The Biodiversity Metric 4.0

User Guide – Technical Annex 2

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The Biodiversity Metric 4.0
Technical Annex 2 – Technical Information

Defra Group

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Further information

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Biodiversity Metric 4.0 builds on a series of previous versions of the biodiversity metric which have been published by Natural England with the input from the Environment Agency and the Forestry Commission, including authors and contributors cited in previous versions.

All versions of the biodiversity metric build on the biodiversity loss/gain framework developed by Jo Treweek and Bill Butcher[1,2], incorporating habitat condition and a new concept of distinctiveness scores, which was subsequently adopted by Defra and Natural England for their biodiversity offset pilots and metric[3].

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[1] Treweek J. et al. (2009) Scoping study for the design and use of biodiversity offsets in an English Context.

[2] Treweek J., Butcher B., and Temple H. (2010) Biodiversity offsets: possible methods for measuring biodiversity losses and gains for use in the UK. CIEEM In Practice.

[3] Defra (2012) Biodiversity Offsetting Pilots. Technical paper: the metric for the biodiversity offsetting pilot in England [online]. Defra, London.) Biodiversity Offsetting Pilots. Technical paper: the metric for the biodiversity offsetting pilot in England

Contents

1. Document guidance

1.1.1. This Technical Annex provides an overview of the considerations and rationale underpinning the component parts of the Biodiversity Metric 4.0 (hereafter referred to as 'the metric'). Sections within this document cover: Habitat classification

- Habitat distinctiveness
- Condition
- Time to target condition
- Habitat creation and enhancement difficulty
- Difficulty values
- Metric equations and functions
- Technical Habitat Data

2. Habitat classification

2.1.1. There are a variety of habitat classification systems used in the metric, including:

- UK Habitat Classification (UKHab)[4]
- European Nature Information System (EUNIS)
- Water Framework Directive (WFD) Lake typologies

2.2. Area based habitats

2.2.1. In the metric, the majority of area-based habitats are classified according to UKHab definitions. The UKHab is a unified and comprehensive approach to classifying habitats covering terrestrial habitats. It is flexible for use in a wide range of survey types from walkover surveys of small urban sites to large scale rural habitat mapping.

2.2.2. Habitats within the metric and the definition from the relevant classification system are shown in Technical Table 2-1 to Technical Table 3-15. For ease of reference these are split by broad habitat type within the metric.

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[4] UK Habitat Classification (2022)

Technical Table 2-1 Cropland habitat types

The metric habitat type	Classification system used	Classification system habitat name	Other definition / notes
Arable field margins cultivated annually	UKHab	Arable field margins cultivated annually with an annual flora	The metric habitat type differs from the UKHab name.
Arable field margins game bird mix	UKHab	Game bird mix strips and corners Game bird mix fields	The metric habitat type differs from the UKHab name.
Arable field margins pollen and nectar	UKHab	Arable field margins pollen and nectar	None
Arable field margins tussocky	UKHab	Arable field margins sown with tussocky grasses	The metric habitat type differs from the UKHab name.
Cereal crops	UKHab	Cereal crops	None
Winter stubble	UKHab	Winter stubble	None
Horticulture	UKHab	Horticulture	None
Intensive orchards	UKHab	Intensive orchards	None
Non-cereal crops	UKHab	Non-cereal crops	None
Temporary grass and clover leys	UKHab	Temporary grass and clover leys	None

Technical Table 2-2 Grassland habitat types

The metric habitat type	Classification system used	Classification system habitat name	Other definition/notes
Traditional orchards	UKHab	Traditional orchards	None
Bracken	UKHab	Bracken	None
Floodplain wetland mosaic and CFGM	Priority Habitat Inventory maps	CFGM - Coastal and floodplain grazing marsh	Metric specific assessment notes for this habitat type can be found within the user guide
Lowland calcareous grassland	UKHab	Lowland calcareous grassland	None
Lowland dry acid grassland	UKHab	Lowland dry acid grassland	None
Lowland meadows	UKHab	Lowland meadows	None
Modified grassland	UKHab	Modified grassland	None
Other lowland acid grassland	UKHab	Other lowland acid grassland	None
Other neutral grassland	UKHab	Other neutral grassland	None
Tall herb communities (H6430)	[Habitats Directive Annex 1](#)	Tall herb communities (H6430)	None
Upland acid grassland	UKHab	Upland acid grassland	None
Upland calcareous grassland	UKHab	Upland calcareous grassland	None
Upland hay meadows	UKHab	Upland hay meadows	None

Technical Table 2-3 Heathland and shrub habitat types

The metric habitat type	Classification system used	Classification system habitat name	Other definition/notes
Blackthorn scrub	UKHab	Blackthorn scrub	None
Bramble scrub	UKHab	Bramble scrub	None
Gorse scrub	UKHab	Gorse scrub	None
Hawthorn scrub	UKHab	Hawthorn scrub	None
Hazel scrub	UKHab	Hazel scrub	None
Lowland heathland	UKHab	Lowland heathland	None
Mixed scrub	UKHab	Mixed scrub	None
Mountain heaths and willow scrub	UKHab	Mountain heaths and willow scrub	None
Rhododendron scrub	UKHab	Rhododendron scrub	None
Willow scrub	UKHab	Willow scrub	None
Dunes with sea buckthorn (H2160)	Habitats Directive Annex 1	Dunes with sea buckthorn (H2160)	All other sea buckthorn scrub should be recorded as 'Other sea buckthorn scrub'
Other sea buckthorn scrub	UKHab	Other sea buckthorn scrub	None
Upland heathland	UKHab	Upland heathland	None

Technical Table 2-4 Individual tree habitat types

The metric habitat type	Classification system used	Classification system habitat name	Other definition/notes
Rural tree	Metric-specific	N/A	Metric specific assessment notes for this habitat type can be found within the user guide
Urban tree	Metric-specific	N/A	Metric specific assessment notes for this habitat type can be found within the user guide

Technical Table 2-5 Lakes habitat types

The metric habitat type	Classification system used	Classification system habitat name	Other definition/notes
Aquifer fed naturally fluctuating water bodies	UKHab	Aquifer fed naturally fluctuating water bodies	None
Ornamental lake or pond	UKHab	Artificial lake or pond	The metric habitat type differs from the UKHab name. ≤ 2ha
High alkalinity lakes	WFD Lakes typology	N/A	≥ 2ha
Low alkalinity lakes	WFD Lakes typology	N/A	≥ 2ha
Marl lakes	WFD Lakes typology	N/A	≥ 2ha
Moderate alkalinity lakes	WFD Lakes typology	N/A	≥ 2ha
Peat lakes	WFD Lakes typology	N/A	≥ 2ha
Ponds (priority habitat)	UKHab	Ponds (priority habitat)	≤ 2ha
Ponds (non-priority habitat)	UKHab*	**N/A**	*Ponds which do not meet either the definition of (i) priority habitat ponds or (ii) ornamental ponds
Reservoirs	**UKHab**	**Reservoir**	*Some larger reservoirs will meet the definition WFD Lakes typology
Temporary lakes ponds and pools (H3170)	UKHab*	Mediterranean temporary ponds (H3170)	The metric habitat type differs from the UKHab name. *All temporary water bodies not meeting the UKHab definition should be recorded as the appropriate pond or WFD Lakes typology

Technical Table 2-6 Sparsely vegetated land habitat types

The metric habitat type	Classification system used	Classification system habitat name
Calaminarian grasslands	UKHab	Calaminarian grasslands
Coastal sand dunes	UKHab	Coastal sand dunes
Coastal vegetated shingle	UKHab	Coastal vegetated shingle
Ruderal/Ephemeral	UKHab	Ruderal/Ephemeral
Tall forbs	UKHab	Tall forbs
Inland rock outcrop and scree habitats	UKHab	Inland rock outcrop and scree habitats
Limestone pavement	UKHab	Limestone pavement
Maritime cliff and slopes	UKHab	Maritime cliff and slopes
Other inland rock and scree	UKHab	Other inland rock and scree

Technical Table 2-7 Urban habitat types

The metric habitat type	Classification system used	Classification system habitat name	Other definition/notes
Allotments	UKHab	Allotments	None
Artificial unvegetated, unsealed surface	UKHab	Artificial unvegetated, unsealed surface	None
Bioswale	UKHab	Bioswale	None
Biodiverse green roof	UKHab	Biodiverse green roof	None
Built linear features	UKHab	Built linear features	None
Cemeteries and churchyards	UKHab	Cemetery	None
Developed land; sealed surface	UKHab	Developed land; sealed surface	None
Façade-bound green wall	UKHab	Façade-bound green wall	None
Ground based green wall	UKHab	Ground based green wall	None
Ground level planters	UKHab	Ground level planters	None
Intensive green roof	UKHab	Intensive green roof	None
Introduced shrub	UKHab	Introduced shrub	None

The metric habitat type	Classification system used	Classification system habitat name	Other definition/notes
Open mosaic habitats on previously developed land	UKHab	Open mosaic habitats on previously developed land	None
Other green roof	UKHab	Other green roof	None
Rain garden	UKHab	Rain garden	None
Actively worked sand pit quarry or open cast mine	UKHab	Sand pit quarry or open cast mine	The metric habitat type differs from the UKHab name. This classification relates to non-vegetated working areas only.
Sustainable drainage system (SuDS)	UKHab*	Sustainable drainage system	*Only for use with open SuDS with vegetation and/or open water
Unvegetated garden	UKHab	Garden	The metric habitat type differs from the UKHab name.
Vacant or derelict land	UKHab	Vacant or derelict land	None
Bare ground	UKHab	Bare ground	None
Vegetated garden	UKHab	Garden	The metric habitat type differs from the UKHab name.

Technical Table 2-8 Wetland habitat types

The metric habitat type	Classification system used	Classification system habitat name	Other definition/notes
Blanket bog	UKHab	Blanket bog	None
Depressions on peat substrates (H7150)	UKHab	Depressions on peat substrates (H7150)	None
Fens (upland and lowland)	UKHab	Lowland fens Upland flushes, fens and swamps or Other swamps	The metric habitat type differs from the UKHab name.
Lowland raised bog	UKHab	Lowland raised bog	None

The metric habitat type	Classification system used	Classification system habitat name	Other definition/notes
Wetland – Oceanic valley mire [1] (D2.1)	EUNIS	Oceanic valley bog	The metric habitat type differs from the EUNIS name.
Purple moor grass and rush pastures	UKHab	Purple moor grass and rush pastures	None
Reedbeds	UKHab	Reedbeds	None
Transition mires and quaking bogs (H7140)	UKHab	Transition mires and quaking bogs; lowland (H7140)	The metric habitat type differs from the UKHab name.

Technical Table 2-9 Woodland and forest habitat types

The metric habitat type	Classification system used	Classification system habitat name
Felled	UKHab	Felled
Lowland beech and yew woodland	UKHab	Lowland beech and yew woodland
Lowland mixed deciduous woodland	UKHab	Lowland mixed deciduous woodland
Native pine woodlands	UKHab	Native pine woodlands
Other coniferous woodland	UKHab	Other coniferous woodland
Other Scot's pine woodland	UKHab	Other Scot's pine woodland
Other woodland; broadleaved	UKHab	Other woodland; broadleaved
Other woodland; mixed	UKHab	Other woodland; mixed
Upland birchwoods	UKHab	Upland birchwoods
Upland mixed ashwoods	UKHab	Upland mixed ashwoods
Upland oakwood	UKHab	Upland oakwood
Wet woodland	UKHab	Wet woodland
Wood-pasture and parkland	UKHab	Wood-pasture and parkland

Technical Table 2-10 Hedgerows and lines of trees habitat types

The metric habitat type	Classification system used	Combined UKHab codes
Species-rich native hedgerow with trees - associated with bank or ditch	UKHab	h2a5 70 h2a5 191 h2a5 70 191
Species-rich native hedgerow with trees	UKHab	h2a5 190
Species-rich native hedgerow - associated with bank or ditch	UKHab	h2a5 190 70 h2a5 190 191 h2a5 190 70 191
Native hedgerow with trees - associated with bank or ditch	UKHab	h2a 190 70 h2a 190 191 h2a 190 70 191
Species-rich native hedgerow	UKHab	h2a5
Native hedgerow - associated with bank or ditch	UKHab	h2a 70 h2a 191 h2a 70 191
Native hedgerow with trees	UKHab	h2a 190
Ecologically valuable line of trees	UKHab	w~ 1175
Ecologically valuable line of trees - associated with bank or ditch	UKHab	w~ 1175 70 w~ 1175 191 w~ 1175 70 191
Native hedgerow	UKHab	h2a h2a6
Line of trees	UKHab	w~ 1174
Line of trees - associated with bank or ditch	UKHab	w~ 1174 70 w~ 1174 191 w~ 1174 70191
Non-native and ornamental hedgerow	UKHab	h2b

Technical Table 2-11 Watercourse habitat type

The metric habitat type	Classification system used	Classification system habitat name	Other definition/notes
Priority habitat	UKHab	Rivers (priority habitat)	Highly naturally functioning stretches of rivers identified on the Priority River Habitat Map, and un-mapped stretches meeting the criteria for inclusion into the Priority River Habitat Map.
Other rivers and streams	UKHab	Other rivers and streams	Rivers and streams that are not classified as Priority River Habitat
Ditches	Metric-specific	**Ditch**	Artificially created linear water-conveyancing features which are less than 5m wide, and likely to retain water for more than 4 months of the year
Canals	UKHab	Canals	An artificial body of water originally created for the purposes of navigation, whether it is currently navigable or not.
Culvert	N/A	N/A	As defined by the Flood and Water Management Act 2010. A covered channel or pipe designed to prevent the obstruction of a watercourse or drainage path by an artificial construction.
Watercourse footprint	Metric-specific habitat	N/A	Area habitat in the metric to use for mapping a watercourse area, the details of which should be put in the Watercourse module of the metric.

2.3. Intertidal Habitats

2.3.1.   Intertidal habitats are defined in the metric according to the European Nature Information System (EUNIS). EUNIS is an established and comprehensive assessment of intertidal habitats and has been selected for use as the basis of intertidal habitat classifications within the metric.

2.3.2.   EUNIS covers all habitat types from natural to artificial, and through to the marine (subtidal) environment. Habitat types are defined for the purposes of the EUNIS classification as 'plant and animal communities as the characterising elements of the biotic environment, together with abiotic factors operating together at a particular scale'.

2.3.3.   EUNIS is used in reporting across the marine environment in Europe and is compatible with the monitoring data of marine protected areas (MPA). Habitats are reported in EUNIS for national and international, biodiversity and natural capital work. For many areas there is preliminary data available through Magic Maps or the European Marine Observation and Data Network.

2.3.4.   EUNIS is a hierarchical classification system with 5 levels:

2.3.5.   Levels 1 and 2 of EUNIS simply define the habitat as 'marine' (EUNIS "A") and its location in relation to the tide and depth.

2.3.6.   At EUNIS Level 2, the habitats that are included in this section of the metric are those located below the mean high-water mark with clear marine origin:

- (A1) Littoral rock and other hard substrate
- (A2) Littoral sediment
- (X02/03) Coastal lagoons

2.3.7.   EUNIS Level 3 is appropriate for reporting in the majority of circumstances. Assessors should note that the metric classifications split out the EUNIS Level 3 habitat 'Littoral sand and muddy sand' into two habitat types in order to better capture the different distinctiveness bands for each (medium and high respectively). These are:

- 'Littoral sand'
- 'Littoral muddy sand'

2.3.8.   If present, assessors should identify EUNIS Level 4 and Level 5 to identify high value and irreplaceable habitats. Crucially, EUNIS Level 5 provides the additional detail needed to separate higher and lower value habitats for certain habitat complexes and allow for the identification of Annex 1 and Section 41 Priority Habitats (for example separating High energy littoral rock from High energy littoral rock on peat and clay exposures).

2.3.9.   Restored 'natural' intertidal habitats are identified in the metric as those that have been restored with the aim of biodiversity conservation either by re-establishing natural processes or with very limited engineering to support natural processes.

2.3.10. Intertidal 'artificial habitats' have been added to the metric where needed (Technical Table 2-13). The artificial intertidal sediment habitats are defined as being an 'artificial' example of the equivalent EUNIS habitat. The three artificial hard-substrate habitats 'Artificial hard structures', 'Features of

artificial hard structures'; and 'Artificial hard structures with integrated greening of grey infrastructure (IGGI)' are all man-made structures.

Technical Table 2-12 Metric intertidal habitats

The metric broad habitat type	The metric habitat type	Classification system used	Classification system habitat name
Coastal lagoons	Coastal lagoons	EUNIS	Saline coastal lagoons
Coastal saltmarsh	Saltmarshes and saline reedbeds	EUNIS	Coastal saltmarshes and saline reedbeds
Coastal saltmarsh	Artificial saltmarshes and saline reedbeds	Adapted from EUNIS	See Technical Table 2-13
Rocky shore	High energy littoral rock	EUNIS	High energy littoral rock
Rocky shore	High energy littoral rock - on peat, clay or chalk	Subset of EUNIS habitat based on substrate	High energy littoral rock
Rocky shore	Moderate energy littoral rock	EUNIS	Moderate energy littoral rock
Rocky shore	Moderate energy littoral rock - on peat, clay or chalk	Subset of EUNIS habitat based on substrate	Moderate energy littoral rock
Rocky shore	Low energy littoral rock	EUNIS	Low energy littoral rock
Rocky shore	Low energy littoral rock - on peat, clay or chalk	Subset of EUNIS habitat based on substrate	Low energy littoral rock
Rocky shore	Features of littoral rock	EUNIS	Features of littoral rock
Rocky shore	Features of littoral rock - on peat, clay or chalk	Subset of EUNIS habitat based on substrate	Features of littoral rock
Intertidal sediment	Littoral coarse sediment	EUNIS	Littoral coarse sediment
Intertidal sediment	Littoral sand	EUNIS	Littoral sand and muddy sand
Intertidal sediment	Littoral muddy sand	EUNIS	Littoral sand and muddy sand
Intertidal sediment	Littoral mud	EUNIS	Littoral mud

The metric broad habitat type	The metric habitat type	Classification system used	Classification system habitat name
Intertidal sediment	Littoral mixed sediments	EUNIS	Littoral mixed sediments
Intertidal sediment	Littoral seagrass	EUNIS	Littoral sediments dominated by aquatic angiosperms
Intertidal sediment	Littoral seagrass on peat, clay or chalk	Subset of EUNIS habitat based on substrate	Littoral sediments dominated by aquatic angiosperms
Intertidal sediment	Littoral biogenic reefs - Mussels	Subset of EUNIS habitat based on reef forming species	Littoral biogenic reefs
Intertidal sediment	Littoral biogenic reefs - Sabellaria	Subset of EUNIS habitat based on reef forming species	Littoral biogenic reefs
Intertidal sediment	Features of littoral sediment	EUNIS	Features of littoral sediment
Intertidal sediment	Artificial littoral coarse sediment	Adapted from EUNIS	See Technical Table 2-13
Intertidal sediment	Artificial littoral muddy sand	Adapted from EUNIS	See Technical Table 2-13
Intertidal sediment	Artificial littoral mud	Adapted from EUNIS	See Technical Table 2-13
Intertidal sediment	Artificial littoral sand	Adapted from EUNIS	See Technical Table 2-13
Intertidal sediment	Artificial littoral mixed sediments	Adapted from EUNIS	See Technical Table 2-13
Intertidal sediment	Artificial littoral seagrass	Adapted from EUNIS	See Technical Table 2-13
Intertidal sediment	Artificial littoral biogenic reefs	Adapted from EUNIS	See Technical Table 2-13
Intertidal hard structures	Artificial hard structures	Adapted from EUNIS	See Technical Table 2-13
Intertidal hard structures	Artificial features of hard structures	Adapted from EUNIS	See Technical Table 2-13
Intertidal hard structures	Artificial hard structures with integrated greening of grey infrastructure (IGGI)	Adapted from EUNIS	See Technical Table 2-13

Technical Table 2-13 Artificial intertidal habitat notes

The metric broad habitat type	The metric habitat type	EUNIS Code	Habitat specific notes and examples
Intertidal hard structures	Intertidal artificial hard structures	ART_A1	Artificial hard structures are man-made structures fulfilling a range of functions (for example coastal defences, port, harbour and marina installations, energy infrastructure, aquaculture). They can be made of various hard materials (artificial or natural rock, wood, plastics, metal) that would not normally be found in the area they are being deployed. **Examples:** seawalls, breakwaters, groynes, jetties, pilings, aquaculture trestles.
Intertidal hard structures	Intertidal artificial features of hard structures	ART_A1.4	Where man-made materials are used to create artificial versions of A1.4 Features of littoral rock
Intertidal hard structures	Intertidal Artificial hard structures with integrated greening of grey infrastructure (IGGI)	ART_A1 IGGI	Where natural materials (most commonly naturally occurring rock) are used to create man-made structures for a range of functions (for example coastal defences, aquaculture). The structures' designs must maximise likeness to the naturally occurring hard habitats from that area in terms of material (for example geological origin), position (tidal level, exposure, aspect), topographic complexity (surface roughness, availability of microhabitat like rock pools or crevices, slope), to support their colonisation with species naturally occurring in the area and to maximise benefits for

The metric broad habitat type	The metric habitat type	EUNIS Code	Habitat specific notes and examples
			biodiversity and ecosystem function. **Examples**: breakwaters or seawalls built with materials local to the region, and with depressions (rock pools) added during the design process or retrospectively
Intertidal sediment	Artificial littoral coarse sediment	ART_A2.1	Artificial sedimentary habitats will be those that cannot meet the general natural definition, particularly in respect to using substrate that is not of marine origin or that cannot remain in situation without significant engineering.
Intertidal sediment	Artificial littoral sand	ART_A2.21/A2.22/A2.23	
Intertidal sediment	Artificial littoral muddy sand	ART_A2.24	**Beneficial use & beach recharge or replenishment:** Provided these use the same sediment type as originally present they fall into enhancement of existing habitats. In these situations, do not use the artificial habitat definition. Ensuring condition is as good as or better than originally and still requiring the 10% biodiversity unit gain.
Intertidal sediment	Artificial littoral mud	ART_A2.3	
Intertidal sediment	Artificial littoral mixed sediments	ART_A2.4	If it's a different sediment type then it will be habitat creation – to be considered natural sediment creation the scheme must meet the natural habitat definition including an aim for biodiversity conservation. Otherwise, they will be considered artificial in the metric. **Examples of artificial littoral sediment habitats:** Sediments deposited around

The metric broad habitat type	The metric habitat type	EUNIS Code	Habitat specific notes and examples
			artificial islands, sediments contained in floating devices.
Coastal saltmarsh	Artificial coastal saltmarshes and saline reedbeds	ART_A2.5	For these habitats the artificial nature is determined by the underlying substrate, most restoration activities will fall under the net gain definition of recreated natural habitats. Situations that fall under artificial will be limited but not impossible and include any base substrate that falls under artificial in the definition above. **Example:** floating habitat creation systems where the underlying substrate is artificially contained.
Intertidal sediment	Artificial littoral seagrass	ART_A2.61	
Intertidal sediment	Artificial littoral biogenic reefs	ART_A2.7	

2.4. Waterbody types

2.4.1. Use Technical Table 2-14 to inform decisions on lake type. Within the metric, waterbodies are classified as:

- ponds and waterbodies (with an area of less than or equal to 2ha)
- lakes (with an area greater than or equal to 2ha)

2.4.2. Technical Table 2-14 also shows relationship between WFD waterbody types and other classification systems. Note that temporary water bodies and aquifer fed naturally fluctuating water bodies are not captured in the WFD typology but are still included within the metric.

2.4.3. Waterbody types are usually defined based on nutrient concentrations. This is unhelpful if the objective is to assess the current state of a waterbody against its natural state. It also makes assessment of natural lake type difficult to judge in the field. For the metric we have adopted the pragmatic approach used for tier 1 (geology) of the WFD Lakes Typology.

2.4.4. Alkalinity is less frequently altered by anthropogenic impacts but is related to natural lake nutrient concentration. Alkalinity is the basis of the WFD typology along with peat and marl. Nearly all lakes above 2 ha have been assigned to one of the WFD types using either measured or modelled data. These types can be found on the lakes portal.

2.4.5. Within Technical Table 2-14 habitat types denoted * are a subset of the Priority Habitat and or WFD type in the same row of the table. The closest correspondence between Joint Nature Conservation Committee (JNCC) vegetation types and WFD alkalinity and colour types is shown in bold in the 'JNCC vegetation types' column. Equally important representatives or regional variants may occur in the other groups listed.

Technical Table 2-14 Comparing waterbody habitat descriptions / typologies

The metric lake types	WFD alkalinity and colour types	Priority Habitat types	Habitats Directive Annex 1 types	JNCC lake vegetation communities
High alkalinity lakes	High alkalinity	Naturally eutrophic standing waters > 2 ha	Natural eutrophic lakes H3150	**E, G, I,** H
Marl lakes	Marl	Mesotrophic lakes > 2 ha	Hard oligo-mesotrophic with *Chara* spp. H3140	B, C2, **E, F,** G, **I**
Moderate alkalinity lakes	Moderate alkalinity	Mesotrophic lakes > 2 ha	Oligotrophic to mesotrophic standing waters H3130	**D, E,**
Low alkalinity lakes	Low alkalinity	Oligotrophic and dystrophic lakes > 2 ha	Oligotrophic to mesotrophic standing waters H3130	B, **C1, C2,**
	Low alkalinity	Oligotrophic and dystrophic lakes > 2 ha	Oligotrophic standing waters of sandy plains H3110	
Peat lakes	Peat	Oligotrophic and dystrophic lakes > 2 ha	Natural dystrophic lakes and ponds H3160	**A**, B, C1, C2
Reservoirs	WFD typology does not include	N/A	N/A	N/A
Aquifer fed naturally fluctuating water bodies	WFD typology does not include hydrological regime	Aquifer fed naturally fluctuating water bodies	Known examples (in England) of this type are also eutrophic lakes H3150.	**B, I**
Temporary lakes ponds and pools (H3170)	WFD typology does not include hydrological regime	N/A	*Mediterranean temporary ponds H3170	N/A
Ponds (priority habitat)	WFD typology does not refer specifically to ponds	Ponds < 2 ha	Can represent any of the above Annex 1 habitat types	N/A
Ponds (non-priority habitat)	N/A	Ponds < 2 ha	N/A	N/A

3. Habitat distinctiveness

3.1. Methodology

3.1.1. Habitat distinctiveness considers species richness, habitat rarity, the extent to which a habitat is protected by designations and the degree to which a habitat supports species rarely found in other habitats.

3.1.2. Within the metric, habitats were assigned to distinctiveness bands based on the following criteria:

- Total amount of remaining habitat in England (its rarity)
- Proportion of habitat protected in SSSI: where less is protected in SSSIs, it is considered of higher distinctiveness
- UK Priority Habitat Status
- European Red List Categories

3.1.3. The Priority Habitat Inventory (England) was the primary source of data to inform the criteria 'Total amount of habitat remaining' and '% of habitat protected in SSSIs' (data extracted spring 2019). Further information from Natural England habitat specialists was included, where these were the more certain and commonly used figures for those habitats.

3.1.4. The European Red List was used to highlight how rare or endangered a habitat is at a European and consequently international scale. Consideration was given to those habitats that are much rarer and more important in an England or UK context (in other words they are much more common on the continent) and those which are very rare elsewhere but reasonably common in England.

3.1.5. The European Red List of Habitats compiled by the International Union for Conservation of Nature (IUCN) provides an overview of the risk of collapse (degree of endangerment) of marine, terrestrial and freshwater habitats in the European Union (EU28) and adjacent regions (EU28+), based on a consistent set of criteria and categories and detailed data and expertise from involved countries. The Red List for European Habitats category quoted is based on the European Union (EU28) list and the corresponding EUNIS Classification Code and description was cited where possible.

3.1.6. The Red List uses 5 criteria:

- Criterion A: reduction in quantity (area or distribution)
- Criterion B: restricted geographic distribution
- Criterion C: reduction in abiotic quality

- Criterion D: reduction in biotic quality
- Criterion E:quantitative analysis of probability of collapse

3.1.7. Two of the criteria assess spatial symptoms of habitat collapse in terms of declining spatial distribution (Criterion A) and restricted spatial distribution (Criterion B).

3.1.8. Two criteria assess functional symptoms (degradation of ecological processes) in terms of physical or abiotic degradation (Criterion C) and disruption of biotic processes and interactions (Criterion D). Given that it is often difficult or impossible to separate biotic and abiotic degradation processes, Criteria C and D have been combined in this assessment (Criterion C and D), with the option to separate where data were available. To understand whether a habitat meets the criteria for Critical, Endangered or Vulnerable see Bland et al., 2017.

3.1.9. Using different criteria for different habitat groups makes direct comparison difficult, mainly due to complications of different habitat classification systems UK Priority Habitats do not translate directly to Habitats Directive Annex 1 Habitats and the European Red List of Habitats. They all have strengths and weaknesses and were developed to address certain issues. Therefore, those habitats used in other classifications have been matched to the most appropriate the metric habitat type and used as the basis for the allocation of distinctiveness bands.

3.1.10. Having compiled this data, it was used to assign a distinctiveness category to each of the metric habitats. Technical Table 3-1 shows the categories and the thresholds used for assignment. Technical Tables 3-4 to 3-15 show the available supporting data for each habitat type. For ease of reference the tables group habitats by distinctiveness. For high distinctiveness habitats they are split further by broad habitat type.

Technical Table 3-1 Habitat distinctiveness categories and criteria thresholds

Distinctiveness category	Criteria threshold
Very high	Priority Habitats as defined in Section 41 of the Natural Environment and Rural Communities (NERC) Act that are highly threatened, internationally scarce and require conservation action, for example blanket bog. Small amount of remaining habitat with a high proportion unprotected by designation. Critically Endangered European Red List habitats.
High	Priority Habitats as defined in Section 41 of the NERC Act requiring conservation action, for example lowland fens. Remaining Priority Habitats not in very high distinctiveness band and other Near Threatened and Vulnerable Red List habitats.
Medium	Semi-natural habitats not classed as a Priority Habitat but with significant wildlife benefit, for example mixed scrub. Arable field margins (Priority Habitat only).
Low	Habitat of limited biodiversity value for example temporary grass and clover ley. Agricultural and urban land of lower biodiversity value.
Very low	Little or no biodiversity value for example hard standing or sealed surface.

Intertidal habitats

3.1.11. Most natural intertidal habitats are of sufficient importance for nature conservation that they require a distinctiveness category of at least 'high'. Other natural intertidal habitats, like those on bedrock including peat and clay exposures and chalk, are, due to their unique origin, lack of resilience and limited recoverability from impacts, given a distinctiveness score of 'very high'.

3.1.12. Most naturally occurring intertidal habitats are of high nature conservation value and are assigned a distinctiveness of **'high'**. Intertidal artificial habitats need to be considered within the metric and distinguished from the naturally occurring versions of those habitats. Hence, artificial counterparts of the natural habitats are included within the metric with a distinctiveness score of

'low' (or in the case of 'Artificial hard structures with integrated greening of grey infrastructure (IGGI)' **'medium'**) to reflect their origin.

Technical Table 3-2 Distinctiveness categories and associated habitat types for intertidal habitats

Distinctiveness category	Intertidal habitat type
Very high	Natural habitats on bedrock including peat, clay or chalk
High	Most other naturally occurring intertidal habitats
Medium	Artificial hard structures with integrated greening of grey infrastructure (IGGI) Littoral coarse sediment Littoral sand
Low	All other artificial habitats

Freshwater bodies

3.1.13. For freshwater bodies an alternative red list approach has been used. This is because the extent or area of freshwater bodies is not often reduced but quality components, such as chemical or biotic processes, can be fundamentally changed, effectively degrading the habitat. The most common reason for lake degradation is eutrophication, a process that can result in a lake no longer being able to support the species that would naturally be associated with it. The European Red List criteria C and D consider degradation in biotic and abiotic quality, and these were the criteria primarily driving the red list categories assigned to standing water habitats at the European level and reported in Technical Table 3-3.

3.1.14. Article 17 reporting in 2019 has shown that degradation is much more widespread in some standing water habitats in England than has been reported for Europe as a whole. Consequently, the IUCN criteria have been applied specifically to data for England. The extent of degraded habitat in relation to the European Red List Categories is in shown in Technical Table 3-3. Whilst this suggests a large amount of the habitat (up to 50%) may be degraded and it remains of least concern, application of the IUCN criteria to the England only data does allow an equal comparison with other habitats that have been evaluated through the same scheme.

Technical Table 3-3 Alternative red list criteria for freshwater habitats

European Red List Categories	Category criteria	Adapted alternative to RED LIST for criteria C & D used in this assessment
Critical (CR)	When the evidence indicates that it meets any of the criteria A to E for Critical and is then considered to be at an extremely high risk of collapse (80% loss in past 50 years)	Only relevant if impact is thought to be extremely severe
Endangered (EN)	When the evidence indicates that it meets any of the criteria A to E for Endangered and considered to be at a very high risk of collapse (50% loss in past 50 years)	Greater than or equal to 90% of the extent of the habitat degraded
Vulnerable (VU)	When the best available evidence indicates that it meets any of the criteria A to E for Vulnerable and is then considered to be at a high risk of collapse (30% loss in last 50 years)	Less than 90% to greater than or equal to 70% of the extent of the habitat degraded
Near Threatened (NT)	A habitat is Near Threatened when it has been evaluated against the criteria but does not qualify for CR, EN or VU, but the status and trends are close to qualifying for a threatened category.	Less than 70% to greater than or equal to 50% of the extent of the habitat degraded
Least Concern (LC)	A habitat is of Least Concern when it has been evaluated against the criteria and does not qualify for CR, EN, VU or NT. Widely distributed and relatively un-degraded habitats are included in this category.	Less than 50% of the extent of the habitat degraded

3.2. Distinctiveness results tables

Very high distinctiveness habitats

3.2.1.   Technical Table 3-4 shows habitats which were assigned to very high distinctiveness within the metric, alongside the data which was used to inform the assessment.

Technical Table 3-4 Very high distinctiveness habitats

Habitat description	Area of habitat remaining (ha)	% Protected in SSSI	European Red List Categories (EUNIS code in brackets)	Notes
Grassland - Lowland dry acid grassland	14,881 (PHI) 20,142 (UK BAP)	60%	Vulnerable (E1.7) Endangered (E1.9a) Endangered (E3.52) Least Concern (E5.31)	

Habitat description	Area of habitat remaining (ha)	% Protected in SSSI	European Red List Categories (EUNIS code in brackets)	Notes
Grassland - Lowland meadows	18,008 (PHI) 7,282 (UK BAP)	52.6%	Vulnerable (E2.1) Vulnerable (E2.2) Endangered (E3.41)	Floodplain meadows (E3.41) considered the most endangered
Grassland - Upland hay meadows	1,928 (PHI) 870 (UK BAP)	39.1%	Vulnerable (E2.3)	
Heathland and shrub - Mountain heaths and willow scrub	1,408	79%		
Annex 1: (H4060) Alpine and subalpine heaths	1,232	100%	Least Concern (F2.2a)	
Annex 1: (H4080) Mountain willow scrub	0.5	100%	Near Threatened (F2.1)	
Littoral sediment - Littoral seagrass - on peat, clay or chalk	Unknown			Irreplaceable due to substrate

Habitat description	Area of habitat remaining (ha)	% Protected in SSSI	European Red List Categories (EUNIS code in brackets)	Notes
Lakes - Aquifer fed naturally fluctuating water bodies	20	100%	Near Threatened (C1.2b)	Figures for this habitat type are intrinsically difficult due to the fluctuating water levels. Only known in Breckland.
Sparsely vegetated land - Calaminarian grasslands *Annex 1:* (H6130) Grasslands on soils rich in heavy metals	152	88%	Endangered (E1.B)	
Sparsely vegetated land - Limestone pavements (H8240)	2,481	84.7%	Least Concern (H3.5a)	Including outcrops of limestone, comprising flat slabs of rock
Littoral sediment - Features of littoral rock - on peat, clay or chalk	Unknown	Unknown		Assessment considered substrate
Rocky shore - High energy littoral rock - on peat, clay or chalk	Unknown	Unknown		Assessment considered substrate
Rocky shore - Low energy littoral rock - on peat, clay or chalk	Unknown	Unknown		Assessment considered substrate
Rocky shore - Moderate energy littoral rock - on peat, clay or chalk	Unknown	Unknown		Assessment considered substrate

Habitat description	Area of habitat remaining (ha)	% Protected in SSSI	European Red List Categories (EUNIS code in brackets)	Notes
Wetland - Blanket bog *Annex 1: (H7130) Blanket Bog*	230,114	68.8%	Near Threatened (D1.2)	
Wetland - Depressions on Peat substrates (H7150)	Unknown	Unknown	Vulnerable (D2.2a) Vulnerable (D2.2c) Vulnerable (D2.2a)	
Wetland – Fens (both upland & lowland types)	34,634	65%		
Annex 1: (H7210) Calcium-rich fen dominated by great fen sedge			Endangered (D4.1b) Vulnerable (D4.1c)	
Annex 1: (H7220) Hard-water springs depositing lime;			Endangered (D4.1a)	

Habitat description	Area of habitat remaining (ha)	% Protected in SSSI	European Red List Categories (EUNIS code in brackets)	Notes
Annex 1: (H7230) Alkaline Fens Calcium-rich springwater-fed fens;			Endangered (D4.1a) Vulnerable (D4.1c)	
Annex 1: (H7240) Alpine pioneer flush/mire formations.			Vulnerable (D4.2)	
EUNIS: Poor fen			Vulnerable (D2.2a)	
EUNIS: Intermediate fen and soft-water spring mire			Vulnerable (D2.2c)	
Wetland - Lowland raised bog	9,090 (PHI) 17,411 (Annex 1, 2018)	90% 47%	Endangered (D1.1)	
Annex 1: (H7110) Active raised bogs	3,727			
Annex 1: (H7120) Degraded raised bog	13,684			

Habitat description	Area of habitat remaining (ha)	% Protected in SSSI	European Red List Categories (EUNIS code in brackets)	Notes
Wetland – Oceanic valley mire			Vulnerable (D2.1)	No clearly related Annex I type. A small amount may match 7150, and locally the habitat may have been assigned under Annex I type 7110 (Active raised bog). EEA (No date) D2.1 Oceanic valley bog
Wetland - Purple moor grass and rush pastures	7,117 (PHI)	30%	Endangered (E3.5)	Developed through past historical management practices often from other Fen and Mire habitats over long time scales.
Annex 1: (H6410) Molinia meadows on calcareous, peaty or clayey-silt-laden soils	21, 544 (UK BAP)			
Wetland - Transition mires and quaking bogs (H7140)			Vulnerable (D2.2c) Vulnerable (D2.3a)	The term 'transition mire' relates to vegetation that in floristic composition and general ecological characteristics is transitional between Acid bog and (7230) Alkaline fens, in which the surface conditions range from markedly acidic to slightly base-rich.

Habitat description	Area of habitat remaining (ha)	% Protected in SSSI	European Red List Categories (EUNIS code in brackets)	Notes
Watercourse - Priority Habitat				Partial (rivers meeting River BAP Priority Descriptions and only those mapped on the priority rivers map).
Headwater streams				A watercourse within 2.5km of its furthest source as marked with a blue line on Ordnance Survey (OS) maps at a scale of 1:50,000.
Chalk rivers			EUNIS codes C2.19, C2.26, C2.3	There are approximately 35 chalk rivers and major tributaries ranging from 20km to 90km in length. They are located in south and east England – from the Frome in Dorset to the Hull in Humberside.
Abundance of water-crowfoots *(H3260) Rivers with floating vegetation*				
Active shingle rivers				

High distinctiveness habitats

3.2.2. Technical Table 3-5 to 3-12 show habitats which were assigned to high distinctiveness within the metric, alongside the data which was used to inform the assessment. Tables are split by metric broad habitat type.

Technical Table 3-5 High distinctiveness urban habitats

Habitat description	Area of habitat remaining (ha)	% protected in SSSI	European Red List Categories
Urban - Open mosaic habitats on previously developed land	Unknown	Very Little	Not Listed

Technical Table 3-6 High distinctiveness grassland and heathland habitats

Habitat description	Area of habitat remaining (ha)	% Protected in SSSI	European Red List Categories (EUNIS code)	Notes
Grassland - Traditional orchards	**14,853**	**0.3**	**Not Listed**	
Grassland – Floodplain Wetland Mosaic and CFGM	218,283	14.7		CFGM is often improved grassland. Little of Priority habitat quality, hence small amount designated, sits on degraded fen and coastal habitats that need restoration.
Grassland - Lowland calcareous grassland	57,189 (PHI) 38, 687 (BAP)	65.8	Vulnerable (E1.2a)	
Grassland - Upland calcareous grassland	11,242 (PHI)	81.4	Vulnerable (E1.26)	

Habitat description	Area of habitat remaining (ha)	% Protected in SSSI	European Red List Categories (EUNIS code)	Notes
Grassland - Tall herb communities (H6430) *Annex 1: (H6430) Tall herb communities*	Less than 1,000 (Not Known)	Expected High		
Heathland and shrub - Lowland heathland	50,987 (PHI)	78	Vulnerable	
Annex 1: (H4010) Wet heathland with cross-leaved heath; lowland	17,667		Vulnerable (F4.1)	
Annex 1: (H4020) Wet heathland with Dorset heath and cross-leaved heath	2,661		Vulnerable (F4.1)	
Annex 1: (H4030) Dry heaths; lowland	26,139		Vulnerable (F4.2)	
Annex 1: (H4040) Dry coastal heaths with Cornish heath	2,212		Vulnerable (F4.2)	
Heathland and shrub - Dunes with sea buckthorn (H2160) *Annex 1:(H2160) Dunes with Hippophae rhamnoides (Sea buckthorn)*	Unknown	100		East coast sand dunes
Heathland and shrub - Upland heathland	276,885			
Annex 1: (H4010) Wet heathland with cross-leaved heath; upland	40,436	~ 95		
Annex 1: (H4030) Dry heaths; upland	236,449	72		
Sparsely vegetated land - Inland rock outcrop and scree habitats				
Annex 1: (H8110) Acidic scree	3,250	~ 80	Least Concern (B2.5)	

Habitat description	Area of habitat remaining (ha)	% Protected in SSSI	European Red List Categories (EUNIS code)	Notes
Annex 1: (H8120) Base-rich scree	400	~ 95	Least Concern (B2.6c)	
Annex 1: (H8210) Plants in crevices in base-rich rocks	300	~ 95		
Annex 1: (H8220) Plants in crevices in acid rocks	1,250	~ 80		
Annex 1: (H6430) Tall herb communities	Unknown	Unknown		

Technical Table 3-7 High distinctiveness wetland habitats

Habitat description	Area of habitat remaining (ha)	% protected in SSSI	European Red List Categories (EUNIS code)	Notes
Wetland - Reedbeds	2,956	79.8	Not listed	An early successional Fen community that is classified separately in the UK Priority Habitat classification.

Technical Table 3-8 High distinctiveness freshwater lake and pond habitats

Habitat description	Area of habitat remaining (ha)	% protected in SSSI	European Red List Categories (EUNIS code)	Alternative to red list using condition %
Lakes - Low alkalinity lakes (H3110)	3,985	40	Least Concern (C1.1b)	Low alkalinity and moderate alkalinity lakes were considered together for article 17 reporting and only 28% of surveyed lakes by area were in 'good' condition. For a subset of lowland low alkalinity lakes (H3110) less than 1% were in 'good' condition'; they clearly are Vulnerable.
Lakes - Moderate alkalinity lakes (H3130)	5,700	32	Least Concern (C1.1b)	Low alkalinity and moderate alkalinity lakes were considered together for article 17 reporting and only 28% of surveyed lakes by area were in 'good' condition. Doing better than some other lake groups; the are clearly Vulnerable.
Lakes - High alkalinity lakes (H3150)	20,351	14	Near Threatened (C1.2b)	Article 17 reporting found only 3% of surveyed lake area was in 'good' condition for these lakes; they clearly are Endangered.
Lakes - Marl lakes (H3140)	584	21.7	Vulnerable (C1.2a)	Article 17 reporting found only 48% of surveyed lake area was in 'good' condition for these lakes they are doing better than other lake types but still require considerable improvement. They are considered Near Threatened.

Habitat description	Area of habitat remaining (ha)	% protected in SSSI	European Red List Categories (EUNIS code)	Alternative to red list using condition %
Lakes - Peat lakes (H3160)	1,275	5	Near Threatened (C1.4)	Article 17 reporting found less than 1% of surveyed lake area was in 'good' condition for these lakes; they clearly are Endangered .
Lakes - Ponds	4159	1.5		It is not possible to differentiate between priority and non-priority habitat ponds. Pond numbers are still much lower than at their peak and there is evidence that their quality continues to decline. Estimates suggest approx. 20% of ponds may be in good condition. They are Vulnerable.
Lakes - Temporary lakes ponds and pools (H3170)		100		Figures for this habitat type are intrinsically difficult due to their temporary nature. The Annex 1 type Mediterranean temporary ponds are only found on the Lizard in Cornwall and are within the protected site series and are in favourable condition.

Technical Table 3-9 High distinctiveness watercourse habitats

Habitat description	Area of habitat remaining (ha)	% protected in SSSI	European Red List Categories (EUNIS code)
Watercourse – Other rivers and streams	Unknown		

Technical Table 3-10 High distinctiveness coastal habitats

Habitat description	Area of habitat remaining (ha)	% protected in SSSI	European Red List Categories (EUNIS code)
Sparsely vegetated land - Coastal vegetated shingle	4,103	90.6	Least Concern (B2.1a)
(H1210) Annual vegetation of drift lines	-	-	
(H1220) Perennial vegetation on coastal shingle	-	-	
Sparsely vegetated land - Coastal sand dunes	10,018	82.2	Near Threatened (B1.3a)
(H2110) Embryonic shifting dunes	-	-	
(H2120) Shifting dunes with marram	-	-	
(H2130) Dune grassland	-	-	Vulnerable (B1.4a)
(H2140) Lime-deficient dune heathland with crowberry	-	-	
(H2150) Coastal dune heathland	-	-	Least Concern (B1.5b)
(H2190) Humid dune slacks	-	-	Vulnerable (B1.8a)
(H2550) Dunes with juniper thickets	-	-	
Sparsely vegetated land - Maritime cliff and slopes	14,123	67	Least Concern (B3.1a)
(H1230) Vegetated sea cliffs	-	-	
B3.4c Atlantic and Baltic soft sea cliff	-	-	Least Concern (B3.4c)

Technical Table 3-11 High distinctiveness intertidal habitats

Habitat description	Area of habitat remaining (ha)	% protected in SSSI	European Red List Categories (EUNIS code)
Coastal Saltmarsh - Saltmarshes and saline reedbeds	-	-	
Coastal lagoons – Coastal lagoons	-	-	
Intertidal sediment - Littoral mud	-	-	Endangered
Intertidal sediment - Littoral muddy sand	-	-	Data Deficient
Intertidal sediment - Littoral mixed sediments	-	-	Data Deficient
Intertidal sediment - Features of littoral sediment	-	-	Data Deficient

Habitat description	Area of habitat remaining (ha)	% protected in SSSI	European Red List Categories (EUNIS code)
Intertidal sediment - Littoral seagrass	-	-	Near Threatened
Intertidal sediment - Littoral biogenic reefs	-	-	Near Threatened (Sabellaria reef), Endangered (Mussel beds)
Intertidal sediment - Low energy littoral rock	-	-	Data Deficient
Intertidal sediment - Moderate energy littoral rock	-	-	Data Deficient
Intertidal sediment - High energy littoral rock	-	-	Least Concern
Intertidal sediment - Features of littoral rock	-	-	Least Concern

Technical Table 3-12 High distinctiveness woodland and forest habitats

Habitat description	Area of habitat remaining (ha)	%protected in SSSI	European Red List Categories
Deciduous woodland	735,055	13 (17 of Ancient woodland in SSSI)	
Woodland and forest - Upland mixed ashwoods	-	-	Near Threatened (G1.A)
(H9180) Lime-maple woodlands of rocky slopes	-	-	
Woodland and forest - Upland oakwood	-	-	Near Threatened (G1.A) Vulnerable (G1.8)
(H91A0) Western acidic oak woodland	-	-	
Woodland and forest - Wet woodland	-	-	
(H91E0) Alder woodland on floodplains	-	-	Near Threatened (G1.1)
(H91D0) Bog woodland	-	-	Vulnerable (G1.5)
Woodland and forest - Lowland beech and yew woodland	-	-	Near Threatened (G1.62, G1.6a & b)

Habitat description	Area of habitat remaining (ha)	%protected in SSSI	European Red List Categories
(H9120) Beech forests on acid soils.	-	-	
(H9130) Beech forests on neutral to rich soils.	-	-	
(H91J0) Yew-dominated woodland.	-	-	Least Concern (G3.9a)
(H5110) Natural box scrub	-	-	
Woodland and forest - Lowland mixed deciduous woodland	-	-	
Woodland and forest - Native pine woodlands	-	-	Near Threatened (G3.41 & G3.4a)
(H91C0) Caledonian forest	-	-	
Woodland and forest - Upland birchwoods	-	-	
Woodland – Wood pasture & parkland	Not known		

Notes on woodland and forest habitat distinctiveness

3.2.3.   The metric does not differentiate between ancient woodland (either determined from inventory or field survey of indicator species) and other non-ancient forms of the same woodland habitat type. These figures for extent of remaining habitat and % protected in SSSIs are underlined_inclusive of ancient woodland as these are the most referred to data on extent.

Medium distinctiveness habitats

3.2.4.   Technical Table 3-13 shows habitats which were assigned to medium distinctiveness within the metric, alongside the data which was used to inform the assessment.

Technical Table 3-13 Medium distinctiveness habitats

Habitat description	Area of habitat remaining (ha)	% protected in SSSI	European Red List Categories (EUNIS Code)	Notes
Cropland - Arable field margins	N/A	Very little	Not listed	None
Grassland - Other neutral grassland	N/A	Very little	Not listed	None
Grassland - Other lowland acid grassland	N/A	Very little	Not listed	None
Grassland - Upland acid grassland	N/A	Some	Not listed	None
Heathland and shrub - Blackthorn scrub	N/A	Very little	Not listed	None
Heathland and shrub - Bramble scrub	N/A	Very little	Not listed	None
Heathland and shrub - Gorse scrub	N/A	Some	Not listed	Some types of Gorse scrub (Western Gorse & Dwarf Gorse, *Ulex gallii & Ulex minor*) are a large component of areas of Upland Dry Heath & Lowland Heath will be recorded as such.
Heathland and shrub - Hawthorn scrub	N/A	Some	Not listed	None

Habitat description	Area of habitat remaining (ha)	% protected in SSSI	European Red List Categories (EUNIS Code)	Notes
Heathland and shrub - Hazel scrub	N/A	Very little	Not listed	The majority will be a Woodland PH type above.
Heathland and shrub - Mixed scrub	N/A	Very little	Not listed	None
Intertidal sediment - Littoral sand	N/A	N/A	N/A	None
Intertidal sediment - Littoral coarse sediment	N/A	N/A	N/A	None
Intertidal hard structures - Artificial hard structures with integrated greening of grey infrastructure (IGGI)	N/A	N/A	N/A	None
Lakes - Reservoirs	N/A	N/A	Not listed	Whilst some reservoirs are in SSSIs, there is no national inventory which would allow us to produce these figures.
Watercourse - Ditches	N/A	N/A	Not listed	Whilst some ditches are in SSSIs, there is no national inventory which would allow us to produce these figures.
Watercourse– Canals	N/A	Very little	Not listed	Whilst some canals are in SSSIs, there is no national inventory which would allow us to produce these figures.

Habitat description	Area of habitat remaining (ha)	% protected in SSSI	European Red List Categories (EUNIS Code)	Notes
Sparsely vegetated land - Other inland rock and scree (non-Priority Habitat)	N/A	Very little	Not listed	None
Urban - Biodiverse green roof	N/A	None	Not listed	Wildlife rich examples.
Urban - Cemeteries and churchyards	N/A	Some	Not listed	None
Woodland and forest - Felled	N/A	Very little	Not listed	None
Woodland and forest - Other Scot's pine woodland	N/A	Very little	Not listed	None
Woodland and forest - Other woodland; broadleaved	N/A	Very little	Not listed	None
Woodland and forest - Other woodland; mixed	N/A	Very little	Not listed	None

Low distinctiveness habitats

3.2.5. Technical Table 3-14 shows habitats which were assigned to low distinctiveness within the metric, alongside the data which was used to inform the assessment.

Technical Table 3-14 Low distinctiveness habitats

Habitat description	Area of habitat remaining (ha)	% protected in SSSI	European Red List Categories (EUNIS code)	Notes
Cropland - Cereal crops	N/A	None	Not listed	None
Cropland - Horticulture	N/A	None	Not listed	None

Habitat description	Area of habitat remaining (ha)	% protected in SSSI	European Red List Categories (EUNIS code)	Notes
Cropland - Intensive orchards	N/A	None	Not listed	None
Cropland - Non-cereal crops	N/A	None	Not listed	None
Cropland - Temporary grass and clover leys	N/A	None	Not listed	None
Grassland - Modified grassland	N/A	Very little	Not listed	None
Grassland - Bracken	N/A	Very little	Not listed	None
Heathland and shrub - Rhododendron scrub	N/A	None	Not listed	None
Heathland and Shrub – Other sea buckthorn scrub	N/A	Very little	Not listed	None
Intertidal - Artificial features of hard structures	N/A	N/A	N/A	None
Intertidal - Artificial hard structures	N/A	N/A	N/A	None
Intertidal sediment - Artificial littoral biogenic reefs	N/A	N/A	N/A	None
Intertidal sediment - Artificial littoral coarse sediment	N/A	N/A	N/A	None
Intertidal sediment - Artificial littoral mixed sediments	N/A	N/A	N/A	None
Intertidal sediment - Artificial littoral mud	N/A	N/A	N/A	None

Habitat description	Area of habitat remaining (ha)	% protected in SSSI	European Red List Categories (EUNIS code)	Notes
Intertidal sediment - Artificial littoral muddy sand	N/A	N/A	N/A	None
Intertidal sediment - Artificial littoral sand	N/A	N/A	N/A	None
Intertidal sediment - Artificial littoral seagrass	N/A	N/A	N/A	None
Lakes - Ornamental lake or pond	N/A	None	Not listed	None
Watercourse- Culvert	N/A	None	Not listed	None
Sparsely vegetated land – Ruderal/ephemeral	N/A	None	Not listed	None
Urban - Allotments	N/A	None	Not listed	None
Urban - Bioswale	N/A	None	Not listed	None
Urban - Façade-bound green wall	N/A	None	Not listed	None
Urban - Ground based green wall	N/A	None	Not listed	None
Urban - Ground level planters	N/A	None	Not listed	None
Urban - Introduced shrub	N/A	None	Not listed	None
Urban - Rain garden	N/A	None	Not listed	None
Urban – Actively worked sand pit quarry or open cast mine	N/A	None	Not listed	This classification relates to non-vegetated working areas only. Mineral extraction sites can support a wide range of habitats, including ponds,

Habitat description	Area of habitat remaining (ha)	% protected in SSSI	European Red List Categories (EUNIS code)	Notes
				heathland, grassland, sparsely vegetated land, bare ground, flushes and springs etc. These should be classified separately.
Urban – Urban trees	N/A	None	Not listed	None
Urban - Sustainable drainage system	N/A	None	Not listed	None
Urban – Vacant or derelict land	N/A	None	Not listed	None
Bare ground	N/A	None	Not listed	None
Urban - Vegetated garden	N/A	None	Not listed	None
Woodland and forest - Other coniferous woodland	N/A	None	Not listed	None

Very low distinctiveness habitats

3.2.6.   Technical Table 3-15 show habitats which were assigned to very low distinctiveness within the metric, alongside the data which was used to inform the assessment.

Technical Table 3-15 Very low distinctiveness habitats

Habitat Description	Area of habitat remaining (ha)	% protected in SSSI	European Red List Categories (EUNIS code)
Urban - Artificial vegetated, unsealed surface	N/A	None	No
Urban – Developed land: sealed surface	N/A	None	No

Urban - Built linear features	N/A	None	No
Urban - Un-vegetated garden	N/A	None	No

Hedgerow and lines of trees

3.2.7. Hedgerows were assigned distinctiveness scores determined by the range of ecological niches likely to be present for each hedgerow type.

Technical Table 3-16 Distinctiveness results for hedgerows and lines of trees

Distinctiveness category	Metric habitat type
Very high	Species-rich native hedgerow with trees - associated with bank or ditch.
High	Species-rich native hedgerow with trees; Species-rich native hedgerow - associated with bank or ditch; or Native hedgerow with trees - associated with bank or ditch.
Medium	Species-rich native hedgerow; Native hedgerow - associated with bank or ditch; Native hedgerow with trees; Ecologically valuable line of trees; or Ecologically valuable line of trees - associated with bank or ditch.
Low	Native hedgerow; Line of trees; or Line of trees - associated with bank or ditch.
Very low	Non-native and ornamental hedgerow

4. Condition

4.1. Development of Condition Sheets

4.1.1. Condition assessment sheets set out how to carry out a condition assessment for the metric. The approach used is based on the methodology used for Common Standards Monitoring (CSM).

4.1.2. Key indicators are used to make an overall assessment of condition. However, the metric condition indicators are simpler than under CSM and it is designed to be undertaken with a single visit to a site, using visual indicators of likely wider habitat condition, whilst still being objective and measurable.

4.1.3. The metric condition assessments look at a broader set of attributes than CSM, that cover both the best and poorest examples of each habitat. Thus, a high distinctiveness habitat could be assessed as being in poor condition because of the presence of invasive non-native species, signs of damage or other impacts.

4.2. Woodland Condition Assessment

4.2.1. The Woodland condition sheet has been adapted from the Woodland Condition Survey developed by the England Woodland Biodiversity Group (EWBG). However, all information needed to complete a Woodland condition assessment is provided within the Woodland condition sheet.

4.3. River Condition Assessment

4.3.1. The assessment of river condition is based on geomorphic principles that are an extension of established citizen science surveys. The assessment, called the River Condition Assessment, is implemented in two parts:

- a desk-based reach-scale assessment to determine river type
- a site-based survey capturing channel dimensions, physical features and habitats, vegetation structural features, and human interventions to assess the condition of the river

5. Time to target condition

5.1.1. The use of multipliers to account for risks associated with habitat creation or enhancement has several benefits:

- disincentives against damaging habitats that are difficult or timely to create and enhance
- recognises that some habitats are more difficult to create or enhance than others, ensuring that interventions are appropriate and realistic
- incentivises the creation and enhancement of habitats in advance of loss, providing project flexibility by allowing activities impacting habitats to occur in advance of works
- incentivises the creation and enhancement of habitats local to the impact

5.1.2. A consequence of applying risk multipliers is that larger areas of habitat are required to offset losses or damage. This acts to:

- preserve the incentives and disincentives of risk multipliers
- account for any temporal losses of habitat function and biodiversity value
- avoid situations where mitigation fails to adequately offset lost biodiversity

5.1.3. Time to target condition is related to the condition classification, and how far restoration efforts change the condition status. The time is based on the complexity of intervention needed to raise condition and the lag time needed for the biological communities to re-establish. Values for time to target condition are fixed within the metric and vary depending on the habitat type, habitat condition and whether the habitat is created or enhanced.

5.2. Influencing Factors

5.2.1. Many factors influence how long a habitat takes to change from the point of creation or restoration to the desired end point condition. Factors are often site-dependent but can include soil nutrient status, soil types and pH, site preparation, climate and the neighbouring habitats and species matrix available to colonise the new or restored habitat.

5.2.2. The timeframe is also resource dependent. With sufficient time and money most habitats can be recreated more rapidly but allowing a more gradual process may be more beneficial to wildlife in the longer term.

5.2.3. For the purposes of the metric, average time estimates have been used, accepting that there will be variation from this central estimation. For

example, some sites will take longer, where conditions are more nutrient-enriched or higher altitude or north-facing.

5.2.4.   Estimates of the average time to target condition were largely expert-driven and build upon the considerations that shaped judgements of the difficulty to create or restore a habitat. They were additionally informed by field experience, industry case studies and a body of practical experience.

5.3. The discounting rate

5.3.1.   The times to target condition have a 'discounting rate' applied to generate the multiplier value used in the metric. 'Discounting' over time is an economic technique used to compare costs and benefits that occur in different time periods based around the principle that, generally, people prefer to receive goods and services now rather than later.

5.3.2.   Where time discounting is used, a standard discount rate is typically applied. The metric uses 3.5%, which is the value recommended in the Treasury Green Book. Technical Table 5-1 shows the multipliers for a number of time periods between one and 30 years, using a discount rate of 3.5%.

5.3.3.   The metric assumes a quality 'jump' from the baseline condition to the target condition once the relevant number of years have elapsed. Metric calculations do not consider incremental increases in quality of the habitat and do not need to be re-calculated annually.

5.3.4.   The metric sets a limit on the discount rate used for temporal risk. This aligns with Green Book values for 30+ years and the maximum time frame that most projects and plans can realistically plan ahead (beyond which the Green Book multiplier reduces in small increments).

Technical Table 5-1 Time to target condition discount multipliers

Time (years)	Multiplier	Time (years)	Multiplier	Time (years)	Multiplier
0	1.000	-	-	-	-
1	0.965	11	0.676	21	0.473
2	0.931	12	0.652	22	0.457
3	0.899	13	0.629	23	0.441
4	0.867	14	0.607	24	0.425

Time (years)	Multiplier	Time (years)	Multiplier	Time (years)	Multiplier
5	0.837	**15**	0.586	**25**	0.410
6	0.808	**16**	0.566	**26**	0.396
7	0.779	**17**	0.546	**27**	0.382
8	0.752	**18**	0.527	**28**	0.369
9	0.726	**19**	0.508	**29**	0.356
10	0.700	**20**	0.490	**30**	0.343
-	-	-	-	**30+**	0.320

The habitat created or enhanced in advance function

5.3.5.   This function recognises the reduced delivery risk and reduces the time to target condition by the number of years since habitat creation or enhancement began. An example of how this works is set out in Technical Table 5-2.

5.3.6.   The metric automatically applies 1 of 3 multipliers, based on the number of years habitat is enhanced or created in advance:

- difficulty of creation multiplier: years are between one and the time taken to reach poor condition (which differs for each habitat)
- difficulty of enhancement multiplier: years are equal to or greater than the time taken to reach poor condition
- neutral multipliers: years reaches or exceeds the time taken to create the desired habitat type and target condition

Technical Table 5-2 Accounting for temporal risk (works in advance)

Habitat	Target Condition	'Standard' time to target condition (years)	Time habitat created in advance (years)	Residual TTC	Time to poor condition reached	Difficulty multiplier applied
Lowland meadow	Good	15	2	13	No (5 years)	Creation multiplier
Modified grassland	Good	7	2	5	Yes (1 year)	Enhancement multiplier
Artificial littoral coarse sediment	Moderate	1	2	0	Yes (1 year)	None
Lowland heathland	Good	30+	5	25	No (10 years)	Creation multiplier

The delay in starting habitat creation or enhancement function

5.3.7.   This function accounts for delays in habitat works by increasing the time to target condition value proportionate to length of delay. Technical Table 5-2 and Technical Table 5-3 provide examples of how time to target condition and difficulty multipliers differ between a range of scenarios where habitat creation is delayed. The table uses four different habitat types as examples.

5.3.8.   Note that if the length of delay combined with the 'standard' time to target condition exceeds 30 years, then the 30+ years multiplier will be applied.

Technical Table 5-3 Accounting for temporal risk (delayed works)

Example habitat	Target Condition	'Standard' time to target condition (years)	Time habitat creation delayed (years)	Combined time to target condition applied by the metric	Difficulty of creation multiplier applied
Modified grassland	Moderate	4	5	9	Yes
Other broadleaved woodland	Moderate	15	5	20	Yes
Other broadleaved woodland	Good	30+	5	30+	Yes
Upland calcareous grassland	Good	25	10	30+	Yes

6. Habitat creation and enhancement difficulty

6.1. Methodology

6.1.1. The metric recognises and attempts to account for the uncertainty and risk of creating and improving biodiversity unit value. The metric applies risk multipliers to account for this. The difficulty of habitat creation and enhancement are treated as a risk in the metric.

6.1.2. There are four possible risk categories for the difficulty of creation or enhancement of each habitat (Low, Medium, High and Very High). Here we:

- set out factors that potentially influence the risk (degree of difficulty) in creating or enhancing each habitat
- explain the method used to assign difficulty categories to each habitat type within the metric

6.1.3. The development of habitat restoration techniques in applied ecology has grown significantly in recent decades. Habitat types that were considered very difficult to restore are now better understood and knowledge and experience of successful restoration techniques is increasing. Nevertheless, it is important to recognise that it is impossible to exactly replicate habitat losses because of the unique physical and ecological features of every site. Restoration is nearly always more effective on well-established semi-natural habitats, even when in a severely degraded state, than on sites without the historical habitat underpinning.

6.1.4. Using the factors described below and with expert input and reference to Entec (2011)[5], Entec and Amec (2013)[6], Amec (2016)[7], each terrestrial habitat was assessed to determine the difficulty of creating or enhancing it. The difficulty category options were very high, high, medium and low.

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[5] Entec (2011) Developing tools to evaluate the consequences for biodiversity of options for coastal zone adaptation to climate change - WC0726

[6] Entec and Amec (2013) *Ease of Habitat Transformation and Restoration* Report for Natural England

[7] AMEC (2016) Developing Datasets for Biodiversity 2020

Intertidal habitats methodology

6.1.5.   A scoring matrix was used for intertidal habitats (Technical Table 6-1) In most cases, a score of 1 to 3 was allocated for each attribute. For a small number of habitats however, it is considered impossible to recreate so they have been assigned a difficulty of creation of 'N/A'. For others a Very High difficulty of creation (score of 4) has been assigned.

6.1.6.   All intertidal habitats are understood to be very sensitive to climate change and associated pressures (including sea-level rise, acidification and increased wave energy), and require good water quality, so neither of these two parameters were included in the calculation of the final difficulty score. This is not to dismiss the importance of those parameters but to allow for an assessment that includes a degree of variability, so that the remaining factors have greater significance in the overall score.

6.1.7.   The evaluation of difficulty of creation and restoration for each intertidal habitat is set out in Technical Table 6-2.

6.1.8.   For habitat creation:

   - score between 7 and 11 will be low difficulty
   - score between 12 and 15 will be medium difficulty
   - score between 16 and 21 will be high difficulty

6.1.9.   It is important to note that the scoring habitat creation takes a precautionary line, as the creation of habitats in the intertidal is largely untested.,

6.1.10. Technical difficulty of creation is attributed a value 'N/A' where it is considered to be impossible or has never been achieved. This results in an automatic overall difficultly of creation of 'Very High'.

6.1.11. For habitat restoration and enhancement:

   - score between 7 and 11 will be low difficulty
   - score between 12 and 16 will be medium difficulty
   - score between 17 and 21 will be high difficulty

6.2. Influencing Factors

Hydrological requirements

6.2.1.   All terrestrial habitats are influenced by water availability and where the water table is found at different times of the year. Some habitats are tolerant of variable water levels, while others need exact conditions. Wetland habitats need water at surface with little drying out in the summer months.

6.2.2.   Intertidal habitats are highly dynamic, subject to daily movement of water of varying salinities. Some intertidal habitats (and their associated species) are tolerant of variable water levels with longer periods of tidal exposure, whilst some require more stable conditions with shorter periods of exposure. In saltmarsh habitats, for example, elevation and slope lead to variable inundation and exposure times, with creeks and channels providing areas with longer phases of submersion.

6.2.3.   When habitats have specific hydrological requirements, the difficulty of creation or restoration increases. In addition, the ability to initiate restoration of suitable hydrological requirements may depend on complex engineering projects.

Seed source or biological material requirements

6.2.4.   The availability of plant material or organisms that comprise a habitat will restrict the success of restoration or creation and the speed at which it occurs. Where areas do not need intervention and natural succession can occur these will be the easiest to restore.

6.2.5.   When complex seed germination and establishment techniques are required, we have given this the highest difficulty score. Many habitats such as mussel beds, oyster reefs, or seagrass beds require a supply of propagules (seeds, spats, and or larvae) to exist.

6.2.6.   Habitats that do not need human intervention and where natural succession can occur once the right conditions are in place, will have greater chance of successful restoration and are given a low score. Where initial seeding or maintenance of larval supply is needed, a 'medium' score is applied. A high score was applied to those habitats that will require complex seeding and establishment techniques.

Low soil nutrient status (Terrestrial habitats only)

6.2.7.   The nutrient levels in soils or water determine the productivity of plants and how dominant particular species become in a habitat. In Britain there are few extremes of pH and climate, so soil fertility will strongly determine a plant's productivity. Consequently, soil nutrients, along with soil depth and hydrology, will be a main driver in community composition of the habitat being created.

6.2.8.   The low nutrient status of a site's soils, (for example nitrogen and phosphate), is a key factor in achieving plant species diversity and potential to create some habitats. All Priority Habitat types require a low nutrient soil status to prosper, the plants within them would be outcompeted by faster growing more competitive plants in higher nutrient soils. These competitive plants are generally less important for wildlife. If a species-rich plant community is the desired objective, the nutrient levels must be low as this will constrain competitive species. Phosphorus is the key nutrient controlling this; nitrogen being less critical provided phosphorus levels are low.

Ongoing management requirements

6.2.9.   When little or no ongoing management is required, it is expected that habitat restoration and creation will be easier. Some habitats will need regular management, through activities such as hay cutting and grazing etc, and this is likely to relate to the complexity of the habitat. Ongoing management practices allow the continued existence of high quality, biodiverse habitats on the site.

Water quality needs

6.2.10. Water quality affects sites and the quality of any habitat within them. When water quality is poor species composition and diversity can be compromised, since many habitats and species are reliant on a good water quality, others might be more tolerant and can exist in areas of poorer water quality.

6.2.11. A direct relationship exists between good water quality and greater biodiversity.

Trophic status conditions (Aquatic habitats only)

6.2.12. Overall fertility, or trophic status, is used to describe bodies of water based on the level of biological activity they sustain, which can be either:

- oligotrophic – the lowest level of biological productivity and are nutrient poor
- mesotrophic – a moderate level of biological activity, with moderate nutrient input
- eutrophic – the highest level of biological activity, with high levels of nutrient input

6.2.13. The categories above are used to describe the overall state of fertility or 'trophic status' of aquatic ecosystems. Nutrients such as nitrogen and phosphorus tend to be limiting resources in standing water bodies, intertidal habitats and for many wetland habitats, so increased concentrations tend to result in increased algal and plant growth, favouring the more competitive/vigorous plants.

6.2.14. The restoration or creation of low nutrient habitats (in other words those that are mesotrophic or oligotrophic) will be more complex, due to existing issues of water quality and nutrient enrichment from anthropogenic sources.

Salinity regime (Intertidal habitats only)

6.2.15. Intertidal habitats extend from estuaries to open coast. All intertidal habitats are able to withstand some degree of changes in salinity, however, species distribution can be largely dominated by salinity ranges. For example, estuaries and coastal lagoons are primarily controlled by salinity and topographical features[8].

6.2.16. The modification of salinity by changes to the hydro physical regime is likely to lead to changes in species' distributions, especially the degree of landward penetration of marine organisms as well as the species composition of coastal lagoons. Habitats, and their associated species, that occur in a range of salinities will be easier to recreate or restore.

Elevation and aspect (Intertidal habitats only)

6.2.17. Elevation is indirectly related to duration and depth of tidal inundation and usually directly related with energy levels and drainage. Inclination and aspect can play important roles in determining the communities present

[8] McClusky, D. S. (1989) *The Estuarine Ecosystem*. 2nd edition. Blackie and Son Ltd, UK.

through species' tolerance to the degree of exposure to sunlight and drying conditions in a habitat. For example, on rocky shores, overhangs and crevices shaded from the sun will create damper conditions compared to those directly exposed to the sun. The more restricted the requirement of a habitat is, in terms of the elevation and aspect, the more difficult it will be to restore or create.

Technical Table 6-1 Scores applies to attributes for habitat creation, restoration or enhancements of intertidal habitats

SCORE	Low	Medium	High	Very high
Score Value	1	2	3	4
Technical difficulty of enhancement, restoration or creation	Abandonment	Limited preparation	Minor engineering	Significant engineering
Hydrological Requirements	Basic	Moderate	Complex	N/A
Salinity Regime	Wide range	Medium range	Specific	N/A
Elevation and aspect	Wide range	Medium range	Specific	N/A
Seed source and biological material requirements	Natural succession	Initial seeding	Extensive planting and seeding	N/A
Trophic status conditions	Eutrophic (Abundant nutrients available)	Mesotrophic (Medium amounts of nutrients available)	Oligotrophic (Very little nutrients available)	N/A
Ongoing management requirements	Low intensity	Ongoing management requirements	High intensity	N/A

Technical Table 6-2 Results for the difficulty of creating and restoring intertidal habitats

Metric habitat type	Difficulty category: Creation	Overall score: Creation	Difficulty category: Enhance	Overall score: Enhance	Technical difficulty of creation score	Technical difficulty of enhancement score	Hydrological requirements	Salinity regime	Elevation and aspect	Biological material requirements score	Trophic Status	Ongoing management
Rocky shore - High energy littoral rock	High	16	Med	14	4	2	2	2	3	1	2	2
Rocky shore - High energy littoral rock - on peat, clay or chalk	Very high	12	Med	14	N/A	2	2	2	3	1	2	2
Rocky shore - Moderate energy littoral rock	High	16	Med	14	4	2	2	2	3	1	2	2
Rocky shore - Moderate energy littoral rock - on peat, clay or chalk	Very high	12	Med	14	N/A	2	2	2	3	1	2	2
Rocky shore - Low energy littoral rock	High	16	Med	14	4	2	2	2	3	1	2	2
Rocky shore - Low energy littoral rock - on peat, clay or chalk	Very High	12	Med	12	N/A	2	2	2	3	1	2	2
Rocky shore - Features of littoral rock	High	16	Med	15	3	2	2	3	3	1	2	2
Rocky shore - Features of littoral rock - on peat, clay or chalk	Very High	13	Med	15	N/A	2	2	3	3	1	2	2

Metric habitat type	Difficulty category: Creation	Overall score: Creation	Difficulty category: Enhance	Overall score: Enhance	Technical difficulty of creation score	Technical difficulty of enhancement score	Hydrological requirements	Salinity regime	Elevation and aspect	Biological material requirements score	Trophic Status	Ongoing management
Intertidal sediment - Littoral coarse sediment	Med	15	Med	14	3	2	2	2	3	1	2	2
Intertidal sediment - Littoral sand and muddy sand	Med	15	Med	14	3	2	2	2	3	1	2	2
Intertidal sediment - Littoral sand	Med	15	Med	14	3	2	2	2	3	1	2	2
Intertidal sediment - Muddy sand	High	17	Med	15	4	2	2	2	3	1	2	3
Intertidal sediment - Littoral mud	High	16	Med	14	4	2	2	2	3	1	1	3
Intertidal sediment - Littoral mixed sediments	High	17	Med	15	4	2	2	2	3	1	2	3
Coastal Saltmarsh -saltmarshes and saline reedbeds	High	17	Med	15	4	2	3	2	3	1	2	2
Intertidal sediment - Littoral seagrass	High	20	High	19	3	2	3	3	3	3	3	2
Intertidal sediment - Littoral seagrass - on peat, clay or chalk	Very High	17	High	19	N/A	2	3	3	3	3	3	2
Intertidal sediment - Littoral biogenic reefs	Med	15	Med	15	2	2	2	2	3	2	2	2

Metric habitat type	Difficulty category: Creation	Overall score: Creation	Difficulty category: Enhance	Overall score: Enhance	Technical difficulty of creation score	Technical difficulty of enhancement score	Hydrological requirements	Salinity regime	Elevation and aspect	Biological material requirements score	Trophic Status	Ongoing management
Intertidal sediment - Littoral biogenic reefs - on peat, clay or chalk	Very High	15	Med	15	N/A	2	2	2	3	2	2	2
Intertidal sediment - Features of littoral sediment	High	16	Med	14	4	2	2	2	3	1	2	2
Intertidal Artificial hard structures with integrated greening of grey infrastructure (IGGI)	Med	13	Med	12	3	2	2	1	3	1	2	1
Intertidal artificial hard structures	Med	13	Med	12	3	2	2	1	3	1	2	1
Intertidal artificial features of hard structures	Med	14	Med	13	3	2	2	2	3	1	2	1
Coastal lagoons - Coastal lagoons	Med	13	Med	13	3	3	2	2	2	1	-	2

7. Metric equations and functions

7.1.1. **BOX TS 7-1** shows the formulae applied in the metric to automatically calculate biodiversity unit values for area habitat biodiversity units (AHBU).

BOX TS 7-1: Calculating area units (AHBUs)

Equation 1: Pre-impact (t_0) biodiversity units for baseline

$$t_0 \ Baseline \ AHBU = (A^{t0} \times Q_D^{t0} \times Q_C^{t0}) \times (Q_{SS}^{t0})$$

Equation 2: Post-impact (t_1) biodiversity units for habitat creation

$$t_1 \ Creation \ AHBU = \{[A^{t1} \times Q_D^{t1} \times Q_C^{t1}] \times [R_D \times R_T] \times [Q_{SS}^{t1}]\}$$

Equation 3: Post-impact (t_1) biodiversity units for enhancement

$$t_1 \ Enhancement \ AHBU = \big[[([\{A^{t1} \times Q_D^{t1} \times Q_C^{t1}\} - \{A^{t0} \times Q_D^{t0} \times Q_C^{t0}\}] \times \{R_D \times R_T\}) + \{A^{t0} \times Q_D^{t0} \times Q_C^{t0}\}] \times \{Q_{SS}^{t1}\}\big]$$

Equation 4: Area habitat biodiversity unit change (on-site)

$$Onsite \ AHBU \ Change = (\{t1 \ Enhancement \ AHBU + t1 \ Creation \ AHBU + t1 \ Retained \ Habitat \ AHBU\} - \{t0 \ Baseline \ AHBU\})$$

Equation 5: Area habitat biodiversity unit change (off-site)

$$Offsite \ AHBU \ Change = (\{t1 \ Offsite \ Enhancement \ AHBU + t1 \ Offsite \ Creation \ AHBU + t1 \ Offsite \ Retained \ Habitat \ AHBU\} - \{t0 \ Baseline \ AHBU\}) \times R_{OS}$$

Equation 6: Total area habitat biodiversity unit change (total)

$$Total \ AHBU \ Change = AHBU \ Change + Offsite \ AHBU \ Change$$

A	Area of habitat (hectares)	R_D	Difficulty (a risk factor)
Q_C	Condition (a quality measure)	R_T	Time to target condition (a risk factor)
Q_D	Distinctiveness (a quality measure)	R_{OS}	Spatial risk (off-site risk factor)
Q_{SS}	Strategic significance (a quality measure)	$t0$	Pre-intervention (baseline)
		$t1$	Post-intervention

7.1.2. **BOX TS 7-2** shows the formulae applied in the metric to automatically calculate biodiversity unit values for hedgerows and lines of trees (HBU).

BOX TS 7-22: Calculating hedgerow units (HBU)

Equation 1: Existing (pre-intervention) (T_0) biodiversity value

$$T_0\ Baseline\ HBU = \left(L^{t0} \times Q_D^{t0} \times Q_C^{t0}\right) \times \left(Q_{SS}^{t0}\right)$$

Equation 2: Post-intervention (T_1) biodiversity units for hedgerow creation

$$T_1\ Creation\ HBU = [L^{t1} \times Q_D^{t1} \times Q_C^{t1}] \times [R_D^{t1} \times R_T^{t1}] \times Q_{SS}^{t1}$$

Equation 3: Post-intervention (T_1) biodiversity units for hedgerow enhancement

$$
\begin{aligned}
T_1 Enhancement\ HBU \\
= \{[([\{L^{t1} \times Q_D^{t1} \times Q_C^{t1}\} - \{L^{t0} \times Q_D^{t0} \times Q_C^{t0}\}] \times \{R_D \times R_T\}) \\
+ \{L^{t0} \times Q_D^{t0} \times Q_C^{t0}\}] \times Q_{SS}^{t1}\}
\end{aligned}
$$

Equation 4: Hedgerow unit change (on-site)

Onsite HBU Change = ({t1 Enhancement HBU + t1 Creation HBU + t1 Retained HBU} - {t0 Baseline HBU})

Equation 5: Hedgerow unit change (off-site)

Offsite HBU Change = ({t1 Offsite Enhancement HBU + t1 Offsite Creation HBU + t1 Offsite Retained HBU} - {t0 Baseline HBU}) × Ros

Equation 6: Hedgerow unit change (total)

Total HBU Change = HBU Change + Offsite HBU Change

L	Length of hedgerow (kilometres)	R_T	Time to target condition (a risk factor)
Q_C	Condition (a quality measure)	t0	Before intervention
Q_D	Distinctiveness (a quality measure)	t1	Post intervention
Q_{SS}	Strategic significance (a quality measure)	R_{OS}	Off-site (spatial) risk
R_D	Difficulty (a risk factor)		

7.1.3. **BOX TS 7-3** shows the formulae applied in the metric to automatically calculate biodiversity unit values for watercourse biodiversity units (WBU),

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BOX TS 7-3: Calculating watercourse units (WBU)

Equation 1: Existing (pre-intervention) (T0) biodiversity units

$$T_0\ Baseline\ WBU = (L^{t0} \times Q_D^{t0} \times Q_C^{t0} \times Q_{SS}^{t0}) \times R_{RE}^{t0} \times R_{WE}^{t0}$$

Equation 2: Post-intervention (T1) biodiversity units for river or stream creation

$$T_1\ Creation\ WBU = [L^{t1} \times Q_D^{t1} \times Q_C^{t1} \times Q_{SS}^{t1}] \times [R_D^{t1} \times R_T^{t1}] \times [R_{RE}^{t1} \times R_{WE}^{t1}]$$

Equation 3: Post-intervention (T1) biodiversity units for river or stream enhancement

$$T_1 Enhancement\ WBU$$
$$= \{[([\{L^{t1} \times Q_D^{t1} \times Q_C^{t1}\} - \{L^{t0} \times Q_D^{t0} \times Q_C^{t0}\}] \times \{R_D \times R_T\})$$
$$+ \{L^{t0} \times Q_D^{t0} \times Q_C^{t0}\}] \times Q_{SS}^{t1}\} \times [R_{RE}^{t1} \times R_{WE}^{t1}]$$

Equation 4: Watercourse unit change (on-site)

Onsite WBU Change = ({t1 Enhancement WBU + t1 Creation WBU + t1 Retained WBU} - {t0 Baseline WBU})

Equation 5: Watercourse unit change (off-site)

Offsite WBU Change = ({t1 Offsite Enhancement WBU + t1 Offsite Creation WBU + t1 Offsite Retained WBU} - {t0 Baseline WBU}) × Ros

Equation 6: Watercourse unit change (total)

Total WBU Change = WBU Change + Offsite WBU Change

L	Length of watercourse (kilometres)	R$_T$	Time to target condition (a risk factor)
Q$_C$	Condition (a quality measure)	t0	Before intervention
Q$_D$	Distinctiveness (a quality measure)	t1	Post intervention
Q$_{SS}$	Strategic significance (a quality measure)	R$_{OS}$	Spatial (off-site) risk
R$_D$	Difficulty of creation or enhancement (a risk factor)	R$_{RE}$	Riparian encroachment unit modifier
		R$_{WE}$	Watercourse encroachment unit modifier

8. Technical habitat data

8.1.1. Metric data tables are presented in the figures below. These are also included within the metric calculation tool

Data Table 1: Distinctiveness scores and difficulty of creation and enhancement multipliers

Habitat type	Distinctiveness Category	Distinctiveness Score	Trading notes	Technical Difficulty Creation	Multiplier	Technical Difficulty Enhancement	Multiplier
Cropland - Arable field margins cultivated annually	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Low	1	Low	1
Cropland - Arable field margins game bird mix	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Low	1	Low	1
Cropland - Arable field margins pollen and nectar	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Low	1	Low	1
Cropland - Arable field margins tussocky	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Low	1	Low	1
Cropland - Cereal crops	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Cropland - Winter stubble	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Cropland - Horticulture	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Cropland - Intensive orchards	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Cropland - Non-cereal crops	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Cropland - Temporary grass and clover leys	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Grassland - Traditional orchards	High	6	Same habitat required =	Low	1	Medium	0.67
Grassland - Bracken	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Grassland - Floodplain wetland mosaic and CFGM	High	6	Same habitat required =	High	0.33	Medium	0.67
Grassland - Lowland calcareous grassland	High	6	Same habitat required =	High	0.33	High	0.33
Grassland - Lowland dry acid grassland	V.High	8	Bespoke compensation likely to be required �	High	0.33	High	0.33
Grassland - Lowland meadows	V.High	8	Bespoke compensation likely to be required ✘	High	0.33	Medium	0.67
Grassland - Modified grassland	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Grassland - Other lowland acid grassland	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Low	1	Low	1
Grassland - Other neutral grassland	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Low	1	Low	1
Grassland - Tall herb communities (H6430)	High	6	Same habitat required =	High	0.33	High	0.33
Grassland - Upland acid grassland	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Low	1	Low	1
Grassland - Upland calcareous grassland	High	6	Same habitat required =	High	0.33	High	0.33
Grassland - Upland hay meadows	V.High	8	Bespoke compensation likely to be required ✘	High	0.33	Medium	0.67
Heathland and shrub - Blackthorn scrub	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Low	1	Low	1
Heathland and shrub - Bramble scrub	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Low	1	Low	1
Heathland and shrub - Gorse scrub	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Low	1	Low	1
Heathland and shrub - Hawthorn scrub	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Low	1	Low	1
Heathland and shrub - Hazel scrub	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Medium	0.67	Low	1
Heathland and shrub - Lowland heathland	High	6	Same habitat required =	High	0.33	Medium	0.67
Heathland and shrub - Mixed scrub	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Low	1	Low	1
Heathland and shrub - Mountain heaths and willow scrub	V.High	8	Bespoke compensation likely to be required ✘	High	0.33	High	0.33
Heathland and shrub - Rhododendron scrub	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Heathland and shrub - Dunes with sea buckthorn (H2160)	High	6	Same habitat required =	Medium	0.67	Low	1
Heathland and shrub - Other sea buckthorn scrub	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Heathland and shrub - Willow scrub	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Medium	0.67	Low	1
Heathland and shrub - Upland heathland	High	6	Same habitat required =	Medium	0.67	Medium	0.67
Lakes - Aquifer fed naturally fluctuating water bodies	V.High	8	Bespoke compensation likely to be required ✘	Very High	0.1	High	0.33
Lakes - Ornamental lake or pond	Low	2	Same distinctiveness or better habitat required ≥	Low	1	High	0.33
Lakes - High alkalinity lakes	High	6	Same habitat required =	High	0.33	High	0.33
Lakes - Low alkalinity lakes	High	6	Same habitat required =	High	0.33	Medium	0.67
Lakes - Marl lakes	High	6	Same habitat required =	High	0.33	High	0.33
Lakes - Moderate alkalinity lakes	High	6	Same habitat required =	High	0.33	High	0.33
Lakes - Peat lakes	High	6	Same habitat required =	High	0.33	High	0.33
Lakes - Ponds (priority habitat)	High	6	Same habitat required =	Medium	0.67	Medium	0.67
Lakes - Ponds (non-priority habitat)	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Low	1	Medium	0.67
Lakes - Reservoirs	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Medium	0.67	Medium	0.67
Lakes - Temporary lakes ponds and pools (H3170)	High	6	Same habitat required =	Medium	0.67	Medium	0.67
Sparsely vegetated land - Calaminarian grasslands	V.High	8	Bespoke compensation likely to be required ✘	Very High	0.1	Medium	0.67
Sparsely vegetated land - Coastal sand dunes	High	6	Same habitat required =	Very High	0.1	Medium	0.67
Sparsely vegetated land - Coastal vegetated shingle	High	6	Same habitat required =	Very High	0.1	Medium	0.67
Sparsely vegetated land - Ruderal/Ephemeral	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Medium	0.67
Sparsely vegetated land - Tall forbs	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Medium	0.67
Sparsely vegetated land - Inland rock outcrop and scree habitats	High	6	Same habitat required =	High	0.33	Low	1
Sparsely vegetated land - Limestone pavement	V.High	8	Bespoke compensation likely to be required ✘	Very High	0.1	Medium	0.67
Sparsely vegetated land - Maritime cliff and slopes	High	6	Same habitat required =	High	0.33	Medium	0.67
Sparsely vegetated land - Other inland rock and scree	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Medium	0.67	Medium	0.67
Urban - Allotments	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Urban - Artificial unvegetated, unsealed surface	V.Low	0	Compensation Not Required	Low	1	Low	1
Urban - Bioswale	Low	2	Same distinctiveness or better habitat required ≥	Medium	0.67	Low	1
Urban - Intensive green roof	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Urban - Built linear features	V.Low	0	Compensation Not Required	Low	1	Low	1
Urban - Cemeteries and churchyards	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Medium	0.67	Low	1
Urban - Developed land; sealed surface	V.Low	0	Compensation Not Required	Low	1	Medium	0.67
Urban - Other green roof	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Urban - Facade-bound green wall	Low	2	Same distinctiveness or better habitat required ≥	Medium	0.67	Medium	0.67
Urban - Ground based green wall	Low	2	Same distinctiveness or better habitat required ≥	Medium	0.67	Medium	0.67
Urban - Ground level planters	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Urban - Biodiverse green roof	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Medium	0.67	Medium	0.67
Urban - Introduced shrub	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Urban - Open mosaic habitats on previously developed land	High	6	Same habitat required =	Medium	0.67	Medium	0.67
Urban - Rain garden	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Urban - Actively worked sand pit quarry or open cast mine	Low	2	Same distinctiveness or better habitat required ≥	Medium	0.67	Medium	0.67
Urban - Sustainable drainage system	Low	2	Same distinctiveness or better habitat required ≥	Medium	0.67	Medium	0.67
Urban - Unvegetated garden	V.Low	0	Compensation Not Required	Low	1	Low	1
Urban - Vacant or derelict land	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Urban - Bare ground	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Urban - Vegetated garden	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Individual trees - Urban tree	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Low	1	Low	1
Individual trees - Rural tree	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Low	1	Low	1
Wetland - Blanket bog	V.High	8	Bespoke compensation likely to be required ✘	Very High	0.1	High	0.33

Habitat	Distinctiveness	Score	Trading rule				
Wetland - Depressions on peat substrates (H7150)	V.High	8	Bespoke compensation likely to be required ✕	Very High	0.1	High	0.33
Wetland - Fens (upland and lowland)	V.High	8	Bespoke compensation likely to be required ✕	High	0.33	High	0.33
Wetland - Lowland raised bog	V.High	8	Bespoke compensation likely to be required ✕	Very High	0.1	High	0.33
Wetland - Oceanic valley mire[1] (D2.1)	V.High	8	Bespoke compensation likely to be required ✕	Very High	0.1	High	0.33
Wetland - Purple moor grass and rush pastures	V.High	8	Bespoke compensation likely to be required ✕	High	0.33	High	0.33
Wetland - Reedbeds	High	6	Same habitat required =	Medium	0.67	Medium	0.67
Wetland - Transition mires and quaking bogs (H7140)	V.High	8	Bespoke compensation likely to be required ✕	Very High	0.1	High	0.33
Woodland and forest - Felled	High	6	Same habitat required =	High	0.33	Low	1
Woodland and forest - Lowland beech and yew woodland	High	6	Same habitat required =	High	0.33	High	0.33
Woodland and forest - Lowland mixed deciduous woodland	High	6	Same habitat required =	High	0.33	High	0.33
Woodland and forest - Native pine woodlands	High	6	Same habitat required =	High	0.33	High	0.33
Woodland and forest - Other coniferous woodland	Low	2	Same distinctiveness or better habitat required ≥	Low	1	Low	1
Woodland and forest - Other Scot's pine woodland	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Medium	0.67	Medium	0.67
Woodland and forest - Other woodland; broadleaved	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Low	1	Low	1
Woodland and forest - Other woodland; mixed	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Low	1	Low	1
Woodland and forest - Upland birchwoods	High	6	Same habitat required =	Medium	0.67	Medium	0.67
Woodland and forest - Upland mixed ashwoods	High	6	Same habitat required =	High	0.33	High	0.33
Woodland and forest - Upland oakwood	High	6	Same habitat required =	High	0.33	High	0.33
Woodland and forest - Wet woodland	High	6	Same habitat required =	Medium	0.67	Medium	0.67
Woodland and forest - Wood-pasture and parkland	V.High	8	Bespoke compensation likely to be required ✕	Very High	0.1	High	0.33
Coastal lagoons - Coastal lagoons	High	6	Same habitat required =	Medium	0.67	Medium	0.67
Rocky shore - High energy littoral rock	High	6	Same habitat required =	High	0.33	Medium	0.67
Rocky shore - High energy littoral rock - on peat, clay or chalk	V.High	8	Bespoke compensation likely to be required ✕	Very High	0.1	Medium	0.67
Rocky shore - Moderate energy littoral rock	High	6	Same habitat required =	High	0.33	Medium	0.67
Rocky shore - Moderate energy littoral rock - on peat, clay or chalk	V.High	8	Bespoke compensation likely to be required ✕	Very High	0.1	Medium	0.67
Rocky shore - Low energy littoral rock	High	6	Same habitat required =	High	0.33	Medium	0.67
Rocky shore - Low energy littoral rock - on peat, clay or chalk	V.High	8	Bespoke compensation likely to be required ✕	Very High	0.1	Medium	0.67
Rocky shore - Features of littoral rock	High	6	Same habitat required =	High	0.33	Medium	0.67
Rocky shore - Features of littoral rock - on peat, clay or chalk	V.High	8	Bespoke compensation likely to be required ✕	Very High	0.1	Medium	0.67
Coastal saltmarsh - Saltmarshes and saline reedbeds	High	6	Same habitat required =	High	0.33	Medium	0.67
Coastal saltmarsh - Artificial saltmarshes and saline reedbeds	Low	2	Same distinctiveness or better habitat required ≥	High	0.33	Medium	0.67
Intertidal sediment - Littoral coarse sediment	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Medium	0.67	Medium	0.67
Intertidal sediment - Littoral mud	High	6	Same habitat required =	High	0.33	Medium	0.67
Intertidal sediment - Littoral mixed sediments	High	6	Same habitat required =	High	0.33	Medium	0.67
Intertidal sediment - Littoral seagrass	High	6	Same habitat required =	High	0.33	High	0.33
Intertidal sediment - Littoral seagrass on peat, clay or chalk	V.High	8	Bespoke compensation likely to be required ✕	Very High	0.1	High	0.33
Intertidal sediment - Littoral biogenic reefs - Mussels	High	6	Same habitat required =	High	0.33	Medium	0.67
Intertidal sediment - Littoral biogenic reefs - Sabellaria	High	6	Same habitat required =	High	0.33	Medium	0.67
Intertidal sediment - Features of littoral sediment	High	6	Same habitat required =	High	0.33	Medium	0.67
Intertidal sediment - Artificial littoral coarse sediment	Low	2	Same distinctiveness or better habitat required ≥	Medium	0.67	Medium	0.67
Intertidal sediment - Artificial littoral mud	Low	2	Same distinctiveness or better habitat required ≥	High	0.33	Medium	0.67
Intertidal sediment - Artificial littoral sand	Low	2	Same distinctiveness or better habitat required ≥	Medium	0.67	Medium	0.67
Intertidal sediment - Artificial littoral muddy sand	Low	2	Same distinctiveness or better habitat required ≥	High	0.33	Medium	0.67
Intertidal sediment - Artificial littoral mixed sediments	Low	2	Same distinctiveness or better habitat required ≥	High	0.33	Medium	0.67
Intertidal sediment - Artificial littoral seagrass	Low	2	Same distinctiveness or better habitat required ≥	High	0.33	High	0.33
Intertidal sediment - Artificial littoral biogenic reefs	Low	2	Same distinctiveness or better habitat required ≥	High	0.33	Medium	0.67
Intertidal sediment - Littoral sand	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Medium	0.67	Medium	0.67
Intertidal sediment - Littoral muddy sand	High	6	Same habitat required =	High	0.33	Medium	0.67
Intertidal hard structures - Artificial hard structures	Low	2	Same distinctiveness or better habitat required ≥	Medium	0.67	Medium	0.67
Intertidal hard structures - Artificial features of hard structures	Low	2	Same distinctiveness or better habitat required ≥	Medium	0.67	Medium	0.67
Intertidal hard structures - Artificial hard structures with integrated greening of grey infrastructure (IGGI)	Medium	4	Same broad habitat or a higher distinctiveness habitat required (≥)	Medium	0.67	Medium	0.67
Watercourse footprint - Watercourse footprint	V.low	0	Compensation Not Required	Medium	0.67	Very High	0.1

Data Table 2: Habitat condition score matrix

Habitat Description	Condition						
	Good	Fairly Good	Moderate	Fairly Poor	Poor	Condition Assessment N/A	N/A - Other
Cropland - Arable field margins cultivated annually	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Cropland - Arable field margins game bird mix	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Cropland - Arable field margins pollen and nectar	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Cropland - Arable field margins tussocky	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Cropland - Cereal crops	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Cropland - Winter stubble	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Cropland - Horticulture	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Cropland - Intensive orchards	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Cropland - Non-cereal crops	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Cropland - Temporary grass and clover leys	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Grassland - Traditional orchards	3	2.5	2	1.5	1	Not Possible	Not Possible
Grassland - Bracken	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Grassland - Floodplain wetland mosaic and CFGM	3	2.5	2	1.5	1	Not Possible	Not Possible
Grassland - Lowland calcareous grassland	3	2.5	2	1.5	1	Not Possible	Not Possible
Grassland - Lowland dry acid grassland	3	2.5	2	1.5	1	Not Possible	Not Possible
Grassland - Lowland meadows	3	2.5	2	1.5	1	Not Possible	Not Possible
Grassland - Modified grassland	3	2.5	2	1.5	1	Not Possible	Not Possible
Grassland - Other lowland acid grassland	3	2.5	2	1.5	1	Not Possible	Not Possible
Grassland - Other neutral grassland	3	2.5	2	1.5	1	Not Possible	Not Possible
Grassland - Tall herb communities (H6430)	3	2.5	2	1.5	1	Not Possible	Not Possible
Grassland - Upland acid grassland	3	2.5	2	1.5	1	Not Possible	Not Possible
Grassland - Upland calcareous grassland	3	2.5	2	1.5	1	Not Possible	Not Possible
Grassland - Upland hay meadows	3	2.5	2	1.5	1	Not Possible	Not Possible
Heathland and shrub - Blackthorn scrub	3	2.5	2	1.5	1	Not Possible	Not Possible
Heathland and shrub - Bramble scrub	Not Possible	Not Possible	Not Possible	1.5	Not Possible	1	Not Possible
Heathland and shrub - Gorse scrub	3	2.5	2	1.5	1	Not Possible	Not Possible
Heathland and shrub - Hawthorn scrub	3	2.5	2	1.5	1	Not Possible	Not Possible
Heathland and shrub - Hazel scrub	3	2.5	2	1.5	1	Not Possible	Not Possible
Heathland and shrub - Lowland heathland	3	2.5	2	1.5	1	Not Possible	Not Possible
Heathland and shrub - Mixed scrub	3	2.5	2	1.5	1	Not Possible	Not Possible
Heathland and shrub - Mountain heaths and willow scrub	3	2.5	2	1.5	1	Not Possible	Not Possible
Heathland and shrub - Rhododendron scrub	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Heathland and shrub - Dunes with sea buckthorn (H2160)	3	2.5	2	1.5	1	Not Possible	Not Possible
Heathland and shrub - Other sea buckthorn scrub	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Heathland and shrub - Willow scrub	3	2.5	2	1.5	1	Not Possible	Not Possible
Heathland and shrub - Upland heathland	3	2.5	2	1.5	1	Not Possible	Not Possible
Lakes - Aquifer fed naturally fluctuating water bodies	3	2.5	2	1.5	1	Not Possible	Not Possible
Lakes - High alkalinity lakes	3	2.5	2	1.5	1	Not Possible	Not Possible
Lakes - Low alkalinity lakes	3	2.5	2	1.5	1	Not Possible	Not Possible
Lakes - Marl lakes	3	2.5	2	1.5	1	Not Possible	Not Possible
Lakes - Moderate alkalinity lakes	3	2.5	2	1.5	1	Not Possible	Not Possible
Lakes - Peat lakes	3	2.5	2	1.5	1	Not Possible	Not Possible
Lakes - Ponds (priority habitat)	3	2.5	2	1.5	1	Not Possible	Not Possible
Lakes - Ponds (non-priority habitat)	3	2.5	2	1.5	1	Not Possible	Not Possible
Lakes - Reservoirs	3	2.5	2	1.5	1	Not Possible	Not Possible
Lakes - Temporary lakes ponds and pools (H3170)	3	2.5	2	1.5	1	Not Possible	Not Possible
Sparsely vegetated land - Calaminarian grasslands	3	2.5	2	1.5	1	Not Possible	Not Possible
Sparsely vegetated land - Coastal sand dunes	3	2.5	2	1.5	1	Not Possible	Not Possible
Sparsely vegetated land - Coastal vegetated shingle	3	2.5	2	1.5	1	Not Possible	Not Possible
Sparsely vegetated land - Ruderal/Ephemeral	3	2.5	2	1.5	1	Not Possible	Not Possible
Sparsely vegetated land - Tall forbs	3	2.5	2	1.5	1	Not Possible	Not Possible
Sparsely vegetated land - Inland rock outcrop and scree habitats	3	2.5	2	1.5	1	Not Possible	Not Possible
Sparsely vegetated land - Limestone pavement	3	2.5	2	1.5	1	Not Possible	Not Possible
Sparsely vegetated land - Maritime cliff and slopes	3	2.5	2	1.5	1	Not Possible	Not Possible
Sparsely vegetated land - Other inland rock and scree	3	2.5	2	1.5	1	Not Possible	Not Possible
Urban - Allotments	3	2.5	2	1.5	1	Not Possible	Not Possible
Lakes - Ornamental lake or pond	3	2.5	2	1.5	1	Not Possible	Not Possible
Urban - Artificial unvegetated, unsealed surface	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	0
Urban - Bioswale	3	2.5	2	1.5	1	Not Possible	Not Possible
Urban - Intensive green roof	3	2.5	2	1.5	1	Not Possible	Not Possible
Urban - Built linear features	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	0
Urban - Cemeteries and churchyards	3	2.5	2	1.5	1	Not Possible	Not Possible
Urban - Developed land; sealed surface	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	0
Urban - Other green roof	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Urban - Facade-bound green wall	3	2.5	2	1.5	1	Not Possible	Not Possible
Urban - Ground based green wall	3	2.5	2	1.5	1	Not Possible	Not Possible
Urban - Ground level planters	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Urban - Biodiverse green roof	3	2.5	2	1.5	1	Not Possible	Not Possible
Urban - Introduced shrub	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Urban - Open mosaic habitats on previously developed land	3	2.5	2	1.5	1	Not Possible	Not Possible
Urban - Rain garden	3	2.5	2	1.5	1	Not Possible	Not Possible
Urban - Actively worked sand pit quarry or open cast mine	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Individual trees - Urban tree	3	2.5	2	1.5	1	Not Possible	Not Possible
Urban - Sustainable drainage system	3	2.5	2	1.5	1	Not Possible	Not Possible
Urban - Unvegetated garden	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	0
Urban - Vacant or derelict land	3	2.5	2	1.5	1	Not Possible	Not Possible
Urban - Bare ground	3	2.5	2	1.5	1	Not Possible	Not Possible
Urban - Vegetated garden	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Wetland - Blanket bog	3	2.5	2	1.5	1	Not Possible	Not Possible
Wetland - Depressions on peat substrates (H7150)	3	2.5	2	1.5	1	Not Possible	Not Possible
Wetland - Fens (upland and lowland)	3	2.5	2	1.5	1	Not Possible	Not Possible
Wetland - Lowland raised bog	3	2.5	2	1.5	1	Not Possible	Not Possible
Wetland - Oceanic valley mire[1] (D2.1)	3	2.5	2	1.5	1	Not Possible	Not Possible

Wetland - Purple moor grass and rush pastures	3	2.5	2	1.5	1	Not Possible	Not Possible
Wetland - Reedbeds	3	2.5	2	1.5	1	Not Possible	Not Possible
Wetland - Transition mires and quaking bogs (H7140)	3	2.5	2	1.5	1	Not Possible	Not Possible
Woodland and forest - Felled	3	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible
Woodland and forest - Lowland beech and yew woodland	3	2.5	2	1.5	1	Not Possible	Not Possible
Woodland and forest - Lowland mixed deciduous woodland	3	2.5	2	1.5	1	Not Possible	Not Possible
Woodland and forest - Native pine woodlands	3	2.5	2	1.5	1	Not Possible	Not Possible
Woodland and forest - Other coniferous woodland	3	2.5	2	1.5	1	Not Possible	Not Possible
Woodland and forest - Other Scot's pine woodland	3	2.5	2	1.5	1	Not Possible	Not Possible
Woodland and forest - Other woodland; broadleaved	3	2.5	2	1.5	1	Not Possible	Not Possible
Woodland and forest - Other woodland; mixed	3	2.5	2	1.5	1	Not Possible	Not Possible
Woodland and forest - Upland birchwoods	3	2.5	2	1.5	1	Not Possible	Not Possible
Woodland and forest - Upland mixed ashwoods	3	2.5	2	1.5	1	Not Possible	Not Possible
Woodland and forest - Upland oakwood	3	2.5	2	1.5	1	Not Possible	Not Possible
Woodland and forest - Wet woodland	3	2.5	2	1.5	1	Not Possible	Not Possible
Woodland and forest - Wood-pasture and parkland	3	2.5	2	1.5	1	Not Possible	Not Possible
Coastal lagoons - Coastal lagoons	3	2.5	2	1.5	1	Not Possible	Not Possible
Rocky shore - High energy littoral rock	3	2.5	2	1.5	1	Not Possible	Not Possible
Rocky shore - High energy littoral rock - on peat, clay or chalk	3	2.5	2	1.5	1	Not Possible	Not Possible
Rocky shore - Moderate energy littoral rock	3	2.5	2	1.5	1	Not Possible	Not Possible
Rocky shore - Moderate energy littoral rock - on peat, clay or chalk	3	2.5	2	1.5	1	Not Possible	Not Possible
Rocky shore - Low energy littoral rock	3	2.5	2	1.5	1	Not Possible	Not Possible
Rocky shore - Low energy littoral rock - on peat, clay or chalk	3	2.5	2	1.5	1	Not Possible	Not Possible
Rocky shore - Features of littoral rock	3	2.5	2	1.5	1	Not Possible	Not Possible
Rocky shore - Features of littoral rock - on peat, clay or chalk	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal sediment - Littoral coarse sediment	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal sediment - Littoral mud	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal sediment - Littoral mixed sediments	3	2.5	2	1.5	1	Not Possible	Not Possible
Coastal saltmarsh - Saltmarshes and saline reedbeds	3	2.5	2	1.5	1	Not Possible	Not Possible
Coastal saltmarsh - Artificial saltmarshes and saline reedbeds	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal sediment - Littoral seagrass	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal sediment - Littoral seagrass on peat, clay or chalk	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal sediment - Littoral biogenic reefs - Mussels	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal sediment - Littoral biogenic reefs - Sabellaria	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal sediment - Features of littoral sediment	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal sediment - Artificial littoral coarse sediment	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal sediment - Artificial littoral mud	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal sediment - Artificial littoral sand	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal sediment - Artificial littoral muddy sand	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal sediment - Artificial littoral mixed sediments	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal sediment - Artificial littoral seagrass	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal sediment - Artificial littoral biogenic reefs	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal sediment - Littoral sand	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal sediment - Littoral muddy sand	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal hard structures - Artificial hard structures	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal hard structures - Artificial features of hard structures	3	2.5	2	1.5	1	Not Possible	Not Possible
Intertidal hard structures - Artificial hard structures with integrated greening of grey infrastructure (IGC	3	2.5	2	1.5	1	Not Possible	Not Possible
Watercourse footprint - Watercourse footprint	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	0
Individual trees - Rural tree	3	2.5	2	1.5	1	Not Possible	Not Possible

Data Table 3: Habitat creation matrix

Habitat Description	Creation						
	Good	Fairly Good	Moderate	Fairly Poor	Poor	Condition Assessment N/A	N/A - Other
Cropland - Arable field margins cultivated annually	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Cropland - Arable field margins game bird mix	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Cropland - Arable field margins pollen and nectar	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Cropland - Arable field margins tussocky	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Cropland - Cereal crops	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Cropland - Winter stubble	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Cropland - Horticulture	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Cropland - Intensive orchards	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Cropland - Non-cereal crops	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Cropland - Temporary grass and clover leys	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Grassland - Traditional orchards	30	25	20	10	5	Not Possible	Not Possible
Grassland - Bracken	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Grassland - Floodplain wetland mosaic and CFGM	20	15	10	8	5	Not Possible	Not Possible
Grassland - Lowland calcareous grassland	20	15	10	8	5	Not Possible	Not Possible
Grassland - Lowland dry acid grassland	30+	25	20	15	10	Not Possible	Not Possible
Grassland - Lowland meadows	15	12	10	8	5	Not Possible	Not Possible
Grassland - Modified grassland	7	5	4	2	1	Not Possible	Not Possible
Grassland - Other lowland acid grassland	15	12	10	5	1	Not Possible	Not Possible
Grassland - Other neutral grassland	10	7	5	3	2	Not Possible	Not Possible
Grassland - Tall herb communities (H6430)	30	25	20	15	10	Not Possible	Not Possible
Grassland - Upland acid grassland	15	12	10	5	1	Not Possible	Not Possible
Grassland - Upland calcareous grassland	25	20	15	12	10	Not Possible	Not Possible
Grassland - Upland hay meadows	20	18	15	12	10	Not Possible	Not Possible
Heathland and shrub - Blackthorn scrub	10	7	5	3	1	Not Possible	Not Possible
Heathland and shrub - Bramble scrub	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Heathland and shrub - Gorse scrub	10	7	5	3	1	Not Possible	Not Possible
Heathland and shrub - Hawthorn scrub	10	7	5	3	1	Not Possible	Not Possible
Heathland and shrub - Hazel scrub	15	12	10	7	5	Not Possible	Not Possible
Heathland and shrub - Willow scrub	15	12	10	7	5	Not Possible	Not Possible
Heathland and shrub - Lowland heathland	30+	25	20	15	10	Not Possible	Not Possible
Heathland and shrub - Mixed scrub	10	7	5	3	1	Not Possible	Not Possible
Heathland and shrub - Mountain heaths and willow scrub	30+	30+	25	23	15	Not Possible	Not Possible
Heathland and shrub - Rhododendron scrub	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Heathland and shrub - Dunes with sea buckthorn (H2160)	10	7	5	3	1	Not Possible	Not Possible
Heathland and shrub - Other sea buckthorn scrub	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Heathland and shrub - Upland heathland	30	25	20	15	10	Not Possible	Not Possible
Lakes - Aquifer fed naturally fluctuating water bodies	30	20	15	10	1	Not Possible	Not Possible
Lakes - High alkalinity lakes	30	20	10	7	5	Not Possible	Not Possible
Lakes - Low alkalinity lakes	30	20	10	7	5	Not Possible	Not Possible
Lakes - Marl lakes	30	20	10	7	5	Not Possible	Not Possible
Lakes - Moderate alkalinity lakes	30	20	10	7	5	Not Possible	Not Possible
Lakes - Peat lakes	30	20	10	7	5	Not Possible	Not Possible
Lakes - Ponds (priority habitat)	5	4	3	2	1	Not Possible	Not Possible
Lakes - Ponds (non-priority habitat)	5	4	3	2	1	Not Possible	Not Possible
Lakes - Reservoirs	10	7	5	3	1	Not Possible	Not Possible
Lakes - Temporary lakes ponds and pools (H3170)	5	4	3	2	1	Not Possible	Not Possible
Sparsely vegetated land - Calaminarian grasslands	10	7	5	3	2	Not Possible	Not Possible
Sparsely vegetated land - Coastal sand dunes	20	15	10	7	5	Not Possible	Not Possible
Sparsely vegetated land - Coastal vegetated shingle	20	15	10	7	5	Not Possible	Not Possible
Sparsely vegetated land - Ruderal/Ephemeral	5	4	3	2	1	Not Possible	Not Possible
Sparsely vegetated land - Tall forbs	5	4	3	2	1	Not Possible	Not Possible
Sparsely vegetated land - Inland rock outcrop and scree habitats	30+	25	20	15	10	Not Possible	Not Possible
Sparsely vegetated land - Limestone pavement	30+	30+	30+	30+	30+	Not Possible	Not Possible
Sparsely vegetated land - Maritime cliff and slopes	20	15	10	7	5	Not Possible	Not Possible
Sparsely vegetated land - Other inland rock and scree	20	15	10	7	5	Not Possible	Not Possible
Urban - Allotments	1	1	1	1	1	Not Possible	Not Possible
Lakes - Ornamental lake or pond	5	4	3	2	1	Not Possible	Not Possible
Urban - Artificial unvegetated, unsealed surface	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	0
Urban - Bioswale	3	2	1	1	1	Not Possible	Not Possible
Urban - Intensive green roof	5	4	3	2	1	Not Possible	Not Possible
Urban - Built linear features	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	0
Urban - Cemeteries and churchyards	20	17	15	12	10	Not Possible	Not Possible
Urban - Developed land; sealed surface	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	0
Urban - Other green roof	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Urban - Facade-bound green wall	5	4	3	2	1	Not Possible	Not Possible
Urban - Ground based green wall	5	4	3	2	1	Not Possible	Not Possible
Urban - Ground level planters	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Urban - Biodiverse green roof	10	8	5	3	1	Not Possible	Not Possible
Urban - Introduced shrub	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Urban - Open mosaic habitats on previously developed land	10	7	4	2	0	Not Possible	Not Possible
Urban - Rain garden	5	4	3	2	1	Not Possible	Not Possible
Urban - Actively worked sand pit quarry or open cast mine	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Individual trees - Urban tree	30+	30+	27	19	10	Not Possible	Not Possible
Urban - Sustainable drainage system	5	4	3	2	1	Not Possible	Not Possible
Urban - Unvegetated garden	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	0
Urban - Vacant or derelict land	5	4	3	2	1	Not Possible	Not Possible
Urban - Bare ground	5	4	3	2	1	Not Possible	Not Possible
Urban - Vegetated garden	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	1	Not Possible
Wetland - Blanket bog	30+	30+	30+	30+	30+	Not Possible	Not Possible
Wetland - Depressions on peat substrates (H7150)	30+	30+	30	25	15	Not Possible	Not Possible
Wetland - Fens (upland and lowland)	30	25	20	15	10	Not Possible	Not Possible
Wetland - Lowland raised bog	30+	30+	30	20	15	Not Possible	Not Possible
Wetland - Oceanic valley mire[1] (D2.1)	30+	30+	30	20	15	Not Possible	Not Possible
Wetland - Purple moor grass and rush pastures	30	25	20	15	10	Not Possible	Not Possible
Wetland - Reedbeds	12	10	7	5	3	Not Possible	Not Possible
Wetland - Transition mires and quaking bogs (H7140)	30+	30+	30	25	15	Not Possible	Not Possible
Woodland and forest - Felled	30+	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible

Habitat						
Woodland and forest - Lowland beech and yew woodland	30+	30+	30+	25	10	Not Possible	Not Possible
Woodland and forest - Lowland mixed deciduous woodland	30+	30+	30+	25	10	Not Possible	Not Possible
Woodland and forest - Native pine woodlands	30+	30+	30+	25	10	Not Possible	Not Possible
Woodland and forest - Other coniferous woodland	30+	30+	30	10	5	Not Possible	Not Possible
Woodland and forest - Other Scot's pine woodland	30+	30+	30+	25	10	Not Possible	Not Possible
Woodland and forest - Other woodland; broadleaved	30+	25	15	7	5	Not Possible	Not Possible
Woodland and forest - Other woodland; mixed	30+	30+	30	10	5	Not Possible	Not Possible
Woodland and forest - Upland birchwoods	30+	30	25	20	10	Not Possible	Not Possible
Woodland and forest - Upland mixed ashwoods	30+	30+	30+	25	10	Not Possible	Not Possible
Woodland and forest - Upland oakwood	30+	30+	30+	25	10	Not Possible	Not Possible
Woodland and forest - Wet woodland	30+	30	15	10	5	Not Possible	Not Possible
Woodland and forest - Wood-pasture and parkland	30+	30+	30+	25	10	Not Possible	Not Possible
Coastal lagoons - Coastal lagoons	10	8	5	3	1	Not Possible	Not Possible
Rocky shore - High energy littoral rock	10	7	4	2	1	Not Possible	Not Possible
Rocky shore - High energy littoral rock - on peat, clay or chalk	30+	30+	30+	30+	30+	Not Possible	Not Possible
Rocky shore - Moderate energy littoral rock	13	8	4	2	1	Not Possible	Not Possible
Rocky shore - Moderate energy littoral rock - on peat, clay or chalk	30+	30+	30+	30+	30+	Not Possible	Not Possible
Rocky shore - Low energy littoral rock	15	10	5	1	1	Not Possible	Not Possible
Rocky shore - Low energy littoral rock - on peat, clay or chalk	30+	30+	30+	30+	30+	Not Possible	Not Possible
Rocky shore - Features of littoral rock	13	8	4	2	1	Not Possible	Not Possible
Rocky shore - Features of littoral rock - on peat, clay or chalk	30+	30+	30+	30+	30+	Not Possible	Not Possible
Intertidal sediment - Littoral coarse sediment	3	2	1	1	1	Not Possible	Not Possible
Intertidal sediment - Littoral mud	6	4	3	2	1	Not Possible	Not Possible
Intertidal sediment - Littoral mixed sediments	5	4	3	2	1	Not Possible	Not Possible
Coastal saltmarsh - Saltmarshes and saline reedbeds	15	10	7	3	1	Not Possible	Not Possible
Coastal saltmarsh - Artificial saltmarshes and saline reedbeds	15	10	7	3	1	Not Possible	Not Possible
Intertidal sediment - Littoral seagrass	20	15	10	5	2	Not Possible	Not Possible
Intertidal sediment - Littoral seagrass on peat, clay or chalk	30+	30+	30+	30+	30+	Not Possible	Not Possible
Intertidal sediment - Littoral biogenic reefs - Mussels	15	10	5	3	3	Not Possible	Not Possible
Intertidal sediment - Littoral biogenic reefs - Sabellaria	15	10	5	3	3	Not Possible	Not Possible
Intertidal sediment - Features of littoral sediment	10	7	5	3	3	Not Possible	Not Possible
Intertidal sediment - Artificial littoral coarse sediment	3	2	1	1	1	Not Possible	Not Possible
Intertidal sediment - Artificial littoral mud	6	4	3	2	1	Not Possible	Not Possible
Intertidal sediment - Artificial littoral sand	4	2	1	1	1	Not Possible	Not Possible
Intertidal sediment - Artificial littoral muddy sand	5	4	3	2	1	Not Possible	Not Possible
Intertidal sediment - Artificial littoral mixed sediments	5	4	3	2	1	Not Possible	Not Possible
Intertidal sediment - Artificial littoral seagrass	20	15	10	5	2	Not Possible	Not Possible
Intertidal sediment - Artificial littoral biogenic reefs	15	10	5	3	3	Not Possible	Not Possible
Intertidal sediment - Littoral sand	4	2	1	1	1	Not Possible	Not Possible
Intertidal sediment - Littoral muddy sand	5	4	3	2	1	Not Possible	Not Possible
Intertidal hard structures - Artificial hard structures	15	10	5	2	1	Not Possible	Not Possible
Intertidal hard structures - Artificial features of hard structures	13	8	4	2	1	Not Possible	Not Possible
Intertidal hard structures - Artificial hard structures with integrated greening of grey infrastructure (IG	13	8	4	2	1	Not Possible	Not Possible
Watercourse footprint - Watercourse footprint	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible	0
Individual trees - Rural tree	30+	30+	27	19	10	Not Possible	Not Possible

Data Table 3: Habitat enhancement matrix

Data Table 5: Hedgerow data part 1

Habitat Description	Distinctiveness Category	Distinctiveness Score	Creation - Poor	Creation - Moderate	Creation - Good	Enh. Condition Poor-Moderate	Enh. Condition Poor-Good	Enh. Condition Moderate-Good	Enh. Distinct. Species-rich native hedgerow with trees - associated with bank or ditch	Enh. Distinct. Species-rich native hedgerow with trees	Enh. Distinct. Native hedgerow with trees - associated with bank or ditch	Enh. Distinct. Species-rich native hedgerow	Enh. Distinct. Native hedgerow - associated with bank or ditch	Enh. Distinct. Native hedgerow with trees	Enh. Distinct. Ecologically valuable line of trees	Enh. Distinct. Ecologically valuable line of trees - associated with bank or ditch	Enh. Distinct. Native hedgerow	Enh. Distinct. Line of trees	Enh. Distinct. Line of trees - associated with bank or ditch	Enh. Distinct. Non-native and ornamental hedgerow	Technical Difficulty Creation	Technical Difficulty Enhancement	Suggested Action
Species-rich native hedgerow with trees - associated with bank or ditch	V.High	8	1	10	20	6	10	4	Error	Error	Error	Error	Error	Error	Error	Error	Error	Error	Error	Error	Low	Low	Like for like
Species-rich native hedgerow with trees	High	6	1	10	20	6	10	4	Error	Error	Error	Error	Error	Error	Error	Error	Error	Error	Error	Error	Low	Low	Like for like or better
Species-rich native hedgerow - associated with bank or ditch	High	6	1	5	12	3	5	2	10	Error	Error	Error	Error	Error	Error	Error	Error	Error	Error	Error	Low	Low	Like for like or better
Native hedgerow with trees - associated with bank or ditch	High	6	1	10	20	6	10	4	5	Error	Error	Error	Error	Error	Error	Error	Error	Error	Error	Error	Low	Low	Like for like or better
Species-rich native hedgerow	Medium	4	1	5	12	3	5	2	10	10	5	10	Error	Error	Error	Error	Error	Error	Error	Error	Low	Low	Same distinctiveness band or better
Native hedgerow - associated with bank or ditch	Medium	4	1	5	12	3	5	2	10	10	5	10	Error	Error	Error	Error	Error	Error	Error	Error	Low	Low	Same distinctiveness band or better
Native hedgerow with trees	Medium	4	1	10	20	6	10	4	5	5	5	5	Error	Error	Error	Error	Error	Error	Error	Error	Low	Low	Same distinctiveness band or better
Ecologically valuable line of trees	Medium	4	5	20	30+	20	30	10	12	12	Error	12	Error	Error	Error	Error	Error	Error	Error	Error	Low	Low	Same distinctiveness band or better
Ecologically valuable line of trees - associated with bank or ditch	Medium	4	5	20	30+	20	30	10	12	12	Error	12	Error	Error	Error	Error	Error	Error	Error	Error	Low	Low	Same distinctiveness band or better
Native hedgerow	Low	2	1	5	12	3	5	2	10	10	5	10	5	6	10	Error	Error	Error	Error	Error	Low	Low	Same distinctiveness band or better
Line of trees	Low	2	5	20	30+	20	30	10	12	12	Error	12	Error	12	Error	Error	Error	Error	Error	Error	Low	Low	Same distinctiveness band or better
Line of trees - associated with bank or ditch	Low	2	5	20	30+	20	30	10	12	12	Error	12	Error	12	Error	Error	Error	Error	Error	Error	Low	Low	Same distinctiveness band or better
Non-native and ornamental hedgerow	V.Low	1	1	N/A	N/A	N/A	N/A	N/A	Error	Error	Error	Error	Error	Error	Error	Error	Error	Error	Error	Error	Low	Low	Same distinctiveness band or better

Data Table 6: Hedgerow data part 2

Enhancement through Distinctiveness	Post Development Hedge Type												
Baseline Hedge Type	Species-rich native hedgerow with trees - associated with bank or ditch	Species-rich native hedgerow with trees	Species-rich native hedgerow - associated with bank or ditch	Native hedgerow with trees - associated with bank or ditch	Species-rich native hedgerow	Native hedgerow - associated with bank or ditch	Native hedgerow with trees	Ecologically valuable line of trees	Ecologically valuable line of trees - associated with bank or ditch	Native hedgerow	Line of trees	Line of trees - associated with bank or ditch	Non-native and ornamental hedgerow
Species-rich native hedgerow with trees - associated with bank or ditch	V.High - V.High	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down
Species-rich native hedgerow with trees	High - V.High	High - High	High - High	High - High	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down
Species-rich native hedgerow - associated with bank or ditch	High - V.High	High - High	High - High	High - High	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down
Native hedgerow with trees - associated with bank or ditch	High - V.High	High - High	High - High	High - High	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down
Species-rich native hedgerow	Medium - V.High	Medium - High	Medium - High	Medium - High	Medium - Medium	Medium - Medium	Medium - Medium	Error - Enhancement not possible	Error - Enhancement not possible	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down
Native hedgerow - associated with bank or ditch	Medium - V.High	Medium - High	Medium - High	Medium - High	Medium - Medium	Medium - Medium	Medium - Medium	Error - Enhancement not possible	Error - Enhancement not possible	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down
Native hedgerow with trees	Medium - V.High	Medium - High	Medium - High	Medium - High	Medium - Medium	Medium - Medium	Medium - Medium	Medium - Medium	Medium - Medium	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down
Ecologically valuable line of trees	Medium - V.High	Medium - High	Error - Enhancement not possible	Medium - High	Error - Enhancement not possible	Error - Enhancement not possible	Medium - Medium	Medium - Medium	Medium - Medium	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down
Ecologically valuable line of trees - associated with bank or ditch	Medium - V.High	Medium - High	Error - Enhancement not possible	Medium - High	Error - Enhancement not possible	Error - Enhancement not possible	Medium - Medium	Medium - Medium	Medium - Medium	Error Trading Down	Error Trading Down	Error Trading Down	Error Trading Down
Native hedgerow	Low - V.High	Low - High	Low - High	Low - High	Low - Medium	Low - Medium	Low - Medium	Error - Enhancement not possible	Error - Enhancement not possible	Low - Low	Error - Enhancement not possible	Error - Enhancement not possible	Error Trading Down
Line of trees	Low - V.High	Low - High	Error - Enhancement not possible	Low - High	Error - Enhancement not possible	Error - Enhancement not possible	Low - Medium	Error - Enhancement not possible	Error - Enhancement not possible	Low - Low	Low - Low	Low - Low	Error Trading Down
Line of trees - associated with bank or ditch	Low - V.High	Low - High	Error - Enhancement not possible	Low - High	Error - Enhancement not possible	Error - Enhancement not possible	Low - Medium	Error - Enhancement not possible	Error - Enhancement not possible	Low - Low	Low - Low	Low - Low	Error Trading Down
Non-native and ornamental hedgerow	Error - Enhancement not possible	Error - Enhancement not possible	Error - Enhancement not possible	Error - Enhancement not possible	Error - Enhancement not possible	Error - Enhancement not possible	Error - Enhancement not possible	Error - Enhancement not possible	Error - Enhancement not possible	Error - Enhancement not possible	Error - Enhancement not possible	Error - Enhancement not possible	V.Low - V.Low

Data Table 7: Watercourse data

Habitat Description	Distinctiveness		Difficulty			Condition				
	Distinctiveness Category	Distinctiveness Score	Technical Difficulty Creation	Technical Difficulty Enhancement	Suggested Action	Good	Fairly Good	Moderate	Fairly Poor	Poor
Priority habitat	V.High	8	High	Medium	Bespoke compensation likely to be required ✗	3	2.5	2	1.5	1
Other rivers and streams	High	6	High	Medium	Restore	3	2.5	2	1.5	1
Ditches	Medium	4	Low	Medium	Restore	3	2.5	2	1.5	1
Canals	Medium	4	Low	Medium	Restore	3	2.5	2	1.5	1
Culvert	Low	2	Low	Medium	Restore	Not Possible	Not Possible	Not Possible	Not Possible	1

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