Norfolk County Council

West Winch Housing Access Road

Environmental Statement

Chapter 8: Biodiversity

Annex 8.17: Biodiversity Net Gain Assessment (2023)

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Foreword

Norfolk County Council are proposing the West Winch Housing Access Road (WWHAR) (herein referred to as the "Proposed Scheme").

WSP UK Ltd (WSP) was commissioned by Norfolk County Council to carry out a Biodiversity Net Gain (BNG) Assessment of the Proposed Scheme. BNG is the desired result of a process applied to development so that overall, there is a positive outcome for biodiversity. This report sets out the BNG assessment, providing both a quantitative and qualitative assessment, using Biodiversity Metric 4.0 Calculation Tool (Natural England, 2023) (herein referred to as "the Metric") and assessing the project against the Biodiversity Net Gain Good Practice Principles (CIEEM, CIRIA and IEMA, 2016) ("the Principles").

This BNG assessment report:

1. Uses the Metric to quantify and compare the baseline biodiversity value of existing habitats onsite and the proposed post-development biodiversity value based on the draft landscape design (see maps in Appendix A) to provide an indication of quantitative net loss, no net loss, or a net gain for biodiversity onsite;

2. Provides a qualitative assessment of the compliance of the Proposed Scheme with the Principles;

3. Provides recommendations where necessary for amendments to the design that can be implemented to promote a scheme-wide BNG; and

4. Provides an overview of offsite habitat creation necessary to achieve net gain.

The Proposed Scheme has been assessed for compliance with conditions set out in the Environment Act (2021), which requires a minimum 10% BNG for all new developments (from January 2024), and to meet client commitments on BNG.

Quantitative Assessment

Overall, based on the draft landscape design, the Proposed Scheme is predicted to achieve the following quantitative net gains and losses.

Biodiversity unit type	Pre-development Baseline	Post development (onsite)	% Net Change
Area Habitat Units	202.17	122.59	-39.11%
Hedgerow Units	12.88	28.76	123.38%
Watercourse Units	0.32	1.06	236.06%

The Proposed Scheme achieves a -39.11% net loss in Area Habitat Units, but a 123.38% net gain in Hedgerow Biodiversity Units, and a 236.06% net gain in Watercourse Units. Hedgerows and watercourses/ditches are measured in lengths (kilometres) and other terrestrial habitats in area (hectares) and are therefore calculated separately in the Metric. The Proposed Scheme, therefore, does not achieve the BNG target of 10% net gain.

Additionally, alongside the net loss in Area Habitat Units, the Trading Rules within the Metric are not satisfied. Trading Rules are designed to ensure that higher quality habitats are not replaced with lower quality ones. The measure of habitat quality used in the Metric to determine Trading Rules is referred to as a habitat's 'distinctiveness'. Within the Metric higher distinctiveness habitats receive a higher biodiversity unit score and cannot be replaced with habitats of a lower distinctiveness score.

There is a deficit of -7.69 biodiversity units associated with lowland mixed deciduous woodland, a deficit of -1.31 biodiversity units associated with reedbeds, and a deficit of -1.40 biodiversity units associated with ponds (priority habitat). These habitats are regarded as having high distinctiveness and require like-for-like habitat creation. There is also a deficit of -11.74 biodiversity units associated with other neutral grassland, and a deficit of -17.30 biodiversity units associated with bramble, hawthorn and mixed scrub habitats. All of these habitat types are considered to have medium distinctiveness and require the same broad habitat or a higher distinctiveness habitat creation to compensate for them.

As the Proposed Scheme moves through the next phases of design (detailed design), consideration should be made to improve the BNG outcomes such as increasing creation of reedbeds and ponds (priority habitat) onsite, as well as lowland mixed deciduous woodland offsite.

Irreplaceable habitat in the form of veteran trees are present within the Scheme Boundary, however these are to be retained. Any impacts or management strategies for these trees are discussed within Chapter 8 of the Environmental Statement (ES) for the Proposed Scheme.

Qualitative Assessment

The Proposed Scheme currently meets four of ten BNG good practice principles. The four principles that have been achieved are as follows:

1. Apply the mitigation hierarchy

2. Avoid losing biodiversity that cannot be offset by gains elsewhere

4. Address risks

9. Optimise sustainability

The six principles that have not been achieved are as follows:

3. Be inclusive and equitable

5. Make a measurable Net Gain contribution

6. Achieve the best outcomes for biodiversity

7. Be additional

8. Create a Net Gain legacy

10. Be transparent

Whilst the Proposed Scheme applies the mitigation hierarchy and does not impact irreplaceable habitats, in order to adhere to all good principles, consideration should be made to secure offsite sites to further compensate habitats that will be lost through the development. All post development habitats should be secured through suitable long-term management strategies and confirmation of the responsibility of monitoring, maintenance and the length of maintenance period post-construction. Stakeholder engagement will also be required to agree management measures.

Next Steps

Changes at Detailed Design

Where possible, additional habitat creation should be included in further design iterations to achieve the required 10% net gain for the Proposed Scheme. This should include measures such as enhancements to drainage attenuation ponds to provide ponds and reedbed habitat.

Achieving BNG in practice will require long-term management and monitoring of habitats for a minimum 30-year period. For this purpose, a detailed 30-year Landscape and Ecology Management Plan (LEMP) should be produced (e.g., as a requirement of a planning condition), setting out the details of a management and monitoring programme, tasks, and responsibilities.

Any amendments to the Proposed Scheme landscape mitigation plan that was used for this BNG assessment will necessitate re-running the biodiversity unit calculations. It is likely that a further iteration of the calculation will be required to show change in units based on any final design freeze or at detailed design stage.

Offsite Habitat Creation

It will be necessary to secure offsite habitat creation for a further 96.05 area biodiversity units to achieve 10% BNG. To satisfy the Trading Rules, offsite habitat creation will need to include lowland mixed deciduous woodland to make up the deficit of -7.69 biodiversity units, which is an approximate area of 6 ha. This value is provided to offer an indication of the area required to meet the 10% net gain target; however offsetting requirements will be subject to further assessment.

It will also be necessary to confirm the responsibility for monitoring and maintenance, to include the length of the maintenance period post-construction, as well as any legal and financial agreements required to secure offsite habitat creation.

1 Introduction

1.1 Project Background

1.1.1 WSP was commissioned by Norfolk County Council (subsequently referred to as "The Client") to undertake a Biodiversity Net Gain (BNG) assessment of the West Winch Housing Access Road (WWHAR) (hereafter referred to as the "Proposed Scheme").

1.1.2 The site of the Proposed Scheme is contained within the Scheme Boundary shown in Figures A-1 and A-2, Appendix A, which comprises an area of 68.86 hectares (ha).

1.1.3 The Proposed Scheme is a highway scheme located within land to the east of West Winch village, linking the A10 Main Road to the A47 Constitution Hill. The Proposed Scheme is located between the A47 (northern extent) and the A10 (southern extent), crossing several agricultural land parcels.

1.1.4 The Client is submitting an outline planning application for the WWHAR Scheme on 68.86 hectare (ha) area of land (including temporary land). The main elements of the Proposed Scheme include:

- A 3.5km long carriageway to the east of West Winch connecting the A47 with the existing A10, providing access to proposed housing development;

- Modifications to the existing Hardwick Interchange and dualling of the existing A47 between Hardwick Interchange and the housing access road;

- The housing access road will be predominantly single carriageway, with a short section of dual carriageway on the approach to the A47 and feature a total of five roundabouts including;

- A partially signalised roundabout junction where the housing access road meets the A47;

- A roundabout on the housing access road providing access to the Hardwick Green (i.e., Hopkins Homes) planned development, plus two roundabout junctions to accommodate connections to further housing development;

- A roundabout at the southern end of the housing access road, providing a connection to the existing A10 with new signalised crossings nearby;

- Treatment of local roads severed by the housing access road including an overbridge at Rectory Lane to accommodate road and bridleway users, and closure of Chequers Lane where it crosses the scheme with an at-grade signalised crossing, to maintain east to west access;

- Modifications to the existing A10 to improve safety and support its repurposing as a local traffic route;

- Construction of drainage features, including basins, and associated maintenance access tracks;

- Landscaping, and connections for non-motorised users;

- Utility diversions, including National Grid gas mains;

- Demolition of Hill Cottages on A47 Constitution Hill; and

- Temporary use of land during construction for working areas, haul routes, site compounds, and storage.

1.1.5   A comprehensive description is provided in Chapter 3 of the Environmental Statement (ES) 'Description of the Proposed Scheme' (document reference: 3.03.00).

1.1.6   The Proposed Scheme is required to allow for the access to the proposed housing developments east of West Winch. These have been identified within the Borough Council of Kings Lynn and West Norfolk Local Plan as suitable for the development of approximately 4,000 new dwellings.

1.1.7   The purpose of this document is to provide an assessment of the Proposed Scheme design that will inform detailed design at a later stage and inform the approximate level of offsite habitat creation necessary to achieve 10% BNG.

1.1.8   This assessment has been completed and reviewed/approved by ecologists capable in BNG, in line with the CIEEM levels of competency (CIEEM, 2021b).

1.2   Biodiversity Net Gain

1.2.1   BNG is an approach to development "that leaves the natural environment in a measurably better state than beforehand" (DEFRA, 2019). The process follows the mitigation hierarchy, which sets out that everything possible must be done to firstly avoid, secondly minimise and thirdly restore / rehabilitate losses of biodiversity onsite. Only as a last resort, residual losses are compensated for using offsite habitat enhancement or creation. To undertake the assessment the Biodiversity Metric 4.0 Calculation Tool (Natural England, 2023) (herein referred to as "the Metric") is used to quantify the biodiversity losses and gains resulting from development and a qualitative assessment is undertaken to review adherence to the BNG Good Practice Principles (CIEEM, CIRIA and IEMA, 2019) (hereafter referred as "the Principles"). A description of the Principles is provided in Table 3-1**.**

1.2.2   The Metric has been used to quantify the biodiversity value (measured in 'biodiversity units') of the existing land within the Scheme Boundary, as well as those proposed under the current landscape designs. By comparing the biodiversity unit value before (baseline) and after development (post-development), the change in biodiversity units can be measured. This change is presented as a percentage change and biodiversity unit change.

1.3   Scope of Report

1.3.1   This report uses the Metric and the Principles to produce an assessment report that:

1. Establishes the total number of baseline biodiversity units by Area Habitat, Hedgerows and Watercourses within the Scheme Boundary.

2. Establishes the total number of Area Habitat Units, Hedgerow Units and Watercourse Units which will be retained, lost, enhanced, and created under the current design of the Proposed Scheme's landscape mitigation plan (see maps in Appendix A);

3. Determines whether the Proposed Scheme is predicted to result in a quantitative net loss, no net loss, or a net gain for biodiversity;

4. Provides a qualitative assessment evidencing compliance of the Proposed Scheme with the Principles; and

5. Provides recommendations where necessary for amendments to the current design of the Proposed Development's landscape mitigation plan to achieve a net gain.

1.3.2   It is important to recognise that BNG is one of several factors to be considered when assessing the impact of the Proposed Scheme on biodiversity. Please note that this BNG assessment report does not cover potential impacts of the Proposed Scheme on protected species, designated sites, and indirect effects on habitats. These are covered within Chapter 8 of the Environmental Statement.

1.3.3   This assessment has been compiled with reference to relevant national and local legislation and policy relating to nature conservation and BNG, provided in Appendix B. The Proposed Scheme has a net gain target of 10%.

2 Methodology

2.1.1 This BNG assessment is informed by the following industry recognised good practice guidance:

- CIEEM, IEMA & CIRIA (2019) Biodiversity Net Gain: Good Practice Principles for Development (CIEEM, CIRIA and IEMA, 2019).

- Natural England (2023) Biodiversity Metric 4.0 (herein referred to as the Metric), following the methodology set out within the Metric 4.0 User Guide and Technical Supplement.

- British Standard 8683 Process for designing and implementing Biodiversity Net Gain – Specification (2021) (British Standards Institute, 2021).

- CIEEM (2021) Biodiversity Net Gain Reporting and Audit Templates (CIEEM, 2021a).

2.2 Consultation

2.2.1 Consultation with the WSP Landscape Design Team and Project Management Team was undertaken during the design of the Proposed Scheme, and the design used for this assessment reflects the results of those discussions.

2.2.2 The main focus of the discussions were to extend the Red Line Boundary (RLB) to the east and north to incorporate further woodland compensation within the Scheme Boundary. In addition, the Scheme Boundary has been refined and revisions to the RLB undertaken to avoid impacting higher distinctiveness habitats such as woodland. The location of features, such as attenuation ponds, have also been amended to avoid these habitats.

2.2.3 Discussions with the Local Planning Authority (LPA) of the Borough Council of King's Lynn and West Norfolk have also taken place. These have centred

around the approach to BNG and the LPA have put forward an option for an offsite creation site.

2.3 Quantitative Assessment

2.3.1 The Metric has been used to complete a quantitative assessment which involves a calculation of the baseline biodiversity value (before construction); a post-development biodiversity value; and a net change in biodiversity value associated with the Proposed Scheme.

2.3.2 There are three habitat quality components of the Metric, namely Distinctiveness, Condition and Strategic Significance.

Distinctiveness

2.3.3 Distinctiveness is a measure based on the type of habitat and its distinguishing features. The classification of distinctiveness of a habitat is generated automatically by the Metric which assigns distinctiveness categories to habitat types broadly based on the categories set out in Table 2-1 and their associated scores. This is the starting point for calculating the number of biodiversity units per hectare for each habitat.

Table 2-1 - Habitat Distinctiveness Bands and Score

Distinctiveness Band	Distinctiveness score	Example of Habitat Type Covered, Area Habitats
Very High	8	Priority habitats as defined in Section 41 of the NERC Act that are highly threatened, internationally scarce and require conservation action e.g., blanket bog.
High	6	Priority Habitat (as defined in Section 41 of the NERC Act).
Medium	4	Semi-natural habitat (broadleaved woodland, species-rich grassland) not included in Section 41 of the NERC Act.
Low	2	Managed habitats (arable, amenity grassland).

Distinctiveness Band	Distinctiveness score	Example of Habitat Type Covered, Area Habitats
Very Low	0	Habitats and land cover of little or no value to wildlife e.g., developed land sealed surface.

Condition

2.3.4   The condition of a habitat is a measure of the state of a habitat. This is often linked to past and present management and land use. It is a way of measuring variation in the quality of habitat parcels of the same habitat type.

2.3.5   Habitat condition scores are set out in Table 2-2.

Table 2-2 - Habitat Condition Scores

Habitat Condition	Area-based Habitat Condition Score	Linear-based Habitat Condition Score
Good	3	3
Fairly Good	2.5	N/A
Moderate	2	2
Fairly Poor	1.5	N/A
Poor	1	1
N/A - Other	0	N/A

Strategic Significance

2.3.6   BNG should aim to contribute to local strategic priorities for nature. The Metric includes an incentive for this through the Strategic Significance score. Strategic Significance for baseline and post-works habitats was categorised following the approach set out in Table 2-3.

Table 2-3 – Method for Assigning Strategic Significance

Strategic significance	Method
High - Within an area formally identified in local strategy	Habitats are assigned this category where the following criteria are met: It is located within an area identified as a statutory designated site or non-statutory designated site or within a relevant local strategy. *and* The habitat type is of specific importance to that location (e.g., it is referred to in the site's designation/strategy). *or* Where specific details on relevant habitats to the identified site are unknown, all habitats which sit within the formally identified area are assigned to this level.
Medium - Location ecologically desirable but not in location strategy	Professional judgement will be applied to determine if the location is deemed ecologically desirable for a particular habitat type. This decision will take account of the proximity of formally identified areas and ecological connectivity (i.e., if the habitat forms a strategic corridor) to the Proposed Scheme. For example, some areas of lowland mixed deciduous woodland within the Scheme Boundary have been assigned medium strategic significance given their direct connection to Sheep's Course Wood County Wildlife Site (CWS) within the Norfolk County Council Strategic Biodiversity Opportunity Area, which would classify as high distinctiveness habitat.
Low - Area not in a local strategy	Any habitats which do not fall into either of the above categories will be assigned this level of strategic significance.

2.3.7   In addition to the three habitat quality components of the Metric above, there are other elements of the Metric which are discussed hereafter.

Time To Target Condition

2.3.8   The time to target condition for each created habitat type present post-development had an additional two years added to reflect the time lag between habitat clearance and habitat creation. The Metric has been used to calculate the baseline biodiversity value; a post-development biodiversity value; and a net change in biodiversity value associated with the Proposed Scheme.

Trading Rules

2.3.9   Within the calculator, Trading Rules are factored in to ensure loss of habitat is replaced in alignment with the 'like for like' or 'like for better' principle, these rules can be summarised as follows:

- Low distinctiveness habitat = Same distinctiveness or better habitat required

- Medium distinctiveness habitat = Same broad habitat or a higher distinctiveness habitat required

- High distinctiveness habitat = Same habitat required

- Very high distinctiveness habitat = Bespoke compensation likely to be required.

Data Sources

2.3.10 The following data sources have been used to complete the BNG assessment:

- Publicly available datasets, Open-Source Natural England (Natural England, 2021) for Habitats of Principal Importance (HPI), ancient woodland (classed as irreplaceable habitat), statutory and non-statutory designated sites for nature conservation and relevant details from local strategies. Full details of the desk study method are provided

within Chapter 8 of the Environmental Statement. The results of the desk study have been used to inform the strategic significance value in line with the methodology detailed within the Biodiversity Metric 4.0 and Section 2.4.

- A UKHAB undertaken in June 2023 by a suitably experienced WSP ecologist following best practice guidelines (UKHab documentation (UKHAB Ltd., 2020)). This survey provided a baseline habitat database which details the habitat types present onsite, their area (ha) and their geographic distribution (Figures A-1 and A-2, Appendix A).

- All areas / lengths of habitats have been measured using QGIS [Version 3.30.2] with reference to the base map (Google Satellite).

- A habitat condition assessment (HCA), following the methodology detailed within Biodiversity Metric 4.0, was undertaken in June 2023 alongside the UKHAB surveys.

- Scheme Plans showing the RLB to determine the footprint for assessment. For the purposes of post development calculations, any proposed habitat creation or enhancement outside of the RLB is considered as offsite within the Metric.

- Habitats which are to be reinstated to their original type and condition within 2-years, are considered to be retained within the Metric.

- A draft post-development landscape mitigation plan provided by WSP on the 4/12/2023 (Drawing no. 70100518_WSP_ELS_WW_DR_LS_0001; Rev no. P03). The post-development landscape mitigation plan habitats were translated into Metric habitat types for use in the assessment (Figure A-3 and A-4, Appendix A). The post-development landscape mitigation plan has undergone iterative improvements in an attempt to achieve the best outcomes for biodiversity.

- The scheme description in the Environmental Statement has been used to inform the delay in habitat creation onsite.

Irreplaceable Habitats and Statutory Designated Sites

2.3.11 In accordance with the Biodiversity Metric 4.0 methodology, impacts on irreplaceable habitats (ancient woodland, ancient and veteran trees), very high distinctiveness habitats and statutory designated sites have been avoided through the design following the mitigation hierarchy, or excluded from the calculations.

2.3.12 It is important to note that BNG cannot be achieved for the Proposed Scheme as a whole if there is a loss of irreplaceable habitat or a loss of habitat from within statutory designated sites.

Approach to Habitat Enhancement / Creation Scenarios

2.3.13 Where the Proposed Scheme's habitat reinstatement delivers a shortfall in quantitative BNG, modelling was undertaken to identify potential habitat changes onsite and the required offsite habitat creation to achieve the BNG requirement for 10% net gain in Area Habitat Units, Hedgerow Units, and Watercourse Units while satisfying the Metric's Trading Rules.

2.4 Qualitative Assessment

2.4.1 A qualitative assessment of the compliance of the Proposed Scheme with the Principles (CIEEM, CIRIA and IEMA, 2016) was undertaken; this also provides a review to determine if wider biodiversity net gain obligations (i.e., in addition to the measurable net gain) have been met. Adherence of the Proposed Scheme to these Principles is based on the current stage in the BNG process; it does not necessarily rule out future adherence.

2.5   Limitations and Assumptions

2.5.1   The following limitations and assumptions have been applied when using the above methodologies.

Post-development Biodiversity

- The number of units required given in this assessment are expressed as 'estimated', given the accuracies of mapping in GIS, where values are not absolute, but approximate.

- Areas within the Scheme Boundary that will be retained have been assumed to be retained and managed post-development as the same habitat type and condition as the baseline habitat.

- Only direct impacts within the planning submission boundary of the Proposed Scheme are considered for BNG. Any indirect habitat impacts (e.g., air quality, dust and shading) have been addressed in the Environmental Statement and are not considered within this report.

- Detailed habitat planting and management plans have not been developed at this stage in the WWHAR design. Habitats that are created within the Proposed Scheme have been assigned a habitat type and condition based on the draft landscape proposals, likely management and professional judgement. It is assumed newly created hedgerows will be managed accordingly with suitable cuts to maintain hedgerow structure.

- Newly created habitat condition is detailed in Table 2-4. This is based on predicted habitat condition at the end of the required 30-year management and professional judgement on the likely condition of habitats has been applied. A justification of these habitat condition assumptions has been provided.

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Table 2-4 – Post-development Habitat Condition Assumptions

BNG 4.0 Habitat	Distinctiveness	Assumed condition	Assumption
Lowland deciduous woodland	High	Poor	One age class as all trees planted at the same time and an assumption that due to deer present within the local landscape, saplings will be prevented from establishing.
			Moderate to High level of herbivore damage as it is assumed newly planted trees will have rabbit proofing but not deer protection. Deer are known to be present on and close to the vicinity of the Proposed Scheme, with existing evidence of browsing of lower branches in existing woodlands and multiple deer tracks through habitats.
			No invasive species present due to selective planting and ongoing management.
			More than five species will be planted within woodland habitat.
			As only native species will be planted, over 80% of canopy trees and understory will be native.
			Due to planned planting, 10-20% of woodland will have areas of open space.
			Unlikely to be managed through thinning, therefore no coppice regrowth.
			Trees will remain in good health on the condition unhealthy trees will be removed and replanted.
			No recognised NVC community due to selected planting.
			Two storeys will be present due to different growth times of native species planted.
			No veteran trees as 30 years is not long enough to achieve this.
			No deadwood present.
			Woodland disturbance is the same as current baseline disturbance as woodland is planted within same broad area with no additional management.
Mixed scrub	Medium	Poor	Due to selective planting, more than three woody species will be planted, with no species being dominant.
			Age of species likely to be the same due to same time of planting.
			There will be no invasive non-native species and species indicative of sub-optimal condition will make up less than 5% of ground cover.
			Unlikely to have a well-developed and defined edge.
			No defined clearings, glades or rides will be present due to lack of management.
Modified grassland	Low	Good	Irregular mowing, allowing varied sward heights to establish.
			Likely to achieve 6-8 species/m² due to topography and wet conditions.

BNG 4.0 Habitat	Distinctiveness	Assumed condition	Assumption
Modified grassland	Low	Poor	Habitat is unlikely to be planted with sufficient species mix or diversity with at least 6-8 species/m², due to topography and ground conditions.
			Likely to be mown regularly and subject to air quality impacts from traffic.
Retained ponds (priority habitat) to be enhanced	High	Good	Poor water quality.
			Surrounding natural habitat will be created through landscape proposal
			Duckweed or filamentous algae likely to cover less 10% of pond surface once surrounding habitat use changes and dredging undertaken.
			Pond will not be connected artificially to other water bodies and water levels will be able to fluctuate naturally throughout the year.
			There will be no non-native plants.
			The ponds will not be stocked with fish.
			Plants will cover 50% of the pond area that is less than 3m deep and the pond will not be shaded more than 50% by woody bankside species.

BNG 4.0 Habitat	Distinctiveness	Assumed condition	Assumption
Wet woodland	High	Poor	One age class as all trees planted at the same time and an assumption that due to deer present within the local landscape, saplings will be prevented from establishing.
			Moderate to High level of herbivore damage as it is assumed newly planted trees will have rabbit proofing but not deer protection. Deer are known to be present on and close to the vicinity of the Proposed Scheme, with existing evidence of browsing of lower branches in existing woodlands and multiple deer tracks through habitats.
			No invasive species present due to selective planting and ongoing management.
			As only native species will be planted, over 80% of canopy trees and understory will be native.
			Due to planned planting, 10-20% of woodland will have areas of open space.
			Unlikely to be managed through thinning, therefore no coppice regrowth.
			Trees will remain in good health on the condition unhealthy trees will be removed and replanted.
			No recognised NVC community due to selected planting.
			Unlikely that more than two storeys will be present due to different growth times of native species planted.
			No veteran trees as 30 years is not long enough to achieve this.
			No deadwood present.
			Woodland disturbance is the same as current baseline disturbance as woodland is planted within same broad area with no additional management.

3 Results

3.1 Overview

3.1.1 This section provides a summary of the quantitative assessment, with full results available in the Metric calculation tool appended to this report (Appendix C), along with a summary of the qualitative assessment against the BNG Good Practice Principles, the full results of which are provided in Table 3-1.

3.1.2 The Proposed Scheme results in a -39.11% (-79.06 biodiversity units) net loss in Area Based Habitats. The Proposed Scheme therefore does not achieve the required BNG outcome.

3.2 Quantitative Assessment

Strategic Significance

3.2.1 The Scheme Boundary contains parcels of lowland mixed deciduous woodland that are assigned medium strategic significance. This is based on professional judgement, given that these woodlands are connected to a core habitat area (Sheep's Course Wood County Wildlife Site (CWS)) within the Norfolk County Council Strategic Biodiversity Opportunity Area. The CWS itself would be considered of high strategic significance, and as such, any connecting habitat such as the lowland mixed deciduous woodland, which is also considered HPI under the Priority Habitat Inventory (Natural England, 2021), should be considered of medium distinctiveness. These woodlands are directly connected to the CWS and there are no physical barriers such as roads bisecting the areas. This applies to both the baseline and post-development.

3.2.2 All other habitats including baseline hedges and watercourses are of low strategic significance.

Baseline Biodiversity

3.2.3   UKHab habitat surveys identified the presence of 13 UKHab habitat types within the Proposed Scheme (Figures A-1 and A-2, Appendix A). The area-based habitats within the Scheme Boundary comprise habitats broadly classified under grassland, cropland, lakes, wetland, urban, woodland and forest, and heathland and shrub.

3.2.4   Within the Scheme Boundary, the hedge baseline includes native hedgerows, some of which were species rich or with trees.

3.2.5   Within the Scheme Boundary, the watercourse baseline includes ditch habitat.

3.2.6   The tabs within the accompanying Metric provide details on the habitat baseline and should be referred to for full details on the habitats present on-site. In this instance, please refer to tabs: A-1 Site Habitat Baseline, B-1 Site Hedge Baseline and C-1 Site Watercourse Baseline. Habitat maps are included in Appendix A.

3.2.7   There were 68.86 ha of habitats onsite, generating an estimated 202.17 Area Habitat Units in total.

3.2.8   There were also 1.66 km of hedgerows onsite, generating an estimated 12.88 Hedgerow Units, and 0.21 km of watercourses onsite, generating an estimated 0.32 Watercourse Units.

3.2.9   The Scheme Boundary includes 0.3058 ha of irreplaceable veteran tree habitats (four veteran trees). This area has been excluded from the baseline calculations as individual tree areas have not been mapped or calculated for this assessment. All veteran trees are retained and protected through the development, with measures to protect them detailed in the Environmental Statement and the Arboricultural Impact Assessment for the Proposed Scheme.
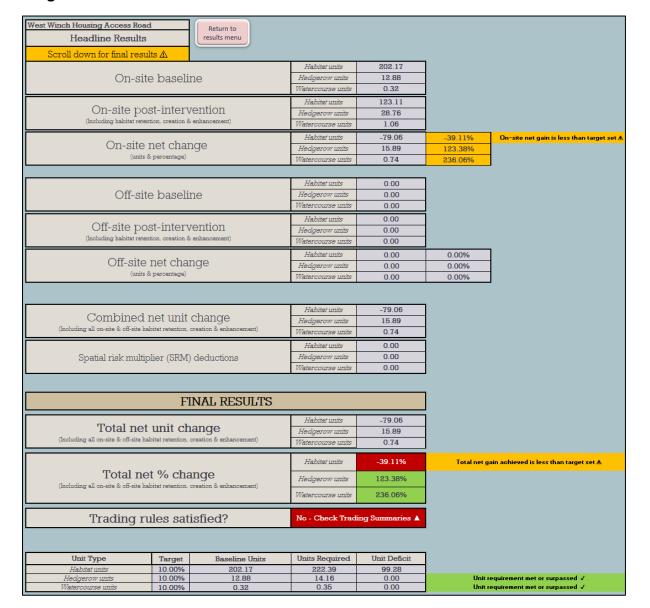
Post-development Biodiversity

3.2.10 The post-development habitats expected onsite after construction are based on the draft landscape mitigation plan and are shown as UKHab types in Figures A-3 and A-4, Appendix A. The landscape mitigation plan identifies where baseline habitats will be retained or enhanced as well as the locations for the creation of new habitats.

3.2.11 The landscape mitigation plan identifies the retention of 5.44ha of habitat, including a mixture of scrub, cereal crops, developed land; sealed surface, lowland mixed deciduous woodland, modified grassland, other neutral grassland, and other coniferous woodland.

3.2.12 All other post-development habitats will be introduced. These include a mixture of developed land; sealed surface, mixed scrub, modified grassland, lowland mixed deciduous woodland, wet woodland, priority hedgerows and ponds (priority habitat).

3.2.13 The tabs within the accompanying Metric document provide details on the retained, enhanced and created habitats (habitats will be created onsite). In this instance, please refer to tabs: A-2 Site Habitat Creation, A-3 Site Habitat Enhancement, B-2 Site Hedge Creation and C-2 Site Watercourse Creation.

3.2.14 The landscape mitigation plan details the retention of 0.3058 ha of irreplaceable veteran tree habitats. This 0.3058 ha area is retained within the Metric.

3.3   Summary of Overall Biodiversity Change

3.3.1   Figure 3-1 shows the headline results from the Metric and summarises the changes in Area Habitat, Hedgerow and Watercourse Units generated for the broad habitat categories present onsite during the baseline and post-development mapping, and the percentage change in units for all area based and linear habitats, along with details on the overall quantitative outcome.

Figure 3-1 - Screenshot of Headline Results from the Metric Calculation Tool

West Winch Housing Access Road			
Headline Results	Return to results menu		
Scroll down for final results ⚠			
On-site baseline	Habitat units	202.17	
	Hedgerow units	12.88	
	Watercourse units	0.32	
On-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	123.11	
	Hedgerow units	28.76	
	Watercourse units	1.06	
On-site net change (units & percentage)	Habitat units	-79.06	-39.11%	On-site net gain is less than target set ⚠
	Hedgerow units	15.89	123.38%	
	Watercourse units	0.74	236.06%	
Off-site baseline	Habitat units	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site net change (units & percentage)	Habitat units	0.00	0.00%
	Hedgerow units	0.00	0.00%
	Watercourse units	0.00	0.00%
Combined net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	-79.06	
	Hedgerow units	15.89	
	Watercourse units	0.74	
Spatial risk multiplier (SRM) deductions	Habitat units	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	

FINAL RESULTS			
Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	-79.06	
	Hedgerow units	15.89	
	Watercourse units	0.74	
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	-39.11%	Total net gain achieved is less than target set ⚠
	Hedgerow units	123.38%	
	Watercourse units	236.06%	
Trading rules satisfied?	No - Check Trading Summaries ▲		

Unit Type	Target	Baseline Units	Units Required	Unit Deficit	
Habitat units	10.00%	202.17	222.39	99.28	
Hedgerow units	10.00%	12.88	14.16	0.00	Unit requirement met or surpassed ✓
Watercourse units	10.00%	0.32	0.35	0.00	Unit requirement met or surpassed ✓

3.3.2 The Proposed Scheme will result in a net loss of -39.11% in Area Habitat Units, a net gain of 123.38% in Hedgerow Units, and a net gain of 236.06% in Watercourse Units. This equates to a net change of -79.06 Area Habitat Units, 15.89 Hedgerow Units, and 0.74 Watercourse Units, respectively.

3.3.3 Although the Proposed Scheme currently achieves a Hedgerow Unit and Watercourse Unit net gain score, there is a net loss in Area Habitat Units and the Trading Rules are not satisfied. Trading Rules are designed to ensure that higher quality habitats are not replaced with lower quality ones. The measure

of habitat quality used in the Metric to determine Trading Rules is referred to as a habitat's 'distinctiveness'. Within the Metric higher distinctiveness habitats receive a higher biodiversity unit score and cannot be replaced with habitats of a lower distinctiveness score.

3.3.4   There is a deficit associated with high distinctiveness habitats, including a -7.69 biodiversity unit deficit for lowland mixed deciduous woodland, a deficit of -1.31 biodiversity units associated with reedbeds, and a deficit of -1.40 biodiversity units associated with ponds (priority habitat). These high distinctiveness habitats require like for like habitat creation, so with the above in consideration, that equates to a total of -10.41 biodiversity units deficit like-for-like not satisfied. However, 0.67 biodiversity units of high distinctiveness habitat (for wet woodland) have been created, which can be used to offset lower distinctiveness deficits.

3.3.5   Furthermore, there is a deficit for medium distinctiveness habitats, including a -11.74 biodiversity units deficit associated with other neutral grassland, and a -17.30 biodiversity units deficit associated with scrub habitats (bramble, hawthorn and mixed scrub), which equates to a total unit deficit of -29.04 biodiversity units. Medium distinctiveness habitats require the same broad habitat or a higher distinctiveness habitat creation. The creation of 0.67 biodiversity units of high distinctiveness habitat (from wet woodland) can be used to offset the medium distinctiveness unit deficit, taking the medium distinctiveness unit deficit to -28.37 biodiversity units.

3.3.6   There is also a deficit for low distinctiveness habitats, including a -77.85 biodiversity units deficit associated with cereal crops, and a -0.08 biodiversity units deficit associated with vegetated gardens. The creation of 37.65 biodiversity units associated with modified grassland can be used to offset the unit deficit for other low distinctiveness habitats. This takes the low distinctiveness unit deficit to -40.28 biodiversity units.

3.3.7   In conclusion, the Proposed Scheme as assessed does not achieve the required 10% quantitative scheme-wide biodiversity net gain. A net gain must

be achieved in each of Areas, Hedges and Watercourses (where present in the baseline) to claim net gain by design.

3.4 Qualitative BNG Assessment

3.4.1 Table 3-1 provides detail on the qualitative assessment against the Principles, with a review to determine if wider biodiversity net gain obligations (i.e., in addition to the measurable net gain) have been met. Adherence of the Proposed Scheme to these principles is based on the current stage in the BNG process.

3.4.2 In conclusion, the Proposed Scheme as assessed does not achieve a qualitative scheme-wide biodiversity net gain as six of the ten principles are not currently achieved, though it does not necessarily rule out future adherence.

Table 3-1 – Evidence of Project Compliance with BNG Good Practice Principles

Principle	Description	Evidence	Recommendations	Current outcome
1. Apply the mitigation hierarchy	Do everything possible to first avoid and then minimise impacts on biodiversity. Only as a last resort, and in agreement with external decision-makers where possible, compensate for losses that cannot be avoided. If compensating for losses within the development footprint is not possible or does not generate the most benefits for nature conservation, then offset biodiversity losses by gains elsewhere.	The landscape design for the Proposed Scheme: Avoids habitat loss as a result of an interrogative process of refining and minimising the Scheme Boundary. Compensates for negative impacts by creating new, biologically valuable habitats onsite. This will be achieved through creation of woodland, hedgerows, watercourses, scrub and grassland. The creation of these habitats will directly compensate for those habitats lost and provide additional habitats to those of value already in existence on site, that will be retained. Where habitats are temporarily lost to development, the habitats are replaced like-for-like or better.	Secure offline habitat creation to further compensate for habitats that will be lost through the development. Offsite compensation should include the creation of HPI lowland mixed deciduous woodland that will be lost as a result of the Proposed Scheme.	Achieved
2. Avoid losing biodiversity that cannot be offset by gains elsewhere	Avoid impacts on irreplaceable biodiversity – these impacts cannot be offset to achieve No Net Loss or Net Gain.	No irreplaceable habitats are affected by the Proposed Scheme.	None	Achieved
3. Be inclusive and equitable	Engage stakeholders early, and involve them in designing, implementing, monitoring, and evaluating the approach to Net Gain. Achieve Net Gain in partnership with stakeholders where possible and share the benefits fairly among stakeholders.	To be included in BNG Plan.	Stakeholders to be engaged through the detailed design stage and through offsite habitat creation measures.	Not yet achieved

Principle	Description	Evidence	Recommendations	Current outcome
4. Address risks	Mitigate difficulty, uncertainty, and other risks to achieving Net Gain. Apply well-accepted ways to add contingency when calculating biodiversity losses and gains in order to account for any remaining risks, as well as to compensate for the time between the losses occurring and the gains being fully realised.	Within Metric 4.0 risk multipliers are applied with respect to time to target condition to account for the time required for habitats to reach any given condition, along with risk multipliers associated with the difficulty to create any given habitat. Further to this, poor predicted condition classifications have been assigned as precaution where management is likely to be limited. A 2-year time lag was applied to the post-development Temporal Risk multiplier to incorporate the time between habitat clearance for the Proposed Scheme and creation of new habitat.	None	Achieved
5. Make a measurable Net Gain contribution	Achieve a measurable, overall gain for biodiversity and the services ecosystems provide while directly contributing towards nature conservation priorities.	The BNG assessment determined a quantitative: -39.11% Net Loss for Area Habitat Units; 123.38% Net Gain in Hedgerow Units; and 236.06% Net Gain for Watercourse Units. Trading Rules are not met due to loss of high distinctiveness habitats that are not replaced like-for-like; and loss of medium distinctiveness habitats that are not replaced by the same broad habitat type or higher distinctiveness habitat. The landscape design contributes towards nature conservation priorities through the creation of hedgerows, lowland mixed deciduous woodland, ponds and scrub.	Creation of high distinctiveness woodland, reedbed and ponds (priority habitat) will be required to meet the Trading Rules. Offsite habitat creation is required to achieve both a 10% net gain and to satisfy the Trading Rules with regards to medium and high distinctiveness habitats. This means more offsite habitat creation for medium and high distinctiveness habitats to achieve net gain.	Not yet achieved

Principle	Description	Evidence	Recommendations	Current outcome
6. Achieve the best outcomes for biodiversity	Achieve the best outcomes for biodiversity by using robust, credible evidence and local knowledge to make clearly justified choices when: Delivering compensation that is ecologically equivalent in type, amount and condition, and that accounts for the location and timing of biodiversity losses; Compensating for losses of one type of biodiversity by providing a different type that delivers greater benefits for nature conservation; Achieving Net Gain locally to the development while also contributing towards nature conservation priorities at local, regional and national levels; Enhancing existing or creating new habitat; Enhancing ecological connectivity by creating more bigger, better, and joined areas for biodiversity.	For area-based habitats, most habitat types have compensated for using the "like-for-like or better approach". This includes the proposed creation of woodland, hedgerows, scrub and grassland. However, high distinctiveness habitat (lowland mixed deciduous woodland) and medium distinctiveness habitats (including grassland and scrub) will be lost and needs to be mitigated for through a like for like or creation of same broad habitat type or higher approach, respectively. Woodland creation has been designed in a way that is supportive to existing local habitat networks (i.e., Sheep's Course Wood CWS). However, in order to meet Trading Rules further woodland creation is required in order to increase size, and connectivity of locally valuable ecosystem networks. The linear nature of the Proposed Scheme and the habitats created either side of the WWHAR will result in north-south habitat connectivity.	Create and apply suitable management strategies, to be secured through planning conditions. Confirmation that proposed moderate or good condition habitat creation will achieve the quality to satisfy the Trading Rules. For example, offsite habitat creation needs to be secured and a planting strategy for woodland creation which uses a native mix of species to meet required HPI habitat definitions, spaced appropriately for good woodland development (including woodland rides and glades), and allowing access for watering which will increase tree vitality, would adequately demonstrate the creation of lowland mixed deciduous woodland. A detailed 30-year Landscape and Ecology Management Plan (LEMP) should be produced (e.g., as a requirement of a planning condition), setting out the details of a management programme, tasks, and responsibilities to ensure that target habitat types and conditions are achieved within the timescales set out in the Metric.	Not yet achieved
7. Be additional	Achieve nature conservation outcomes that demonstrably exceed existing obligations (i.e., do not deliver something that would occur anyway).	The majority of habitat creation within the Proposed Scheme will be delivered to mitigate significant effects upon ecology and landscape and visual receptors.	Secure offsite areas for additional biodiversity compensation and enhancement.	Not yet achieved

Principle	Description	Evidence	Recommendations	Current outcome
8. Create a Net Gain legacy	Ensure Net Gain generates long-term benefits by: Engaging stakeholders and jointly agreeing practical solutions that secure Net Gain in perpetuity; Planning for adaptive management and securing dedicated funding for long-term management; Designing Net Gain for biodiversity to be resilient to external factors, especially climate change; Mitigating risks from other land uses; Avoiding displacing harmful activities from one location to another; Supporting local-level management of Net Gain activities.	To be included in final iteration.	Confirm offsite areas are secured for compensation and enhancement. Confirm the responsibility for monitoring, maintenance and management measures and the length of the maintenance period post-construction, in order to achieve the predicted habitat types and conditions.	Not yet achieved
9. Optimise sustainability	Prioritise Biodiversity Net Gain and, where possible, optimise the wider environmental benefits for a sustainable society and economy.	This BNG assessment is being used to inform the Proposed Scheme's design to provide better outcomes for biodiversity. The landscape plan considers the BNG requirements as well as sustainability requirements and aims to address the two so that they are delivered together where possible.	None	Achieved
10. Be transparent	Communicate all Net Gain activities in a transparent and timely manner, sharing the learning with all stakeholders.	To be included in final iteration.	Final iteration to be publicly available with transparency of offsite compensation areas included. Confirm future management.	Not yet achieved

4 Next Steps

4.1.1 In order to achieve 10% net gain in biodiversity units, a further 99.80 biodiversity units would need to be secured.

4.1.2 The remaining biodiversity units can therefore be provided through a combination of offsite habitat creation and provision of certain habitats within the Proposed Scheme at detailed design stage.

4.1.3 The following steps detail how BNG can be achieved for the Proposed Scheme.

4.2 Step 1: Refinement of Design

4.2.1 Areas not required for the Proposed Scheme or its construction should be removed from the Scheme Boundary where possible to reduce the net gain requirement.

4.2.2 Revisions should also be made to the landscape design and drainage design to provide additional reedbeds and ponds (priority habitat) within the existing Scheme Boundary. Approximate areas of these habitats that are required to satisfy the Trading Rules are summarised in the table below:

Table 4-1 – Onsite habitat delivery

Habitat type	Required Area of Habitat (hectares)	Units Required
Ponds (priority habitat) – good condition	0.27	1.92
Reedbeds	0.21	1.31

4.2.3 If it is not possible to achieve these habitat areas within the drainage and landscape design, these habitat units will also need to be secured as offsite habitat creation.

4.3   Step 2: Offsite Habitat Creation

4.3.1   With the above onsite habitat delivery in consideration, it will be necessary to secure offsite habitat creation equivalent to a further 96.05 biodiversity units to achieve 10% BNG. The types of habitats required to achieve this and satisfy Trading Rules are summarised below:

High Distinctiveness Habitats

Lowland mixed deciduous woodland

4.3.2   To achieve net gain, it will be necessary to create areas of lowland mixed deciduous woodland offsite. 7.69 biodiversity units for lowland mixed deciduous woodland will be required in order to satisfy the Trading Rules. 7.69 biodiversity units equates to an approximate area of 6 ha. This value is provided to offer an indication of the area required to meet the 10% net gain target; however offsetting requirements will be subject to further assessment.

Medium Distinctiveness Habitats

4.3.3   There were two medium distinctiveness habitat types with a deficit in biodiversity units, so the creation of 0.67 biodiversity units of high distinctiveness habitat (from wet woodland) was split evenly between the two (0.34 biodiversity units each) for the purpose of the examples below. However, these units could be deducted from either habitat in any amount.

Scrub (bramble, hawthorn and mixed scrub)

4.3.4   To achieve net gain, it will be necessary to create areas of scrub or higher distinctiveness habitat offsite.

4.3.5   A total of 16.96 biodiversity units for scrubland habitats (bramble, hawthorn and/or mixed scrub) will be required in order to achieve net gain.

Medium Distinctiveness Grassland; Other Neutral Grassland

4.3.6   To achieve net gain, it will be necessary to create areas of medium distinctiveness grassland or higher distinctiveness habitat offsite.

4.3.7   A total of 11.40 biodiversity units for Other Neutral Grassland or higher distinctiveness habitat will be required in order to achieve net gain.

Low Distinctiveness Habitats

4.3.8   To achieve net gain, it will be necessary to create areas of low distinctiveness habitats offsite, to include cereal crops and vegetated gardens. A total of 40.28 biodiversity units of any habitat distinctiveness type are required.

Biodiversity Units for 10% Net Gain

4.3.9   A total of 20.24 additional biodiversity units are then required to reach 10% net gain of any distinctiveness habitat type.

4.4   Step 3: Biodiversity Net Gain Plan

4.4.1   A BNG Plan will need to be submitted to the LPA, detailing the final BNG assessment for detailed design stage and how offsite measures are secured, funded, managed and monitored.
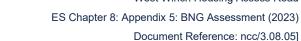
4.5   Summary and Further Recommendations

4.5.1   The following recommendations have been identified which, if implemented are predicted to achieve both quantitative and qualitative BNG:

1. To achieve the required 10% net gain for the Proposed Scheme, as the scheme moves through the next phases of design, consideration should be made to improve the BNG outcomes onsite.

2. Offsite areas will need to be secured to further compensate habitats that will be lost through the development.

3. Create and apply suitable long-term management strategies, to be secured through planning conditions. A detailed 30-year Landscape and Ecology Management Plan (LEMP) should be produced (e.g., as a requirement of a planning condition), setting out the details of a management programme, tasks, and responsibilities to ensure that target habitat types and conditions are achieved within the timescales set out in the Metric. It will also set out an appropriate monitoring regime for checking progress towards achieving target condition and identifying any remedial actions required, following the principles of adaptive management.

4. Confirm the responsibility of monitoring, maintenance and the length of the maintenance period post-construction.

5. In terms of qualitative assessment, as shown in Table 3-1, there are six Principles which are currently not achieved. These are required to be met for 10% net gain and to satisfy Trading Rules. As such, the following recommendations are given:

- Principle 3; Be inclusive and be equitable - Stakeholders to be engaged through the detailed design stage and through offsite habitat creation measures.

- Principle 5; Make a measurable Net Gain contribution - Creation of high distinctiveness woodland, reedbed and ponds (priority habitat) will be required to meet the Trading Rules, both on- and offsite.

- Principle 6; Achieve the best outcomes for biodiversity - Create and apply suitable management strategies, to be secured through planning conditions. Confirmation that proposed moderate or good condition habitat creation will achieve the quality to satisfy the Trading Rules.

- Principle 7; Be additional - Secure offsite areas for additional biodiversity compensation and enhancement.

- Principle 8; Create a Net Gain legacy – Ensure confirmation of offsite areas for enhancement and compensation of habitats, as well as the responsibility for monitoring, maintenance and management measures.

- Principle 10; Be transparent - Final iteration to be publicly available with transparency of offsite compensation areas included.

4.5.2 If the recommendations above are considered, the Proposed Scheme has potential to achieve an overall net gain in biodiversity in line with the project requirements.

5   Conclusion

5.1.1   In conclusion the BNG assessment recorded a biodiversity baseline of:

- 202.17 Area Habitat Units

- 12.88 Hedgerow Units; and

- 0.32 Watercourse Units.

5.1.2   Considering the proposed landscaping it is predicted that the Proposed Scheme will result in:

- -39.11% net loss in Area Habitat Units,

- 123.38% net gain in Hedgerow Units; and

- 236.06% net gain in Watercourse Units.

5.1.3   In terms of the quantitative assessment, it is therefore predicted that the Proposed Scheme **will not achieve a quantitative 10% biodiversity net gain.**

5.1.4   Additionally, although the Proposed Scheme currently achieves a Hedgerow Unit and Watercourse Unit net gain score, there is a net loss in Area Habitat Units and the Trading Rules are not satisfied. Trading Rules are designed to ensure that higher quality habitats are not replaced with lower quality ones. The measure of habitat quality used in the Metric to determine Trading Rules is referred to as a habitat's 'distinctiveness'. Within the Metric higher distinctiveness habitats receive a higher biodiversity unit score and cannot be replaced with habitats of a lower distinctiveness score.

5.1.5   There is a deficit of -7.69 biodiversity units associated with lowland mixed deciduous woodland, a deficit of -1.31 biodiversity units associated with reedbeds, and a deficit of -1.40 biodiversity units associated with ponds (priority habitat). These habitats are regarded as having high distinctiveness and require like-for-like habitat creation.

5.1.6   There is also a deficit of -11.74 biodiversity units associated with other neutral grassland, and a deficit of -17.30 biodiversity units associated with bramble, hawthorn and mixed scrub habitats. All of these habitat types are considered to have medium distinctiveness and require the same broad habitat or a higher distinctiveness habitat creation.

5.1.7   **The qualitative assessment concluded that the Proposed Scheme complies with four of the ten Principles.**

5.1.8   **The Proposed Scheme therefore does not achieve quantitative or qualitative BNG.**

6 References

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