

Land at South Farm

Biodiversity Net Gain Calculations

edp6190_r006a

1. Introduction

- 1.1 This Biodiversity Net Gain (BNG) Assessment has been prepared by The Environmental Dimension Partnership Ltd (EDP) on behalf of Bloor Homes (South West) (hereafter referred to as 'the Applicant'). This document presents the Biodiversity Net Gain (BNG) Calculations (**Annex EDP 1**) for a proposed residential development of Land at South Farm, Wickwar ('hereafter referred to as the 'Application Site').
- 1.2 EDP is an independent environmental planning consultancy with offices in Cirencester, Cardiff and Cheltenham. The practice provides advice to private and public sector clients throughout the UK in the fields of landscape, ecology, archaeology, cultural heritage, arboriculture, rights of way and masterplanning. Details of the practice can be obtained at our website www.edp-uk.co.uk.

2. Background Information and Site Context

- 2.1 The Application Site is centred approximately at Ordnance Survey Grid Reference (OSGR) ST 72387 87684, at the southern edge of the village of Wickwar in South Gloucestershire. The wider landscape is dominated by agricultural land, predominately grazing pasture and arable fields subdivided by native hedgerow.
- 2.2 Overall, the Application Site is circa 7.8 hectares (ha) in size and comprises four field parcels predominantly within agricultural use, divided by native hedgerows reinforced in places with wire fencing. South Farm, comprising a complex of agricultural buildings, is present offsite adjacent to the northern boundary of the Application Site bordered by Sodbury Road. The southern boundary of the Application Site is bordered by additional areas of agricultural land with Frith Lane located further south. The location and extents of the Application Site are illustrated at **Plan EDP 1**.
- 2.3 An outline planning application is proposed for submission to South Gloucestershire Council for residential development of Land at South Farm, Wickwar. To inform the planning submission, a desk study, Extended Phase 1 Habitat survey and further detailed survey with respect to bats, breeding birds, badger (*Meles meles*), dormouse (*Muscardinus avellanarius*), otter (*Lutra lutra*) and water vole (*Arvicola amphibius*) and great crested newt (*Triturus cristatus*) was undertaken by EDP between 2020 and 2021, the results of which are provided within an Ecological Appraisal (report reference: edp6190_r005).

- 2.4 To inform final masterplan design for proposed development and subsequently a planning submission a BNG assessment is required to inform the proposed change in biodiversity of the Application Site following completion of construction.
- 2.5 This report, therefore, provides the results of a BNG assessment alongside details of the methodologies adopted and any assumptions and limitations.

3. Methodology

- 3.1 The BNG assessment has been undertaken using the 'DEFRA Biodiversity Metric 3.0' (JP039)¹ by an Associate Ecological Consultant with experience of using such calculators.
- 3.2 The assessment has been based on the Extended Phase 1 Habitat survey by EDP on 12 and 13 March 2020 with a further update assessment undertaken on 22 January 2021. GIS software has been used to calculate approximate areas of habitat to be lost, retained, enhanced and/or created. Calculations are based on the Framework Masterplan provided at **Annex EDP 2**.
- 3.3 The condition of all habitats has been assessed using the condition assessment criteria provided within the 'Technical Supplement' and 'Habitat Condition Assessment Sheets' published alongside the Biodiversity Metric 3.0, where available, using professional judgement to interpret such criteria. The following should be read in conjunction with the detailed BNG calculations provided in **Annex EDP 1**, along with the Phase 1 Habitat Plan (baseline habitats) included at **Plan EDP 1**.

Limitations & Assumptions

- 3.4 Various assumptions have been made for the purposes of the calculations, with the key assumptions being:
- The red line boundary assessed follows that illustrated at **Annex EDP 2**;
 - The calculations are based on a high-level concept plan which has been subdivided into four broad categories including 'allotments', 'attenuation basin', 'development/roads', 'Local Area for Play' (LAP)/'Local Equipped Area for Play' (LEAP), 'open space' and 'swale'. No significant division or identification of habitat types to be created has been identified. Instead, the current version of the BNG calculations are based on the presumed retention and/or enhancement of habitats outwith proposed residential areas unless otherwise specified. This is with the exception of arable land which is presumed lost and replaced with new habitat creation;

¹ <http://publications.naturalengland.org.uk/publication/6049804846366720>

- The residential area has been split into 70% 'developed land, sealed surface' and 30% 'urban – vegetated garden';
- It is presumed areas of open space outwith the main development footprint will comprise a mixture of wildflower planting (50%), amenity use grassland (20%) and scrub planting (30%). The realistic target condition of the wildflower habitat grassland will vary across the site depending on the locality and levels of public disturbance;
- The remainder of green space planting has been split between wildflower grassland and. The target condition for wildflower grasses and scrub is appropriately higher as future management plans will seek to maintain these for their benefit to wildlife;
- The BIA calculations do not account for other protected species enhancement measures such as the provision of bird and bat boxes and reptile hibernacula, nor does it account for the additional value of habitat resources important to specific species groups, which may not score highly within the calculator. Compensatory habitat will therefore need to take into account protected species issues in addition to creating sufficient biodiversity units to achieve a net gain;
- Retained hedgerows will be protected during construction and enhanced to target 'good' condition through the planting of a higher value native species mixture as well as management. New native hedgerow planting, will incorporate at least five species; and
- The BIA calculations do not account for other protected species enhancement measures such as the provision of bird and bat boxes, nor does it account for the additional value of habitat resources important to specific species groups, which may not score highly within the calculator.

4. Results

4.1 The BNG calculations pertaining to habitat areas are provided in **Annex EDP 1**. Overall, the biodiversity impact habitat area score of the proposed development has been calculated as follows:

- Total net unit change = 4.15units (net gain); and
- Total net percentage change = 26.2% (net gain).

4.2 With respect to the biodiversity impact score of the proposed development for hedgerows specifically, this has been calculated as follows:

- Total net unit change = 5.42 units (net gain); and
- Total net percentage change = 35.25% (net gain).

5. Discussion and Conclusions

- 5.1 The Application Site is largely dominated by arable land of limited ecological value. An initial loss of biodiversity units is due to loss of habitats almost exclusively of poor condition and low distinctiveness (predominantly improved grassland and arable crop). The Framework Masterplan (**Annex EDP 2**) has sought to mitigate this loss through the incorporation of habitats of higher quality and distinctiveness. These proposed habitats, situated within areas of informal open green space will include wildflower and wet meadow grasslands in addition to new tree and shrub planting whilst allotments are proposed for a local community and combined will provide a biodiversity net gain.
- 5.2 The gain in linear units is due to the site-wide retention and enhancement of existing hedgerows. The expected loss of hedgerow amounts to approximately 98m of hedgerow compared to an additional creation of 670m of new species-rich native hedgerow creation.
- 5.3 Habitat establishment and management details included within a Landscape and Ecological Management Plan, can be secured via planning condition, to ensure that the target habitat conditions required for the assessment will be achieved. Overall, the development is capable of delivering a net gain in biodiversity units



Annex EDP 1
BNG Results

Land at South Farm Wickwar
Headline Results

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results menu

On-site baseline	<i>Habitat units</i>	15.82
	<i>Hedgerow units</i>	15.82
	<i>River units</i>	0.00
On-site post-intervention (Including habitat retention, creation & enhancement)	<i>Habitat units</i>	19.97
	<i>Hedgerow units</i>	21.24
	<i>River units</i>	0.00
On-site net % change (Including habitat retention, creation & enhancement)	<i>Habitat units</i>	26.20%
	<i>Hedgerow units</i>	34.25%
	<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>	4.15
	<i>Hedgerow units</i>	5.42
	<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>	26.20%
	<i>Hedgerow units</i>	34.25%
	<i>River units</i>	0.00%
Trading rules Satisfied?	Yes	

Lead at South Farm Windsor
A-1 Site Habitat Baseline

Condition / Issue Column	Condition / Issue Row
Main Menu	Instructions

Habitat and issue				Disturbance		Condition		Strategy significance			Suggested action to address habitat issue	Ecological benefits Final habitat value
Ref	Issue habitat	Habitat type	Area (hectares)	Disturbance	Score	Condition	Score	Strategy significance	Strategy significance multiplier	Strategy significance multiplier		
1	Grassland	Grassland edge	0.04	Low	1	OK	1	Arctic/temperate not in local strategy no local strategy	Low Strategy Significance	1	Green disturbance not in better habitat required	0.04
2	Grassland	Modified grassland	0.01	Low	3	Poor	1	Arctic/temperate not in local strategy no local strategy	Low Strategy Significance	1	Green disturbance not in better habitat required	0.03
3	Grassland	Modified grassland	0.06	Low	3	Poor	1	Arctic/temperate not in local strategy no local strategy	Low Strategy Significance	1	Green disturbance not in better habitat required	0.03
4												
5			7.61									10.08

Baseline category Modestly value						Degree compensation agreed for unacceptable issue	Comments	
Area retained	Area enhanced	Baseline value enhanced	Baseline value enhanced	Area lost	Value lost		Assessory comments	Restorative comments
		0.06	0.07	0.04	0.06			
0.04	0.4	0.06	1.00	0.07	7.04		Improved grassland. 90% of grassland enhanced to enhance. 10% could be used. 10% retained as modified.	
0.03	0.02	0.06	0.14	0.14	0.32		Five more improvement processes. 10% of grassland enhanced to enhance. 10% could be used. 10% retained as modified for example.	
0.02	0.01	0.04	0.04	0.04	0.04			

Land at South Farm Wickham
A-2 Site Habitat Creation

Condense / Show Columns

Condense / Show More

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Condense / Show Columns

Condense / Show Rows

Main Menu

Instructions

UK Habitats - existing habitats			Habitat effectiveness		Habitat condition		Strategic significance				Suggested action to address habitat losses		Ecological benefits		Intention category biodiversity value					Comments	
Reserve ref	Hedge number	Hedge type	Length (m)	Disturbance	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier		Length retained	Length enhanced	Value retained	Value enhanced	Length lost	Value lost	Assessor comments	Reviewer comments		
1	101	Native Hedgerow with trees - Associated with bank or ditch	0.09	High	6	Good	3	Area/conspicuous not to land strategy no bank strategy	Low Strategic significance	1	Gain for bank or fence	0.09		0.00	0.00	0.00	0.00				
2	102	Native Hedgerow - Associated with bank or ditch	0.14	Medium	4	Good	3	Area/conspicuous not to land strategy no bank strategy	Low Strategic significance	1	Gain for bank or fence	1.00		1.00	0.00	0.01	0.14				
3	103	Native Hedgerow with trees	0.1	Medium	4	Good	3	Area/conspicuous not to land strategy no bank strategy	Low Strategic significance	1	Gain for bank or fence	1.00		1.20	0.00	0.00	0.00				
4	104	Native Species Rich Hedgerow	0.15	Medium	4	Moderate	2	Area/conspicuous not to land strategy no bank strategy	Low Strategic significance	1	Gain for bank or fence	1.00		0.15	0.00	1.20	0.00				
5	105	Native Species Rich Hedgerow with trees	0.04	High	6	Good	3	Area/conspicuous not to land strategy no bank strategy	Low Strategic significance	1	Gain for bank or fence	0.72		0.04	0.72	0.00	0.00				
6	106	Native Hedgerow with trees - Associated with bank or ditch	0.04	High	6	Good	3	Area/conspicuous not to land strategy no bank strategy	Low Strategic significance	1	Gain for bank or fence	0.72		0.04	0.72	0.00	0.00				
7	107	Native Hedgerow - Associated with bank or ditch	0.09	Medium	4	Good	3	Area/conspicuous not to land strategy no bank strategy	Low Strategic significance	1	Gain for bank or fence	1.00		0.09	0.00	0.00	0.00				
8	108	Native Hedgerow	0.16	Low	2	Good	3	Area/conspicuous not to land strategy no bank strategy	Low Strategic significance	1	Some disturbance/loss or better	0.00		0.16	0.00	0.00	0.00				
9	109	Native Species Rich Hedgerow with trees	0.03	High	6	Good	3	Area/conspicuous not to land strategy no bank strategy	Low Strategic significance	1	Gain for bank or fence	0.74		0.03	0.74	0.00	0.00				
10	110	Native Hedgerow with trees	0.09	Medium	4	Good	3	Area/conspicuous not to land strategy no bank strategy	Low Strategic significance	1	Gain for bank or fence	1.00		0.09	1.00	0.00	0.00				
11	111	Hedge Ornamental Non Native	0.07	V Low	1	Poor	1	Location ecologically desirable but not in bank strategy	Medium strategic significance	1.1	Some disturbance/loss or better	0.00		0.07	0.00	0.00	0.00				
12	112	Native Hedgerow with trees - Associated with bank or ditch	0.11	High	6	Good	3	Area/conspicuous not to land strategy no bank strategy	Low Strategic significance	1	Gain for bank or fence	1.00		0.11	1.00	0.00	0.00				
13	113	Native Hedgerow - Associated with bank or ditch	0.18	Medium	4	Good	3	Area/conspicuous not to land strategy no bank strategy	Low Strategic significance	1	Gain for bank or fence	0.18		0.18	0.00	0.00	0.00				
14	114	Native Hedgerow - Associated with bank or ditch	0.07	Medium	4	Moderate	2	Area/conspicuous not to land strategy no bank strategy	Low Strategic significance	1	Gain for bank or fence	0.55		0.00	0.00	0.00	0.07	0.55			
15	115	Native Hedgerow with trees - Associated with bank or ditch	0.00	High	6	Moderate	2	Area/conspicuous not to land strategy no bank strategy	Low Strategic significance	1	Gain for bank or fence	0.00		0.00	0.00	0.00	0.00				
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B-2 Site Hedge Creation

Condense / Show Columns

Condensed / Show More

Notable Features

STRUCTURE

		Proposed habitat		Habitat disturbance		Habitat condition		Strategic significance			Tempor multiplier					Delivery sub multipliers					Comments		
Reservoir no.	Key habitat number	Habitat type	Length km	Disturbance	Score	Condition	Score	Strategic significance	Strategic condition	Strategic condition score/10	Standard Time to target condition/years	Habitat created in advance/years	Delay in meeting habitat condition/years	Standard or adjusted time to target condition	Final time to target condition/years	Final Time to target condition/years	Standard delivery of condition	Applied delivery condition	Final delivery condition	Efficiency condition applied			Score with delivery
1		Nature Species Rich Wetland	0.02	Medium	4	Good	3	Amortisation but no direct strategic benefit	Low Strategic Importance	1	12			Standard time to be met condition	12	0.002	Low	Standard delivery meeting	Low	1	0.20		
2		Nature Species Rich Wetland	0.02	Medium	4	Good	3	Amortisation but no direct strategic benefit	Low Strategic Importance	1	12			Standard time to be met condition	12	0.002	Low	Standard delivery meeting	Low	1	0.20		
3																							
4																							
5																							
6																							
7																							
			0.07																			0.64	

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Annex EDP 2
Framework Masterplan
(Turley, 3001 Rev H, August 2021)



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- KEY
- Site Boundary (7.89 ha/19.49 ac)
 - Residential Development (4.46 ha/11.02 ac)
 - Area reserved for potential shop extents - to be confirmed (0.15 ha)
 - Open Space including Informal Recreational and Natural & semi-natural urban green space (3.2 ha)
 - Allotments (0.09 ha)
 - PROW (public rights of way)
 - Primary Roads
 - Areas of boundary to be bolstered with additional Planting
 - Existing Hedgerow
 - Existing Trees
 - Proposed Pumping Station
 - 1 Proposed Access Points
 - 2 Proposed LAP (local area of play)
 - 3 Proposed LEAP (local equipped area of play)
 - 4 Proposed attenuation basin
 - 5 Proposed swale

c.180 homes @ 40dph net

CLIENT:
Bloor Homes

PROJECT:
Land at Wickwar

DRAWING:
Framework Masterplan

PROJECT NUMBER:
BLOA3039

DRAWING NUMBER: 3001 **CHECKED BY:** CD/LN

REVISION: H **STATUS:** DRAFT

DATE: 07/09/2021 **SCALE:** 1:2500 @ A3