

Biodiversity Metric Assessment

Twycross Zoo, Burton Road, Atherstone

A Report To: Baker Mallett LLP

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Quality Assurance

Date	Version	Author	Checked by	Approved by
09/10/2023	Final, Rev A	Joanne Harper MSc (Ecological Project Officer)	Gemma Retallick BSc (Ecological Consultant)	Chris Walsh MSc (Natural Capital Solutions Leader)

Declaration of Compliance

This study has been undertaken in accordance with British Standard 42020:2013 "Biodiversity, Code of Practice for Planning and Development". 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.

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1. Introduction

1.1 Project Background

In November 2022, Baker Mallett LLP commissioned Middlemarch to undertake a Biodiversity Metric Assessment associated with a proposed development at Twycross Zoo, Atherstone.

The assessment is informed by ecological and arboricultural works carried out at the site in November 2022 and September 2023 by Middlemarch. These are:

- Preliminary Arboricultural Assessment (Report RT-MME-159277-01);
- Preliminary Ecological Appraisal (Report RT-MME-159277-04);
- Preliminary Bat Roost Assessment (Report RT-MME-159277-05);
- Report To Inform Habitats Regulations Assessment: Stage 1 Screening (Report RT-MME-160474-01);
- Updated Preliminary Ecological Appraisal (Report RT-MME-160474-02);
- Updated Preliminary Bat Roost Assessment (Report RT-MME-160474-03); and,
- Great Crested Newt Habitat Suitability Index Assessment (Report RT-MME-160474-05).

1.2 Site Description and Context

Table 1.1 provides a brief summary of the site and its surroundings.

Attribute	Description
Location	Twycross Zoo, Burton Road, Atherstone
National Grid Reference	SK 31559 06068
Site Area (ha)	1.63
Topography	Generally flat, slightly sloping to the south.
Land Cover (on site)	The site forms the south-west corner of the larger site of Twycross Zoo and a stretch of land immediately south of the current zoo boundary. Approximately one third of the site was composed of semi-improved grassland with scattered scrub. The remaining land comprised a mosaic of dense scrub, amenity grass, conifer plantation, broad-leaved woodland, scattered and groups of planted trees, hedgerow, pond, hardstanding paths and animal enclosures, the latter mainly containing bark chippings and grasses.
Land Cover (site surrounds)	Twycross Zoo dominates the landscape to the north/north-east of the proposed development area with the wider area comprising intensively managed arable farmland dotted with small farmsteads and residential properties. The M42 lies around 3 km to the west.

Table 1.1: Summary of Site and Surroundings

1.3 Project Scope

The purpose of the Biodiversity Metric Assessment (BMA) is to identify the change in biodiversity value that may result from a change in land use (e.g. development) or management (e.g. biodiversity enhancement) at the site and to establish if a net gain for biodiversity can be achieved.

The BMA utilises a biodiversity metric to provide a proxy measure of biodiversity based on habitat attributes, which can then be used to determine the relative change in biodiversity value resulting from any land use or management measures proposed.

It should be noted that the metric is only a proxy for biodiversity using habitat values, and that any proposed enhancements should be designed using appropriate ecological expertise. Existing levels of protection afforded to protected species and to habitats are not changed by use of the metric and statutory obligations will still need to be satisfied. In addition, the metric cannot account for impacts on, or enhancements to, irreplaceable habitats or protected sites, which will need to be assessed separately.

1.4 Summary of Proposals

The proposed development will comprise demolition works and removal of trees and vegetation to make way for a new, National Conservation Science Centre with associated landscaping and tree planting. This assessment is based on the documentation detailed in the following documentation listed in Table 1.2.

Document / Drawing Number	Author
Site Context Plan / TWZ-HLM-ZZ-ZZ-DR-L-0004	HLM Architects
Proposed Site Plan (WIP) / Drawing: TWZ-HLM-00-00-DR-L-00001, Rev P06	HLM Architects
Proposed Site Plan (WIP) / Drawing: TWZ-HLM-XX-ZZ-DR-L-4501, Rev P01	HLM Architects
Combined Masterplan / Drawing: P22009-00-001-DZ-0110-02	Dearadh Zú
Planting Strategy / Drawing: P22009-00-001-DZ-400-00	Dearadh Zú

Table 1.2: Documentation Provided by Client

2. Methods

2.1 Biodiversity Metric

The biodiversity calculations used within this assessment were undertaken by Charline Hue and Joanne Harper using 'The Biodiversity Metric 4.0' and associated User Guide¹ and Technical Supplement². Sections 2.2 and 2.3 describe the data used for the assessment and the assumptions applied.

2.2. Data Sources

Existing Baseline

The baseline habitat data and condition assessment for the site is taken from the Preliminary Ecological Appraisal (Report RT-MME-159277-04) carried out by Middlemarch in November 2022 and the updated Preliminary Ecological Appraisal (Report RT-MME-160474-02), based on the new red line boundary, completed in September 2023. A Phase 1 Habitat Plan showing the extent and location of each habitat recorded on site is included in Section 5 (Drawing C160474-02-01).

The Biodiversity Metric 4.0 calculator tool utilises the UK Habitat Classification System (UKHab) as the standard data input for habitats. The Phase 1 Habitat Survey data for the site was subsequently converted for the purposes of the metric calculation using the Phase 1 habitats to UKHab translation feature, included in the Biodiversity Metric 4.0 calculator tool, or using professional opinion.

Each habitat or linear feature recorded within the site is assigned a score for 'Distinctiveness', 'Condition' and 'Strategic Significance'. Table 2.1 below describes how each habitat attribute has been determined for the existing baseline habitats in the metric assessment.

Attribute	Description
Distinctiveness	An automated score based on the type of habitat present and its value to wildlife. Highly diverse habitats such as those listed as Habitats of Principal Importance under the NERC Act (2006) or Annex 1 habitats in the Habitats Directive (1992) score highly in this category, whilst highly modified and low diversity habitats such as arable crops will have low distinctiveness scores.
Condition	A score based on the quality of the habitat parcel against published condition criteria (See Report RT-MME-160474-02).
Strategic significance	A score based on information set out in local plans or policies. In this instance, a strategic location was defined as within the Leicestershire & Rutland Biodiversity Action Plan: Space for Wildlife 2016-2026 ³ and Interim Guidance ⁴ .

Table 2.1: Habitat Attributes for Existing Baseline Habitats

¹ Natural England (2023) *The Biodiversity Metric 4.0 – User Guide*. Natural England Joint Publication JP039. Available <http://publications.naturalengland.org.uk/publication/6049804846366720>

² Natural England (2023) *The Biodiversity Metric 4.0 – User Guide: Technical Annex 1 Condition Sheets and Methodology*. Natural England Joint Publication JP039. Available <http://publications.naturalengland.org.uk/publication/6049804846366720>

³ Leicestershire & Rutland Environmental Records Centre (2016). Leicestershire & Rutland Biodiversity Action Plan: Space for Wildlife 2016-2026 (2nd edition)

⁴ Timms, S. (2022). *Applying the Biodiversity Net-Gain Metric – Interim Guidance for Assessing Strategic Significance in Leicestershire and Rutland*. Available at: <https://www.leicestershire.gov.uk/sites/default/files/field/pdf/2022/9/20/Biodiversity-net-gain-metric-guidance-for-assessing-strategic-significance-Leicestershire-and-Rutland.pdf> v

The value of each habitat parcel (or linear feature) is presented in terms of habitat (or hedgerow/river) 'biodiversity units' (BU).

Future Baseline

The future baseline conditions of the site are based on the soft landscape strategy (P22009-00-001-DZ-400-00 Soft Landscape Strategy). Table 2.2 below describes how each habitat attribute has been determined for the future baseline habitats in the metric assessment.

Attribute	Description
Distinctiveness	An automated score based on professional opinion about the projected habitat type proposed, taking into account the landscaping proposals detailed in P22009-00-001-DZ-400-00 Soft Landscape Strategy.
Condition	A target condition score of the proposed habitat parcel based on professional opinion about the outline enhancement and future management proposals.
Strategic significance	A score based on information set out in local plans or policies. In this instance, a strategic location was defined as within the Leicestershire & Rutland Biodiversity Action Plan: Space for Wildlife 2016-2026 ³ and Interim Guidance ⁴ .
Time to Target Condition	Time to target condition is automatically assigned in accordance with the Biodiversity Metric Tool 4.0. This multiplier can be adapted manually to reflect situations where a habitat is created in advance or where there is a delay in the project timescales for new habitat creation (e.g. project phasing).
Difficulty of Recreation	An automated value based on the difficulty of creating the target habitat. This value is unchanged from the values generated in Metric 4.0.

Table 2.2: Habitat Attributes for Existing Baseline Habitats

Following the calculation of the existing and future biodiversity value of the site, a calculation of the net biodiversity change is carried out to determine the 'Post-intervention habitat (or hedgerow and river) units', along with a figure for the percentage of net biodiversity impact loss (or gain).

2.3 Constraints and Assumptions

The following constraints and assumptions are applied to this report:

- For the purposes of this report, the term 'Habitat Loss' is applied to proposals that result in a change of habitat type or habitat 'distinctiveness'. This is defined in the Biodiversity Metric even where the new habitat type is created without any physical loss of the previous habitat type (e.g. creation of scrub over grassland). 'Habitat Enhancement' is applied where the habitat type and 'distinctiveness' remains the same, but the 'condition' of the habitat is improved.
- The BMA necessitates an estimation of future baseline values, based on professional opinion, to determine the change in biodiversity value that could occur as a result of the proposals at the site. The assumptions about target habitat types or condition in this report are based on professional opinion about the likely achievable outcomes at the site, based on the proposed planting plans and presumed management resources. All target habitats presume the implementation of a long-term Management Plan to achieve these ends and a recommendation to this effect is given in Section 4.
- The area of any new Urban Trees proposed is calculated using the Street Tree Helper (as described above). For the purposes of this assessment, all new trees proposed are assumed to be small (below 1/3 of their life expectancy).

3. Biodiversity Metric Calculation

3.1 Existing Habitats

The habitats identified during the Preliminary Ecological Appraisal (Reports RT-MME-159277-04 and RT-MME-160474-02) are described in Table 3.1 and their value in biodiversity units (BU) is provided. The current extent of the habitats present is shown in Drawing C160474-02-01 in Section 5. The baseline metric calculations are provided in Appendix 1.

Phase 1 Habitat	UKHab Habitat Equivalent	Area (ha) / Length (km)	Description (distinctiveness, condition, connectivity, and strategic significance)	Value (BU)
Area Based Habitats				
Amenity grassland (TN13)	Modified grassland (g4)	0.13	Habitat is automatically classed as being of 'Low' distinctiveness and was considered to be in 'Moderate' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'Low' strategic significance as it is not formally identified within the local plan.	0.52
Amenity grassland (TN14 and TN15)	Modified grassland (g4)	0.29	Habitat is automatically classed as being of 'Low' distinctiveness and was considered to be in 'Moderate' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'Low' strategic significance as it is not formally identified within the local plan.	0.58
Building (TN23)	Developed land; sealed surface (u1b5)	0.01	Habitat is automatically classed as being of 'Very Low' distinctiveness and is considered to be of 'Low' strategic significance. A condition assessment is not applicable for this habitat type due to its limited attributes for biodiversity.	0.00
Dense scrub – Mixed (TN6, TN10, TN42, and TN43)	Mixed scrub (h3h)	0.46	Habitat is classed as being of 'Medium' distinctiveness and was considered to be in 'Poor' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'Low' strategic significance as it is not formally identified within the local plan.	1.84
Hardstanding (TN22)	Developed land; sealed surface (u1b)	0.29	Habitat is automatically classed as being of 'Very Low' distinctiveness and is considered to be of 'Low' strategic significance. A condition assessment is not applicable for this habitat type due to its limited attributes for biodiversity.	0.00
Plantation coniferous woodland (TN5)	Other coniferous woodland (w2c)	0.12	Habitat is automatically classed as being of 'Low' distinctiveness and was considered to be in 'Moderate' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'Low' strategic significance as it is not formally identified within the local plan.	0.48

Table 3.1: Summary of Existing Habitats and Linear Features (Continues)

Phase 1 Habitat	UKHab Habitat Equivalent	Area (ha) / Length (km)	Description (distinctiveness, condition, connectivity, and strategic significance)	Value (BU)
Area Based Habitats				
Plantation broad-leaved woodland (TN1)	Other woodland; broad-leaved (w1g7)	0.11	Habitat is automatically classed as being of 'Moderate' distinctiveness and was considered to be in 'Moderate' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'Low' strategic significance as it is not formally identified within the local plan.	0.88
Plantation broad-leaved woodland (TN24)	Other woodland; broad-leaved (w1g7)	0.01	Habitat is automatically classed as being of 'Moderate' distinctiveness and was considered to be in 'Moderate' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'Low' strategic significance as it is not formally identified within the local plan.	0.04
Semi-improved neutral grassland (TN19)	Other neutral grassland (g3c)	0.62	Habitat is automatically classed as being of 'Medium' distinctiveness and was considered to be in 'Moderate' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'Low' strategic significance as its extent lies outside any strategic areas identified in the local plan.	4.96
Poor semi-improved grassland (TN38)	Other neutral grassland (g3c)	0.01	Habitat is automatically classed as being of 'Medium' distinctiveness and was considered to be in 'Poor' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'Low' strategic significance as it is not formally identified within the local plan.	0.04
Standing water (TN8)	Ponds (priority habitat) (r1, 19)	0.02	Habitat is automatically classed as being of 'High' distinctiveness and was considered to be in 'Moderate' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'High' strategic significance as it is formally identified within the local plan.	0.28
Introduced shrub (TN39)	Introduced shrub (48)	0.01	Habitat is automatically classed as being of 'Low' distinctiveness and is considered to be of 'Low' strategic significance as it is not formally identified within the local plan. A condition assessment is not applicable for this habitat type.	0.02

Table 3.1 (Continued): Summary of Existing Habitats and Linear Features (Continues)

Phase 1 Habitat	UKHab Habitat Equivalent	Area (ha) / Length (km)	Description (distinctiveness, condition, connectivity, and strategic significance)	Value (BU)
Area Based Habitats				
Bare ground (TN16)	Bare ground (73)	0.06	Habitat is automatically classed as being of 'Low' distinctiveness and was considered to be in 'Poor' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'Low' strategic significance as it is not formally identified within the local plan.	0.12
Other habitat (TN18)	Modified grassland (g4)	0.04	Habitat is automatically classed as being of 'Low' distinctiveness and was considered to be in 'Poor' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'Low' strategic significance as it is not formally identified within the local plan.	0.08
Other habitat (TN40)	Modified grassland (g4)	0.01	Habitat is automatically classed as being of 'Low' distinctiveness and was considered to be in 'Poor' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'Low' strategic significance as it is not formally identified within the local plan.	0.02
Dense scrub – Mixed (TN37)	Mixed scrub (h3h)	0.02	Habitat is classed as being of 'Medium' distinctiveness and was considered to be in 'Moderate' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'Low' strategic significance as it is not formally identified within the local plan.	0.16
Plantation broad-leaved woodland (TN17)	Other woodland; broad-leaved (w1g7)	0.04	Habitat comprises 30 early-mature to mature trees. This habitat is automatically classed as being of 'Medium' distinctiveness and the trees were deemed to be in 'Poor' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'Low' strategic significance as it is not formally identified within the local plan.	0.16
Scattered trees (TN28, TN33, TN45, and TN48)	Urban tree (11)	0.04	Habitat comprises 10 semi- to early-mature trees of small size (DBH between 7 and 30 cm). This habitat is automatically classed as being of 'Medium' distinctiveness and the trees were deemed to be in 'Good' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'High' strategic significance as mature trees are formally identified within the local plan.	0.37

Table 3.1 (Continued): Summary of Existing Habitats and Linear Features (Continues)

Phase 1 Habitat	UKHab Habitat Equivalent	Area (ha) / Length (km)	Description (distinctiveness, condition, connectivity, and strategic significance)	Value (BU)
Area Based Habitats				
Scattered trees (TN26, TN27, TN29, TN30, TN31, TN32, TN35, TN36, TN44, TN46, and TN47)	Urban tree (11)	0.39	Habitat comprises 14 semi- mature to mature trees including 1 of large size (DBH greater than 90 cm), 8 of medium size, and 5 of small size. This habitat is automatically classed as being of 'Medium' distinctiveness and the trees were deemed to be in 'Good' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'High' strategic significance as mature trees are formally identified within the local plan.	5.38
Total Area (ha)		2.68	Total Habitat Baseline (BU)	15.93
Total Area Excluding Urban Trees (ha)		2.25		
Hedgerows				
Line of broad-leaved trees (TN2)	Line of trees (w1g6)	0.15	Habitat is automatically classed as being of 'Low' distinctiveness and was considered to be in 'Poor' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'Low' strategic significance as it is not formally identified within the local plan.	0.30
Line of coniferous trees (TN3)	Line of trees (w1g6)	0.06	Habitat is automatically classed as being of 'Low' distinctiveness and was considered to be in 'Poor' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'Low' strategic significance as it is not formally identified within the local plan.	0.12
Species-poor intact hedgerow (TN9)	Native hedgerow (h2a)	0.11	Habitat is automatically classed as being of 'Low' distinctiveness and was considered to be in 'Moderate' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'High' strategic significance as hedgerows are formally identified within the local plan.	0.51
Species-rich intact hedgerow (TN4, TN11, and TN12,)	Species-rich, native hedgerow (h2a)	0.33	Habitat is automatically classed as being of 'Medium' distinctiveness and was considered to be in 'Good' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'High' strategic significance as hedgerows are formally identified within the local plan.	4.55

Table 3.1 (Continued): Summary of Existing Habitats and Linear Features (Continues)

Phase 1 Habitat	UKHab Habitat Equivalent	Area (ha) / Length (km)	Description (distinctiveness, condition, connectivity, and strategic significance)	Value (BU)
Hedgerows				
Species-rich intact hedgerow (TN21)	Species-rich, native hedgerow (h2a)	0.03	Habitat is automatically classed as being of 'Medium' distinctiveness and was considered to be in 'Poor' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'High' strategic significance as hedgerows are formally identified within the local plan.	0.14
Total Length (km)		0.68	Total Hedgerow Baseline (BU)	5.62
Rivers and Streams				
Dry ditch (Part of TN11)	Ditch (r1)	0.14	Habitat is automatically classed as being of 'Medium' distinctiveness and was considered to be in 'Poor' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'Low' strategic significance as it is not formally identified within the local plan.	0.47
Wet ditch (TN7 and part of TN11)	Ditch (r1)	0.09	Habitat is automatically classed as being of 'Medium' distinctiveness and was considered to be in 'Moderate' condition based on the Phase 1 Habitat survey. This habitat is regarded as having 'Low' strategic significance as it is not formally identified within the local plan.	0.72
Total Length (km)		0.23	Total Hedgerow Baseline (BU)	1.19

Table 3.1 (Continued): Summary of Existing Habitats and Linear Features

3.2 Future Baseline and Impacts

Description of the Future Baseline

The future baseline for the purposes of this assessment is set out in the Planting Strategy, Combined Masterplan, and Proposed Site Plan (Drawings P22009-00-001-DZ-400-00, P22009-00-001-DZ-0110-02, and TWZ-HLM-00-00-DR-L-00001, Rev P06). An adapted version of these maps (Drawing C160474-04-01) is included in Section 5 showing how each landscaping area has been translated to a habitat type for the purpose of the Biodiversity Metric Assessment.

3.3 Habitat Creation

Table 3.3 below outlines the value of the proposed habitat creation in the development proposals.

Landscape Typology	UKHab Habitat Equivalent	Area (ha) / Length (km)	Description (target distinctiveness, condition, connectivity, strategic significance, and risk multipliers)	Value (BU)
Habitats				
Other habitat	Vegetated garden (231)	0.02	Comprises the proposed feature grasses (i.e.: block planting of ornamental grasses to provide structure and height). This habitat is automatically assessed as being of 'Low' distinctiveness and due to its limited attributes for biodiversity, is not assigned a condition. This habitat is not identified as being of strategic significance / within a local plan.	0.04
Other habitat	Introduced shrub (48)	0.04	Comprises the proposed habitat planting (i.e.: a matrix planting of shrub species within the animal enclosures to provide screening and seasonal interest). This habitat is automatically assessed as being of 'Low' distinctiveness and due to its limited attributes for biodiversity, is not assigned a condition. This habitat is not identified as being of strategic significance / within a local plan.	0.08
Building / Hardstanding	Developed land; sealed surface (u1b)	1.1	Comprises the new areas of built development (buildings and hardstanding). This habitat is automatically assessed as being of 'Very Low' distinctiveness and due to its limited attributes for biodiversity, is not assigned a condition. This habitat is not identified as being of strategic significance / within a local plan.	0.00

Table 3.3: Summary of Habitat Creation and Enhancement Proposals (continues)

Landscape Typology	UKHab Habitat Equivalent	Area (ha) / Length (km)	Description (target distinctiveness, condition, connectivity, strategic significance, and risk multipliers)	Value (BU)
Habitats				
Semi-improved acidic grassland	Other lowland acid grassland (g1d)	0.23	Comprises a proposed area of native acid meadow (i.e.: proposed sowing of Naturescape N12, including a mix of 20 native wildflower and 8 grass species). This habitat is automatically assessed as being of 'Medium' distinctiveness and subject to appropriate long-term management, is deemed capable of achieving 'Moderate' condition. The extent of this habitat is not within an area of strategic significance identified within the local plan.	1.29
Dense scrub – Mixed	Mixed scrub (h3h)	0.06	Comprises the areas of proposed native planting (i.e.: planting of native hedgerow species which will form pockets of mixed scrub). This habitat is automatically assessed as being of 'Medium' distinctiveness and is deemed capable of achieving 'Poor' condition based on its proposed management and extent on site. The extent of this habitat is not within an area of strategic significance identified within the local plan.	0.23
Other habitat	Modified grassland (g4)	0.35	Comprises the proposed native tussock mix (i.e.: proposed sowing of Emorsgate EG10 which will provide a low maintenance tussock grassland within the animal enclosures). This habitat is automatically assessed as being of 'Low' distinctiveness and is deemed capable of achieving 'Poor' condition based on its intended use and the proposed management regime. This habitat is not identified as being of strategic significance / within a local plan.	0.69
Introduced shrub	Introduced shrub (48)	0.01	Comprises the areas of proposed ornamental planting. At the time of writing, no species mix was available, however, it is anticipated a mix of native and non-native specimens will be planted. This habitat is automatically assessed as being of 'Low' distinctiveness and due to its limited attributes for biodiversity, is not assigned a condition. This habitat is not identified as being of strategic significance / within a local plan.	0.02

Table 3.3 (continued): Summary of Habitat Creation and Enhancement Proposals (continues)

Landscape Typology	UKHab Habitat Equivalent	Area (ha) / Length (km)	Description (target distinctiveness, condition, connectivity, strategic significance, and risk multipliers)	Value (BU)
Habitats				
Introduced shrub	Introduced shrub (48)	0.05	Comprises the areas of proposed "themed" planting (i.e.: planting of specimen shrubs as well as herbaceous and grass species throughout public areas to evoke a "sense of Indonesia"). This habitat is automatically assessed as being of 'Low' distinctiveness and due to its limited attributes for biodiversity, is not assigned a condition. This habitat is not identified as being of strategic significance / within a local plan.	0.10
Standing water	Ponds (non-priority habitat) (r1, 366)	0.01	Comprises the proposed waterbodies in the centre and north of the site. This habitat is automatically assessed as being of 'Medium' distinctiveness and is deemed capable of achieving 'Poor' condition. This habitat is not identified as being of strategic significance / within a local plan.	0.04
Semi-improved neutral grassland	Other neutral grassland (g3c)	0.03	Comprises the area of proposed wetland meadow (i.e.: proposed sowing of Emorsgate EG8 to create a low maintenance wetland edge around the existing ditch). This habitat is automatically assessed as being of 'Medium' distinctiveness and is deemed capable of achieving 'Poor' condition based on the proposed management regime. The extent of this habitat is not within an area of strategic significance identified within the local plan.	0.11
Semi-improved neutral grassland	Other neutral grassland (g3c)	0.11	Comprises areas of proposed wildflower meadow. At the time of writing, no seed mix was available, however, it is assumed a mix similar to Emorsgate EM1 will be used. This habitat is automatically assessed as being of 'Medium' distinctiveness and is deemed capable of achieving 'Poor' condition based on the proposed management regime. The extent of this habitat is not within an area of strategic significance identified within the local plan.	0.41

Table 3.3 (continued): Summary of Habitat Creation and Enhancement Proposals (continues)

Landscape Typology	UKHab Habitat Equivalent	Area (ha) / Length (km)	Description (target distinctiveness, condition, connectivity, strategic significance, and risk multipliers)	Value (BU)
Habitats				
Plantation broad-leaved woodland	Other woodland; broadleaved (w1g7)	0.05	Comprises small pockets of proposed broadleaved woodland. At the time of writing, no species mix was available, however, it is assumed that at least 5 native specimens will be planted in these areas. This habitat is automatically assessed as being of 'Medium' distinctiveness and is deemed capable of achieving 'Moderate' condition subject to appropriate long-term management. The extent of this habitat is not within an area of strategic significance identified within the local plan.	0.23
Plantation coniferous woodland	Other coniferous woodland (w2c)	0.01	Comprises an area of proposed pleached trees. At the time of writing, no species mix was available, however, it is assumed that coniferous and/or non-native specimens will be planted to provide screening for the animal enclosures. This habitat is automatically assessed as being of 'Low' distinctiveness and is deemed capable of achieving 'Poor' condition based on its intended use and proposed management regime. The extent of this habitat is not within an area of strategic significance identified within the local plan.	0.02
Scattered trees	Urban tree (11)	0.53	Comprises the proposed 131 ornamental trees across the site. A mix of native and non-native specimens will be planted. These are anticipated to be of small size (DBH less than 7 cm) and deemed capable of achieving 'Poor' condition. This habitat is not identified as being of strategic significance / within a local plan.	1.48
Total Creation (Area Habitats)		2.61		4.74
Total Creation Excluding Urban Trees		2.08		
Hedgerows				
Species-poor, non-native hedgerow	Non-native and ornamental hedgerow	0.013	Comprises a proposed green screen in the south of the site. At the time of writing, no species mix was available, however, it is anticipated that this green screen will be species-poor and consist of non-native specimens.	0.01
Total Creation (Length)		0.01	Total Hedgerow Baseline (BU)	0.01

Table 3.3 (continued): Summary of Habitat Creation and Enhancement Proposals

3.4 Headline Results

Table 3.4 details the headline results. Full details of the biodiversity metric calculations can be found in Appendix 1.

	Habitat Units	Hedgerow Units	River and Stream Units
On-site baseline	15.93	5.62	1.19
On-site post-intervention	9.49	3.17	0.23
Total net unit change (BU)	- 6.43	- 2.45	- 0.96
Total net % change	- 40.40%	- 43.65%	- 80.91%

Table 3.4: Biodiversity Metric Assessment – Headline Results

The existing value of the habitats on site is **15.93 BU**.

The proposals (habitat loss, retention, and creation combined), as based on the landscaping plans (please refer to Table 1.2), will deliver a net loss of **6.43 units**, a **40.40% decrease** of baseline habitat value.

The existing value of the hedgerows on site is **5.62 BU**.

The proposals (habitat loss, retention, and creation), as based on the landscaping plans, will deliver a net loss of **2.45 BU**, a **43.65% decrease** of baseline hedgerow value.

The existing value of the ditches on site is **1.19 BU**.

The proposals (habitat loss and retention), as based on the landscaping plans, will deliver a net loss of **0.96 BU**, an **80.91% decrease** of baseline river and streams value.

4. Discussion and Recommendations

4.1 Conclusions

Biodiversity Change

Net Loss

The BMA identifies that the proposed development will result in a **net loss of 6.43 BU** (Habitats), **2.45 BU** (Hedgerows), and **0.96 BU** (Rivers and streams). This is equivalent to a decrease of 41.66%, 45.02% and 83.56% below the baseline habitat values for each feature respectively. The mitigation hierarchy of the National Planning Policy Framework⁵ and Biodiversity Net Gain (Interim Approach Before Mandatory BNG Goes 'Live')⁶, state that where adverse biodiversity impacts cannot be avoided or mitigated, compensation will be required to ensure that development proposals achieve net gains in biodiversity. Compensation for the residual losses of habitats, hedgerows, and river and streams features will therefore be required to ensure that the development can achieve an overall net gain for biodiversity and ensure compliance with planning policy.

Whilst the Leicester, Leicestershire, and Rutland Biodiversity Action Plan³ highlights that future development should have regard to the draft Environment Act 2021⁷ which sets out a mandate for new development schemes to deliver a 10% net gain in biodiversity, it has been agreed with the county council that a gain of 1% will be appropriate at this site. The agreed 1% net gain figure is calculated based on the existing baseline of the site which in this instance is 15.93 BU (Habitats), 5.62 BU (Hedgerows) and 1.19 BU (Rivers and streams). To secure the requisite 1% net gain for biodiversity, a total figure of **16.01 BU** (Habitats) (existing baseline unit + 1% of the existing baseline unit), **5.68 BU** (Hedgerows) and **1.2 BU** (Rivers and streams) will be required. As biodiversity units for habitats, hedgerows, and river and stream features are measured differently in the metric, the values generated for one are not comparable to another. Therefore, when landscaping proposals are changed, any net gain in habitats/hedgerows/river and streams features cannot be used to counterbalance the net losses in another feature.

In this instance, there are limited opportunities to provide further habitat creation/enhancement within the red line boundary to address all of the residual losses due to the type, layout, and end use of the development scheme. Therefore, achieving a net gain within the red line boundary may not be feasible. It is proposed that the soft landscaping habitat within the red line boundary should be enhanced as much as possible, and an offsite compensation solution (e.g. biodiversity offset) should be considered, either within the wider ownership of the zoo or, on 3rd party land to secure an overall net gain for this development. It is recommended that the Local Planning Authority are contacted to discuss this and a recommendation to this effect is included in Section 4.2 below.

Landscape and Ecological Management Plan

The projected onsite habitat values given in this report are based on the assumption that an appropriate management plan will be implemented to ensure that the habitats, hedgerows, and river and stream features will be established and maintained to fulfil their intended biodiversity

⁵ Ministry of Housing, Communities and Local Government (2021) *National Planning Policy Framework*. Available <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

⁶ Timms, S. (2022). *Biodiversity Net Gain (Interim Approach Before Mandatory BNG Goes 'Live')*. Available at <https://www.leicestershire.gov.uk/sites/default/files/field/pdf/2022/10/5/Biodiversity-net-gain-interim-approach.pdf>

⁷ Legislation.gov.uk. (N.D) The Environment Act 2021. Available: <https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted>

value. Biodiversity Net Gain Principles⁸ necessitates that any biodiversity units claimed must be deliverable over a minimum period of 30 years. As such, the recommended management plan must provide long-term management proposals and provide scope for monitoring and reporting, to demonstrate that the intended values will be achieved over a minimum 30-year period. A recommendation to this effect is included in Section 4.2 below.

4.2 Recommendations

- R1 Further Onsite Biodiversity Enhancements:** Where possible further habitat retention, enhancement and creation should be incorporated in an updated Soft Landscaping Plan to maximise on-site biodiversity value in the developments operational phase. Further proposed onsite biodiversity retention / enhancement / creation should be feasible and designed not to materially impede upon the operational functions of the scheme.
- R2 Biodiversity Offsetting Scheme:** After the developments onsite biodiversity value is further enhanced (so far as is feasible) any remaining biodiversity losses should be delivered via a biodiversity offsetting scheme, either within the wider ownership of the zoo or, on 3rd party land. The scheme should be sufficient in its proposed scope to fully account for all residual onsite biodiversity losses and to also deliver an overall net gain for this development (+1% of the site's determined baseline values)
- R3 Landscape and Ecological Management and Monitoring Plan (LEMMP):** A Landscape and Ecological Management and Monitoring Plan should be produced for all habitats, hedgerows, river and stream features proposed within the site (as well as within any biodiversity offsetting area located on land in the wider ownership of the zoo). The LEMMP should set out the appropriate establishment works, and management prescription required to achieve and maintain the intended type and condition of each habitat/ hedgerow/river and stream feature proposed. The LEMMP should cover a minimum period of 30 years and include provisions for monitoring, review, reporting and contingency throughout. The LEMMP could be produced as part of a planning condition for the proposed development.

⁸ CIRIA, CIEEM, IEMA (2016) *Biodiversity Net Gain: Good Practice Principles for Development* [Available <https://cieem.net/wp-content/uploads/2019/02/Biodiversity-Net-Gain-Principles.pdf>]

5. Drawings

Drawing C160474-02-01, RevA – Phase 1 Habitat Survey

Drawing C160474-04-01 - Drawing Adaptation of the Landscape Masterplan for Purposes of the BMA



Legend

- Site boundary
- Scattered scrub
- Scattered tree
- Dry ditch
- Fence
- Line of broad-leaved trees
- Line of coniferous trees
- Species-poor intact hedgerow
- Species-rich intact hedgerow
- Wet ditch
- Wall
- Amenity grassland
- Bare ground
- Building
- Dense scrub
- Hardstanding
- Introduced shrub
- No access
- Other habitat
- Plantation broad-leaved woodland
- Plantation coniferous woodland
- Poor semi-improved grassland
- Semi-improved neutral grassland
- Standing water
- Target note (feature)
- Target note (habitat)

Project	Twycross Zoo		
Drawing	Phase 1 Habitat Map		
Client	Baker Mallett c/o Twycross Zoo		
Drawing Number	C160474-02-01-RevA	Revision	Rev A
Scale @ A3	1:700	Date	October 2023
Approved By	CH	Drawn By	BD
 MIDDLEMARCH			
Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ T:01676 525880 E:admin@middlemarch-environmental.com			
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C160474-02-01-RevA



Legend

- - Site boundary
- Proposed ornamental tree
- Tree to be removed
- Tree to be retained
- - Dry ditch to be removed
- - Dry ditch to be retained
- Hedgerow to be removed
- Hedgerow to be retained
- Line of trees to be removed
- Line of trees to be retained
- - Proposed green screen
- - Wet ditch to be removed
- - Wet ditch to be retained
- Existing pond
- Proposed 'themed' planting
- Proposed feature grassland
- Proposed habitat planting
- Proposed building and hardstanding
- Proposed native acid meadow mix
- Proposed native planting
- Proposed native tussock mix
- Proposed ornamental planting

- Proposed pleached trees
- Proposed water body
- Proposed wetland meadow mix
- Proposed wildflower mix
- Proposed woodland
- Retained habitat

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

MIDDLEMARCH

Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ
T:01676 525880
E:admin@middlemarch-environmental.com

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C160474-04-01-RevA

Appendix 1

Biodiversity Metric 4.0. Calculation: National Conservation Science Centre, Twycross Zoo

The Biodiversity Metric 4.0 - Calculation Tool

Start page

Project details			
Planning authority:	Leicestershire County Council		
Project name:	National Conservation Science Centre, Twycross Zoo		
Applicant:	Baker Mallett LLP		
Application type:			
Planning application reference:			
Completed by:	Joanne Harper and Gemma Retallick		
Date of metric completion:	03.10.2023		
Reviewer:			
Version control:	e Masterplan, P22009-00-001-DZ-400-00 Soft Landscape Strategy, and TWZ-HLM-00-00-		
Consenting body reviewer:			
Date of consenting body review:			
Target % net gain:	10%		
Irreplaceable habitat present on-site at baseline:	No		
Total site area (including irreplaceable habitat area):	2.68	Irreplaceable habitat area at baseline:	0.00

Instructions

Main menu

Results

Cell style conventions	
	Attention required
	Input error/rules and principles not met
	Use of this cell is not appropriate
	Enter data
	Automatic lookup
	Result

View all

Reset view

On-site baseline map

Insert

On-site post intervention map

Insert

On-site baseline map reference number

On-site post-intervention map reference number

Off-site baseline map

Insert

Off-site post intervention map

Insert

Off-site baseline map reference number

Off-site post-intervention reference number

Key

Area habitats

Hedgerows and lines of trees

Watercourses

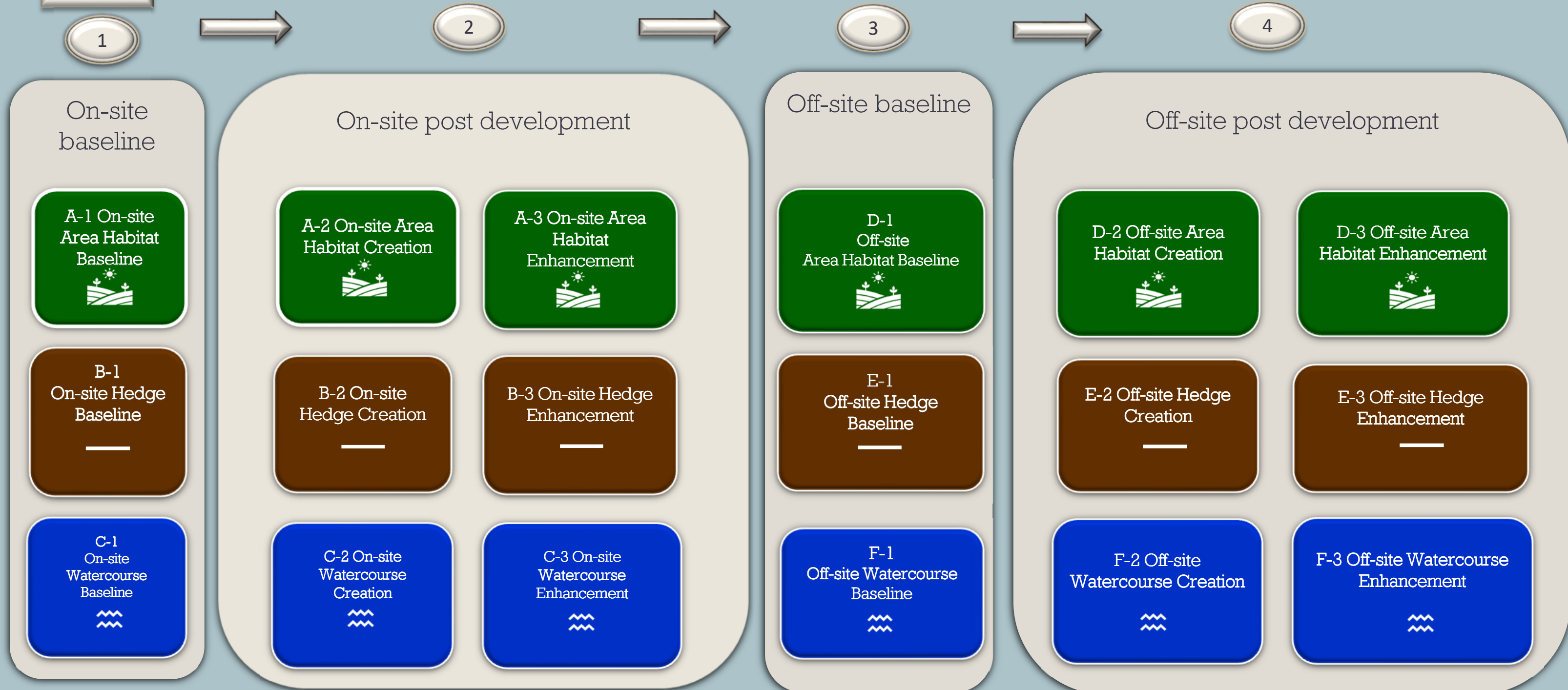
The Biodiversity Metric 4.0 - Calculation Tool

Main menu

- Start page
- Instructions
- Technical data
- Results

Tree helper						
Tree size	Number of trees and area (ha) for each condition state					
	Poor	Area	Moderate	Area	Good	Area
Small	131	0.5334	4	0.0163	4	0.0163
Medium		0.0000	30	1.0993	6	0.2199
Large		0.0000		0.0000		0.0000
Total	131	0.5334	34	1.1156	10	0.2361

Start here



Return to results menu

On-site baseline	Habitat units	15.93		
	Hedgerow units	5.62		
	Watercourse units	1.19		
On-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	9.49		
	Hedgerow units	3.17		
	Watercourse units	0.23		
On-site net change (units & percentage)	Habitat units	-6.43	-40.40%	On-site net gain is less than target set ▲
	Hedgerow units	-2.45	-43.65%	On-site net gain is less than target set ▲
	Watercourse units	-0.96	-80.91%	On-site net gain is less than target set ▲

Off-site baseline	Habitat units	0.00		
	Hedgerow units	0.00		
	Watercourse units	0.00		
Off-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	0.00		
	Hedgerow units	0.00		
	Watercourse units	0.00		
Off-site net change (units & percentage)	Habitat units	0.00	0.00%	
	Hedgerow units	0.00	0.00%	
	Watercourse units	0.00	0.00%	

Combined net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	-6.43		
	Hedgerow units	-2.45		
	Watercourse units	-0.96		
Spatial risk multiplier (SRM) deductions	Habitat units	0.00		
	Hedgerow units	0.00		
	Watercourse units	0.00		

FINAL RESULTS

Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	-6.43	
	Hedgerow units	-2.45	
	Watercourse units	-0.96	
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	-40.40%	Total net gain achieved is less than target set Δ
	Hedgerow units	-43.65%	Total net gain achieved is less than target set Δ
	Watercourse units	-80.91%	Total net gain achieved is less than target set Δ
Trading rules satisfied?	No - Check Trading Summaries ▲		

Unit Type	Target	Baseline Units	Units Required	Unit Deficit
Habitat units	10.00%	15.93	17.52	8.03
Hedgerow units	10.00%	5.62	6.18	3.01
Watercourse units	10.00%	1.19	1.31	1.08

Project Name: National Conservation Science Centre, Twycross Zoo

Map Reference:

A-1 On-Site Habitat Baseline

Condense / Show Columns

Condense / Show Rows

Main Menu

Instructions

Area habitat summary	
Total Net Unit Change	-6.43
Total Net % Change	-40.40%
Trading Rules Satisfied	No - check trading summaries ▲

Existing area habitats				Distinctiveness		Condition		Strategic significance			Required Action to Meet Trading Rules	Ecological baseline
Ref	Broad Habitat	Habitat Type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic Significance multiplier		Total habitat units
1	Grassland	Modified grassland	0.13	Low	2	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required ≥	0.52
2	Grassland	Modified grassland	0.29	Low	2	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required ≥	0.58
3	Urban	Developed land; sealed surface	0.01	V.Low	0	N/A - Other	0	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Compensation Not Required	0.00
4	Heathland and shrub	Mixed scrub	0.46	Medium	4	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required (≥)	1.84
5	Urban	Developed land; sealed surface	0.29	V.Low	0	N/A - Other	0	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Compensation Not Required	0.00
6	Woodland and forest	Other coniferous woodland	0.12	Low	2	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required ≥	0.48
7	Woodland and forest	Other woodland; broadleaved	0.11	Medium	4	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required (≥)	0.88
8	Woodland and forest	Other woodland; broadleaved	0.01	Medium	4	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required (≥)	0.04
9	Grassland	Other neutral grassland	0.62	Medium	4	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required (≥)	4.96
10	Grassland	Other neutral grassland	0.01	Medium	4	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required (≥)	0.04
11	Lakes	Ponds (priority habitat)	0.02	High	6	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same habitat required =	0.28
12	Urban	Introduced shrub	0.01	Low	2	Condition Assessment N/A	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required ≥	0.02
13	Urban	Bare ground	0.06	Low	2	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required ≥	0.12
14	Grassland	Modified grassland	0.04	Low	2	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required ≥	0.08
15	Woodland and forest	Other woodland; broadleaved	0.04	Medium	4	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required (≥)	0.16
16	Individual trees	Urban tree	0.04	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required (≥)	0.37
17	Individual trees	Urban tree	0.39	Medium	4	Good	3	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required (≥)	5.38
18	Urban	Modified grassland	0.01	Low	2	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required ≥	0.02
19	Heathland and shrub	Mixed scrub	0.02	Medium	4	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required (≥)	0.16
20												
21												
22												
23												
24												
Total habitat area			2.68									
Site Area (Excluding area of Individual trees and Green walls)			2.25									

Retention category biodiversity value						Bespoke compensation agreed for unacceptable losses	Comments		
Area retained	Area enhanced	Baseline units retained	Baseline units enhanced	Area habitat lost	Units lost		User comments	Consenting body comments	GIS reference number
0	0	0.00	0.00	0.13	0.52		Amenity grassland		TN13
0	0	0.00	0.00	0.29	0.58		Amenity grassland		TN14 and 15
0	0	0.00	0.00	0.01	0.00		Building		TN23
0.07	0	0.28	0.00	0.39	1.56		Dense scrub, mixed		TN 6, 10, 42, and 43
0.01	0	0.00	0.00	0.28	0.00		Hardstanding		TN22
0	0	0.00	0.00	0.12	0.48		Conifer plantation woodland		TN5
0.07	0	0.56	0.00	0.04	0.32		Broad-leaved plantation woodland		TN1
0	0	0.00	0.00	0.01	0.04		Broad-leaved plantation woodland		TN24
0	0	0.00	0.00	0.62	4.96		Semi-improved neutral grassland		TN19
0	0	0.00	0.00	0.01	0.04		Poor semi-improved grassland		TN38
0.02	0	0.28	0.00	0.00	0.00		Pond		TN8
0	0	0.00	0.00	0.01	0.02		Ornamental planting		TN39
0	0	0.00	0.00	0.06	0.12		Bare ground		TN16
0	0	0.00	0.00	0.04	0.08		Other habitat -ground within the primate enclosure comprising bare ground, bark chippings, and common and introduced grass species		TN18
0	0	0.00	0.00	0.04	0.16		30 early-mature to mature, hybrid black poplars situated close together in the tufted deer enclosures forming a plantation woodland		TN17
0.02	0	0.18	0.00	0.02	0.18		10 moderate condition trees; all of small size. 4 of these to be retained. Most of the trees are deemed to be semi-mature to mature. Mature trees are formally identified within the LBAP		TN28, TN33, TN45, and TN48
0.25	0	3.45	0.00	0.14	1.93		14 good condition trees: 1 of large size, 8 of medium size, and 5 of small size. 13 of these are to be retained including, 6 in good condition and of med size; 4 in good condition and of small size; and 3 in moderate condition and of small size. Most of the trees are deemed to be semi-mature to mature. Mature trees are formally identified within the LBAP		TN26, TN27, TN29, TN30, TN31, TN32, TN35, TN36, TN44, TN46, and TN47
0	0	0.00	0.00	0.01	0.02		No access but anticipated to be similar to TN16		TN40
0	0	0.00	0.00	0.02	0.16		Dense scrub, mixed		TN37
0.44	0.00	4.75	0.00	2.24	11.18				

Total area lost (excluding area of Individual trees and Green walls)	2.08
--	------

M² to hectares conversion tool:	Select a unit	Hectares	M²

Project Name: National Conservation Science Centre, Twycross Zoo Map Reference:

A-2 On-Site Habitat Creation

Condense / Show Columns

Condense / Show Rows

Main Menu

Instructions

Area habitat summary	
Total Net Unit Change	-6.43
Total Net % Change	-40.40%
Trading Rules Satisfied	No - check trading summaries ▲
Area Check (excluding individual trees and green walls)	Area Acceptable ✓

Post development/ post intervention habitats												
Broad Habitat	Proposed habitat	Area (hectares)	Distinctiveness	Condition	Strategic significance	Temporal multiplier		Difficulty	Habitat units delivered	Comments		GIS reference number
			Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition (years)	Final difficulty of creation		User comments	Consenting body comments	
Urban	Vegetated garden	0.02	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	1	Low	0.04	Proposed feature grasses (i.e.: block planting of ornamental grasses)		
Urban	Introduced shrub	0.04	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	1	Low	0.08	Proposed habitat planting (i.e.: matrix planting of shrub species within animal habitats to provide screening).		
Urban	Developed land; sealed surface	1.1	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	0	Medium	0.00	Proposed hardstanding		
Grassland	Other lowland acid grassland	0.23	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	10	Low	1.29	Proposed native acid meadow mix (N12) (i.e.: includes 20 native wildflowers and 8 grass species)		
Heathland and shrub	Mixed scrub	0.06	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	1	Low	0.23	Proposed native planting (i.e.: planting of native hedgerow species - will form pockets of scrub)		
Grassland	Modified grassland	0.36	Low	Poor	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	1	Low	0.69	Proposed native tussock mix (Emorsgate EG10) (i.e.: low maintenance tussock grassland areas within animal habitats)		
Urban	Introduced shrub	0.01	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	1	Low	0.02	Proposed ornamental planting		
Urban	Introduced shrub	0.05	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	1	Low	0.10	Proposed themed planting (i.e.: planting of specimen shrubs, herbaceous and grass species throughout public realm to evoke a "sense of Indonesia").		
Lakes	Ponds (non-priority habitat)	0.01	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	1	Low	0.04	Proposed waterbody		
Grassland	Other neutral grassland	0.03	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	2	Low	0.11	Proposed wetland meadow mix (Emorsgate EGB) (i.e.: to create a low maintenance wetland edge around the existing ditch)		
Grassland	Other neutral grassland	0.11	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	2	Low	0.41	Proposed wildflower mix (No seed mix available at the time of writing. Suggested mix, Emorsgate EM1)		
Woodland and forest	Other woodland; broadleaved	0.05	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	15	Low	0.23	Proposed woodland (No species mix available at the time of writing. Assumed native broad-leaved species will be planted)		
Woodland and forest	Other coniferous woodland	0.01	Low	Poor	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	5	Low	0.02	Proposed pleached trees (No species mix available at the time of writing. Assumed non-native, coniferous species will be planted to act as screening for enclosures)		
Individual trees	Urban tree	0.53	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	10	Low	1.48	Proposed 131 ornamental trees of small size and capable of reaching criteria for poor condition only. A mix of native and non-native specimens will be planted.		
Total habitat area		2.61							4.74			

Site Area (Excluding area of Individual trees and Green walls)	2.08
--	------

M² to hectares conversion tool:	Select a unit	Hectares	M²

sct Name: National Conservation Science Centre, Twyccross Zoo
 Map Refere

B-1 On-Site Hedge Baseline

Condense / Show Columns

Condense / Show Rows

Main Menu

Instructions

Hedgerow summary

Total Net Unit Change
 -2.45

Total Net % Change
 -43.65%

Trading Rules Satisfied
 No - check trading summary ▲

Existing hedgerow habitats				Distinctiveness	Condition	Strategic significance	Required Action to Meet Trading Rules	Ecological baseline
Baseline ref	Hedge number	Hedgerow type	Length (km)	Distinctiveness	Condition	Strategic significance		Total hedgerow units
1	TN2	Line of trees	0.15	Low	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	0.30
2	TN3	Line of trees	0.06	Low	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	0.12
3	TN9	Native hedgerow	0.11	Low	Moderate	Formally identified in local strategy	Same distinctiveness band or better	0.51
4	TN4, 11, and 12	Species-rich native hedgerow	0.33	Medium	Good	Formally identified in local strategy	Same distinctiveness band or better	4.55
5	TN21	Species-rich native hedgerow	0.03	Medium	Poor	Formally identified in local strategy	Same distinctiveness band or better	0.14
6								
7								
8								
9								
10								
			0.68					
								5.62

Retention category biodiversity value						Comments		
Length retained	Length enhanced	Units retained	Units enhanced	Length lost	Units lost	User comments	Consenting body comments	GIS reference number
0	0	0.00	0.00	0.15	0.30			TN2
0.06	0	0.12	0.00	0.00	0.00			TN3
0	0	0.00	0.00	0.11	0.51			TN9
0.22	0	3.04	0.00	0.11	1.52			TN4, 11, and 12
0	0	0.00	0.00	0.03	0.14			TN21
0.28	0.00	3.16	0.00	0.40	2.46			

Project Name: National Conservation Science Centre,
Tanjung Zoo - Mac Reference:
C-1 On-Site WaterC' Baseline

Condense / Show ColumnsCondense / Show Rows

Main MenuInstructions

Watercourse summary	
Total Net Unit Change	-0.96
Total Net % Change	-80.91%
Trading Rules Satisfied	No - check trading summary ▲

Existing watercourse type			Distinctiveness		Condition		Strategic significance			Watercourse encroachment		Riparian encroachment		Required Action to Meet Trading Rules	Ecological baseline
Baseline ref	Watercourse type	Length (km)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic significance multiplier	Extent of encroachment	Multiplier	Extent of encroachment for both banks	Multiplier		Total watercourse units
1	Ditches	0.14	Medium	4	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	No Encroachment	1	Major/Minor	0.84	Same habitat required =	0.47
2	Ditches	0.09	Medium	4	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	No Encroachment	1	No Encroachment/ No Encroachment	1	Same habitat required =	0.72
3															
4															
5															
6															
7															
		0.83													
															1.19

Retention category biodiversity value						Bespoke compensation agreed for unacceptable losses	Comments	
Length retained	Length enhanced	Units retained	Units enhanced	Length Lost	Units Lost		User Comments	Consenting body comments
0.02	0	0.07	0.00	0.12	0.40		Part of wet ditch to be culverted to go under the proposed orangutan enclosure	Part of TN11
0.02	0	0.16	0.00	0.07	0.56		Parts of dry ditch to be culverted to go under the built environment (hardstanding/buildings)	TN7 and Part of TN11
0.04	0.00	0.23	0.00	0.19	0.96			