THAMES YOUNG MARINERS, RIVERSIDE DR, LONDON

BIODIVERSITY NET GAIN ASSESSMENT

A Report to: Pick Everard

Report No: RT-MME-157100-06

Date: October 2022

Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ
Tel: 01676 525880 Fax: 01676 521400
E-mail: admin@middlemarch-environmental.com Web: www.middlemarch-environmental.com

REPORT VERIFICATION AND DECLARATION OF COMPLIANCE

This study has been undertaken in accordance with British Standard 42020:2013 “Biodiversity, Code of practice for planning and development”.

Report Version	Date	Completed by:	Checked by:	Approved by:
Final	10/10/2022	Beth Stacey (Ecological Project Officer)	Will Rees (Senior Ecological Consultant)	Paul Roebuck MSc MCIEEM (South East Manager)

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.

CONTENTS

1. INTRODUCTION

1.1 PROJECT BACKGROUND

In February 2022, Pick Everard commissioned Middlemarch Environmental Ltd to undertake a Biodiversity Net Gain Assessment associated with a proposed development at Thames Young Mariners, Riverside Dr, London. This assessment is required to inform a planning application associated with the redevelopment of the existing site to create new accommodation and educational facilities.

Middlemarch Environmental Ltd has previously carried out the following surveys on site:

- Preliminary Arboricultural Appraisal (RT-MME-157100-01);
- Arboricultural Impact Assessment (RT-MME-157100-02);
- Ecological Walkover Survey (RT-MME-157100-03);
- Preliminary Bat Roost Assessment (RT-MME-157100-04);
- Badger Survey (RT-MME-157100-05); and,
- Bat Survey Report (RT-MME-158089).

1.2 PROJECT SCOPE

The purpose of the Biodiversity Net Gain (BNG) Assessment 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 BNG Assessment 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.

1.3 SITE DESCRIPTION AND CONTEXT

The development site is situated in the London Borough of Richmond, centred at National Grid Reference TQ 16397 72304. The site comprised the Thames Young Mariners Outdoor Learning Facilities with associated facilities and soft landscaping.

The central portion of the site was dominated by a large lake fed from backwater from the River Thames channel. The lake was fringed by a range of semi-natural habitats and a series of docks and pontoons. Site facilities were predominantly located within the south-western portion of the site, comprising a series of buildings, with associated storage units and hardstanding. The area to the south of the lake comprised an access road, managed amenity grassland with scattered trees and narrow bands of woodland used for amenity purposes. The north-eastern portion of the site comprises woodland habitat which forms part of a larger offsite band of woodland with reduced amenity pressure. The north-western portion of the site comprises an area of previously cleared land which has subsequently been colonised by mixed scrub habitat.

Ham Lands, a 72 ha Local Nature Reserve with broadleaf woodland, scattered scrub, meadow grassland and wetland habitats, is situated immediately north and south of the site. The River Thames is located immediately west of the site boundary. Riverside Dr. abuts at the Eastern site boundary. The broader surrounding area consists of a mixture of residential housing and parkland. St Marys University Park and Playing Grounds, comprised of scattered tree and amenity grassland, is situated approximately 700 m west. Grey Court School is situated approximately 674 m east of the site and features playing grounds with vegetated margins.

Richmond Park, a 1011.7 ha area comprised of broadleaf woodland, lowland acidic grassland and standing water habitats, is situated approximately 2.25 km east. Bushy Park, a 445 ha area of mixed woodland and grassland, is situated 1.9 km south west of the sites bounds.

1.4 DESCRIPTION OF DEVELOPMENT

The proposed works include to demolition of the existing buildings and facilities within the site and erect a series of buildings to provide new guest accommodation and associated facilities. The majority of the works will take place within the existing built development footprint, however, small areas of soft landscaping are to be lost to facilitate the wider development. Proposals have been designed to retain all trees with bat roosting potential and all notable habitats within the site. As compensation for small scale habitat losses, significant additional habitat creation is proposed, including a series of features specifically targeting biodiversity enhancement.

Proposed habitat losses include:

- Buildings and Hardstanding;
- 5 no. small trees from the site frontage to widen the access road;
- Amenity grassland and introduced shrubs within the development footprint.

Proposed habitat creation includes:

- G2 wildflower meadow (other neutral grassland) creation within soft landscaping areas;
- G3 Flowering Lawn (modified grassland) creation within soft landscaping areas;
- G4 Reinforced grass (modified grassland) creation to be used as additional parking;
- G5 Swale (other neutral grassland) creation to comprise marshy grassland adjacent to the lake;
- H1 Species rich-native hedgerow creation along the southern boundary to Ham Lands;
- H2 – Native hedgerow creation comprising clipped native hedges within soft landscaping;
- R1 Intensive green roof creation comprising wildflower turf;
- R2 Biodiverse roof creation comprising varied substrate depth dry meadow roofs;
- S1 Ornamental shrub and herbaceous planting within areas of soft landscaping;
- S2 Rain garden (Urban SUDs feature) creation within areas of soft landscaping;
- S3 Sensory planting (Introduced shrubs) within areas of soft landscaping;
- S4 Pollinator planting (Introduced shrubs) within areas of soft landscaping;
- T1 Native urban tree planting (Urban tree – moderate condition) within existing grassland; and,
- T2 Ornamental urban tree planting (Urban tree – poor condition) withing areas of soft landscaping.

Proposed habitat enhancement includes:

- DS1 Existing Bramble Scrub enhanced to mixed scrub in moderate condition;
- BW1 and BW2 Existing poor condition other woodland to be enhanced to moderate condition;
- G1 Existing poor condition modified grassland to be enhanced to good condition other neutral grassland.

1.5 DOCUMENTATION PROVIDED

The conclusions and recommendations made in this report are based on information provided by the client regarding the scope of the project. Documentation made available by the client is listed in Table 1.1.

Document Name / Drawing Number	Author
Site Layout - 211263_220207	Pick Everard
PR-200-PEV-XX-XX-DR-L-00201-Landscape Planting Strategy.dwg	Pick Everard

Table 1.1: Documentation Provided by Client

2. METHODOLOGY

2.1 HABITAT BASELINE

A baseline biodiversity value for the site was established through a Phase 1 Habitat Survey of the site, carried out by Middlemarch Environmental Ltd in April 2022, as part of the Eco Walkover Survey (Report RT-MME-157100-03).

The walkover survey was conducted following the Phase 1 Habitat Survey methodology of the Joint Nature Conservation Committee (JNCC, 2010[1]) and the Institute of Environmental Assessment (IEA, 1995[2]). Phase 1 Habitat Survey is a standard technique for classifying and mapping British habitats. The aim is to provide a record of habitats that are present on site.

2.2 CALCULATION OF NET LOSS/GAIN

The biodiversity calculations were undertaken using 'The Biodiversity Metric 3.1' and associated User Guide[3] and Technical Supplement[4].

2.2.1 Calculating the On-Site Baseline

The site is separated into habitat parcels based on the Phase 1 Habitat Survey map (See Section 6). The metric differentiates between non-linear habitats (i.e., grassland, woodland) and linear habitats (i.e., hedgerows), for which a separate calculation is completed. The respective areas (in hectares) of each habitat parcel and respective lengths (in kilometres) of linear features are calculated in Geographical Information System (GIS) mapping software and entered into the calculator tool.

The Biodiversity Metric 3.1 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 3.1 calculator tool or professional opinion.

Each habitat or linear feature recorded within the site is assigned a score for 'Distinctiveness', 'Condition' and 'Strategic Significance':

- **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. Habitat condition values used in this report are taken from Middlemarch-Environmental Ltd Report RT-MME-156011-01; and,
- **Strategic significance** – A score based on information set out in local plans or policies. In this instance, a strategic location was defined as areas identified as Biodiversity Opportunity Areas, Wildlife Corridors or Biological Notification Sites in the Richmond Borough Biodiversity Action Plan[5]. For purposes of this assessment, the Thames Young Mariners site is directly referenced within the Biodiversity Action Plan with respect to enhancement opportunities. As no explicit habitat is referenced, all habitats considered within the assessment have been assigned High Strategic Significance within the Metric in accordance with Paragraph 4.29 within the Metric 3.1 User Guide.

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

For purposes of the assessment, the application red-line is considered as "on-site" while habitats within the wider Thames Young Mariners site are considered as "off-site" habitats.

[1] JNCC. (2010). *Handbook for Phase 1 Habitat Survey: A technique for environmental audit*. Joint Nature Conservation Committee, Peterborough.
[2] IEA. (1995). *Guidelines for Baseline Ecological Assessment*, Institute of Environmental Assessment. E&FN Spon, An Imprint of Chapman and Hall, London.
[3] Panks, S., White, N., Newsome, A., Potter, J., Heyton, M., Mayhew, E., Alvarez, M., Russell, T., Scott, S.J., Heaver, M., Scott, S.H., Treweek, J., Butcher, B. and Stone, D. (2022) T*he Biodiversity Metric 3.1 – Auditing and accounting for biodiversity: User Guide*. Natural England.
[4] Panks, S., White, N., Newsome, A., Potter, J., Heyton, M., Mayhew, E., Alvarez, M., Russell, T., Scott, S.J., Heaver, M., Scott, S.H., Treweek, J., Butcher, B. and Stone, D. (2022) T*he Biodiversity Metric 3.1 – Auditing and accounting for biodiversity: Technical Supplement*. Natural England.
[5] Richmond Biodiversity Action. Available at: https://habitatsandheritage.org.uk/our-work/parks-nature/richmond-biodiversity-partnership/

2.2.2 Calculating the Future Baseline

The future baseline conditions of the site are based on the Landscape Strategy (PR-200-PEV-XX-XX-DR-L-00200) provided by Pick Everard and adapted by Middlemarch Environmental Ltd for the purposes of the assessment (See Drawing C157100-06-01 within Section 5). The future baseline is initially overlaid on the existing baseline to calculate the area of habitats to be lost, retained or retained and enhanced. This is used to calculate the gross biodiversity change at the site.

New target habitat 'distinctiveness' and 'condition' values are subsequently assigned for lost or retained habitats, taking account of any recommendations regarding planting plans or habitat creation and management proposals as presented within Section 4 of this report.

The areas (or lengths) of these new target habitats are entered into the calculator and are assigned a predicted score for their 'Strategic Significance'. As the calculation of target habitats requires some degree of prediction based on professional judgement, additional risk factors are included to account for the difficulty in restoring or creating habitats and the time it takes for enhanced or created habitats to reach their predicted condition.

The area of any new Urban Trees proposed is calculated using the Street Tree Helper (as described above) using projected Diameter at Breast Height (DBH) at 30 years post creation.

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).

2.2.3 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 BNG Assessment 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 is based on professional opinion about the likely achievable outcomes at the site based on the proposed planting plans and presumed management resources.

3. ECOLOGICAL BASELINE AND IMPACT ASSESSMENT

3.1 EXISTING HABITATS

The habitats identified during the Phase 1 Habitat Survey are described in Tables 3.1 and 3.2 and their value in biodiversity units provided. The full assessment is provided in Appendix 1.

Phase 1 Habitat	Polygon / Line Ref.	UK Hab Equivalent	Area (ha) / Length (KM)	Description	Value (Biodiversity Units)
Area Based Units					
Amenity Grassland	AG1	Grassland – Modified Grassland	1.790482	Habitat is automatically classed as being of 'Low' distinctiveness. Assessed against the low-quality grassland condition criteria the habitat has been assigned a condition of 'Poor'.	4.12
Buildings And Hardstanding	N/A	Developed Land; Sealed Surface	0.654916	Habitat is automatically classed as being of 'Very low' distinctiveness, and due to its lack of habitat attributes is not assigned a condition score.	0.00
Dense Scrub	DS1	Heathland And Shrub – Bramble Scrub	0.085263	Habitat is automatically classed as being of 'Medium' distinctiveness and due to its lack of habitat attributes is not assigned a condition score.	0.39
	DS2	Heathland And Shrub – Mixed Scrub	0.19321	Habitat is automatically classed as being of 'Medium' distinctiveness. Assessed against the scrub condition criteria, the habitat has been assessed as being of 'Poor' condition.	0.89
Introduced Shrub	N/A	Urban – Introduced Shrub	0.015304	Habitat is automatically classed as being of 'Low' distinctiveness, and due to its lack of habitat attributes is not assigned a condition score.	0.04
Plantation Woodland Broadleaved	BW1	Other Woodland – Broadleaved	0.140281	Habitat is automatically classed as being of 'Medium' distinctiveness. Assessed against the woodland condition criteria, the habitat has been assessed as being of 'Poor' condition.	0.65
	BW2	Other Woodland – Broadleaved	0.026747	Habitat is automatically classed as being of 'Medium' distinctiveness. Assessed against the woodland condition criteria, the habitat has been assessed as being of 'Poor' condition.	0.12
	BW3	Other Woodland – Broadleaved	0.199536	Habitat is automatically classed as being of 'Meduim' distinctiveness. Assessed against the woodland condition criteria, the habitat has been assessed as being of 'Moderate' condition.	1.84
	BW4	Other Woodland – Broadleaved	0.07617	Habitat is automatically classed as being of 'Meduim' distinctiveness. Assessed against the woodland condition criteria, the habitat has been assessed as being of 'Moderate' condition.	0.70
Poor Semi-improved Grassland	SI1	Grassland - Other Neutral Grassland	0.052141	Habitat is automatically classed as being of 'Medium' distinctiveness. Assessed against the grassland	0.24

Table 3.1. Summary of Existing On-site Habitats and Hedgerows (Continues)

Phase 1 Habitat	Polygon / Line Ref.	UK Hab Equivalent	Area (ha) / Length (KM)	Description	Value (Biodiversity Units)
				condition criteria, the habitat has been assigned a condition of 'Poor'.	
	SI2	Grassland - Other Neutral Grassland	0.011131	Habitat is automatically classed as being of 'Medium' distinctiveness. Assessed against the grassland condition criteria, the habitat has been assigned a condition of 'Poor'.	0.05
Scattered Trees	ST1	Urban – Urban Tree	0.0529	Habitat is automatically classed as being of 'Medium' distinctiveness. Assessed against the urban trees condition criteria the habitat has been assigned a condition of 'Poor'.	0.49
	N/A	Urban – Urban Tree	1.2127	Habitat is automatically classed as being of 'Medium' distinctiveness. Assessed against the urban trees condition criteria the habitat has been assigned a condition of 'Poor'.	11.16
Standing Water	N/A	Lakes - Reservoir within Metric 3.1 due to the lack of a suitable alternative.	0.499219	Habitat is automatically classes as being of 'Medium' distinctiveness. Assessed against the lakes condition criteria the habitat has been assigned a condition of 'Moderate'.	4.59
Tall Ruderal	TR1	Grassland - Other Neutral Grassland	0.015936	Habitat is automatically classed as being of 'Medium' distinctiveness. Assessed against the grassland condition criteria, the habitat has been assigned a condition of 'Poor'.	0.07
	TR2	Grassland - Other Neutral Grassland	0.029982	Habitat is automatically classed as being of 'Medium' distinctiveness. Assessed against the grassland condition criteria, the habitat has been assigned a condition of 'Poor'.	0.14
Total Area (ha) – Development Site			**5.06***	**Total Site Baseline (Biodiversity Units) – Development Site**	**25.48†**
Hedgerows					
Line of Trees	H1	Line of Trees - Associated with bank or ditch	0.030189	Habitat is automatically classed as being of 'Medium' distinctiveness. Assessed against the hedgerow condition criteria, the habitat has been assigned a condition of 'Poor'.	0.07
Species-poor Hedgerow	H2	Hedge – Ornamental Non Native	0.058234	Habitat is automatically classed as being of 'Low' distinctiveness and 'Poor' condition.	0.07
Total Length (Km) – Development Site			**0.09**	**Total Site Baseline (Biodiversity Units) – Development Site**	**0.14†**

Notes:
*The area of Urban Trees does not count towards the Total Area figure in the metric as their canopies extend over other habitats already included in the total.
†Biodiversity Units are provided by the Biodiversity Metric 3.1 Auditing and Accounting for Biodiversity Calculation Tool. Any apparent calculation errors may be from unseen rounding anomalies.

Table 3.1. Summary of Existing On-site Habitats and Hedgerows

Phase 1 Habitat	Polygon / Line Ref.	UK Hab Equivalent	Area (ha) / Length (KM)	Description	Value (Biodiversity Units)
Area Based Units					
Amenity Grassland	AG1	Grassland – Modified Grassland	0.000089	Habitat is automatically classed as being of 'Low' distinctiveness. Assessed against the low-quality grassland condition criteria the habitat has been assigned a condition of 'Poor'.	0.00
Buildings And Hardstanding	N/A	Developed Land; Sealed Surface	0.171163	Habitat is automatically classed as being of 'Very low' distinctiveness, and due to its lack of habitat attributes is not assigned a condition score.	0.00
Dense Scrub	DS1	Heathland And Shrub – Bramble Scrub	0.000141	Habitat is automatically classed as being of 'Medium' distinctiveness and due to its lack of habitat attributes is not assigned a condition score.	0.00
	DS2	Heathland And Shrub – Mixed Scrub	0.000114	Habitat is automatically classed as being of 'Medium' distinctiveness. Assessed against the scrub condition criteria, the habitat has been assessed as being of 'Poor' condition.	0.00
	DS3	Heathland And Shrub – Mixed Scrub	0.77457	Habitat is automatically classed as being of 'Medium' distinctiveness. Assessed against the scrub condition criteria, the habitat has been assessed as being of 'Moderate' condition.	7.13
	No Access	Heathland And Shrub – Mixed Scrub	0.547784	Habitat is automatically classed as being of 'Medium' distinctiveness. Assessed against the scrub condition criteria, the habitat has been assessed as being of 'Good' condition.	7.56
	BW4	Other Woodland – Broadleaved	0.281025	Habitat is automatically classed as being of 'Meduim' distinctiveness. Assessed against the woodland condition criteria, the habitat has been assessed as being of 'Moderate' condition.	2.59
Poor Semi-improved Grassland	SI1	Grassland - Other Neutral Grassland	0.006953	Habitat is automatically classed as being of 'Medium' distinctiveness. Assessed against the grassland condition criteria, the habitat has been assigned a condition of 'Poor'.	0.03
	SI2	Grassland - Other Neutral Grassland	0.000016	Habitat is automatically classed as being of 'Medium' distinctiveness. Assessed against the grassland condition criteria, the habitat has been assigned a condition of 'Poor'.	0.00
Semi-natural Broadleaved Woodland	SNBW1	Lowland Mixed Deciduous Woodland	0.41923	Habitat is automatically classed as being of 'High' distinctiveness. Assessed against the woodland condition criteria, the habitat has been assigned a condition of 'Poor'.	2.89
Standing Water	N/A	Lakes - Reservoir within Metric 3.1 due to the lack of a suitable alternative.	3.082243	Habitat is automatically classes as being of 'Medium' distinctiveness. Assessed against the lakes condition criteria the habitat has been assigned a condition of 'Moderate'.	28.36

Table 3.2. Summary of Existing Off-site Habitats and Hedgerows (Continues)

Phase 1 Habitat	Polygon / Line Ref.	UK Hab Equivalent	Area (ha) / Length (KM)	Description	Value (Biodiversity Units)
Tall Ruderal	TR2	Grassland - Other Neutral Grassland	0.000051	Habitat is automatically classed as being of 'Medium' distinctiveness. Assessed against the grassland condition criteria, the habitat has been assigned a condition of 'Poor'.	0.00
Total Area (ha) – Development Site			**5.28***	**Total Site Baseline (Biodiversity Units) – Development Site**	**48.55†**
Hedgerows					
Species-poor Hedgerow	H2	Hedge – Ornamental Non Native	0.05896	Habitat is automatically classed as being of 'Low' distinctiveness and 'Poor' condition.	0.07
Total Length (Km) – Development Site			**0.058963**	**Total Site Baseline (Biodiversity Units) – Development Site**	**0.07†**

Notes:
*The area of Urban Trees does not count towards the Total Area figure in the metric as their canopies extend over other habitats already included in the total.
†Biodiversity Units are provided by the Biodiversity Metric 3.1 Auditing and Accounting for Biodiversity Calculation Tool. Any apparent calculation errors may be from unseen rounding anomalies.

Table 3.2. Summary of Existing Off-site Habitats and Hedgerows

Drawing C157100-03-01 in Chapter 5 details the current extent of the habitats present within both the red and blue lines.

3.2 DEVELOPMENT PROPOSALS AND ASSESSMENT OF IMPACTS

3.2.1 Description of the future baseline

The future baseline conditions of the site are based on the Landscape Strategy (PR-200-PEV-XX-XX-DR-L-00200) provided by Pick Everard. An adapted version of the Indicative Masterplan map is included in Section 5 showing how each landscaping area has been translated to a habitat type for the purpose of the BNG assessment.

3.2.2 Impacts

Table 3.3 outlines the potential biodiversity impacts of the proposed development. The losses given represent the gross change in biodiversity value associated with the proposals.

UKHab Habitat	Polygon / Line Ref	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 Units							
Grassland – Modified Grassland	AG1	1.136754	2.61	0.235032	0.54	0.42	0.96
Developed Land; Sealed Surface	N/A	0.03845	0.00	0.00	0.00	0.62	0.00
Heathland And Shrub – Bramble Scrub	DS1	0.056203	0.26	0.029048	0.13	0.00	0.00
Heathland And Shrub – Mixed Scrub	DS2	0.19321	0.89	0.00	0.00	0.00	0.00
Urban – Introduced Shrub	N/A	0	0	0	0	0.02	0.04
Other Woodland – Broadleaved	BW1	0	0.00	0.140281	0.65	0.00	0.00
	BW2	0	0.00	0.026747	0.12	0.00	0.00
	BW3	0.199536	1.84	0	0.00	0.00	0.00
	BW4	0.07617	0.70	0	0.00	0.00	0.00
Grassland - Other Neutral Grassland	SI1	0.049752	0.23	0	0	0.00	0.01
	SI2	0.011131	0.05	0	0	0.00	0.00
Urban – Urban Tree	ST1	0.0529	0.49	0.00	0.00	0.00	0.00
	N/A	1.1923	10.97	0.00	0.00	0.02	0.19
Lakes - Reservoir	N/A	0.499219	4.59	0.00	0.00	0.00	0.00
Grassland - Other Neutral Grassland	TR1	0.015936	0.07	0.00	0.00	0.00	0.00
	TR2	0.029982	0.14	0.00	0.00	0.00	0.00
Total Impact (Area habitats)		**3.55***	**22.84†**	**0.43**	**1.44†**	**-1.07**	**-1.20†**
Hedgerows							
Line of Trees - Associated with bank or ditch	H1	0.030189	0.07	0.00	0.00	0.00	0.00
Hedge – Ornamental Non Native	H2	0.058234	0.07	0.00	0.00	0.00	0.00
Total Impact (Hedgerows)		**0.09**	**0.14**	**0.00**	**0.00**	**0.00**	**0.00†**

Notes:
†Biodiversity Units are provided by the Biodiversity Metric 3.1 Auditing and Accounting for Biodiversity Calculation Tool. Any apparent calculation errors may be from unseen rounding anomalies.

Table 3.3: Summary of Gross Impacts

All off-site habitats and hedgerows will be retained therefore there are no gross impacts on off-site habitats and hedgerows with respect to Biodiversity Units.

3.3 HABITAT CREATION AND ENHANCEMENT

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

UKHab Habitat	Landscape typology	Area (ha)	Description (target distinctiveness, condition, strategic significance and risk multipliers)	Value (Biodiversity Units)
Habitat based Units - Creation				
Other Neutral Grassland	Wildflower Meadow	0.042518	Proposed wildflower meadow. The Wildflower Meadow will be seeded with Emorsgate EM8 meadow species mix intended for wetlands. The use of this seed mixture should create a neutral grassland comprised of more than 9 species per m^2. Furthermore, management measures will ensure that a diverse sward height is maintained and undesirable species, such as bramble, are controlled. Other Neutral Grassland is automatically classified as 'Medium' distinctiveness and under the proposed plans is projected to achieve 'Good' condition against the Grassland condition criteria.	0.41
Modified Grassland	Flowering lawn	0.033783	Proposed Flowering Lawn. The Flowering Lawn will be seeded with Emorsgate Flowering Lawn Mixture. The use of this seed mixture should create a modified grassland comprised of 6-8 species per m^2. Furthermore, management measures will ensure undesirable species, such as bramble, are controlled. Modified Grassland is automatically classified as 'Low' distinctiveness and under the proposed plans is projected to achieve 'Good' condition against the Grassland condition criteria.	0.18
Modified Grassland	Reinforced Grass	0.094042	Reinforced Grass. Modified Grassland is automatically classed as 'Low' distinctiveness. Under the proposed plans, the Reinforced Grass is unlikely to achieve 6-8 species per m^2 and exhibit a diverse sward length, and is therefore projected to achieve 'Poor' condition against the Grassland condition criteria.	0.21
Other neutral grassland	Swale	0.024812	Swale. Other Neutral Grassland is automatically classified as 'Medium' distinctiveness. The proposed plans intend to use an Emorsgate EM8 meadow species mix intended for wetlands. It is predicted that the swale is unlikely to achieve a diversity of >9 species per m^2 as it will be manged as tussocky grassland to provided structural diversity to the site. Therefore, under the Grassland condition criteria, the swale is projected to achieve a 'Moderate' condition.	0.19
Green roof	R1 Intensive Green Roof	0.009792	Proposed intensive green roof. The roof turf is made up of 41 UK native wildflowers and grasses, with a minimum of 50% wildflowers. The habitat is automatically classified as 'Low' distinctiveness and is projected to achieve a condition of 'Moderate' against the Urban habitat condition assessment.	0.04
Urban – Biodiverse Green Roof	R2 Biodiverse Roof	0.026599	Proposed Biodiverse Roof. The habitat type is automatically assessed as being 'Medium' distinctiveness. The habitat will have a varied substrate depth between 80-150mm and be established and managed to maximise biodiversity value. As such the habitat is projected to achieve a maximum condition of 'Good' under the Urban habitat condition assessment.	0.17
Introduced Shrub	S1 Ornamental Shrubs and Herbaceous Planting	0.007717	Proposed introduced shrub planting. The habitat is automatically classed as being of 'low' distinctiveness. Due to its ornamental nature and resulting lack of habitat attributes, it is assigned a default condition score of 'Poor'.	0.02

Table 3.4. Summary of Habitat Creation and Enhancement Proposals (Continues)

Urban SUDs Feature	S2 Rain Garden	0.010927	Proposed rain garden. The habitat is automatically classed as being of 'low' distinctiveness. Due to its primarily ornamental nature the habitat is projected to achieve a condition of 'Poor' under the Urban habitat condition assessment.	0.02
Introduced Shrubs	S3 Proposed Sensory Planting & S4 Pollinator Planting	0.040456	Proposed sensory garden and pollinator planting. The habitat is automatically classed as being of 'low' distinctiveness. Due to its ornamental nature and resulting lack of habitat attributes, it is assigned a default condition score of 'Poor'.	0.09
Urban - Developed land: Sealed surface	Hardstanding and Buildings	0.76222	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 score.	0.00
Urban - Urban Trees	Native Urban Tree Planting (T1)	0.4761	13 no. medium native trees proposed within the existing area of modified grassland. The habitat is automatically classified as having 'Moderate' distinctiveness. This habitat is projected to pass at least three of the six Urban Tree criteria, through being native, in good physical condition and by the canopy oversailing at least 20% of the underlying vegetation. Therefore, the Urban Tree habitat is projected to achieve 'Moderate' condition.	1.67
Urban – Urban Trees	Specimen Tree Planting (T2)	0.0407	10 no. small ornamental trees. The habitat is automatically classified as having 'low' distinctiveness. Considering that trees planted will be non-native ornamental species and small in size, the habitat is projected to achieve a condition of Poor' against the Urban Tree habitat criteria.	0.13
Total Creation – Site (Area habitats)		**1.05***	**Total Value – Site (Area Habitats)**	**3.13†**
Hedgerows - Creation				
Native Species Rich Hedgerow	H1 – Proposed Species-rich Native Hedgerow	0.075053	To reinforce boundary the existing hedgerow will be enhanced to create a species-rich native hedgerow. Species-rich Native Hedgerows are automatically assessed as being of 'High' distinctiveness. Due to the use of native species and planned integration of an appropriate management regime, it is anticipated that the hedgerow will pass all Hedgerow criteria and achieve a 'Good' condition.	0.68
Native Hedgerow	H2 – Native Hedgerow	0.153176	A single species clipped hedgerow will be created under proposed plans. Native hedgerows are automatically assessed as being of 'Low' distinctiveness. As the hedgerow is comprised of a single species it is anticipated that it will achieve a 'Poor' condition under the Hedgerow condition criteria.	0.34
Total Creation – Site (Hedgerow Units)		**0.23**	**Total Value – Site (Hedgerow Units)**	**1.02†**
Habitat Enhancement				
Other neutral grassland	Amenity Grassland – AG1	0.235032	Proposals include the enhancement of existing intensively managed modified grassland along the southern boundary to other-neutral grassland. The habitat type is automatically assessed as being 'Medium distinctiveness' and will be managed to target a target condition of "Good".	2.12
Mixed scrub	Dense Scrub – DS1	0.029048	Existing bramble scrub - enhanced to mixed scrub in 'Moderate' condition.	0.25
Other woodland; broadleaved	Plantation Woodland – BW1	0.140281	Existing plantation woodland BW1 enhanced to 'Moderate' condition.	1.10

Other woodland; broadleaved	Plantation Woodlan BW2	0.026747	Existing plantation woodland BW2 enhanced to 'moderate' condition.	0.21
Total Enhancement – Site (Area habitats)		**0.43**	**Total Enhancement Value – Site (Area Habitats)**	**3.68†**
Notes: *The area of Urban Trees do not count towards the Total Area figure in the metric as their canopies extend over other habitats already included in the total / the area is calculated on the vertical plane. †Biodiversity Units are provided by the Biodiversity Metric 3.1 Auditing and Accounting for Biodiversity Calculation Tool. Any apparent calculation errors may be from unseen rounding anomalies.				

Table 3.4. Summary of Habitat Creation and Enhancement Proposals

3.4 HEADLINE RESULTS

Table 3.5 details the headline results. Full details of the biodiversity metric calculations can be found in Appendix B.

	Habitat units	Hedgerow units
On-site baseline	25.48	0.14
On-site post-intervention	29.65	1.15
Off-site baseline	48.55	0.07
Off-site post-intervention	48.55	0.07
Total net unit change	**4.17**	**1.02**
Total net % change	**16.37%**	**>100%**

Table 3.5: Biodiversity Net Gain Assessment – Headline Results

The existing value of the habitats on-site is **25.48 Biodiversity Units (BU)**.

The proposals (habitat loss, creation and enhancement), will deliver a net gain of +**4.17 Habitat BU**, a **+16.37%** increase relative to baseline habitat value.

The existing value of the hedgerows on site is **0.14 BU**.

The proposals (habitat loss and retention), will deliver a net gain of +**1.02 Hedgerow BU**, a **>100%** increase in the baseline hedgerow value.

4. HABITAT ENHANCEMENT AND MANAGEMENT

4.1 PURPOSE OF HABITAT ENHANCEMENT AND MANAGEMENT

The 'target condition' of enhanced and created habitats can only be reached and maintained in the long-term subject to the implementation of appropriate management measures. The following sections provide an overview of the habitat management.

4.2 HABITAT ENHANCEMENT

Management measures which will be implemented to ensure that habitats on site reach their potential biodiversity value are as follows:

4.2.1 Enhancement of Amenity Grassland AG1

A management regime aimed at establishing "Good" condition semi-improved neutral grassland in areas formerly managed as amenity grassland is to be implemented. The southern boundary grass verge is to be targeted due to its proximity to Ham Lands. These verges will be subject to scarification, re-seeding and adoption of a hay meadow cutting regime in order to improve the floristic diversity of the sward and reduce the vigour of dominant grasses.

The existing grass verge along the southern boundary is species-poor. To achieve the target distinctiveness and condition, management should target an **increase in species richness to >9 species/m^2.**

Colonisation of the site by desirable plant species can take many years, even where management regimes are undertaken to promote colonisation. As such, it is recommended that a proactive approach is adopted to boost the floristic diversity of the grassland on site. The use of seed mixes of **of local provenance** could be used on site to boost floristic diversity, with Emorsgate EM3 Special General Purpose Meadow Mixture recommended. Details of the EM3 Special General Purpose Meadow Mixture are detailed in Table 4.1 below.

Seed mixtures should be spread between late-July and early September or between March- April.

Immediately prior to seeding **in the first year the grassland should be scarified** with a target of creating approximately 50% disturbed ground.

Long-term management should comprise a **hay meadow management regime** as follows:

- Leave areas of grassland unmown outside of the below proposed cutting windows in order to allow plants to flower and set seed;
- Complete a hay cut in late July-mid August once plants have set seed;
- Complete a second cut towards the end of October and in February, in order to maintain an approximate sward height of 5-10 cm outside of the growing season; and,
- Remove all arisings from site after each cut in order to limit nutrient build up and to prevent excess thatch from inhibiting seed germination.

Efforts should be made to hinder the growth of undesirable species which could be detrimental to the condition of the grassland. The following species are considered undesirable for this habitat type: creeping thistle, spear thistle, docks *Rumex spp.,* brambles and common nettle *Urtica dioica.* The species should be removed manually by hand. Total eradication of the species is not a requirement, however, undesirable species should make up less than 5% of the vegetated ground cover.

Where plant removal is undertaken, bare areas should be left to naturally regenerate or further seed mix can be added at an appropriate time of year.

Wildflowers		
%	**Scientific Name**	**Common Name**
0.1	*Achillea millefolium*	Yarrow
1.1	*Agrimonia eupatoria*	Agrimony
0.1	*Anthyllis vulneraria*	Kidney Vetch
1	*Betonica officinalis - (Stachys officinalis)*	Betony
2.2	*Centaurea nigra*	Common Knapweed
0.2	*Centaurea scabiosa*	Greater Knapweed
1.5	*Daucus carota*	Wild Carrot
0.2	*Filipendula vulgaris*	Dropwort
0.4	*Galium album - (Galium mollugo)*	Hedge Bedstraw
0.4	*Galium verum*	Lady's Bedstraw
0.1	*Hippocrepis comosa*	Horseshoe Vetch
0.2	*Leontodon hispidus*	Rough Hawkbit
0.7	*Leucanthemum vulgare*	Oxeye Daisy - (Moon Daisy)
0.7	*Lotus corniculatus*	Birdsfoot Trefoil
1	*Malva moschata*	Musk Mallow
0.2	*Origanum vulgare*	Wild Marjoram
1	*Plantago lanceolata*	Ribwort Plantain
0.2	*Poterium sanguisorba - (Sanguisorba minor)*	Salad Burnet
0.2	*Primula veris*	Cowslip
0.2	*Prunella vulgaris*	Selfheal
0.7	*Ranunculus acris*	Meadow Buttercup
0.1	*Rumex acetosa*	Common Sorrel
0.4	*Scabiosa columbaria*	Small Scabious
1	*Silene dioica*	Red Campion
1.5	*Silene latifolia*	White Campion
0.2	*Silene vulgaris*	Bladder Campion
2.2	*Vicia cracca*	Tufted Vetch
17.8		
Grasses		
%	**Scientific Name**	**Common Name**
8	*Agrostis capillaris*	Common Bent
2.2	*Carex flacca*	Glaucous Sedge
32	*Cynosurus cristatus*	Crested Dogstail
24	*Festuca rubra*	Red Fescue
16	*Poa pratensis*	Smooth-stalked Meadow-grass
82.2		

Table 4.1 – Emorsgate EM3 Seed Mix

4.2.2 Enhancement of Dense Scrub DS1

Proposals include the enhancement of existing Bramble Scrub DS1 along the western boundary to Mixed Scrub in 'Moderate' condition. This will be achieved through the planting of three additional native woody scrub species (hazel, dogwood and guelder rose) and native tree planting along the boundary. This will increase the age and species diversity of the scrub habitat, fulfilling Criteria 1-2 of the Scrub condition assessment. Condition 3 can also be achieved with appropriate long-term management of undesirable species.

4.2.3 Enhancement of Plantation Woodland BW1

Proposals include the enhancement of existing Plantation Woodland BW1 from "Poor" to "Moderate" condition. This will be achieved through the eradication of invasive species (snowberry and variegated yellow archangel) and replacement with native tree, shrub and bulb planting. This will target "Good" scores for Woodland Criteria 3 and 4 through the eradication of non-native invasive species and increasing the number of native tree or shrub species within the woodland.

In addition, it is proposed to re-seed areas of damaged ground using a shade tolerant wildflower mix (Emoresgate EW1), targeting a "Moderate" score for Criteria 13 with <20% damaged ground within the woodland.

4.2.4 Enhancement of Plantation Woodland BW2

Proposals include the enhancement of existing Plantation Woodland BW1 from "Poor" to "Moderate" condition. This will be achieved through planting the planting of native tree and shrub species to both

increase the number of native tree or shrub species within the woodland and the age distribution of trees. This will target “Moderate” scores for Woodland Criteria 1 and a “Good” score for Criteria 4.

A standing deadwood habitat feature (stag beetle loggery) should be created within the woodland parcel using any deciduous trees felled to facilitate the development. This will target a score of “Good” for Criteria 12.

4.3 HABITAT CREATION

4.3.1 Wildflower Meadow

The Wildflower Meadow will be seeded with Emorsgate EM8. Once established, it should be managed in accordance with Section 4.2.

4.3.2 Flowering lawn

It is prosed to created a flowering lawn on site. The proposed seed mix, EL1 contains slow growing grasses with a selection of wild flowers that respond well to regular short mowing.

The wildflower and grass species in this mix are perennial; they will be slow to germinate and grow and will not usually flower in their first growing season. There will often be a flush of annual weeds from the soil in the first growing season, which is easily controlled by repeated mowing.

Regarding future management, cut to a height of 30-40mm throughout the growing season (March to October inclusive) to maintain a neat tidy appearance. Remove all arisings and reform edges as required. To permit flowering, mowing shall be relaxed from late June. Resume cutting when the sward gets untidy (after 4-8 weeks).

All cuttings should be collected and removed from the flowering lawns and composted elsewhere at a suitable location on site to reduce nutrient buildup.

4.3.3 Reinforced Grass

The reinforced grass will be used as parking areas and does not have specific long-term management objectives to meet the target condition of ‘poor’.

4.3.4 Swale

The Wildflower Meadow will be seeded with Emorsgate EM8. Once established, it is recommended that the habitat is subject to minimal management to allow a tussock grassland sward to establish. Unwanted perennial weeds (docks, thistles) may need control by selective scything before seeding. To control scrub and bramble development, tussocky areas may need cutting every 2-3 years between October and February. For wildlife this cutting is best done on a rotational basis so that no more than half the area is cut in any one year leaving part as an undisturbed refuge.

4.3.5 Intensive Green Roof

The intensive green roof will be created using a standard wildflower turf mix. Intensive green roofs are low maintenance habitats, however it is recommended that they are subject to an annual inspection in autumn. Roof workers should avoid walking on the substrate, especially during the first year, to improve the chances of plant establishment. Any annual growth that requires cutting back (this is unlikely to be the case in the first few years) should be removed from the roof to prevent a build-up of decaying organic matter on the roof and the subsequent increase in nutrient levels. Invasive non-native plant species, such as buddleia, may colonise the roof and it is recommended that these plants are removed to maintain botanical diversity and prevent encroachment.

4.3.6 Biodiverse Roof

It is proposed to create a Biodiverse Roof on a structure located within the southern portion of the site. The feature is to be designed to maximise biodiversity value and target the creation of a ‘dry meadow’ biodiverse roof. The following is recommended:

- Use a low fertility substrate, comprised of 80% inorganic matter and 20% organic matter.
- To promote the development of a diverse dry meadow, the substrate depth should be contoured, providing variety in depth between 80 mm – 150 mm.
- The roof is to be seeded using a drought tolerant native seed mix to promote the development of dry grassland habitat - Emorsgate ER1 seed mix is designed for use on rooftops, comprising 20% native wild flowers and 80% slow growing grasses.

- Seed should be hand sown in the autumn or spring but can be sown at other times of the year if there is sufficient warmth and moisture.
- The recommended sowing rate for the seed mix is relatively low at approximately 4g/m2 to allow varied development of species across the site with areas of unseeded ground presenting areas of bare ground and opportunities for natural colonisation to occur.
- Annual growth will be controlled by mowing throughout the first year to minimise competition and weed seed production. A total of three cuts are proposed in the first year (spring / summer/ autumn), with all arisings removed from site to minimise the enrichment of the soil with nutrients.
- After the first year the site will be bought into hay meadow management targeting the development of dry meadow habitat. The cutting regime is to include a hay cut in mid-summer and a final full cut in September / October to c.50mm.
- 1 m buffers of uncut vegetation is to be retained around the biodiversity features to provide shelter for during the winter months.
- The following species are considered undesirable for this habitat type: butterfly bush Buddleia davidii, creeping thistle Cirsium arvense, spear thistle Cirsium vulgare, docks Rumex spp., brambles Rubus spp., common ragwort Jacobaea vulgaris and common nettle Urtica dioica.
- The species should be removed manually by hand. Total eradication of the species is not a requirement, however, undesirable species should make up less than 5% of the vegetated ground cover.
- Two log piles are to be provided within each area of roof habitat, providing suitable nesting habitat of value to insects. The log piles are to consist of logs approximately 600mm in length and stacked at a height of 350mm. Native oak *Quercus robur* deadwood is to be used.
- Two gravel/stone piles are to be provided within each Green Roof habitat, 1m x 1m with a height of 0.3m.

4.3.7 Ornamental Shrubs and Herbaceous Planting

To maximise the value of any areas of soft landscaping areas (including the proposed sensory garden, pollinator planting and ornamental shrub/herbaceous planting) should utilise a native/nature benefitting mixture of plants. There are no specific objectives for this habitat type and target condition. All required pruning should be undertaken outside of the nesting bird season (March – September inclusive).

4.3.8 Native Urban Tree Planting (T1)

13 no. medium native trees proposed within the existing area of modified grassland. The habitat is automatically classified as having ‘Moderate’ distinctiveness. This habitat is projected to pass at least three of the six Urban Tree criteria, through being native, in good physical condition and by the canopy oversailing at least 20% of the underlying vegetation.

Tree planting shall be carried out in accordance with BS 8545: 2014 'Trees: from nursery to independence in the landscape - Recommendations'' and subject to long term management in accordance with best arboricultural practice.

4.3.9 Specimen Tree Planting (T2)

10 no. small ornamental trees are proposed within areas of soft landscaping, Considering that trees planted will be non-native ornamental species and small in size, the habitat is projected to achieve a condition of Poor’ against the Urban Tree habitat criteria. There are no specific objectives relating to this target condition. Tree planting shall be carried out in accordance with BS 8545: 2014 'Trees: from nursery to independence in the landscape -Recommendations'' and subject to long term management in accordance with best arboricultural practice.

4.3.10 Species-rich Native Hedgerow

To reinforce boundary the existing hedgerow will be enhanced to create a species-rich native hedgerow. The hedgerow it so be established and managed to maximise biodiversity value, targeting ‘Good’ condition. The following is recommended:

- Establish the hedgerow in double staggered rows targeting a minimum width of 1.5m along length and an even distribution of >5 native woody species.
- Delay cutting/coppicing until January/February as autumn berries provide a valuable food source for birds, small mammals and invertebrates.
- Trimming hedges on a two-to-three-year rotation, targeting different sections each year to ensure yearly supply of flowers in Spring and berries in Autumn. Make certain tools are kept sharp to promote clean cuts which reduce the risk of disease and promote growth.

- Provide a minimum 2m buffer strip of untrimmed grass to benefit wildlife.
- Introduce native hedgerow climbers, such as old-mans beard, honeysuckle and white and black bryony to promote structural complexity for nesting birds.

4.3.11 Native Clipped Hedgerow

Single species clipped hedgerows will be created under proposed plans. As the hedgerow is comprised of a single species and require intensive management it is anticipated that it will achieve a 'Poor' condition under the Hedgerow condition criteria. There are no specific objectives relating to this target condition. All required pruning should be undertaken outside of the nesting bird season (March – September inclusive).

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

The existing value of the habitats on-site is **25.48 Biodiversity Units (BU)**.

The proposals (habitat loss, creation and enhancement), will deliver a net gain of +**4.17 Habitat BU**, a **+16.37%** increase relative to baseline habitat value.

The existing value of the hedgerows on site is **0.14 BU**.

The proposals (habitat loss and retention), will deliver a net gain of +**1.02 Hedgerow BU**, a **>100%** increase in the baseline hedgerow value.

Habitat 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 will be established and maintained to fulfil their intended biodiversity value. Biodiversity Net Gain Principles[6] necessitates that any biodiversity units claimed must be deliverable over a minimum period of 30 years. As such, the Management Plan must provide long-term management proposals and provide scope for monitoring and reporting to demonstrate that the intended values are achieved over the 30-year period. A recommendation to this effect is included below.

5.2 RECOMMENDATIONS

R1 A Habitat Enhancement and Management Plan (HEMP) should be produced for all habitat features proposed within the site. The HEMP should set out the appropriate establishment works and management prescription required to achieve and maintain the intended type and condition of each habitat /hedgerow feature. The HEMP should cover a minimum period of 30 years and include provisions for monitoring, review, reporting and contingency throughout. The HEMP could be produced as part of a planning condition for the proposed development**.**

[6] 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]

6. DRAWINGS

Drawing C157100-03-01-Rev C – Phase 1 Habitat Map

Drawing C157100-BNG-RevA – Biodiversity Net Gain Assessment

C157100-03-01-REVC

Legend

- Target note
- Scattered tree
- Species-poor intact hedgerow
- Amenity grassland
- Building
- Dense scrub
- Hardstanding
- Introduced shrub
- No access
- Other habitat
- Plantation broad-leaved woodland
- Poor semi-improved grassland
- Scattered trees
- Semi-natural broad-leaved woodland
- Standing water
- Tall ruderal
- Phase 1 survey area
- Development boundary

N

Project	Thames Young Mariners, Richmond, London
Drawing	Phase1 Habitat Map
Client	Pick Everard
Drawing Number: C157100-03-01-REVC	Revision: Rev C
Scale @ A3: 1:1,600	Date: October 2022
Approved By: WR	Drawn By: CD

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

C157100-BNG-REVA

Legend

- Proposed native urban tree planting
- Proposed specimen tree planting
- Trees to be retained
- Existing hedgerow to be retained
- Proposed clipped hedgerow
- Proposed species-rich native hedgerow
- Brown roof
- Existing grassland to be enhanced
- Existing woodland to be enhanced
- Flowering lawn
- Green roof
- Loss of temporary building
- Mulch surfacing
- Off-site habitat
- Proposed buildings and hardstanding
- Proposed ornamental shrubs and herbaceous planting
- Proposed rain gardens
- Proposed sensory planting
- Reinforced grass
- Retained habitat
- Scrub to be enhanced
- Swale
- Wildflower meadow

N

Project	Thames Young Mariners, Richmond, London
Drawing	Biodiversity Net Gain Proposals
Client	Pick Everard
Drawing Number: C157100-BNG-REVA	Revision: Rev A
Scale @ A3: 1:1,600	Date: Septmeber 2022
Approved By: WR	Drawn By: CD

MIDDLEMARCH

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

APPENDICES

Appendix A – Habitat Condition Assessment
Appendix B – Biodiversity Metric 3.1 Calculation

Appendix A: Habitat Condition Assessment

Habitat Condition Assessment - Existing

Table A1.1 and A1.2 summarise the results of the habitat condition assessment for the existing area-based habitats and hedgerows respectively. For the detailed condition criteria for each habitat, see Panks *et al.* (2022)[7].

Phase 1 Habitat	Polygon / Line Ref.	UK Hab Equivalent	Condition Sheet	Condition Criteria Score													Total Score	Condition Assessment
				C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13		
Amenity Grassland	AG1	Grassland – Modified Grassland	5. Grassland Habitat Type (low distinctiveness)	F	F	P	F	F	P	P	-	-	-	-	-	-	3/7	Poor
Buildings And Hardstanding	N/A	Developed Land; Sealed Surface	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/A
Dense Scrub	DS1	Heathland And Shrub – Bramble Scrub	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Poor
	DS2	Heathland And Shrub – Mixed Scrub	19. Scrub Habitat type	P	P	F	F	F	-	-	-	-	-	-	-	-	2/5	Poor
	DS3	Heathland And Shrub – Mixed Scrub	19. Scrub Habitat type	P	P	F	P	P	-	-	-	-	-	-	-	-	4/5	Moderate
	No Access	Heathland And Shrub – Mixed Scrub	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Good
Introduced Shrub	N/A	Urban – Introduced Shrub	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Poor

Table A1.1. Summary of Condition Assessment for Existing Habitats (Continues)

[7] Panks, S., White, N., Newsome, A., Potter, J., Heyton, M., Mayhew, E., Alvarez, M., Russell, T., Scott, S.J., Heaver, M., Scott, S.H., Treweek, J., Butcher, B. and Stone, D. (2022) T*he Biodiversity Metric 3.1 – Auditing and accounting for biodiversity: Technical Supplement*. Natural England.

Phase 1 Habitat	Polygon / Line Ref.	UK Hab Equivalent	Condition Sheet	Condition Criteria Score													Total Score	Condition Assessment
				C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13		
Plantation Woodland Broadleaved	BW1	Other Woodland – Broadleaved	24. Woodland Habitat type	2	3	1	2	2	3	2	2	1	1	1	3	1	24/39	Poor
	BW2	Other Woodland – Broadleaved	24. Woodland Habitat type	1	3	3	2	2	3	2	2	1	1	1	1	2	24/39	Poor
	BW3	Other Woodland – Broadleaved	24. Woodland Habitat type	3	3	1	2	2	3	2	3	1	2	1	3	1	27/39	Moderate
	BW4	Other Woodland – Broadleaved	24. Woodland Habitat type	3	3	1	2	2	3	2	3	1	2	1	3	1	27/39	Moderate
Poor Semi-improved Grassland	SI1	Grassland - Other Neutral Grassland	6. Grassland Habitat Type (medium, high & very high distinctiveness)	F	P	P	P	F	F	-	-	-	-	-	-	-	3/6	Poor
	SI2	Grassland - Other Neutral Grassland	6. Grassland Habitat Type (medium, high & very high distinctiveness)	F	P	P	P	F	F	-	-	-	-	-	-	-	3/6	Poor
Semi-natural Broadleaved Woodland	SNBW1	Lowland Mixed Deciduous Woodland	24. Woodland Habitat type	2	1	1	2	2	3	2	2	1	2	1	2	2	23/39	Poor
Scattered Trees	ST1	Urban – Urban Tree	22. Urban Trees (including street trees) Habitat Type	P	P	F	F	P	P	-	-	-	-	-	-	-	4/6	Moderate
	N/A	Urban – Urban Tree	22. Urban Trees (including street trees) Habitat type	P	F	F	F	P	P	-	-	-	-	-	-	-	3/6	Moderate

Table A1.1. Summary of Condition Assessment for Existing Habitats (Continues)

Phase 1 Habitat	Polygon / Line Ref.	UK Hab Equivalent	Condition Sheet	Condition Criteria Score													Total Score	Condition Assessment
				C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13		
Standing Water	N/A	Lakes – Other Eutrophic Standing Water Lakes - Reservoir within Metric 3.0 due to the lack of a suitable alternative.	13. Lake Habitat type	4	3	4	3	-	-	-	-	-	-	-	-	-	3.5/5 (1 = Most Natural / 5 = Least Natural)	Moderate
Tall Ruderal	TR1	Grassland - Other Neutral Grassland	6. Grassland Habitat Type (medium, high & very high distinctiveness)	F	P	F	F	F	F	-	-	-	-	-	-	-	1/6	Poor
	TR2	Grassland - Other Neutral Grassland	6. Grassland Habitat Type (medium, high & very high distinctiveness)	F	F	F	F	F	F	-	-	-	-	-	-	-	0/6	Poor
Species poor native hedgerow	H1	Line of Trees - Associated with bank or ditch	15. Line of Trees Habitat type	F	P	F	F	P	-	-	-	-	-	-	-	-	2/5	Poor

Key:
P – Criteria passed
F – Criteria failed

Table A1.1. Summary of Condition Assessment for Existing Habitats

Phase 1 Habitat	Polygon / Line Ref.	UK Hab Equivalent	Criteria Score										Condition Assessment
			A1	A2	B1	B2	C1	C2	D1	D2	E1*	E2*	
Species poor hedgerow	H2	Hedge Ornamental Non Native	-	-	-	-	-	-	-	-	-	-	Poor

Key:
*Applicable to hedgerows with trees only
P – Criteria passed
F – Criteria failed

Table A1.2. Summary of Condition Assessment for Existing Hedgerow

Habitat Condition Assessment – Proposed

Tables A1.3 and A1.4 summarise the post-development target habitat types and conditions for area-based habitats and hedgerows respectively. For the detailed condition criteria for each habitat, see Panks *et al.* (2022)[8].

Phase 1 Habitat	Polygon / Line Ref.	UK Hab Equivalent	Condition Sheet	Condition Criteria Score													Total Score	Condition Assessment
				C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13		
Habitats to be Enhanced																		
Plantation Broadleaved Woodland	BW1	Other Woodland – Broadleaved	24. Woodland Habitat type	2	3	3	3	2	3	2	2	1	1	1	3	2	28/39	Moderate
Plantation Broadleaved Woodland	BW2	Other Woodland – Broadleaved	24. Woodland Habitat type	2	3	3	3	2	3	2	2	1	1	1	3	2	28/39	Moderate
Semi-Improved Grassland	AG1 - Grassland Enhancement	Grassland - Other Neutral Grassland	6. Grassland Habitat Type (medium, high & very high distinctiveness)	P	P	P	P	P	P	-	-	-	-	-	-	-	6/6	Good
Dense Scrub	DS1	Heathland and Scrub – Mixed Scrub	19. Scrub	P	P	P	F	F	-	-	-	-	-	-	-	-	3/5	Moderate

Table A1.3. Summary of Condition Assessment for Proposed Habitats

[8] Panks, S., White, N., Newsome, A., Potter, J., Heyton, M., Mayhew, E., Alvarez, M., Russell, T., Scott, S.J., Heaver, M., Scott, S.H., Treweek, J., Butcher, B. and Stone, D. (2022) T*he Biodiversity Metric 3.1 – Auditing and accounting for biodiversity: Technical Supplement*. Natural England.

Phase 1 Habitat	Polygon / Line Ref.	UK Hab Equivalent	Condition Sheet	Condition Criteria Score													Total Score	Condition Assessment
				C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13		
Habitats to be Created																		
Semi-Improved Grassland	Wildflower Meadow	Other Neutral Grassland	6. Grassland Habitat Type (medium, high & very high distinctiveness)	P	P	P	P	P	P	-	-	-	-	-	-	-	6/6	Good
Amenity Grassland	Flowering lawn	Modified Grassland	5. Grassland Habitat Type (low distinctiveness)	P	F	P	P	P	P	P	-	-	-	-	-	-	6/7	Good
Amenity Grassland	Reinforced Grass	Modified Grassland	5. Grassland Habitat Type (low distinctiveness)	F	F	P	F	F	P	P	-	-	-	-	-	-	3/7	Poor
Semi-improved Grassland	Swale	Other Neutral Grassland	6. Grassland Habitat Type (medium, high & very high distinctiveness)	P	P	P	P	P	F	-	-	-	-	-	-	-	6/6	Good
Other Habitat	R1 Intensive Green Roof	Green roof	21. Urban	F	P	P	-	-	-	-	-	-	-	-	-	-	2/3	Moderate
Other Habitat	R2 Biodiverse Roof	Urban – Biodiverse Green Roof	21. Urban	P	P	P	P	-	-	-	-	-	-	-	-	-	4/4	Good
Other Habitat	S2 Rain Garden	Urban - SUDs Feature	21. Urban	F	F	P	-	-	-	-	-	-	-	-	-	-	1/3	Poor
Scattered Trees	Native Urban Tree Planting (T1)	Urban - Urban Trees	22. Urban Trees (including street trees) Habitat type	P	F	P	P	F	P	-	-	-	-	-	-	-	4/6	Moderate

Table A1.3. Summary of Condition Assessment for Proposed Habitats

Phase 1 Habitat	Polygon / Line Ref.	UK Hab Equivalent	Condition Sheet	Condition Criteria Score													Total Score	Condition Assessment
				C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13		
Scattered Trees	Native Urban Tree Planting (T2)	Urban – Urban Trees	22. Urban Trees (including street trees) Habitat type	F	F	P	F	F	P	-	-	-	-	-	-	-	2/6	Poor

Key:
P – Criteria passed
F – Criteria failed

Table A1.3. Summary of Condition Assessment for Proposed Habitats

Phase 1 Habitat	Polygon / Line Ref.	UK Hab Equivalent	Criteria Score										Condition Assessment
			A1	A2	B1	B2	C1	C2	D1	D2	E1*	E2*	
Species Rich hedgerow	Landscaping Typology: H1	Native Species Rich Hedgerow	P	P	P	P	P	P	P	P	-	-	Good
Species poor hedgerow	Landscaping Typology: H2	Native Hedgerow	F	F	P	F	F	P	P	F	-	-	Poor

Key:
*Applicable to hedgerows with trees only
P – Criteria passed
F – Criteria failed

Table A1.4. Summary of Condition Assessment for Proposed Hedgerows

Appendix B – Biodiversity Metric 3.1 Calculation

(Attached Separately)