



Sinah Lane, Hayling Island

Biodiversity Net Gain Assessment



Barratt Homes

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2	17.11.2020	Ben Cooke	David West	Update for resubmission of the proposed scheme
3	03.02.2020	Ben Cooke	David West	Update to take into account latest guidance and to remove winter bird mitigation area.

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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. The assessment has been updated to utilise the Biodiversity Metric 2.0 (Natural England 2019a) which has been published since the original issue which primarily used the Warwickshire, Coventry and Solihul Biodiversity Impact Assessment Calculator.

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.

For the purposes of this assessment, the Wader and Brent Geese refuge is excluded to avoid double-counting (this provides mitigation for loss of supporting habitat for SPA qualifying birds). The SuDS and detention basin are included as they are an integral part of the scheme.



2.0 Methodology

The assessment has been made using The Biodiversity Metric 2.0 (Natural England, 2019a), in conjunction with the user guide (Natural England, 2019b).

Habitat Assessment

Habitats on site pre-development that will be removed and those to be retained, created or enhanced post-development were identified in accordance with the categories specified for a Phase 1 habitat survey (Joint Nature Conservation Committee, 2010). These were then converted to categories specified for UKHab (UK Habitat Classification Working Group, undated) using guidance within the Biodiversity Metric 2.0.

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). These scores are:

- Very High (Section 41 Priority Habitats that are threatened, internationally scarce and require conservation action)
- High: 6 (Section 41 Priority Habitats)
- Medium: 4 (Semi-natural habitats not classified as Priority Habitat)
- Low: 2 (Habitat of low biodiversity value)
- Very low: 0 (Little or no biodiversity value)

Condition

The condition of each habitat is assessed using the methods set out in The Biodiversity Metric 2.0: Auditing and accounting for biodiversity value: technical supplement (Natural England, 2019b).

This approach determines how many of the condition criteria descriptions for each habitat type are met or are not met. For each habitat type, thresholds then apply for the numbers of condition criteria that must be met. For instance, if two or more of the 10 condition criteria for Ditches are not met, then the condition should be assigned as Moderate.

This is used as a guide but may be superseded where appropriate by other evidence and best ecological judgement. Where this is the case, additional information is provided in the tables within the condition assessment.

Conditions and associated scores in the 2.0 Metric are as follows:



- Good: 3
- Fairly Good: 2.5
- Moderate: 2
- Fairly Poor: 1.5
- Poor: 1
- N/A – Agriculture: 1
- N/A – Other: 0

Fairly good and fairly poor condition assessments are relevant to Lakes only.

A number of lower distinctiveness habitats including cropland and urban habitats are assigned default values and do not require a detailed condition assessment. These are shown in the tables where they apply.

For linear features including Hedgerows and Lines of Trees, the condition assessment is simplified, whereby a threshold for achieving good, moderate and poor is weighted solely upon criteria met.

Conditions and criteria thresholds for Hedgerows are detailed in Table 1.

Table 1: Hedgerows condition assessment and weighting

Condition	Criteria Met	Score
Good	No more than 2 failures in total and no more than 1 in any functional group.	3
Moderate	No more than 4 failures in total and fails both attributes in a maximum of one functional group.	2
Poor	Fails a total of more than 4 attributes or both attributes in more than one functional group.	1

Conditions and criteria thresholds for Lines of Trees are detailed in Table 2.

Table 2: Line of Trees condition assessment and weighting

Condition	Criteria Met	Score
Good	Mature trees with continuous canopy • a 'mature tree' in this context is one that is at least 1/3 expected fully mature height • gaps make up <10% of total length and there are no canopy gaps >5 m	3
Moderate	Continuous canopy • trees < 1/3 expected fully mature height • gaps make up <10% of total length and there are no canopy gaps >5 m	2
Poor	Broken canopy • gaps make up >10% and / or gaps are >5 m in length.	1



Connectivity

Connectivity is included as a multiplier in the metric. However, at this stage in the development of the metric (Biodiversity Metric 2.0 is a beta version), the assessment for connectivity score applied to habitats is automated depending on the distinctiveness of the habitats recorded. This is stated in Section 2.17 of the technical supplement (Natural England, 2019b):

"...all High and Very High distinctiveness habitats is to be assigned a Medium connectivity multiplier; other habitats a low connectivity multiplier'.

Connectivity scores in the 2.0 Metric are as follows:

- Medium: 1.1
- Low: 1

Strategic Significance

The strategic significance of a site within the Biodiversity Metric 2.0 is based upon whether the location of the development, and or off-site work, has been identified locally as significant for nature. This is determined by information set out in local plans or policies.

Strategic significance scores in the 2.0 Metric are as follows:

- High strategic significance:
High potential & within area formally identified in local policy 1.15
- Medium strategic significance:
Good potential but not in area defined in local policy 1.1
- Low Strategic Significance:
Low potential and not in area defined in local policy 1

All habitats have been assigned high strategic significance as the site is located within the Solent Wader and Brent Goose network.

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 2.0 metric. These may be altered if informed by knowledge of the site and proposed management prescriptions.



3.0 Results

The data used to inform the condition assessments for the habitats pre- and post-development and calculations from the DEFRA 2.0 Metric are provided in Appendix B to Appendix F.

The headline results are provided in Table 4. This shows that with the implementation of the proposed layout and achievement of the condition of the proposed habitats (Appendix C, E and F), the development proposals will achieve an increase in habitat units of 2.20% and an increase in hedgerow units of 22.40%. This is further supplemented by the qualitative gains proposed as part of the Ecological Mitigation and Management Plan (WYG, 2020b).

Table 3: Headline results

Project Stage	Habitat Type	Units
On-site baseline	Habitat units	14.79
	Hedgerow units	6.83
	River units	0.00
On site post-intervention (Including habitat retention, creation, enhancement & succession)	Habitat units	15.11
	Hedgerow units	8.36
	River units	0.00
Off-site baseline	Habitat units	0.00
	Hedgerow units	0.00
	River units	0.00
Off-site post -intervention (Including habitat retention, creation, enhancement & succession)	Habitat units	0.00
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention / creation)	Habitat units	0.33
	Hedgerow units	1.53
	River units	0.00
Total net % change (including all on site & off-site habitat creation + retained habitats)	Habitat units	2.20%
	Hedgerow units	22.40%
	River units	0.00



4.0 References

- JNCC, (2010), Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit, JNCC: Peterborough.
- Natural England, (2019a), *The Biodiversity Metric 2.0 - Calculation Tool - Beta Test December 2019 Update*, [online] Available at <http://publications.naturalengland.org.uk/file/5985083561607168>, Accessed November 2020.
- Natural England, (2019b), *The Biodiversity Metric 2.0 auditing and accounting for biodiversity USER GUIDE Beta Version*, First published 29th July 2019, [online] Available at <http://publications.naturalengland.org.uk/file/5366205450027008> Accessed November 2020.
- Treweek et al., (2010). Biodiversity offsets: possible methods for measuring biodiversity losses and gains for use in the UK. CIEEM In Practice.
- UK Habitat Classification Working Group, (undated), *Habitat Definitions*, [online] Available at <http://ecountability.co.uk/wp-content/uploads/2018/05/UK-Habitat-Classification-Habitat-Definitions-V1.0-May-2018-1.pdf>, Accessed November 2020.
- WYG (2020a). Sinah Lane, Hayling Island Extended Phase 1 Habitat Survey.
- WYG (2020b). Sinah Lane, Hayling Island Ecological Mitigation and Management Plan.



Appendix A: Report Conditions

This Report has been prepared using reasonable skill and care for the sole benefit of Barratt Homes ("the Client") for the proposed uses stated in the report by WYG Environment Planning Transport Limited ("WYG"). WYG exclude all liability for any other uses and to any other party. The report must not be relied on or reproduced in whole or in part by any other party without the copyright holder's permission.

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The whole of the report must be read as other sections of the report may contain information which puts into context the findings in any executive summary.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. WYG accept no liability for issues with performance arising from such factors.



Appendix B: A-1 Site Habitat Baseline

Table 4: Cropland – Cereal crops (Poor Condition) 1

Habitat condition:			
N/A - Agricultural.			
Distinctiveness:			
Low: Default score			
No.	Criteria description	Pre-development criterion met	
		Yes	No
No condition assessment required.			
		Total	N/A

Table 5: Grassland – Other Neutral Grassland

Habitat condition:			
Poor – semi-improved grassland, most of the condition criteria being failed.			
Distinctiveness:			
Medium: Default score			
No.	Criteria description	Pre-development criterion met	
		Yes	No
1	The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site.		X
2	The appearance and composition of the vegetation on site should very closely match the characteristics for the specific Priority Habitat [i.e. as described by either the Phase 1 Habitat Classification or the UK Habitat Classification], with species typical of the habitat representing a significant majority of the vegetation.		X
3	Wildflowers, sedges and indicator species for the specific Priority grassland habitat are very clearly and easily visible throughout the sward and occur at high densities in high frequency. See relevant Habitat Classification for details of indicator species for specific habitat.		X
4	Undesirable species and physical damage is below 5% cover.		X



5	Cover of bare ground greater than 10% (including localised areas, for example, rabbit warrens).	X	
6	Cover of bracken less than 20% and cover of scrub and bramble less than 5%.	X	
Total		3	4

[illegible]



Appendix C: A-2 Site Habitat Creation

Table 6: Urban – Developed land; sealed surface

Habitat condition:			
N/A – Other			
Distinctiveness:			
Very Low: Default score			
No.	Criteria description	Pre-development criterion met	
		Yes	No
No condition assessment required.			
		Total	N/A

Table 7: Urban – Vegetated garden

Habitat condition:			
Poor: Default value			
Distinctiveness:			
Low: Default score			
No.	Criteria description	Pre-development criterion met	
		Yes	No
No condition assessment required.			
		Total	N/A

Table 8: Lakes – Ponds (Non- Priority Habitat)

Habitat condition:			
Moderate – only moderate water quality expected and artificial connections to other waterbodies which do not deliver poor quality water.			
Distinctiveness:			
High: Default score			



No.	Criteria description	Pre-development criterion met (Pond No.)	
		Yes	No
1	Are of good water quality, with clear water (substrate can be seen) and no obvious sign of pollution in the water body.		X
2	The water body should have semi natural riparian land for at least 10 m from the pond edge.	X	
3	Non-woodland ponds should be dominated by plants, be they submerged or floating (note dominance of duckweed is a sign of eutrophication).	X	
4	Non-woodland ponds [i.e. that have always been open] should not be shaded more than 50%.	X	
5	Many ponds will be fishless, those which naturally contain fish should not be stocked and should contain a native fish assemblage.	N/A	
6	Ponds should not be artificially connected to other water bodies, e.g. ditches.		X
7	Pond water levels should be able to fluctuate naturally throughout the year.	X	
8	Non-native species should be absent.	X	
9	Less than 10% of the pond should be covered with duckweed or filamentous algae.	X	
Total		6	2

Table 9: Grassland – Other Neutral Grassland

Habitat condition:			
Moderate – semi-improved grassland, at least one of the condition criteria being failed.			
Distinctiveness:			
Medium: Default score			
No.	Criteria description	Pre-development criterion met	
		Yes	No
1	The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site.	X	
2	The appearance and composition of the vegetation on site should very closely match the characteristics for the specific Priority Habitat [i.e. as described by either the Phase 1 Habitat Classification or the UK Habitat Classification], with species typical of the habitat representing a significant majority of the vegetation.		X



3	Wildflowers, sedges and indicator species for the specific Priority grassland habitat are very clearly and easily visible throughout the sward and occur at high densities in high frequency. See relevant Habitat Classification for details of indicator species for specific habitat.		X
4	Undesirable species and physical damage is below 5% cover.	X	
5	Cover of bare ground greater than 10% (including localised areas, for example, rabbit warrens).	X	
6	Cover of bracken less than 20% and cover of scrub and bramble less than 5%.	X	
Total		4	2

Post development/ post intervention habitats																
Proposed habitat	Area (hectares)	Distinctiveness	Score	Condition	Score	Ecological connectivity			Strategic significance			Temporal multiplier		Difficulty multipliers		Habitat units delivered
						Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier	Time to target condition/years	Time to target multiplier	Difficulty of creation category	Difficulty of creation multiplier	
Urban - Developed land; sealed surface	3.14	V.Low	0	N/A - Other	0	N/A	Assessment not appropriate	1	Within area formally identified in local strategy	High strategic significance	1.15	0	1.000	Low	1	0.00
Urban - Vegetated garden	1.93	Low	2	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	1	0.965	Low	1	4.28
Lakes - Ponds (Non- Priority Habitat)	0.35	High	6	Moderate	2	Medium	Moderately connected habitat	1.1	Within area formally identified in local strategy	High strategic significance	1.15	3	0.899	Low	1	4.77
Grassland - Other neutral grassland	0.94	Medium	4	Moderate	2	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	10	0.700	Low	1	6.06
Totals	6.36														Total Units	15.11



Appendix D: B-1 Site Hedge Baseline

Table 10: Hedgerow with trees

Habitat condition:			
Poor - All			
Distinctiveness:			
Low: Fails 4 or more criteria or both in a functional group.			
No.	Condition description	Pre-development condition met (Hedgerow No.)	
		Yes	No
A1	>1.5 m average along length	X	
A2	>1.5 m average along length		X
B1	Gap between ground and base of canopy <0.5 m for >90% of length (unless 'line of trees')	X	
B2	- Gaps make up <10% of total length - No canopy gaps >5 m		X
C1	>1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length measured from outer edge of hedgerow, and is present on one side of the hedge (at least)		X
C2	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground		X
D1	>90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species		X
D2	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities	X	

Table 11: Hedgerow with trees

Habitat condition:			
Good - All			
Distinctiveness:			
Low: Fails 4 or more criteria or both in a functional group.			
No.	Condition description	Pre-development condition met (Hedgerow No.)	
		Yes	No
A1	>1.5 m average along length	X	



A2	>1.5 m average along length	X	
B1	Gap between ground and base of canopy <0.5 m for >90% of length (unless 'line of trees')	X	
B2	- Gaps make up <10% of total length - No canopy gaps >5 m	X	
C1	>1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length measured from outer edge of hedgerow, and is present on one side of the hedge (at least)	X	
C2	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground	X	
D1	>90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species	X	
D2	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities	X	

	UK Habitats - existing habitats				Habitat distinctiveness		Habitat condition		Ecological connectivity			Strategic significance			Ecological baseline	Retention category biodiversity value					
Baseline ref	Hedge number	Hedgerow type	length KM	Distinctiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier	Suggested action to address habitat losses	Total hedgerow units	Length retained	Length enhanced	Units retained	Units enhanced	Length lost	Units lost
1	HR3; HR4	Native Hedgerow with trees	0.42	Low	2	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness band or better	0.966		0.42	0	0.966	0	0
2	HR1; HR2	Native Hedgerow with trees	0.85	Low	2	Good	3	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness band or better	5.865	0.85		5.865	0	0	0
3																					
4																					
5																					
6																					
7																					
		Total Site length/KM	1.27											Total Site baseline	6.83	0.85	0.42	5.87	0.97	0.00	0.00



Appendix E: B-2 Site Hedge Creation

Table 12: Native species rich hedgerow

Habitat condition:			
Good – All			
Distinctiveness:			
Medium: Default score			
No.	Condition description	Pre-development condition met	
		Yes	No
A1	>1.5 m average along length	X	
A2	>1.5 m average along length	X	
B1	Gap between ground and base of canopy <0.5 m for >90% of length (unless 'line of trees')	X	
B2	- Gaps make up <10% of total length - No canopy gaps >5 m	X	
C1	>1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length measured from outer edge of hedgerow, and is present on one side of the hedge (at least)	X	
C2	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground	X	
D1	>90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species	X	
D2	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities	X	
Total		8	0

								Spatial quality						Temporal multiplier		Difficulty of creation multiplier	Hedge units delivered
		Proposed habitats		Habitat distinctiveness		Habitat condition		Ecological connectivity			Strategic significance						
Baseline ref	New hedge number	Habitat type	Length km	Distinctiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier	Time to target condition/years	Time to target multiplier		
1		Native Species Rich Hedgerow	0.09	Medium	4	Good	3	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	10	0.700	0.67	0.58
2																	
3																	
4																	
5																	
6																	
		Creation Length/KM		0.09													0.58



Appendix F: B-3 Site Hedge Enhancement

Table 13: Hedgerow with trees

Habitat condition:			
Good – All			
Distinctiveness:			
Low: Default score			
No.	Condition description	Pre-development condition met	
		Yes	No
A1	>1.5 m average along length	X	
A2	>1.5 m average along length	X	
B1	Gap between ground and base of canopy <0.5 m for >90% of length (unless 'line of trees')	X	
B2	- Gaps make up <10% of total length - No canopy gaps >5 m	X	
C1	>1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length measured from outer edge of hedgerow, and is present on one side of the hedge (at least)	X	
C2	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground	X	
D1	>90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species	X	
D2	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities	X	
Total		8	0

		Post development/ post intervention habitats										Hedge units delivered
Baseline Habitats		Proposed	Change in distinctiveness and condition		Length KM	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Temporal multiplier	Difficulty Multipliers	
Baseline ref	Baseline habitat		Distinctiveness movement	Condition movement					Strategic significance	Time to target condition/years	Difficulty of enhancement Category	
1	Native Hedgerow with trees	Native Hedgerow with trees	Low - Low	Poor - Good	0.42	Low	Good	Low	Within area formally identified in local strategy	20	Low	1.91
				Total site length	0.42							1.91