Greater Cambridge Partnership

Cambourne to Cambridge

Appendix TR5.7: Biodiversity Net Gain Assessment

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Cambourne to Cambridge

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Overview

Biodiversity Net Gain (BNG) is a strategy to enable the development of land whilst contributing to the recovery of nature ensuring that the overall habitat for wildlife is in a better state than it was before a development takes place. This report sets out the BNG assessment (both a quantitative and qualitative) for the Cambourne to Cambridge (C2C) Scheme using Biodiversity Metric 3.1 Calculation Tool[1] (herein referred to as "the Metric") and assesses the project against the Biodiversity Net Gain Good Practice Principles[2] (herein referred to as "the Principles").

The Greater Cambridge Partnership (GCP) are proposing a new busway and active travel route linking Cambourne and Cambridge, along with a new travel hub (herein referred to as the "Scheme"). The GCP has committed to achieve 10% BNG on all development projects with an aspiration for 20%. WSP was commissioned by the GCP to carry out a BNG assessment of the C2C Scheme.

The Metric has been used to quantify the biodiversity value (measured in 'biodiversity units' (BU)) of the existing land within the C2C Scheme and those proposed under the current designs including any landscape proposals (**Annex A, Figures 1 and 2**).

The purpose of this document is to provide an initial assessment, which will be updated, where necessary, C2C Scheme once the design is finalised, and any offsite habitat creation secured. The final assessment, including secured offsite compensation will need to be included within a BNG Plan. River and stream habitats have not been included in this assessment and will form a separate assessment and independent report.

Main Findings

The C2C Scheme achieves a 5.52% net gain in Area Habitat Biodiversity Units (AHBUs) and a -15.15% net loss in Hedgerow Biodiversity Units (HBU). Hedgerows are measured in lengths (kilometres) and other terrestrial habitats in area (hectares) and are therefore calculated separately in the Metric. The C2C Scheme, if taken in isolation, therefore does not achieve the required BNG outcome.

Additionally, although the C2C Scheme currently achieves an AHBU net gain score with over 5% net gain, 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

[1] Natural England Biodiversity Metric 3.1. Available at: https://publications.naturalengland.org.uk/publication/5850908674228224

[2] Biodiversity Net Gain Good practice principles for development. Available at: https://cieem.net/wp-content/uploads/2019/02/Biodiversity-Net-Gain-Principles.pdf

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 BU score and cannot be replaced with habitats of a lower distinctiveness score.

There is a deficit of 4.34 BU associated with traditional orchards and 8.12 BU associated with lowland mixed deciduous woodland. Both of these habitats are regarded as having high distinctiveness and require like for like habitat creation. There is also a deficit of 17.34 BU associated with other broadleaved woodland and other mixed woodland. Both of these habitat types are considered to have medium distinctiveness and require the same broad habitat or a higher distinctiveness habitat creation.

Refining the Assessment

The calculations were based on design plans and landscape mitigation proposals within Design Freeze 4, although these designs will be refined and amended further in the event that consent for the C2C Scheme is granted. Where possible, additional habitat creation should be included in further design iterations to achieve the targeted 20% net gain for the C2C Scheme. This could include measures such as creation of wet woodland in flood prevention areas or enhancements to drainage attenuation ponds. As the C2C Scheme moves through the next phases of design, consideration should be made to improve the BNG outcomes such as increasing creation of habitats onsite. This should focus on creation of hedgerows as well as the required medium and high distinctiveness habitats onsite, where possible.

Any amendments to the C2C Scheme's 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.

The C2C Scheme meets six of ten BNG good practice principles. The six principles that have been achieved are as follows:

1. Apply the mitigation hierarchy
2. Avoid losing biodiversity that cannot be offset by gains elsewhere
3. Be inclusive and equitable
4. Address risks
7. Be additional
9. Optimise sustainability

The four principles that have not be achieved are as follows:

5. Make a measurable Net Gain contribution
6. Achieve the best outcomes for biodiversity

8. Create a Net Gain legacy
10. Be transparent

In order to fully adhere to all good principles, consideration should be made to secure offsite areas 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. The location of offsite habitat creation should also be disclosed within the BNG Plan once these measures are secured.

A river biodiversity net gain assessment should also be completed, and the results included within a separate report.

Offsite Habitat Creation

It will be necessary to secure offsite habitat creation to achieve 20% BNG. Offsite habitat creation will need to include lowland mixed deciduous woodland, traditional orchard and hedgerows to satisfy the trading rules. An example of the area and type of offsite habitat creation required to achieve 20% net gain has been provided and is included within Section 4 of this report.

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

1 Introduction

1.1 Project Background

1.1.1. The Cambourne to Cambridge (C2C) Scheme (herein referred to as the C2C Scheme) will include a 13.6km long dedicated busway connecting Cambourne in the west with Cambridge in the east. A service road and active travel path will run alongside the busway. The Scotland Farm travel hub (a park and ride facility) will be situated along the route, just north of the A428, approximately 5km west of Cambridge.

1.1.2. WSP was commissioned by the GCP to undertake a BNG assessment of the C2C Scheme. The C2C Scheme footprint is approximately 81ha, based on the proposals submitted as the subject of the TWA Order application. This is defined by the C2C Scheme's boundary shown in **Annex A**. This boundary comprises the land required for the C2C Scheme and its construction and excludes areas of land that will need to be temporarily acquired during construction due to being landlocked throughout the duration of construction. This definition of the C2C Scheme boundary differs from that of the Limit of land to be acquired or used (LLAU) and the limits of deviation (LoD)

1.1.3. This assessment has been managed and completed by ecologists competent in BNG assessments with a good understanding of the Biodiversity Metric 3.1 and who are members of the Chartered Institute of Ecology and Environmental Management.

1.1.4. This report should be read in conjunction with the Biodiversity Metric which is provided in the Microsoft Excel format.

1.2 Biodiversity Net Gain

1.2.1. BNG is an approach to development which aims to leave the natural environment in a measurably better state than beforehand. 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 on site. Only as a last resort, residual losses are compensated for using offsite habitat enhancement or creation. To undertake the assessment the Biodiversity Metric 3.1 Calculation Tool (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 Biodiversity Net Gain Good Practice Principles (2016) (hereafter referred as "the Principles").

1.3 Scope of Report

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

- establishes the baseline in terms of the total number of Biodiversity Units (BU): both Area Habitat Biodiversity Units (AHBU) and Hedgerow Biodiversity Units (HBU) within the C2C Scheme boundary;

- establishes the total number of AHBU and HBU which will be retained, enhanced, and created under the current design of the C2C Scheme's landscape mitigation plan;
- determines whether the C2C Scheme will result in a quantitative net loss, no net loss or a net gain for biodiversity on Site;
- determines whether the C2C Scheme achieves a scheme-wide net gain for biodiversity by evidencing compliance with the BNG Principles; and
- identifies any shortfall in biodiversity units that are needed to achieve 20% BNG, noting the GCP commitment to achieve 10% BNG on all development projects, and its aspiration for 20%[3].

1.3.2. The quantification of BUs is one of several considerations when assessing the C2C Scheme impact on biodiversity. This wider coverage of Scheme impacts on protected groups/species, designated sites and habitats is addressed in Technical Report 5 - Ecology.

1.3.3. This assessment has been compiled with reference to relevant legislation and policy relating to nature conservation and BNG, provided in **Annex B**.

[3] The GCP position on BNG is as per Greater Cambridge Shared Planning Biodiversity Supplementary Planning Document (Feb 2022), which increases the 10% national target that is anticipated to become mandatory under the Environmental Act 2021 from November 2023 for applications under the Town and Country Planning Act 1990.

2 Methodology

2.1.1. This BNG assessment uses the following industry recognised good practice guidance:

- CIEEM, IEMA & CIRIA (2019) Biodiversity Net Gain: Good Practice Principles for Development;
- Natural England (2022) Biodiversity Metric 3.1 (herein referred to as the Metric), following the methodology set out within the Metric 3.1 User Guide and Technical Supplement;
- British Standard 8683: 2021 Process for designing and implementing Biodiversity Net Gain – Specification (BSI, 2021); and
- CIEEM (2021) Biodiversity Net Gain Reporting and Audit Templates (CIEEM, 2021).

2.1.2. Metric version 3.1 was used for this assessment as it was the current version at the time of the assessment. Natural England's standing advice is that users of previous versions of the Metric should continue to use that metric (unless requested to do otherwise by their client or consenting body) for the duration of the project it is being used for. This is because users may find that certain biodiversity unit values generated in biodiversity metric 4.0 will differ from those generated by earlier versions.

2.2 Quantitative Assessment

2.2.1. 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 C2C Scheme.

2.2.2. There are three habitat quality components of the metric, namely Distinctiveness, Condition and Strategic significance. These considerations require weightings to be applied to all calculations of new habitat areas. Each new habitat must include an area that both compensates for that which is lost and provides for an additional 20% in Biodiversity Units.

Distinctiveness

2.2.3. 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 TR5-7-2-1** and their associated scores. This is the starting point for calculating the number of biodiversity units per hectare for each habitat.

Table TR5-7-2-1 - 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

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

Condition

2.2.4. 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.

2.2.5. Habitat condition scores are set out in **Table TR5-7-2-2**.

Table TR5-7-2-2 - 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

2.2.6. With respect to strategic significance the following approach has been taken to identify the relevant category:

Table TR5-7-2-3 - Method for assigning strategic significance

Strategic significance	Method
Habitat is within an area formally identified as strategically important in a local strategy	A habitat is assigned as having strategic significance where: • It is located within an area identified as a statutory designated site or non-statutory

Strategic significance	Method
	designated site (County Wildlife Site) or within a relevant local strategy and • It is specified in relation to the identified area or • 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.
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 C2C Scheme. For this category Natural England's open-source Natural Habitat Network data was used to apply this level of strategic significance to habitats that these areas overlapped with.

2.2.7. With respect to strategic significance, the entire site is within an area formally identified within a local strategy where specific details on relevant habitats are unknown (The Wildlife Trust, 2021). Parts of the C2C Scheme are formally identified in the Cambridge Nature Network (Cambridge Nature Network, 2021). The Cambridge Nature Network:

- Identifies the Priority Areas for landscape and biodiversity enhancement in and around Cambridge;
- Identifies the critical components of a Nature Network in each of the Priority Areas, based on the Lawton principles of more, better, bigger, and joined up;
- Identifies a range of strategic and local green infrastructure opportunities;
- Identifies the best and most deliverable opportunities for habitats and green infrastructure, in the short and longer term, through discussion with landowners;
- Identifies the mechanisms for delivering the opportunities that are identified; and
- Assesses the sustainability of the proposed Nature Network in financial and organisational terms.

2.2.8. As such a strategic significance multiplier of 1.15 is applied, as per the Metric.

Trading Rules

2.2.9. 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. This avoids replacing certain high-distinctiveness habitats with more but lower quality habitat. In particular

- Where low distinctiveness habitats are affected, it will need to be replaced with a habitat type that is the same distinctiveness or better;

- Where a medium distinctiveness habitat is affected, it will need to be replaced with the same broad habitat type or a higher distinctiveness habitat;
- Where a high distinctiveness habitat is affected, it will need to be replaced with the same habitat; and
- Where a very high distinctiveness habitat is affected, bespoke habitat compensation is likely to be required.

Time to Target Condition

2.2.10. Every habitat type is assigned a score based on the time it takes to reach a level of maturation.

Time Delay

2.2.11. A time delay of two years has been added to reflect the time lag between habitat clearance and habitat creation. This will extend the time to target condition by the same amount of time applied.

2.3 Qualitative Assessment

2.3.1. A qualitative assessment has been completed, whereby the C2C Scheme has been assessed against the Biodiversity Net Gain: Good practice principles for development has also been undertaken. The ten principles are as follows:

1 Apply the mitigation hierarchy;
2 Avoid losing biodiversity that cannot be offset by gains elsewhere;
3 Be inclusive and equitable;
4 Address risks;
5 Make a measurable Net Gain contribution;
6 Achieve the best outcomes for biodiversity;
7 Be additional;
8 Create a Net Gain legacy;
9 Optimise sustainability and
10 Be transparent.

2.4 Data Sources

2.4.1. Publicly available Open-Source Natural England (2021) datasets for Habitats of Principal Importance (HPI), ancient woodland (classed as irreplaceable habitat), and statutory designated sites for nature conservation. Full details of the desk study method are provided within the Ecological Impact Assessment (EcIA) (WSP Ltd., 2023a). The results of the desk study have been used to inform the strategic significance value in line with the methodology detailed within the Metric.

2.4.2. A UKHab habitat classification assessment was undertaken by WSP in July 2022. This included verification of areas where Phase 1 Habitat and National Vegetation Classification (NVC) Surveys had been previously undertaken by Cambridge Ecology in August 2017 (Cambridge Ecology , 2017), and updated in May and June 2021. All previously identified Phase 1 habitats were then converted to UKHab classifications. The habitats were then assigned distinctiveness and condition using data, such as species recorded, from the Phase 1 and NVC reports (Cambridge Ecology, 2021). Phase 1 habitats converted into Metric habitats of Low distinctiveness, using previously recorded data, were not subject to UKHab verification surveys. Habitats of Medium and High distinctiveness and areas not previously surveyed within the C2C Scheme Boundary were subject to UKHab classification surveys. The UKHab assessment, surveys and verifications were undertaken by experienced WSP ecologists following best practice guidelines. These surveys provided a baseline habitat database which details the habitat types present, their area (ha) and their geographic distribution (**Annex A**, **Figure 2**). A habitat condition assessment (HCA) was completed simultaneously with the habitat survey for medium and high distinctiveness habitats, following the methodology detailed within Biodiversity Metric 3.1. Full details of the survey method are provided within the EcIA (WSP Ltd., 2023a).

2.4.3. All areas / lengths of habitats have been measured using ArcGIS 3.22.0 with reference to an Ordnance Survey Map (OSM) and Google Earth basemap.

2.4.4. A post-development landscape mitigation plan provided by WSP landscape team in January 2023 (Drawing no: 70086660-WSP-GEN-XX-DR-LS-00001 - 70086660-WSP-GEN-XX-DR-LS-00018, Rev: P01.]. Any amendments occurring after this have not been captured in this assessment. The post-development landscape mitigation plan habitats were translated into UKHab habitat types for use in the assessment (**Annex A**, **Figure 2**). The post-development landscape mitigation plan has undergone iterative improvements in an attempt to achieve the best outcomes for biodiversity. The current version of the C2C Scheme and landscape design used in this assessment is referred to as Design Freeze 4 (DF4).

2.5 Irreplaceable Habitats and Statutory Designated Sites

2.5.1. In accordance with the Biodiversity Metric 3.1 methodology, impacts on irreplaceable habitats (ancient woodland, ancient and veteran trees) and statutory designated sites should be excluded from the calculations. Therefore, a check was made for the presence of

these habitats or designated sites within the C2C Scheme Boundary,. No statutory designated sites or irreplaceable habitat was recorded within the Scheme.

2.5.2. It is important to note that net gain cannot be achieved for a Scheme as a whole if there is a loss of irreplaceable habitat or a loss of habitat from within statutory designated sites.

2.6 Limitations and Assumptions

Baseline Information

2.6.1. Where UKHab surveys were required in addition to data previously collected by Cambridge Ecology, the UKHab surveys were limited to locations where landowner permission was available. Small areas of low value habitat that will be impacted by the C2C Scheme such as arable fields and their margins were not surveyed due to land access issues. These areas were able to be mapped using aerial imagery and it is not considered to be a significant limitation to this assessment.

2.6.2. In addition, an area of woodland north of the junction between Long Road and St Neots Road was not visited during the UKhab survey. This area contains a recently planted and self-sown woodland. The condition of this habitat was able to be confidently assessed using a combination of aerial imagery, Streetview and through observations from the adjacent public right of way. The area will remain unaffected by the C2C Scheme.

2.6.3. A retrospective condition assessment was applied to hedgerows using the data available (Phase 1 Habitat Survey Appendix 5: Hedgerow Assessment (Cambridge Ecology, 2021)). Where data gaps emerge, an assumption of condition was made of the data subject to precautionary principle. This was carried out by an experienced BNG practitioner using the Defra Metric 3.1 methodology, aerial imagery and habitat information available in the Phase 1 or NVC report.

Post-development

2.6.4. Areas within the C2C Scheme boundary that that are not affected by the scheme construction or landscaping have been assumed to be retained and managed post development in the same habitat type and condition as the baseline habitat.

2.6.5. Detailed habitat planting and management plans have not been developed at this stage in the C2C Scheme design. Habitats that are created within the C2C Scheme have been assigned a habitat type and condition based on the landscape proposals, likely management and professional judgement. It is assumed newly created hedgerows will be managed accordingly with suitable cuts to maintain hedgerow structure. Retained hedgerows will maintain current management regimes.

2.6.6. Habitat types included within Scheme landscape proposals (ref) were accorded BNG habitat type categorisations, as described in **Table TR5-7-2-4**,although no information on species mixes were not available at the time of the assessment.

Table TR5-7-2-4 - Post development Landscape Plan to BNG 3.1 Translation

Landscape Plan Habitat	BNG 3.1 Habitat Translation (and UKHab code)	Distinctiveness	Rationale
Shrub	Mixed scrub (h3h)	Medium	It is assumed that a native scrub mix will be planted. This habitat distinctiveness and condition is considered a suitable translation.
Enhanced vegetation	Other neutral grassland (g3c)	Medium	It is assumed enhanced vegetation is hedgerow. Hedgerow is a linear feature therefore area based habitat assumed underneath will be other neutral grassland.
Grassland – Amenity	Modified grassland (g4)	Low	It is assumed this habitat will comprise 6 species or less and is likely to be kept as short sward and regularly mown. This is a direct translation through UKHab definition.
Marginal – Aquatics – Emergent	Other neutral grassland (g3c)	Medium	Proposed grassland adjacent to Bin brook with scattered trees. Proposed as flood mitigation but unlikely to be permanently or seasonally wet. In addition, this habitat has been assigned to proposed SuDS feature, which are also unlikely to be permanently or seasonally wet and therefore unlikely to reach wetland habitat type. It is assumed to be sufficient species diversity with appropriate management to achieve a medium distinctiveness and good condition.
Marginal – Aquatics – Emergent	Ponds (non-priority habitat) (r1)	Medium	These features have been assigned to proposed SuDS features which are likely to be permanently or regularly wet.
Swale Mix	Modified grassland (g4)	Low	It is assumed this habitat is unlikely to be planted with sufficient diversity of species, nor will have a suitable management regime to be classified as wetland habitats, as such it is assumed it will become modified grassland.
Hardstanding	Developed land; sealed surface (u1b)	N/A	This is a direct translation through UKHab definition.
Hedgerows	Other neutral grassland (g3c). These have also been input at linear habitats in the Metric.	Medium	Hedgerow is a linear feature therefore area based habitat assumed underneath will be other neutral grassland. It is assumed the sufficient species diversity, management, and quality to achieve a medium distinctiveness and good condition.
Enhanced meadow	Other neutral grassland (g3c)	Medium	It is assumed this habitat is unlikely to reach Lowland Meadow HPI grassland due to lack of

Landscape Plan Habitat	BNG 3.1 Habitat Translation (and UKHab code)	Distinctiveness	Rationale
			management practice, despite a suitable seeded mix likely to be used.
Grassland – Flowering meadow	Other neutral grassland (g3c)	Medium	It is assumed this habitat is unlikely to reach meadow grassland due to lack of management practice, despite a suitable seeded mix likely to be used.
Grassland – Flowering meadow	Other woodland; broadleaved (w1g)	Medium	It is proposed fruit and nut tree varieties will be planted within the grassland planting scheme to compensate for loss of non-priority habitat orchard trees. After 30 years canopy cover is likely to reach over 25% and as such will be classified as woodland and not grassland.
Grassland – Flowering meadow	Lowland mixed deciduous woodland (w1f)	Medium	Trees will be planted within grassland and after 30 years canopy cover is likely to reach over 25%.
Woodland	Other woodland; broadleaved (w1g)	Medium	It is proposed fruit and nut tree varieties will be planted within the planting scheme to compensate for loss of non-priority habitat orchard trees. Due to planting design and species present this will not meet orchard classification.
Woodland	Lowland mixed deciduous woodland (w1f)	High	Areas assigned this habitat were not surveyed as it was originally outside of the C2C Scheme boundary. As such this habitat is assumed reasonable worst case - good condition if removed.

2.6.7. Newly created habitat condition is detailed inError! Reference source not found.**Table TR5-7-2-5**. 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.

Table TR5-7-2-5 - Post development Habitat Condition Assumptions

BNG 3.1 Habitat	Distinctiveness	Assumed condition	Assumption
Lowland deciduous woodland	Medium	Moderate	▪ 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 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 C2C Scheme Boundary. ▪ 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	Moderate	▪ Due to selective planting, more than three woody species will be planted, with no species being dominant. ▪ There will be good range in age of species. ▪ There will be no invasive non-native species and species indicative of sub-optimal condition will make up less than 5% of ground cover. ▪ A well developed and defined edge will be present due to natural encouragement and succession and growth of scrub species and adjacent tall herbs/grassland habitats. ▪ No defined clearings, glades or rides will be present due to lack of management.

BNG 3.1 Habitat	Distinctiveness	Assumed condition	Assumption
Other Neutral Grassland	Medium	Moderate	▪ More than 9 species will be present at 30 years due to selective planting and assumed management of two mowings per year. ▪ Sward will be varied in height due to management and natural succession of species present. ▪ Assumed management will prevent scrub/ bracken growth and growth of sub-optimal species.
Modified grassland	Low	Poor	▪ Habitat is unlikely to be planted with sufficient species mix or diversity with at least 6-8 species/m².
Ponds (non-priority habitat)	Medium	Poor	▪ Poor water quality, with surrounding natural habitat. ▪ Less than 10% duckweed or filamentous algae. ▪ As the pond will be part of drainage strategy, they will be artificially connected through ditches and artificial pipework, and dams, and pipework will be present in order to assist with fluctuations. ▪ 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 that 3m deep and the pond will not be shaded more than 50% by woody bankside species.

3 Results

3.1 Quantitative Assessment

Strategic Significance

3.1.1. The desk study identified the entire Site is located within the Cambridge Nature Network. As such all habitats have been assigned the highest level of strategic significance and given a multiplication value of 1.15.

Baseline Biodiversity

3.1.2. There are no statutory designated sides or irreplaceable habitats on Site.

3.1.3. UKHab habitat surveys identified the presence of 15 UKHab habitat types within the C2C Scheme (Figure 1). These included a mixture of cereal crops, developed land, sealed surface, artificial unvegetated; unsealed surface, other neutral grassland, modified grassland, sparsely vegetated land with ruderal/ephemeral vegetation, lowland mixed deciduous woodland, other broadleaved woodland, other mixed woodland, mixed scrub, hawthorn scrub, traditional orchard, priority hedgerows and other hedgerows (WSP Ltd., 2023a).

3.1.4. The individual sections within the Metric document, which accompanies this report, provide details on the habitat baseline and should be referred to for full details on the habitats present, condition, strategic significance and other details. In this instance, please refer to tabs: A-1 Site Habitat Baseline and B-1 Site Hedge Baseline.

Post-development Biodiversity

3.1.5. The retained habitats within the C2C Scheme boundary are shown in the landscape mitigation plan and comprise BNG habitat types that are described in **Table TR5-7-2-4** and presented in **Annex A** (**Figure 2**). The landscape plan identifies the retention of 0.8ha of habitat, including a mixture of other neutral grassland, developed land; sealed surface, lowland mixed deciduous woodland, mixed scrub, modified grassland and hedgerows.

3.1.6. All other post-development habitats will be introduced. These include a mixture of developed land; sealed surface, artificial unvegetated; unsealed surface, cereal crop, hawthorn scrub, mixed scrub, modified grassland, other neutral grassland, sparsely vegetated land with ruderal/ephemeral vegetation, lowland mixed deciduous woodland, other broadleaved woodland (fruit and nut trees). ponds (non-priority habitat) and priority hedgerows.

3.1.7. The tabs within the accompanying Metric document provides details on the retained and created habitats (habitats will be created onsite). In this instance, please refer to tabs: A-2 Habitat Creation and B2 Site Hedge Creation.

3.2 Summary of Overall Biodiversity Change

3.2.1. The results from the Metric are summarised below showing pre- and post-development and the overall changes in BU for the habitat categories.

On-site baseline	*Habitat units*	265.67
	Hedgerow units	36.04
	River units	0.00
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	280.33
	Hedgerow units	30.58
	River units	0.00
On-site net % change (Including habitat retention, creation & enhancement)	*Habitat units*	5.52%
	Hedgerow units	-15.15%
	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*	14.66
	Hedgerow units	-5.46
	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*	5.52%
	Hedgerow units	-15.15%
	River units	0.00%
Trading rules Satisfied?	No - Check Trading Summary ▲	

3.2.2. The C2C Scheme will result in total net 5.52% gain in AHBU and -15.15% loss in HBU. In conclusion, the C2C Scheme as assessed **does not achieve a quantitative scheme-wide biodiversity net gain,** due to current HBU losses and does not meet the targeted 20% AHBU gain.

3.2.3. Additionally, although the C2C Scheme currently achieves a AHBU net gain score with over 5% net gain, the trading rules are not achieved owing to the deficit of 4.34 BU in traditional orchards and 8.12 BU in lowland mixed deciduous woodland. Both of these habitats are regarded as having high distinctiveness and require like for like habitat creation. There is also a deficit of 17.34 BU in other broadleaved woodland and other mixed woodland. Both of these habitats types are considered to have medium distinctiveness and require the same broad habitat or a higher distinctiveness habitat creation.

Qualitative BNG Assessment

3.2.4. **Table TR5-7-3-1** sets out the qualitative assessment against the principles and provides a review to determine if wider biodiversity net gain principles (i.e.in addition to the measurable net gain) have been met. Adherence of the C2C Scheme to these principles is based on the current stage in the BNG process. In conclusion, the C2C Scheme as assessed **does not achieve a qualitative scheme-wide biodiversity net gain** as four of the ten principles are not currently achieved, though it does not necessarily rule out future adherence.

Table TR5-7-3-1 - 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 C2C Scheme: • Avoids impacts to existing biodiversity value by avoiding areas of high distinctiveness habitats where possible, through considerate selection of route options. • Avoids habitat loss as a result of an interrogative process of refining and minimising the C2C Scheme boundary. • Compensates for negative impacts by creating new, biologically valuable habitats on Site. This will be achieved through creation of woodland, hedgerows, 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. In addition, wet ponds will be created as part of the drainage strategy. Where habitats are temporarily lost to development, the habitats are replaced like-for-like or better.	• Secure offline sites to further compensate habitats that will be lost through the development. Offsite compensation should include the creation of traditional orchard habitat and HPI lowland mixed deciduous woodland that will be lost as a result of the proposed development. • Despite HPI habitats being created adjacent to the proposed busway, these habitats are unlikely to reach good condition due to lack of management. As such it is recommended HPI habitats are managed to be allow habitat to reach good condition.	Achieved

Principle	Description	Evidence	Recommendations	Current outcome
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 C2C Scheme.		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 final iteration. Refer to Chapter 4.7 of Environmental Statement for further information on consultations with stakeholders (WSP Ltd., 2023b).		Achieved
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 3.1 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 busway and creation of new habitat.		Achieved.

Principle	Description	Evidence	Recommendations	Current outcome
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: • 5.52% Net Gain for AHBU; and • 15.15% Net Loss for HBU. However, 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.	Discussions are ongoing with offsite habitat providers. It is likely that final landscaping designs will incorporate additional hedgerow creation that will meet the targeted 20% gain in HBU. Creation of high distinctiveness woodland and traditional orchard will also be required to meet the trading rules. Offsite habitat creation is likely required to achieve both a 20% net gain and to satisfy the trading rules with regards to high distinctiveness habitats.	Not yet achieved
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	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 (traditional orchard habitat) and medium distinctiveness habitats (including woodland) 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.	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, 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	Not yet achieved

Principle	Description	Evidence	Recommendations	Current outcome
	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.	Woodland creation has been designed in a way that is supportive to existing local habitat networks, such as the Cambridge Nature Network (The Wildlife Trust, 2021). 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 C2C Scheme and the habitats created either side of the busway will result in east-west habitat connectivity.	watering which will increase tree vitality, would adequately demonstrate the creation of lowland mixed deciduous woodland).	
7. Be additional	Achieve nature conservation outcomes that demonstrably exceed existing obligations (i.e., do not deliver something that would occur anyway).	The nature conservation requirements within the legislation and policy (Appendix C) have been met. Areas of proposed landscape habitat creation within the C2C Scheme boundary have been enhanced for biodiversity, where feasible, and this outcome would not have occurred anyway.	Secure offsite areas for additional biodiversity compensation and enhancement.	Achieved
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;	To be included in final iteration.	Confirm off site areas are secured for compensation and enhancement. Confirm the responsibility 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

Principle	Description	Evidence	Recommendations	Current outcome
	• 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.			
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 C2C 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. Wider environmental and sustainability benefits of the C2C Scheme are discussed in Chapter 1.2 of the Environmental Statement (WSP Ltd., 2023b).		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. Implementation of the following recommendations will help achieve both qualitative and quantitative BNG:

1. To achieve the targeted 20% net gain for the C2C Scheme, as the scheme moves through the next phases of design, consideration should be made to improve the BNG outcomes. This should focus on creation of hedgerow and woodland habitats onsite.
2. Secure offline sites to further compensate habitats that will be lost through the development. Offsite compensation should include the creation of traditional orchard habitat that will be lost as a result of the proposed development.
3. Despite potential HPIs being created adjacent to the proposed busway, these habitats are only likely to reach poor condition due to lack of woodland management. As such it is recommended that additional HPI habitats of high condition, under appropriate management should be created offsite. Confirmation that proposed HPI habitat creation will achieve the quality to satisfy the Trading Rules will also be necessary e.g. native woodland planting to meet HPI habitat definition and native hedgerow planting to meet HPI hedgerow definition..
4. Create and apply suitable long-term management strategies, to be secured through planning conditions.
5. Confirm the responsibility of monitoring, maintenance and the length of the maintenance period post-construction.
6. To maximise the C2C Scheme's potential to achieve net gain for biodiversity, the ongoing development of the landscape design should be undertaken in consultation with the BNG team.
7. It is recommended that an update to the BNG assessment is undertaken on completion of final landscape planting plan. If the recommendations above are considered, the C2C Scheme has potential to achieve an overall 20% net gain in biodiversity.
8. In addition, a separate River BNG assessment is required in order to ensure all habitats are accounted for within the BNG assessment. The targeted 20% net gain should be achieved for a complete BNG.

4.1.2. The following example of habitat creation have been provided as a guide for offsite habitat creation that will provide the targeted 20% BNG. They are approximated values that are provided as a guide only, and therefore the actual areas, habitat types and BU that can be created may differ. The areas of habitat creation have been input into the Metric and have been selected to satisfy the trading rules and to offset the offsite baseline BU value. Below is the output from the Metric based on the example provided.

Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	20.12%
	Hedgerow units	20.06%
	River units	0.00%
Trading rules Satisfied?	Yes ✓	

4.1.3. Assuming that the offsite baseline habitat type is cropland: cereal crops (arable farmland) and the strategic significance is 'formerly identified in local strategy', approximately 23ha will be required.

4.1.4. The following habitats will need to be created to achieve no net loss and 20% BNG:

Habitat type created	Area (hectares)	Condition	Habitat units delivered				
			Strategic significance	Created in advance (years)	Delay in creation (years)	Spatial risk category	Habitat units delivered
Lowland mixed deciduous woodland	15.95	Poor	Formally identified in local strategy	0	0	Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss	25.43
Traditional orchards	0.65	Moderate	Formally identified in local strategy	0	0	Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss	4.40
Other neutral grassland	4	Good	Formally identified in local strategy	0	0	Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss	38.66
Mixed scrub	2.4	Good	Formally identified in local strategy	0	0	Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss	23.19

5 References

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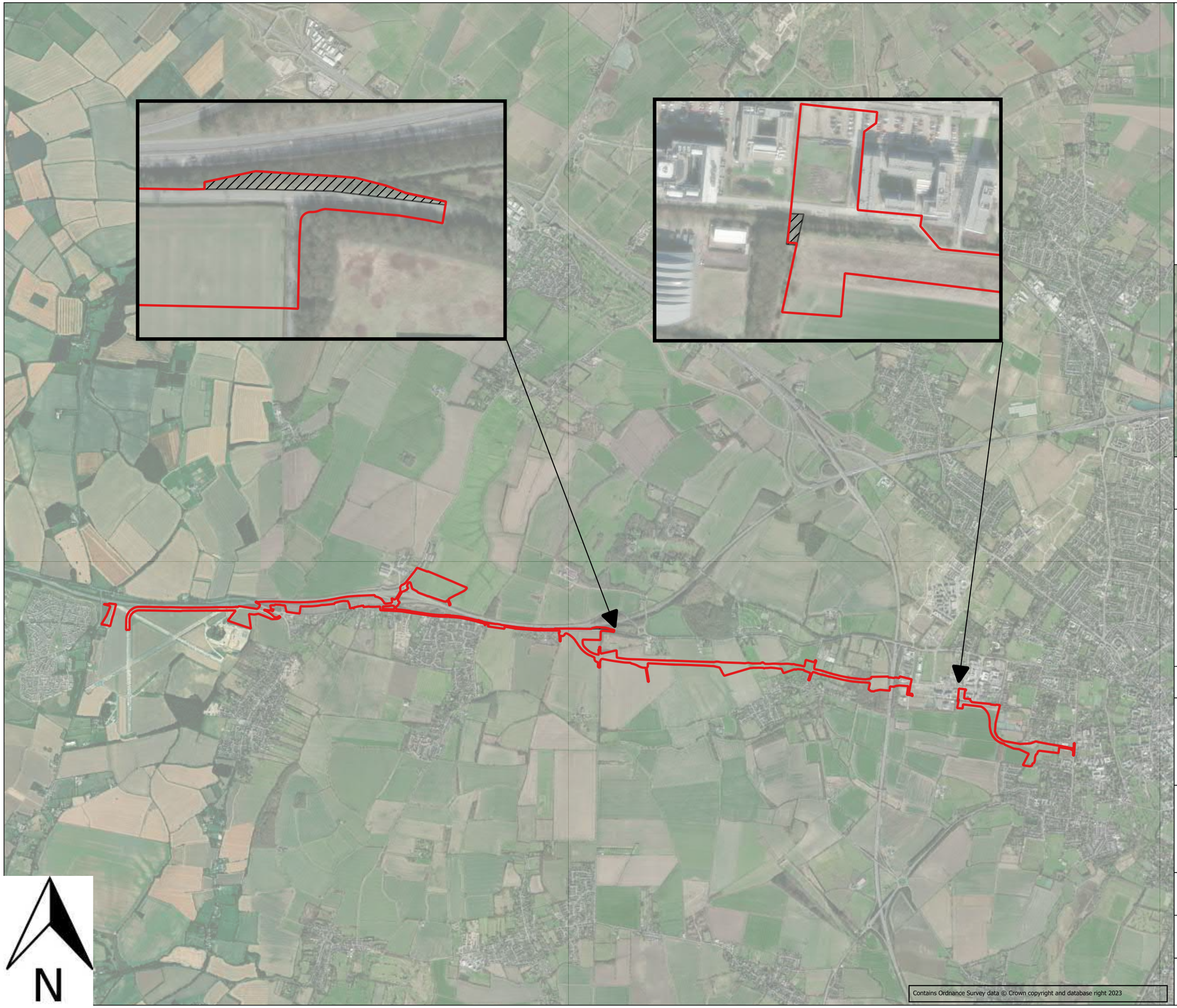
WSP Ltd. (2023b). *Cambourne to Cambridge (C2C) Environmental Statement.* Cambridge : WSP Ltd.

Annex A

Baseline and Post-development Habitat Maps



STATUS:

FINAL

62-64 Hills Road,
Cambridge, CB2 1LA

www.wsp.com

CLIENT: Greater Cambridge Partnership

PROJECT: Cambourne to Cambridge

TITLE: Site Location

SCALE @A3:	CHECKED:	APPROVED:
	MP	IE
QGIS FILE:	DRAWN:	DATE:
	02/06/2023	02/06/23
PROJECT No:	DRAWING No:	REV:
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Hedgerows

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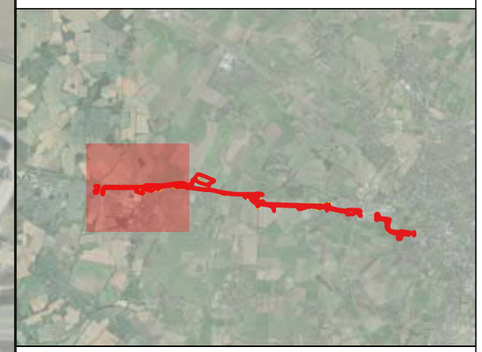

STATUS:

FINAL

N

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CLIENT: Greater Cambridge Partnership		
PROJECT: Cambourne to Cambridge		
TITLE: Hedgerow habitats		
SCALE @A3:	CHECKED: MP	APPROVED: IE
QGIS FILE:	DRAWN: 22/11/2022	DATE: 02/06/23
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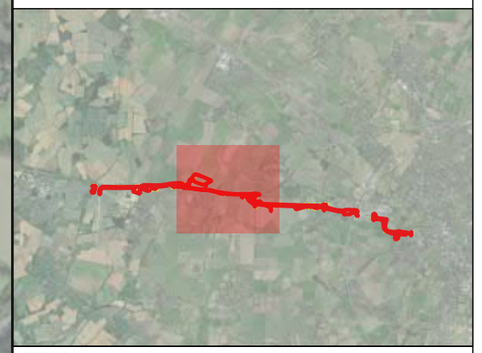

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TITLE: Hedgerow habitats

SCALE @A3:	CHECKED: MP	APPROVED: IE
QGIS FILE:	DRAWN: 22/11/2022	DATE: 02/06/23
PROJECT No: 70086660	DRAWING No: Figure 2	REV: 0.1

Legend:

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Hedgerows

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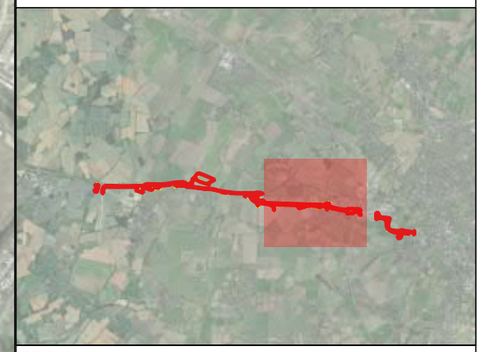

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STATUS:

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PROJECT: Cambourne to Cambridge

TITLE: Hedgerow habitats

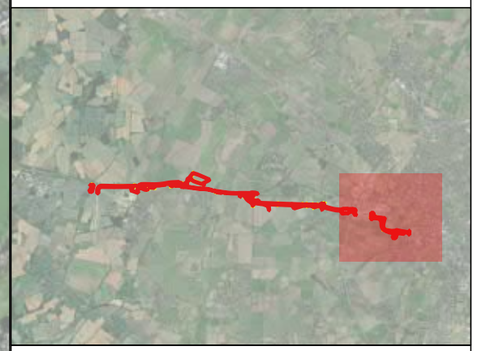
SCALE @A3:	CHECKED: MP	APPROVED: IE
QGIS FILE:	DRAWN: 22/11/2022	DATE: 02/06/23
PROJECT No: 70086660	DRAWING No: Figure 2	REV: 0.1

Legend:

Scheme extent

Hedgerows

0 250 500 m



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CLIENT: Greater Cambridge Partnership

PROJECT: Cambourne to Cambridge

TITLE: Hedgerow habitats

SCALE @A3:	CHECKED:	APPROVED:
	MP	IE
QGIS FILE:	DRAWN:	DATE:
	22/11/2022	02/06/23
PROJECT No:	DRAWING No:	REV:
70086660	Figure 2	0.1

Annex B

Biodiversity Net Gain Policy and Legislation

National Legislation

England

Environment Act 2021

The Act requires a minimum of 10% net gain for biodiversity as a condition of planning permission for planning applications submitted under the Town and Country Act 1990 after November 2023.

Net gain is to be measured by the biodiversity metric published by the Secretary of State. This is the Natural England Biodiversity Metric 3.1 Calculation Tool. The Act requires that gains must be secured for a minimum of 30 years post completion of development.

Also, under Section 40 the NERC Act 2006, as amended by the Environment Act 2021, "*A public authority which has any functions exercisable in relation to England must from time to time consider what action the authority can properly take, consistently with the proper exercise of its functions, to further the general biodiversity objective*."…the biodiversity objective is, "…*the conservation and enhancement of biodiversity in England through the exercise of functions in relation to England*". This is referred to as the Biodiversity Duty.

UK Government's 25 Year Environment Plan

The UK Government's 25 Year Environment Plan (DEFRA, 2018) states a desire to '*embed a 'net environmental gain' principle for development to deliver environmental improvements locally and nationally*' and plans to consult on making Biodiversity Net Gain a mandatory requirement.

On 14th March 2019, Her Majesty's Treasury confirmed that following consultation, the government will use the forthcoming Environment Bill to mandate BNG for development in England, ensuring that the delivery of much-needed infrastructure and housing is not at the expense of vital biodiversity.

Biodiversity 2020: A strategy for England's wildlife and Ecosystem Services

Biodiversity 2020: A strategy for England's wildlife and ecosystem services (DEFRA, 2011) is the national strategy for biodiversity. This sets out an ambition to halt the loss of biodiversity and see an increase in the area of priority habitats by 200,000 ha by 2020. Biodiversity 2020 sets in policy the objectives to improve our wildlife sites, make them bigger, develop more of them and join them up (summarised as 'Bigger, Better, More and Joined').

National Planning Policy Framework

The revised National Planning Policy Framework (NPPF) (MHCLG, 2021) refers to conserving and enhancing the natural environment. This requires Local Authorities in England to take measures to:

- Conserve and enhance biodiversity;
- Protect the habitats of these species from further decline;
- Protect the species from the adverse effect of development; and
- Refuse planning permission for development, if significant harm resulting from a development cannot be avoided, adequately mitigated, or, as a last resort, compensated for.

Although not currently a legal obligation, the revised NPPF refers to biodiversity and environmental net gains in the following paragraphs:

- Transport Infrastructure
  - Paragraph 104. "*Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:*
    d) the environmental impacts of traffic and transport infrastructure can be identified assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for ***net environmental gains.****"*
- Planning decisions
  - Paragraph 118. "*Planning decisions and planning policy should a) encourage multiple benefits from both urban and rural land … and taking opportunities to* ***achieve net environmental gains - such as developments that would enable new habitat creation****."*
  - Paragraph 170. *"Planning policies and decisions should contribute to and enhance the natural and local environment by: … d) minimising impacts on and* ***providing net gains*** *for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures."*
  - Paragraph 174. "*To protect and enhance biodiversity and geodiversity plans should b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing* ***measurable net gains for biodiversity***."
  - Paragraph 175. "*When determining planning applications, local planning authorities should apply the following principles: a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts) adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused; … and d) … opportunities to incorporate biodiversity improvements in and around developments, especially where this can secure* ***measurable net gains for biodiversity****.*"

National Policy Statement for National Networks

The National Policy Statement for National Networks (NPSNN) (Department for Transport, 2014) paragraph 5.23 states that:

- "*The applicant should show how the project has taken advantage of opportunities to* ***conserve and enhance biodiversity*** *and geological conservation interests.*"

Maintaining no net loss of biodiversity as a result of the Proposed Development is consistent with the policy aims of Paragraph 5.25 of the NPSNN, which states:

- "*As a general principle, and subject to the specific policies below, development should avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives. The applicant may also wish to make use of* ***biodiversity offsetting*** *in devising compensation proposals to counteract any impacts on biodiversity which cannot be avoided or mitigated. Where significant harm cannot be avoided or mitigated, as a last resort, appropriate compensation measures should be sought.*"

This sets out that any loss should be compensated for to achieve no net loss or net gain by replacing habitats, exploring the potential for enhancing them, and managing retained features.

Natural Environment and Rural Countryside Act 2006

The Natural Environment and Rural Countryside (NERC) Act (HMSO, 2006) requires public bodies, including local authorities, '*to have regard to the conservation of biodiversity in England when carrying out their normal functions'*.

Section 40 sets out that:

- Paragraph 1. *"Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity";* and that
- Paragraph 3. *"Conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat".*

Section 41 sets out that:

- Paragraph 1. *"The Secretary of State must… publish a list of the living organisms and types of habitat … of principal importance for the purpose of conserving biodiversity"* based on consultation with Natural England*;* and that
- Paragraph 3a. Every planning authority must *"a) take such steps… to further the conservation of the living organisms and types of habitat included in any list published under this section, or (b) promote the taking by others of such steps".*

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