Sinah Lane, Hayling Island

Biodiversity Net Gain Assessment

Barratt Homes

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1.0 Introduction

1.1 Background

WYG was commissioned by Barratt David Wilson Homes in February 2018 to prepare a Biodiversity Net Gain Assessment for land at Sinah Lane, Hayling Island, Havant (the Site).

The purpose of this assessment is to quantify the biodiversity value of the site prior to development, and the predicted value post development. This is measured in biodiversity units calculated according to the habitats present and their size, distinctiveness and condition. Risk factors are taken into account when quantifying habitats post-development. This enables the quantitative calculation of the predicted change in biodiversity value as a result of the proposed development, with the objective of achieving a net gain in biodiversity.

This report has been prepared by David West CEnv MCIEEM.

This issue has been prepared for the resubmission of the scheme alongside all other ecological reports previously completed at the above site. The development proposals for the site remain unchanged (aside from minor non-material changes where ecology is concerned) and no change in conditions on site have been identified (following the completion of ecological surveys in 2018). It was therefore considered that there was no need to complete updated field surveys to support the resubmission.

1.2 Site Location

The site is located within the south west of Hayling Island in and is centred at Ordnance Survey National Grid Reference SZ 70816 99897. The site comprises of an arable field bounded by residential areas to the south and south west, foreshore to the north west, woodland to the north and the Hayling Billy trail and a small copse to the east.

1.3 Development Proposals

The erection of 195 dwellings, associated open space, pumping station, substation with vehicular access via Sinah Lane and change of use of land from agriculture to a Wader and Brent Geese refuge.

2.0 Methodology

The methodology for the assessment follows Defra guidance on Biodiversity Offsetting (Defra, 2012) and the Biodiversity Impact Assessment Calculator in use by Warwickshire County Council (Martland, 2014).

Habitat Assessment

Habitats on site pre-development and to be retained, created or enhanced post-development are identified in accordance with the categories specified for a Phase 1 habitat survey (Joint Nature Conservation Committee, 2010).

Area and Length

The area of identified habitats is calculated in ha, ignoring linear features such as hedgerows or ditches (the area should be measured to the centre line of such features). The length of linear features is measured separately in km.

Distinctiveness

Each habitat is assigned a score for distinctiveness. Distinctiveness includes parameters such as species richness, diversity, rarity (at local, regional, national and international scales) and the degree to which a habitat supports species rarely found in other habitats (Treweek et al., 2010). For the purposes of this assessment, the distinctiveness categories form the Warwickshire Biodiversity Impact Assessment Calculator have been used as they allow a greater range than the Defra metric. These scores are:

- High: 6 (broadly aligns with Habitats of Principal Importance)
- Medium-High: 5
- Medium: 4 (broadly semi-natural habitats)
- Medium-Low: 3
- Low: 2 (broadly non-natural habitats but still with some biodiversity value)

Using the Warwickshire method, habitats are assigned a default score based on their distinctiveness within the Warwickshire region according to the local Habitat Biodiversity Audit. In the absence of comparable local data these scores have been used, except where evidence suggests a higher or lower score is appropriate.

Condition

The condition of each habitat is assessed following criteria set out in the Farm Environment Plan (FEP) Manual, which includes detailed assessment criteria for different habitats. This is used as a guide but may be superseded where appropriate by other evidence and best ecological judgement.

Conditions within the metric are as follows:

- Good: 3
- Moderate: 2
- Poor: 1

A condition assessment using the FEP manual is determined by how many of the detailed criteria are met:

- Good condition: All criteria are met.
- Moderate condition: All but 1 criterion are met.
- Poor condition: 2 or more criteria are failed.

Low distinctiveness habitats should as standard be assigned a poor condition, unless a particular valuable or diverse example of that habitat is present. Proposed gardens within residential developments should always be assigned poor condition. Although some gardens can have high wildlife value, most will have minimal value and may just be paved or lawn. There can be no control on how these are managed in the future and so poor condition should be selected.

Risk Factors

As part of any proposed habitat creation and restoration, risk factors must be taken into account to correct for disparity, delay or risk, these are:

- Time to target condition;
- Difficulty of restoration/creation.

To take this into account, creation of a habitat which will take many years to get to target condition or is difficult to recreate would have a reduced biodiversity value compared to the same habitat already in situ. Therefore to compensate for loss of that original habitat a larger area would be required as an offset.

Default values are provided for a range of habitats as part of the Defra metric. These may be altered if informed by knowledge of the site and proposed management prescriptions.

3.0 Existing Habitats

Information on existing habitats is provided by the WYG (2018) extended Phase 1 Habitat survey.

3.1 Arable

The site is prominently an arable field sown with wheat at the time of the survey, a small area of bare ground with small patches of scentless mayweed (*Tripleurospermum inodorum*) recorded but little evidence of other species present.

Area	12.57ha
Distinctiveness	2 – Arable land is assigned low distinctiveness as a default. There is no overriding justification to vary this, although the habitat does provide foraging habitat for wading birds.
Condition	1 – Habitats of low distinctiveness are assigned poor conditions as a default. There is no overriding justification to vary this.

3.2 Neutral Semi-Improved Grassland

The field is cropped close to the boundaries with little in the way of a field margin. There are a number of small patches of semi-improved grassland located at the corners of the field. These are linked by the boundary hedgerows. Species recorded includes false oat grass (*Arrhenatherum elatius*), meadow foxtail (*Alopecurus pratensis*), common ragwort (*Jacobaea vulgaris*), winter heliotrope (*Petasites fragrans*), narrow leaved dock (*Rumex acetosa*), common sedge (*Carex nigra.*), cow parsley, common vetch (*Vicia sativa*), fern (*Tracheophyta* sp.), willow herb (*Epilobium* sp.), charlock (*Sinapis arvensis*), horseradish (*Armoracia rusticana*), lords and ladies (*Arum maculatum*) and figwort (*Scrophularia nodosa*).

Area	0.07ha
Distinctiveness	4 – Semi-improved grassland is assigned medium distinctiveness as a default. There is no overriding justification to vary this.
Condition	1 – The grassland has been assessed using criteria for GO6 – Lowland Meadows. The criteria relating to BAP indicator species have been discounted as they are not relevant for grassland of low-medium distinctiveness. Low condition is assigned as the habitat fails on two criteria: • Cover of undesirable species (e.g. common nettle, common ragwort etc.) is higher than 5%; and • Cover of wildflowers and sedges (excluding white clover and creeping buttercup) is lower than 20%.

3.3 Hedgerows

Around the majority of the site are species-poor hedgerows. HR1 and HR2 are intact whilst HR3 and HR4 are defunct. Species comprise of ivy (*Hedera helix*), goat willow (*Salix caprea*), lilac (*Syringa* spp.), wayfaring tree (*Viburnum lantana*), creeping thistle (*Cirsium arvense*), cleavers (*Galium aparine*), dog rose (*Rosa canina*), cherry laurel (*Prunus laurocerasus*), bay laurel (*Laurus nobilis*) along with introduced shrubs originating from adjacent gardens. Within all of the hedgerows are scatted trees comprising of beech (*Fagus sylvatica*), privet (*Ligustrum* sp.), elm (*Ulmus minor*), oak (*Quercus robur*), ash (*Fraxinus excelsior*) and field maple (*Acer campestre*).

Length	Defunct	0.42km
	Intact with trees	1.32km
Distinctiveness	Defunct	2 – Low distinctiveness is assigned as a default. There is no overriding justification to vary this.
	Intact with trees	5 – Medium-high distinctiveness is assigned as a default. There is no overriding justification to vary this.
Condition	Defunct	1 – Habitats of low distinctiveness are assigned poor conditions as a default. There is no overriding justification to vary this.
	Intact with trees	3 - The hedgerow has been assessed using criteria for FO2 – High environmental value boundaries. High condition is assigned as the habitat passes all three criteria: • The hedgerow is a minimum of 2m in height; • The hedgerow is a minimum of 1.5m in width; and • Fewer than 10% of the length is occupied by gaps.

4.0 Proposed Habitats

4.1 Built Form

The proposed development is for 195 dwellings with associated access, parking and footpaths. These comprise the built form of the development and are assessed as one element.

Area	3.50ha
Distinctiveness	0 – Buildings and hardstanding are assigned null distinctiveness.
Target Condition	N/A
Time to Target Condition	N/A
Difficulty of Creation	N/A

4.2 Gardens and Formal Landscaping

Each plot has a rear garden and associated landscaping. Further formal landscaping is associated with the shared infrastructure such as road verges. These are assessed as one element.

Area	1.81ha
Distinctiveness	2 – Gardens and landscaping are assigned low distinctiveness as a default. There is no overriding justification to vary this.
Target Condition	1 – Gardens and landscaping are assigned poor condition as a default to account for a lack of certainty over future management.
Time to Target Condition	1.2 – Up to 5 years required to create.
Difficulty of Creation	1 – Low difficulty assigned as default. There is no overriding justification to vary this.

4.3 Semi-improved Grassland

Two areas of semi-improved grassland are proposed as part of the soft landscaping proposals, one to the centre of the site and one to the south of the attenuation pond.

Area	0.5ha
Distinctiveness	4 – Semi-improved grassland is assigned medium distinctiveness as a default. There is no overriding justification to vary this.

Target Condition	2 – The grassland has been assessed using criteria for GO6 – Lowland Meadows. The criteria relating to BAP indicator species have been discounted as they are not relevant for grassland of low-medium distinctiveness. Medium condition is assigned as it is anticipated that 3 of four criteria will be met: • Cover of undesirable species (e.g. common nettle, common ragwort etc.) is less than 5%; • Cover of bare ground is less than 10%; and • Cover of invasive trees and shrubs less than 5%, and indicators of water logging (such as large sedges, rushes, reeds) less than 30%.
Time to Target Condition	1.2 – Up to 5 years required to create.
Difficulty of Creation	1.5 – Medium difficulty assigned as default. There is no overriding justification to vary this.

4.4 Improved Grassland

It is proposed that the northern area of the site is converted from arable crop to permanent improved grassland pasture as a wader and brent goose refuge. This grassland will include wader scrapes, however these are not assessed separately as they form part of the condition assessment criteria for the habitat.

Area	6.31ha
Distinctiveness	2 – Improved grassland is assigned low distinctiveness as a default. There is no overriding justification to vary this.
Target Condition	3 – The grassland has been assessed using criteria for G13 – Habitat for wintering waders and wildfowl. High condition is assigned as it is anticipated that all 3 criteria will be met: • Cover of rushes should be less than 40%, and on the remainder the cover of grass or sedge tussocks should be between 5% and 60%; • The sward height should be between 5 cm and 15 cm in November; and • There is standing water on more than 5% of the field and the ground is wet (a 6-inch nail can easily be pushed in) on more than 50% of the field between November and February.
Time to Target Condition	1.4 – Up to 10 years required to create.
Difficulty of Creation	1 – Low difficulty assigned as default. There is no overriding justification to vary this.

4.5 Wetland

Wetland habitat is proposed as part of the surface water drainage strategy. This comprises a large attenuation basin and connecting swales. These features have been designed to provide biodiversity benefits alongside their water management and treatment function.

Area	Attenuation basin (standing water)	0.48ha
	Swales (acid/neutral flush)	0.04ha
Distinctiveness	Attenuation basin (standing water)	6 – Standing water is assigned high distinctiveness as a default. There is no overriding justification to vary this (most wetland habitats are assigned high value).
	Swales (acid/neutral flush)	6 – Acid/neutral flush is assigned high distinctiveness as a default. There is no overriding justification to vary this (most wetland habitats are assigned high value).
Target Condition	Attenuation basin (standing water)	2 – The basin has been assessed using criteria for W07 - Ponds. Medium condition is assigned as it is anticipated that 5 of 6 criteria will be met: • The pond should be set within a semi-natural habitat; • It should be within 500 m of another wetland feature (such as a pond, river or fen); • There should be an absence of damaging non-native plant or animal species; • The pond should not be stocked with fish or support damaging numbers of wildfowl; and • It should experience only natural fluctuations in water level.
	Swales (acid/neutral flush)	1 – The swales have been assessed using criteria for M08 - – Upland flushes, fens and swamps. Poor condition is assigned as it is anticipated that 2 of 4 criteria will be met: • Cover of trees and shrubs and/or disturbed ground less than 10%; and • Where present (and in season), flowering plants of cottongrass, grasses and sedges, heathers and wetland herbs at least frequent

		(ie not grazed).
Time to Target Condition	Attenuation basin (standing water)	1.2 – Up to 5 years required to create.
	Swales (acid/neutral flush)	1.2 – Up to 5 years required to create.
Difficulty of Creation	Attenuation basin (standing water)	1.5 – Medium difficulty assigned as default. There is no overriding justification to vary this.
	Swales (acid/neutral flush)	3 – High difficulty assigned as default. There is no overriding justification to vary this.

4.6 Hedgerow

Infill planting is proposed for the existing hedgerows and a new species-rich hedgerow is to be created along the northern boundary of the site.

Length	0.08m
Distinctiveness	6 – Species-rich hedgerow is assigned high distinctiveness as a default. There is no overriding justification to vary this.
Target Condition	3 - The hedgerow has been assessed using criteria for FO2 – High environmental value boundaries. High condition is assigned as the habitat is anticipated to pass all three criteria: • The hedgerow is a minimum of 2m in height; • The hedgerow is a minimum of 1.5m in width; and Fewer than 10% of the length is occupied by gaps.
Time to Target Condition	1.4 – Up to 10 years required to create.
Difficulty of Creation	1 – Low difficulty assigned as default. There is no overriding justification to vary this.

5.0 Assessment

Habitats

						Habitat Biodiversity Value					
Existing habitats on site		**Habitat distinctiveness**		**Habitat condition**		**Habitats to be retained with no change within development**		**Habitats to be retained and enhanced within development**		**Habitats to be lost within development**	
Habitat description	*Habitat area (ha)*	*Distinctiveness*	*Score*	*Condition*	*Score*	*Area (ha)*	*Existing value*	*Area (ha)*	*Existing value*	*Area (ha)*	*Existing value*
			A		B	C	A x B x C = D	E	A x B x E = F	G	A x B x G = H
Arable	12.57	Low	2	Poor	1					12.57	25.14
Semi-improved neutral grassland	0.07	Medium	4	Poor	1					0.07	0.28
Total	12.64									12.64	25.42
										Site Habitat Biodiversity Value	**25.42**
										Habitat Impact Score	**25.42**

Proposed habitats on site		**Target habitats distinctiveness**		**Target habitat condition**		**Time till target condition**		**Difficulty of creation / restoration**		***Habitat biodiversity value***
Habitat description	*Area (ha)*	*Distinctiveness*	*Score*	*Condition*	*Score*	*Time (years)*	*Score*	*Difficulty*	*Score*	
Habitat Creation	N		O		P		Q		R	(N x O x P) / Q / R
Improved grassland	6.31	Low	2	Good	3	10 years	1.4	Low	1	27.04
Built Environment: Buildings/hardstanding	3.50	none	0	Poor	1	5 years	1.2	Low	1	0.00
Built Environment: Gardens (lawn and planting)	1.81	Low	2	Poor	1	5 years	1.2	Low	1	3.02
Wetland: Standing water	0.48	High	6	Moderate	2	5 years	1.2	Medium	1.5	3.20
Wetland: Acid/neutral flush	0.04	High	6	Poor	1	5 years	1.2	High	3	0.07
Semi-improved neutral grassland	0.50	Medium	4	Moderate	2	5 years	1.2	Medium	1.5	2.22
Total	12.64									35.55
									Habitat Mitigation Score	**35.55**

Linear Habitats

Existing habitats on site		Habitat distinctiveness		Habitat condition		Habitat Biodiversity Value: Habitats to be retained with no change within development		Habitats to be retained and enhanced within development		Habitats to be lost within development	
Habitat description	*Feature length(km)*	*Distinctiveness*	*Score*	*Condition*	*Score*	*Length (km)*	*Existing value*	*Length (km)*	*Existing value*	*Length (km)*	*Existing value*
			A		B	C	A x B x C = D	E	A x B x E = F	G	A x B x G = H
Defunct hedge	0.42	Low	2	Poor	1			0.42	0.84	12.57	25.14
Hedge with trees	1.32	Medium-high	5	Moderate	2			1.315	13.15	0.005	0.05
Total	1.74							1.735	13.99	0.005	0.05
										Site Linear Biodiversity Value	**14.04**
										Linear Impact Score	**0.05**

Proposed habitats on site		Target habitats distinctiveness		Target habitat condition			Time till target condition		Difficulty of creation / restoration		***Habitat biodiversity value***
Habitat description	*Length (km)*	*Distinctiveness*	*Score*	*Condition*	*Score*		*Time (years)*	*Score*	*Difficulty*	*Score*	
Linear Creation	N		O		P			Q		R	(N x O x P) / Q / R
Species rich hedgerow	0.08	High	6	Good	3		10 years	1.4	Low	1	1.07
Total	0.08										1.07
Linear Enhancement					P	Existing value S(=F)		Q			((N x O x P)-S / Q / R
Intact hedge	0.42	Medium	4	Moderate	2	0.84	10 years	1.4	Low	1	1.80
Hedge with trees	1.315	Medium-high	6	Moderate	2	13.15	10 years	1.4	Low	1	0.00
Total	1.74										1.80
										Linear Mitigation Score	**2.87**

6.0 Summary

Habitat

The pre-development habitats have been calculated to have a biodiversity value of **25.42** units, of which **25.42** will be lost as a result of the proposed development.

Proposed habitat mitigation has been calculated to have a biodiversity value of **35.55** units, resulting in a gain of **10.13** units or **40%**.

Linear

The pre-development linear features have been calculated to have a biodiversity value of **14.04** units, of which **0.05** will be lost as a result of the proposed development.

Proposed habitat mitigation has been calculated to have a biodiversity value of **2.87** units, resulting in a gain of **2.82** units or **20%**.

Net Gain

Based on these calculations it is predicted that the proposed development will achieve a **net gain** for biodiversity.

7.0 References

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