Biodiversity Metric Assessment

Hempland Primary School

MIDDLEMARCH

Quality Assurance

Date	Version	Author	Checked & Approved by
28/06/2023	Final	Ellie Rickman MSc, MCIEEM (Principal Ecological Consultant)	Dr Amanda Flint (Biodiversity Manager)

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.

Disclaimer

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Contents

1. Introduction

1.1 Project Background

ISG Ltd commissioned Middlemarch to undertake a Biodiversity Metric Assessment associated with a proposed development at Hempland Primary School in York.

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

- RT-MME-156485-02- Preliminary Ecological Appraisal
- RT-MME-158201-01- Preliminary Arboricultural Assessment
- RT-MME-160543-02- Bat Surveys

1.2 Site Description and Context

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

Attribute	Description
Location	The site is located on the north-eastern outskirts of the city of York within a residential area.
National Grid Reference	SE 62579 52945.
Site Area (ha)	2.17
Topography	Flat
Land Cover (on site)	At the time of the Preliminary Ecological Appraisal, the site was dominated by school buildings in the northern half of the site with a large amenity grassland playing field to the south. An area of plantation broadleaved woodland was present along the southern boundary of the site. Scattered trees, a short section of hedgerow and patches of dense scrub were recorded along the site boundaries and around the perimeter of the school building. Hardstanding access tracks and car parking areas were also present mostly to the north of the site.
Land Cover (site surrounds)	The site is bordered by Whitby Avenue to the north, Tang Hall Beck along the southern border and a park to the west with residential properties to the north and east. The wider landscape is dominated by residential properties with agricultural fields beyond the residential area 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 a new school building located to the centre of the site with amenity grassland playing fields to the north and south. Hardstanding parking is proposed to the north east and hardstanding playgrounds to the north west, and sports courts to the south east. The woodland to the south of the site will be retained and enhanced. This assessment is based on the documentation detailed in the following documentation listed in Table 1.2.

Document / Drawing Number	Author
0628-pli-zz-zz-M2-l-0100 Landscape Layout	Plinke
BRP-1062-pli-zz-xx-D-L-1971 Site Plan	Plinke

Table 1.2: Documentation Provided by Client

2. Methods

2.1 Biodiversity Metric

The biodiversity calculations used within this assessment were undertaken by Ellie Rickman MCIEEM (Principal Ecological Consultant) using 'The Biodiversity Metric 4.0' and associated User Guide[1] and Technical Supplement[2]. 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 (RT-MME-156485-02) carried out by Middlemarch in December 2021. A Phase 1 Habitat showing the extent and location of each habitat recorded on site is included in Section 5 (C156485-02-01)

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 RT-MME-156485-02).
Strategic significance	A score based on information set out in local plans or policies. In this instance, a strategic location was defined as a target habitat in the City of York Biodiversity Action Plan.[3]

Table 2.1: Habitat Attributes for Existing Baseline Habitats

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

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[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] City of York Council (2017) City of York Local Biodiversity Action Plan. Available: https://mayhewgroup.files.wordpress.com/2019/03/city_of_york_lbap_2017-2.pdf

Future Baseline

The future baseline conditions of the site are based on the proposed landscaping plan 0628-pli-zz-zz-M2-l-0100 by Plinke. 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 detail in Add development drawing.
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 a target habitat in the City of York Biodiversity Action Plan (LBAP)[3].
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/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 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 C156485-02-01 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	Modified Grassland	1.086	Habitat is automatically classed as being of 'Low' distinctiveness and was assessed as being in 'Poor' condition. This habitat is of low strategic significance.	2.17
Broadleaved Woodland	Other Broadleaved Woodland	0.221	Habitat is of 'Medium' distinctiveness and was assessed as being in 'poor' condition. It is of high strategic significance as woodland is a target habitat in the City of York LBAP.	1.02
Buildings and hardstanding	Developed Land/sealed surface	0.834	Habitat is automatically classed as being of 'Low' distinctiveness and does not require a condition assessment. This habitat is of low strategic significance.	0.00
Vegetable Garden	Vegetated Garden	0.016	Habitat is automatically classed as being of 'Low' distinctiveness and does not require a condition assessment. This habitat is of low strategic significance.	0.03
Scattered Trees	Urban Tree	0.6718	Habitat is of 'Medium' distinctiveness and was assessed as being in 'poor' condition. It is of medium strategic significance as trees are not a specific target in the City of York LBAP but contribute to connectivity between target habitats.	2.96
Ornamental Shrubs	Introduced shrub	0.006	Habitat is automatically classed as being of 'Low' distinctiveness and does not require a condition assessment. This habitat is of low strategic significance.	0.01
Total Area (ha) (excluding areas of urban trees which oversail other habitats)		**2.16**	**Total Habitat Baseline (BU)**	**6.19**

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

Hedgerows				
Species Poor Hedgerow (H1)	Native Hedgerow	0.03	Habitat is of 'Low' distinctiveness and was assessed as being in 'Moderate' condition. It is of medium strategic significance as only species rich hedgerows are a target habitat in the City of York LBAP but hedgerows do contribute to connectivity between habitats.	0.14
Species Poor Hedgerow (H2)	Native Hedgerow	0.11	Habitat is of 'Low' distinctiveness and was assessed as being in 'Moderate' condition. It is of medium strategic significance as only species rich or ancient hedgerows are a target habitat in the City of York LBAP but hedgerows do contribute to connectivity between habitats.	0.76
Total Length (km)		**0.14**	**Total Hedgerow Baseline (BU)**	**0.90**

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

3.2   Future Baseline and Impacts

Description of the Future Baseline

The future baseline for the purposes of this assessment is set out in Proposed Landscaping Plan 0628-pli-zz-zz-M2-l-0100 by Plinke. An adapted version of this map 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.

Impacts

Table 3.2 outlines the potential biodiversity impacts of the proposed development (including area proposed for retention, retained for enhancement, or habitats that are lost).

Phase 1 Habitat	UKHab Habitat	Habitats Retained		Habitat Retained for Enhancement		Habitat Loss	
		Area/Length (Ha/km)	Value (BU)	Area/Length (Ha/km)	Value (BU)	Area/Length (Ha/km)	Value (BU)
Area based habitats							
Amenity Grassland	Modified Grassland	0.017	0.03	0.00	0.00	-1.07	-2.14
Broadleaved Woodland	Other Broadleaved Woodland	0.00	0.00	0.221	1.02	0.00	0.00
Buildings and hardstanding	Developed Land/sealed surface	0.00	0.00	0.00	0.00	-0.83	0.00
Vegetable Garden	Vegetated Garden	0.00	0.00	0.00	0.00	-0.2*	-0.03
Scattered Trees	Urban Tree	2.85	1.25	0.00	0.00	-0.39	-1.70

Ornamental Shrubs	Introduced shrub	0.00	0.00	0.00	0.00	0.01	-0.01
Total Impact (Area habitats)		**0.30**	**1.29**	**0.22**	**1.02**	**-2.31**	**-3.88**
Hedgerows							
Species Poor Hedgerow (H1)	Native Hedgerow	0.00	0.00	0.00	0.00	-0.03	-0.14
Species Poor Hedgerow (H2)	Native Hedgerow	0.11	0.76	0.00	0.00	0.00	0.00
Total Impact (Hedgerows)	**0.11**	**0.76**	**0.00**	**0.00**	**-0.03**	**-0.14**
* Any discrepancies between the metric and numbers in the table is due to rounding.							

Table 3.2: Summary of Impacts

3.3   Habitat Creation / Enhancement

Table 3.3 below outlines the value of the proposed habitat creation/ enhancements 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				
Hardstanding	Developed land; sealed surface	0.765	Comprises the new area of built development (buildings and hardstanding). The habitat type is automatically assessed as being 'Very low' distinctiveness and due to the limited attributes for biodiversity is not assigned a condition.	0.00
Amenity Grassland	Modified grassland	0.89	Habitat is automatically classed as being of 'Low' distinctiveness and has been assigned a target condition of 'Poor' as it will be used for sports. This habitat is of low strategic significance.	1.72
Groundcover and perennial planting	Vegetated garden	0.06	Habitat is automatically classed as being of 'Low' distinctiveness and has been assigned a target condition of 'Poor' as it will be used for sports. This habitat is of low strategic significance.	0.12
Rain Garden	Rain garden	0.011	Habitat is automatically classed as being of 'Low' distinctiveness and has been assigned a target condition of 'Moderate'. This habitat is of low strategic significance.	0.04

Green Roof	Biodiverse green roof	0.095	Habitat is automatically classed as being of 'Medium' distinctiveness and has been assigned a target condition of 'Moderate'. This habitat is of high strategic significance as green roofs are a target within the City of York LBAP.	0.49
Semi-natural vegetation	Other neutral grassland	0.07	Habitat is automatically classed as being of 'Medium' distinctiveness and has been assigned a target condition of 'Moderate'. This habitat is of medium strategic significance as unimproved grasslands are a target within the City of York LBAP.	0.52
Scattered Trees	Urban tree	0.1914	Habitat is automatically classed as being of 'Medium' distinctiveness and has been assigned a target condition of 'Moderate'. This habitat is of medium strategic significance as trees are not a target within the City of York LBAP but do enhance connectivity between habitats.	0.64
Broadleaved Woodland Creation	Other woodland; broadleaved	0.1914	Habitat is automatically classed as being of 'Medium' distinctiveness and has been assigned a target condition of 'Moderate'. It has high strategic significance because broadleaved woodland is a target within the City of York LBAP.	0.64
Broadleaved Woodland Enhancement	Other woodland; broadleaved	0.036	Habitat is automatically classed as being of 'Medium' distinctiveness and is targeted to be enhanced from Poor to Moderate condition, It has high strategic significance because broadleaved woodland is a target within the City of York LBAP.	0.19
Total Creation (Area Habitats)		**2.12**	**Total Habitat Baseline (BU)**	**3.72**
Hedgerows				
Native Hedgerow	Native Hedgerow	0.309	Habitat is of 'Low' distinctiveness and has been assigned a target condition of 'Moderate'. It is of medium strategic significance as only species rich or ancient hedgerows are a target habitat in the City of York LBAP but hedgerows do contribute to connectivity between habitats.	1.19
Total Creation (Length)		**0.309**	**Total Hedgerow Baseline (BU)**	**1.19**

Table 3.3: 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
On-site baseline	6.19	0. 90
On-site post-intervention	6.74	1.95
Total net unit change	0.55	1.05
Total net % change	8.86%	117.22%

Table 3.4: Biodiversity Metric Assessment – Headline Results

The existing value of the habitats on site is **6.19 BU**.

The proposals (habitat loss, retention, enhancement and creation combined), as based on 0628-pli-zz-zz-M2-l-0100 Landscape Layout, will deliver a net gain of **0.55 units**, a **8.86%** increase of baseline habitat value.

The existing value of the hedgerows on site is **0.890 BU**.

The proposals (habitat loss, retention, enhancement and creation), as based on 0628-pli-zz-zz-M2-l-0100 Landscape Layout, will deliver a net gain of **1.05 BU**, a 117.22**%** increase of baseline hedgerow value.

4. Discussion and Recommendations

4.1 Conclusions

Biodiversity Change

Net Gains

The BMA identified that the proposed development will result in a net gain of **0.55 BU** in habitat units and **1.05 BU** in hedgerow units. These gains compensate for all loss of these features and secure a net gain for biodiversity but falls slightly short of the 10% net gain in habitat biodiversity value advocated by the Environment Act 2021. Long term management will be required to ensure that the target biodiversity value of created and enhanced habitats are achieved.

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 and hedgerow features will be established and maintained to fulfil their intended biodiversity value. Biodiversity Net Gain Principles[4] 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 A Landscape and Ecological Management Plan (LEMP) should be produced for all habitat and hedgerow features proposed within the site. The LEMP 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 LEMP should cover a minimum period of 30 years and include provisions for monitoring, review, reporting and contingency throughout. The LEMP could be produced as part of a planning condition for the proposed development**.**

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[4] 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 C156485-02-01 – Phase 1 Habitat Survey

Drawing C160543-01 - Drawing Adaptation of Landscape Strategy Proposal for Purposes of the BMA

462500 462600 462700

0   20   40 m
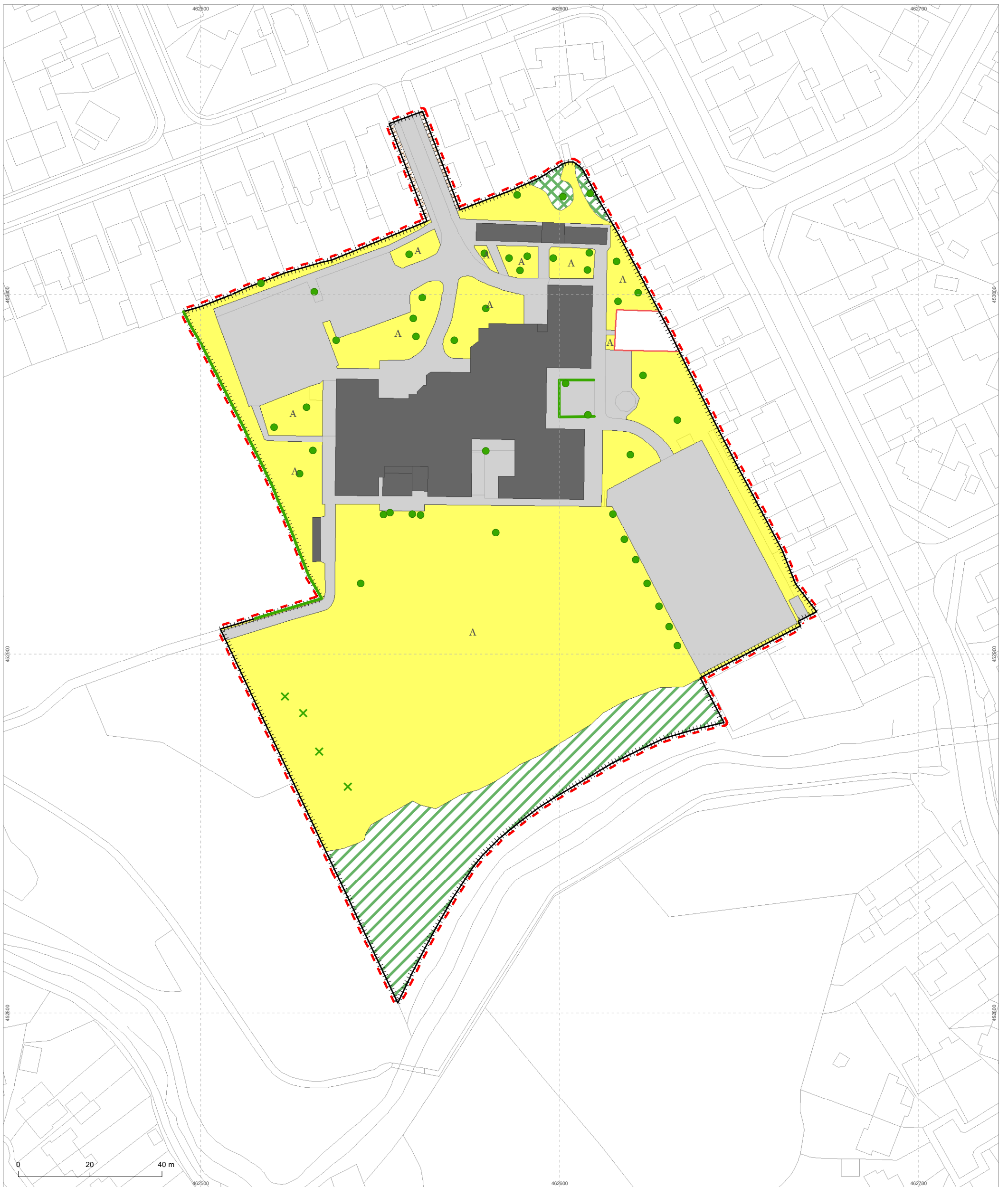
Legend

- – – – Site boundary
- ✕ Scattered scrub
- ● Scattered tree
- +++++ Fence
- —— Species-poor intact hedgerow
- [A] Amenity grassland

- Broad-leaved plantation woodland
- Building
- Dense scrub
- Hardstanding
- Introduced shrub
- Other habitat: vegetable garden

N

Legend

- ⬛ ⬛ (red dashed) Site boundary
- 🔴 Tree to be removed
- 🟢 Tree to be retained
- 🟢 Proposed tree
- 🟣 Bat box
- ▬▬ (dark red) Hedgerow to be removed
- ▬▬ (green) Proposed hedgerow
- Proposed amenity grass
- Proposed green roof
- Proposed groundcover planting
- Proposed rain garden
- Proposed semi-natural vegetation
- Proposed species rich perennial
- Proposed woodland matrix
- Propose woodland/meadow
- Hardstanding
- Retained habitat

Project	Hempland Primary School
Drawing	Biodiversity Net Gain Proposals
Client	ISG ltd
Drawing Number C160543-01-01	**Revision** 00
Scale @ A3 1:800	**Date** June 2023
Approved By ER	**Drawn By** AW

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C160543-01-01

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Appendix 1

Biodiversity Metric 4.0. Calculation, Hempland Primary School

Attached separately.