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Biodiversity Net Gain Assessment

Butts Batch, Wrington

October 2020

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EXECUTIVE SUMMARY

This report summarises the delivery of biodiversity net gain on Butts Batch, Wrington, in accordance with national planning policy. The existing baseline habitats are modified grassland which total 4.52 ha and generate 9.04 biodiversity units and linear hedgerow habitats total 0.66 km and generate 3.20 biodiversity units. Grassland and hedgerow habitats will be retained on site and enhanced, and new habitats including other neutral grassland and additional hedgerows will be created on site. The proposed post-development habitats generate 14.05 biodiversity units, of which 10.85 units are generated from retained and enhanced habitats, whilst the remaining 2.18 units are from created habitats. Hedgerow habitats generate 5.27 biodiversity units, 3.92 units of which are from retaining and enhancing the existing hedgerows and the remaining 1.35 units are from new hedgerow creation.

Based on DEFRA biodiversity net gain metric 2.0 calculations, the proposed habitats on the site would deliver a biodiversity net gain of 55.46% for habitats and 64.58% for hedgerows

CONTENTS

1 INTRODUCTION

The following report provides a summary of the biodiversity net gain calculations undertaken for Butts Batch, Wrington, North Somerset (Central Grid Reference ST 46638 62408), hereafter referred to as the "site" and shown in Figure 1. The report sets out the policy background for biodiversity net gain, the baseline conditions of the site, the proposed site layout and the results of the net gain calculations.

2 POLICY BACKGROUND

2.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) sets out planning policy for England. Paragraph 170 of the NPPF states

> *"Planning policies and decisions should contribute to and enhance the natural and local environment by:…*
> *d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;…"*

Paragraph 174 states

> *"To protect and enhance biodiversity and geodiversity, plans should:…*
> *b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity."*

2.2 North Somerset Council Core Strategy 2017

Core Strategy Policy CS4 relates to nature conservation. Specifically it states that the biodiversity of North Somerset will be maintained and enhanced by:

> *"…*
> *2) seeking to ensure that new development is designed to maximise benefits to biodiversity, incorporating, safeguarding and enhancing natural habitats and features and adding to them where possible, particularly networks of habitats. A net loss of biodiversity interest should be avoided, and a net gain achieved where possible;…"*

2.3 Draft Environment Bill

The draft Environment Bill includes provision for biodiversity net gain to be applied to every planning permission.

Schedule 14 of the draft Environment Bill sets out amendments to the Town and Country Planning Act 1990 for the inclusion of biodiversity net gain as follows:

> *"Biodiversity gain objective*

(1) The biodiversity gain objective is met in relation to development for which planning permission is granted if the biodiversity value attributable to the development exceeds the pre-development biodiversity value of the onsite habitat by at least the relevant percentage.

(2) The biodiversity value attributable to the development is the total of—

(a) the post-development biodiversity value of the onsite habitat,

(b) the biodiversity value, in relation to the development, of any registered offsite biodiversity gain allocated to the development, and

(c) the biodiversity value of any biodiversity credits purchased for the development.

(3) The relevant percentage is 10%."

The draft Environment Bill is still making its way through Parliament and has not yet become law, but it does set out the expectation for all planning permissions to include a biodiversity net gain of at least 10%.

3 METHOD

3.1 UK Habitat Classification survey

The habitat survey was carried out according to the UKHab Classification system (Butcher et al. 2020)[1]. The survey included a detailed assessment of the land within the development boundary, including a description and mapping of all key features and habitat types. The survey was carried out to identify the range of habitats within the site and the predominant and notable species of flora.

A conditions assessment was undertaken alongside the UKHab survey. This involves assessing a series of attributes representing key physical characteristics of each habitat type. The attributes are used to assess whether the habitat is in a favourable condition. The habitats present on site were assessed as either poor, moderate or good condition. Guidance for assessment of hedgerows is detailed within Appendix 1.

3.2 Biodiversity Net Gain (BNG) assessment

This BNG assessment uses the following industry recognised best practice methodologies:

- *CIEEM, IEMA & CIRIA (2016). Biodiversity Net Gain: Good Practice Principles for Development;*
- *Natural England (2019). Biodiversity Metric 2.0 – Auditing and Accounting for Biodiversity;*

Applying these standardised methods results in the calculation of a baseline biodiversity value, a post-development biodiversity value and a net change in biodiversity value associated with the proposed development.

The quantitative outcomes of the calculations are one component of the BNG assessment and associated good practice principles. A BNG assessment also requires the collation of qualitative evidence on the application of the mitigation hierarchy, stakeholder engagement and post-development habitat management. Collectively, these quantitative outcomes and qualitative evidence are used to inform the outcomes of the project-wide BNG assessment.

3.3 Limitations and assumptions

The Biodiversity Metric 2.0 (Natural England, 2019) is a beta test trial of the metric and therefore will be subject to further change and enhancement in the future. Known errors in the calculator tool have been avoided, however there are potentially further errors not yet identified.

[1] Butcher, B., Carey, P., Edmonds, R., Norton, L. and Treweek, J. (2020). UK Habitat Classification – Habitat Definitions V1.1. at http://ukhab.org

This biodiversity net gain report only address impacts on habitats. Other ecological impacts, such as those to protected species or designated sites are not covered by this report.

The biodiversity net gain calculations based on field survey of habitats and their condition and mapping of habitat parcels in GIS. Habitat areas have been calculated in GIS and rounded to two decimal places.

The UKHab survey was undertaken in November, which is outside of the recommended survey period for identifying botanical species (March to October inclusive). Therefore, some species of plant are likely to have been missed and a full species list for the site may not have been gained from the single site visit.

Connectivity has been assigned based on the guidelines issued with DEFRA metric 2.0. For low and medium distinctiveness habitats, connectivity has been set to 'low'. For high and very high distinctiveness habitats, connectivity has been set to 'medium'.

The calculations in this report are based on indicative layouts for the development and landscaping at outline stage. The calculations will require updating for the reserved matters stage.

There are considered to be no significant limitations to the assessment.

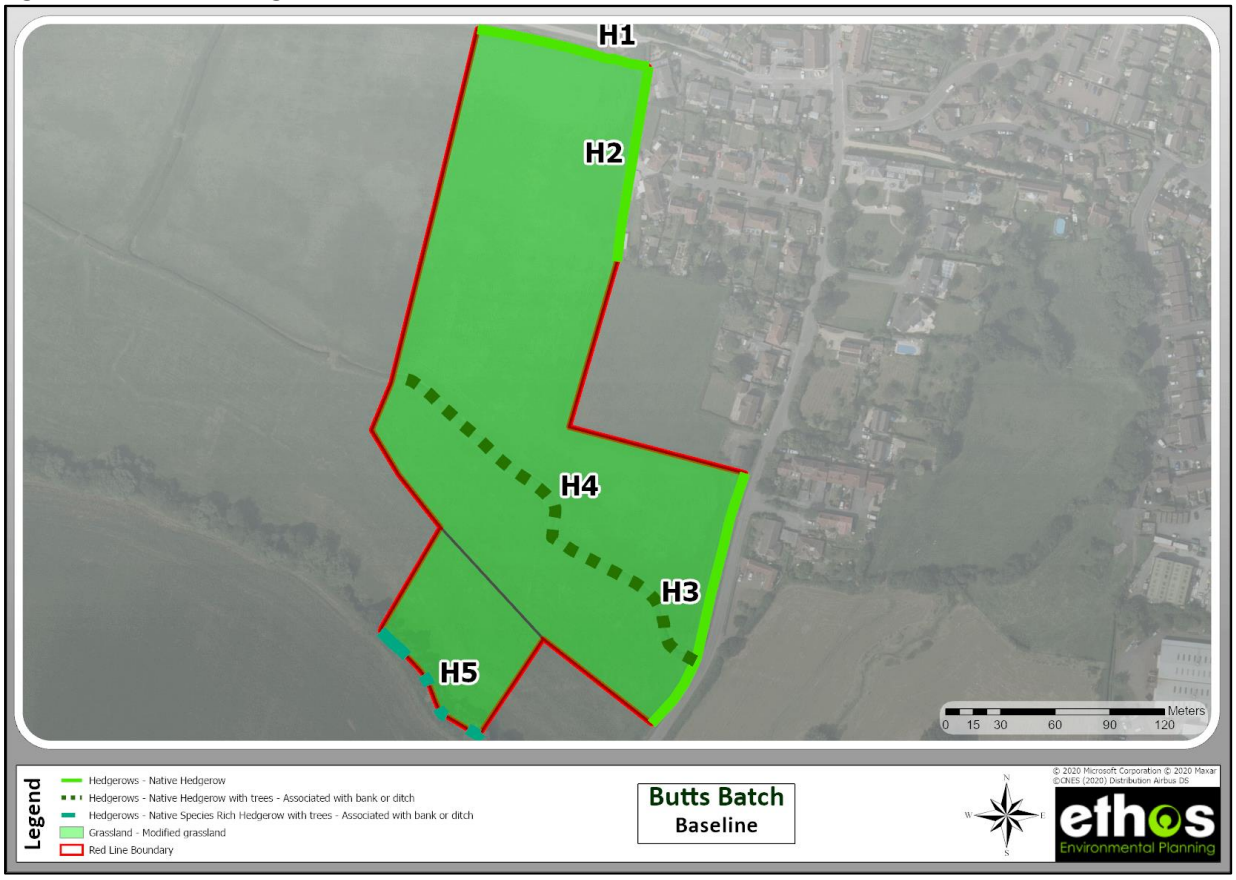
4 BASELINE HABITATS

4.1 Introduction

The site covers 5.2 ha. The biodiversity baseline for the site was based on habitat types and areas, their distinctiveness and condition scores and the number of biodiversity units each type of habitat generates. The baseline biodiversity map showing the existing habitats across the site is shown in Figure 1 and the habitats are listed below:

- *Grassland - Modified grassland*
- *Native Hedgerow*
- *Native Hedgerow with Associated Bank/Ditch*

Figure 1 Existing habitats



A description of each habitat and its condition is given below. Area habitats are considered separately from linear habitats.

4.2 Area habitats

4.2.1 Grassland – Modified

The Site was dominated by agriculturally modified grassland, as shown in Photo 1 and Photo 2. The grassland was recently grazed by cattle resulted in a short sward. It was assessed that the grassland was botanically poor and was analogous across the site.

Photo 1: Internal Grassland

Photo 2: Internal Grassland

Table 1: Species

Value	Percentage Cover	Species
Dominant	>75%	◻ Rye grass *(Lolium perenne)*
Abundant	51 - 75%	◻ creeping buttercup *(Ranunculus repens)* ◻ clover *(Trifolium spp.)*. ◻
Frequent	26 - 50%	◻ N/A
Occasional	11 -25%	◻ sorrel *(Rumex acetosa)* ◻ common dandelion *(Taraxacum officinale)*
Rare	1 – 10%	◻ broad-leaved dock *(Rumex obtusifolius)* ◻ Yarrow *(Achillea millefolium)*

Condition Assessment

Table 2: Condition Assessment: Grassland – modified grassland

Number	Condition Assessment Criteria	Criteria Met/Failed	Condition
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.	The area is clearly and easily recognisable as a grassland. **Pass**.	**Poor** Five of the six criteria assessment failed This area was dominated by rye grass and was characteristics of agriculturally intensive grassland.
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.	The appearance and composition of the vegetation does not match characteristics for the Priority Habitat. **Fail**.	
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.	The grassland contained mainly grass species, with limited wildflowers, sedges or indicator species. **Fail**.	
4	Undesirable species and physical damage is below 5% cover.	Undesirable species include creeping thistle, curled dock, broad leaved dock and creeping buttercup. **Fail**	
5	Cover of bare ground greater than 10% (including localised areas, for example, rabbit warrens).	There is less than 10% bare ground. **Fail**	

Number	Condition Assessment Criteria	Criteria Met/Failed	Condition
6	Cover of bracken less than 20% and cover of scrub and bramble less than 5%.	Bramble scrub is encroaching across the habitat. **Fail.**	

4.3 Linear habitats

The corresponding condition assessments for the hedgerows within table four were provided within Appendix I of this report.

Table 3 Hedgerows

Hedgerow Number	Type	Description/Species	Condition	Photo
H1	Native hedgerow	Dominated by bramble (*Rubus fruticosus*) and scattered elder (*Sambucus nigra*). There were stands of blackthorn (*Prunus spinosa*) within the western section of the hedgerow (off-site). There was a ditch present to the north which was dry at the time of survey. There were stands of rosebay willowherb (*Chamerion angustifolium*) within the ditch.	Poor	 *Photo 3: H1 dominated by bramble*
H2	Native Hedgerow	H2 bordered the residential gardens to the north east of the site. Species present included blackthorn, hazel (*Corylus avellana*), elder, English elm (*Ulmus procera*), ash (*Fraxinus excelsior*), field maple (*Acer campestre*), dogwood (*Cornus sanguinea*) and hawthorn (*Crataegus monogyna*). The hedgerow was assessed to be species-rich but in a poor structural condition. The hedgerow was approximately two metres wide at the base and 1.8m in height. There were no mature trees present within the hedge. The hedgerow continued off-site to the east.	Poor	 *Photo 4: Southern section of H2*

Hedgerow Number	Type	Description/Species	Condition	Photo
H3	Native Hedgerow	H3 formed a double hedgerow along Half Yard Road, in the south east corner of the site. The hedgerow had a good basal density and was well-connected to hedgerows to the north of the site and to H4 to the south. Species present included blackthorn, field maple, hawthorn, dogwood and hazel. There was a metal field gate to the north of the hedgerow.	Good	 *Photo 5: northern section of H3*
H4	Native hedgerow with associated bank	H4 was located along the southern boundary of the site. The hedgerow was located on a steep bank with a ditch with running water to the south. The hedge was assessed as species-poor defunct, with no mature trees and a poor structural condition. H4 was approximately 3 m wide and 3 m in height. The hedgerow had good ecological connectivity; it formed a node with H3 to the east and was connected to several hedgerows to the west. Species present included field maple, hawthorn, blackthorn, hazel and dogwood.	Poor	 *Photo 6: Hedgerow 4*

Hedgerow Number	Type	Description/Species	Condition	Photo
H5	Native hedgerow with trees with associated ditch	H4 was located at the very southern boundary of the field adjacent to the development area. The hedgerow was located adjacent to a water filled ditch. Several mature trees were present in the hedgerow and the understorey was dominated by nettle. Woody species include field maple, alder and crack willow.	Good	 *Photo 7 Hedgerow 5*

4.4 Summary of baseline units

Within the site, area-based habitats total 4.52 ha and generate 9.40 biodiversity units and linear hedgerow habitats total 0.66 km and generate 3.48 biodiversity units (See Tables 4 and 5).

Table 4: Baseline habitat units assessment results

Habitat	Area (ha)	Distinctiveness	Condition	Connectivity	Strategic significance	Units
Grassland - Modified grassland	4.52	Low	Poor	Low	Low Strategic Significance	9.4
Total	**4.52**					**9.4**

Table 5: Baseline linear units assessment results

Habitat	Length (km)	Distinctiveness	Condition	Connectivity	Strategic significance	Units
Native hedgerow	0.09	Low	Poor	Low	Low Strategic Significance	0.18
Native Hedgerow	0.1	Low	Poor	Low	Low Strategic Significance	0.2
Native hedgerow	0.15	Low	Good	High	Low Strategic Significance	1.035
Native hedgerow – Associated with bank or ditch	0.24	Medium	Poor	Low	Low Strategic Significance	0.96
Native hedgerow with trees – Associated with bank or ditch	0.08	Medium	Good	High	Low Strategic Significance	1.10
Total	**0.31**					**0.88**

5 PROPOSED HABITATS

5.1 Habitat Map

The post-development habitats expected on site after construction are based on the development proposals and shown in figure 2 below. The development proposals identify the habitats lost to the development and the created and enhanced habitats.

Figure 2 Proposed habitats

5.2 Retained habitats

5.2.1 Grassland – modified grassland

A section of grassland (0.51) to the south of the site will be retained in situ with no change to the current management

5.3 Enhanced Habitats

5.3.1 Grassland

A section of modified grassland will be enhanced. This section of grassland will be enhanced to Other Neutral Grassland in a good ecological condition. This will be achieved by scarifying, re-sowing, and the introduction of traditional grassland management.

5.2.3 Hedgerows

The native hedgerows on site will be retained and enhance. Enhancement will involve planting native species in gaps.

5.3 Created habitats

5.3.1 Urban – Amenity grassland

Areas amenity grassland will be created as part of the development. To maximise their value for biodiversity, these areas will include species that provide nectar and pollen sources for insects in the sward, such as clover and bird's-foot trefoil.

5.3.2 Urban - Sustainable urban drainage feature

A retention basin will be created on site as part of the sustainable drainage solution. This feature will be sown with a wildflower seed mixed designed for wet grasslands to maximise its value for wildlife.

5.4 Summary

Within the site, area-based habitats generate 14.05 biodiversity units, of which 10.85 units are generated from retained and enhanced habitats, whilst the remaining 2.18 units are from created habitats. Hedgerow habitats generate 5.27 biodiversity units, 3.92 units of which are from retaining and enhancing the existing hedgerows and the remaining 1.35 units are from new hedgerow creation.

6 SUMMARY OF OVERALL BIODIVERSITY CHANGE

Based on the metric calculations, the proposed habitats on the site would deliver a biodiversity net gain of 55.46% for habitats and 64.58% for hedgerows. Figure 3 shows the headline results from the metric.

On-site baseline	Habitat units	9.04
	Hedgerow units	3.20
	River units	0.00
On-site post-intervention (Including habitat retention, creation, enhancement & succession)	Habitat units	14.05
	Hedgerow units	5.27
	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	5.01
	Hedgerow units	2.07
	River units	0.00
Total net % change (including all on-site & off-site habitat creation + retained habitats)	Habitat units	55.46%
	Hedgerow units	64.58%
	River units	0.00%

Figure 3: Headline result from the DEFRA metric 2.0

Table 6 below summarises the change in area and associated biodiversity units for each of the habitats. Table 7 summarises the change in hedgerow habitats and associated biodiversity units for the site.

Table 6: Summary of the changes in broad habitat category area and AHBU

Broad habitat category	Baseline Area (ha)	Baseline Units	Post-development Area	Post-development units	Change in units	Change in area
Grassland – Modified	4.52	9.04	0.51	1.02	-8.02	-4.01
Grassland – other neutral	0	0	1.75	10.85	+1.75	+10.85
Urban – developed land; sealed surface	0	0	1.38	0.00	0	+1.38
Urban – Vegetated garden	0	0	0.6	1.16	+0.6	+1.16

Broad habitat category	Baseline Area (ha)	Baseline Units	Post-development Area	Post-development units	Change in units	Change in area
Urban – Amenity grassland	0	0	0.22	0.79	+0.22	+0.79
Urban – Sustainable urban drainage feature	0	0	0.06	0.23	+0.23	+0.06
Total	**4.52**	**9.04**		**14.05**	**+55.46**	

Table 7: Summary of the changes in broad habitat category area and AHBU: Linear Units

Baseline Hedgerow Category	Baseline length (km)	Baseline units	Post-development length (km)	Post-development units	Change in units
Native hedgerow	0.34	1.28	0.34	1.43	+0.15
Native Species Rich Hedgerow	0	0	0.24	1.35	+1.35
Native Hedgerow - Associated with bank or ditch	0.24	0.96	0.23	1.52	+0.56
Native Hedgerow with trees - Associated with bank or ditch	0.08	0.96	0.08	0.96	0
Total	**0.66**	**3.20**	**0.89**	**5.27**	**+64.58%**

7 APPENDIX 1

Condition assessments for the hedgerows are set out in Table 8 below.

Table 8: Hedgerow condition assessments

	H1		H2		H3		H4		H5	
Attribute	Description	Outcome	Description	Outcome	Description	Outcome	Description	Outcome	Description	Outcome
A1 Height	2 metres	Fail	2 metres	Pass	2 metres	Pass	3 metres	Pass	10 metres	Pass
A2 Width	2 metres	Fail	1.8 metres	Fail	2 metres	Pass	3 metres	Pass	5 metres	Pass
B1. Gap – hedge base	No significant gap at hedge base	Pass	No significant gap at hedge base	Pass	Dense hedge base	Pass	Dense hedge base	Pass	Significant gap at base	Fail
B2. Gap – hedge canopy continuity	Gaps <10%	Pass	Gaps <10%	Pass	Gaps <10%	Pass	Gaps <10%	Pass	Gaps <10%	Pass
C1. Undisturbed ground and perennial vegetation	Short mown grassland	Fail	Short mown grass	Fail	Short mown grass	Fail	Short mown grass	Fail	Undisturbed margin present, but consists entirely of nettle	Pass
C2. Undesirable perennial vegetation	None present	Pass	Sward includes nettle, dock	Fail	Sward includes dock	Fail	Sward includes docks and nettle	Fail	Dominated by nettles	Fail
D1. Invasive and neophyte species	No invasive or neophyte species	Pass	No invasive or neophyte species	Pass	No invasive or neophyte species	Pass	No invasive or neophyte species	Pass	No invasive or neophyte species	Pass
D2. Current damage	No damage	Pass	No significant damage	Pass	No significant damage	Pass	No significant damage	Pass	No damage	Pass

The favourable attributes for hedgerows are set out in Table 9 below.

Table 9: Hedgerow favourable conditions attributes

Hedgerow favourable condition attributes		
Attributes and functional groupings (A, B, C and D)	**Criteria (the minimum requirements for 'favourable condition'**	**Description**
A1. Height	>1.5 m average along length	The average height of woody growth estimated from base of stem to the top of shoots, excluding any bank beneath the hedgerow, any gaps or isolated trees. Newly laid or coppiced hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice) A newly planted hedgerow does not pass this criterion (unless it is > 1.5 m height)
A2. Width	>1.5 m average along length	The average width of woody growth estimated at the widest point of the canopy, excluding gaps and isolated trees. Outgrowths (e.g. blackthorn suckers) are only included in the width estimate when they >0.5 m in height. Laid, coppiced, cut and newly planted hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice).
B1. Gap – hedge base	Gap between ground and base of canopy <0.5 m for >90% of length (unless 'line of trees')	This is the vertical gappiness of the woody component of the hedgerow, and its distance from the ground to the lowest leafy growth. Certain exceptions to this criterion are acceptable (see page 65 of the Hedgerow Survey Handbook)
B2. Gap – hedge canopy continuity	-Gaps make up <10% of total length -No canopy gaps >5 m	This is the horizontal gappiness of the woody component of the hedgerow. Gaps are complete breaks in the woody canopy (no matter how small). Access points and gates contribute to the overall gappiness, but are not

Hedgerow favourable condition attributes		
Attributes and functional groupings (A, B, C and D)	**Criteria (the minimum requirements for 'favourable condition'**	**Description**
		subject to the >5 m criterion (as this is the typical size of a gate).
C1. Undisturbed ground and perennial vegetation	>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)	None provided in guidance (duplicate of B2 in error).
C2. Undesirable perennial vegetation	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground.	The indicator species used are nettles (Urtica spp.), cleavers (Galium aparine) and docks (Rumex spp.). Their presence, either singly or together, should not exceed the 20% cover threshold.
D1. Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species.	Neophytes are plants that have naturalised in the UK since AD 1500. For information on neophytes see the JNCC website and for information on invasive non-native species see the GB Non-Native Secretariat website.
D2. Current damage	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities.	This criterion addresses damaging activities that may have led to or lead to deterioration in other attributes. This could include evidence of pollution, piles of manure or rubble, or inappropriate management practices (e.g. excessive hedge cutting)

Table 10: Hedgerow condition assessment and weighting

Condition Categories for Hedgerows		
Category	**Maximum number of attributes that can fail to meet 'favourable condition' criteria.**	**Weighting**
Good	No more than 2 failures in total and no more than 1 in any functional group.	1
Moderate	No more than 4 failures in total and fails both attributes in a maximum of one functional group e.g. fails attribute 1 & 2, 5 &7 = Moderate condition.	2
Poor	Fails a total of more than 4 attributes or both attributes in more than one functional group.	3