 2 – 6)	X	X	X	X	X	X	X	X	X	X	X	X	All unnecessary tree guards to be removed from site.
H6		Occasional management of 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 retained woodland.
H7		Litter to be collected and removed from site.	As and when required (Years 1 – 30)	X	X	X	X	X	X	X	X	X	X	X	X	
Wildflower Grassland (Neutral Grassland)																
WG1		To reduce soil nutrient levels, twice a year cut all grassland areas between 50 – 100 mm. Cuttings should then be removed from site.	Twice Annually (Years 1 & 2)				X	X		X	X					End of April or early March for first cut, mid-July to mid-August for second cut.
WG2		Scarification of total area to achieve 95% bare soil.	Once (Year 3)		X	X										End of February but depending on weather could occur in early March.
WG3		Seeding of scarified area with appropriate wildflower mix ⁹ at an appropriate rate.	Once (Year 3)			X										Once seed is applied it should be over-raked to encourage germination and reduce losses to foraging birds and small mammals.
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 3 – 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		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. Ideally, weed control should be undertaken by hand, but if chemical control is to be used it should be only done by 'spot' treatment. Only Glyphosate should be used.
WG7		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.	
Woodland																
W1		Inspect all trees in high risk areas for disease or health and safety issues and carry out remedial works as appropriate.	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.
W2		Removal of any invasive and undesirable vegetation from the woodland understory (Cherry Laurel). All arising to be chipped and removed from site.	Once (In Year 1 and then as required)										X	X	X	Vegetation clearance to occur in late autumn / winter to avoid nesting bird season. All stumps to be treated with and approved herbicide to prevent re-growth.

Table 3.1 (continued): Management Prescriptions

Ref	Management Activity	Year / s Management Activity Occurs									
		1	2	3	4	5	6	7	8	9	10
Amenity Areas											
AA1	Cut all modified grassland areas to 50 mm	Every year									
AA2	After care of newly planted (pleated) trees		X	X	X	X	X				
AA3	Inspect trees for disease and health and safety issues. Remedial works if necessary	Every year									
AA4	Stakes, ties and tree guards to be removed when no longer required		X	X	X	X	X				
AA5	Manage shrubs and hedgerow to maintain access and amenity	Every year									
AA6	Removal of undesirable species and weeds										
Ditches											
D1	Monitor and inspect ditches for invasive non-native species. Remedial action if needed	Every year									
D2	Grass banks cut to 100 mm in 1-2 m buffer from channel										
D3	Removal of undesirable species and weeds										
D4	Desilt ditches if/when required										
				X		X				X	

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/>

		Year / s Management Activity Occurs									
Ref	Management Activity	1	2	3	4	5	6	7	8	9	10
Woodland											
W1	Inspect 'high-risk' trees for disease and health and safety concerns. Remedial works if needed	Every year									
W2	Removal of invasive or undesirable species										
Ponds											
P1	Planting of appropriate marginal, submerged, floating aquatic plants	X									
P2	Thinning of ditches marginal vegetation to create approx. 30% of clear bankside		X			X			X		
P3	Maintain approx. 30% to 50% of open water	Every year									
P4	Monitor and inspect ponds for invasive non-native species. Remedial action if needed										
P5	Inspection of mature trees that overhang pond for disease/health and safety										
P6	Surrounding grassland cut to 100 – 150 mm										
Species-rich hedgerows											
H1	Planting of at least five woody native species per 30 m of length	X									
H2	Hedgerow aftercare		X	X	X	X	X				
H3	Replace failed planting stock		X	X	X	X	X				
H4	Removal of undesirable species and weeds	Every year									
H5	Stakes, ties and guards to be removed as required										
H6	Hedgerow management, ensuring 1.5 m length and width is retained						X	X	X	X	X
H7	Litter collected and removed from site	Every year									
Scrub											
S1	Planting appropriate native scrub species mix	X									
S2	Aftercare for newly plant 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	Coppicing (up to 20% of plants) to diversify ages structure								X	X	X
Wildflower Grassland (Neutral Grassland)											
WG1	Bi-yearly hay cut to reduce soil nutrient levels	X	X								
WG2	Scarification of areas to be planted			X							
WG3	Seeding scarified area with appropriate wildflower seed mix			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	Removal of undesirable species and weeds			X	X	X	X	X	X	X	X
WG7	Inspect area for non-native invasive plant species. Remedial work if necessary	Every year									
Individual Trees											
T1	Support new trees to maturity	Every year									
T2	Tree planting aftercare										
T3	Inspection of trees for disease and health and safety risks		X	X	X	X	X				
T4	Replace lost or damage trees	Every year									

Table 3.2 (continued): Years Management Prescriptions Enacted



- Legend**
- Site boundary
 - T - Individual Trees
 - D - Ditches
 - H - Species-rich hedgerows
 - AA - Amenity Areas
 - P - Ponds
 - S - Scrub
 - W - Woodland
 - WG - Wildflower Grassland (Neutral Grassland)
 - Building and hardstanding

Project		Twycross Zoo, Atherstone	
Drawing		Habitat Management Delivery Plan Map	
Client		Henry Brothers Construction Ltd	
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Scale @ A3	1:1,000	Date	March 2025
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C181945-01-02

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 report 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 Midlands 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 Midlands Zoological Society, or their appointed contractor/ecologist.

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

- The Local Planning Authority, **Hinckley and Bosworth Borough Council**.

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 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 prescribed, 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 Midlands Zoological Society**.

Appendix A

Proposed Planting Species and Seeding Mixtures

Proposed Individual Tree Planting Species

- English oak / pedunculate oak, *Quercus robur*;
- Sessile oak, *Quercus petraea*
- Beech, *Fagus sylvatica*;
- Silver birch, *Betula pendula*;
- Wild cherry, *Prunus avium*;
- Crab apple, *Malus sylvestris*;
- Large leaved lime, *Tilia platyphyllos*;
- Small leaved lime, *Tilia cordata*;
- Aspen, *Populus tremula*;

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

Proposed Species Rich Hedgerow Planting

New hedgerow planting and the 'gapping-up' of any breaks within the existing hedgerow lengths should comprise a mix of (but not limited to) the following woody species:

- Field Maple; *Acer campestre*
- Common hazel, *Corylus avellana*;
- Wild cherry, *Prunus avium*;
- Crab apple, *Malus sylvestris*;
- Holly, *Ilex aquifolium*;
- Hawthorn, *Crataegus monogyna*;
- Blackthorn, *Prunus spinosa*;
- Elder, *Sambucus nigra*;
- Hornbeam, *Carpinus betulus*
- Guelder rose, *Viburnum opulus*
- Dogwood, *Cornus sanguinea*

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

Proposed Pond Margin Species

Planting of aquatic vegetation along the pond margin should comprise a mix of floating, submerged and emergent planting including (but not limited to):

- Floating plants (i.e., do not require anchoring or digging into soil)
 - White water lily (*Nymphaea alba*)
 - Ivy-leaved duckweed (*Lemna trisulca*)
 - Frogbit (*Hydrocharis morsus ranae*)
 - Water soldier (*Stratiotes aloides*)
- Submerged plants (i.e., planted to a below waterline depth of 10cm - 45cm)
 - Spiked water-milfoil (*Myriophyllum spicatum*)
 - Whorled water-milfoil (*M. verticillatum*)
 - Curled pondweed (*Potamogeton crispus*)
 - Hornwort (*Ceratophyllum demersum*)
 - Water starwort (*Allitriche stagnalis*)
 - Common spike-rush (*Eleocharis palustris*)
 - Willow moss (*Fontinalis antipyretica*)
 - Marestail (*Hippuris vulgaris*)
 - Water violet (*Hottonia palustris*)
 - Water crowfoot (*Ranunculus aquatilis*)
- Emergent plants (i.e., planted at ponds edge either at waterline)
 - Yellow iris (*Iris pseudacorus*)
 - Meadowsweet (*Filipendula ulmaria*)
 - Purple loosestrife (*Lythrum salicaria*)
 - Rushes (*Juncus spp*)
 - Sedges (*Carex spp*)
 - Greater spearwort (*Ranunculus lingua*)
 - Water mint (*Mentha aquatica*)
 - Water forget-me-not (*Myosotis scorpioides*)

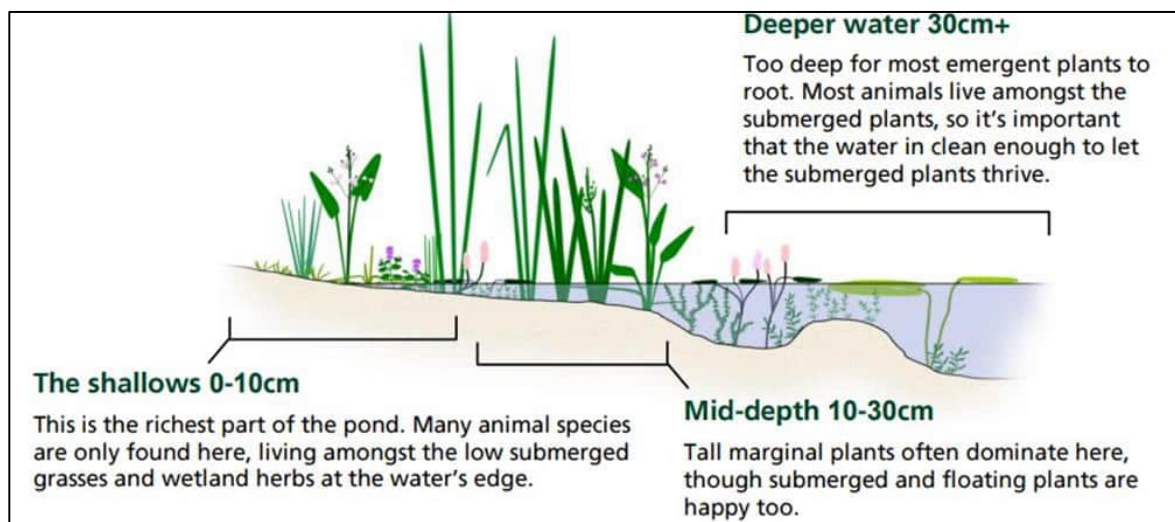


Figure A.1: Pond profile design to maximise the pond for aquatic macrophytes and invertebrates (Reproduced from *Freshwater Habitats Trust, 2023*).

Proposed Broadleaved Woodland Tree Re-Planting Species

Tree planting should comprise a mix of canopy and sub-canopy species such as (but not limited to):

- English oak / pedunculate oak, *Quercus robur*;
- Beech, *Fagus sylvatica*;
- Silver birch, *Betula pendula*;
- Field Maple; *Acer campestre*
- Aspen, *Populus tremula*;
- Common hazel, *Corylus avellana*;
- Wild cherry, *Prunus avium*;
- Crab apple, *Malus sylvestris*;
- Large leaved lime, *Tilia platyphyllos*;
- Small leaved lime, *Tilia cordata*;
- Holly, *Ilex aquifolium*;
- Hawthorn, *Crataegus monogyna*;
- Blackthorn, *Prunus spinosa*; and
- Elder, *Sambucus nigra*

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

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

Biodiversity Metric Assessment Map C160474-04 Rev E



Legend

- Proposed feature tree planting
- Proposed native tree planting
- Tree to be removed
- Tree to be retained
- Translocated tree
- Site boundary
- Hedgerow with ditch to be removed
- Hedgerow with ditch to be retained
- Hedgerow to be enhanced
- Hedgerow to be removed
- Hedgerow to be retained
- Line of trees to be removed
- Line of trees to be retained
- Proposed green screen
- Proposed ditch
- Proposed hedgerow
- Wet ditch to be removed
- Wet ditch to be retained
- Proposed fence
- Existing pond
- Proposed enclosure modified grassland
- Proposed grasscrete
- Proposed habitat feature grassland
- Proposed habitat planting
- Proposed meadow mix 1
- Proposed meadow mix 2
- Proposed native mix scrub
- Proposed neutral grassland mix
- Proposed ornamental planting
- Proposed pleached trees
- Proposed pond
- Proposed 'themed' planting
- Proposed water body mix
- Proposed wetland meadow mix
- Retained habitat
- Proposed building and hardstanding

Project	Twycross Zoo		
Drawing	Biodiversity Metric Assessment		
Client	Baker Mallett c/o Twycross Zoo		
Drawing Number	C160474-04-01-RevE	Revision	Rev E
Scale @ A3	1:700	Date	December 2024
Approved By	CH	Drawn By	BD
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