

Biodiversity Net Gain Assessment

Thorneydown Farm, Eastleigh

March 2023

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Thorneydown Farm, Eastleigh

29/03/2023

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1. Introduction

Project Background

- 1.1 Phlorum Limited was commissioned by JM Leisure to compile a Biodiversity Net Gain Assessment in relation to the proposed development of Thorneydown Farm, Eastleigh (hereafter referred to as "the site"). The site address is Thorneydown Farm, Moorhill Road, Eastleigh, SO30 3AY.

Site Description and Context

- 1.2 The site comprised following habitats within the revised site boundary: hardstanding, amenity grassland, marshy grassland, ruderal vegetation, scrub and a line of laurel.
- 1.3 The site was in Eastleigh to the east of Southampton. The site was located between the south west corner of a golf course (Boundary lakes golf course) and two roads, the A334 and the A27 (Moorhill Road), which meet at Kanes Hill Roundabout which is adjacent to the south west corner of the site. To the west and south-west of the site, on the other side of the adjacent roads/roundabout is housing. To the north-west and north-east is the golf course and trees. To the south is a mix of fields, trees residential and commercial space. The site contains hardstanding to the west and grassland to the east.
- 1.4 The National Grid Reference for the centre of the site is SU 47397 13112. The survey area extended over approximately 1.54 hectares (ha).

Description of Development

- 1.5 Current proposals are for a touring caravan site with 32 pitching sites and a central amenity block.

Documentation Provided

- 1.6 This document has been developed with reference to the findings contained within the previous ecological report:
 -  Preliminary Ecological Appraisal (PEA) (September, 2022).

2. Methodology

Establishing the Baseline Habitat

- 2.1 The desktop study involved conducting database searches for statutory and non-statutory designated sites, legally protected species and features of interest within a 2km radius of the site. This was carried out by Phlorum (2022).
- 2.2 Phlorum carried out a Preliminary Ecological Appraisal (September, 2022) of the site, following the guidance set by the Joint Nature Conservation Committee, handbook for Phase 1 surveys (JNCC 2010).

Calculating Biodiversity Net Gain/Loss

- 2.3 The calculation of Biodiversity Net Gain (BNG) was undertaken using 'The Biodiversity Metric 3.1' published by Natural England (2022). The metric uses site habitats, as areas and linear lengths, to calculate a score for the site. Each habitat is scored according to its relative biodiversity value. This value is then adjusted depending on various factors, to calculate the 'biodiversity units' for each habitat.

Baseline Calculation

- 2.4 Site baseline habitats are assessed based on the following:
 -  Terrestrial areas;
 -  Terrestrial linear lengths; and
 -  Aquatic linear lengths.
- 2.5 The baseline habitat map from the Preliminary Ecological Appraisal is used to calculate the individual parcels of habitats on the site, such as terrestrial areas (e.g. woodland, grassland), terrestrial lengths (e.g. hedgerows) and aquatic lengths (e.g. streams, rivers). Each area is measured in *hectares* and each linear feature in *kilometres*.
- 2.6 The Biodiversity Metric 3.1 calculator requires habitats present on site to be described using the UKHabs Classification System. As a result, the calculator in the technical data section includes a tool to translate Phase 1 habitats into UKHabs habitats.
- 2.7 Once the UKHabs habitat names, and areas/lengths have been measured the parcels need to be assessed against the following criteria:
 -  **Habitat Distinctiveness** – The calculator creates an automated score based on the type of habitat present. Highly diverse habitats, particularly those habitats of Principal Importance under the NERC Act (2006) or Annex 1 habitats in the Habitats Directive (1992) score 'high', whilst sites with low diversity such as arable crops have 'low' scores.

-  Habitat Condition – An assessment of the quality of the habitat parcel assessed during the baseline surveys.
-  Strategic Significance – An assessment based on the information set out in local plans or policies.

- 2.8 The calculator realises the importance of individual trees but there is no UKHabs habitat for these in the area calculation. As a result, the 'Street tree helper', which allows numbers of trees to be converted to an area in hectares is used, regardless of if the tree is a street tree or isolated tree in another habitat. Trees are categorised as 'small', 'medium' or 'large'.

Post Development Calculation

- 2.9 The post development areas are calculated by initially assessing the areas/length of habitats retained, enhanced, and created plus any offsite areas created or enhanced.
- 2.10 A 'Habitat Condition' and 'Strategic Significance' assessment are carried out on the post-development habitats. Where habitats have been created or enhanced, additional factors are considered, such as time taken for each of these habitats to reach target condition (temporal multiplier) and the difficulty of recreating these habitats (difficulty multiplier).
- 2.11 The baseline biodiversity score and post-development score are then calculated and compared the biodiversity impact loss or gain is calculated for each habitat (e.g. terrestrial habitat, terrestrial linear and /or linear aquatic habitat).
- 2.12 If needed offsite enhancement and/or creation of habitats can be carried out and assessed.

Caveats

- 2.13 The BNG calculates habitats and only provide a score to represent the biodiversity on site. As a result, compensation and mitigation should be designed using appropriate expertise and common sense.
- 2.14 As only habitats are calculated an increase in biodiversity due to increase in fauna (e.g. birds, bats, insects, reptiles, amphibians, or other mammals) is not included. The creation of bird/bat/insect boxes, log piles, and/or hibernacula's can significantly enhance the ecosystems on a site, but these enhancement are not calculated by the BNG calculator. The BNG calculator is a good guide to help increase biodiversity but habitats need both flora (plants) and fauna (animals) enhanced to ensure healthy and sustainable ecosystems.
- 2.15 The existing levels of protection provided to certain habitats or protected species are not changed by this calculator. The impact on protected species are not considered by the calculator, and must be assessed separately.

- 2.16 In nature the boundaries between ecological habitats are not usually an easily defined line, unless human impact such as a hard surface (e.g. buildings/roads), fences, ploughing, and/or felling has occurred. As a result, the habitat areas used are based on best judgement and therefore are subjective.
- 2.17 The calculator requires area measurements in *hectares* and linear measurements in *kilometres*, which for small sites can result in smaller areas/lengths not being recorded when only 2 decimal places area used.
- 2.18 As isolated trees are measured separately the overall area of all the habitat parcels can be greater than the actual site area.
- 2.19 The calculator cannot take account of all site-specific features and circumstances that may affect the true value of certain habitats or dictate the nature of habitat creation and enhancement. Such features and circumstances may make it impossible to satisfy trading rules for medium and high distinctiveness habitats, even where a clear net gain for biodiversity is being delivered. Whilst the calculator provides a valuable guide as to how a development will affect biodiversity, it should be considered as a guide to be used in combination with pragmatic and knowledge-based judgement when reaching conclusions as to how effective biodiversity enhancement will be delivered.

3. Biodiversity Net Gain Assessment

Existing Habitats

- 3.1 The existing habitats identified on site during the Preliminary Ecological Appraisal were hardstanding, grassland, marshy grassland, ruderal vegetation, and scrub. The habitat map can be seen in Appendix A.
- 3.2 The landscape scheme can be seen in Appendix B.
- 3.3 Where relevant, the following habitats will be referred to using the UK Habitat Classification¹ to help inform the Biodiversity Net Gain (BNG) for the site.
- 3.4 The following habitats will be lost:
-  **Modified grassland:** An extent of the existing grassland (modified grassland) will be converted into wildflower grassland.
 -  **Ruderal:** the area of ruderal will be lost.
 -  **Hedge:** the laurel hedge will be lost
- 3.5 The following habitats will be retained:
-  **Hardstanding:** the small area of hardstanding will be retained.
 -  **Modified grassland:** An area of the existing grassland (modified grassland) will be retained.
 -  **Marshy grassland:** all the marshy grassland (other neutral grassland) will be retained.
 -  **Scrub:** All the scrub (mixed scrub) will be retained.
- 3.6 The following habitats will be enhanced:
-  No habitats will be enhanced on site.
- 3.7 The following habitats will be created:
-  **Hardstanding:** an area of hardstanding will be created on site.
 -  **Introduced shrub:** An area of introduced shrubs will be created.
 -  **Wildflower grassland:** An area of wildflower grassland (other neutral grassland) will be created.
 -  **Hedge:** a new native hedge will be created.

Headline Results

- 3.8 The headline results, including total unit and % change are shown in Table 7 below.

¹ The UK Habitat Classification (2018) *Habitat Definitions Version 1.0*. The UK Habitat Classification Working Group.

Table 5: Results

	Habitat Area Units (Terrestrial area)	Habitat Length Units (Terrestrial linear length)	Aquatic Length Units (Aquatic linear length)
On-site Baseline	5.10	0.07	0.00
On-site post- intervention	6.29	2.51	0.00
Total net unit change	+ 1.19	+ 2.44	0.00
Total net % change	+ 23.38%	+ 3339.02%	0.00%

Results Summary

- 3.9 The existing area habitats on the site are considered by the Biodiversity Net Gain assessment to have a value of **5.10 units**. The post-development area habitats are considered by the Biodiversity Net Gain Assessment to have a value of **6.29 units**. This is a **+1.19 net change** in habitat units which equates to a **23.38% net gain**.
- 3.10 The existing linear habitats on the site are considered by the Biodiversity Net Gain assessment to have a value of **0.07 units**. The post-development area habitats are considered by the Biodiversity Net Gain Assessment to have a value of **2.51 units**. This is a **+2.44 net change** in habitat units which equates to a **3339.02% net gain**.
- 3.11 There are no aquatic habitat features on the site pre- or post-development.
- 3.12 This reflects; the loss of ruderal vegetation, parts of existing grassland and non-native hedge line; the retention of scrub, marshy grassland, areas of existing grassland and hardstanding; and the creation of a larger area of hardstanding, wildflower grassland, planting new trees and native hedgerow.

4. Discussion

- 4.1 A Biodiversity Net Gain Assessment has been carried out for the proposed development of Thorneydown Farm, Eastleigh. The site comprised of: hardstanding, amenity grassland, marshy grassland, ruderal vegetation, scrub and a line of laurel.
- 4.2 It is understood that development proposals are for a touring caravan site with 32 pitching sites and a central amenity block.
- 4.3 An overall net gain of 23.38% in habitat units and a net gain of 3339.02% in hedgerow units from the existing baseline has been calculated. The net gain reflects the loss of ruderal vegetation, parts of existing grassland and non-native hedge line. There will be no change in areas of scrub, marshy grassland, areas of existing grassland and existing hardstanding. The newly created habitats include, a larger area of hardstanding, wildflower grassland, new trees and native hedgerow.
- 4.4 There may also be significant gains for ecology on the site that are not captured by the BNG Assessment, such as species-specific enhancements including bird and bat boxes.

5. Conclusions and Recommendations

Conclusions

- 5.1 A Biodiversity Net Gain Assessment has been carried out for the proposed development of the Thorneydown Farm, Eastleigh. An overall **net gain of 23.38% in habitat units** and a **net gain of 3339.02% in hedgerow units** from the existing baseline has been calculated
- 5.2 It should be noted that the BNG assessment does not capture other methods of ecological enhancement such as the inclusion of bat and bird boxes.

Recommendations

- 5.3 To achieve a biodiversity net gain on the site, the following recommendation are made:
- 5.4 The management and monitoring of habits should be guided by a Landscape and Ecological Management Plan (LEMP), to ensure the site's biodiversity value is maintained.

6. References

-  Baker J., Hoskins R. and Butterworth T. (2019). Biodiversity Net Gain. Good practice principles for development: A practical guide. Ciria, London. Baker J., Hoskins R. and Butterworth T. (2019). Biodiversity Net Gain. Good practice principles for development: Case studies. Ciria, London.
-  British Standards Institute (2013). 24040:2013. *Biodiversity-Code of Practice for Planning and Development*. Standards Policy & Strategy Committee. Milton Keynes: BSI.
-  CIEEM (2017). *Guidelines for Preliminary Ecological Appraisal Second Edition*. Chartered Institute of Ecology and Environmental Management, Winchester.
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-  Joint Nature Conservation Committee (2010). *Handbook for Phase 1 habitat survey - A technique for Environmental Audit*. JNCC, Peterborough.
-  Natural England. (2022). The Biodiversity Metric. 3.1 (JP039).
-  Phlorum (2022). *Preliminary Ecological Appraisal, Thorneydown Farm, Eastleigh*. Unpublished report.

Figures and Appendices

Appendix A

Habitat Map

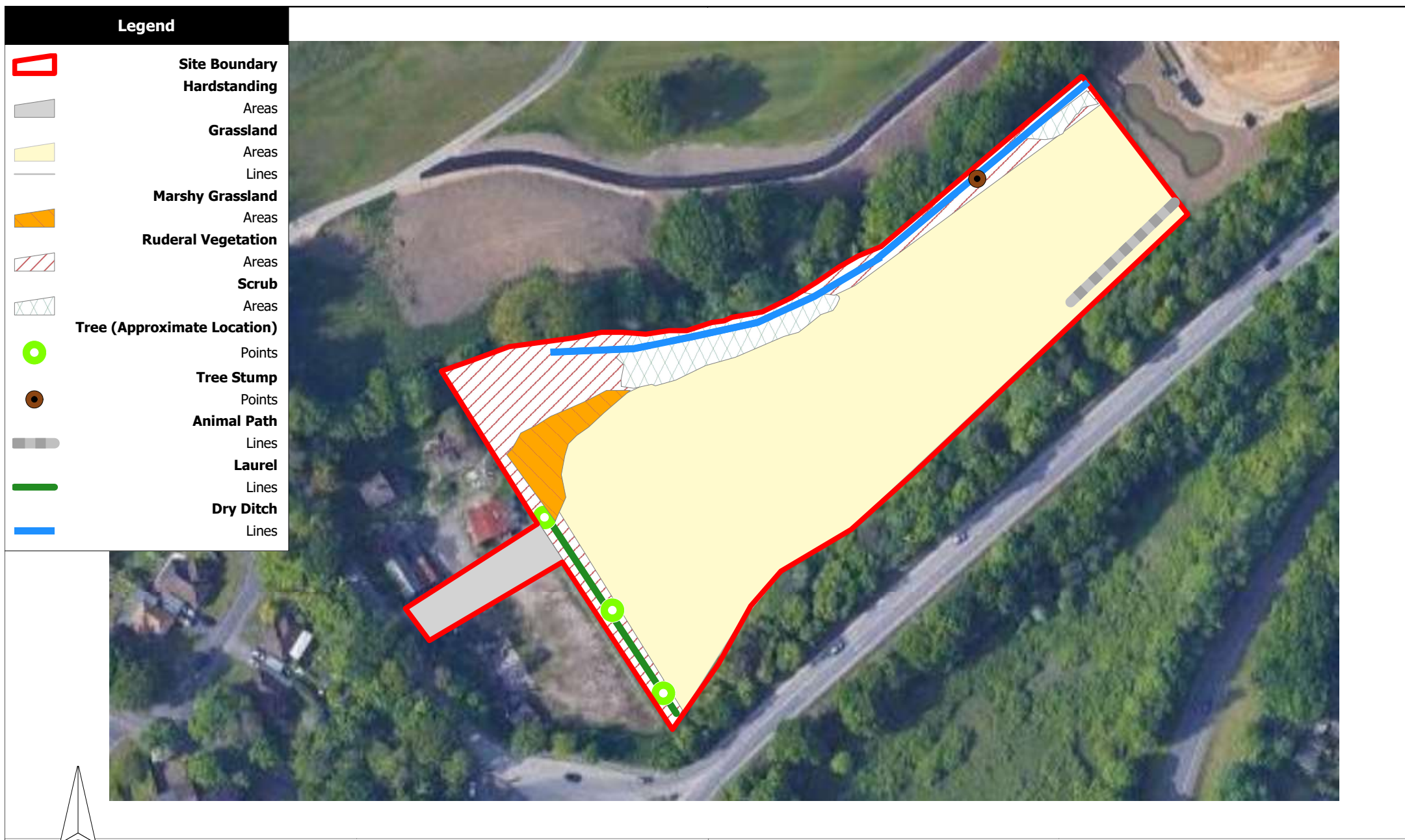


Figure 1: 10571 Thorneydown Farm Habitat Map

Drawn by: PC
On the: 30.09.2022
Not to Scale
Ref: 10571



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Appendix B

Post Development Landscape Plan



KEY

Application site boundary 15,400m²

Existing 1m contours

+61.75

Indicative proposed ground levels for pitches

Existing trees.
Orange circles indicate RPAs (root protection areas).
Refer to Tree Report.

Existing trees to be removed

Existing embankment/screen planting along southern boundary (evergreen and deciduous trees/shrubs)

Existing scrub vegetation along northern boundary to be retained and managed as a green corridor 1400m² (207m)

Existing marshy grassland to be retained 300m²

Proposed tree (62 no.)

Proposed native screen planting (trees and shrubs) 550m²

Proposed native hedge/shrub planting 750 linear m (ornamental planting by amenity block 100m²)

Proposed embankments

Proposed access roads, bonded gravel surfacing

Proposed amenity grass 7,150m²

Proposed other neutral grassland (wildflower grassland) 3,100m²

A

Motorhome service point

Proposed water point/fire point

Hard surfacing: road, paths, bin stores, amenity block 2,800m²

NOTES

1. This drawing is intended for Planning purposes only. Levels shown on drawing are indicative only. All construction details for earthworks and levels to be designed by consultant engineer.

2. Refer to dwg. no. 63-07 Illustrative Sections

3. Pitches 27-29 for tents only

rev. date by description

drawing status

FOR INFORMATION

project

THORNEYDOWN FARM

title

ILLUSTRATIVE MASTERPLAN WITH AREAS FOR ECOLOGY

date

28.03.23

project no.

63

scale

1:500 @ A1
1:1000 @ A3
drawing no.

drawn by

PJS

revision

-

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Appendix C

Suggested Compensatory Planting

Suggested Compensatory Planting

This section provides a list of plants which are of proven value to wildlife. The list is not exhaustive and merely provides a guide for suggested planting for wildlife value. Planting should be tailored on a site by site basis. The list includes native species.

This list includes species that may be harmful if handled or ingested. Schedule 9 (Part 2) of the Wildlife and Countryside Act, 1981 (as amended) includes a list of invasive plants, including aquatic species, that should always be avoided in planting schemes.

Large Shrubs

Hawthorn (*Crataegus monogyna*)

Blackthorn (*Prunus spinosa*)

Rose: dog rose (*Rosa canina*), field rose (*R. arvensis*), burnet rose (*R. pimpinellifolia*)

Wild privet (*Ligustrum vulgare*)

Common holly (*Ilex aquifolium*)

Hazel: (*Corylus avellana*)

Viburnum (*Viburnum* spp.): wayfaring tree (*V. lantana*), guelder rose (*V. opulus*),. Note: *V. lantana* can become invasive in more open habitats.

Dogwood (*Cornus sanguinea*)

Broom (*Cytisus scoparius*)

Buckthorn (*Rhamnus cathartica*)

Spindle (*Euonymus europaeus*)

Tutsan (*Hypericum androsaemum*)

Yew (*Taxus baccata*)

Trees

Ash (*Fraxinus excelsior*)

Apple (*Malus* spp.): edible apple (*M. domestica*), crab apple (*M. sylvestris*)

Small-leaved lime (*Tilia cordata*)

Silver birch (*Betula pendula*)

Yew (*Taxus baccata*)

Black poplar (*Populus nigra*)

Beech (*Fagus sylvatica*)

Climbers

Ivy (*Hedera helix*)

Honeysuckle (*Lonicera* spp.): (*L. periclymenum*)

Hop (*Humulus lupulus*)

Bulbs

English bluebell (*Hyacinthoides non-scripta*)

Snowdrop (*Galanthus nivalis*)

Wild Daffodil (*Narcissus pseudonarcissus*)

Wood anemone (*Anemone nemorosa*)

Lesser celandine (*Ficaria verna*)

Appendix D

The Biodiversity Metric 3.1 Headline Results

Headline Results

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On-site baseline	<i>Habitat units</i>	5.10
	<i>Hedgerow units</i>	0.07
	<i>River units</i>	0.00
On-site post-intervention (Including habitat retention, creation & enhancement)	<i>Habitat units</i>	6.29
	<i>Hedgerow units</i>	2.51
	<i>River units</i>	0.00
On-site net % change (Including habitat retention, creation & enhancement)	<i>Habitat units</i>	23.38%
	<i>Hedgerow units</i>	3339.02%
	<i>River units</i>	0.00%
Off-site baseline	<i>Habitat units</i>	0.00
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	<i>Habitat units</i>	0.00
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	<i>Habitat units</i>	1.19
	<i>Hedgerow units</i>	2.44
	<i>River units</i>	0.00
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	<i>Habitat units</i>	23.38%
	<i>Hedgerow units</i>	3339.02%
	<i>River units</i>	0.00%
Trading rules Satisfied?	Yes ✓	



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