



BIODIVERSITY NET GAIN REPORT
LOWER HORSEBRIDGE
HAILSHAM
EAST SUSSEX
BH3 7HE

DECEMBER 2022

ON BEHALF OF
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1.0 EXECUTIVE SUMMARY

- 1.1 This Biodiversity Net Gain Report, prepared by LC Ecological Services Limited, was undertaken to assess the potential to achieve Biodiversity Net Gain from the proposed development at Land at Lower Horsebridge, Hailsham, East Sussex (Grid ref: TQ 57317 11186).
- 1.2 The purpose of this report is to identify the net percentage change in biodiversity on site post development and to demonstrate a minimum of 10% Biodiversity Net Gain in accordance with the emerging national policy.
- 1.3 The Biodiversity Net Gain score has been determined for the proposed application, which will deliver the required minimum 10% net gain. A total net of 4.77 habitat units and 1.8 hedgerow units is possible to achieve resulting in a 26.46% net gain in habitat units and 39.13% in hedgerow units.
- 1.4 It is advised that a Landscape and Ecological Management Plan (LEMP) is conditioned for the development to outline the landscape specification and management to ensure the target net gain in biodiversity is achieved.
- 1.5 This report does not contain prescriptive measures to ensure the target conditions and habitat types are produced within the post development area. This report outlines how the BNG score can be achieved and demonstrates a viable means of achievement. Within the application areas, final landscape proposals could be altered to achieve a higher BNG score but it is highly unlikely that the net gain proposal would not be met by slight variations in the final planting specification.
- 1.6 Based on the current scheme it is predicted that a net gain of 26.46% change in habitat units will be achieved within the proposed application area. For the purposes of assessment the lowest score is used between area and linear habitats.

2.0 INTRODUCTION

Project brief

- 2.1 This Biodiversity Net Gain (BNG) report, prepared by LC Ecological Services Limited (LCES), was undertaken to assess the potential to achieve Biodiversity Net Gain from the proposed development at Land at Lower Horsebridge, Hailsham, East Sussex (Grid ref: TQ 57317 11186).
- 2.2 The BNG score for the project has been determined for the proposed development which includes housing, a play area, swale and pond creation, grassland enhancement and woodland planting.

Preparation of Biodiversity Net Gain Assessment

- 2.3 This assessment was prepared using version 3.1: Calculation tool (spread sheet).

Purpose of the report

- 2.4 The purpose of this report is to outline the following:
- To identify the net percentage change in biodiversity on site following the most design proposals.
 - To demonstrate a minimum of 10% BNG in accordance with the emerging national policy.
 - To demonstrate that the net can commitment can be obtained with reasonable and viable habitat creation which can be maintained in the long term.

3.0 ASSESSMENT METHODOLOGY

Study Area

- 3.1 The application area is located around Ordnance Survey (OS) grid reference SZ TQ 57317 11186, the parameters plan for the development proposals is located in appendix IV.

Sources of information

- 3.2 A baseline botanical assessment was undertaken in accordance with the UK Habitat Classification (UKHABS, 2020). The assessment was undertaken in October 2022 by Lizard Ecology Ltd.
- 3.3 The habitat survey recorded the habitat types across the site with a record made of the botanical interest in each area. The habitat maps are provided in appendix II.
- 3.4 Habitats recorded on site were transposed into a digital map using QGIS coordinate referencing system OSGB 1936/ British National Grid.
- 3.5 Habitats recorded on site were measured using the derived areas (Ellisoidal – EPSG 7001) and habitat areas are provided in hectares. Linear features were measured using the derived length (Ellisoidal – EPSG 7001) and the measurements provided in kilometres.

Assessment Process

- 3.6 The BNG assessment was undertaken in accordance with the CIRA *Biodiversity Net Gain – Good Practice Principles for Developments* (CIRA 2019).
- 3.7 To undertake the BNG assessment the habitat classification notes obtained from the baseline botanical assessment were inserted into the BNG calculator using the technical data provided in the appendices of the calculator tool.
- 3.8 The condition of the habitats was assigned in accordance with the Biodiversity Metric 3.1 Technical supplement (Natural England 2021).
- 3.9 The level of mitigation applied was done in accordance with the mitigation hierarchy outlined in table 11.5 of the *Biodiversity Net Gain – Good Practice Principles for Developments* (CIRA 2019), and has been provided below:

Any combination of these factors might apply	
Does the habitat affected have high biodiversity value?	When a project affects rare habitats, creating new areas of the habitat is often required to ensure no reduction in cover. This only applies after strict application of the mitigation hierarchy, and does not apply to irreplaceable habitat or statutory designated sites. Enhancing existing habitats that should have high biodiversity value, but that are currently degraded, could generate valuable benefits for biodiversity.
Does the habitat affected provide a critical ecological function?	When a project affects critical ecological functions, creating new habitat that provides equivalent or better ecological functions is often required to ensure no reduction in provision of the function.
Do stakeholders or local policies prioritise enhancements in the habitat over increasing its coverage?	Enhancing existing habitats could contribute to this priority.
Alternatively, do stakeholders or local policies prioritise increases in habitat cover?	Creating new habitat could be most appropriate.
Is provision of green space a priority issue locally?	Projects that achieve BNG by enhancing habitats elsewhere, although resulting in a loss of green space, can cause significant negative consequences locally.
Are existing habitats at risk from future threats and/or under continued decline?	Enhance habitat to secure its long-term future, eg by making habitat more resilient to other pressures, such as the effects of climate change. Also protect habitats in decline from declining further (also known as averted loss).

Limitations

- 3.10 Whilst every effort has been made to accurately map the habitats on site there may be discrepancies associated with the projected coordinate reference system. However, the National Grid transformation is considered to be the most accurate with an accuracy level of less than 1 metre.
- 3.11 The habitat survey of the site was undertaken at a sub-optimal time of year for floristic identification within grassland habitats. Due to this species may have been under recorded due to a lack of diagnostic features or a reduced seasonal presence. Given the common and widespread nature of the habitat recorded it is considered unlikely that seasonality had a significant effect on grassland habitat assessment.
- 3.12 A small building was also recorded on site but has not been included within this assessment as it functionally generates no baseline score and will be retained in the design proposals.

4.0 BASELINE

Habitats

- 4.1 The habitat types within the site were noted during the most recent botanical surveys in October 2022. A UKHABS classification of the habitats present was undertaken by Lizard Ecology. The classification and condition for each habitat was recorded in accordance with the UK habitats classification methodology.
- 4.2 The baseline value of the site has been determined from the following habitats:
- Modified grassland (Poor condition)
 - Lowland Mixed Deciduous Woodland (Poor condition)
 - Pond (P1- Moderate condition)
 - Pond (P2-Good condition)
 - Pond (P3-Moderate condition)
 - Scattered trees (UT3- Good condition and UT4-Moderate condition)
 - Native hedgerow with trees (H3b-Poor condition)
 - Native hedgerow (H3a-Poor condition)
 - Native species rich with trees (H2- Moderate condition)
 - Native hedgerow with trees (H1-Poor condition)

Scrub

- 4.3 An area of bramble (*Rubus fruticosus*) scrub approximately 0.03 hectares in size is located on site. This habitat does not have a condition assessment score as it is functionally negligible in condition.
- 4.4 The strategic significance is “**Area/ compensation area not in local strategy**”
- 4.5 This habitat is equivalent to 0.16 biodiversity units.

Modified grassland

- 4.6 Modified grassland is the dominant habitat on site and has been highly improved through nutrient enrichment. Perennial rye grass (*Lolium perenne*) dominates the sward. The structure of the sward is varied owing to the mixed grazing regime, which uses sheep and horses.
- 4.7 The UKHab considers that the habitat on site is classified as “**Grassland – modified grassland**”.
- 4.8 The metric assigns this habitat a value of “**low distinctiveness**”.
- 4.9 The condition has been determined using the Condition Assessment Criteria (CAC) outlined in table 1 below. Criteria 2, 3, 4, 5, 6 and 7 were met and as such a ‘**poor condition**’ has been recorded for this habitat. The habitat was generally

grazed to a low level with no areas of scattered scrub within the fields and a low species diversity.

Table 1: Criteria assessment for Grassland – modified grassland (low distinctiveness)

Condition Assessment Criteria		Y/N	Justification
1	There must be 6-8 species per m ² . Note - if a grassland has 9 or more species per m ² it should be classified as a moderate distinctiveness grassland habitat type.	N	6 quadrats were taken and in none did the diversity of species exceed 6.
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20 per cent is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	Y	Sward height varies owing to mixed grazing regime
3	Some scattered scrub (including bramble) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of shrubs with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.	Y	No scattered scrub present.
4	Physical damage evident in less than 5% of total grassland area, such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities.	Y	Small areas of poached ground are present, such as beside culvert over eastern ditch, but this does not cover >5% of total area
5	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.	Y	Bare ground caused by poaching (as above) probably covers between 1-3% of total grassland area
6	Cover of bracken less than 20%.	Y	No bracken
7	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and undesirable species ¹ make up less than 5% of ground cover.	Y	No invasive species noted in grassland
Condition Assessment	Condition Assessment Score		

Result	
Passes 6 or 7 of 7 criteria including non-negotiable criterion 7	Good (3)
Passes 4 or 5 of 7 criteria; OR Passes 6 of 7 criteria excluding non-negotiable criterion 7	Moderate (2)
Passes 0, 1, 2 or 3 of 7 criteria	Poor (1)
Footnote 1 - Species considered undesirable for this habitat type include: Creeping thistle <i>Cirsium arvense</i> , spear thistle <i>Cirsium vulgare</i> , curled dock <i>Rumex crispus</i> , broad-leaved dock <i>Rumex obtusifolius</i> , common nettle <i>Urtica dioica</i> , greater plantain <i>Plantago major</i> , white clover <i>Trifolium repens</i> , cow parsley <i>Anthriscus sylvestris</i> .	

4.10 The strategic significance is “**Area/ compensation area not in local strategy**”

4.11 This habitat is equivalent to 13.99 biodiversity units.

Lowland Mixed Deciduous Woodland

4.12 A small area of lowland mixed deciduous woodland is located to the south east of the site. This area shades all three ponds on the site.

4.13 The UKHab considers that the habitat on site is classified as “**Woodland and Forest – Lowland Mixed Deciduous Woodland**”.

4.14 The metric assigns this habitat a value of “**high distinctiveness**”.

4.15 The condition has been determined using the CAC outlined in table 2 below. An indicator score of 24 was met and as such a ‘**poor condition**’ has been recorded for this habitat.

4.16 The strategic significance is “**Area/ compensation area not in local strategy**”

Table 2: Criteria assessment for heathland and shrub – Woodland and Forest

Condition Assessment Criteria					
Indicator		Good (3 points)	Moderate (2 points)	Poor (1 point)	Score per indicator
1	Age distribution of trees¹	Three age classes present	Two age classes present	One age class present	2
2	Wild, domestic and feral herbivore damage	No significant browsing damage evident in woodland ²	Evidence of significant browsing pressure is present in 40% or less of whole woodland	Evidence of significant browsing pressure is present in 40% or more of whole woodland	1
3	Invasive plant species³	No invasive species present in woodland	Rhododendron or laurel not present, other invasive species < 10% cover	Rhododendron or laurel present, or other invasive species > 10% cover	3
4	Number of native tree species	Five or more native tree or shrub species found across woodland parcel	Three to four native tree or shrub species found across woodland parcel	None to two native tree or shrub species across woodland parcel	3
5	Cover of native tree and shrub species	> 80% of canopy trees and >80% of understory shrubs are native	50-80% of canopy trees and 50-80% of understory shrubs are native	< 50% of canopy trees and <50% of understory shrubs are native	2
6	Open space within woodland⁴	10 – 20% of woodland has areas of temporary open space, unless woodland is <10ha in which case lower threshold of 10% does not apply	21- 40% of woodland has areas of temporary open space	More than 40% of woodland has areas of temporary open space	3
7	Woodland regeneration⁵	All three classes present in woodland; trees 4-7cm dbh, saplings and seedlings or advanced coppice regrowth	One or two classes only present in woodland	No classes or coppice regrowth present in woodland	1
8	Tree health	Tree mortality less than 10%, no pests or diseases and no crown dieback	11% to 25% mortality and/or crown dieback or low risk pest or disease present	Greater than 25% tree mortality and or any high risk pest or disease present	3
9	Vegetation and ground flora	Ancient woodland flora indicators present	Recognisable NVC plant community present	No recognisable NVC community	1
10	Woodland vertical structure⁶	Three or more storeys across all survey plots or a complex woodland	Two storeys across all survey plots	One or less storey across all survey plots.	1
11	Veteran trees⁷	Two or more veteran trees per hectare	One veteran tree per hectare	No veteran trees present in woodland	1

12	Amount of deadwood	50% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	Between 25% and 50% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	Less than 25% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	2
13	Woodland disturbance ⁸	No nutrient enrichment or damaged ground evident	Less than 1 hectare in total of nutrient enrichment across woodland area and/or less than 20% of wooded area has damaged ground	More than 1 hectare of nutrient enrichment and/or more than 20% of woodland area has damaged ground	1
Total score (out of a possible 39)					24
Condition Assessment Result				Condition Assessment Score	
Total score >32 (33 to 39)				Good (3)	
Total score 26 to 32				Moderate (2)	
Total score <26 (13 to 25)				Poor (1)	
Footnote 1 - See EWBG method INDICATOR 1 for more information. If tree species is not a birch, cherry or Sorbus: 0 – 20 years (Young); 21 - 150 years (Intermediate); and >150 years (Old). A recognisable age class should be a consistent recognisable layer across the woodland or stand being assessed. Presence of a few saplings would not indicate that the woodland has an 'age class' of young trees.					
Footnote 2 - See EWBG method INDICATOR 2 for more information. Browsing pressure is considered to be significant where >20% of vegetation visible within each survey plot shows damage from any type of browsing pressure listed.					
Footnote 3 - See EWBG method INDICATOR 3 for more information. Check for presence of the following invasive non-native species: American skunk cabbage <i>Lysichiton americanus</i> ; Himalayan balsam <i>Impatiens glandulifera</i> ; Japanese knotweed <i>Fallopia japonica</i> ; Cherry Laurel <i>Prunus laurocerasus</i> ; Shalloon <i>Gaultheria shallon</i> ; Snowberry <i>Symphoricarpos albus</i> ; Variegated yellow archangel <i>Lamiastrum galeobdolon subsp. argentatum</i> ; and Rhododendron <i>Rhododendron ponticum</i> .					
Footnote 4 - See EWBG method INDICATOR 6 for more information. Open space within woodland in this context is temporary open space in which trees can be expected to regenerate (e.g. glades, rides, footpaths, areas of clear-fell). This differs from permanent open space where tree regeneration is not possible or desirable (e.g. tarmac, buildings, rivers). Area is at least 10m wide with less than 20% covered by shrubs or trees.					
Footnote 5 - See EWBG method INDICATOR 8 for more information. This indicator measures regeneration potential of the woodland by considering three classes: seedlings; saplings; and young trees of 4-7 cm DBH. All three classes would fall in the 'young' category of the 'age distribution of trees' indicator, the regeneration indicator is gathers additional information by considering regeneration potential i.e. if seedlings, saplings and young trees are all present that means natural regeneration processes are happening.					
Footnote 6 - This indicator is looking at structural diversity and is useful to understand in conjunction with the age of trees in a woodland. Vertical structure is defined as the number of canopy storeys present. Possible storey values are: 1) Upper; 2) Complex: recorded when the stand is composed of multiple tree heights that cannot easily be stratified into broad height bands (such as upper, middle or lower); 3) Middle; 4) Lower; and 5) Shrub layer.					
Footnote 7 - See EWBG method INDICATOR 12 for more information. All ancient trees are veteran trees, but not all veteran trees are ancient. A veteran tree may not be very old, but it has decay features, such as branch death and hollowing. These features contribute to its biodiversity, cultural and heritage value. Veteran trees can be classified if they have four out of the five following features: 1. Rot sites associated with wounds which are decaying >400 cm ² ; 2. Holes and water pockets in the trunk and mature crown >5 cm diameter; 3. Dead branches or stems >15 cm diameter; 4. Any hollowing in the trunk or major limbs; 5. Fruit bodies of fungi known to cause wood decay.					
Footnote 8 - See EWBG method INDICATOR 15 for more information. Examples of disturbance are: significant nutrient enrichment: soil compaction from trampling, machinery or animal poaching: litter.					

Ponds

- 4.17 A total of three small ponds are present on site. These waterbodies are located under the canopy of the woodland.
- 4.18 The UKHab considers that the habitat on site is classified as “**Lakes – Ponds (Non-priority habitat)**”.
- 4.19 The metric assigns this habitat a value of “**medium distinctiveness**”.
- 4.20 The condition has been determined using the CAC outlined in table 3 below. Ponds 1 and 3 have been grouped for assessment as they held the same conditions. Criteria 1, 2, 3, 5 and 7 were met and as such a ‘**Moderate condition**’ has been recorded for this habitat.

Table 3: Criteria assessment for Lakes – Ponds (Non-priority habitat) for Ponds 1 and 3

Condition Assessment Criteria		Condition Achieved (Y/N)	Notes/Justification
CORE CRITERIA - applicable to all ponds (woodland¹ and non-woodland):			
1	The pond is of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution. Turbidity is acceptable if the pond is grazed by livestock.	Y	Slight turbidity but pond is grazed by livestock
2	There is semi-natural habitat (i.e. moderate distinctiveness or above) for at least 10 m from the pond edge.	Y	Lowland mixed deciduous woodland
3	Less than 10% of the pond is covered with duckweed or filamentous algae.	Y	
4	The pond is not artificially connected to other waterbodies, either via streams, ditches or artificial pipework.	N	A small ditch exits the pond and connects to the river to the south, which was dry at the time of survey
5	Pond water levels should be able to fluctuate naturally throughout the year. No obvious dams, pumps or pipework.	Y	
6	There is an absence of non-native plant and animal species ² .	N	Small areas of floating pennywort

7	The pond is not artificially stocked with fish. If the pond naturally contains fish, it is a native fish assemblage at low densities.	Y	
Number of criteria passed			
Condition assessment Result	Condition Assessment Score	Score Achieved x/✓	
If 8 criteria assessed (woodland ponds):			
Passes 7 of 7 criteria	Good (3)		
Passes 5 or 6 of 7 criteria	Moderate (2)	5	
Passes 0, 1, 2, 3 or 4 of 7 criteria	Poor (1)		
If 10 criteria assessed (non-woodland ponds):			
Passes 9 of 9 criteria	Good (3)		
Passes 6, 7 or 8 of 9	Moderate (2)		
Passes 0, 1, 2, 3, 4 or 5 of 9 criteria	Poor (1)		
Footnote 1 - A woodland pond will be surrounded on all sides by woodland habitat.			
Footnote 2 - Any species included on the Water Framework Directive UKTAG GB High Impact Species List should be absent.			
- Frequently occurring non-native plant species include water fern <i>Azolla spp.</i>, Australian swamp stonecrop <i>Crassula helmsii</i>, parrot's feather <i>Myriophyllum aquaticum</i>, floating pennywort <i>Hydrocotyle ranunculoides</i> and Japanese knotweed <i>Fallopia japonica</i>, giant hogweed <i>Heracleum mantegazzianum</i> (on the bank). - Frequently occurring non-native animals include signal crayfish <i>Pacifastacus leniusculus</i>, zebra mussels <i>Dreissena polymorpha</i>, killer shrimp <i>Dikerogammarus villosus</i>, demon shrimp <i>Dikerogammarus haemobaphes</i>, carp <i>Cyprinus carpio</i>.			
Footnote 3 - If the pond is seasonal (i.e. dries out in most summers) then emergent species alone are likely to be found.			

4.21 The condition of pond 2 has been determined using the Condition Assessment Criteria (CAC) outlined above. Criteria 1, 2, 3, 4, 5, 6 and 7 were met and as such a **'Good condition'** has been recorded for this habitat.

4.22 The strategic significance is **"Area/ compensation area not in local strategy"**

- 4.23 Pond 1 and 3 is equivalent to 0.17 biodiversity units and Pond 2 is equivalent to 0.12 biodiversity units. These units will be lost within the development proposals.

Scattered Trees

- 4.24 Two scattered trees are present on site. These trees were assessed for their condition and were found to be of '**Moderate**' and '**Good Condition.**' These trees are equivalent to 0.29 and 0.92 biodiversity units respectively. These units will be retained but tree UT4 (0.29 biodiversity units) is subject to an ash dieback infection will naturally die during the lifespan of the development.

Hedgerows

- 4.25 The development area includes four classifications of hedgerow. The CDC of these hedgerows is presented in appendix V. The distinctiveness of these habitats and the biodiversity units they generate is presented in table 4 below.

Table 4: Distinctiveness and value of baseline hedgerows

Number	Classification	Distinctiveness	Biodiversity units generated	Biodiversity units retained
H1	Native hedgerow with trees	Medium	0.93	0.00
H2	Native species rich with trees	High	2.80	2.80
H3a	Native hedgerow	Low	0.46	0.06
H3b	Native hedgerow with trees	Medium	0.42	0.30

- 4.26 The strategic significance is "**Area/ compensation area not in local strategy**"

5.0 IMPACT ASSESSMENT

5.1 The proposed development will impact the following habitats:

- Modified grassland (Poor condition)
- Pond (P1- Moderate condition)
- Pond (P2-Good condition)
- Pond (P3-Moderate condition)
- Native hedgerow with trees (H1-Poor condition)
- Native hedgerow with trees (H3b-Poor condition)
- Native hedgerow (H3a-Poor condition)

5.2 The application includes an extensive landscaping scheme designed to contribute to a net gain in biodiversity. A summary of the new areas of habitat creation and the associated biodiversity units generated has been presented in appendix I (table 1). The habitat creation proposed (appendix III) is outlined in full detail below.

Permanent impacts

Habitat loss

5.3 There will be a net loss in area of the modified grassland, ponds and some hedgerow loss as a result of the proposed development. This is presented in table 5 below. Overall, the BNG calculation has determined that there will be no net loss of habitats. The habitat creation proposed will contribute to a net gain as the habitats lost will be compensated for through the creation of habitat with an equal or greater distinctiveness to satisfy the trading requirements of the calculator.

Table 5: Habitats lost as a result of the proposed development.

Habitat type	Habitat lost in application area (ha/km)	Biodiversity Units lost
Modified grassland (Poor condition)	6.99	13.99
Pond (P1 and P3- Moderate condition)	0.02	0.17
Pond (P2-Good condition)	0.01	0.12
Native hedgerow with trees (H1- Poor condition)	0.23	0.93
Native hedgerow with trees (H3b- Poor condition)	0.20	0.40
Native hedgerow (H3a-Poor condition)	0.03	0.12

- 5.4 The goal of the habitat creation on site is to increase the condition, distinctiveness and area of the post development habitats to ensure a net gain in biodiversity units. This will be undertaken through sensitive habitat management to ensure the stated target condition will be reached. Habitats within the gardens of the new development have not been included within the assessment as the condition or type of this area cannot be assured as it is subject to change by the homeowners.

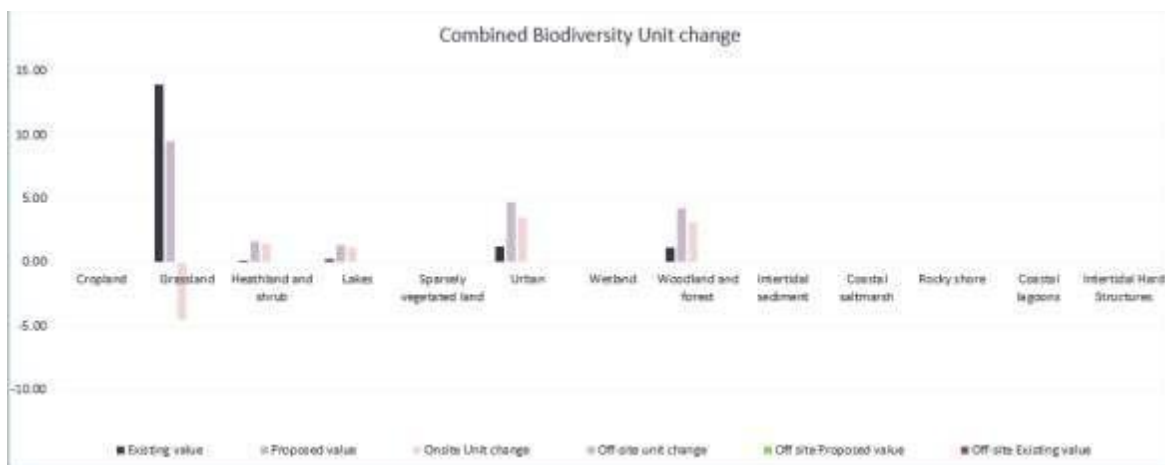
Habitat gain

- 5.5 Proposals for new habitat creation have not been finalised within the application area but the current specification shown demonstrates a net gain of 28.46% habitat units and 39.13% hedgerow units will be achieved. This value is likely to be subject to some variation following the finalisation of the landscaping specification for these areas as the target condition of the habitats can be more closely managed and habitat created in advance of operations. It is highly unlikely that there will be a failure in habitats on a scale large enough to cause the value of net gain to fall below the 10% net gain value targeted by the development.
- 5.6 Over time, all the development will result in the loss of area habitats worth 14.44 biodiversity units and linear habitats (hedgerow) worth 1.45 biodiversity units. The area of habitat that will not be affected by development and will be retained will equate to 2.34 biodiversity units of area habitats and 3.15 biodiversity units for linear habitats.
- 5.7 The target habitat conditions proposed for the created habitats are believed to be both practical and achievable. The target habitat conditions proposed range from fairly poor to moderate condition which can be created and maintained with limited intervention to ensure the long-term viability of the target condition.
- 5.8 The surface area that will be occupied by sealed or unsealed developed surfaces has not been presented here due to its negligible value but has been fully presented within the associated calculations for the report.
- 5.9 The proposed post development habitats have been designed to create areas of high-quality biodiverse habitats. The habitats to be created have been outlined within the dedicated Biodiversity Net Gain Metric (3.1) calculations associated with this report.

Unit change

- 5.10 Figures 1 and 2 demonstrate the biodiversity unit change as a result of the proposals within the application.

Figure 1: Biodiversity unit change



5.11 Figure 2 demonstrates that it is predicted that there will be a net gain of 28.46% in the biodiversity units provided by the creation and enhancement of the areas of habitats to their suggested target condition. It should be noted that the baseline conditions for the woodland that will be retained during the development can be enhanced to give a greater biodiversity net gain score.

Figure 2: Headline results of BNG 3.1 Calculations

On-site baseline	Habitat units	16.78
	Hedgerow units	4.61
	River units	0.00
On-site post-intervention (including habitat retention, creation & enhancement)	Habitat units	21.55
	Hedgerow units	6.41
	River units	0.00
On-site net % change (including habitat retention, creation & enhancement)	Habitat units	28.46%
	Hedgerow units	39.13%
	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)	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 & enhancement)	Habitat units	4.77
	Hedgerow units	1.80
	River units	0.00
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	28.46%
	Hedgerow units	39.13%
	River units	0.00%
Trading rules Satisfied?	Yes ✓	

6.0 POST DEVELOPMENT HABITATS

- 6.1 The habitats to be created within the proposed development area have been outlined below in relation to the species composition. Management to target condition has not been outlined as a dedicated management plan can be produced with the habitat planting specification. The enhancement scheme has not yet been fully defined and the specification for green habitats is not currently completed. The proposed habitats presented here have been outlined in general terms.

Area habitats

Grassland – (Modified grassland)

- 6.2 An area of modified grassland will be created on site. The first will cover an area of 1.2 hectares and will be managed to provide a greater species diversity. The target condition of this habitat is 'Moderate'. This habitat will be created using Emorsgate EL1 seed mix that includes a composition of 80% grass species and 20% suitable wildflower species. This will result in a gain of 4.22 biodiversity units.
- 6.3 The second area of modified grassland measuring 0.251 hectares will be created in site in similar composition to the larger area but will be used as hedgerow understory so will hold a lower target condition. The target condition of this habitat is 'Moderate'. This habitat will be created using Emorsgate EL1 seed mix. This will result in a gain of 0.7 biodiversity units

Grassland – Lowland meadows

- 6.4 A total of 1.53 hectares of moderate condition lowland meadow will be enhanced and managed to provide a greater species diversity. The target condition of this habitat is 'Fairly Poor' but could be increased to 'Moderate' following long term management. This habitat will be created using Emorsgate EM1 general purpose meadow mix that includes a composition of 10% native wild flowers and 90% slow growing grasses (by weight). This will result in a gain of 4.57 biodiversity units.

Lakes- Ponds (Non-priority habitat)

- 6.5 The development will create a total of three new waterbodies which will be maintained for biodiversity. Two of these new ponds will be created to a 'moderate' condition and include wetland planting using Emorsgate EM8 (wetland

planting) and EP1 (ponds edge) seed mixes. These ponds will be 0.09 and 0.05 hectares in size and generate a combined gain of 1.06 biodiversity units.

- 6.6 An unvegetated pond will be created on site and be 0.06 hectares in size. This pond will be created to a 'Fairly Poor' condition due to the limited planting within it. This will result in a gain of 0.35 biodiversity units.

Heathland and shrub – Mixed scrub

- 6.7 A total of 0.24 hectares of mixed scrub will be created and managed to provide a greater species diversity. Composition will be of native species with less than 10% being bramble. This habitat will be created at a "Moderate" condition. This will result in a gain of 1.66 biodiversity units.

Woodland and Forest – Other mixed woodland

- 6.8 A total of 0.74 hectares of mixed woodland will be created on site to create a wider block that connects to the retained woodland. The woodland will be created using a mix of native species but is unlikely to mature to a high quality within 30 years. As such the target condition has been lowered to 'Fairly Poor'. It is not considered viable to raise this habitat condition higher due to the long growing period and woodland management require. This will result in a gain of 3.12 biodiversity units.

Urban-Urban tree

- 6.9 The proposals include extensive mixed tree planting. This habitat will be created using native trees that will include at least a 25% composition of fruiting species such as crab apple (*Malus sylvestris*), wild cherry (*Prunus avium*), elder (*Sambucus nigra*) and holly (*Ilex aquifolium*). This planting also includes broadleaved native trees such as oak (*Quercus robur*), hornbeam (*Carpinus betulus*), hazel (*Corylus avellana*) and hawthorn (*Crataegus ,onogynal*). The habitat covers an area of 1.15 hectares and will be created to a 'Moderate' condition with all trees being planted at the feathered maiden stage or above. This will result in a gain of 3.53 biodiversity units.

Linear habitats

Native hedgerow

- 6.10 The proposals include the creation of a species rich native hedgerow that will measure a total of 0.97 hectares. This habitat will be created with connections to existing hedgerows and be of a 'Moderate' condition. This hedgerow will be created using a diverse mix of species and include hawthorn, field maple (*Acer campestre*), Guelder rose (*Viburnum opulus*), wayfaring tree (*Viburnum lantana*), elder and hazel. This will result in a gain of 3.26 biodiversity units.

Risks

- 6.11 To achieve net gain it will be necessary to ensure that habitats are created and enhanced and managed correctly for the perpetuity of the development. To ensure the habitats created are managed correctly a detailed Management Plan should be produced and implemented by a management company. The actions within the management plan will be undertaken to ensure the habitats present at the point of implementation meet or are maintained at their target condition. The management plan will detail the target habitat condition with management actions and timings. It will set conditions for intervention for remedial actions such as replacement planting. The plan will cover the establishment period of the habitats on site and provide an on-going management strategy for up to 30 years, updated on a five year rotational basis.

7.0 CONCLUSION

- 7.1 Based on the current scheme it is predicted that a net gain in biodiversity will result from the proposed habitat creation within the application area. A predicted net gain of 4.77 habitat units and 1.80 hedgerow units will be provided which equates to a net gain of 28.46% in habitat units and 39.13% in hedgerow units.
- 7.2 To ensure habitats created reach their target condition a Biodiversity Net Gain management and monitoring plan should be created.

8.0 REFERENCES

CIRA (2019) *Biodiversity Net Gain – Good Practice Principles for Developments*

Natural England (2023) *Biodiversity Metric 3.1 Technical supplement*

APPENDIX I: HABITAT GAIN – Creation areas

Habitat creation areas: -Creation of new habitat areas and the associated value of the habitats in biodiversity units.

Proposed habitat	Condition assessment	Area within application	Value
		ha	Biodiversity units
Modified grassland	Moderate	1.217	4.22
Lowland meadows	Fairly Poor	1.534	4.57
Ponds (Non- Priority Habitat)	Moderate	0.0501	0.36
Ponds (Non- Priority Habitat)	Fairly Poor	0.062	0.35
Modified grassland	Fairly Poor	0.251	0.70
Developed land; sealed surface	N/A - Other	2.811	0.00
Mixed scrub	Moderate	0.2482	1.66

Other woodland; mixed	Fairly Poor	0.7433	3.12
Artificial unvegetated, unsealed surface	N/A - Other	0.0415	0.00
Ponds (Non- Priority Habitat)	Moderate	0.0971	0.70
Urban Tree	Moderate	1.15572096	3.53
Native Hedgerow	Moderate	0.973 (Kilometres)	3.26

APPENDIX II: PHASE 1 HABITAT SURVEY



APPENDIX III: HABITAT PROPOSALS





APPENDIX IV: PARAMETERS PLAN



APPENDIX V: HEDGEROW CDC

H1: Native hedgerow with bank or ditch

Condition sheet: HEDGEROW Habitat Types				
UKHAB Habitat Type				
Native hedgerow				
Native hedgerow - associated with bank or ditch				
Native hedgerow with trees				
Native hedgerow with trees - associated with bank or ditch				
Native species rich hedgerow				
Native species rich hedgerow - associated with bank or ditch				
Native species rich hedgerow with trees				
Native species rich hedgerow with trees - associated with bank or ditch				
Site name/Location	Lower Horsebridge	Onsite/offsite	On site	
Habitat's central grid reference	TQ 57447 11123	Unique polygon reference(s)	H1	
Limitations (if applicable)	none	Metric 3.1 survey reference (if condition assessment of this polygon relates to a wider habitat survey)		
Habitat Description				
Hedgerow with ditch between wood and river at the centre of site, primarily composed of dogwood and blackthorn				
See Table TS1-3 of the Technical Supplement.				
Condition Assessment Criteria				
A series of ten attributes, representing key physical characteristics, are used for this assessment. The attributes, and the minimum criteria for achieving a favourable condition in each, are defined. The attributes use similar favourable condition criteria to the Hedgerow Survey Handbook and the handbook is the recommended source of reference for assessing individual hedgerow attributes.				
Hedgerow favourable condition attributes				
Attributes and functional groupings (A, B, C, D & E)	Criteria (the minimum requirements for 'favourable condition')	Description	Condition Achieved (Y/N)	Notes/Justification
Core groups - applicable to all hedgerow types				
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).	Y	C. 2.5m
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 ⁴).	N	c. 0.75m
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).	N	c. 1m
B2 Gap - hedge canopy continuity	Gaps make up <10% of total length and 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 subject to the >5 m criterion (as this is the typical size of a gate).	Y	hedgerow largely continuous
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)	This is the level of disturbance (excluding wildlife disturbance) at the base of the hedge. Undisturbed ground should be present for at least 90% of the hedgerow length, greater than 1m in width and must be present along at least one side of the hedge. This criterion recognises the value of the hedge base as a boundary habitat with the capacity to support a wide range of species. Cultivation, heavily trodden footpaths, poached ground etc. can limit available habitat niches.	N	field margin lies adjacent to hedgerow, with no distinct margin
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 (<i>Urtica</i> spp.), cleavers (<i>Galium aparine</i>) and docks (<i>Rumex</i> spp.). Their presence, either singly or together, should not exceed the 20% cover threshold.	N	Many nettles and thistles are found across hedgerow base
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.	Y	
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).	N	Excessive felling on southern aspect of hedgerow has led to creation of exposed hedge base
Additional group - applicable to hedgerows with trees only				

E1	Tree age	At least one mature tree per 30m stretch of hedgerow. A mature tree is one that is at least 2/3 expected fully mature height for the species.	This criterion addresses if there are sufficient mature trees (within the scope of planning timescales) which are of higher value to biodiversity.		
E2	Tree health	At least 95% of hedgerow trees are in a healthy condition (excluding veteran features valuable for wildlife). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.	This criterion identifies if the trees are subject to damage which compromises the survival and health of the individual specimens.		

Each attribute is assigned to one of five functional groups (A – E), as indicated in Table TS1-2 and the condition of a hedgerow is assessed according to the number of attributes from these functional groups which pass or fail the 'favourable condition' criteria according to the approach set out in Table TS1-3.

The hedgerow condition assessment generates a weighting (score) ranging from 1-3, which is used within the biodiversity metric 3.1. The scores for each are set out in tables TS1-3 and TS1-4 below.

TABLE TS1-3: Hedgerow condition assessment and weighting

Condition categories for hedgerows without trees		
Category	Maximum number of attributes that can fail to meet 'favourable condition' criteria in Table TS1-2	Weighting (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 Does not fail both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & C2 = Moderate condition).	2
Poor	Fails a total of more than 4 attributes; OR Fails both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & B2 = Poor condition).	1
Score achieved:	poor	
Condition categories for hedgerows with trees		
Category	Maximum number of attributes that can fail to meet 'favourable condition' criteria in Table TS1-2	Weighting (score)
Good	No more than 2 failures in total; AND No more than 1 failure in any functional group.	3
Moderate	No more than 5 failures in total; AND Does not fail both attributes in more than one functional group (e.g. fails attributes A1, A2, B1, C2 & E1 = Moderate condition).	2
Poor	Fails a total of more than 5 attributes; OR Fails both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & B2 = Poor condition).	1
Score achieved:	n/a	

Suggested enhancement interventions to improve condition score

Avoid disturbance (i.e. ploughing) close to hedgerow, change cutting regime to encourage hedge base growth

H2: Native species rich hedgerow with trees

Condition sheet: HEDGEROW Habitat Types				
UKHab Habitat Type				
Native hedgerow				
Native hedgerow - associated with bank or ditch				
Native hedgerow with trees				
Native hedgerow with trees - associated with bank or ditch				
Native species rich hedgerow				
Native species rich hedgerow - associated with bank or ditch				
Native species rich hedgerow with trees				
Native species rich hedgerow with trees - associated with bank or ditch				
Site name/Location	Lower Horsebridge	Onsite/offsite	On site	
Habitat's central grid reference	TQ 57247 11096	Unique polygon reference(s)	H2	
Limitations (if applicable)	none	Metric 3.1 survey reference (if condition assessment of this polygon relates to a wider habitat survey)		
Habitat Description				
Hedgerow with trees on western boundary of site. Hedgerow lies adjacent to field, dominated by hawthorn, tree line lies adjacent to hedgerow, c. 2m east, therefore trees do not emerge from hedgerow, but as overall less than 5m hedgerow with trees considered best habitat fit.				
See Table TS1-3 of the Technical Supplement.				
Condition Assessment Criteria				
A series of ten attributes, representing key physical characteristics, are used for this assessment. The attributes, and the minimum criteria for achieving a favourable condition in each, are defined. The attributes use similar favourable condition criteria to the Hedgerow Survey Handbook and the handbook is the recommended source of reference for assessing individual hedgerow attributes.				
Hedgerow favourable condition attributes				
Attributes and functional groupings (A, B, C, D & E)	Criteria (the minimum requirements for 'favourable condition')	Description	Condition Achieved (Y/N)	Notes/Justification
Core groups - applicable to all hedgerow types				
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).	Y	C: 2.0m
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).	Y	c. 5m wide overall
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 gapiness 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).	N	c. 1.25m
B2. Gap - hedge canopy continuity	Gaps make up <10% of total length and No canopy gaps >5 m	This is the horizontal gapiness 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 gapiness, but are not subject to the >5 m criterion (as this is the typical size of a gate).	Y	hedgerow and tree line largely continuous
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)	This is the level of disturbance (excluding wildlife disturbance) at the base of the hedge. Undisturbed ground should be present for at least 90% of the hedgerow length, greater than 1m in width and must be present along at least one side of the hedge. This criterion recognises the value of the hedge base as a boundary habitat with the capacity to support a wide range of species. Cultivation, heavily trodden footpaths, poached ground etc. can limit available habitat niches.	Y	base of tree line is relatively undisturbed
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 (<i>Urtica</i> spp.), cleavers (<i>Galium aparine</i>) and docks (<i>Rumex</i> spp.). Their presence, either singly or together, should not exceed the 20% cover threshold.	N	Many nettles are found across hedgerow base
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.	Y	
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).	N	Excessive felling on eastern aspect of hedgerow has led to creation of exposed hedge base
Additional group - applicable to hedgerows with trees only				

E1. Tree age	At least one mature tree per 30m stretch of hedgerow. A mature tree is one that is at least 2/3 expected fully mature height for the species.	This criterion addresses if there are sufficient mature trees (within the scope of planning timescales) which are of higher value to biodiversity.	Y	
E2. Tree health	At least 95% of hedgerow trees are in a healthy condition (excluding veteran features valuable for wildlife). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.	This criterion identifies if the trees are subject to damage which compromises the survival and health of the individual specimens.	Y	

Each attribute is assigned to one of five functional groups (A – E), as indicated in Table TS1-2 and the condition of a hedgerow is assessed according to the number of attributes from these functional groups which pass or fail the 'favourable condition' criteria according to the approach set out in Table TS1-3.

The hedgerow condition assessment generates a weighting (score) ranging from 1-3, which is used within the biodiversity metric 3.1. The scores for each are set out in tables TS1-3 and TS1-4 below.

TABLE TS1-3: Hedgerow condition assessment and weighting

Condition categories for hedgerows without trees			
Category	Maximum number of attributes that can fail to meet 'favourable condition' criteria in Table TS1-2	Weighting (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 Does not fail both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & C2 = Moderate condition).	2	
Poor	Fails a total of more than 4 attributes; OR Fails both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & B2 = Poor condition).	1	
Score achieved:	N/A		
Condition categories for hedgerows with trees			
Category	Maximum number of attributes that can fail to meet 'favourable condition' criteria in Table TS1-2	Weighting (score)	
Good	No more than 2 failures in total; AND No more than 1 failure in any functional group.	3	
Moderate	No more than 5 failures in total; AND Does not fail both attributes in more than one functional group (e.g. fails attributes A1, A2, B1, C2 & E1 = Moderate condition).	2	
Poor	Fails a total of more than 5 attributes; OR Fails both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & B2 = Poor condition).	1	
Score achieved:	moderate		

Suggested enhancement interventions to improve condition score

Avoid disturbance (i.e. ploughing) close to hedgerow, change cutting regime to encourage hedge base growth

H3a: Native hedgerow

Condition sheet: HEDGEROW Habitat Types				
UKHabit Habitat Type				
Native hedgerow				
Native hedgerow - associated with bank or ditch				
Native hedgerow with trees				
Native hedgerow with trees - associated with bank or ditch				
Native species rich hedgerow				
Native species rich hedgerow - associated with bank or ditch				
Native species rich hedgerow with trees				
Native species rich hedgerow with trees - associated with bank or ditch				
Site name/Location	Lower Horsebridge	Onsite/offsite	On site	
Habitat's central grid reference	TQ 57253 11297	Unique polygon reference(s)	H3a	
Limitations (if applicable)	Surveyed from south side only	Metric 3.1 survey reference (if condition assessment of this polygon relates to a wider habitat survey)		
Habitat Description				
Hedgerow along the northern boundary of site, predominately composed of hawthorn, with occasional sycamore, beech, bramble, ivy and willow.				
See Table TS1-3 of the Technical Supplement.				
Condition Assessment Criteria				
A series of ten attributes, representing key physical characteristics, are used for this assessment. The attributes, and the minimum criteria for achieving a favourable condition in each, are defined. The attributes use similar favourable condition criteria to the Hedgerow Survey Handbook and the handbook is the recommended source of reference for assessing individual hedgerow attributes.				
Hedgerow favourable condition attributes				
Attributes and functional groupings (A, B, C, D & E)	Criteria (the minimum requirements for 'favourable condition')	Description	Condition Achieved (Y/N)	Notes/Justification
Core groups - applicable to all hedgerow types				
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).	Y	C: 2.5m
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 ¹).	N	c. 1m
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).	N	c. 2m
B2: Gap - hedge canopy continuity	Gaps make up <10% of total length and 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 subject to the >5 m criterion (as this is the typical size of a gate).	Y	hedgerow largely continuous
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)	This is the level of disturbance (excluding wildlife disturbance) at the base of the hedge. Undisturbed ground should be present for at least 90% of the hedgerow length, greater than 1m in width and must be present along at least one side of the hedge. This criterion recognises the value of the hedge base as a boundary habitat with the capacity to support a wide range of species. Cultivation, heavily trodden footpaths, poached ground etc. can limit available habitat niches.	N	field margin lies adjacent to hedgerow, with no distinct margin
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 (<i>Urtica</i> spp.), cleavers (<i>Galium aparine</i>) and docks (<i>Rumex</i> spp.). Their presence, either singly or together, should not exceed the 20% cover threshold.	N	Many nettles are found across hedgerow base
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.	Y	Sycamore is found, but <10%
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).	N	Excessive felling on southern aspect of hedgerow has led to creation of exposed hedge base
Additional group - applicable to hedgerows with trees only				

E1	Tree age	At least one mature tree per 30m stretch of hedgerow. A mature tree is one that is at least 2/3 expected fully mature height for the species.	This criterion addresses if there are sufficient mature trees (within the scope of planning timescales) which are of higher value to biodiversity.		n/a
E2	Tree health	At least 95% of hedgerow trees are in a healthy condition (excluding veteran features valuable for wildlife). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.	This criterion identifies if the trees are subject to damage which compromises the survival and health of the individual specimens.		n/a

Each attribute is assigned to one of five functional groups (A – E), as indicated in Table TS1-2 and the condition of a hedgerow is assessed according to the number of attributes from these functional groups which pass or fail the ‘favourable condition’ criteria according to the approach set out in Table TS1-3.

The hedgerow condition assessment generates a weighting (score) ranging from 1-3, which is used within the biodiversity metric 3.1. The scores for each are set out in tables TS1-3 and TS1-4 below.

TABLE TS1-3: Hedgerow condition assessment and weighting

Condition categories for hedgerows without trees		
Category	Maximum number of attributes that can fail to meet ‘favourable condition’ criteria in Table TS1-2	Weighting (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 <u>Does not fail both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & C2 = Moderate condition).</u>	2
Poor	Fails a total of more than 4 attributes; OR <u>Fails both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & B2 = Poor condition).</u>	1
Score achieved:	Poor	
Condition categories for hedgerows with trees		
Category	Maximum number of attributes that can fail to meet ‘favourable condition’ criteria in Table TS1-2	Weighting (score)
Good	No more than 2 failures in total; AND No more than 1 failure in any functional group.	3
Moderate	No more than 5 failures in total; AND <u>Does not fail both attributes in more than one functional group (e.g. fails attributes A1, A2, B1, C2 & E1 = Moderate condition).</u>	2
Poor	Fails a total of more than 5 attributes; OR <u>Fails both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & B2 = Poor condition).</u>	1
Score achieved:	n/a	

Suggested enhancement interventions to improve condition score

Avoid disturbance (i.e. ploughing) close to hedgerow, change cutting regime to encourage hedge base growth.

H3b: Native hedgerow with trees

Condition sheet: HEDGEROW Habitat Types				
UKHab Habitat Type				
Native hedgerow				
Native hedgerow - associated with bank or ditch				
Native hedgerow with trees				
Native hedgerow with trees - associated with bank or ditch				
Native species rich hedgerow				
Native species rich hedgerow - associated with bank or ditch				
Native species rich hedgerow with trees				
Native species rich hedgerow with trees - associated with bank or ditch				
Site name/Location	Lower Horsebridge	Onsite/offsite	On site	
Habitat's central grid reference	TQ 57175 11206	Unique polygon reference(s)	H3b	
Limitations (if applicable)	Surveyed from eastern side only		Metric 3.1 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	
Habitat Description				
Hedgerow along in the north western corner of site, predominately composed of hawthorn, with occasional sycamore, beech, bramble, ivy and willow, with low emergent tree's c. 5m apart.				
See Table TS1-3 of the Technical Supplement.				
Condition Assessment Criteria				
A series of ten attributes, representing key physical characteristics, are used for this assessment. The attributes, and the minimum criteria for achieving a favourable condition in each, are defined. The attributes use similar favourable condition criteria to the Hedgerow Survey Handbook and the handbook is the recommended source of reference for assessing individual hedgerow attributes.				
Hedgerow favourable condition attributes				
Attributes and functional groupings (A, B, C, D & E)	Criteria (the minimum requirements for 'favourable condition')	Description	Condition Achieved (Y/N)	Notes/Justification
Core groups - applicable to all hedgerow types				
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).	Y	C. 2.5m
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).	N	c. 1m
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).	N	c. 2m
B2: Gap - hedge canopy continuity	Gaps make up <10% of total length and 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 subject to the >5 m criterion (as this is the typical size of a gate).	Y	hedgerow largely continuous
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)	This is the level of disturbance (excluding wildlife disturbance) at the base of the hedge. Undisturbed ground should be present for at least 90% of the hedgerow length, greater than 1m in width and must be present along at least one side of the hedge. This criterion recognises the value of the hedge base as a boundary habitat with the capacity to support a wide range of species. Cultivation, heavily trodden footpaths, poached ground etc. can limit available habitat niches.	N	fold margin lies adjacent to hedgerow, with no distinct margin
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 (<i>Urtica</i> spp.), cleavers (<i>Galium aparine</i>) and docks (<i>Rumex</i> spp.). Their presence, either singly or together, should not exceed the 20% cover threshold.	N	Many nettles are found across hedgerow base
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.	Y	Sycamore is found, but <10%
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).	N	Excessive felling on southern aspect of hedgerow has led to creation of exposed hedge base
Additional group - applicable to hedgerows with trees only				

E1	Tree age	At least one mature tree per 30m stretch of hedgerow. A mature tree is one that is at least 2/3 expected fully mature height for the species.	This criterion addresses if there are sufficient mature trees (within the scope of planning timescales) which are of higher value to biodiversity.	N	
E2	Tree health	At least 95% of hedgerow trees are in a healthy condition (excluding veteran features valuable for wildlife). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.	This criterion identifies if the trees are subject to damage which compromises the survival and health of the individual specimens.	Y	

Each attribute is assigned to one of five functional groups (A – E), as indicated in Table TS1-2 and the condition of a hedgerow is assessed according to the number of attributes from these functional groups which pass or fail the 'favourable condition' criteria according to the approach set out in Table TS1-3.

The hedgerow condition assessment generates a weighting (score) ranging from 1-3, which is used within the biodiversity metric 3.1. The scores for each are set out in tables TS1-3 and TS1-4 below.

TABLE TS1-3: Hedgerow condition assessment and weighting

Condition categories for hedgerows without trees		
Category	Maximum number of attributes that can fail to meet 'favourable condition' criteria in Table TS1-2	Weighting (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 Does not fail both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & C2 = Moderate condition).	2
Poor	Fails a total of more than 4 attributes; OR Fails both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & B2 = Poor condition).	1
Score achieved:	n/a	
Condition categories for hedgerows with trees		
Category	Maximum number of attributes that can fail to meet 'favourable condition' criteria in Table TS1-2	Weighting (score)
Good	No more than 2 failures in total; AND No more than 1 failure in any functional group.	3
Moderate	No more than 5 failures in total; AND Does not fail both attributes in more than one functional group (e.g. fails attributes A1, A2, B1, C2 & E1 = Moderate condition).	2
Poor	Fails a total of more than 5 attributes; OR Fails both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & B2 = Poor condition).	1
Score achieved:	poor	

Suggested enhancement interventions to improve condition score

Avoid disturbance (i.e. ploughing) close to hedgerow, change cutting regime to encourage hedge base growth