

Orgreave Park, Handsworth, Sheffield

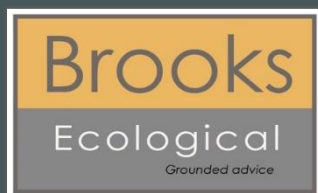


Biodiversity Net Gain Assessment (Baseline)

Report Ref. ER-7214-01

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The Norfolk Estate



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Introduction

1. Brooks Ecological Ltd was commissioned by The Norfolk Estate to carry out a Biodiversity Net Gain (BNG) Assessment of the proposed development Site at Orgreave Park, Handsworth, Sheffield.
2. The assessment applies to the parcel of land shown in Figure 1 opposite.
3. The assessment is informed in part by a Preliminary Ecological Appraisal Survey of the Site detailed in our report ER-5522-01. The initial preliminary ecological appraisal and biodiversity calculations were carried out in May 2021, using DEFRA's Biodiversity Metric version 2.0. Given the dated nature of the initial BNG assessment an updating Site visit was carried out during November 2023 and habitats assessed in line with the more recent Metric version, 4.0, as detailed herein.
4. Biodiversity Accounting metrics are used to quantify the value of a site in Biodiversity Units, which helps in assessing the ecological impacts of the proposed development on the Site.
5. Biodiversity Units can help to inform avoidance, or on-Site mitigation levels required; or as a last resort can translate to a direct monetary value where compensation (off-Site) is required.

Figure 1 Extent of BNG assessment (red line boundary).



Part 1

Pre-development baseline

Habitats Identified

6. Habitats present on-Site are outlined in Table 1, opposite. These are shown in relation to location and extent in Figure 2 overleaf.

Condition Assessment

7. Habitat condition has been assessed as part of the Preliminary Ecological Appraisal of the Site.
8. Information on condition assessments is provided in the Excel spreadsheet CA-7214-01 provided alongside this report.
9. Conditions may have changed, since the initial survey, to reflect changes in condition assessment criteria, changes in guidance or changes between habitat categories which may better reflect the value in the most recent metric version. Similarly fewer hedgerows have been recorded than previously, with some being grouped together though lengths on site remain similar.

Biodiversity Metric

10. Habitat types, conditions, and areas have been entered into the DEFRA Biodiversity Metric 4.0 Calculation Tool, alongside information on their strategic significance.
11. The DEFRA Biodiversity Metric 4.0 Calculation Tool is provided alongside this assessment, in Excel spreadsheet BM-7214-01, and may be useful in investigating design options for the Site.

Table 1 Habitat Types.

UK Habitats as per DEFRA Metric	Label Reference - see plan below	Distinctiveness	Condition assessment	See Condition Assessment sheet
Non Cereal Crops	-	Low	N/A	N/A
Arable Margins, Tussocky	-	Low	N/A	N/A
Mixed Scrub	-	Medium	Poor	20A
Bramble Scrub	-	Medium	N/A	N/A
Lowland Deciduous Woodland	LW1	High	Moderate	24A
Other woodland Broad leaved	OW1	Medium	Poor	24B
Ponds	-	High	Poor	18A
Individual Trees	Assessed as group	Medium	Moderate	9A
Developed Land; Sealed Surface	-	Very Low	N/A	N/A
Other Rivers and Streams	WC1	High	Moderate (Full MoRPH survey required)	N/A
Ditches	D1 & D2	Medium	Poor	4A
Line of Trees	LOT1	Low	Poor	16A
Hedgerows	H1 - H10	Low - Medium	Poor - Good	8A - B

Figure 2 The Site's habitats assigned to types used in the relevant DEFRA Biodiversity Metric. Labelled codes cross-reference to our condition assessment and description in the PEAR, which should be read in conjunction with this report.



Figure 3 Extract from the DEFRA Biodiversity Metric 4.0 Calculation Tool showing entered information and resultant Biodiversity Units¹.

	Existing area habitats			Distinctiveness s	Condition	Strategic significance	Required Action to Meet Trading Rules	Ecological baseline	
Ref	Broad Habitat	Habitat Type	Area (hectares)	Distinctiveness s	Condition	Strategic significance		Total habitat units	
1	Cropland	Arable field margins tussocky	0.8051	Medium	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	3.22	
2	Cropland	Non-cereal crops	53.9982	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	108.00	
3	Grassland	Other neutral grassland	0.4902	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	3.92	
4	Grassland	Other neutral grassland	0.1724	Medium	Moderate	Formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	1.59	
5	Heathland and shrub	Bramble scrub	0.2883	Medium	Condition Assessment N/A	Formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	1.33	
6	Heathland and shrub	Mixed scrub	0.0123	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	0.05	
7	Heathland and shrub	Mixed scrub	0.2869	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	1.15	
8	Heathland and shrub	Mixed scrub	0.4257	Medium	Poor	Formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	1.96	
9	Lakes	Ponds (priority habitat)	0.1149	High	Poor	Formally identified in local strategy	Same habitat required =	0.79	
10	Urban	Developed land; sealed surface	0.1152	V.Low	N/A – Other	Area/compensation not in local strategy/ no local strategy	Compensation Not Required	0.00	
11	Woodland and forest	Lowland mixed deciduous woodland	1.0272	High	Moderate	Formally identified in local strategy	Same habitat required =	14.18	
12	Woodland and forest	Other woodland; broadleaved	0.5235	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	2.09	
13	Woodland and forest	Other woodland; broadleaved	3.9074	Medium	Poor	Formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	17.97	
14	Individual trees	Rural tree	0.4827	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	3.86	
15	Individual trees	Rural tree	0.0765	Medium	Good	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	0.92	
16									
17									
18									
Total habitat area			62.73						161.02
Site Area (Excluding area of Individual trees and Green walls)			62.17						

¹ Our report provides an estimate of the Site's value in Biodiversity Units. This is based on thorough assessment at the time of survey and using the information available at this time. In this assessment we have used the latest version of DEFRA's Biodiversity Metric Tool, the UK Habitats Classification, and relevant guidance. This assessment requires subjective judgments to be made in terms of habitat type and condition and could be open to other interpretations. Reliance on the Unit Score, or conversion of this into a monetary value, would be at the developer's own risk. Where conversion to monetary value is required, it is always advisable to get calculations checked independently.

Existing hedgerow habitats				Distinctiveness	Condition	Strategic significance	Required Action to Meet Trading Rules	Ecological baseline
Baseline ref	Hedge number	Hedgerow type	Length (km)	Distinctiveness	Condition	Strategic significance	Required Action to Meet Trading Rules	Total hedgerow units
1	1	Line of trees - associated with bank or ditch	0.242	Low	Moderate	Formally identified in local strategy	Same distinctiveness band or better	1.11
2	1	Native hedgerow - associated with bank or ditch	0.346	Medium	Good	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	4.15
3	2	Native hedgerow	0.269	Low	Moderate	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	1.08
4	3	Native hedgerow	0.113	Low	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	0.23
5	4	Native hedgerow	0.066	Low	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	0.13
6	5	Native hedgerow	0.277	Low	Good	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	1.66
7	6	Native hedgerow - associated with bank or ditch	0.327	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	1.31
8	7	Native hedgerow - associated with bank or ditch	0.145	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	0.58
9	8	Native hedgerow - associated with bank or ditch	0.15	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	0.60
10	9	Native hedgerow - associated with bank or ditch	0.176	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	0.70
11	10	Native hedgerow	0.048	Low	Moderate	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	0.13
12	11	Native hedgerow	0.07	Low	Moderate	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	0.28
13								
14								
15								
16								
17								
			2.23					12.03

Existing watercourse type			Distinctiveness	Condition	Strategic significance	Watercourse encroachment	Riparian encroachment	Required Action to Meet Trading Rules	Ecological baseline
Baseline ref	Watercourse type	Length (km)	Distinctiveness	Condition	Strategic significance	Extent of encroachment	Extent of encroachment for both banks	Required Action to Meet Trading Rules	Total watercourse units
1	Other rivers and streams	0.507	High	Moderate	Area/compensation not in local strategy/ no local strategy	Minor	Moderate/ Moderate	Same habitat required =	4.14
2	Ditches	0.244	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Minor	Moderate/ Minor	Same habitat required =	0.70
3	Ditches	0.106	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Minor	Moderate/ Minor	Same habitat required =	0.31
4									
5									
6									
7									
8									
			0.86						5.15

Trading Rules

12. As part of delivering a Net Gain for biodiversity, the BNG process requires that trading rules are complied with, such that loss of habitats is compensated for in a like-for-like or like-for-better fashion. This is based on habitat distinctiveness.
13. Once trading rules are complied with, the 'gain' component can come from any distinctiveness category.

Habitat Units

14. The Site has been assessed as having a baseline score of 161.02 Habitat Units. These break down as shown in Table 2, below.

Table 2 Habitat Units broken down by distinctiveness at this Site.

Habitat distinctiveness	Units	Approach to compensation if lost
Very Low	0	No compensation required.
Low	108	Can be replaced with <u>any</u> habitat of the same distinctiveness (low) or any habitat from a higher distinctiveness (Medium, High or Very High).
Medium	38.06	Can not be replaced with habitats from a lower distinctiveness. Compensation needs to be like-for-like, or like-for-better. This means it can only be replaced by habitat from the same broad categories in Medium distinctiveness (in this case Scrub, Grassland, Woodland and Individual trees), or any habitat from a higher distinctiveness category (High or Very High).
High	14.97	Can only be replaced with the same habitat, in this case Ponds and Lowland woodland .
Very High	0	Bespoke compensation would be required.
Irreplaceable	0	Cannot be compensated.

Hedgerow Units

15. The Site has been assessed as having a baseline score of 12.03 hedgerow units. These break down as shown in Table 3.

Table 3 Habitat Units broken down by distinctiveness at this Site.

Habitat distinctiveness	Units	Approach to compensation if lost
Low/ Very Low	4.68	Can be replaced with habitat of the same distinctiveness - native hedgerows and tree lines.
Medium	7.34	Can only be replaced with habitat from the same broad categories - such as hedgerows with banks or ditches, or with trees .
High	0	Can only be replaced with the same habitat.
Very High	0	Bespoke compensation would be required.
Irreplaceable	0	Cannot be compensated.

Watercourse Units

16. The Site has been assessed as having a baseline score of 5.15 watercourse units. These break down as shown in Table 4.

Table 4 Habitat Units broken down by distinctiveness at this Site.

Habitat distinctiveness	Units	Approach to compensation if lost
Medium	1.01	Can only be replaced with habitat from the same broad categories - in this case, Ditches .
High	4.14	Can only be replaced with the same habitat - in this case Other rivers and streams .
Very High	0	Bespoke compensation would be required.
Irreplaceable	0	Cannot be compensated.

Planning your development

Mitigation hierarchy

17. To engage with the Biodiversity Gain process, a project must be able to demonstrate that it has complied with the Mitigation Hierarchy of Avoid - Mitigate - Compensate. Its relevance to this Site is set out in Table 5 adjacent.

Table 5 Mitigation hierarchy summary.

Level of Hierarchy	Requirement at this Site
<i>First</i> Avoid	The PEA has established that there are no Very High distinctiveness habitats. High distinctiveness habitats have been identified and these should be avoided during development, this includes higher value lowland woodland, the pond and watercourse. Of the Medium distinctiveness habitats present, retention of the other areas of woodland is advised, as this would help support the connectivity and function of existing higher value woodland. In time it would be hoped that lower value woodland would develop into higher value woodland, similar in nature to that already present. Achieving this in a layout would engage with this part of the hierarchy and helps avoid loss of Biodiversity Units.
<i>then</i> Mitigate	As it would be very difficult to retain the Site's hedgerows and arable margins fully within any development, the structure and habitat it provides would be lost. This loss could be mitigated in part by designing in structured landscaping with native species and native hedge planting to new boundaries. Whilst cropland will likely be the focus of development, habitat creation on Site should focus on supporting and linking retaining habitats such as the woodlands and watercourse areas, providing habitat connectivity across and off the Site. Enhancement of retained habitats such as woodland and scrub as well as the watercourse could also yield additional units. The creation of standard vegetated gardens post development will help to mitigate the loss of some of the cropland post development.
<i>then</i> Compensate	Any residual loss would need to be compensated off-Site. It would be difficult to facilitate the loss of such large areas of open farmland, despite it being lower value, whilst delivering a Net Gain on-Site alongside development here, so this element will be required.

Biodiversity Units - Likely requirement

18. Figure 4 presents a picture of the Site in terms of its 'Distinctiveness score'. Development should seek to target areas of lower distinctiveness habitat, and retain/protect areas of higher distinctiveness, so as to minimise impacts on the most valuable habitats. Very low and low distinctiveness habitats are shown by blue and green shades respectively, medium by orange and high by pink.
19. It is notable at this site that several habitats of medium distinctiveness are also within locally designated sites, indicated within the metric by being 'formally identified' within the strategic significance column, this includes woodland and scrub for instance and places greater emphasis on retention. A single hedgerow habitat within the LWS, comprising a line of trees is also considered retained for the purpose of this exercise. These areas are shown by the yellow shade.

Figure 4 Areas of varying distinctiveness in relation to the Site.



20. Figure 5 shows an approximate development footprint area.
21. This has been based on the development footprint targeting lower distinctiveness habitats resulting in a loss of all lower value cropland, hedgerows and cropland margins within central cropland areas. The Site's peripheral and higher value habitat such as woodland, ponds, the watercourses (including ditches) as well as scrub, other neutral grassland and some hardstanding have been retained.
22. If development in line with Figure 5 is undertaken a shortfall of Biodiversity Units is predicted as shown in Table 6.
23. This should be considered a baseline from which to improve upon, for example retained habitats such as woodland and watercourses will be required to incorporate buffer areas to mitigate impacts during planning which may include areas of lower distinctiveness habitat such as cropland representing an additional opportunity for enhancement.
24. Furthermore, the development footprint is anticipated to result in a 70/30% split of developed land/vegetated gardens. In reality it is likely that public open space or dedicated ecological areas could provide additional areas for ecological mitigation and enhancement.
25. Finally, no enhancement of retained habitat has been assumed which could also yield additional habitat units, mitigating losses elsewhere.
26. Please note this is not a final calculation this represents a rough estimate to show impacts on the BNG score of the Site if hypothetical development with the footprint shown is carried out.

Figure 5 Example development footprint.



Table 6 Approach to offsetting lost Biodiversity Units.

Habitat type	Notes	Units likely to be needed
Low distinctiveness habitats	As discussed some of this loss can be offset on-Site through better/bigger landscaping and gardens, enhancement of retained habitats etc. These Habitat Units can be offset elsewhere using any other Habitat Units.	79.49
Low distinctiveness hedgerows	Some of this loss can be offset on-Site through native and ornamental hedgerow planting in POS.	3.57
Medium and High distinctiveness habitats	For the purposes of this exercise it has been assumed all such habitats can be retained.	N/A
Medium distinctiveness hedgerows	This loss can be offset via the creation of species rich native hedgerows, hedgerows and tree lines associated with banks or ditches or hedgerows with trees within POS.	7.34
Watercourse Units	For the purposes of this exercise it has been assumed all watercourse units will be retained.	N/A
Additional units to reach 10% net gain requirement	Habitat Units: These Units can be offset/created using any other Habitat Units. Hedgerow Units: These Units can be offset/created using any other Habitat Units. Watercourse Units: These Units can be offset/created using any other Habitat Units.	16.1 1.21 0.52

Summary and Recommendations

27. The Site has been assessed as having a baseline value of 161.02 Habitat Units, 12.03 Hedgerow Units and 5.15 Watercourse Units.
28. Assuming the recommendations set out above can be followed, it seems likely that the mitigation hierarchy can be complied with. These recommendations should be a consideration of any design work.
29. Development of the Site is likely to result in the requirement to offset losses elsewhere. Potential means of achieving this would be:
- Making use (through contribution) of any Local Authority habitat banking scheme, if this is available.
 - Purchasing the necessary Units from a broker or habitat banking scheme, as locally as possible (and ideally within the same Local Authority or Natural Character area/s as the development).
 - Creating a bespoke offset on land available to the developer, again as locally as possible.
 - Purchasing Statutory Credits from the UK government scheme (this is the last resort and is not available yet at the time of writing).

30. Finding a means of offsetting losses from the Site should be part of the project planning and any pre-application discussions. On the assumption that higher value habitats, medium distinctiveness woodland and watercourses are retained **the likely requirement of Units** has been estimated for the purposes of project planning, as follows:

Habitats

- 76.27 Units of Low (or better) distinctiveness habitat
- 3.22 Units of Medium (or better) distinctiveness cropland habitat

Hedgerows

- 3.57 Units of Low (or better) distinctiveness hedgerows
- 7.34 Units of Medium (or better) distinctiveness hedgerows

Table 7 Summary of recommendations.

Planning considerations		
Recommendation	Rationale	When
R1 Produce a layout which minimises loss of biodiversity	Engage with the recommendations set out above, involve your ecologist in designs at an early stage, as required. The proposals will need to consider the NPPF hierarchy of Avoid – Mitigate – Compensate in minimising any loss of biodiversity.	During the design process
R2 Biodiversity Gain Strategy (BGS)	Engage an ecologist to work with the design team to maximise available Biodiversity Units on-Site. Identify opportunities to address any losses off-Site.	During the design process
R3 Landscape Design	Make sure your landscape architect follows ecological advice or the BGS to maximise Biodiversity Units on-Site and make sure there are no design conflicts.	During the design process
R4 Calculate final Biodiversity Impact Score	Use the DEFRA Metric to quantify Net Gain/Loss of biodiversity – complete Part 2 of this report.	After a fixed design is agreed

Part 2

Post-development value

31. This section calculates the biodiversity value of the post-development Site and quantifies any shortfall in Biodiversity Units.
32. It can only be completed once a design for the Site is fixed.

References

CIEEM (2019) Advice Note – On the Lifespan of Ecological Reports and Surveys

DEFRA (2023) Biodiversity Metric 4.0 Calculation Tool – macro- enabled

DEFRA (2023) Biodiversity Metric 4.0 – Technical Annex 1 – Condition Assessment Sheet and Methodology

DEFRA (2023) Biodiversity Metric 4.0 – Technical Annex 2 – Technical Information

DEFRA (2023) Biodiversity Metric 4.0 – User Guide

Appendices

The following reports/digital documents have been provided alongside this report and should be read in conjunction with it:

- Biodiversity Metric 4.0 Calculation Tool – BM-7214-01
- Biodiversity Metric 4.0 – Technical Annex 1 – Condition Assessment Sheets CA-7214-01
- Preliminary Ecological Appraisal ER-5522-01