M60/M62/M66 Simister Island Interchange

TR010064

ENVIRONMENTAL STATEMENT APPENDICES

APPENDIX 8.12 BIODIVERSITY NET GAIN REPORT

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Development Consent Order 202[ ]

ENVIRONMENTAL STATEMENT APPENDICES
APPENDIX 8.12 BIODIVERSITY NET GAIN REPORT

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Appendix 8.12 Biodiversity net gain report

Executive summary

This Biodiversity Net Gain (BNG) Report is an appendix to the biodiversity assessment reported in Chapter 8: Biodiversity of the Environmental Statement (TR010064/APP/6.1) for the M60/M62/M66 Simister Interchange (the 'Scheme').

The purpose of this document is to report on the methodology and results of a biodiversity metric assessment undertaken on the Scheme. The assessment presented in this report is based on the preliminary design for the application for development consent.

This report uses the Natural England Biodiversity Metric 3.1 (the 'Metric') calculation tool to determine if the Scheme would likely result in a net gain in biodiversity. The calculation tool has been used to assess biodiversity unit change for area-based habitats, hedgerows and rivers and streams. These three assessments must be considered as stand-alone and units from one assessment cannot be combined with units from another as per the Biodiversity Metric 3.1 User Guide (Panks, *et al.*, 2022).

Table 0.1 provides a summary of the forecast net biodiversity unit change for each of the three types of biodiversity units assessed. It shows no net loss for rivers and streams and a net gain for area-based units and hedgerow units.

Table 0.1 Summary of change in biodiversity units

Unit type	On-site baseline units	On-site post-construction units*	Total net change	
			Units	Percentage (%)
Habitat	392.80	407.28	**14.47****	**3.68**
Hedgerow	13.09	20.74	**7.66**	**58.50****
River and stream	7.21	7.21	**0.00**	**0.00**

*including habitat retention, creation, and enhancement.

**these number are taken directly from the Biodiversity Metric and are based on numbers to four decimal places, but have been rounded to two decimal places here. This accounts for the minor difference compared to calculations based on the two decimal place numbers presented in this table.

The headline results of the Metric indicate that there would be a 3.68% net gain of area-based units and a 58.50% net gain of hedgerow units based on the on-site post-intervention information (including habitat retention, creation and enhancement). Therefore, the Scheme target of no net loss is likely to be achieved based on the information contained within this submission.

The Scheme would not result in the loss of any habitats that are considered 'irreplaceable' or any habitats within statutory designated sites for nature conservation. Currently the assessment does not meet the trading rules specified in the Biodiversity Metric for medium distinctiveness woodland units, which require offsetting with the same broad habitat type, or a higher distinctiveness habitat type.

During the detailed design stage, opportunities to further reduce habitat loss during construction, minimise lags between habitat loss and creation and to maximise the condition and distinctiveness of habitats created would be sought where practicable in order to seek to maximise biodiversity performance over the full Scheme lifecycle.

1 Introduction

1.1 Purpose of this report

1.1.1 This report is an appendix of Chapter 8 Biodiversity of the Environmental Statement (TR010064/APP/6.1) for the M60/M62/M66 Simister Interchange (the 'Scheme').

1.1.2 The purpose of this report is to record the methodology and results of a biodiversity metric assessment undertaken on the Scheme. The assessment presented here is based on the preliminary design for the application for development consent.

1.1.3 This report is structured as follows:

- **Chapter 1: Introduction** – this chapter addresses the drivers of the requirement for Biodiversity Net Gain (BNG) for the Scheme
- **Chapter 2: Methodology** – this chapter covers the survey and calculation approach and addresses limitations
- **Chapter 3: Results** – this chapter presents the overarching results of the report, a breakdown of the results can be found within the accompanying Biodiversity Metric 3.1 tool (the 'Metric')
- **Chapter 4: Conclusions** – this chapter summaries the current standpoint and identifies the next steps
- **Annex A: Supporting information** – this annex includes further details of approach to the Metric calculations
- **Annex B: Biodiversity Metric 3.1 calculation tool** – this annex contains a copy of the Metric tool used for the assessment
- **Annex C: Figures** – this annex contains the figures which support the information within this report.

1.2 Site context

1.2.1 The study area for the biodiversity metric assessment covers the Scheme Order Limits for the application for development consent (as shown on the figures in Annex C of this report), located within Greater Manchester, north-west England (hereafter, referred to as the Scheme). The Order Limits span west-east, from Whitefield Interchange (M60, Junction 17) to Simister Interchange (M60, Junction 18), and north-south, from 700m south of Pilsworth Interchange (M66, Junction 3) to 600m north of Rhodes Interchange (M60, Junction 19).

1.2.2 Land would be required both temporarily (temporary possession for duration of construction and five-year habitat establishment only) and permanently to construct, operate and maintain the Scheme. Permanent land-take requirements include the footprint of all the highway infrastructure and associated earthworks, drainage works and access roads, together with essential environmental mitigation areas for landscape planting for visual amenity and landscape integration.

1.2.3 The study area includes watercourses and associated culverts. Each watercourse is listed below:

- Parr Brook
- Blackfish
- Castle Brook
- Castle Brook Tributary
- Tributary of Castle Brook Tributary

1.2.4 The Scheme is a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008, triggering the need to apply for a Development Consent Order (DCO).

1.3 Planning policy and legislation

1.3.1 The National Policy Statement for National Networks (NPS NN) (Department for Transport (DfT), 2014) sets out the need for, and Government's policies to deliver, development of NSIPs on the national road and rail networks in England. Chapter 5 of the NPS NN discusses biodiversity and ecological conservation. There is no specific requirement within the NPS NN for NSIPs to deliver BNG, however, the document states projects should, '*show how the project has taken advantage of opportunities to conserve and enhance biodiversity….interests'*. It also states as a general principle that, '*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'*. The NPS NN goes on to say that *'proposals potentially provide many opportunities for building in beneficial biodiversity…. features as part of good design. When considering proposals, the Secretary of State should consider whether the applicant has maximised such opportunities in and around developments.'*

1.3.2 The draft NPS NN document (DfT, 2023) specifies that the most appropriate version of the Department for Environment, Food and Rural Affairs (Defra) biodiversity metric be used, and that reference should be made to any Local Nature Recovery Strategy and other relevant national or local plans and strategies (DfT, 2023).

1.3.3 The National Planning Policy Framework (NPPF) (Department for Levelling Up, Housing and Communities (DLUHC), 2023) sets out the government's planning policies for England and how these are expected to be applied. Chapter 15 of the NPPF details core policy principles with respect to conserving and enhancing the natural environment. Paragraph 174 states that planning decisions are required to contribute to and enhance the natural and local environment by *'minimising impacts on and providing net gains for biodiversity'*, and paragraph 179 states that plans should, *'identify and pursue opportunities for securing measurable net gains for biodiversity'.*

1.3.4 Following a transition period, the Environment Act 2021 will mandate schemes in England consented through the Planning Act 2008 to deliver an anticipated 10% BNG. This will be measured using a version of Natural England's Biodiversity Metric adopted as the statutory metric once mandatory BNG comes into force. The Environment Act 2021 will be underpinned by secondary legislation, which has not been issued at the time of writing, in respect of mandatory BNG. The transition period for NSIPs is likely to come to an end in Autumn 2025 by which time a '*biodiversity gain statement*' or statements will have been brought forward and agreed in Parliament setting out the Biodiversity Gain Objective (i.e. the % BNG target, required to be delivered by NSIPs). This is expected to be a minimum of 10%. Whilst there is no current legal requirement for the Scheme to provide BNG, the Scheme design has been developed to maximise biodiversity delivery as far as possible and the Scheme has been proactive in applying the Metric to assess measurable changes in biodiversity.

1.3.5 The Scheme aims to maximise biodiversity value (with an aspiration to provide a net gain in biodiversity), in line with the requirements of the NPS NN (DfT, 2014) and NPPF (DLUHC, 2023).

1.4 Biodiversity metric

1.4.1 A key element of applying BNG is that it should be measurable. As a result, BNG metrics have been developed that allow losses and gains in biodiversity to be measured in an objective and repeatable manner. This assessment uses the Biodiversity Metric 3.1 (the 'Metric') calculation tool to determine whether the Scheme could result in a net gain in biodiversity.

1.4.2 The Biodiversity Metric 3.1 was issued by Defra and Natural England in 2022 and the User Guide (Panks, *et al.,* 2022) and Technical Supplement (Panks, *et al.*, 2022) can be referred to for further details. The Metric includes a spreadsheet-based calculation tool into which data is entered to carry out the biodiversity unit calculations.

1.4.3 Throughout the development of the Scheme design, various versions of the Metric have been available to assess the forecast biodiversity unit performance. It should be noted that the highways and landscape designs have been developed in conjunction with the Biodiversity Metric 3.1 to avoid or minimise significant effects on the environment and based on the principle of maximising biodiversity outcomes by creating the highest distinctiveness habitats appropriate to the Scheme.

1.4.4 BNG is an iterative process and early assessment of BNG has helped to influence the Scheme design.

1.4.5 Within previous iterations of the Order Limits, Ancient Woodland was included within the south-western corner of the Scheme. The Order Limits have since been reduced and no longer include the Ancient Woodland habitat parcel.

1.4.6 At the time of writing, the Biodiversity Metric 4.0 is the latest metric version available which supports standardised BNG calculations in England. This was released in March 2023 and a 'statutory' version of the Biodiversity Metric was published in November 2023. Natural England advise that users of previous versions of the Metric should continue to use that metric for the duration of the scheme it is being used for. Switching metrics is not simply a case of putting the same numbers in a new calculator tool, as the advice regarding how the data is compiled and applied differs between different versions of the Metric. As such it is also not possible to compare results from one version of the Metric tool to another. The Scheme has therefore continued to report using Biodiversity Metric 3.1 given that this version of the Biodiversity Metric has informed the Scheme design.

2 Methodology

2.1 Guidance documents

2.1.1 This report has been produced in accordance with the following guidance documents that are designed to support UK Habitat (UKHab) Classification and the Biodiversity Metric 3.1 calculation:

- UK Habitat Classification Working Group (2020) UK Habitat Classification User Manual (Butcher, *et al.,* 2020a)[1]
- UK Habitat Classification Working Group (2020) UK Habitat Classification Field Key (Butcher, *et al.,* 2020b) [2]
- The Biodiversity Metric 3.1 – User Guide (Panks, *et al.*, 2022)
- The Biodiversity Metric 3.1 – Technical Supplement (Crosher, *et al.*, 2022)
- The MoRPh Survey Technical Reference Manual 2020 version (Gurnell, *et al.,* 2020a)
- A Guide to Assessing River Condition Part of the Rivers and Streams Component of the Biodiversity Net Gain Metric (Gurnell, *et al.*, 2020b)

2.1.2 This report supports and should be read alongside the Biodiversity Metric 3.1 Calculation Tool (Annex B of this report).

2.2 Biodiversity Metric 3.1

2.2.1 The Metric generates a value measured in units for a site before development commences and after development is completed, allowing the difference (gain or loss) to be measured. The calculation is based on habitats, and for each habitat parcel, or length, a biodiversity unit value is generated based on the following factors that are multiplied together:

- The area (habitats) or length (hedgerows and watercourse)
- The value (or distinctiveness) of the habitat type
- The condition (poor/moderate/good)
- The strategic significance applied to the habitat parcel
- Watercourse encroachment (rivers and streams only)

[1] Since carrying out field surveys and commencing writing the report version 2 of the UK Habitat Classification User Manual has been released, August 2023.

[2] Since carrying out field surveys and commencing writing the report version 2 of the UK Habitat Classification Field Key has been released, August 2023.

- Riparian encroachment (rivers and streams only)
- Habitat delay / advance (applied in the post-intervention part of the assessment only).

2.2.2 Given the number of individual habitat parcels and lines in this assessment, they have been grouped together within the Metric tool based on having the same combination of characteristics.

2.3 Area-based habitats and hedgerows

Habitat baseline

2.3.1 An initial UKHab field survey was undertaken within the provisional Order Limits at the time of the survey and included land within a 500m buffer radius from the provisional Order Limits (the 'survey area'). The surveys were undertaken by suitably experienced ecologists between the 5th and 12th April 2021. Additional surveys of some of the land that was not accessible during the first visit were undertaken on 16th and 17th February 2022. See Appendix 8.1: UKHab Report of the Environmental Statement Appendices (TR010064/APP/6.3) for further details regarding UKHab surveys undertaken).

2.3.2 Woodland parcels were revisited in November 2022 in order to inform the Metric condition assessments. This is described in more detail within Section 2.5 of this report.

2.3.3 For each distinct habitat parcel and hedgerow (i.e. a contiguous area of habitat of the same type and condition), plant species were identified and the Dominant, Abundant, Frequent, Occasional, and Rare (DAFOR) scale applied (to record relative abundance of species) in order to determine habitat type.

2.3.4 Aerial imagery was used to plan surveys and for the purposes of preliminary mapping prior to ground truthing by field surveys. In the instances where there were access issues, health and safety considerations or refinements in the Order Limits, and subsequently those areas were not visited for field surveys, aerial imagery and knowledge of the Site and its surrounds has been used to infer the habitat type.

2.3.5 Habitat area is measured in hectares (ha) and hedgerows or tree lines in kilometres (km). Area and length were calculated using field notes, aerial imagery and geolocation features within ArcGIS to calculate an area/length for each habitat as accurately as possible. The area/length was rounded to the nearest four decimal points to be inputted into the Metric.

Distinctiveness

2.3.6 Distinctiveness is automatically determined within the Metric based on the habitat type. The weighting varies from very low (score of 0) to very high (score of 8) considering the habitat's rarity, the extent it is protected by designations and the degree to which the habitat type supports species rarely found in other habitats.

Condition assessments

2.3.7 Condition in the Metric is a measure of a habitat's quality. A condition value of poor (score of 1), moderate (score of 2), or good (score of 3) is assigned following an assessment of which condition criteria in the Biodiversity Metric 3.1 User Guide specific to that habitat type are met (Panks, *et al.,* 2022). The habitat parcel or line was measured against a set of condition criteria for that habitat type within the Biodiversity Metric 3.1 Technical Supplement (Crosher, *et al.,* 2022).

2.3.8 The condition assessment was carried out in the field alongside the UKHab survey described above. The initial field survey was carried out using Technical Supplement and Biodiversity Metric version 2.0, the latest version available at the time. To apply the condition assessment in Biodiversity Metric 3.1, the condition scoring was reviewed against the updated criteria for each habitat. Since version 2.0, the assessment of habitats, in particular woodland, has changed. Therefore, in order to inform Biodiversity Metric 3.1, further condition assessment surveys of woodland parcels were carried out in November 2022.

Strategic significance

2.3.9 Strategic significance recognises the value of location and/or type of habitat parcel that meets local objectives for biodiversity. This is scored between 1 (low strategic significance) and 1.15 (high strategic significance). Through the application of strategic significance, the Metric places greater reward for habitat creation where it is strategically important and locally relevant.

2.3.10 Within this assessment any area which is not considered sealed surface or residential garden has been allocated a value of *'Formally identified in local strategy'*. This is due to the application of the freely accessible Greater Manchester Council Map (Greater Manchester Combined Authority, 2023) which identifies any areas which are not currently in residential use or allocated as parks as having potential for ecological enhancement, as shown under the 'Local Nature Recovery Strategy (LNRS) Opportunities' layer. As specific areas have been identified within local policy as having potential for ecological improvement the location is considered strategically significant. The Urban habitats, garden and sealed surfaces, have been allocated a value of *'Area/compensation not in local strategy/no local strategy'*.

Post-development assessment

2.3.11 Post-development biodiversity units were calculated using the same criteria as the baseline assessment, based on the Environmental Masterplan (Figure 2.3 of the Environmental Statement Figures (TR010064/APP/6.2)) and Scheme design information (see Chapter 2: The Scheme of the Environmental Statement (TR010064/APP/6.1) for further details) to determine habitat retention, loss, creation and enhancement. In addition, consideration of delays in habitat creation between loss and establishment were considered as described below.

Habitat retention and loss

2.3.12 Habitat loss was identified as being within the site clearance perimeter. The measure of habitat loss has been calculated with input from across the team to ensure all areas being impacted are accurately represented by the site clearance perimeter data.

2.3.13 Where possible, impact to woodland has been minimised within the design. The site clearance perimeter includes the likely loss of trees where it enters the root zone. This approach ensures a precautionary representation of habitat loss.

2.3.14 Within the calculations it has been assumed that any habitats not within the site clearance perimeter would be retained.

Habitat creation

2.3.15 Figure 2.3: Environmental Masterplan of the Environmental Statement Figures (TR010064/APP/6.2) applies to all areas that are considered to be cleared and within land under the possession of National Highways. The Environmental Masterplan Landscape Element (LE) codes were converted to the UKHab system and mapped using ArcGIS software for application in the Biodiversity Metric tool. The LE codes were translated into corresponding Metric habitats as shown within Table A.2 and Table A.3 in Annex A.

2.3.16 For all areas cleared and under only temporary control of National Highways, habitats cleared are assumed to be lost and reinstated to reflect the same baseline habitat type. The habitats created have been assessed as having a maximum of moderate target condition due to the limited time the land will be under National Highways management and the limitation of not being able to guarantee future management as the land will be privately owned. The reinstatement rules are shown within Table A.1 in Annex A.

Habitat enhancement

2.3.17 Enhancement has been applied to all woodland areas and other neutral grassland which will be retained and which will be under the possession of National Highways. Enhancement has been limited to a single step increase in condition (e.g. poor to moderate) in order to ensure the enhancement is achievable. This is considered appropriate as the grassland and woodland currently present will be under the same management as areas of habitat creation to meet the condition criteria outlined within the technical supplement.

2.3.18 Woodland enhancement is limited to fairly good due to time required to achieve certain criteria such as, diverse age structure and presence of veteran trees.

Delay / advance creation

2.3.19 The Metric accounts for the time for habitat creation occurring in advance or being delayed beyond the point at which the baseline losses occur. Advance creation results in a reduction in both the time remaining to reach the target condition and the risk of delivery being successful, therefore, more units can be awarded. When habitat creation is delayed significantly beyond the point at which the baseline losses occur, this is also accounted for by increasing the time remaining to reach the target condition. When habitat creation is delayed this results in fewer units being awarded.

2.3.20 For the Scheme, no advance habitat creation is currently identified and based on the current information, the delay varies between zero and four years across the site. An average delay of two years has been applied across all habitat creation.

2.4 Rivers and streams

Baseline survey

2.4.1 Modular River Physical 5 (MoRPh5) (Gurnell, *et al.,* 2019) field surveys have been developed as a tool for assessing the condition of rivers, stream and canals for the purposes of carrying out calculations within the biodiversity metric.

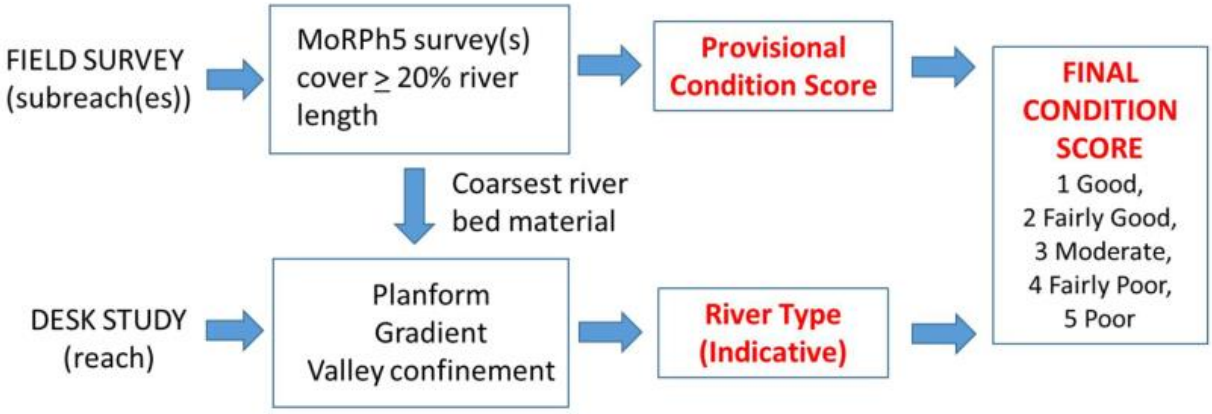
2.4.2 MoRPh5 surveys were carried out on four separate occasions, on 29 September 2021, 13 January 2022, 3 May 2023 and 1 June 2023.

2.4.3 Heavy rainfall during and preceding the survey was noted on the 29 September 2021 survey, though local water levels were observed as being within a normal range for each watercourse. Weather conditions on 13 January 2022 and 3 May 2023 were clear, with a light breeze. Water levels were observed as being within their normal range on these dates. Weather conditions were overcast and dry on 1 June 2023, when two reaches along Castle Brook Tributary were surveyed. The channel was dry across all surveyed modules on this date. The channel bed substrate was intermittently visible across the survey locations, due to high levels of fine sediment load obscuring the bed and local vegetation coverage.

River condition assessment

2.4.4 The River Condition Assessment (RCA) provides the condition score component for input into the Metric. Plate 2.1 illustrates the process for obtaining the RCA final condition score, starting with field surveys using the MoRPh survey method (Gurnell *et al.*, 2019). Survey data then determines a Preliminary Condition Score, which is then combined with desk study findings used to establish a River Type. The River Type and Preliminary Condition Score then determine the Final Condition Score, of which is carried forward into the Metric.

Plate 2.1 Flow chart showing how the Final Condition Score and River Type are established (Gurnell *et al*. 2019)



2.4.5 Full details of the MoRPh survey method can be found in the Technical Reference Manual (Gurnell *et al.,* 2020). To summarise, MoRPh5 surveys are set out as sub-reaches evenly spaced out to cover a minimum of 20% of each watercourse within the Order Limits. Furthermore, sub-reaches would capture changes observed along the reach. For example, where a watercourse requires two sub-reaches, their locations should capture the most natural and modified lengths of a given watercourse (Gurnell *et al*., 2019). Additional changes could include changes in land use, channel modifications, river processes and/or flow conditions. A summary of the sub-reaches within the Order Limits is presented in Table 2.1.

Table 2.1 MoPRh5 Survey requirements

Baseline Ref	Reach Description	Reach Length	20% of Length	River Width	MoRPh5 Length	Number of Subreaches
1	Parr Brook	69m	14m	<5m	50m	1
2	Parr Brook Culvert	453m	91m	<5m	50m	N/A
3	Blackfish	83m	17m	<5m	50m	1
4	Blackfish Culvert	4m	1m	<5m	50m	N/A
5,9,11	Castle Brook Tributary	397m	79m	<5m	50m	3
6	Tributary of Castle Book Tributary	224m	45m	<5m	50m	1
8	Castle Brook	38m	8m	<5m	50m	1

2.4.6 Each sub-reach is then split into five modules, of which the MoRPh river width (Gurnell *et al*., 2020) determines module length. A single module involves the assessment of features along the immediate bank top (10m), bank face, water margin and channel bed. Once assessed, the findings along each module calculates a preliminary condition score.

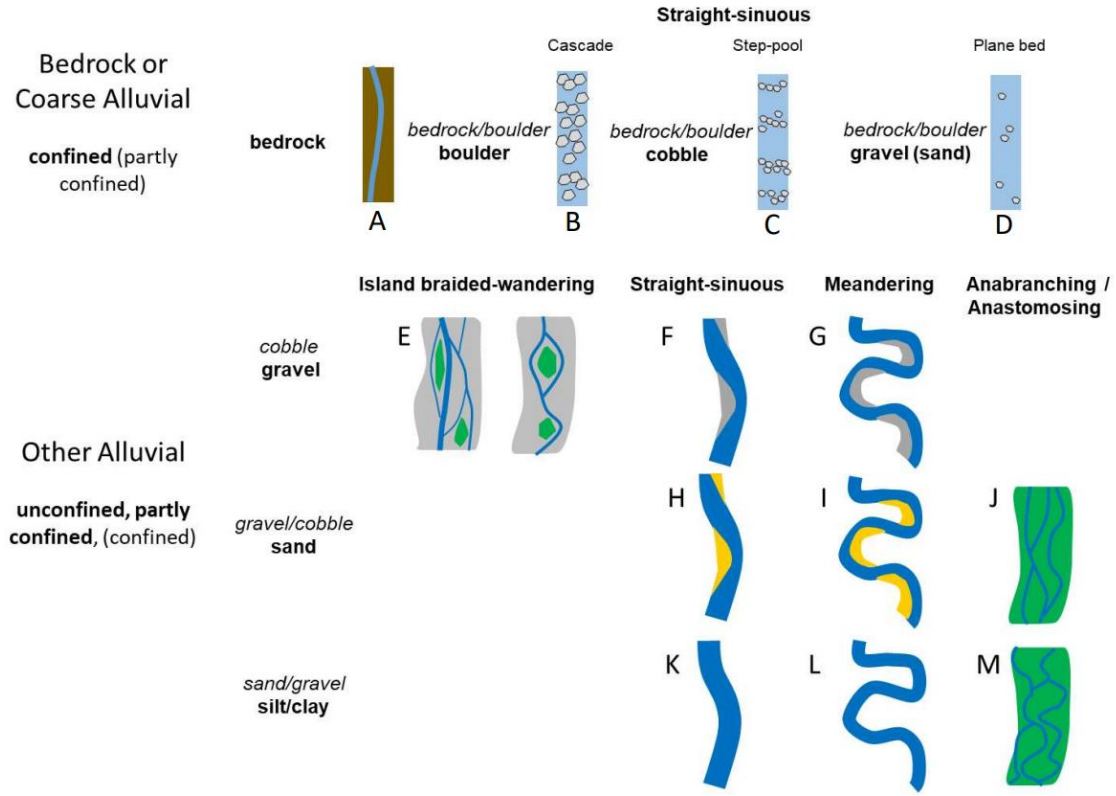
2.4.7 Based on the Scheme extent at the time of surveying and standard survey guidance, the following survey requirements have been calculated. The total extent of watercourse within the Scheme is approximately 1.3km, requiring seven MoRPh5 Surveys (Gurnell *et al.,* 2020). This length is inclusive of culverts within the Order Limits.

2.4.8 Once the preliminary scores were calculated, a desktop study was carried out to establish the river type of the reach. The river type was estimated by combining bed material data acquired during the MoRPh5 surveys with geometric information (river planform, valley gradient, valley confinement) for a defined reach the Scheme is situated in. The following determines the upstream and downstream extent of a reach:

- A major tributary (contributing >10% flow to the watercourse);
- A major artificial barrier (e.g., >5m tall –and likely to significantly change flow of sediment movements); or
- A distinct and persistent change in planform.

2.4.9 Recorded bed material data and geometric information then calculates the indicative river type automatically using MoRPh River Type Pro on the Cartographer website (cartographer.io). There are 15 possible River Type outputs, 13 of which are indicative (‘natural’) river types labelled A-M (Plate 2.2). The remaining two are not defined by the desktop study. The first is canals and navigable rivers, identified by the surveyor based on their function. The second is large rivers, identified by the surveyor to be too large and deep to obtain an accurate assessment of the bed features.

Plate 2.2 The 13 indicative River Types (Gurnell *et al*., 2019)



2.4.10 The final condition score is carried forward into the Metric and contributes to calculating biodiversity units.

2.4.11 Both the preliminary condition score and indicative river type determine the final condition score of a given sub-reach, through parameterisation. Table 2.2 outlines the parameters which determine each final condition category and score.

Table 2.2 Thresholds for condition class scores for each river type (excluding canals/navigable rivers (Gurnell *et al*., 2019)

Final condition category	Final condition score	River Type													
		Large	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**
Good	5	>2.0	>1.9	>2.2	>2.2	>2.2	>2.2	>2.3	>2.5	>2.4	>2.5	>2.3	>1.9	>1.9	>1.9
Fairly Good	4	>1.3	>1.2	>1.4	>1.4	>1.4	>1.4	>1.5	>1.6	>1.6	>1.7	>1.5	>1.2	>1.2	>1.2
Moderate	3	>0.3	>0.2	>0.2	>0.2	>0.2	>0.2	>0.4	>0.5	>0.5	>0.6	>0.4	>0.2	>0.2	>0.2
Fairly Poor	2	>-1.0	>-1.0	>-0.9	>-0.9	>-0.9	>-0.9	>-0.9	>-0.9	>-0.9	>-0.8	>-0.9	>-1.0	>-1.0	>-1.0
Poor	1	<-1.0	<-1.0	<-0.9	<-0.9	<-0.9	<-0.9	<-0.9	<-0.9	<-0.9	<-0.8	<-0.9	<-1.0	<-1.0	<-1.0

2.4.12 In addition to the river condition assessment stages outlined above, an "overdeep assessment" must also be completed for each MoRPh5 sub-reach. This is calculated by dividing the average MoRPh width by average water depth and lower bank height recorded across the five modules within a MoRPh5 (Gurnell *et al.,* 2019). Values equal to or less than 2 indicate the channel is almost certainly overdeep and values equal to or less than 4 indicate it is highly likely the channel is overdeep. Overdeep channels display a lack of hydrological connectivity between the channel and floodplain. To reflect this, within the final condition score, if a channel is determined as overdeep, its condition score is demoted by one condition class. Professional judgement was applied when determining whether subreaches should be defined as overdeep. This included reviewing photographs of the channel taken during site work to check shape values reflect the nature of the watercourse.

Assessment parcels

2.4.13 Where there was a change in condition score throughout a reach, the surveyor divided the river length into assessment parcels based on their habitat condition. Since only 20% of the site area requires assessment; parcel boundaries between each MoRPh5 sub-reach are determined based on similarity of river to the character of the sub-reach upstream and downstream. The length of each parcel was recorded and input to the Biodiversity Metric tool. Reaches were only separated into different parcels either when there was a difference in condition or when they were not geographically connected due to changes in morphology along the reach.

Habitat length

2.4.14 The length of each assessment parcel was measured using aerial imagery and Ordnance Survey (OS) map input into the length column of the Metric in kilometres.

Strategic significance

2.4.15 None of the watercourses within the Order Limits feature within local plans for the region and have therefore been considered to have low strategic significance within the assessment.

Riparian encroachment

2.4.16 Assessment of the degree of riparian encroachment in the baseline scenario and as a result of the Scheme is required. In the Metric, the riparian zone is defined as a 10m zone from the top of the riverbank. Development within the riparian zone is termed 'riparian encroachment'. Riparian encroachment is defined as:

'A reduction in the quantity/ quality and 'use' of available habitat that forms a specific ecological function for riparian or aquatic specialist species. Whereby, 'use' is defined as the ability of a species to: commute, forage, rest/ dwell, or access as part of its life cycle between aquatic and terrestrial phases.' (Panks, *et al.,* 2022).

2.4.17 Development is defined as: the presence of any habitats of very low distinctiveness found within the riparian zone (as listed within the Metric e.g. hard standing etc.).

2.4.18 Riparian encroachment multipliers reflect how far the development has encroached toward the river channel (distance) or how much of the 10m riparian zone (by % area) is covered by the development footprint. Further details can be found in the Biodiversity Metric 3.1 User Guide (Panks, *et al.,* 2022).

In-watercourse encroachment

2.4.19 In the Metric, in-watercourse encroachment is defined as:

'An intervention that adversely affects hydrological and geo-morphological processes, creating localised changes in flow (e.g., eddying, erosion) and/or sediment dynamics and riverine connectivity - longitudinal, lateral or vertical. The result is localised changes in habitat, species and the use of migratory pathways.'

2.4.20 In-watercourse encroachment multipliers reflect how far the development has encroached into the river channel (% width) or along the bank (% length). The percentage length is measured as a percentage of the total length of the watercourse within the on-site boundary. Further details can be found in the Biodiversity Metric 3.1 User Guide (Panks *et al.,* 2022).

Post-development assessment

2.4.21 Post-development rivers and streams units were calculated using the same criteria as the baseline assessment, based on Figure: 2.3 Environmental Masterplan of the Environmental Statement Figures (TR010064/APP/6.2) and Scheme design information to determine habitat retention, loss, creation and enhancement. As no creation, loss or enhancement was identified as a result of the Scheme within the rivers and streams assessment, no consideration of delays in habitat creation or enhancement was required at this stage in the assessment.

2.4.22 The condition indicators from the baseline MoRPh5 surveys were modified to reflect the works and establish the post-development condition.

2.4.23 Within this scheme, the condition remains the same as the baseline, therefore, the full length of that assessment parcel was entered into the retained column in the Metric.

2.5 Limitations

2.5.1 In general, it should be noted that the Metric calculation tool uses habitats as a proxy for biodiversity and is a simplification of the 'real world'. Furthermore, while the scoring of habitats is informed by ecological reasoning and the available evidence, the outputs of biodiversity unit calculations are not scientifically precise or absolute values (Panks *et al.*, 2022). The Metric and its outputs should therefore be interpreted, alongside ecological expertise and common sense, as an element of the evidence that informs plans and decisions.

2.5.2 In addition to the acknowledged limitations of the Metric calculation tool, a number of assumptions and limitations exist in respect of the current metric calculation tool assessment, and these are summarised below. It is considered that these assumptions and limitations do not introduce a level of uncertainty that would affect the veracity of the assessment.

Metric version change

2.5.3 The initial baseline habitat surveys and condition assessment was based on Biodiversity Metric 2.0, the most current version of the Metric at the time the field surveys were undertaken. Since the initial assessment, subsequent versions of the Biodiversity Metric (Metric 3.0, 3.1 and 4.0) and accompanying guidance have been released. The assessment reported in this report is based on Biodiversity Metric 3.1.

2.5.4 The greatest limitation to transferring the assessment from Biodiversity Metric 2.0 to Biodiversity Metric 3.1 are the changes in condition assessment for habitat types. The condition criteria set out in Biodiversity Metric 2.0 do not in many cases require the same data as for the condition assessment in Biodiversity Metric 3.1. As such the assessment was lacking some of the detail required for a full condition assessment in Biodiversity Metric 3.1.

2.5.5 Due to this limitation the majority of the data has been transferred across into Biodiversity Metric 3.1 as it stands (i.e. the same condition has been applied in Biodiversity Metric 3.1 as for Biodiversity Metric 2.0). This is not considered a major constraint for grassland habitats as it is not considered that the condition assessment would change significantly between Biodiversity Metric 2.0 and Biodiversity Metric 3.1 criteria.

2.5.6 The greatest difference between Biodiversity Metric 2.0 and Biodiversity Metric 3.1 condition assessment is considered to be in the approach to woodland assessment, as the scoring system for the condition criteria has changed from pass or fail to scores applied between 1 and 3. Therefore, these habitat types were targeted for re-assessment of condition in November 2022 to address this initial limitation. These surveyed were carried out outside of the optimum survey window. This is not considered a significant limitation because to the condition criteria specifically for woodland does not rely on vegetation growth, and the woodland type and tree species had already been identified during the initial field surveys.

2.5.7 Some areas within the Order Limits could not be accessed safely. These habitats were assessed either from a distance with informed estimations made, or through a desk study considering any similar habitats likely under the same management nearby. The percentage of land estimated to not be safely accessible is 1% of the overall survey area.

2.5.8 Approximately 34% of the survey area was carried out using aerial imagery as it comprised private residential areas. Within the Biodiversity Metric 3.1 User Guide (Panks, *et al.,* 2022) it suggests a 70:30 ratio between sealed surface and vegetated gardens be used to represent the gardens and housing, including associated road networks. A more precautionary approach was taken in this assessment, following assessment of the aerial imagery, and a 50:50 approach was applied to ensure the coverage of vegetated garden was not undervalued. This approach is reflected in both the baseline and post-development calculations and inputted into the Metric as areas of sealed surface and vegetated garden.

2.5.9 Access was not granted to the bank top for Castle Brook Reach 1, limiting the ability to complete a formal MoRPh5 survey for the subreach. However, a public right of way did cross the channel within the subreach, meaning photographs could be taken and used to inform the condition of the watercourse. These photographs and aerial imagery were used as proxy data for the desk-based survey to establish the condition of the subreach.

2.5.10 Outfalls have been identified at two locations along Castle Brook Tributary (at Castle Brook Tributary Reach 1 and Castle Brook Tributary Reach 3). The design of the outfall has not been finalised at this stage in the Scheme, but they have been assumed to be set back from the bank face, as per hydromorphological mitigation (see Section 13.9 of Chapter 13: Road Drainage and the Water Environment of the Environmental Statement (TR010064/APP/6.1)). Based on the dimensions of an existing outfall on Castle Brook Reach 1,2, the outfall and its associated concrete reinforcement has been modelled as being no wider than 3m. The outfalls are detailed further within paragraph 3.4.5.

2.5.11 During the surveys on 29 September 2021, overgrown vegetation and access limitations led to the bed of the Tributary of Castle Brook Tributary being indiscernible. Both surveys assumed the presence of silt along the bank floor, where follow up surveys provided confirmation from alternative vantage points.

Metric area error message

2.5.12 Within the Metric the ‘check areas’ warning is present. The area of habitat lost equates to 40.89ha, with the habitat creation amounting to 41.07ha. This is a difference of 0.18ha where the Metric tool expects losses and creation to match exactly. This mis-match is considered likely due to the mapping process which can result in small gaps and overlaps between the habitat parcels, and the Metric tool rounding the data which is inputted to four decimal points.

2.5.13 This minor difference in areas is not considered to significantly impact the final biodiversity calculations for the Scheme.

3 Results

3.1 Summary

3.1.1 Within the extent of the Order Limits, no designated sites, irreplaceable habitats or habitats of very high distinctiveness are present.

3.1.2 No habitat creation specifically for protected species or other requirements is needed as part of the scheme, therefore, additionality does not need to be considered and any uplift in biodiversity units counts towards the Scheme biodiversity delivery.

3.1.3 Table 3.1 provides a summary of the forecast biodiversity unit change for each of the three types of biodiversity units assessed i.e. area-based habitat units, hedgerow units and river and stream units. It shows a gain in habitat and hedgerow units, and no net loss in river and stream units.

Table 3.1 Summary of biodiversity units and net change

Unit type	On-site baseline units	On-site post-construction*	Total net change	
			Units	Percentage (%)
Habitat	392.80	407.28	**14.47****	**3.68**
Hedgerow	13.09	20.74	**7.66**	**58.50****
River and stream	7.21	7.21	**0.00**	**0.00**

*including habitat retention, creation, and enhancement.

**these number are taken directly from the Metric and are based on numbers to four decimal places, but have been rounded to two decimal places here. This accounts for the minor difference compared to calculations based on the two decimal place numbers presented in this table.

3.2 Habitat units

3.2.1 Full descriptions of the baseline habitats present within the Order Limits can be found within Chapter 8: Biodiversity of the Environment Statement (TR010064/APP/6.1)) and Appendix 8.1: UK Habitat Classification Report of the Environmental Statement Appendices (TR010064/APP/6.3)).

3.2.2 The current forecast for habitat units estimates a 3.68% gain in units as compared to the baseline.

3.2.3 The main driver of the gain forecast is the creation of ‘other neutral grassland’ in ‘good’ condition. Other neutral grassland created as part of the landscape design (excluding re-instated grassland) creates 166.43 of the 407.28 biodiversity units in the post-development assessment (i.e. 40% of the total post-development biodiversity units).

3.2.4 Woodland enhancement has also been identified as part of the Scheme. Approximately 15.05ha of 'other woodland; broadleaved' habitat between poor and moderate condition has been identified for enhancement. With an additional 0.16ha of Lowland Mixed Deciduous Woodland enhancement from moderate to fairly good also identified. A total of 79.39 biodiversity units are delivered through woodland enhancement.

3.2.5 The Metric results highlight that trading rules are not met for medium distinctiveness habitats, specifically 'other woodland; broadleaved', with the trading deficit being -34.48 units. Medium distinctiveness habitats require the delivery of the same broad habitat type or higher distinctiveness habitat to the same value of the habitat units being lost.

3.2.6 In order to address this trading rule issue, extensive discussions with the design team were undertaken to seek changes to the design to minimise loss of 'other woodland; broadleaved'. This resulted in retention of small area of woodland in the southern part of the Order Limits (connected to Hazlitt Wood Site of Biological Importance). However, it was not possible to avoid impacts to other areas of 'other woodland; broadleaved' habitat, because most of this habitat is immediately adjacent to the existing highway and has to be cleared to enable construction of the Scheme.

3.2.7 Next a review of the landscape design was undertaken with the aim of mitigating the loss of 'other woodland; broadleaved' by increasing the area of woodland within the landscape design. This resulted in changes to the design which incorporated an additional 2.63ha of 'lowland mixed deciduous woodland and other woodland; broadleaved' and a reduction in grassland, wet woodland and coniferous woodland creation, which whilst having an overall impact of the predicted net gain figure (a reduction of 2.44%), meant that the net loss of units associated with 'other woodland; broadleaved' was reduced, which moved the Scheme closer to addressing the trading rules.

3.2.8 It would be possible to fully satisfy the trading rules, however this would result in the entire Order Limits being landscaped with woodland planting. This would lead to reduction in the diversity of habitats and therefore associated fauna. It is considered that a more optimal approach for biodiversity is the design which, whilst it does not fully satisfy the trading rules, does ensure no loss in the area of woodland, whilst providing a greater diversity of habitats which is considered to be more ecologically valuable.

3.2.9 Following the mitigation hierarchy, the Scheme design has avoided impacting high distinctiveness lowland mixed deciduous woodland where possible, however, of the 0.17ha present within the Order Limits, 0.11ha (amounting to 1.56 biodiversity units) has the potential to be lost. This loss has been mitigated for through the creation of 2.90ha of Lowland Mixed Deciduous Woodland habitat in moderate condition and the enhancement of 0.16ha of Lowland Mixed Deciduous Woodland from moderate condition to fairly good condition.

3.3 Hedgerow units

3.3.1 Full descriptions of the habitats present within the Order Limits can be found within Chapter 8: Biodiversity of the Environmental Statement (TR010064/APP/6.1) and Appendix 8.1: UK Habitat Classification Report of the Environmental Statement Appendices (TR010064/APP/6.3).

3.3.2 The current forecast for hedgerow units estimates a 58.50% gain in units as compared to the baseline.

3.3.3 The baseline comprises ‘native hedgerow’ in poor (0.47km), moderate (1.05km) and good (1.04km) condition and ‘native hedgerow with trees associated with a ditch’ in moderate condition (0.0001km).

3.3.4 There is a net gain of 0.6km in hedgerow extent based on the preliminary design resulting in a post-development value of 20.74 units. Native species rich hedgerows (including some with trees) with a target of moderate condition as included within the landscape design, would generate 11.27 biodiversity units post-development. The remainder of the credits generated are as a result of existing hedgerows which would be retained, or from re-instated hedgerows which would be temporarily lost during the construction phase.

3.4 River and stream units

3.4.1 Baseline river and stream units are presented in Table 3.2 and culverts are presented in Table 3.3. Further details can be found within Chapter 13: Road Drainage and the Water Environment of the Environment Statement (TR010064/APP/6.1).

Table 3.2 Scheme baseline reach delineations and condition class

BNG Metric Reference	Reach Reference	Reach length (km)	National Grid Reference (NGR)	On Site / Off Site	River Type	'Initial' Final Condition Class	Overdeep Assessment	Final Condition Class
1	Parr Brook Reach 1	0.069	SD 82558 05593 to SD 82521 05642	On site	K	Moderate	No	Moderate
3	Blackfish Brook 1	0.083	SD 83257 05362 to SD 83299 05290	On site	H	Moderate	Yes	Fairly Poor
5	Castle Brook Tributary Reach 1	0.125	SD 82696 06428 to SD 82776 06477	On site	K	Moderate	Yes	Fairly Poor
6	Tributary of Castle Brook Tributary 1	0.224	SD 82696 06428 to SD 82776 06477	On site	K	Fairly Poor	Yes	Poor
8	Castle Brook Reach 1	0.038	SD 83042 06471 to SD 82882 06615	On site	F	Fairly Poor	Yes	Poor
9	Castle Brook Tributary Reach 2	0.127	SD 82776 06477 to SD 82852 06559	On site	K	Moderate	Yes	Fairly Poor
11	Castle Brook Tributary Reach 3	0.146	SD 82852 06559 to SD 82884 06677	On site	K	Fairly Poor	Yes	Poor

3.4.2 Table 3.3 summarises information on the baseline culverts surveyed within the Order Limits.

3.4.3 Due to their heavily modified nature, culverts are given a predetermined condition class of 'poor'. The degree of watercourse encroachment is not assessed for culverts.

Table 3.3 Baseline culverts

Metric Reference	Reach Reference	Reach length (km)	Description	On site/Off site	Final Condition Class
2	Parr Brook Culvert	0.453	From culvert inlet to Order Limits	On site	Poor
4	Blackfish Culvert	0.008	From culvert inlet to Order Limits	On site	Poor

3.4.4 Riparian and watercourse encroachment were assessed during the survey, and further supplemented by aerial imagery. This is accounted for in the Metric, which applies a multiplier to the score based on the degree encroachment. The levels of riparian and watercourse encroachment are presented in Table 3.4.

Table 3.4 Watercourse and riparian encroachment values

Metric Reference	Watercourse Encroachment	Riparian Encroachment	Overall Encroachment Multiplier
1 - Parr Brook	No encroachment	No encroachment	1
2 - Parr Brook Culvert	N/A	No encroachment	1
3 - Blackfish	No encroachment	No encroachment	1
4 - Blackfish Culvert	N/A	No encroachment	1
5 – Castle Brook Tributary Reach 1	No encroachment	No encroachment	1
6 – Tributary to Castle Brook Tributary	No encroachment	No encroachment	1
8 – Castle Brook Reach 1,2	No encroachment	No encroachment	1
9 – Castle Brook Tributary Reach 2	No encroachment	No encroachment	1
11 – Castle Brook Tributary Reach 3	No encroachment	No encroachment	1
12 – Castle Brook Reach 1,1	No encroachment	No encroachment	1

3.4.5 Limited impacts to watercourses within the Order Limits are anticipated as a result of the Scheme. The most prominent impact across the Scheme will be the outfalls along Castle Brook Tributary. One will be located within 'Castle Brook Tributary Reach 1' and one within 'Castle Brook Tributary Reach 3'. The design of the outfalls has not been finalised at this stage in the Scheme, but they have been assumed to be set back from the bank face, as per hydromorphological mitigation (see Section 13.9 of Chapter 13: Road Drainage and the Water Environment of the Environment Statement (TR010064/APP/6.1)). Based on the dimensions of an existing outfall on Castle Brook Reach 1,2, the outfalls and associated concrete reinforcement are assumed to be no wider than 3m. Condition scores have been modelled based on these assumptions, which resulted in no change in condition class.

3.4.6 Riparian encroachment resulting from the outfalls was assessed using guidance issued in the Biodiversity Metric 3.1 User Guide (Panks *et al.,* 2022). No riparian encroachment is likely to occur as a result of the outfall.

3.4.7 The outfalls were also found to cause no in-watercourse encroachment. The Biodiversity Metric 3.1 User Guide (Panks *et al.,* 2022) describes minor encroachment as "comprising 5%-20% of the bank length, or encroachment extending up to 10% of the channel width". Table 3.5 shows that the assumed width of the outfalls at both sub-reach does not meets the lower threshold of bank length for Minor Encroachment to occur. The setback nature of the outfalls relative to the channel will also mean that they will not extent 10% into the watercourse.

Table 3.5 Sub-reach bank lengths and in-watercourse bank length threshold values

Sub-reach name	Bank length (double reach length)	5% Bank length	Outfall width
Castle Brook Tributary Reach 1	250m	12.5m	3m
Castle Brook Tributary Reach 3	292m	14.6m	3m

3.4.8 The final rivers and streams unit forecast for the Scheme is 0.00%. This is due to the Scheme causing no changes in watercourse length, and there being no deterioration in condition, despite the addition of two outfalls.

4 Conclusions

4.1.1 This assessment is based on the Environmental Masterplan (Figure 2.3 of the Environmental Statement Figures (TR010064/APP/6.2)) for the application for development consent. At this stage, the Metric forecasts should be treated with some caution due to the assumptions made to allow a quantitative forecast of biodiversity unit change (see Section 2.5 of this report) and the preliminary nature of the design. However, it is considered that this assessment provides a good indicator of the likely performance of the Scheme in terms of net biodiversity. The current forecast change in biodiversity units forecast for the Scheme is:

- 3.68% for area-based habitat units
- 58.50% for hedgerow units
- 0.00% for river and stream units

4.1.2 The headline results of the Metric indicate that there would be a 3.68% net gain of area-based units and a 58.50% net gain of hedgerow units based on the on-site post-intervention information (including habitat retention, creation and enhancement). Therefore, the Scheme target of no net loss is likely to be achieved based on the information contained within this submission.

4.1.3 This assessment represents the current stage of the Scheme, using the preliminary Scheme design, and should be updated and refined at key milestones to further develop the forecast for net biodiversity change.

4.1.4 Avoidance of habitat loss is the best way to improve biodiversity performance. As the design is refined at the detailed design stage, the project would continue to seek opportunities to further reduce impacts to the most ecologically valuable habitats.

4.1.5 As the detailed landscape design and the Landscape and Ecological Management Plan (LEMP) is developed (from the Outline LEMP, which is Appendix N of the First Iteration Environmental Management Plan (EMP) (TR010064/APP/6.5)), opportunities should be sought to ensure the condition and distinctiveness of habitats identified for creation are maximised and that this is captured in future metric assessments. Reducing the delays between habitat loss and establishment would also improve the forecast biodiversity performance. Scheme programming should look to minimise delays between habitat loss and creation and future updates to the Metric assessment should apply updated programme information.

4.1.6 Within the current design, the trading rules are not satisfied for medium distinctiveness habitats due to the loss of ‘other woodland broadleaved’ as part of the Scheme (-34.48 biodiversity units).

4.1.7 Where possible woodland creation has been maximised, with the delivery of high distinctiveness Lowland Mixed Deciduous Woodland prioritised where suitable. Further woodland creation to meet the trading rules for medium distinctiveness woodland is not considered suitable within the landscape design. There is limited area within the red line boundary, and the creation of further woodland would reduce the creation of other habitats, including other neutral grassland which would contribute to producing a varied landscape comprising multiple habitats.

Acronyms and initialisms

Acronym or initialism	Term
BNG	Biodiversity Net Gain
DAFOR	Dominant, Abundant, Frequent, Occasional, and Rare
DCO	Development Consent Order
Defra	Department for Environment, Food and Rural Affairs
DLUHC	Department for Levelling Up, Housing and Communities
EMP	Environmental Management Plan
ha	Hectare
km	Kilometre
LEMP	Landscape and Ecological Management Plan
LNRS	Local Nature Recovery Strategy
MoRPh	Modular River Physical Survey
MoRPh5	Modular River Physical 5 survey
NGR	National Grid Reference
NPPF	National Planning Policy Framework
NPPG	National Planning Policy Guidance
NPS NN	National Policy Statement for National Networks
NSIP	Nationally Significant Infrastructure Project
OS	Ordnance Survey
RCA	River Condition Assessment
TCPA	Town & Country Planning Act
UKHab	UK Habitat Classification

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Annex A Supporting Information

Table A.1 Reinstatement rules (habitat type and condition) for area-based habitats and hedgerows

Assumptions/Rules	Applicable to:
Anything 'poor' in the baseline will remain poor	Habitats and hedgerows
Anything 'moderate' in the baseline will remain moderate	Habitats and hedgerows
Anything 'good' in the baseline will be considered 'moderate' taking a pre-cautionary approach*	Habitats and hedgerows
*Within the current design no habitats assessed as in good condition are being lost.	

Habitat Type (Metric 3.1)	Condition	Reinstated condition
Lakes – Temporary Lakes, ponds and pools	Moderate	Moderate
Lakes – Ponds (Non- Priority Habitat)	Moderate	Moderate
Grassland - Modified grassland	Poor	Poor
Grassland - Modified grassland	Moderate	Moderate
Grassland - Other neutral grassland	Moderate	Moderate
Grassland - Other neutral grassland	Poor	Poor
Heathland and shrub - Hawthorn scrub	Poor	Poor
Urban – Developed Land Sealed Surface	N/A - Other	N/A - Other
Urban – Vegetated Garden	Poor	Poor
Woodland and forest - Other woodland; broadleaved	Poor	Poor

Table A.2 Environmental Masterplan (Figure 2.3 of the Environmental Statement Figures (TR010064/APP/6.2)) habitat creation translations (see Table A.3 for justification of target condition target)

Landscape Description	Linear or Area	Metric 3.1 Habitat	Condition
Mixed Hedgerow	Linear	Native Species Rich Hedgerow	Moderate
		Native species Rich Hedgerow with Trees	
Coniferous Woodland	Area	Woodland and forest - Other woodland; broadleaved	Moderate
Broadleaf Woodland	Area	Lowland Mixed Deciduous Woodland	Moderate
Mixed Woodland / Woodland Edge	Area	Woodland and forest - Other woodland; broadleaved	Moderate
Wet Woodland	Area	Woodland and forest - Wet woodland	Moderate
Shrubs with Intermittent Trees	Area	Heathland and shrub - Mixed scrub	Moderate
Shrubs			
Ponds	Area	Lakes - Ponds (Non- Priority Habitat)	Moderate
Marginal planting	Area	Grassland - Other neutral grassland	Good
Species rich grassland	Area	Grassland - Other neutral grassland	Good
Open grassland	Area	Grassland – Modified grassland	Moderate
Swales	Area	Urban – Bioswale	Poor
Wet grassland	Area	Lakes - Temporary lakes, ponds and pools	Moderate
		Urban - Sustainable Urban Drainage feature	Poor

Table A.3 Evidence sheets for habitat type target condition used in the Biodiversity Metric based on discussion with Landscape Architects

Condition Assessment Criteria for:		**Woodland and forest - Other woodland; broadleaved** **Woodland and forest – Lowland Mixed Deciduous Woodland** **Woodland and forest – Wet Woodland**			
Indicator		**Good (3 points)**	**Moderate (2 points)**	**Poor (1 point)**	**Score per indicator**
1	Age distribution of trees	Three age classes present	Two age classes present	One age class present	2
2	Wild, domestic, and feral herbivore damage	No significant browsing damage evident in woodland	Evidence of significant browsing pressure is present in 40% or less of whole woodland	Evidence of significant browsing pressure is present in 40% or more of whole woodland	3
3	Invasive plant species	No invasive species present in woodland	Rhododendron or laurel not present, other invasive species < 10% cover	Rhododendron or laurel present, or other invasive species > 10% cover	3
4	Number of native tree species	Five or more native tree or shrub species found across woodland parcel	Three to four native tree or shrub species found across woodland parcel	None to two native tree or shrub species across woodland parcel	3
5	Cover of native tree and shrub species	> 80% of canopy trees and >80% of understory shrubs are native	50-80% of canopy trees and 50-80% of understory shrubs are native	< 50% of canopy trees and <50% of understory shrubs are native	3
6	Open space within woodland	10 – 20% of woodland has areas of temporary open space, unless woodland is <10ha in which case lower threshold of 10% does not apply	21- 40% of woodland has areas of temporary open space	More than 40% of woodland has areas of temporary open space	3

Condition Assessment Criteria for:		**Woodland and forest - Other woodland; broadleaved** **Woodland and forest – Lowland Mixed Deciduous Woodland** **Woodland and forest – Wet Woodland**			
Indicator		**Good (3 points)**	**Moderate (2 points)**	**Poor (1 point)**	**Score per indicator**
7	Woodland regeneration	All three classes present in woodland; trees 4-7cm dbh, saplings and seedlings or advanced coppice regrowth	One or two classes only present in woodland	No classes or coppice regrowth present in woodland	1
8	Tree health	Tree mortality less than 10%, no pests or diseases and no crown dieback	11% to 25% mortality and/or crown dieback or low risk pest or disease present	Greater than 25% tree mortality and or any high risk pest or disease present	3
9	Vegetation and ground flora	Ancient woodland flora indicators present	Recognisable NVC plant community present	No recognisable NVC community	1
10	Woodland vertical structure	Three or more storeys across all survey plots or a complex woodland	Two storeys across all survey plots	One or less storey across all survey plots	2
11	Veteran trees	Two or more veteran trees per hectare	One veteran tree per hectare	No veteran trees present in woodland	1
12	Amount of deadwood	50% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	Between 25% and 50% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	Less than 25% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	1

Condition Assessment Criteria for:		**Woodland and forest - Other woodland; broadleaved** **Woodland and forest – Lowland Mixed Deciduous Woodland** **Woodland and forest – Wet Woodland**			
Indicator		**Good (3 points)**	**Moderate (2 points)**	**Poor (1 point)**	**Score per indicator**
13	Woodland disturbance	No nutrient enrichment or damaged ground evident	Less than 1 hectare in total of nutrient enrichment across woodland area and/or less than 20% of woodland area has damaged ground	More than 1 hectare of nutrient enrichment and/or more than 20% of woodland area has damaged ground	1
Total score (out of 39)					**27 - Moderate**

Condition Assessment Result	**Condition Assessment Score**
Total score >32 (33 to 39)	Good (3)
Total score 26 to 32	Moderate (2)
Total score <26 (13 to 25)	Poor (1)

Condition Assessment Criteria for:	**Grassland - Other neutral grassland (Medium, High & Very High Distinctiveness condition sheet)**	
Indicator		**Pass/Fail**
1	The appearance and composition of the vegetation closely matches characteristics of the specific grassland habitat type (see UKHab definition). Wildflowers, sedges and indicator species for the specific grassland habitat type are very clearly and easily visible throughout the sward.	1
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20 per cent is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	1
3	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.	1
4	Cover of bracken less than 20% and cover of scrub (including bramble) less than 5%.	1
5	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981). Combined cover of undesirable species1 and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area.	1
6	There are greater than 9 species per metre squared. NB - This criterion is essential for achieving good condition (non-acid grassland types only).	1
Total score (out of 6)		**6 - Good**

Condition Assessment Result	**Condition Assessment Score**
Passes 5 of 5 criteria	Good (3)
Passes 3 or 4 of 5 criteria	Moderate (2)
Passes 0, 1 or 2 of 5 criteria	Poor (1)

Condition Assessment Criteria for:	**Grassland - Modified grassland (Low Distinctiveness condition sheet)**	
Indicator		**Pass/Fail**
1	There must be 6-8 species per m². If a grassland has 9 or more species per m² it should be classified as a medium distinctiveness grassland habitat type. NB - this criterion is essential for achieving moderate condition.	1
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20 per cent is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	0
3	Some scattered scrub (including bramble) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of shrubs with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.	1
4	Physical damage is evident in less than 5% of total grassland area. Examples of physical damage include excessive poaching, damage from machinery use or storage, erosion caused by high levels of access, or any other damaging management activities.	1
5	Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens).	0
6	Cover of bracken is less than 20%.	1
7	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981).	1
Total score (out of 7)		**5 - Moderate**

Condition Assessment Result	**Condition Assessment Score**
Passes 6 or 7 of 7 criteria including passing essential criterion 1	Good (3)
Passes 4 or 5 of 7 criteria; OR Passes 4 or 5 of 7 criteria including passing essential criterion 1	Moderate (2)
Passes 0, 1, 2 or 3 of 7 criteria; OR 4, 5 or 6 of criteria but failing criterion 1	Poor (1)

Condition Assessment Criteria for:	**Heathland and shrub - Mixed scrub**	
Indicator		**Pass/Fail**
1	Habitat is representative of UKHab description (where in its natural range). There are at least three woody species, with no one species comprising more than 75% of the cover (except common juniper, sea buckthorn or box, which can be up to 100% cover).	1
2	There is a good age range – all of the following are present: seedlings, young shrubs and mature shrubs.	0
3	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and undesirable species1 make up less than 5% of ground cover.	1
4	The scrub has a well-developed edge with scattered scrub and tall grassland and/or herbs present between the scrub and adjacent habitat(s).	1
5	There are clearings, glades or rides present within the scrub, providing sheltered edges.	0
Total score (out of 5)		**3 - Moderate**

Condition Assessment Result	**Condition Assessment Score**
Passes 5 of 5 criteria	Good (3)
Passes 3 or 4 of 5 criteria	Moderate (2)
Passes 0, 1 or 2 of 5 criteria	Poor (1)

Condition Assessment Criteria for:		**Hedgerows – Species-rich Native Hedgerow**	
Indicator		**Criteria to pass**	**Score per indicator**
A1	Height	>1.5 m average along length	1
A2	Width	>1.5 m average along length	1
B1	Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length (unless 'line of trees')	1
B2	Gap - hedge canopy continuity	Gaps make up <10% of total length AND No canopy gap >5m	1
C1	Undisturbed ground and perennial vegetation	>1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length: measured from outer edge of hedgerow, and is present on one side of the hedge (at least)	0
C2	Undesirable perennial vegetation	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground	0
D1	Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species	1
D2	Current damage	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities	0
Total score (out of 8)			**5 - Moderate**

Condition Assessment Result	**Condition Assessment Score**
No more than 2 failures in total; AND no more than 1 failure in any functional group.	Good (3)
No more than 5 failures in total; AND does not fail both attributes in more than one functional group (e.g. fails attributes A1, A2, B1, C2 & E1 = Moderate condition).	Moderate (2)
Fails a total of more than 5 attributes; OR fails both attributes in more than one functional group (e.g. fails	Poor (1)

attributes A1, A2, B1 & B2 = Poor condition).	

Condition Assessment Criteria for:		**Hedgerows – Species-rich Native Hedgerow with Trees**	
Indicator		**Criteria to pass**	**Score per indicator**
A1	Height	>1.5 m average along length	1
A2	Width	>1.5 m average along length	1
B1	Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length (unless 'line of trees')	1
B2	Gap - hedge canopy continuity	Gaps make up <10% of total length AND No canopy gap >5m	1
C1	Undisturbed ground and perennial vegetation	>1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length: measured from outer edge of hedgerow, and is present on one side of the hedge (at least)	0
C2	Undesirable perennial vegetation	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground	0
D1	Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species	1
D2	Current damage	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities	0
E1.	Tree age	At least one mature tree per 30m stretch of hedgerow. A mature tree is one that is at least 2/3 expected fully mature height for the species.	0
E2.	Tree health	At least 95% of hedgerow trees are in a healthy condition (excluding veteran features valuable for wildlife). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.	1
Total score (out of 10)			**6 - Moderate**

Condition Assessment Result	Condition Assessment Score
No more than 2 failures in total; AND no more than 1 failure in any functional group.	Good (3)
No more than 5 failures in total; AND does not fail both attributes in more than one functional group (e.g. fails attributes A1, A2, B1, C2 & E1 = Moderate condition).	Moderate (2)
Fails a total of more than 5 attributes; OR fails both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & B2 = Poor condition).	Poor (1)

Condition Assessment Criteria for:	**Lakes - Pond (Non-priority habitat)** **Lakes - Temporary lakes, ponds and pools**	
Indicator		**Pass/Fail**
1	The pond is of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution. Turbidity is acceptable if the pond is grazed by livestock.	0
2	There is semi-natural habitat (i.e. moderate distinctiveness or above) for at least 10 m from the pond edge.	1
3	Less than 10% of the pond is covered with duckweed or filamentous algae.	1
4	The pond is not artificially connected to other waterbodies, either via streams, ditches or artificial pipework.	0
5	Pond water levels should be able to fluctuate naturally throughout the year. No obvious dams, pumps or pipework.	1
6	There is an absence of non-native plant and animal species.	1
7	The pond is not artificially stocked with fish. If the pond naturally contains fish, it is a native fish assemblage at low densities.	1
8	In non-woodland ponds, plants, be they emergent, submerged or floating (excluding duckweeds)3, should cover at least 50% of the pond area that is less than 3 m deep.	1
9	The surface of non-woodland ponds is no more than 50% shaded by woody bankside species.	1
Total score (out of 9)		**7 - Moderate**

Condition Assessment Result	**Condition Assessment Score**
Passes 9 of 9 criteria	Good (3)
Passes 6-8 of 9 criteria	Moderate (2)
Passes 0-5 of 9 criteria	Poor (1)

Condition Criteria for:	**Urban – Bioswale** **Urban – Sustainable Urban Drainage Feature**	
Indicator		**Pass/Fail**
1	Vegetation structure is varied, providing opportunities for insects, birds and bats to live and breed. A single ecotone (i.e. scrub, grassland, herbs) should not account for more than 80% of the total habitat area.	0
2	There is a diverse range of flowering plant species, providing nectar sources for insects. These species may be either native, or non-native but beneficial to wildlife. NB - To achieve GOOD condition, criterion 2 must be satisfied by native species only (rather than non-natives beneficial to wildlife). Note that Biodiverse green roofs are exempt from this requirement, and can include non-native sedums, as set out in footnote 1.	0
3	Invasive non-native species (Schedule 9 of WCA) cover less than 5% of total vegetated area. NB - To achieve GOOD condition, criterion 3 must be satisfied by a complete absence of invasive non-native species (rather than <5% cover).	1
ADDITIONAL CRITERION - only applicable to Open mosaic on previously developed land habitat type:		
4b	The water table is at or near the surface throughout the year. This could be open water or saturation of soil at the surface.	0
Total score (out of 4)		**1 - Poor**

Condition Assessment Result	**Condition Assessment Score**
Passes 3 of 3 core criteria; AND Meets the requirements for good condition within criteria 2 and 3; AND Passes additional criterion 4b	Good (3)
Passes 2 of 3 of 4 criteria; OR Passes 4 of 4 criteria but does not meet the requirements for good condition within criteria 2 and 3	Moderate (2)
Passes 0 or 1 of 4 criteria	Poor (1)

Annex B Biodiversity Metric 3.1 calculation tool

M60/M62/M66 Simister Island Interchange

Headline Results

Return to results menu

On-site baseline	*Habitat units*	392.80
	Hedgerow units	13.09
	River units	7.21
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	407.28
	Hedgerow units	20.64
	River units	7.21
On-site net % change (Including habitat retention, creation & enhancement)	*Habitat units*	3.68%
	Hedgerow units	57.71%
	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*	14.47
	Hedgerow units	7.55
	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*	3.68%
	Hedgerow units	57.71%
	River units	0.00%
Trading rules Satisfied?		No - Check Trading Summary ▲

M60/M62/M66 Simister Island Interchange

Detailed Results

Return to results menu

Summary Figures

Net project biodiversity units (including all on-site & off-site habitat retention/creation)		
	Habitat units	14.47
	Hedgerow units	7.55
	River units	0.00

Total project biodiversity % change (including all On-site & Off-site Habitat Creation + Retained Habitats)		
	Habitat units	3.68%
	Hedgerow units	57.71%
	River units	0.00%

Combined habitat retention and enhancement

	Habitats	Hedgerows	Rivers
Total on-site and off-site baseline area / length	85.76	2.56	1.27
Total on-site and off-site baseline units	392.80	13.09	7.21
Total on-site and off-site baseline area / length retained	36.47	1.68	1.27
Total on-site and off-site baseline units retained	49.86	9.19	7.21
Area / length proposed for enhancement	8.58	0.00	0.00
Baseline units proposed for enhancement	74.89	0.00	0.00
Total on-site and off-site baseline area / length lost	40.71	0.88	0.00
Total on-site and off-site baseline units lost	268.05	3.90	0.00

Area Habitats

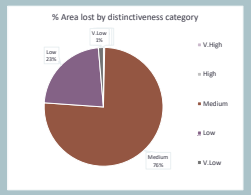
Area habitats

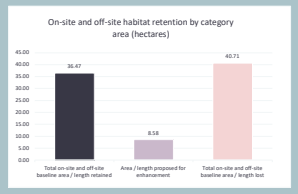
On site change by broad habitat type

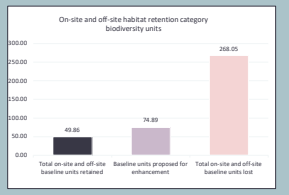
Habitat group	Baseline		Post development on site		Onsite Change	
	Existing area	Existing value	Proposed area	Proposed value	Area change	Onsite Unit change
Cropland	3.85	8.16	0.38	0.88	-3.17	-7.29
Grassland	36.44	223.94	34.42	259.71	-2.03	35.77
Heathland and shrub	2.62	17.97	3.25	22.61	0.63	4.63
Lakes	0.06	0.54	1.20	9.26	1.14	8.72
Sparsely vegetated land	0.00	0.00	0.00	0.00	0.00	0.00
Urban	27.87	1.37	32.21	2.02	4.34	0.65
Wetland	0.00	0.00	0.00	0.00	0.00	0.00
Woodland and forest	15.22	140.82	15.62	112.80	0.40	-28.02
Intertidal sediment	0.00	0.00	0.00	0.00	0.00	0.00
Coastal saltmarsh	0.00	0.00	0.00	0.00	0.00	0.00
Rocky shore	0.00	0.00	0.00	0.00	0.00	0.00
Coastal lagoons	0.00	0.00	0.00	0.00	0.00	0.00
Intertidal Hard Structures	0.00	0.00	0.00	0.00	0.00	0.00

Combined area lost by distinctiveness band

Category	Area lost (hectares)	Area lost (%)
V.High	0	
High	0.1129	0
Medium	30.8001	76
Low	9.176	23
V.Low	0.8054	1



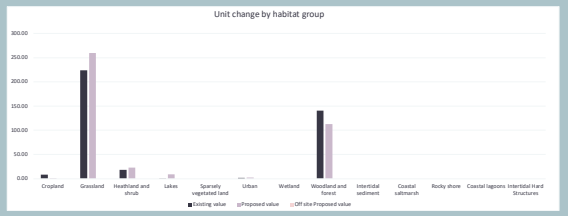


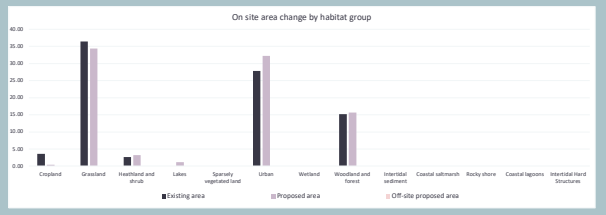


Area Habitats

Off site change by broad habitat type

Habitat group	Baseline		Post development Off-site		Off-site Change	
	Existing area	Off-site Existing value	Off-site proposed area	Off site Proposed value	Off-site area change	Off-site unit change
Cropland	0.00	0.00	0.00	0.00	0.00	0.00
Grassland	0.00	0.00	0.00	0.00	0.00	0.00
Heathland and shrub	0.00	0.00	0.00	0.00	0.00	0.00
Lakes	0.00	0.00	0.00	0.00	0.00	0.00
Sparsely vegetated land	0.00	0.00	0.00	0.00	0.00	0.00
Urban	0.00	0.00	0.00	0.00	0.00	0.00
Wetland	0.00	0.00	0.00	0.00	0.00	0.00
Woodland and forest	0.00	0.00	0.00	0.00	0.00	0.00
Intertidal sediment	0.00	0.00	0.00	0.00	0.00	0.00
Coastal saltmarsh	0.00	0.00	0.00	0.00	0.00	0.00
Rocky shore	0.00	0.00	0.00	0.00	0.00	0.00
Coastal lagoons	0.00	0.00	0.00	0.00	0.00	0.00
Intertidal Hard Structures	0.00	0.00	0.00	0.00	0.00	0.00

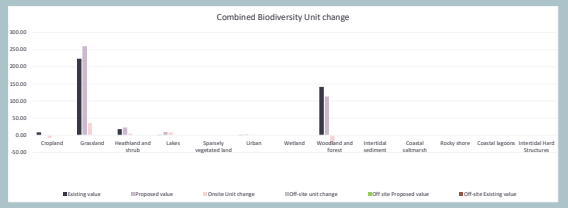


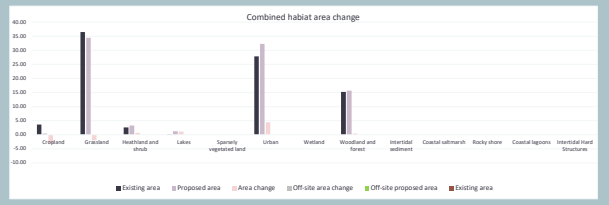


Area Habitats

Combined on site and off site change by broad habitat type

Habitat group	Baseline		On-site and Off-site post development		Combined change	
	Existing area	Existing value	Combined proposed area	Combined proposed value	Proposed area	Proposed value
Cropland	3.85	8.16	0.38	0.88	-3.17	-7.29
Grassland	36.44	223.94	34.42	259.71	-2.03	35.77
Heathland and shrub	2.62	17.97	3.25	22.61	0.63	4.63
Lakes	0.06	0.54	1.20	9.26	1.14	8.72
Sparsely vegetated land	0.00	0.00	0.00	0.00	0.00	0.00
Urban	27.87	1.37	32.21	2.02	4.34	0.65
Wetland	0.00	0.00	0.00	0.00	0.00	0.00
Woodland and forest	15.22	140.82	15.62	112.80	0.40	-28.02
Intertidal sediment	0.00	0.00	0.00	0.00	0.00	0.00
Coastal saltmarsh	0.00	0.00	0.00	0.00	0.00	0.00
Rocky shore	0.00	0.00	0.00	0.00	0.00	0.00
Coastal lagoons	0.00	0.00	0.00	0.00	0.00	0.00
Intertidal Hard Structures	0.00	0.00	0.00	0.00	0.00	0.00





Hedgerows and lines of trees

On site change by hedgerow type

Hedgerow type	Baseline		Post development on site		Onsite Change	
	Existing length on-site	Existing value	Proposed length on-site	Proposed value on-site	On-site length change	On-site Unit change
Native Species Rich Hedgerow with trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow with trees	0.00	0.00	0.66	5.94	0.66	5.94
Native Species Rich Hedgerow - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow with trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow	0.00	0.00	0.74	5.33	0.74	5.33
Native Hedgerow - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow with trees	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees (Ecologically Valuable)	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees (Ecologically Valuable) - with Bank or Ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow	2.56	13.09	1.75	9.47	-0.80	-3.62
Line of Trees	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Hedge Ornamental Non Native	0.00	0.00	0.00	0.00	0.00	0.00

Off site change by hedgerow type

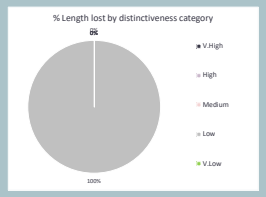
Hedgerow type	Off site baseline		Post development off site		Off site Change	
	Existing length off-site	Existing value off-site	Proposed length off-site	Proposed value off-site	Off-site length change	Off site Unit change
Native Species Rich Hedgerow with trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow with trees	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow with trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow with trees	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees (Ecologically Valuable)	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees (Ecologically Valuable) - with Bank or Ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Hedge Ornamental Non Native	0.00	0.00	0.00	0.00	0.00	0.00

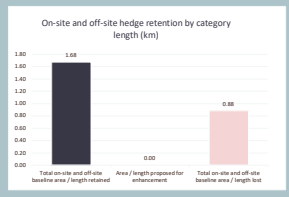
Combined on and off site change by hedgerow type

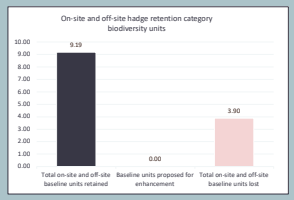
Hedgerow type	Baseline		Post development on site		Onsite Change	
	Existing length	Existing value	Proposed length	Proposed value	length change	Onsite Unit change
Native Species Rich Hedgerow with trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow with trees	0.00	0.00	0.66	5.94	0.66	5.94
Native Species Rich Hedgerow - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow with trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow	0.00	0.00	0.74	5.33	0.74	5.33
Native Hedgerow - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow with trees	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees (Ecologically Valuable)	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees (Ecologically Valuable) - with Bank or Ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow	2.56	13.09	1.75	9.47	-0.80	-3.62
Line of Trees	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Hedge Ornamental Non Native	0.00	0.00	0.00	0.00	0.00	0.00

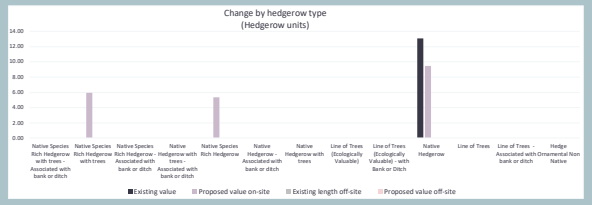
Combined length lost by distinctiveness band

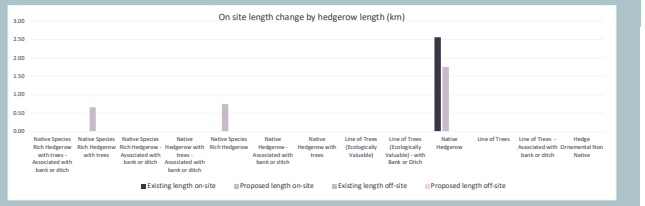
Category	Length lost (KM)	Length lost (%)
V.High	0	
High	0	
Medium	0.0001	0
Low	0.8634	100
V.Low	0	

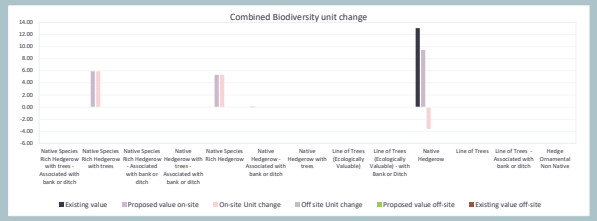


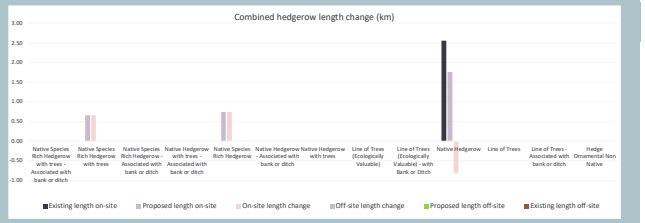












Rivers and Streams

Rivers and Streams

Rivers and Streams

Rivers and Streams

Rivers and Streams

On site change by river type

River type	Baseline		Post development on site		Onsite Change	
	Existing length	Existing value	Proposed length	Proposed value	length change	Onsite Unit change
Priority Habitat	0.0	0.0	0.0	0.0	0.0	0.0
Other Rivers and Streams	0.8	6.3	0.8	6.3	0.0	0.0
Ditches	0.0	0.0	0.0	0.0	0.0	0.0
Canals	0.0	0.0	0.0	0.0	0.0	0.0
Culvert	0.5	0.9	0.5	0.9	0.0	0.0

Off site change by river type

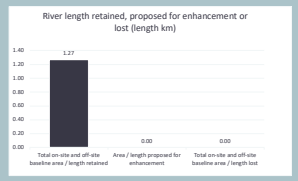
River type	Baseline		Post development off-site		Off-site Change	
	Existing length off-site	Existing value off-site	Proposed length off-site	Proposed value off-site	Off-site length change	Off-site unit change
Priority Habitat	0.0	0.0	0.0	0.0	0.0	0.0
Other Rivers and Streams	0.0	0.0	0.0	0.0	0.0	0.0
Ditches	0.0	0.0	0.0	0.0	0.0	0.0
Canals	0.0	0.0	0.0	0.0	0.0	0.0
Culvert	0.0	0.0	0.0	0.0	0.0	0.0

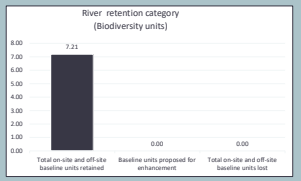
Combined on and off site change by river type

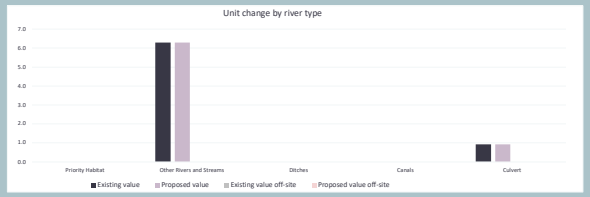
River type	Baseline		Post development on site		Onsite Change	
	Existing length	Existing value	Proposed length	Proposed value	length change	Onsite Unit change
Priority Habitat	0.0	0.0	0.0	0.0	0.0	0.0
Other Rivers and Streams	0.8	6.3	0.8	6.3	0.0	0.0
Ditches	0.0	0.0	0.0	0.0	0.0	0.0
Canals	0.0	0.0	0.0	0.0	0.0	0.0
Culvert	0.5	0.9	0.5	0.9	0.0	0.0

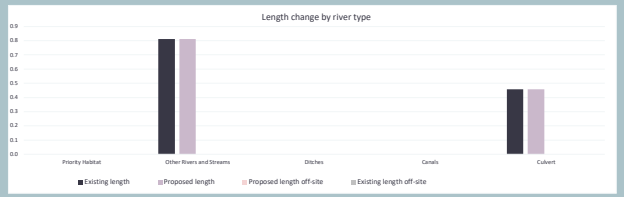
Combined length lost by distinctiveness band

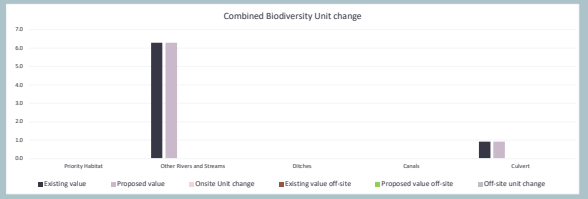
Category	Length lost (KM)	Length lost (%)
V.High	0	
High	0	
Medium	0	
Low	0	

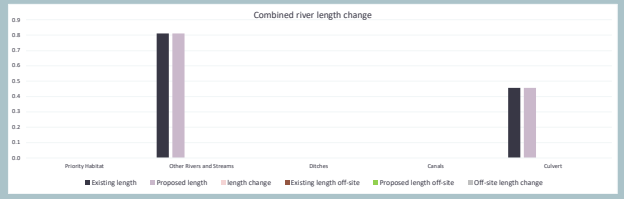












Trading Summary

Distinctiveness Group	Trading Rule	Trading Satisfied?
Very High	Bespoke compensation likely to be required ✖	Yes ✓
High	Same habitat required =	Yes ✓
Medium	Same broad habitat or a higher distinctiveness habitat required (>)	No ▲
Low	Same distinctiveness or better habitat required ≥	Yes ✓

Very High Distinctiveness

Habitat group	Group	On Site Unit Change	Off Site Unit Change	Project wide Unit Change	Unit Losses
Grassland - Lowland dry acid grassland	Grassland	0.00	0.00	0.00	
Grassland - Lowland meadows	Grassland	0.00	0.00	0.00	
Grassland - Upland hay meadows	Grassland	0.00	0.00	0.00	
Heathland and shrub - Mountain heaths and willow scrub	Heathland and shrub	0.00	0.00	0.00	
Lakes - Aquifer fed naturally fluctuating water bodies	Lakes	0.00	0.00	0.00	
Sparsely vegetated land - Calaminarian grasslands	Sparsely vegetated land	0.00	0.00	0.00	
Sparsely vegetated land - Limestone pavement	Sparsely vegetated land	0.00	0.00	0.00	
Wetland - Blanket bog	Wetland	0.00	0.00	0.00	
Wetland - Depressions on Peat substrates (H7150)	Wetland	0.00	0.00	0.00	
Wetland - Fens (upland and lowland)	Wetland	0.00	0.00	0.00	
Wetland - Lowland raised bog	Wetland	0.00	0.00	0.00	
Wetland - Oceanic Valley Mire(1) (D2.1)	Wetland	0.00	0.00	0.00	
Wetland - Purple moor grass and rush pastures	Wetland	0.00	0.00	0.00	
Wetland - Transition mires and quaking bogs (H7140)	Wetland	0.00	0.00	0.00	
Woodland and forest - Wood-pasture and parkland	Woodland and forest	0.00	0.00	0.00	
Rocky shore - High energy littoral rock - on peat, clay or chalk	Rocky shore	0.00	0.00	0.00	
Rocky shore - Moderate energy littoral rock - on peat, clay or chalk	Rocky shore	0.00	0.00	0.00	
Rocky shore - Low energy littoral rock - on peat, clay or chalk	Rocky shore	0.00	0.00	0.00	
Rocky shore - Features of littoral rock - on peat, clay or chalk	Rocky shore	0.00	0.00	0.00	
Intertidal sediment - Littoral seagrass on peat, clay or chalk	Intertidal sediment	0.00	0.00	0.00	
		0.00	0.00	0.00	0.00

Very High Distinctiveness Summary

Very High Distinctiveness Units available to offset lower distinctiveness deficit	0.00

High Distinctiveness

Habitat group	Group	On Site Unit Change	Off Site Unit Change	Project wide Unit Change	Losses not yet accounted for
Grassland - Traditional orchards	Grassland	0.00	0.00	0.00	
Grassland - Floodplain Wetland Mosaic (CFGM)	Grassland	0.00	0.00	0.00	
Grassland - Lowland calcareous grassland	Grassland	0.00	0.00	0.00	
Grassland - Tall herb communities (H6430)	Grassland	0.00	0.00	0.00	
Grassland - Upland calcareous grassland	Grassland	0.00	0.00	0.00	
Heathland and shrub - Lowland Heathland	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Sea buckthorn scrub (Annex 1)	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Upland Heathland	Heathland and shrub	0.00	0.00	0.00	
Lakes - High alkalinity lakes	Lakes	0.00	0.00	0.00	
Lakes - Low alkalinity lakes	Lakes	0.00	0.00	0.00	
Lakes - Mar1 Lakes	Lakes	0.00	0.00	0.00	
Lakes - Moderate alkalinity lakes	Lakes	0.00	0.00	0.00	
Lakes - Peat Lakes	Lakes	0.00	0.00	0.00	
Lakes - Ponds (Priority Habitat)	Lakes	0.00	0.00	0.00	
Lakes - Temporary lakes, ponds and pools	Lakes	2.54	0.00	2.54	
Sparsely vegetated land - Coastal sand dunes	Sparsely vegetated land	0.00	0.00	0.00	
Sparsely vegetated land - Coastal vegetated shingle	Sparsely vegetated land	0.00	0.00	0.00	
Sparsely vegetated land - Inland rock outcrop and scree habitats	Sparsely vegetated land	0.00	0.00	0.00	
Sparsely vegetated land - Maritime cliff and slopes	Sparsely vegetated land	0.00	0.00	0.00	
Urban - Open Mosaic Habitats on Previously Developed Land	Urban	0.00	0.00	0.00	
Wetland - Reedbeds	Wetland	0.00	0.00	0.00	
Woodland and forest - Fallad	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Lowland beech and yew woodland	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Lowland mixed deciduous woodland	Woodland and forest	2.10	0.00	2.10	
Woodland and forest - Native pine woodlands	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Upland birchwoods	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Upland mixed ashwoods	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Upland oakwood	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Wet woodland	Woodland and forest	3.76	0.00	3.76	
Coastal lagoons - Coastal lagoons	Coastal lagoons	0.00	0.00	0.00	
Rocky shore - High energy littoral rock	Rocky shore	0.00	0.00	0.00	
Rocky shore - Moderate energy littoral rock	Rocky shore	0.00	0.00	0.00	
Rocky shore - Low energy littoral rock	Rocky shore	0.00	0.00	0.00	
Rocky shore - Features of littoral rock	Rocky shore	0.00	0.00	0.00	
Intertidal sediment - Littoral mud	Intertidal sediment	0.00	0.00	0.00	
Intertidal sediment - Littoral mixed sediments	Intertidal sediment	0.00	0.00	0.00	
Coastal saltmarsh - Saltmarshes and saline reedbeds	Coastal Saltmarsh	0.00	0.00	0.00	
Intertidal sediment - Littoral biogenic reefs - Mussels	Intertidal sediment	0.00	0.00	0.00	
Intertidal sediment - Littoral biogenic reefs - Sabellaria	Intertidal sediment	0.00	0.00	0.00	
Intertidal sediment - Features of littoral sediment	Intertidal sediment	0.00	0.00	0.00	
Intertidal sediment - Littoral muddy sand	Intertidal sediment	0.00	0.00	0.00	
		8.41	0.00	8.41	0.00

High Distinctiveness Summary

High Distinctiveness Units available to offset lower distinctiveness deficit	9.01
Unit Deficit: Like for like not satisfied	✓ 0.00

Medium Distinctiveness

Habitat Group	Group	On site unit change	Off Site unit Change	Project wide unit change	Cumulative Broad Habitat Change
Cropland - Arable field margins cultivated annually	Cropland	0.00	0.00	0.00	0.00
Cropland - Arable field margins game bird mix	Cropland	0.00	0.00	0.00	
Cropland - Arable field margins pollen & nectar	Cropland	0.00	0.00	0.00	
Cropland - Arable field margins tussocky	Cropland	0.00	0.00	0.00	
Grassland - Other lowland acid grassland	Grassland	0.00	0.00	0.00	52.43
Grassland - Other neutral grassland	Grassland	52.43	0.00	52.43	
Grassland - Upland acid grassland	Grassland	0.00	0.00	0.00	
Heathland and shrub - Blackthorn scrub	Heathland and shrub	0.00	0.00	0.00	4.63
Heathland and shrub - Bramble scrub	Heathland and shrub	3.69	0.00	3.69	
Heathland and shrub - Gorse scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Hawthorn scrub	Heathland and shrub	3.97	0.00	3.97	
Heathland and shrub - Hazel scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Mixed scrub	Heathland and shrub	11.29	0.00	11.29	
Lakes - Ponds (Non- Priority Habitat)	Lakes	8.17	0.00	8.17	8.17
Lakes - Reservoirs	Lakes	0.00	0.00	0.00	
Sparsely vegetated land - Other inland rock and scree	Sparsely vegetated land	0.00	0.00	0.00	0.00
Urban - Cemeteries and churchyards	Urban	0.00	0.00	0.00	0.09
Urban - Biodiverse green roof	Urban	0.00	0.00	0.00	
Urban - Urban Tree	Urban	0.09	0.00	0.09	
Woodland and forest - Other Scot's Pine woodland	Woodland and forest	0.00	0.00	0.00	-34.48
Woodland and forest - Other woodland: broadleaved	Woodland and forest	-34.48	0.00	-34.48	
Woodland and forest - Other woodland: mixed	Woodland and forest	0.00	0.00	0.00	
Intertidal sediment - Littoral coarse sediment	Intertidal sediment	0.00	0.00	0.00	0.00
Intertidal sediment - Littoral sand	Intertidal sediment	0.00	0.00	0.00	
Intertidal Hard Structures - Artificial hard structures with Integrated Greening of Grey Infrastructure (IGGI)	Intertidal	0.00	0.00	0.00	
		85.84	0.00	85.84	

Medium Distinctiveness Summary

Medium Distinctiveness Units available to offset lower distinctiveness deficit	63.33
Medium Distinctiveness Broad Habitat Deficit to be offset by trading up	-34.48
Higher distinctiveness surplus units minus Medium Distinctiveness Broad Habitat Deficit	0.00
Cumulative surplus of units	63.33

Low Distinctiveness

Habitat group	Group	On site unit change	Off Site Unit Change	Project wide unit change
Cropland - Cereal crops	Cropland	0.00	0.00	0.00
Cropland - Horticulture	Cropland	0.00	0.00	0.00
Cropland - Intensive orchards	Cropland	0.00	0.00	0.00
Cropland - Non-cereal crops	Cropland	-7.28	0.00	-7.28
Cropland - Temporary grass and clover leys	Cropland	0.00	0.00	0.00
Cropland - Cereal crops winter stubble	Cropland	0.00	0.00	0.00
Grassland - Modified grassland	Grassland	-16.68	0.00	-16.68
Grassland - Bracken	Grassland	0.00	0.00	0.00
Heathland and shrub - Rhododendron scrub	Heathland and shrub	0.00	0.00	0.00
Lakes - Ornamental lake or pond	Lakes	0.00	0.00	0.00
Sparsely vegetated land - Ruderal/Ephemeral	Sparsely vegetated land	0.00	0.00	0.00
Urban - Bramble	Sparsely vegetated land	0.08	0.00	0.08
Urban - Allotments	Urban	0.00	0.00	0.00
Urban - Facade-bound green wall	Urban	0.00	0.00	0.00
Urban - Ground based green wall	Urban	0.00	0.00	0.00
Urban - Ground level planters	Urban	0.00	0.00	0.00
Urban - Other green roof	Urban	0.00	0.00	0.00
Urban - Intensive green roof	Urban	0.00	0.00	0.00
Urban - Introduced shrub	Urban	-0.11	0.00	-0.11
Urban - Rain garden	Urban	0.00	0.00	0.00
Urban - Actively worked sand pit quarry or open cast mine	Urban	0.00	0.00	0.00
Urban - Sustainable urban drainage feature	Urban	0.00	0.00	0.00
Urban - Vacant/derelict land/ bareground	Urban	0.00	0.00	0.00
Urban - Vegetated garden	Urban	-0.19	0.00	-0.19
Woodland and forest - Other coniferous woodland	Woodland and forest	0.00	0.00	0.00
Coastal saltmarsh - Artificial saltmarshes and saline reedbeds	Coastal saltmarsh	0.00	0.00	0.00
Intertidal sediment - Artificial littoral coarse sediment	Intertidal sediment	0.00	0.00	0.00
Intertidal sediment - Artificial littoral mud	Intertidal sediment	0.00	0.00	0.00
Intertidal sediment - Artificial littoral sand	Intertidal sediment	0.00	0.00	0.00
Intertidal sediment - Artificial littoral muddy sand	Intertidal sediment	0.00	0.00	0.00
Intertidal sediment - Artificial littoral mixed sediments	Intertidal sediment	0.00	0.00	0.00
Intertidal sediment - Artificial littoral seagrass	Intertidal sediment	0.00	0.00	0.00
Intertidal sediment - Artificial littoral biogenic reefs	Intertidal sediment	0.00	0.00	0.00
Intertidal Hard Structures - Artificial hard structures	Intertidal	0.00	0.00	0.00
Intertidal Hard Structures - Artificial features of hard structures	Intertidal	0.00	0.00	0.00
Heathland and shrub - Sea buckthorn scrub (other)	Heathland and shrub	0.00	0.00	0.00
		-23.38		-23.38

Low Distinctiveness Summary

Low Distinctiveness Net Change in Units	-23.38
Cumulative surplus of units	39.96

M60/M62/M66 Simister Island Interchange

A-1 Site Habitat Baseline

Condense / Show Columns | Condense / Show Rows

Main Menu | Instructions

	Habitats and areas			Distinctiveness		Condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline	Retention category biodiversity value					Bespoke compensation agreed for unacceptable losses	Comments	
Ref	Broad Habitat	Habitat Type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic Significance multiplier		Total habitat units	Area retained	Area enhanced	Baseline units retained	Baseline units enhanced	Area habitat lost	Units lost		Assessor comments	Reviewer comments
1	Cropland	Non-cereal crops	3.5491	Low	2	Condition Assessment N/A	1	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required ≥	8.16	0.3815		0.88	0.00	3.17	7.29		UK Hab - Cropland c1d	
2	Grassland	Other neutral grassland	13.6351	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required ≥	125.44	1.2999	0.4478	11.96	4.12	11.89	109.36		UK Hab - Grassland g3c - For areas of habitat retained and owned by NH, enhancement applied	
3	Grassland	Other neutral grassland	11.2269	Medium	4	Poor	1	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required ≥	51.64	0.1966	0.9254	0.90	4.26	10.10	46.48		UK Hab - Grassland g3c - For areas of habitat retained and owned by NH, enhancement applied	
4	Grassland	Modified grassland	0.4751	Low	2	Good	3	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required ≥	3.28	0.3673		2.53	0.00	0.11	0.74		UK Hab - Grassland g4	
5	Grassland	Modified grassland	7.8406	Low	2	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required ≥	36.07	3.3963		15.62	0.00	4.44	20.44		UK Hab - Grassland g4	
6	Grassland	Modified grassland	3.2629	Low	2	Poor	1	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required ≥	7.50	2.0228		4.65	0.00	1.24	2.85		UK Hab - Grassland g4	
7	Heathland and shrub	Bramble scrub	0.8892	Medium	4	Condition Assessment N/A	1	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required ≥	4.09	0.3043		1.40	0.00	0.58	2.69		UK Hab - Heathland and shrub - h3d	
8	Heathland and shrub	Bramble scrub	0.0685	Medium	4	Condition Assessment N/A	1	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required ≥	0.32	0.0685		0.32	0.00	0.00	0.00		UK Hab - Heathland and shrub - h3d	
9	Heathland and shrub	Hawthorn scrub	0.4394	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required ≥	4.04			0.00	0.00	0.44	4.04		UK Hab - Heathland and shrub - h3f	
10	Heathland and shrub	Hawthorn scrub	0.0118	Medium	4	Poor	1	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required ≥	0.05	0.0117		0.05	0.00	0.00	0.00		UK Hab - Heathland and shrub - h3f	
11	Heathland and shrub	Mixed scrub	0.8475	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required ≥	7.80	0.6034		5.55	0.00	0.24	2.25		UK Hab - Heathland and shrub - h3h	
12	Heathland and shrub	Mixed scrub	0.364	Medium	4	Poor	1	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required ≥	1.67	0.3639		1.67	0.00	0.00	0.00		UK Hab - Heathland and shrub - h3h	
13	Lakes	Ponds (Non- Priority Habitat)	0.0583	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required ≥	0.54	0.013		0.12	0.00	0.05	0.42		UK Hab - Rivers and Lakes - r1a. Condition data not available therefore precautionary approach taken and moderate applied.	
14	Urban	Introduced shrub	0.3061	Low	2	Condition Assessment N/A	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required ≥	0.61	0.1525		0.31	0.00	0.15	0.31		UK Hab - Urban - h3	
15	Urban	Developed land; sealed surface	26.6401	V.Low	0	N/A - Other	0	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Compensation Not Required	0.00	26.137		0.00	0.00	0.50	0.00		UK Hab - Urban - u1b	
16	Urban	Artificial unvegetated, unsealed surface	0.1654	V.Low	0	N/A - Other	0	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Compensation Not Required	0.00	0.1647		0.00	0.00	0.00	0.00		UK Hab - Urban - u1c	
17	Urban	Developed land; sealed surface	0.3804	V.Low	0	N/A - Other	0	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Compensation Not Required	0.00	0.3188		0.00	0.00	0.06	0.00		UK Hab - Urban - u1d: Suburban / mosaic of developed / natural surfaces - translated into metric by dividing area 50:50 between Developed land; sealed surface and vegetated garden	
18	Urban	Vegetated garden	0.3804	Low	2	Condition Assessment N/A	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required ≥	0.76	0.3188		0.64	0.00	0.06	0.12		UK Hab - Urban - u1d: Suburban / mosaic of developed / natural surfaces - translated into metric by dividing area 50:50 between Developed land; sealed surface and vegetated garden	
19	Woodland and forest	Lowland mixed deciduous woodland	0.0083	High	6	Good	3	Formally identified in local strategy	High strategic significance	1.15	Same habitat required =	0.17	0.0083		0.17	0.00	0.00	0.00		UK Hab - Woodland and forest - w1f	
20	Woodland and forest	Lowland mixed deciduous woodland	0.1569	High	6	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same habitat required =	2.17		0.044	0.00	0.61	0.11	1.56		UK Hab - Woodland and forest - w1f7	
21	Woodland and forest	Other woodland; broadleaved	14.2369	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required ≥	130.98	0.33	6.609	3.04	60.80	7.30	67.14		UK Hab - Woodland and forest - w1g	
22	Woodland and forest	Other woodland; broadleaved	0.8117	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required ≥	7.47	0.0018	0.5551	0.02	5.11	0.25	2.34		UK Hab - Woodland and forest - w1g	
23	Woodland and forest	Other woodland; broadleaved	0.0016	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required ≥	0.01	0.0016		0.01	0.00	0.00	0.00		UK Hab - Woodland and forest - w1g7	
24	Woodland and forest	Other coniferous woodland	0.0074	Low	2	Poor	1	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required ≥	0.02	0.0074		0.02	0.00	0.00	0.00		UK Hab - Woodland and forest - w2c	
25	Lakes	Ponds (Non- Priority Habitat)	0.0012	Medium	4	Poor	1	Formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required ≥	0.01			0.00	0.00	0.00	0.01		UK Hab - Rivers and Lakes - r2b	
26																					
27																					
28																					
29																					
30																					
		Total habitat area	86.78									392.90	38.47	8.88	49.86	74.89	40.71	288.05			

Total area lost (excluding area of Urban trees and Green walls)	40.71

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A-2 Site Habitat Creation

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Note; Habitat selected has a time to target condition greater than 30 years. Non standard agreement may be rewarded

Check Areas - Area cross check failed (Baseline habitat lost does not match development footprint plus

Post development/ post intervention habitats

Broad Habitat	Proposed habitat	Area (hectares)	Distinctiveness	Condition	Strategic significance	Temporal multiplier		Difficulty	Habitat units delivered	Comments	
			Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years	Final difficulty of creation		Assessor comments	Reviewer comments
Grassland	Other neutral grassland	5.2545	Medium	Moderate	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	7	Low	37.67	Temporary land which has been cleared and returned to previous habitat type. UK Habs - Grassland o/e	
Grassland	Other neutral grassland	0.0155	Medium	Poor	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	4	Low	0.06	Temporary land which has been cleared and returned to previous habitat type. UK Habs - Grassland o/e	
Grassland	Modified grassland	1.8336	Low	Moderate	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	6	Low	6.81	Temporary land which has been cleared and returned to previous habitat type. UK Habs - Grassland o/d	
Grassland	Modified grassland	0.0192	Low	Poor	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	3	Low	0.04	Temporary land which has been cleared and returned to previous habitat type. UK Habs - Grassland o/d	
Heathland and shrub	Hawthorn scrub	0.0103	Medium	Moderate	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	7	Low	0.07	Temporary land which has been cleared and returned to previous habitat type. UK Habs - Heathland and Shrub - h/d	
Lakes	Ponds (Non- Priority Habitat)	0.0134	Medium	Moderate	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	5	Low	0.10	Temporary land which has been cleared and returned to previous habitat type. UK Habs - Rivers and Lakes - r1a	
Urban	Developed land; sealed surface	0.0124	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	2	Medium	0.00	Temporary land which has been cleared and returned to previous habitat type. UK Habs - Urban o1b	
Urban	Developed land; sealed surface	0.0117	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	2	Medium	0.00	Temporary land which has been cleared and returned to previous habitat type. UK Habs - Urban - u1d. UK Hab - Urban - u1d: Suburban / mosaic of developed / natural surfaces - translated into metric by dividing area 50:50 between Developed land; sealed surface and vegetated garden	
Urban	Vegetated garden	0.0117	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Check details- Delay in starting habitat in required condition? ⚠	3	Low	0.02	Temporary land which has been cleared and returned to previous habitat type. UK Habs - Urban - u1d. UK Hab - Urban - u1d: Suburban / mosaic of developed / natural surfaces - translated into metric by dividing area 50:50 between Developed land; sealed surface and vegetated garden	
Woodland and forest	Other woodland; broadleaved	0.0892	Medium	Moderate	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	17	Low	0.45	Temporary land which has been cleared and returned to previous habitat type. UK Habs - Woodland and forest - w1a	
Grassland	Other neutral grassland	0.3939	Medium	Good	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	12	Low	3.54	Environmental Masterplan - Marginal Planting	
Woodland and forest	Lowland mixed deciduous woodland	2.9034	High	Moderate	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	30+	High	4.23	Environmental Masterplan - broadleaf Woodland within the masterplan is used to represent areas where Lowland Mixed Deciduous Woodland creation is proposed	
Woodland and forest	Other woodland; broadleaved	0.522	Medium	Moderate	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	17	Low	2.62	Environmental Masterplan - Coniferous Woodland . Although labelled as Coniferous woodland the percentage of conifer species coverage will be within the margins to be considered broadleaved woodland	
Woodland and forest	Other woodland; broadleaved	1.9128	Medium	Moderate	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	17	Low	9.60	Environmental Masterplan - Mixed Woodland. Due to the percentage of coniferous species proposed being under 20% and deciduous species dominant this habitat is considered to be other woodland; broadleaved rather than mixed.	
Heathland and shrub	Mixed scrub	0.3554	Medium	Moderate	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	7	Low	2.55	Environmental Masterplan - Shrubs	
Heathland and shrub	Mixed scrub	1.5072	Medium	Moderate	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	7	Low	10.81	Environmental Masterplan - Shrubs with Intermittent trees	
Woodland and forest	Wet woodland	0.745	High	Moderate	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	17	Medium	3.76	Environmental Masterplan - Wet Woodland	
Woodland and forest	Other woodland; broadleaved	1.8909	Medium	Moderate	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	17	Low	9.49	Environmental Masterplan - Woodland Edge	
Urban	Developed land; sealed surface	4.3509	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	2	Medium	0.00	Environmental Masterplan - Feature Highway Boundary	
Grassland	Modified grassland	0.1429	Low	Moderate	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	6	Low	0.53	Environmental Masterplan - Open grassland	
Grassland	Other neutral grassland	18.0472	Medium	Good	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	12	Low	162.41	Environmental Masterplan - Species rich grassland	
Lakes	Temporary lakes, ponds and pools	0.3287	High	Moderate	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	5	Medium	2.54	Environmental Masterplan - Wet Grassland - Planted scrapes created to provide wetter areas which will create temporary pools	
Urban	Sustainable urban drainage feature	0.6437	Low	Poor	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	3	Medium	0.89	Environmental Masterplan marked as wet grassland, this feature to the north of the Site was allocated as a SuD within the metric due to purpose being to store road water runoff. There is no additional design to ensure water is present throughout the year and no specific planting associated with the feature. 0.6437 ha taken from wet grassland coverage within Masterplan	
Urban	Bioswale	0.0612	Low	Poor	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	3	Medium	0.08	Environmental Masterplan - Swale	
Lakes	Ponds (Non- Priority Habitat)	0.8435	Medium	Moderate	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	5	Low	6.49	Environmental Masterplan - Ponds	
Grassland	Other neutral grassland	0.0521	Medium	Good	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	12	Low	0.47	Scattered Trees and Shrubs - Mosaic habitat of scattered trees over grassland with groups of shrubs. As an estimate overall area of 0.0781 divided into thirds. 0.0260 ha of urban trees over other neutral grassland (area of urban trees accounted for separately to ground layer coverage therefore grassland accounts for 0.0521 ha).	
Heathland and shrub	Mixed scrub	0.026	Medium	Moderate	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	7	Low	0.19	See above	
Urban	Urban Tree	0.026	Medium	Moderate	Formally identified in local strategy	Check details- Delay in starting habitat in required condition? ⚠	29	Low	0.09	See above	
	Total habitat area	**48.08**							**365.53**		
	Site Area (Excluding area of Urban trees and Green walls)	**48.00**									

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A-3 Site Habitat Enhancement

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Baseline habitats										
Baseline ref	Baseline habitat	Total habitat area (hectares)	Baseline distinctiveness band	Baseline distinctiveness score	Baseline condition category	Baseline condition score	Baseline strategic significance category	Baseline strategic significance score	Baseline habitat units	Suggested action to address habitat losses
2	Grassland - Other neutral grassland	13.6351	Medium	4	Moderate	2	High strategic significance	1.15	125.44	Same broad habitat or a higher distinctiveness habitat required (≥)
3	Grassland - Other neutral grassland	11.2269	Medium	4	Poor	1	High strategic significance	1.15	51.64	Same broad habitat or a higher distinctiveness habitat required (≥)
20	Woodland and forest - Lowland mixed deciduous woodland	0.1569	High	6	Moderate	2	High strategic significance	1.15	2.17	Same habitat required =
21	Woodland and forest - Other woodland; broadleaved	14.2369	Medium	4	Moderate	2	High strategic significance	1.15	130.98	Same broad habitat or a higher distinctiveness habitat required (≥)
22	Woodland and forest - Other woodland; broadleaved	0.8117	Medium	4	Moderate	2	High strategic significance	1.15	7.47	Same broad habitat or a higher distinctiveness habitat required (≥)

Post development/ post intervention habitats

Baseline ref	Proposed Habitat (Pre-populated but can be overridden)		Change in distinctiveness and condition							Strategic significance		
	Proposed Broad Habitat	Proposed habitat	Distinctiveness change	Condition change	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier
2	Grassland	Other neutral grassland	Medium - Medium	Moderate - Good	0.4478	Medium	4	Good	3	Formally identified in local strategy	High strategic significance	1.15
3	Grassland	Other neutral grassland	Medium - Medium	Poor - Moderate	0.9254	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15
20	Woodland and forest	Lowland mixed deciduous woodland	High - High	Moderate - Fairly Good	0.044	High	6	Fairly Good	2.5	Formally identified in local strategy	High strategic significance	1.15
21	Woodland and forest	Other woodland; broadleaved	Medium - Medium	Moderate - Fairly Good	6.609	Medium	4	Fairly Good	2.5	Formally identified in local strategy	High strategic significance	1.15
22	Woodland and forest	Other woodland; broadleaved	Medium - Medium	Moderate - Fairly Good	0.5551	Medium	4	Fairly Good	2.5	Formally identified in local strategy	High strategic significance	1.15
					8.58							

Baseline ref	Temporal risk multiplier						Difficulty risk multipliers				Habitat units delivered	Comments	
	Standard time to target condition/years	Habitat enhanced in advance/years	Delay in starting habitat enhancement/years	Standard or adjusted time to target condition	Final time to target condition/years	Final time to target multiplier	Standard difficulty of enhancement	Applied difficulty multiplier	Final difficulty of enhancement	Difficulty multiplier applied		Assessor comments	Reviewer comments
2	10		2	Check details- Delay in starting habitat in required condition? ⚠	12	0.652	Low	Standard difficulty applied	Low	1	5.46		
3	10		2	Check details- Delay in starting habitat in required condition? ⚠	12	0.652	Low	Standard difficulty applied	Low	1	7.03		
20	10		2	Check details- Delay in starting habitat in required condition? ⚠	12	0.652	High	Standard difficulty applied	High	0.33	0.64	Aiming to improve quality through selective thinning and understorey planting with younger trees and scrub, artifically creating standing deadwood and treating invasive species where present. Limited to fairly good due to time required to achieve certain criteria such as age structure and presence of veteran trees	
21	5		2	Check details- Delay in starting habitat in required condition? ⚠	7	0.779	Low	Standard difficulty applied	Low	1	72.65	Existing and retained areas of highways verge screening planting. Aiming to improve quality through selective thinning and understorey planting with younger trees and scrub, artifically creating standing deadwood and treating invasive species where present. Limited to fairly good due to time required to achieve certain criteria such as age structure and presence of veteran trees	
22	5		2	Check details- Delay in starting habitat in required condition? ⚠	7	0.779	Low	Standard difficulty applied	Low	1	6.10	Existing and retained areas of highways verge screening planting. Aiming to improve quality through selective thinning and understorey planting with younger trees and scrub, artifically creating standing deadwood and treating invasive species where present. Limited to fairly good due to time required to achieve certain criteria such as age structure and presence of veteran trees	
											91.88		

B-1 Site Hedge Baseline

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	UK Habitats - existing habitats			Habitat distinctiveness		Habitat condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline	Retention category biodiversity value						Comments	
Baseline ref	Hedge number	Hedgerow type	Length (km)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier		Total hedgerow units	Length retained	Length enhanced	Units retained	Units enhanced	Length lost	Units lost	Assessor comments	Reviewer comments
1		Native Hedgerow	1.0406	Low	2	Good	3	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness band or better	7.18	0.8065		5.56	0.00	0.23	1.62		
2		Native Hedgerow	1.0494	Low	2	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness band or better	4.83	0.7053		3.24	0.00	0.34	1.58		
3		Native Hedgerow	0.469	Low	2	Poor	1	Formally identified in local strategy	High strategic significance	1.15	Same distinctiveness band or better	1.08	0.1638		0.38	0.00	0.31	0.70		
4		Native Hedgerow - Associated with bank or ditch	0.0001	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	Like for like or better	0.00			0.00	0.00	0.00	0.00		
5																				
6																				
7																				
8																				
9																				
			2.56									13.09	1.58	0.00	9.19	0.00	0.88	3.90		

B-2 Site Hedge Creation

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		Proposed habitats		Habitat distinctiveness		Habitat condition		Strategic significance			Temporal multiplier					Difficulty risk multipliers				Hedge units delivered	Comments	
Baseline ref	New hedge number	Habitat type	Length (km)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier	Standard Time to target condition/years	Habitat created in advance/years	Delay in starting habitat creation/years	Standard or adjusted time to target condition	Final time to target condition/years	Final time to target multiplier	Standard difficulty of creation	Applied difficulty multiplier	Final difficulty of creation	Difficulty multiplier applied		Assessor comments	Reviewer comments
1		Native Hedgerow	0.0224	Low	2	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	5		2	Check details- Delay in starting habitat in required condition? A	7	0.779	Low	Standard difficulty applied	Low	1	0.08	Within temporary land. Reinstated to same condition level and hedgerow type.	
2		Native Hedgerow	0.0569	Low	2	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	5		2	Check details- Delay in starting habitat in required condition? A	7	0.779	Low	Standard difficulty applied	Low	1	0.20	Within temporary land. Reinstated to same condition level and hedgerow type.	
3																							
4		Native Species Rich Hedgerow	0.7438	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	5		2	Check details- Delay in starting habitat in required condition? A	7	0.779	Low	Standard difficulty applied	Low	1	5.33	Environmental masterplan	
5		Native Species Rich Hedgerow with trees	0.66	High	6	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	10		2	Check details- Delay in starting habitat in required condition? A	12	0.652	Low	Standard difficulty applied	Low	1	5.94	Environmental masterplan - where hedgerows meet tree points within masterplan	
6																							
7																							
8																							
9																							
10																							
			1.48																		11.55		

C-1 Site River Baseline

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Existing river type			Habitat distinctiveness		Habitat condition		Strategic significance			Watercourse encroachment		Riparian encroachment		Suggested action	Ecological baseline
Baseline ref	River type	Length (km)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic significance multiplier	Extent of encroachment	Multiplier	Extent of encroachment	Multiplier		Total river units
1	Other Rivers and Streams	0.069	High	6	Moderate	2	Low potential/action not identified in any plan	Low Strategic Significance	1	No Encroachment	1	No Encroachment	1	Restore	0.83
2	Culvert	0.453	Low	2	Poor	1	Low potential/action not identified in any plan	Low Strategic Significance	1	N/A - Culvert	1	No Encroachment	1	Restore	0.91
3	Other Rivers and Streams	0.083	High	6	Fairly Poor	1.5	Low potential/action not identified in any plan	Low Strategic Significance	1	No Encroachment	1	No Encroachment	1	Restore	0.75
4	Culvert	0.004	Low	2	Poor	1	Low potential/action not identified in any plan	Low Strategic Significance	1	N/A - Culvert	1	No Encroachment	1	Restore	0.01
5	Other Rivers and Streams	0.125	High	6	Fairly Poor	1.5	Low potential/action not identified in any plan	Low Strategic Significance	1	No Encroachment	1	No Encroachment	1	Restore	1.13
6	Other Rivers and Streams	0.224	High	6	Poor	1	Low potential/action not identified in any plan	Low Strategic Significance	1	No Encroachment	1	No Encroachment	1	Restore	1.34
7															
8	Other Rivers and Streams	0.038	High	6	Poor	1	Low potential/action not identified in any plan	Low Strategic Significance	1	No Encroachment	1	No Encroachment	1	Restore	0.23
9	Other Rivers and Streams	0.127	High	6	Fairly Poor	1.5	Low potential/action not identified in any plan	Low Strategic Significance	1	No Encroachment	1	No Encroachment	1	Restore	1.14
10															
11	Other Rivers and Streams	0.146	High	6	Poor	1	Low potential/action not identified in any plan	Low Strategic Significance	1	No Encroachment	1	No Encroachment	1	Restore	0.88
12															
13															
14															
15															
16															
		1.37													7.31

Retention category biodiversity value						Comments	
Length retained	Length enhanced	Units retained	Units enhanced	Length Lost	Units Lost	Assessor Comments	Reviewer comments
0.069	0	0.83	0.00	0.00	0.00	Parr Brook Reach 1- From Culvert to RLB. (Post Stat Consultation DF3). NGR: SD 82558 05593 to SD 82521 05642 No riparian or watercourse encroachment observed using aerial imagery.	Need to include NGRs for the start and end. We're ok identifying these areas, but the audience won't be as clued up on it. See powerpoint - worth discussing length. Agree with encroachment and no chances.
0.453	0	0.91	0.00	0.00	0.00	Parr Brook Culvert1- Extent of Culvert within RLB (Post Stat Consultation DF3). NGR: SD 82521 05642 to SD 82135 05612 Route of culverted channel based on detailed river network and site observations.	
0.083	0	0.75	0.00	0.00	0.00	Blackfish Brook1- From source to culvert inlet. (Post Stat Consultation DF3) NGR: SD 83257 05362 to SD 83299 05290 No riparian/watercourse encroachment observed from site work/ aerial imagery. Overdeep.	
0.004	0	0.01	0.00	0.00	0.00	Blackfish Brook Culvert1 - From inlet to RLB (Post Stat Consultation DF3) NGR: SD 83299 05290 to SD 83303 05284	
0.125	0	1.13	0.00	0.00	0.00	Castle Brook Tributary Reach 1- From source to Castle Brook Tributary 2 (Post Stat Consultation DF3). NGR: SD 82696 06428 to SD 82776 06477 No riparian or watercourse encroachment observed during site visit- Overdeep.	
0.224	0	1.34	0.00	0.00	0.00	Tributary of Castle Brook Tributary 1- From RLB (Post Stat Consultation DF3) to confluence with Castle Brook Tributary. NGR:SD 83042 06471 to SD 82882 06615 No riparian or watercourse encroachment observed using aerial imagery. Overdeep	
0.038	0	0.23	0.00	0.00	0.00	Castle Brook Reach 1- Section of Castle Brook which runs along the RLB (Post Stat Consultation DF3) to the North of Pike Fold Golf Club. NGR: SD 82622 07399 to SD 82603 07429 Watercourse encroachment due to existing outfall, no riparian encroachment observed during survey. Overdeep.	
0.127	0	1.14	0.00	0.00	0.00	Castle Brook Tributary Reach 2- From Castle Brook Tributary 1 to Castle Brook Tributary 3(Post Stat Consultation DF3). NGR: SD 82776 06477 to SD 82852 06559 No riparian or watercourse encroachment observed during site visit. Overdeep	
0.146	0	0.88	0.00	0.00	0.00	Castle Brook Tributary Reach 3- From Castle Brook Tributary 2 to RLB (Post Stat Consultation DF3). NGR: SD 82852 06559 to SD 82884 06677 No riparian or watercourse encroachment observed during site visit. Overdeep	
1.37	0.00	7.31	0.00	0.00	0.00		

Annex C Figures

Figure 8.12.1: UK Habitat Baseline Survey Results

Figure 8.12.2: BNG Metric 3.1 Baseline Rivers and Streams Arrangement

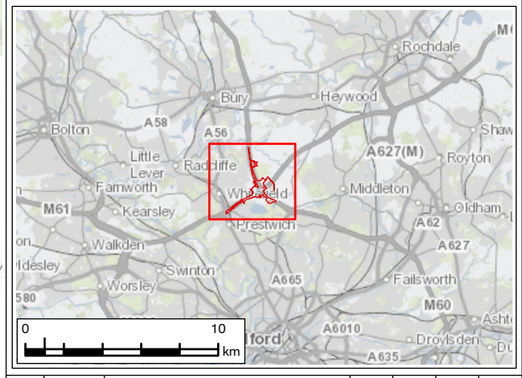
ENVIRONMENTAL STATEMENT APPENDIX 8.12 FIGURE 8.12.1

Legend

- Order Limits
- Secondary Habitat

Habitat Type (UK Hab)

- h2a - hedgerow (priority habitat)
- h2b - other hedgerow
- r2b - rivers and streams
- c1d - non-cereal crops
- g3c - other neutral grassland
- g4 - modified grassland
- h3 - dense scrub
- h3d - bramble scrub
- h3f - hawthorn scrub
- h3h - mixed scrub
- r1a - eutrophic standing waters
- r2b - other rivers and streams
- u1b - developed land sealed surface
- u1d - suburban mosaic of developed/natural surface
- w1f - lowland mixed deciduous woodland
- w1f7 - other lowland mixed deciduous woodland
- w1g - other woodland-broadleaved
- w1g7 - other broadleaved woodland types
- w2c - other coniferous woodland



P01	JAN 24	For DCO application	LT	MS	JR	BB
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Development Consent Order Number: TR010064

Development Consent Order Drawing Number: 6.3

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
M60/M62/M66 SIMISTER ISLAND INTERCHANGE

Drawing Title: UK HABITAT BASELINE SURVEY RESULTS

Drawing Status: S4 – SUITABLE FOR STAGED APPROVAL

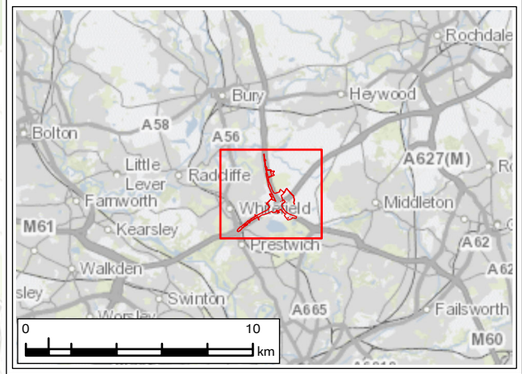
Scale @ A3	1:14,000	DO NOT SCALE
Jacobs No.	B36601F0	
Client No.	HE548642	Rev P01

Drawing Number: HE548642-JAC-LDC-SII_MLT-SK-LE-0039

Environmental Statement Appendix 8.12 Figure 8.12.2

Legend

- Order Limits
- Existing Outfall
- Proposed Outfall
- Parr Brook
- Parr Brook Culvert
- Blackfish
- Blackfish Culvert
- Castle Brook Reach
- Castle Brook Tributary Reach 1
- Castle Brook Tributary Reach 2
- Castle Brook Tributary Reach 3
- Tributary to Castle Brook Tributary Reach



P01	JAN 24	For DCO application	LT	MS	JR	BB
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Development Consent Order Number: TR010064

Development Consent Order Drawing Number: 6.3

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
M60/M62/M66 SIMISTER ISLAND INTERCHANGE

Drawing Title: M60 SIMISTER ISLAND - BNG METRIC 3.1
BASELINE RIVERS AND STREAMS ARRANGEMENT

Drawing Status: S4 – SUITABLE FOR STAGED APPROVAL

Scale @ A3	1:14,000	DO NOT SCALE
Jacobs No.	B36601F0	
Client No.	HE548642	Rev P01

Drawing Number: HE548642-JAC-LDC-SII_MLT-SK-LE-0044

0 1 Km