

Biodiversity Impact Assessment

Project: Land at Yarnton

Technical Briefing Note 01: Biodiversity Impact Assessment Using Defra Biodiversity Metric 2.0 Calculation Tool

Date: 2nd October 2020

1. Introduction

- 1.1. Aspect Ecology was commissioned by Merton College, Oxford to undertake a Biodiversity Impact Assessment (BIA) for the proposed development of land at Yarnton, Oxfordshire, to provide up to 540 dwellings with associated access, elderly care provision, landscaping and green open space, hereafter referred to as 'the site'.
- 1.2. There is currently no standard approach to biodiversity metrics across the UK, with only some local authorities requiring demonstrable net gain through the use of metrics, and a variety of different metric systems being used. It is understood that Cherwell District Council do not currently have a metric system in place. It is considered that the most appropriate metric to use for the site is therefore the Defra Biodiversity Metric 2.0 Calculation Tool. The Defra 2.0 tool is referenced in the Environment Bill and sets the new standard for metrics, employing a more sophisticated approach than other local metrics to date (e.g. Warwickshire), with many more parameters included. Defra 2.0 includes a larger range of habitat types; more guidance on difficulty and time to target condition for each habitat type; is prepopulated with distinctiveness, time to target condition and difficulty scores; includes new distinctiveness scores (0-8) to include very high and very low; includes new condition scores (0,1,1.5,2,2.5,3); includes two new elements 'Connectivity' and 'Strategic Significance'; includes 'accelerated succession'; includes off-site habitat options and takes account of proximity to the impact site.
- 1.3. This technical briefing note provides a summary of the results of the Defra Biodiversity Metric 2.0 Calculation Tool conducted for the site and justifies the choice of habitat definitions, distinctiveness, target habitat condition and ecological connectivity where appropriate.

2. Approach and Methodology

- 2.1. A BIA calculation tool requires information on the site pre and post development to determine any change in 'biodiversity units' for 'Habitat units' and 'Hedgerow units' and 'River units'.
- 2.2. Pre development information used to inform the DEFRA 2.0 Biodiversity Impact Calculation Tool has been based on the results of the Phase 1 habitat survey conducted by Aspect Ecology the results of which are set out within Aspect Ecology's Ecological Baseline, dated September 2020 (see Pre-development Metric Habitat Plan at Appendix 5436/1). Post development information has been taken from the Illustrative Master Plan (see Post-development Metric Habitat Plan at Appendix 5436/2). This enables the change in 'Biodiversity Units' for habitats both pre and post-development to be measured and provides indicative values and percentage



- of loss / gain of 'Total Biodiversity Units' to quantify the ecological impact of the proposed development.
- 2.3. The BIA Calculator has been completed following the guidance set out within 'The Biodiversity Metric 2.0 (Beta version) auditing and accounting for biodiversity user guide' published 29 July 2019 and 'The Biodiversity Metric 2.0 (Beta version) auditing and accounting for biodiversity technical supplement' published 29 July 2019.

3. Biodiversity Impact Assessment

3.1. The following section provides a systematic review of the input information, referencing, justifying and discussing the habitat categories and their condition chosen from the drop-down menus of the BIA calculator. Worksheets from the completed DEFRA 2.0 Biodiversity Impact Assessment Calculation Tool are provided at Appendix 5436/3.

A-1 Site Habitat Baseline (Pre-development)

- 3.2. **'Cropland Cereal Crops' Distinctiveness 'Low'**: The arable land within the site has been attributed to this category as the survey work undertaken identified the arable land to be seeded with cereal crops at the time of survey. In accordance with the User Guide and Technical Supplement, this habitat type does not require an assessment of its condition or connectivity and is instead allocated a fixed score of 1 for both categories. In terms of strategic significance `area/compensation not in local strategy/ no local strategy` has been selected as this habitat type is not a Local BAP habitat.
- 3.3. 'Grassland Modified Grassland' Distinctiveness 'Low': The improved grassland within the site is dominated by a low diversity of common and widespread species typically associated with improved grassland, such as Perennial Rye-grass Lolium perenne. The grassland is dominated by Perennial Rye-grass and cover of undesirable species is >15%, therefore the grassland is considered to be in a 'poor' condition, whilst a connectivity of `low` has been selected to accord with the User Guide in respect of low distinctiveness habitats. In terms of strategic significance `area/compensation not in local strategy/ no local strategy` has been selected as this habitat type is not a Local BAP habitat.
- 3.4. 'Grassland Other Neutral Grassland' Distinctiveness 'Medium': The semi-improved grassland within the site has been included under this category. The areas of semi-improved grassland are dominated by coarse grass species and a number of injurious weeds are present within the sward. Whilst the grassland does contain a small number of indicator species of good quality grassland, these are localised and not sufficiently abundant for the grassland to qualify as a Priority Habitat. Accordingly, a 'moderate' condition has been assigned to this category, whilst connectivity of 'low' has been selected to accord with the User Guide in respect of medium distinctiveness habitats. In terms of strategic significance 'area/compensation not in local strategy/ no local strategy' has been selected as this habitat type is not a Local BAP habitat.
- 3.5. 'Heathland and Shrub Mixed Scrub' Distinctiveness 'Medium': The dense and scattered scrub at the site comprises a limited diversity of species that are both common and widespread in the local and national context. This habitat does not meet the 'high environmental value' categorisation defined in the Farm Environment Plan (FEP) Manual and overall the scrub within the site is considered to be in 'moderate' condition. Connectivity of 'low' has been selected to accord with the User Guide in respect of medium distinctiveness habitats. In terms of strategic significance 'area/compensation not in local strategy/ no local strategy' has been selected as this habitat type is not a Local BAP habitat.



- 3.6. 'Woodland and Forest Other Woodland; Broadleaved' Distinctiveness 'Medium': The woodland along Dolton Lane in the north of the site has been included under this category. The woodland meets approximately half of the woodland condition assessment criteria within the Biodiversity Metric 2.0 Technical Supplement, and therefore 'moderate' condition has been selected. Connectivity of 'low' has been selected to accord with the User Guide in respect of medium distinctiveness habitats. In terms of strategic significance 'within area formally identified within local strategy' has been selected as woodland is a Local BAP habitat.
- 3.7. **'Lakes Ponds (Non-Priority Habitat) Distinctiveness 'High':** The ponds within the site are ephemeral in nature, and accordingly are not considered to form important ecological features. The ponds fail to meet a number of the pond condition assessment criteria within the Biodiversity Metric 2.0 Technical Supplement, such that a condition score of 'poor' has been allocated. Connectivity of 'medium' has been selected to accord with the User Guide in respect of high distinctiveness habitats. In terms of strategic significance 'within area formally identified within local strategy' has been selected as the ponds are a Local BAP habitat.

A-2 Site Habitat Creation (Post-development)

- 3.8. 'Woodland and Forest Other Woodland: Broadleaved Distinctiveness 'Medium': A new community woodland will be created in the north of the site. The 'good' condition assigned to the community woodland is based on the woodland planting comprising a diverse range of native tree and shrub species, with a diverse seeded ground flora, and on the basis that the habitat will receive on-going ecologically sensitive management as part of the landscape strategy. Subject to this management, it is considered that the woodland should achieve 'good' condition within 32+ years. Connectivity of 'low' has been selected to accord with the User Guide in respect of medium distinctiveness habitats. In terms of strategic significance 'within area formally identified within local strategy' has been selected as woodland is a Local BAP habitat.
- 3.9. 'Woodland and Forest Other Woodland: Broadleaved Distinctiveness 'Medium': Pockets of new native woodland planting will be created throughout the site along the hedgerows and boundaries of the development. The 'good' condition is based on the woodland pocket planting comprising diverse native tree and shrub planting, and on the basis that the habitat will receive on-going ecological sensitive management as part of the landscape strategy. Subject to this management, it is considered that the woodland should achieve 'good condition within 32+ years. Connectivity of 'low' has been selected to accord with the User Guide in respect of medium distinctiveness habitats. In terms of strategic significance 'within area formally identified within local strategy' has been selected as woodland is a Local BAP habitat.
- 3.10. 'Grassland Other Neutral Grassland' Distinctiveness 'Medium': This habitat includes new meadowland which will be created between the built development and retained arable land. The aim will be to increase floristic diversity through appropriate seeding and to manage the wildflower grassland based on ecological principles, which should enable the grassland to reach a 'good' condition within 15 years. Connectivity of `low` has been selected to accord with the User Guide in respect of medium distinctiveness habitats. In terms of strategic significance `area/compensation not in local strategy/ no local strategy` has been selected as this habitat type is not a Local BAP habitat.
- 3.11. 'Grassland Other Neutral Grassland' Distinctiveness 'Medium': This habitat includes new species-rich grassland which will be created at the boundaries of the development. The aim will be to manage the grassland based on ecological principles, which should enable the grassland to reach a 'moderate' condition within 10 years. Connectivity of 'low' has been



selected to accord with the User Guide in respect of medium distinctiveness habitats. In terms of strategic significance `area/compensation not in local strategy/ no local strategy` has been selected as this habitat type is not a Local BAP habitat.

- 3.12. 'Urban Sustainable urban drainage feature' Distinctiveness 'Low': This habitat represents the SuDS features to be created throughout the site. Assuming all of the SuDS are seeded with a diverse native wet grassland seed mixture and management incorporates ecological principles for the benefit of biodiversity, it is considered achievable for this habitat to be of 'moderate' condition in three years. Connectivity of 'low' has been selected to accord with the User Guide in respect of low distinctiveness habitats. In terms of strategic significance 'area/compensation not in local strategy/ no local strategy' has been selected as this habitat type is not a Local BAP habitat.
- 3.13. 'Urban Suburban/ mosaic of developed/ natural surface' Distinctiveness 'Low': This habitat includes all new buildings, roads, parking, footpaths, gardens and Locally Equipped Areas of Play (LEAP). A condition score of 'moderate' has been assigned to this habitat and a connectivity of 'low' is selected. In terms of strategic significance 'area/compensation not in local strategy/ no local strategy' has been selected as this habitat type is not a Local BAP habitat.
- 3.14. `Urban Developed land; sealed surface' Distinctiveness `Very Low': This habitat includes the sports area for the school and it is assumed that the surface of this area will comprise hardstanding, AstroTurf or similar. Hardstanding is of inherently negligible ecological value and, in line with the assessment criteria within the Technical Supplement Document, the condition assessment is not applicable and a score of '0' is allocated, with a connectivity of `low` selected. In terms of strategic significance `area/compensation not in local strategy/ no local strategy` is considered appropriate.

A-3 Habitat Enhancement (Post-development)

- 3.15. 'Grassland Other neutral grassland' Condition Change 'Low Distinctiveness Habitat Good': This habitat represents the existing improved grassland which will be retained and enhanced through the introduction of additional wildflower species and by bringing the area into ecologically sensitive ongoing management practices. It is calculated that a 'good' condition can be achieved within 15 years. The habitat type is auto-generated a 'medium' distinctiveness score within the Defra 2.0 metric, according the guidance set out within the Technical Supplement Document, a low connectivity score is therefore appropriate. The habitat falls within an 'area/compensation not in local strategy/ no local strategy'.
- 3.16. 'Grassland Other neutral grassland' Condition Change 'Moderate Good': This habitat represents existing semi-improved grassland which is currently under agricultural management. It is proposed that areas of the existing semi-improved grassland be retained and enhanced through seeding of additional wildflower species and bringing the grassland into an ecologically sensitive ongoing management practices. It is calculated that a 'good' condition can be achieved within 15 years. The habitat type is auto-generated a 'medium' distinctiveness score within the Defra 2.0 metric, according the guidance set out within the Technical Supplement Document, a low connectivity score is therefore appropriate. The habitat falls within an 'area/compensation not in local strategy/ no local strategy'.
- 3.17. 'Woodland and forest - Other woodland; broadleaved' Condition Change 'Moderate Good': This habitat represents the woodland along Dolton Lane. The woodland is to be retained in full and will be enhanced with additional new native planting, as appropriate, and subject to management based on ecological principles for the benefit of biodiversity. Where



necessary undesirable vegetation such as dense Bramble thickets may be removed to encourage new growth of native species. Future management will be completed in an ecologically sensitive manner. It is therefore considered that the woodland will achieve a 'good' condition within 15 years (as determined by the Defra metric). The habitat type is auto-generated a 'medium' distinctiveness score within the Defra 2.0 metric, according the guidance set out within the Technical Supplement Document, a low connectivity score is therefore appropriate. The habitat is considered to fall within local strategy such that it is of high strategic significance.

3.18. 'Lakes – Ponds (Non-Priority Habitat)' – Condition Change 'Poor - Moderate': This habitat represents the retained ponds which will be enhanced to provide constant areas of permanent standing water for aquatic species. New planting of native marginal aquatic species on the ponds banks will increase floristic diversity. The ponds will be subject to ecologically sensitive management to ensure that they remain of value to biodiversity. It is therefore considered that the ponds will achieve a moderate condition within two years (as determined by the Defra metric). The habitat type is auto-generated a 'high' distinctiveness score within the Defra 2.0 metric, according the guidance set out within the Technical Supplement Document, a medium connectivity score is therefore appropriate. The habitat is considered to fall within local strategy such that it is of high strategic significance.

4. Hedgerow Impact Assessment

B-1 Site Hedge Baseline (Pre-development)

4.1. 'Native Species Rich Hedgerow with Trees' – Distinctiveness 'Medium': This habitat refers to the species-rich hedgerows within the site which are well connected, have a number of associated hedgerow features, and contain a number of standard trees, including a number of trees which have been noted to have reached a veteran age class. Accordingly, the species-rich hedgerows with trees are considered to be in 'good' condition. Connectivity of 'low' has been selected to accord with the User Guide in respect of medium distinctiveness habitats. In terms of strategic significance 'within area formally identified within local strategy' has been selected as Hedgerows are a Local BAP habitat.

B-2 Hedge Creation (Post-development)

4.2. **Ref 1 'Native Species Rich Hedgerow with Trees'** This includes all new hedgerows within the scheme which will be planted with a diverse range of native tree/shrub species to ensure that the hedgerows are species-rich. The hedgerows will be managed in perpetuity of the scheme to ensure their value for biodiversity is maximised and it is considered that a condition of 'good' can be achieved for the hedgerows within 20 years. Connectivity of 'low' has been selected to accord with the User Guide in respect of medium distinctiveness habitats. In terms of strategic significance 'within area formally identified within local strategy' has been selected as Hedgerows are a local BAP habitat.

5. River Impact Assessment

5.1. There are no linear water features within the site and therefore this section of the metric is not applicable to the site.

6. Habitat Biodiversity Impact Calculator Assessment Score Results

6.1. In order to inform the proposals, a Biodiversity Impact Assessment calculation has been carried out. With the condition of the existing habitats currently present within the site and with the habitats to be created or enhanced as part of the proposals (as justified above)



inputted into the impact calculator, the Habitat Biodiversity Impact Score for the proposals is a **net gain of 41.41 units** which equates to a **16.84% net gain**. The Hedgerow Biodiversity Impact Score for the proposals is a **net gain of 6.32 units** which equates to a **9.42% net gain**. This has been demonstrated through the Defra Biodiversity Metric 2.0 Calculation Tool as shown at Appendix 5436/3, which displays the deliverable net gain at the site. TBC following updates to enhancement section of metric.

6.2. The beta testing version of the metric is recognised to substantially under value proposed woodland creation, and accordingly it is anticipated that a further increase in net gain would be reported under the final metric when this is released.

Appendices:

- Appendix 5436/1 Plan 5436/BIA1: Pre-development Metric Habitat Plan
- Appendix 5436/2 Plan 5436/BIA2: Post-development Metric Habitat Plan
- Appendix 5436/3 Completed BIA Calculator

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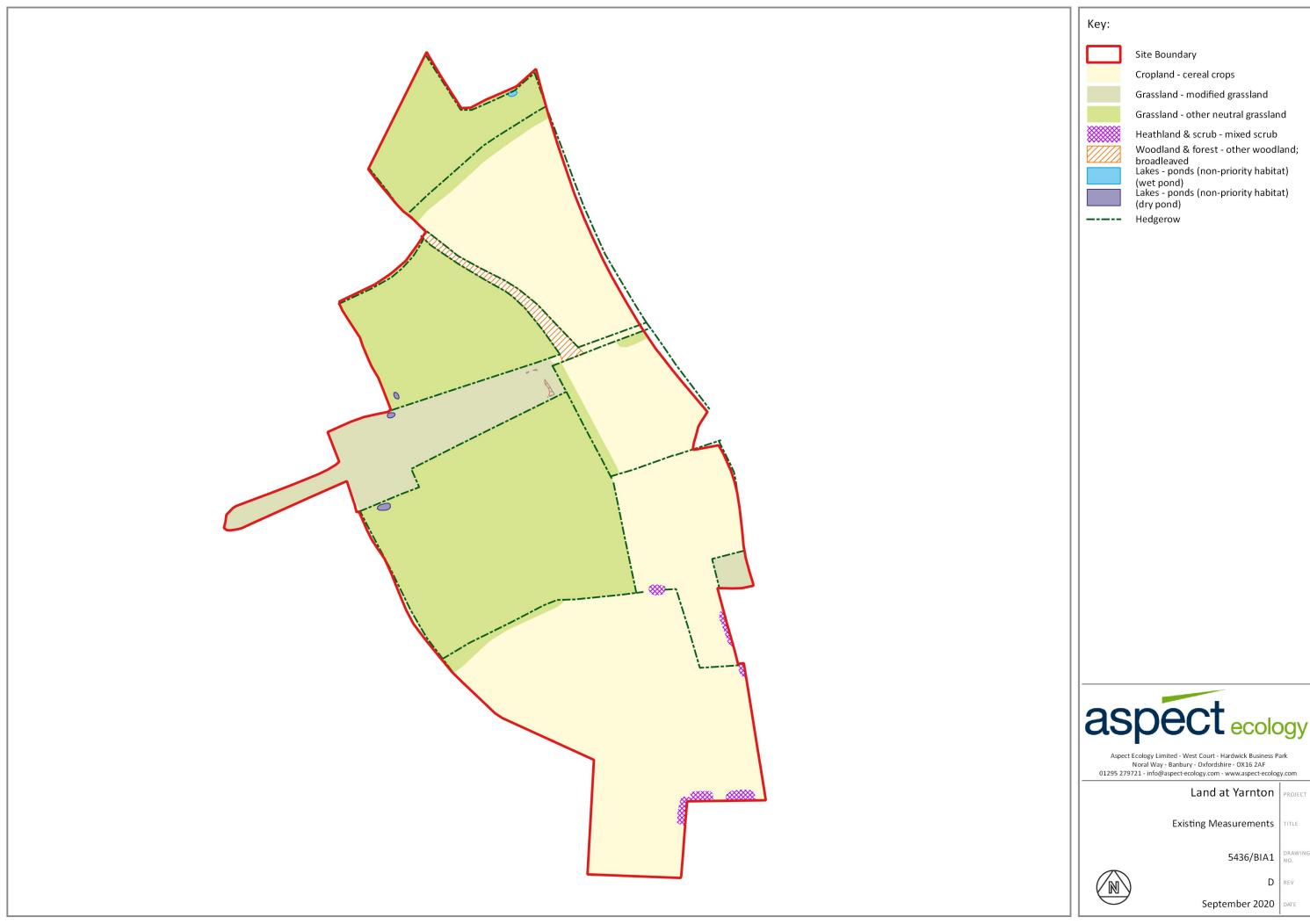
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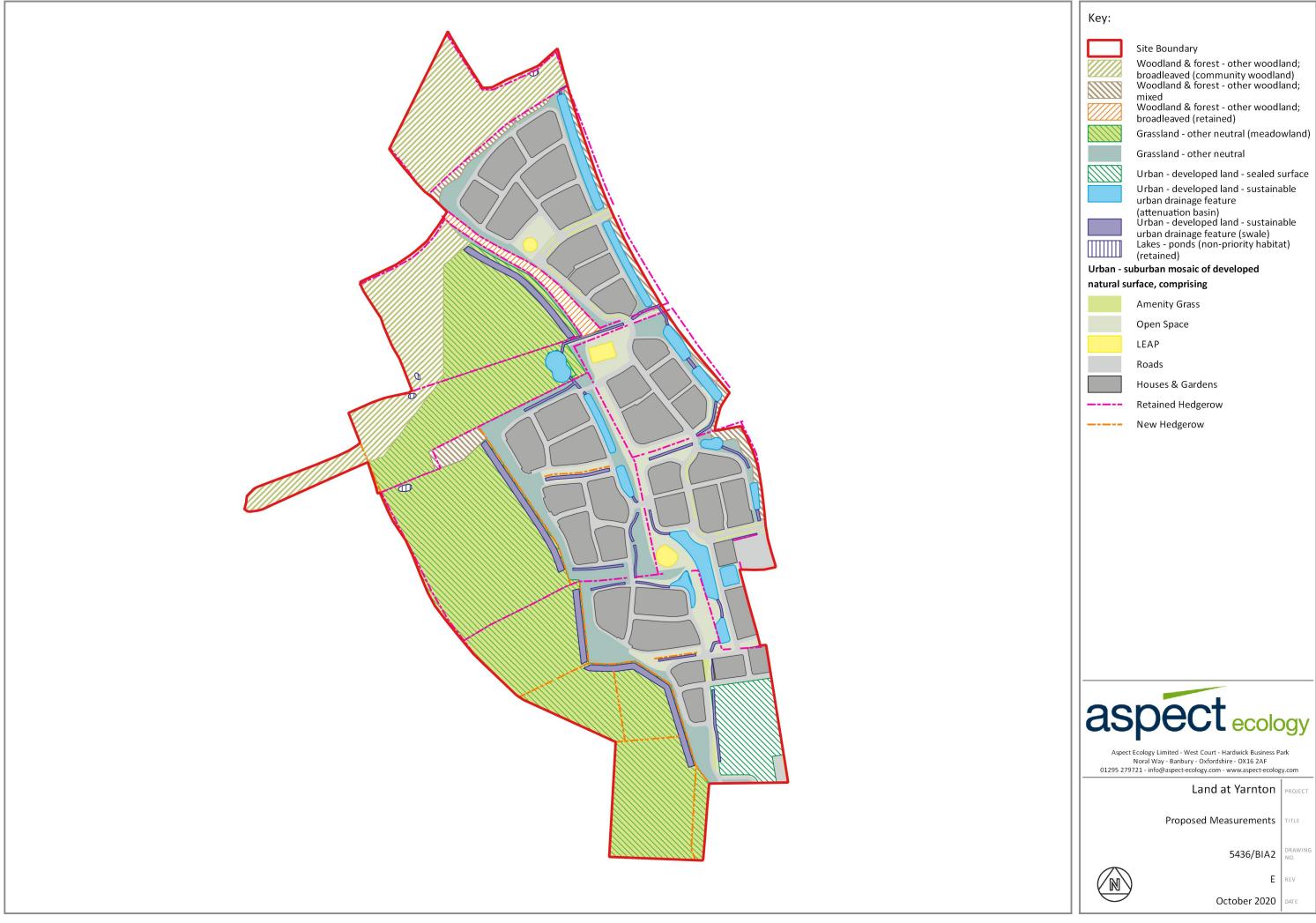
Plan 6179/BNGA1:

Pre-development Metric Habitat Plan



Plan 6179/BNGA2:

Post-development Metric Habitat Plan



Appendix 6179/1:

Completed BNGA Calculator



Land at Yarnton Ret		
Headline Results result	rs menu	
	Habitat units	245.84
On-site baseline	Hedgerow units	67.10
Off site baseline	River units	0.00
On-site post-intervention	Habitat units	287.24
(Including habitat retention, creation, enhancement &	Hedgerow units	73.42
succession)	River units	0.00
	Habitat units	0.00
Off-site baseline	Hedgerow units	0.00
	River units	0.00
	Mahitat with	0.00
Off-site post-intervention	Habitat units Hedgerow units	0.00
(Including habitat retention, creation, enhancement &	River units	0.00
(morading habitat recention, dreation, enhancement a	niver units	0.00
Total net unit change	Habitat units	41.41
	Hedgerow units	6.32
(including all on-site & off-site habitat retention/creation)	River units	0.00
	Habitat units	16.84%
Total net % change	Hedgerow units	9.42%
(including all on-site & off-site habitat creation + retained habitats)	River units	0.00%





Summary Figures

Net project biodiversity units	Habitat units	41.41
Net project blourversity units	Hedgerow units	6.32
(including all on-site & off-site habitat retention/creation)	River units	0.00

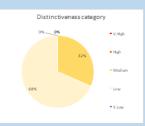
Total music at his division	:+ 0/	Habitat units	16.84%
Total project biodivers			9.42%
(including all On-site & Off-site Habitat Crea	ition • Retained Habitats)	River units	0.00%

On-site habitat retention and enhancement

On-site nabitat retention and enhancement											
	Habitats	Hedgerow	Rivers								
Total site area / length	54.92	4.86	0.00								
Total site units	245.84	67.10	0.00								
Area / length retained	0.00	4.62	0.00								
Units Retained	0.00	63.80	0.00								
Area / length enhanced	11.64	0.00	0.00								
Baseline units enhanced	77.33	0.00	0.00								
Area / length succession	0.00										
Units succession	0.00										
Area / Jength Jost	43.28	0.24	0.00								

168.51

Area lost by distinctiveness band									
Category	Area lost (hectares	Area lost (%)							
V.High	0								
High	0								
Medium	13.6586	32							
Low	29.6203	68							
V.Low	0								

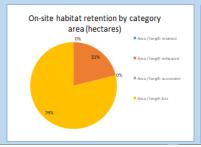


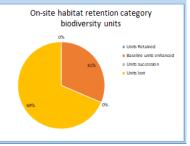


	Pre-deve	elopment	develop	ment on	Post Developme	ent off site	Total post deve	elopment	Change		
Habitat group	Existing area	Existing value	Proposed area	Proposed value	Proposed area	Offsite proposed value	Proposed area	Proposed value	Area change	Unit change	
Cropland	27.6	55.2	-27.6	-55.2	0.0	0.0	0.0	0.0	-27.6	-55.2	
Grassland	26.4	110.8	-4.4	67.5	21.9	178.3	0.0	0.0	-26.4	-110.8	
Heathland and shrub	0.3	2.5	-0.3	-2.5	0.0	0.0	0.0	0.0	-0.3	-2.5	
Rivers and lakes	0.0	0.0	0.0	0.7	0.0	0.7	0.0	0.0	0.0	0.0	
Sparsely vegetated land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Urban	0.0	0.0	24.0	77.2	24.0	77.2	0.0	0.0	0.0	0.0	
Wetland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Woodland and forest	0.6	0.0	8.3	31.0	8.9	31.0	0.0	0.0	-0.6	0.0	

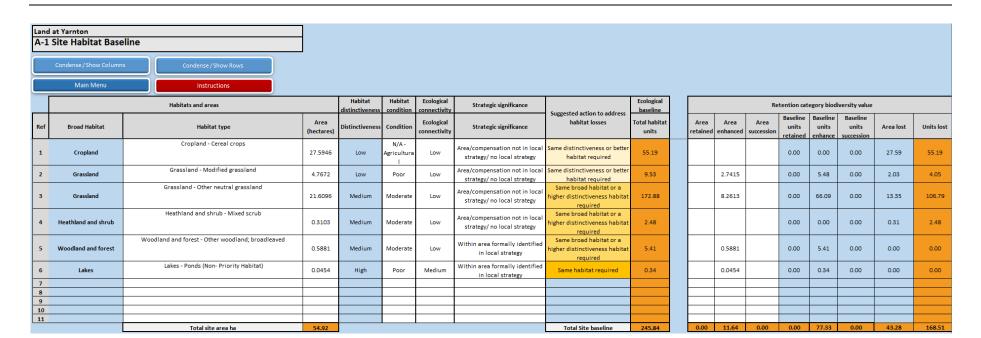














A-2 Site Habitat Creation

Condense/Show Columns

Condense/Show Rows

Main Menu

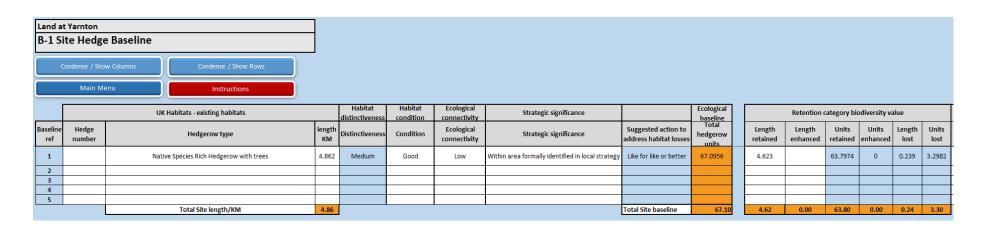
Instructions

			4					
		Post developm	ent/ post interv	rention habitats				
				Ecological	Strategic significance	Temporal multiplier	Difficulty	
Proposed habitat	Area (hectares)	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Time to target condition/years	Difficulty of creation category	Habitat units delivered
Woodland and forest - Other woodland; broadleaved	7.0454	Medium	Good	Low	Within area formally identified in local strategy	32+	Medium	20.83
Woodland and forest - Other woodland; mixed	1.2653	Medium	Good	Low	Within area formally identified in local strategy	32+	Medium	3.74
Grassland - Other neutral grassland	7.043	Medium	Good	Low	Area/compensation not in local strategy/ no local strategy	15	Low	49.53
Grassland - Other neutral grassland	3.886	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	10	Low	21.77
Urban - Sustainable urban drainage feature	3.0378	Low	Moderate	Low	Area/compensation not in local strategy/ no local strategy	3	Medium	7.32
Urban - Suburban/ mosaic of developed/ natural surface	19.4503	Low	Moderate	Low	Area/compensation not in local strategy/ no local strategy	3	Low	69.91
Urban - Developed land; sealed surface	1.5511	V.Low	N/A - Other	Low	Area/compensation not in local strategy/ no local strategy	0	Low	0.00
Totals	43.28							173.10



Land at	Yarnton											
A-3 Si	ite Habitat Enhancement											
Cond	dense/ShowColumns Condense/ShowRows											
	Main Menu Instructions			Post development/ post interv								
	Baseline habitats	Baseline habitats Change in distinctiveness and condition						Ecological connectivity	Strategic significance	Temporal multiplier	Difficulty multipliers	
Baseline ref	Baseline habitat	Proposed habitat (Pre-populated but can be overridden)	Distinctiveness change	Condition change	Area (hectares)	Distinctiveness	Condition	Ecological connectivity score	Strategic significance	Time to target condition/years	Difficulty of enhancement category	Habitat units delivered
2	Grassland - Modified grassland	Grassland - Other neutral grassland	Low - Medium	Lower Distinctiveness Habitat - Good	2.7415	Medium	Good	Low	Area/compensation not in local strategy/ no local strategy	15	Low	21.55
3	Grassland - Other neutral grassland	Grassland - Other neutral grassland	Medium - Medium	Moderate - Good	8.2613	Medium	Good	Low	Area/compensation not in local strategy/ no local strategy	15	Low	85.46
5	Woodland and forest - Other woodland; broadleaved	Woodland and forest - Other woodland; broadleaved	Medium - Medium	Moderate - Good	0.5881	Medium	Good	Low	Within area formally identified in local strategy	15	Medium	6.47
6	Lakes - Ponds (Non- Priority Habitat)	Lakes - Ponds (Non- Priority Habitat)	High - High	Poor - Moderate	0.0454	High	Moderate	Medium	Within area formally identified in local strategy	2	Low	0.67
				Total site area	11.64						Enhancement total	114.14





R_2 S	ita Uad	Land at Y	arnton							
		/Show Columns								
Main Menu Instructions								Multipliers		
=	_			•				Spatial quality	Temporal	
	Proposed habitats			Habitat distinctiveness	Habitat condition	Ecological connectivity	Strategic significance	multiplier	Hodge units	
Baseline ref	New hedge number		Habitat type	Length km	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Time to target condition/years	Hedge units - delivered
1		Native Species Rich Hedgerow with trees		2.122	Medium	Good	Low	Within area formally identified in local strategy	20	9.62
2										
3										
4										
5		-	anation Longth /VB4	2.42						0.62
		Cr	eation Length/KM	2.12						9.62