

# The Biodiversity Metric 2.0

auditing and accounting for biodiversity

## TECHNICAL SUPPLEMENT

Beta Edition

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IAN CROSER <sup>A</sup>, SUSANNAH GOLD <sup>B</sup>, MAX HEAVER <sup>D</sup>, MATT HEYDON <sup>A</sup>, LAUREN MOORE <sup>D</sup>, STEPHEN PANKS <sup>A</sup>, SARAH SCOTT <sup>C</sup>, DAVE STONE <sup>A</sup> & NICK WHITE <sup>A</sup>. 2019. The Biodiversity Metric 2.0: Auditing and accounting for biodiversity value: technical supplement (Beta version, July 2019). Natural England

A – Natural England, B – Imperial College, University of London, C – Environment Agency, D – Department for Environment, Food and Rural Affairs

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## Image credits

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## Introduction

- 0.1 The **biodiversity metric 2.0 technical supplement** provides technical resources to support data collection, condition assessment and further detail about the metric.
- 0.2 We recognise that not all users of biodiversity metric 2.0 will want or need this level of technical detail for everyday use. But for those that that need to apply the metric in detail the technical supplement will be a key resource.
- 0.3 This document provides the detailed data tables used in the calculation tool; methodological reference sheets for assessing area habitat condition; a digest of the considerations that have informed the values presented in these sections, and additional relevant information on topics such as connectivity.



## Part 1a - Habitat Condition

### Scope

- 1.1 This section explains how to assess the 'condition' of Area Habitats.
- 1.2 The detailed methodology for assessing condition of habitats within the supplementary modules to the metric (currently hedgerows and lines of trees and rivers and ditches) are provided separately in chapter 7 of the User Guide, but are largely repeated here in parts 1 b and c for convenience

### Introduction

- 1.3 Biodiversity metric 2.0, like the original Defra biodiversity metric, uses the term habitat 'condition' as one of its measures of the quality of a habitat. The 'condition' component of quality measures the biological 'working-order' of a habitat type judged against the perceived ecological optimum state for that particular habitat. It is – therefore – a means of measuring variation in quality of patches of the same habitat type (i.e. an 'intra-habitat' quality measure) rather than a measure of quality between habitat types (i.e. an 'inter-habitat' quality measure) – which is assessed through the 'distinctiveness' of habitats.
- 1.4 So, for example, you might have a high distinctiveness grassland habitat that is lacking in important structural components of the sward and may have become dominated by tussock forming grass species. Because this patch of habitat is not in the optimum 'working order' for this particular grassland type it will be classified as being in 'Moderate' or 'Poor' condition, depending on how far from optimum it is judged to be.
- 1.5 The process of assessing habitat condition considers how many of the key physical characteristics and typical species of a particular habitat type are present in a habitat patch. For example, if a grassland has some of the grass species typically found in a sward but few of the flowering plants, its condition is poor relative to a patch of grassland that has all the expected species richness of grasses and flowering plants.
- 1.6 To support the use of biodiversity metric 2.0 'Condition Sheets' are provided for each area habitat type. These list positive indicators for each habitat, and indicate how many of these indicators need to be present to meet certain thresholds of condition.

### Choosing the right area habitat condition sheet

- 1.7 Table TS1-1 lists the habitat condition sheets that are available and indicates which sheet should be used for each Area Habitat type.

### Format of area habitat condition sheets

- 1.8 Condition sheets are either specific to a particular habitat type or cover a wider range of habitat types within a broad habitat category<sup>1</sup>. More detailed ecological input will be required when using a condition sheet for a broader habitat category to

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<sup>1</sup> We have used an adapted version of the Broad Habitat Categories defined by the JNCC at: <http://jncc.defra.gov.uk/page-4261>

judge the state of a habitat patch relative to the optimum ecological state that is potentially possible for a habitat in this category.

- 1.9 The condition sheets have been split into a number of sections.
- **Habitat Description:** a description of the habitat type and contextual information to aid the assessment.
  - **Condition Assessment Criteria:** the criteria describe what components need to be present for the habitat to be judged to be of good quality. These features may be specific to a particular habitat but in most cases are general to all habitats within the broad groupings. The condition assessment describes the scores that a high, medium or low quality habitat will need to achieve to fit in this category.
- 1.10 Condition sheets list commonly encountered undesirable species that are relevant to the condition assessment. The lists are not exhaustive and expert judgement by the ecological surveyor will be needed to assess whether other undesirable species are present.
- 1.11 For certain habitats a condition assessment is not required and a condition score is pre-assigned in the metric. These tend to be habitats that are intensively managed i.e. croplands or artificial e.g. green roof, and have a narrow biodiversity niche.

**TABLE TS1-1: Choosing the appropriate condition sheet**

**How to use:** Locate the relevant habitat in column 1 of the table and then refer to column 2 to find out which habitat Condition Sheet should be used for data collection. The Condition Sheets are provided in the next section of this document. Please note the following important points:

- Certain habitats are allocated a fixed condition score and do not need their condition assessed. These are marked '*No assessment required*'.
- The condition assessment of habitats covered by Supplementary modules are explained in the relevant sections of the User Guidance and parts 1b and c..
- Habitats Descriptions in **bold** are Priority Habitats (including Annex 1)

Habitat Description	Condition Sheet to use	Notes
Cropland - Arable field margins cultivated annually	No assessment required	Allocated a score of 1
Cropland - Arable field margins game bird mix	No assessment required	Allocated a score of 1
Cropland - Arable field margins pollen & nectar	No assessment required	Allocated a score of 1
Cropland - Arable field margins tussocky	No assessment required	Allocated a score of 1
Cropland - Cereal crops	No assessment required	Allocated a score of 1
Cropland - Cereal crops other	No assessment required	Allocated a score of 1
Cropland - Cereal crops winter stubble	No assessment required	Allocated a score of 1
Cropland - Horticulture	No assessment required	Allocated a score of 1
Cropland - Intensive orchards	No assessment required	Allocated a score of 1
Cropland - Non-cereal crops	No assessment required	Allocated a score of 1
Cropland - Temporary grass and clover leys	No assessment required	Allocated a score of 1
<b>Cropland - Traditional orchards</b>	Orchard	
Grassland - Bracken	Scrub	
<b>Grassland – Floodplain Wetland Mosaic</b> (previously Coastal floodplain Grazing Marsh)	Wetland, unless associated with a species rich grassland sward	See <i>Additional Information</i> on individual habitats section
<b>Grassland - Lowland calcareous grassland</b>	Grassland	
<b>Grassland - Lowland dry acid grassland</b>	Grassland	
<b>Grassland - Lowland meadows</b>	Grassland	
Grassland - Modified grassland	Grassland	

Grassland - Other lowland acid grassland	Grassland	
Grassland - Other neutral grassland	Grassland	
<b>Grassland - Tall herb communities</b>	Grassland	
Grassland - Upland acid grassland	Grassland	
<b>Grassland - Upland calcareous grassland</b>	Grassland	
<b>Grassland - Upland hay meadows</b>	Grassland	
Heathland and shrub - Blackthorn scrub	Scrub	
Heathland and shrub - Bramble scrub	Scrub	
Heathland and shrub - Gorse scrub	Scrub	
Heathland and shrub - Hawthorn scrub	Scrub	
Heathland and shrub - Hazel scrub	Scrub	
<b>Heathland and shrub - Lowland Heathland</b>	Heathland	
Heathland and shrub - Mixed scrub	Scrub	
<b>Heathland and shrub - Mountain heaths and willow scrub</b>	Heathland	
Heathland and shrub - Rhododendron scrub	No assessment required	Allocated a score of 1
<b>Heathland and shrub - Sea buckthorn scrub</b>	Scrub	
Heathland and shrub - Sea buckthorn scrub (non- priority habitat)	Scrub	
<b>Heathland and shrub - Upland Heathland</b>	Heathland	
<b>Lakes - Aquifer fed naturally fluctuating water bodies</b>	Lakes	Refer to Lakes Types section
<b>Lakes - High alkalinity lakes</b>	Lakes	Refer to Lakes Types section
<b>Lakes - Moderate alkalinity lakes</b>	Lakes	Refer to Lakes Types section

<b>Lakes - Low alkalinity lakes</b>	Lakes	Refer to Lakes Types section
<b>Lakes - Marl lakes</b>	Lakes	Refer to Lakes Types section
<b>Lakes - Peat lakes</b>	Lakes	Refer to Lakes Types section
Lakes - Ponds (non- Priority Habitat)	Ponds	
<b>Lakes - Ponds</b>	Ponds	
Lakes - Reservoirs	Lakes	
<b>Lakes - Temporary lakes, ponds and pools [C1.6]</b>	Ponds (under 1 ha) or Lakes (over 2 ha)	> 1 and < 2 ha the surveyor decides which approach is most appropriate
Lakes - Ditches	Ditches	
<b>Sparsely vegetated land - Calaminarian grasslands</b>	Grassland	
<b>Sparsely vegetated land - Coastal sand dunes</b>	Coastal	
<b>Sparsely vegetated land - Coastal vegetated shingle</b>	Coastal	
Sparsely vegetated land - Ruderal	Sparsely Vegetated & Rock Habitats	See <i>Additional Information</i> on individual habitats
<b>Sparsely vegetated land - Inland rock outcrop and scree habitats</b>	Sparsely Vegetated & Rock Habitats	See <i>Additional Information</i> on individual habitats
<b>Sparsely vegetated land - Limestone pavement</b>	Sparsely Vegetated & Rock Habitats	See <i>Additional Information</i> on individual habitats
<b>Sparsely vegetated land - Maritime cliff and slopes</b>	Coastal	
Sparsely vegetated land - Other inland rock and scree	Sparsely Vegetated & Rock Habitats	See <i>Additional Information</i> on individual habitats
Urban - Allotments	Urban	
Urban - Amenity grassland	Grassland	
Urban - Artificial vegetated, unsealed surface	Urban	
Urban - Bioswale	Urban	
Urban - Brown roof	Urban	
Urban - Built linear features	No assessment required	Allocated a score of 0
Urban - Cemeteries and churchyards	Urban	
Urban - Developed land; sealed surface	No assessment required	Allocated a score of 0
Urban - Extensive green roof	Urban	
Urban - Façade-bound green wall	Urban	

Urban - Ground based green wall	Urban	
Urban - Ground level planters	Urban	
Urban - Intensive green roof	No assessment required	Allocated a score of 1
Urban - Introduced shrub	No assessment required	Allocated a score of 1
<b>Urban - Open Mosaic Habitats on Previously Developed Land</b>	Urban	
Urban - Orchard	Orchard	
Urban - Rain garden	No assessment required	Allocated a score of 1
Urban - Sand pit quarry or open cast mine	Urban	
Urban - Street Tree	No assessment required	Allocated a score of 2
Urban - Suburban/ mosaic of developed/ natural surface	Urban	
Urban - Sustainable urban drainage feature	Urban	
Urban - Un-vegetated garden	No assessment required	Allocated a score of 0
Urban - Vacant/derelict land/ bare ground	Urban	
Urban - Vegetated garden	No assessment required	Allocated a score of 1
Urban - Woodland	Woodland	
<b>Wetland - Blanket bog</b>	Wetland	
<b>Wetland - Depressions on Peat substrates</b>	Wetland	
<b>Wetland - Fens (upland &amp; lowland)</b>	Wetland	
<b>Wetland - Lowland raised bog</b>	Wetland	
<b>Wetland – Oceanic Valley Mire<sup>2</sup></b>	Wetland	
<b>Wetland - Purple moor grass and rush pastures</b>	Wetland	
<b>Wetland - Reedbeds</b>	Wetland	
<b>Wetland - Transition mires and quaking bogs</b>	Wetland	
Woodland and forest - Felled	Woodland	See <i>Additional Information</i> on individual habitats

<sup>2</sup> Not clearly related Annex I type. Small parts may qualify for 7150, and locally the habitat may have been assigned under Annex I type 7110 (active raised bog). <https://forum.eionet.europa.eu/european-red-list-habitats/library/terrestrial-habitats/d.-mires-and-bogs/d2.1-oceanic-valley-bog-1>

<b>Woodland and forest - Lowland beech and yew woodland</b>	Woodland	
<b>Woodland and forest - Lowland mixed deciduous woodland</b>	Woodland	
<b>Woodland and forest - Native pine woodlands</b>	Woodland	
Woodland and forest - Other coniferous woodland	Woodland	
Woodland and forest -- Other Scot's Pine woodland	Woodland	
Woodland and forest - Other woodland; broadleaved	Woodland	
Woodland and forest - Other woodland; mixed	Woodland	
Woodland and forest - Other woodland; Young Trees planted	No assessment required	Allocated a score of 1 See notes in Data Collection & Fieldwork section.
<b>Woodland and forest - Upland birchwoods</b>	Woodland	
<b>Woodland and forest - Upland mixed ashwoods</b>	Woodland	
<b>Woodland and forest - Upland oakwood</b>	Woodland	
<b>Woodland and forest - Wet woodland</b>	Woodland	
<b>Woodland and forest - Wood-pasture and parkland</b>	Woodland & Grassland and other habitats as necessary.	See notes in Data Collection & Fieldwork section.

## Habitat Condition Sheets for different habitats

1.12 A series of Habitat Condition Sheets are provided to aid assessment of area habitats. The following Habitat Condition Sheets are provided (see TABLE-TS1-1 for advice on choosing the correct sheet):

<a href="#">Ditch Habitat Type</a> .....	13
<a href="#">Coastal Habitat Types</a> .....	15
<a href="#">Grassland Habitat Types</a> .....	19
<a href="#">Heathland Habitat Types</a> .....	<b>Error! Bookmark not defined.</b>
<a href="#">Lake Habitat Types</a> .....	<b>Error! Bookmark not defined.</b>
<a href="#">Orchards Habitat Type</a> .....	<b>Error! Bookmark not defined.</b>
<a href="#">Pond Habitat Type</a> .....	<b>Error! Bookmark not defined.</b>
<a href="#">Scrub Habitat Types</a> .....	29
<a href="#">Sparsely Vegetated and Rock Habitat Type</a> .....	<b>Error! Bookmark not defined.</b>
<a href="#">Urban Habitat Type</a> .....	<b>Error! Bookmark not defined.</b>
<a href="#">Wetland Broad Habitat Type</a> .....	<b>Error! Bookmark not defined.</b>
<a href="#">Woodland Broad Habitat Type</a> .....	39

## Condition Table

## Ditch Habitat Type

### Habitat Description

- This covers artificial habitats such as ditches or urban features with similar attributes.
- Ditches will steadily fill in through succession, periodic management of these water bodies will reset this process. As long as such management is not overly frequent or extensive it will not damage the biodiversity of the site, although it does have the capacity to alter a condition assessment if this is undertaken shortly after management has occurred.
- These artificial water bodies provide homes for biodiversity that may have been lost from more natural standing water habitats in the wider environment. The possibility of restoring more naturally functioning standing water habitats to support these species should be considered.

### Condition Assessment Criteria

1. There should be good water quality with no sign of pollution (the water should not be green or turbid) in the water body or the water supply.
2. Clear water should be dominated by plants, be they submerged or floating (note dominance of duckweed is a sign of eutrophication).
3. A range of submerged and floating leaved plants should be present. As a guide more than 10 species of emergent, floating or submerged species in a 20 m ditch length or 7 species of submerged or floating species in 150 m canal length.
4. A marginal fringe of emergent vegetation should be present.
5. The water body should not be impacted by use of the riparian land.
6. If a fish assemblage is present it should comprise of a range of native species and the assemblage should not reach an excessive biomass or be overly dominated by benthivorous or zooplanktivorous fish.
7. Sufficient water levels should be maintained; as a guide a minimum summer depth of approximately 50 cm in minor ditches and 1 m in main drains and linear waterbody should be maintained.
8. Less than 10% of the ditch or linear waterbody should be heavily shaded.
9. There should be an absence of non-native species.
10. There should be less than 10% cover of filamentous algae and/or duckweed.

Condition	Assessment Criteria	Score
Good	<ul style="list-style-type: none"><li>• Water bodies of high to moderate quality.</li><li>• Meets the majority of the criteria with only minor variation.</li><li>• Few of the indicators of poor condition are present.</li></ul>	3
Moderate	<ul style="list-style-type: none"><li>• Waterbodies in moderate health.</li><li>• Fails 2 or more of the criteria above.</li><li>• Where non-native species comprise more than 10% of the vegetation.</li><li>• Filamentous algae and or duckweed cover more than 10% of the water body.</li><li>• Insufficient water levels.</li><li>• Moderate water quality.</li><li>• Limited plant species present (submerged species are often the first to be lost).</li></ul>	2

	<ul style="list-style-type: none"> <li>• Intensive land use directly adjacent to the water body.</li> </ul>	
Poor	<ul style="list-style-type: none"> <li>• Fails 5 or more of the criteria.</li> <li>• Water body dries out.</li> <li>• Poor water quality present.</li> <li>• Widespread undesirable species.</li> <li>• Invasive none-native present.</li> <li>• No or very limited submerged plants present.</li> <li>• Intensive land use directly adjacent to the water body.</li> </ul>	1
<p><b>Undesirable species:</b></p> <ul style="list-style-type: none"> <li>• Any non-native species.</li> <li>• Frequently observed non–native plant species include water fern, Australian swamp stoncrop, parrot’s feather, floating pennywort and Japanese knotweed and giant hogweed (on the bank).</li> <li>• Frequently occurring non-native animals include signal crayfish, zebra mussels, killer and demon shrimp, carp and zander.</li> <li>• Cover of more than 10% of duckweeds or filamentous algae are signs of eutrophication.</li> </ul>		

## Condition Table

## Coastal Habitat Types

### Habitat Description

Coastal habitats are influenced by a number of coastal processes. The different maritime influences that they experience lead to a high degree of naturalness compared to many other habitats, resulting in highly distinctive environments. The degree of maritime influence varies as follows:

**Maritime:** strong and direct influence of sea with markedly saline soils.

**Sub-maritime:** less direct effect of sea with soils still more saline than those inland.

**Para-maritime:** zone in which special climatic conditions of sea coast are influential but soils not saline and halophytes not present (NB this can relate to the influence of the underlying sediment such as shingle, sand or silt, and the microclimatic conditions of the coast).

In the sub-maritime and para-maritime zones, plant species present may be variants of more widespread common species, for example the presence of *Arrhenatherum elatius* on shingle as a key element of a shingle pioneer community. Due to variation in these habitats, there may not always be a close 'fit' to the published classifications. Mosaics and transitions are common and there can be a high proportion of bare surfaces, or areas undergoing cyclical colonisation.

### Supralittoral sediment

Supralittoral sediment moved from the sea onto the coast or beach plain by wind or wave action can result in either sand dune or shingle deposits forming quite distinctive habitat types in the supralittoral zone. The vegetation communities on the coarser shingle depend on the amount of finer sand or other materials mixed in with the shingle, and on the hydrological regime. Classic pioneer species on the seaward edge include sea kale *Crambe maritima*, sea pea *Lathyrus japonicus*, Babington's orache *Atriplex glabriuscula*, sea beet *Beta vulgaris*, and sea campion *Silene uniflora*; which can withstand exposure to salt spray and some degree of burial or erosion. Further from the shore, where conditions are more stable, mixed communities develop, leading to mature grassland, lowland heath, moss and lichen communities, or even scrub. Some of these communities appear to be specific to shingle, and some are only known from Dungeness, the largest shingle structure in the UK. On the parallel ridges of cusped forelands, patterned vegetation develops, due to the differing particle size and hydrology. Some shingle sites contain natural hollows which develop wetland communities.

**Sand dune** vegetation occurs in a successional sequence relating to proximity to the sea, how long ago the dunes were formed, the degree of stability, and the hydrological conditions. Embryonic and mobile dunes occur mainly on the seaward side of a dune system where most fresh sand deposition is occurring. These early successional stages can also colonise blow-outs within the dunes. Embryonic and mobile dunes consist of a few specialised plant species, the most characteristic being marram grass *Ammophila arenaria*. Semi-fixed dunes occur where the rate of sand accretion has slowed but the surface is still predominantly bare sand; marram is still common but there is an increasing number of other species. Fixed dune grassland forms more complete swards but can still experience cycles of disturbance and colonisation, which is important to sustain biodiversity interest. Calcareous dunes support a wide variety of colourful flowering plants, including a number of species of orchid. Sand dune systems are also very rich in invertebrates, including butterflies, moths and burrowing bees and wasps. Acid dune grassland or dune heaths develop on less calcareous sand, usually dominated by heather *Calluna vulgaris*, and with rich lichen communities. Dune slack vegetation occurs in wet depressions between dune ridges; it is often characterised by creeping willow *Salix repens* spp.

*argentea* and a range of mosses and other wetland species which will vary according to the maturity of the slack and local hydrology.

### **Supralittoral rock**

Supralittoral rock is the overarching term for **Maritime cliffs and slopes**. These comprise sloping to vertical faces on the coastline where a break in slope is formed by marine erosion and land slips. The habitat includes the cliff-face and cliff-top, extending landward to at least the limit of maritime influence (i.e. limit of salt spray deposition), which in some exposed situations may continue for up to 500 m inland. On the seaward side, the habitat extends to the limit of the supralittoral zone and so includes the splash zone lichens and other species occupying this habitat.

Cliff profiles vary with the nature of the rocks forming them and with the geomorphological processes influencing rates of recession and erosion. Geology influences the distinction between 'hard cliffs' or 'soft cliffs', though in practice there are a number of intermediate types. **Hard cliffs** are vertical or steeply sloping; they are inclined to support few higher plants other than on ledges and in crevices or where a break in slope allows soil to accumulate. They tend to be formed of rocks resistant to weathering, such as granite, sandstone and limestone, but can be formed of softer rocks, such as chalk, which erode to a vertical profile. **Soft cliffs** are formed in less resistant rocks such as shales or in unconsolidated materials such as boulder clay; being unstable they often form less steep slopes and are therefore more easily colonised by vegetation. Soft cliffs are subject to frequent slumping and landslips, particularly where water percolates into the rock and reduces its effective shear strength.

**Maritime cliff and slope** vegetation varies according to the extent of exposure to wind and salt spray, the chemistry of the underlying rock, the water content and stability of the substrate, influence of bird nesting colonies and, on soft cliffs, the time elapsed since the last landslip together with presence of freshwater seepages. Bare ground is important for some uncommon plant species and many invertebrates. Cliff-top habitats are also influenced by soil type and management.

The habitat is important for a wide range of species including invertebrates and seabirds.

Key indicative species: rock samphire *Crithmum maritimum*, rock sea spurrey *Spergularia rupicola*, oraches *Atriplex spp*, sea beet *Beta vulgaris spp maritima*, a maritime form of red fescue *Festuca rubra*, thrift *Armeria maritima*, sea plantain *Plantago maritima*, buck's-horn plantain *P. coronopus*, sea carrot *Daucus carota spp gummifer*, ribwort plantain *Plantago lanceolata*, bird's-foot trefoil *Lotus corniculatus*, common restharrow *Ononis repens*. On soft cliffs: colt's-foot *Tussilago farfara*, great horsetail *Equisetum telmateia*, field horsetail *Equisetum arvense*.

### **Condition Assessment Criteria**

1. The area is readily recognisable as a good example of the relevant habitat and has a close match with published classifications.
2. The vegetation composition is formed of native species typical of the relevant habitat and present in the typical successional stages, being clearly visible throughout the sward, at sufficient cover and frequency to meet the definition for the relevant habitat.
3. Vegetation structure (sward height variation, zonation) is varied and not uniform.
4. Naturally open ground or bare surfaces are present as part of a sequence of colonisation and succession.
5. Coastal processes needed to support the habitat are functional and are not modified by hard engineering or other forms of intervention.

6. The landform reflects the interaction of coastal processes and geology, and there is a varied topography present supporting the range of habitat types.
7. Habitat management is at appropriate levels for the habitat type – including non-intervention.
8. Non-native and invasive species are absent or infrequent (less than 5% cover and not expanding).
9. Other negative indicators of damage or modification are not present, such as excessive poaching, damage from machinery use or storage, or any other damaging management or public access activities.
10. Water quality and quantity (e.g. seasonal fluctuations in dune slacks of seepages on cliff slopes) is sufficient to support the range of water-dependent parts of the habitat.
11. Habitat mosaics and transitions are present and unimpeded by inappropriate management.

Condition	Assessment Criteria	Score
Good	<ul style="list-style-type: none"> <li>• Meets the majority of the criteria with only minor variation.</li> <li>• None of the indicators of poor condition are present.</li> <li>• No evidence of non-native species (plants or animals).</li> <li>• Zonation and successional change are present and typical for the habitat type.</li> <li>• Vegetation has a mixed structure reflecting variation in species composition combined with appropriate grazing where relevant.</li> </ul>	3
Moderate	<ul style="list-style-type: none"> <li>• Clear failure of 2 or more criteria.</li> <li>• Habitat is potentially restorable.</li> <li>• The coastal habitat type has some differences between what is described in the relevant habitat classifications and what is visible on site.</li> </ul>	2
Poor	<ul style="list-style-type: none"> <li>• Five or more of the criteria are being failed.</li> <li>• Clear evidence of damage.</li> <li>• Low water quality and availability.</li> <li>• Restoration potential visibly limited.</li> <li>• Hard engineering or other forms of intervention will prevent restoration and are unlikely to be removed in short term.</li> <li>• Habitat has many differences between what is described in the relevant habitat classifications and what is visible on site.</li> </ul>	1

**Undesirable species:**

- Grassland: creeping thistle *Cirsium arvense*, spear thistle *Cirsium vulgare*, curled dock *Rumex crispus*, broad-leaved dock *Rumex obtusifolius*, common ragwort *Senecio jacobea*, common nettle *Urtica dioica*, creeping buttercup *Ranunculus repens*, white clover *Trifolium repens*, cow parsley *Anthriscus sylvestris*, marsh thistle *Cirsium palustre* and marsh ragwort *Senecio aquaticus*.
- Heathland: Rhododendron *Rhododendron ponticum*, Shallon *Gaultheria shallon*, Japanese knotweed *Fallopia japonica* (exotic species <1%); Creeping thistle *Cirsium arvense*, Common nettle *Urtica dioica*, "coarse grasses" (< 1% *Senecio spp.*, *Cirsium spp.*, in clumps); Blackthorn *Prunus spinosa*, Pines *Pinus spp.*, Common Broom *Cytisus scoparius*,

- Further information is available in Coastal Common Standards Monitoring [see <http://jncc.defra.gov.uk/page-2204>]

**Notes**

Coastal habitats are complex, even where remaining as fragments of a previously larger area. Even small areas may provide a functional role for other coastal habitat types.

For coastal heathland on dunes, shingle or cliffs, there may be transitions to lowland heath. Transitional areas may not be adequately described in habitat classifications.

Some habitat elements may only comprise a few specialised species, this needs to be taken account of when assessing species richness.

Habitats may look 'scruffy' and risk of being undervalued. Open ground can be important for many S41 species across all coastal habitats. For further advice see NERR 024

<http://publications.naturalengland.org.uk/publication/30025?category=7005>

## Condition Table

## Grassland Habitat Types

### Habitat Description

- Includes both agricultural, recreational, amenity, road verges and semi-natural grassland types including Priority Habitat Grasslands on all soil types.
- Will be dominated by grassland species with very little (if any) dwarf shrub, wetland or wooded species within the sward.
- Will exist above and below the level of enclosure at all altitudes.

### Condition Assessment Criteria

1. The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site.
2. The appearance and composition of the vegetation on site should very closely match the characteristics for the specific Priority Habitat [i.e as described by either the Phase 1 Habitat Classification or the UK Habitat Classification], with species typical of the habitat representing a significant majority of the vegetation.
3. Wildflowers, sedges and indicator species for the specific Priority grassland habitat are very clearly and easily visible throughout the sward and occur at high densities in high frequency. See relevant Habitat Classification for details of indicator species for specific habitat.
4. Undesirable species and physical damage is below 5% cover.
5. Cover of bare ground greater than 10% (including localised areas, for example, rabbit warrens).
6. Cover of bracken less than 20% and cover of scrub and bramble less than 5%.

### Condition Assessment Criteria

### Score

Condition	Assessment Criteria	Score
Good	<ul style="list-style-type: none"><li>• Species-rich Grassland of all Priority Habitat Types. Of high to moderate quality.</li><li>• Wildflower and sedges above 30% excluding white clover <i>Trifolium repens</i>, creeping buttercup <i>Ranunculus repens</i> and injurious weeds.</li><li>• Meets all the condition criteria with only minor variation.</li><li>• None of the indicators of poor condition are present (4, 5 &amp; 6).</li></ul>	3
Moderate	<ul style="list-style-type: none"><li>• Semi-improved grassland occurs on a wide range of soils and may be derived from higher quality Priority Habitat grassland habitats in poor condition. Often as they deteriorate following nutrient inputs. Typical grasses include: cock's-foot, common bent, creeping bent, crested dog's-tail, false oat-grass, meadow fescue, meadow foxtail, red fescue, sweet vernal grass, Timothy, tufted hair-grass and Yorkshire-fog.</li><li>• Total cover of wildflowers and sedges less than 30%, excluding white clover, creeping buttercup and injurious weeds.</li><li>• Rye-grass cover is less than 25% including amenity grasslands.</li><li>• OR clearly fails at least 1 of the condition criteria.</li><li>• OR The grassland type has some differences between what is described in the relevant habitat classifications and what is visible on site. It is a Lower Quality Priority Habitat, but clearly recognisable as such.</li></ul>	2

	<ul style="list-style-type: none"> <li>• Potentially restorable to grassland Priority Habitat with improved management.</li> <li>• Cover of undesirable species at 5- 15%.</li> </ul>	
Poor	<ul style="list-style-type: none"> <li>• Agricultural grasslands is characterised by vegetation dominated by a few fast-growing grasses on fertile, neutral soils. It is frequently characterised by an abundance of rye-grass <i>Lolium</i> spp. (above 25% cover) and white clover <i>Trifolium repens</i>. These grasslands are typically either managed as pasture or mown regularly for silage production or in non-agricultural contexts for recreation and amenity purposes; they are often periodically re-sown and are maintained by fertiliser treatment and weed control. They may also be temporary and sown as part of the rotation of arable crops but they are only included in this broad habitat type if they are more than one year old.</li> <li>• Amenity and Road verge grasslands with similar species to description for agriculture grasslands.</li> <li>• OR Most of the condition criteria are being failed.</li> <li>• Cover of undesirable species above 15%, usually resulting in a dense scrub or tree cover, or high cover of exotic species.</li> </ul>	1
<p><b>Undesirable species:</b></p> <ul style="list-style-type: none"> <li>• creeping thistle <i>Cirsium arvense</i>, spear thistle <i>Cirsium vulgare</i>, curled dock <i>Rumex crispus</i>, broad-leaved dock <i>Rumex obtusifolius</i>, common ragwort <i>Senecio jacobea</i>, common nettle <i>Urtica dioica</i>, creeping buttercup <i>Ranunculus repens</i>, white clover <i>Trifolium repens</i>, cow parsley <i>Anthriscus sylvestris</i>, marsh thistle <i>Cirsium palustre</i> and marsh ragwort <i>Senecio aquaticus</i>.</li> </ul>		
<p><b>Notes</b></p> <ul style="list-style-type: none"> <li>• Physical damage to the vegetation from: excessive poaching, damage from machinery use or storage, or any other damaging management activities.</li> </ul>		

**Condition Table****Heathland Habitat Types****Habitat Description**

- Usually with at least 25% cover of heathers and other dwarf shrubs. Or previously heathland in a degraded state below this.
- It typically comprises heathers, gorses, fine grasses, wildflowers, mosses and lichens in a complex mosaic.
- It covers the full altitudinal range with Lowland heathlands below 250-300 m and Upland Heathland (300 – 600 m) and Montane (600 m+) above this.

**Condition Assessment Criteria**

1. Cover of dwarf shrubs at least 50% for dry heath or between 25% and 75% for wet heath, with at least two dwarf shrub species frequent.
2. There should be a range of age classes of heather present, with cover of young (pioneer stage) heather between 10% and 15% and cover of old (late-mature/degenerate stages) between 10% and 30%.
3. No signs of burning or cutting of 'sensitive areas'. Sensitive areas comprise: thin soils (less than 5 cm deep); steep slopes (greater than a gradient of one in two); pools, wet hollows, peat above 10 cm depth, hags and erosion gullies; areas close to watercourses (within 15 m); areas with noticeably uneven structure at a small scale (c.1 m or less, particularly very old heather stands); and severely wind-clipped vegetation (usually forming a mat less than 10 cm thick).
4. No more than 33% of heather shoots should be grazed (when assessed between February and April), or flowering heather plants are at least frequent in autumn.
5. Cover of undesirable species (injurious weeds and invasive non-native plants – see list below) should be less than 5%.
6. Cover of trees and/or scrub should be less than 15%.
7. Physical damage to the vegetation from: excessive poaching, damage from machinery use or storage, or any other damaging management or public access activities.

<b>Condition</b>	<b>Assessment Criteria</b>	<b>Score</b>
Good	<ul style="list-style-type: none"> <li>• Meets criteria 1 &amp; 2.</li> <li>• Meets at least 6 of the criteria with only minor variation from any. Heather is flowering extensively.</li> <li>• Only 1 minor fail of the indicators of poor condition (3,4,5,6 &amp; 7) are present.</li> </ul>	3
Moderate	<ul style="list-style-type: none"> <li>• The Heather and Dwarf shrub cover is between 25-50% on dry heaths or between 10-50% on wet heaths.</li> <li>• OR meets criteria 1 but fails at least 2 or 3 of the condition criteria.</li> <li>• The heathland type has minor differences between what is described in the relevant habitat classifications and what is visible on site.</li> <li>• OR cover of undesirable species at 5-20%</li> </ul>	2
Poor	<ul style="list-style-type: none"> <li>• Meets criteria 1 but at least 4 condition criteria are being failed.</li> <li>• The Heather and Dwarf shrub cover is below 25% but still frequent through the area (Fragmented Heathland).</li> </ul>	1

	<ul style="list-style-type: none"> <li>• Relict Heathland, generally in a mosaic with acid grassland.</li> <li>• Potentially restorable to heathland with improved management.</li> <li>• The heathland type has major differences between what is described in the relevant habitat classifications and what is visible on site, but is still clearly been heathland vegetation for considerable time and is now severely degraded.</li> <li>• Cover of undesirable species is above 20%.</li> </ul>	
<p><b>Undesirable species:</b></p> <p><b>Dry heaths:</b></p> <ul style="list-style-type: none"> <li>• <i>Rhododendron ponticum</i>, <i>Gaultheria shallon</i>, <i>Fallopia japonica</i> (exotic species &lt;1%); <i>Cirsium arvense</i>, <i>Digitalis purpurea</i>, <i>Epilobium</i> spp. (excl. <i>E. palustre</i>), <i>Chamerium angustifolium</i>, <i>Juncus effusus</i>, <i>J. squarrosus</i>, <i>Ranunculus</i> spp., <i>Senecio</i> spp., <i>Rumex obtusifolius</i>, <i>Urtica dioica</i>, “coarse grasses” (&lt; 1% <i>Senecio</i> spp., <i>Urtica dioica</i>, <i>Cirsium</i> spp. and other herbaceous, in clumps); <i>Betula</i> spp., <i>Prunus spinosa</i>, <i>Pinus</i> spp., <i>Rubus</i> spp., <i>Cytisus scoparius</i>, <i>Quercus</i> spp., <i>Hippophae rhamnoides</i> (&lt; 15% trees, tree seedlings or other species of scrub. &lt;1% <i>Rubus</i> spp); <i>Pteridium aquilinum</i> (&lt; 10% P. a. in dense canopy); <i>Ulex europaeus</i> (&lt;25%); Dense mats of acrocarpous mosses (<i>Campylopus introflexus</i>, Acr. mosses &lt;occasional).</li> </ul> <p><b>Wet Heaths:</b></p> <ul style="list-style-type: none"> <li>• <i>Rhododendron ponticum</i> (exotic species &lt;1%); <i>Apium nodiflorum</i>, <i>Cirsium arvense</i>, <i>Digitalis purpurea</i>, <i>Epilobium</i> spp. (excl. <i>E. palustre</i>), <i>Glyceria fluitans</i>, <i>Juncus effusus</i>, <i>J. squarrosus</i>, <i>Oenanthe crocata</i>, <i>Phragmites</i> spp., <i>Ranunculus repens</i>, <i>Fallopia japonica</i>, <i>Senecio jacobaea</i>, <i>Rumex obtusifolius</i>, <i>Typha</i> spp., <i>Urtica</i> spp (&lt;1% undesirable herbaceous/forb spp); <i>Alnus glutinosa</i>, <i>Betula</i> spp., <i>Pinus</i> spp., <i>Prunus spinosa</i>, <i>Quercus</i> spp., <i>Rubus</i> spp., <i>Salix</i> spp. (&lt; 10% trees, tree seedlings or other species of scrub); <i>Pteridium aquilinum</i> (&lt; 5% <i>P. aquilinum</i>); <i>Ulex europaeus</i> (&lt;10% <i>U. europaeus</i>); Dense mats of acrocarpous mosses (<i>Campylopus introflexus</i>, Acr. mosses &lt;occasional).</li> </ul>		

## Condition Table

## Lake Habitat Types

### Habitat Description

- This covers all water bodies over 2 ha in area. Expert judgement should be used to decide if a water body between 1 and 2 ha area is assessed as a pond or as a lake.

### Condition Assessment Criteria

The Freshwater Biological Association 'Habitat Naturalness Assessment' is used to assess the condition of lakes. The average naturalness assessment scores for a lake are then converted into scores condition scores for use in biodiversity metric 2.0 (see below).

Details of the methodology for assessing naturalness of lakes are available at: <http://priorityhab.wpengine.com/contribute/>. The key documents are:

- [Lake naturalness assessment – guidance document \(PDF\)](#)
- [Annex I – Printable lake naturalness survey form to use in field \(PDF\)](#)
- [Annex II – Physical naturalness photographs \(PDF\)](#)
- [Annex III – Hydrological naturalness photographs \(PDF\)](#)
- [Annex IV – Chemical naturalness photographs \(PDF\)](#)
- [Annex V – Plant functional group photographs \(PDF\)](#)
- [Annex VI – Further species recording \(PDF\)](#)

The following criteria indicate the characteristics of a good quality lake.

1. Are of good water quality and contain a range of features characteristic of that waterbody type.
2. There should be no obvious sign of pollution or of inappropriate quality of the water supply.
3. The water body should be set within a semi-natural habitat.
4. Clear water is dominated by plants (and the water is not turbid or green).
5. A marginal fringe of emergent vegetation is present.
6. A range of submerged and floating leaved plants is present.
7. The fish community comprises a range of suitable species if the water body is large enough to support them. Being absent from Ponds.
8. There is no artificial drainage impacting on water bodies, or lowering of the waterbody, which would include outfalls that have been deepened and widened.
9. The water level and its management should be appropriate throughout the year for the waterbody type.

[For Aquifer-fed, naturally fluctuating water bodies (mainly fluctuating meres in Norfolk) water depth varies from 6 m in some cases to complete drying out for a period of time. Characterised by strikingly obvious concentric zones of vegetation in these lakes, especially when they are in their dry phase. Water chickweed and common nettle are typical of the damp centre of Breckland mere basins, with a broad band of reed canary-grass at a slightly higher level. Pondweeds and stoneworts are present during wet phases.]

Condition	Average 'Habitat Naturalness Assessment' class	Score
Good	1 Natural	3

Fairly good	2	2.5
Moderate	3	2
Fairly poor	4	1.5
Poor	5 Least natural	1

**Notes**

Record the results for 4 naturalness classes (physical, hydrological, chemical and biological) and, if you do not use an average, how you calculated the final figure and why you used a different approach.

We encourage recording of data on lakes on the Freshwater Biological Association 'Habitat Naturalness Assessment' website portal (<http://priorityhab.wpengine.com/contribute/>).

BETA TEST

## Condition Table

## Orchards Habitat Type

### Habitat Description

Includes: Intensive Orchards: Traditional Orchards: Urban Orchards

**Traditional orchards** are defined as five or more trees, where the distance between the crown edges is 20 m or less.

- They are characterised by the presence of either standard or half-standard fruit trees, grown on vigorous rootstocks and planted at low densities (usually less than 150 trees per hectare) on permanent grassland.
- Mature trees should have 90% of their foliage above 1.5 m, with trunks that are either at least 1 m in circumference at the base or form their first major fork at least 1.5 m above ground level.

### Intensive Orchards

- Where planting is relatively recent and in full agricultural production usually with planting above 150 trees per hectare.

### Urban Orchards

- Can have similar attributes but generally much smaller or much more recently planted within a built up (Urban) area. Can get traditional orchards in an urban environment if they match the description. They may well fall below the age (and varieties) of traditional orchards but still be of an older age than an intensive productive orchard.

### Condition Assessment Criteria

1. There should be between 50 and 150 fruit or nut trees per hectare.
2. There should be an absence of scrub growing between or up the trees.
3. At least 80% of the trees should be free from damage caused by browsing, bark stripping or rubbing on non-adjusted ties.
4. The average height of the grass sward should be between 5 cm and 30 cm.
5. There should be less than 5% cover of bare ground, injurious weeds or scrub.

Condition	Assessment Criteria	Score
Good	<ul style="list-style-type: none"><li>• Meets the majority of the criteria with only minor variation.</li><li>• None of the indicators of poor condition are present.</li></ul>	3
Moderate	<ul style="list-style-type: none"><li>• A poorer quality Traditional Orchard, missing a number of defining features or Urban Orchard.</li><li>• Some of the condition criteria are being failed.</li><li>• The Orchard type has minor differences between what is described in the relevant habitat classifications and what is visible on site.</li><li>• Cover of undesirable species at 5% or above.</li></ul>	2
Poor	<ul style="list-style-type: none"><li>• An Intensive Orchard in full agricultural production.</li><li>• Poor Quality Urban Orchard with little biodiversity value.</li></ul>	1

	<ul style="list-style-type: none"> <li>• Potentially restorable to higher biodiverse state with improved management.</li> <li>• Most of the condition criteria are being failed.</li> <li>• The Orchard type has major differences between what is described in the relevant habitat classifications and what is visible on site.</li> <li>• Cover of undesirable species above 20%, usually resulting in a dense scrub or tree cover, or high cover of exotic and invasive species, lack of bare ground and lack of structural diversity.</li> </ul>	
<p><b>Undesirable species:</b></p> <ul style="list-style-type: none"> <li>• Which become overly dominate (above 10% cover) below the canopy, such as; creeping thistle, spear thistle, curled dock, broad-leaved dock, common ragwort, common nettle, creeping buttercup and cow parsley etc..</li> </ul>		
<p><b>Notes</b></p> <p><b>The following can be recorded:</b></p> <ul style="list-style-type: none"> <li>• Density – spacing between rows and within rows.</li> <li>• Tree form – for example, standard or half-standard and the height of the trees.</li> <li>• Grassland management regime – if the orchard is grazed, include the type of animal being used, the density and timing of grazing and the source of water for stock. If the sward is cut, include the timing and number of cuts, whether there is any aftermath grazing and whether cuttings are removed.</li> <li>• The number of surviving trees and their approximate age, and the number of young trees.</li> <li>• Condition – the general state of health of the trees, i.e. whether they are upright, the amount of dead wood, whether they have been under- or over-pruned in the recent past, any disease present and the likelihood of long-term survival.</li> <li>• Species/varieties of trees – details on varieties may be obtained either from the owner, local experts or previous planting records or through identification.</li> <li>• Threats – damage by pests, invasion of undesirable species, overgrazing or the presence of non-native species.</li> <li>• Conservation value – the presence of any BAP species or mistletoe.</li> <li>• Invasive Species – any invasive and non-native invasive species.</li> <li>• Undesirable species – type and how much in % cover.</li> </ul>		

**Condition Table****Pond Habitat Type****Habitat Description**

- This covers all water bodies up to 1 ha in area. Expert judgement should be used to decide if a water body between 1 and 2 ha area is assessed as a pond or as a lake.
- It includes sunny or shaded and temporary or permanent ponds at any stage of succession, from newly created ponds to ones that are completely overgrown.
- It also includes scrapes, and other temporary ponds which may be dry certain times of the year.

**Condition Assessment Criteria**

1. Are of good water quality, with clear water (substrate can be seen) and no obvious sign of pollution in the water body.
2. The water body should have semi natural riparian land for at least 10 m from the pond edge.
3. Non-woodland ponds should be dominated by plants, be they submerged or floating (note dominance of duckweed is a sign of eutrophication).
4. Non-woodland ponds [i.e. that have always been open] should not be shaded more than 50%
5. Many ponds will be fishless, those which naturally contain fish should not be stocked and should contain a native fish assemblage.
6. Ponds should not be artificially connected to other water bodies, e.g. ditches.
7. Pond water levels should be able to fluctuate naturally throughout the year.
8. Non-native species should be absent.
9. Less than 10% of the pond should be covered with duckweed or filamentous algae.

<b>Condition</b>	<b>Assessment Criteria</b>	<b>Score</b>
Good	<ul style="list-style-type: none"> <li>• Meets the majority of the criteria with only minor variation.</li> <li>• Few of the indicators of poor condition are present.</li> </ul>	3
Moderate	<ul style="list-style-type: none"> <li>• Fails a number of the criteria above.</li> <li>• Where non-native species comprise more than 10% of the vegetation.</li> <li>• There is only moderate water quality.</li> <li>• There is insufficient extent of semi natural riparian land.</li> <li>• Water levels are subject to some control.</li> <li>• There are some artificial connections to other water bodies, but they are not delivering water of poor water quality or preventing water level fluctuations.</li> <li>• Fish have been stocked at a low density, but they are native species and there is sufficient aquatic plants and habitat heterogeneity to reduce the effects of predation.</li> <li>• Moderate shading of non-woodland ponds.</li> <li>• Submerged and floating plants are limited but still presence.</li> </ul>	2
Poor	<ul style="list-style-type: none"> <li>• Ponds in poor health.</li> <li>• Fails the majority of criteria.</li> <li>• Poor water quality present.</li> </ul>	1

	<ul style="list-style-type: none"> <li>• Extensive filamentous algae or duckweed.</li> <li>• Absence of semi-natural riparian land.</li> <li>• No natural fluctuations in water levels.</li> <li>• Extensive non-native species.</li> <li>• High density of stocked fish.</li> <li>• Absence of submerged and floating plants (unless naturally a shaded woodland pond).</li> <li>• Non-woodland ponds completely over-grown with trees and scrub.</li> </ul>	
<p><b>Undesirable species:</b></p> <ul style="list-style-type: none"> <li>• Any non-native species.</li> <li>• Frequently observed non-native plant species include water fern, Australian swamp stonecrop, parrot's feather, floating pennywort and Japanese knotweed and giant hogweed (on the banks).</li> <li>• Frequently occurring non-native animals include signal crayfish, zebra mussels, killer and demon shrimp and carp.</li> <li>• Cover of more than 10% of duckweeds or filamentous algae are signs of eutrophication.</li> </ul> <p>Factsheets of these invasive non-native plant species can be found on the GB non-native species secretariat website.  <a href="http://www.nonnativespecies.org/home/index.cfm">http://www.nonnativespecies.org/home/index.cfm</a></p> <p><b>Notes</b></p> <ul style="list-style-type: none"> <li>• Make a record of key features, including water quality, undesirable and non-native species all non- natives</li> </ul>		

### **Additional information relevant to data collection**

#### **Aquatic Marginal Vegetation**

Aquatic Marginal Vegetation is a habitat type listed within UK Habitat classification. When applying the biodiversity metric please always record as the component of the river, lake or pond Priority Habitat that it sits adjacent to. With field notes about its location, structure and species composition.

## Condition Table

## Scrub Habitat Types

### Habitat Description

This covers Biodiversity Metric scrub categories including;

- Bracken, Blackthorn, Bramble, Gorse, Hawthorn, Hazel, Mixed scrub, Sea blackthorn and Rhododendron, *Rhododendron ponticum*.

For hedgerows see User Guide chapter 7.

**Scrub of high (distinctiveness) environmental value such as:**

- Common juniper or box scrub.
- Scrub on calcareous soils with three or more of wayfaring-tree.
- Wild privet, dogwood, buckthorn, hawthorn and spindle.
- Native sea buckthorn scrub (on the east coast).
- Hazel.
- Scrub on peat soils with two or more of alder buckthorn, eared willow, goat willow, grey willow, bay willow, purple willow and osier.
- It excludes montane scrub (above 600 m altitude) which is covered under Heathland.
- South facing bracken stands with violets, when associated with UK priority butterfly species; high brown fritillary, pearl-bordered fritillary and small pearl-bordered fritillary.

**Scrub of lower (distinctiveness) environmental value such as:**

- The majority of bracken stands.
- Bramble.
- Blackthorn, Hawthorn.
- Gorse (unless as a low growing component of heathland habitat).
- Mixed scrub.

### Condition Assessment Criteria

1. Condition assessment criteria for Scrub Habitats.
2. There are at least three woody species, with no one species comprising more than 75% of the cover (except common juniper, sea buckthorn or box, which can be 100% cover).
3. There is a good age range – a mixture of seedlings, saplings, young shrubs and mature shrubs.
4. Pernicious weeds and invasive species make up less than 5% of the ground cover.
5. The scrub has a well-developed edge with un-grazed tall herbs.
6. There are many clearings and glades within the scrub.

Condition	Assessment Criteria	Score
Good	<ul style="list-style-type: none"> <li>• Meets all of the 5 criteria with only minor variation.</li> <li>• Scrub type of high biodiversity value in good condition.</li> <li>• None of the indicators of poor condition are present.</li> </ul>	3
Moderate	<ul style="list-style-type: none"> <li>• The single woody species cover is greater than 75%.</li> <li>• The age range is missing some size classes.</li> <li>• Scrub type of high biodiversity value in poor condition.</li> </ul>	2

	<ul style="list-style-type: none"> <li>• The scrub type has minor differences between what is described in the relevant habitat classifications and what is visible on site.</li> <li>• Cover of undesirable and invasive species at 5-20%.</li> </ul>	
Poor	<ul style="list-style-type: none"> <li>• The single woody species cover is greater than 75%.</li> <li>• The age range is missing some size classes.</li> <li>• Scrub type of high biodiversity value in poor condition.</li> <li>• The scrub type has minor differences between what is described in the relevant habitat classifications and what is visible on site.</li> <li>• Cover of undesirable and invasive species at 5-20%.</li> <li>• Single-age scrub present.</li> <li>• Potentially restorable to improved scrub habitat with improved management.</li> <li>• All of the condition criteria are being failed.</li> <li>• The scrub type has major differences between what is described in the relevant habitat classifications and what is visible on site.</li> <li>• Cover of undesirable and invasive species above 20% [see below].</li> <li>• All Rhododendron stands will be in this condition.</li> </ul>	1
<p><b>Undesirable species:</b></p> <ul style="list-style-type: none"> <li>• <i>Cirsium arvense</i></li> <li>• <i>Urtica dioica</i></li> <li>• Himalayan balsam <i>Impatiens glandulifera</i></li> <li>• Japanese knotweed <i>Fallopia japonica</i></li> <li>• Cherry Laurel <i>Prunus laurocerasus</i></li> <li>• Rhododendron <i>Rhododendron ponticum</i></li> </ul> <p>Factsheets of these invasive non-native plant species can be found on the GB non-native species secretariat website.  <a href="http://www.nonnativespecies.org/home/index.cfm">http://www.nonnativespecies.org/home/index.cfm</a></p>		

## Condition Table

## Sparsely Vegetated and Rock Habitat Type

### Habitat Description

Includes Limestone Pavement.

#### Ruderal Habitat

- The short lived transitory habitat of low growing early successional plants of open ground such as arable landscapes, derelict urban sites, quarries and railway ballasts. This will get replaced by more stable vegetation unless disturbance of soil continues. Reasonably variable in biodiversity value dependent on species present, do often provide important pollen and nectar sources along with open ground for insects.

#### Inland Rock Outcrops and Scree Habitat

- They are found on stony ground on cliff ledges, crags, ridges, summits, scree slopes, and amongst cracks and fissures of rock faces. Although much more common at higher altitudes, rock and scree habitats are also found at lower elevations (but not sea cliffs). This includes vegetation growing out of crevices, cracks and ledges on exposed rocks, including cliffs, scree, rubble and rocky slopes. They grow on a wide range of substrates, from acidic to highly calcareous and base-poor to base-rich.
- A wide range of vegetation communities are found. Some are very sparse with lichens dominating, some are very species-rich; some are well-vegetated, whilst others are species-poor; some are dominated by ferns, grasses and herbs, whilst others are dominated by low-growing mosses and bryophytes. Lichens and bryophytes are one of the most notable and distinct features associated with inland rock outcrop and scree habitats. Many hundreds of individual species have been recorded growing on rock faces and scree, with different communities associated with acidic rock and limestone not associated with other habitats.
- Includes Annex 1: Acidic Scree (H8110); Base Rich Scree (H8120); Plants in crevices in base-rich rocks (H8210); Plants in crevices in acid rocks (H8220).
- [NOTE: For tall herb communities use grassland condition score].

#### Limestone Pavement

This feature is found on Carboniferous limestone in northern England.

- The exposed near-horizontal limestone surface is characterised by a complex pattern of blocks (clints) and deep fissures (grykes).
- On open pavements, the vegetation is largely confined to the grykes and can be rich in vascular plants, bryophytes and lichens.
- Tree and shrub cover is low, but many of the species found in the humid, shady conditions of the grykes are more typical of woodlands.
- The exact assemblage varies according to geographical location, altitude, extent of pavement and degree of grazing.

Does not include when a grass sward is present in a sufficient quantity to be mapped (i.e. beyond clumps and tussock or small isolated grass patches within the pavement). This should be assessed under the appropriate grassland habitat.

#### Other Inland Rock and Scree

- All other rock habitat which does not meet the Priority Habitat description or location and is devoid of any significant vegetation of note. May well be artificially created by human

activities and have the possibility of creating an artificial habitat that replicates the above with management intervention or if left to natural processes.

### Condition Assessment Criteria

#### Limestone Pavement Condition assessment

1. There should be no evidence of damage to the pavement surface.
2. Cover of typical emergent pavement flora and clint-top vegetation should account for at least 25% of total vegetation cover (i.e. excluding bare rock).
3. Cover of all undesirable herbaceous species (false oat-grass, crested dog's-tail, brambles, creeping thistle, spear thistle, curled dock, broad-leaved dock, common ragwort, common nettle and other pernicious perennial species) should be less than 5%.
4. Cover of undesirable woody species (sycamore, beech, blackthorn and cotoneasters) should be less than 10% of the woody cover.

#### Condition assessment Rock Outcrops and Scree

5. Cover of bracken, scrub and trees less than 25%.
6. Cover of weed (for example, creeping and spear thistles, docks, brambles, common ragwort and common nettle) or non-native species less than 1%.
7. Less than 50% of live leaves (broad-leaved plants), fronds (ferns) or shoots (dwarf shrubs) show signs of grazing or browsing.

Condition	Assessment Criteria	Score
Good	<ul style="list-style-type: none"> <li>• Meets the majority of the criteria with only minor variation for the habitat.</li> <li>• None of the indicators of poor condition are present:</li> <li>• Cover of undesirable species below 5%.</li> <li>• Species rich with good example of habitat matching description.</li> </ul> <p>[Ruderal habitats are not a Priority Habitat. As such if they are of good quality they would actually fall within the PH for Open Mosaic Habitat on Previously Developed Land. See note below].</p>	3
Moderate	<ul style="list-style-type: none"> <li>• Some of the condition criteria are being failed.</li> <li>• The rock habitat type has minor differences between what is described in the relevant habitat classifications and what is visible on site.</li> <li>• Has been created through human activity and natural processes over considerable time, but is an important wildlife and habitat resource in its present form.</li> <li>• Cover of undesirable species at 5-10%</li> <li>• Ruderal Habitat with High biodiversity value.</li> </ul>	2
Poor	<ul style="list-style-type: none"> <li>• Ruderal Habitat with low biodiversity value.</li> <li>• Relict of any of the habitat that can be restored.</li> <li>• Potentially restorable to a good condition with improved management.</li> <li>• Most of the condition criteria are being failed.</li> <li>• The habitat type has major differences between what is described in the relevant habitat classifications and what is visible on site, but is still fitting the vegetation components of the habitat type.</li> </ul>	1

	<ul style="list-style-type: none"> <li>Habitat is now severely degraded, or is created by accident but through human activity, with intervention and natural processes will develop the key characteristics of the habitat.</li> <li>Cover of undesirable species above 20%, usually resulting in a dense scrub or tree cover, or high cover of exotic species, lack of bare ground and lack of structural diversity</li> </ul>	
<p><b>Undesirable species:</b></p> <ul style="list-style-type: none"> <li><i>Rhododendron ponticum</i>, <i>Cirsium arvense</i>. Other examples include: creeping thistle, <i>Cirsium arvense</i> and spear thistles, <i>Cirsium vulgare</i>, docks, brambles, common ragwort, <i>Senecio jacobea</i> and common nettle, <i>Urtica dioica</i>.</li> </ul> <p><b>Notes</b></p> <p>The following should be recorded:</p> <ul style="list-style-type: none"> <li>Key or characteristic species present;</li> <li>Whether the pavement is wooded or open in character.</li> <li>Description of the vegetation structure</li> <li>Amount of bare ground</li> <li>Amount of rock cover</li> </ul>		

### Additional information relevant to data collection

#### **Sparsely vegetated land – Ruderal**

These Ruderal short patchy plant associations are typical (but not exclusively) of unmanaged areas in arable landscape, derelict urban sites, quarries and railway ballast. This habitat table should only be used when the **Open Mosaic Habitat on Previously Developed Land** has been excluded, with justification of decision and field notes as to why it does not fit this habitat description. As sparsely vegetated land lacks a dominate species, deciding which condition sheet to use can be tricky. In most cases we believe the grassland or urban type will fit best as determined by the predominant species in the sward i.e where grass species make a significant contribution to the structure use the grassland. When heath species present even at low cover (10%) it should be condition assessed as a heathland habitat if this is the likely habitat that will form given time.

#### **Sparsely vegetated land - Limestone pavement**

A scarce and non-renewable resource but they were frequently removed in the 1970 and 1980's. Remaining sections often have limestone pavement orders<sup>3</sup> to prevent further removal. Where removal has occurred the remnants is often lose limestone scree. This category should only be used when it is solid limestone pavement. Where grassland is present the grassland condition sheet should be used and recorded as the correct grassland type. Limestone pavement vegetation can often have unusual combinations of plants with woodland and woodland edge plants in the sheltered grykes. Can also be partly wooded if grazing excluded. Where canopy is fully developed then woodland condition can be used with appropriate field notes made on the presence of pavement.

<sup>3</sup> <https://data.gov.uk/dataset/ff9f1088-4b07-4cab-88cf-838a8f421328/limestone-pavement-orders>  
[http://naturalengland-defra.opendata.arcgis.com/datasets/509f8e3a23684412b104d1f0660b3ae1\\_0](http://naturalengland-defra.opendata.arcgis.com/datasets/509f8e3a23684412b104d1f0660b3ae1_0)

## Condition Table

## Urban Habitat Type

### Habitat Description

This includes the Priority Habitat Open Mosaic Habitats on Previously Developed Land.

Along with other urban habitats, that have high biodiversity value or the potential to deliver for multiple species such as extensive green roof and walls designed for maximum wildlife benefits.

- Open mosaic habitat on Previously Developed Land [inc. brownfield sites] can be extremely diverse, supporting a wide range of terrestrial and aquatic habitats. This diversity has made them increasingly important within ecological networks for rare and scarce invertebrates as well as lichens, plants, birds, reptiles and amphibians of conservation concern. However, this same diversity can make them challenging to define, identify and assess appropriately. Without being properly identified, wildlife-rich brownfields supporting open mosaic habitat are vulnerable to being poorly assessed, increasing the likelihood of loss to development or inappropriate restoration.
- Open mosaic habitats can be located on wide range of sites such as railway sidings, quarries, former industrial works, slag heap, bings and brick pits. Brownfields with open mosaic habitats show evidence of previous disturbance, either through soil being removed or severely modified by previous use, or the addition of materials such as industrial spoil, with spatial variation developing across the site. The resultant variation allows for a mosaic of different habitats to be supported in close proximity. This habitat diversity can support rich assemblages of invertebrates.
- Artificially created & planted areas that mimic semi-natural habitats such as species rich grassland would also be in scope. Where quality features & high native species richness are created to imitate desirable natural ecosystem attributes, such as pollen, nectar and nesting locations within the area.
- They can be created and incorporated during the development process as a way of increasing and supporting wildlife in an urban setting.
- For more information see:
  - Identifying Open Mosaic Habitats:  
<https://www.buglife.org.uk/sites/default/files/Identifying%20open%20mosaic%20habitat.pdf>
  - Open Mosaic Habitat Survey Handbook both by BugLife;  
<https://www.buglife.org.uk/sites/default/files/omhsurveyhandbookfinal.pdf>

### Condition Assessment Criteria

1. Known history of disturbance at the site or evidence that soil has been removed or severely modified by previous use(s) of the site. Extraneous materials/substrates such as industrial spoil may have been added which in turn has led to a low nutrient environment.
2. The site contains some vegetation. This will comprise of early successional communities consisting mainly of stress-tolerant species (e.g. indicative of low nutrient status or drought). Early successional communities are composed of (a) annuals, or (b) mosses/liverworts, or (c) lichens, or (d) ruderals, or (e) inundation species, or (f) open grassland, or (g) flower-rich grassland, or (h) heathland.
3. The site contains unvegetated, loose bare substrate and pools may be present and desirable.

4. The site shows spatial variation, forming a mosaic of one or more of the early successional communities (a)–(h) above plus bare substrate or pools.

Condition	Assessment Criteria	Score
Good	<ul style="list-style-type: none"> <li>Vegetation provides multiple opportunities for a high number of species to live and breed (complete their life cycles).</li> <li>Bare open ground is common throughout the area.</li> <li>Plant species are flowering extensively and so providing ready nectar sources for insects.</li> <li>Insects and butterflies are common and using the site extensively.</li> <li>None of the indicators of poor condition are present.</li> <li>The invasive non-native species are low or absent from the site, or in the process of being eradicated if beneficial to wildlife to do so.</li> </ul>	3
Moderate	<ul style="list-style-type: none"> <li>Cover of undesirable and invasive species at 10-20%.</li> <li>OR Some of the condition criteria are being failed.</li> <li>The areas of bare ground with little species colonisation are large, with a high potential for improvement with better wildlife management.</li> </ul>	2
Poor	<ul style="list-style-type: none"> <li>Most of the condition criteria are being failed.</li> <li>Cover of undesirable species high above 20%</li> </ul>	1

**Undesirable species:**

- American skunk cabbage *Lysichiton americanus*
- Himalayan balsam *Impatiens glandulifera*
- Japanese knotweed *Fallopia japonica*
- Cherry Laurel *Prunus laurocerasus*
- Shallon *Gaultheria shallon*
- Snowberry *Symphoricarpos albus*
- Variiegated yellow archangel *Lamiastrum galeobdolon* subsp. *argentatum*
- Rhododendron *Rhododendron ponticum*

Factsheets of these invasive non-native plant species can be found on the GB non-native species secretariat website.

<http://www.nonnativespecies.org/home/index.cfm>

## Condition Table

## Wetland Broad Habitat Type

### Habitat Description

- The soil is waterlogged, with the water table close to or above the surface for most of the year.
- They are found on flood plains, on the fringes of open water, in valleys, in basin-like depressions, and also around springs and flushes.
- Often have peat soils present [in either wet, dry or drained state and of any depth].

#### **Lowland Raised Bog** (included degraded raised bog)

This rare habitat type is limited to areas where there are or have been deep peat deposits.

It comprises peatland vegetation dominated by bog-mosses (Sphagnum), cottongrasses and heathers, which develops mainly in cool, humid lowland areas such as the heads of estuaries, river flood plains and depressions where drainage is impeded.

- The bog is usually (was once) higher than the surrounding land so that it only receives water as rainfall.
- Often the degraded habitat stretches beyond the remaining plant community still existing to the edge of the peat body.

#### **Blanket Bog**

This feature comprises (predominantly upland) wetland vegetation, generally on flat or gently sloping blanket peat, and usually on unenclosed moorland with high rainfall.

- It is characterised by bog-mosses (Sphagnum) and cottongrasses, especially hare's-tail cottongrass, and a mix of deergrass, purple moor-grass and dwarf shrubs (especially cross-leaved heath and heather), usually with at least some other indicator species present.

#### **Fens**

- Fens differ from blanket bogs and lowland raised bogs (which are [should be] both dominated by a sphagnum moss carpet) in that fens are fed by ground water and surface water in addition to direct rainfall.
- Fens encompass a wide range of wetland plant communities on both peat and mineral soils, but typically you should find some of the following species:

Bogbean; Marsh pennywort; Bog-mosses (Sphagnum); Marsh valerian; Branched bur-reed Meadowsweet; Cottongrass; Purple-loosestrife; Common butterwort; Ragged robin; Common skullcap; Reed canary-grass; Common reed; Reedmace; Common valerian; Reed sweet-grass; Gypsywort Sedges; Hemp-agrimony; Water forget-me-not; Lesser spearwort; Water horsetail; Marsh arrowgrass; Water mint; Marsh/fen bedstraw; Wild angelica; Marsh cinquefoil; Yellow flag; Marsh-marigold; Yellow loosestrife.

- The vegetation of a fen is largely determined by the site's position in the landscape, the water supply mechanism (for example groundwater, flooding from rivers/streams or surface run-off) and water chemistry.
- Flood plain fens tend to be relatively nutrient-rich and are dominated by tall sedges, grasses and other tall herbs such as meadowsweet, yellow iris and common valerian.

These fens are found throughout the country with particularly important areas in Norfolk and Suffolk.

- Outside flood plains, on fens fed by nutrient-poor water or overlying acid substrates, the vegetation may be shorter and is more likely to be dominated by bog-mosses and bottle sedge and/or other sedges. On more base-enriched sites, very species-rich vegetation may develop, with high cover of brown mosses, small sedges and species such as common butterwort, marsh valerian and marsh arrowgrass. These fen types tend to be much less common. They are concentrated in the north and west of the country, but Norfolk, Dorset and the New Forest, Devon and Cornwall, the White Peak and the Surrey Heaths are also important for them.
- Fen often occurs in association with other semi-natural habitats, especially lowland raised bog, reedbeds, wet woodland, wet grassland (including purple moor-grass and rush pasture), lowland heath and open water. These areas of fen should always be recorded separately.

### **Reedbeds**

- Dominated by common reeds being an early successional, less developed stage in the development of fens habitats. In the UK we separate them out as a separate habitat in our classification system.

### **Floodplain Wetland Mosaic** (previously Coastal Floodplain Grazing Marsh)

The new Priority Habitat 'Floodplain Wetland Mosaic' (FWM) including some or all of the following river and coastal floodplain habitats is defined as:

- a) Mosaics of priority wetland habitats with natural / near-natural hydrological function and/or water quality
- b) Floodplain areas providing important refuges for wetland wildlife whose natural habitats have been lost including:
  - i. Land with breeding waders and/or wintering waterbirds, or other terrestrial wetland priority species or assemblages.
  - ii. Species currently dependent on ditches and other seasonal or permanent standing water within, or surrounding the land.

### **Condition Assessment Criteria**

1. There is no artificial drainage, which would include ditches that are now revegetated and streams that have been depend and widened.
2. The water level and its management should result in surface water throughout the year.
3. Cover of undesirable species (common nettle, docks, creeping/spear thistles, common ragwort and Indian (Himalayan) balsam) should be less than 10%.
4. Cover of scrub should be less than 10%.
5. Cover of bare ground should be less than 10%.
6. No more than 25% of the fen area should have a continuous cover of litter (i.e. dead vegetation).
7. On bogs sphagnum moss cover should be between 40% - 100%. Heathers and cottongrasses should be at least frequent. Cover of dwarf shrubs between 20% and 75% (except when bogmosses (Sphagnum) or other wetland indicators are dominant), with at least two dwarf shrub species frequent.
8. Flowering cottongrass plants frequent in spring (where present), or flowering heather plants at least frequent in autumn (where present).
9. Reedbed vegetation should include at least 60% common reeds.

Condition	Assessment Criteria	Score
Good	<ul style="list-style-type: none"> <li>Meets all the criteria for habitat with only minor variation.</li> <li>None of the indicators of poor condition are present.</li> <li>Hydrology very close to ideal.</li> <li>Water quality good or impacts very localised.</li> </ul>	3
Moderate	<ul style="list-style-type: none"> <li>Clearly fails at least 1 of the criteria for the habitat above.</li> <li>OR where non-native species comprise more than 10% of the vegetation.</li> <li>OR too dry during parts of the year, some minor hydrology impacts.</li> <li>OR moderate water quality enriching the site.</li> <li>Minor drainage still in place.</li> </ul>	2
Poor	<ul style="list-style-type: none"> <li>Fails the majority of criteria for the habitat.</li> <li>High soft rush cover may indicate a previous drained peat lens.</li> <li>Very dry for much of the time.</li> <li>Very poor water quality present.</li> <li>Improved grass sward (refer to grassland condition for supporting information).</li> <li>Extensive drainage features still active to reduce water table significantly.</li> <li>Any peat soil indicates a previous degraded wetland habitat of some type. As such if peat soil is present, irrespective of its current land-use, it should be considered a poor quality wetland.</li> </ul>	1
<p><b>Undesirable species:</b></p> <ul style="list-style-type: none"> <li>Common nettle, docks, creeping/ spear thistles, common ragwort, Indian (Himalayan) balsam and <i>Rhododendron ponticum</i>.</li> <li>Conifer seedlings.</li> </ul>		

### Additional information relevant to data collection

#### **Floodplain Wetland Mosaic** (previously Coastal Floodplain Grazing Marsh)

This habitat category includes all land that fit the criteria for Coastal Floodplain Grazing Marsh (CFGM) and Floodplain Wetland Mosaic Priority Habitat. In addition, this includes areas within the present CFGM habitat inventory and (when published) the NEW 'Floodplain with potential for restoration to Wetland Mosaic Priority Habitat' Inventory. Where features within these areas fit other Priority Habitats (such as Fen, Reedbed, Saltmarsh, Species rich grasslands etc.) they should be recorded as these habitats with a notes to state that it also sits within this habitat mosaic type.

If Floodplain Mosaic contain species rich grassland (such as Floodplain Meadows – see <http://www.floodplainmeadows.org.uk>) it is categorised as Lowland Meadows Habitat and is assessed using Grassland Condition Sheet.

#### **Wetlands - Other Swamps**

Always record as Fen habitat in poor condition.

## Condition Table

## Woodland Broad Habitat Type

### Habitat Description

Woodland is defined as vegetation dominated by trees more than 5 m high when mature, which forms a distinct, although sometimes open, canopy [areas of trees with a canopy greater than 20%]. This includes felled, young or newly planted woodland.

- There is no minimum size for areas of trees that have the definite characteristics and feel of a woodland and are managed as woodland.
- Two broad woodland types are considered here:
  - Broadleaved, mixed and yew woodland.
  - Coniferous woodland.
- It **does not** include scrub (see separate scrub condition assessment).
- In England, native woodland is defined as woodland that is composed of at least 80% native tree species including 'naturalised species'.
- It is based on the **England Woodland Biodiversity Group** condition assessment for none SSSI woodlands. See <https://woodlandwildlifetoolkit.sylva.org.uk/assess> for more background and detailed information.

**Wood Pasture and Parkland** (see notes below on how to record)

Wood pasture is a vegetation structure rather than a particular plant community. Typically, this structure consists of large, open-grown or high forest trees (often pollards) at various densities, in a matrix of grazed grassland, heathland and/or woodland floras.

This feature includes:

- Wood pasture and parkland derived from medieval forests and embankments, wooded commons, parks and pastures with trees; and where the land use has been converted to arable, forestry or amenity, but where ancient trees are still present.
- For wood pasture and parkland assessment established by PTES see <https://ptes.org/campaigns/wood-pasture-parkland/wood-pasture-parkland-survey/>.

### Condition Assessment Criteria

1. This should be an area of trees with complete canopy cover.
2. Native species are dominant. Non-native and invasive species account for less than 10% of the vegetation cover.
3. A diverse age and height structure of the trees.
4. Free from damage [Bark stripping; Browse line; Damage shoot tips] (in the last five years) from stock or wild mammals with less than 20% of vegetation being browsed.
5. There should be evidence of successful (i.e. not browsed off before it gets well established) tree regeneration such as seedlings, saplings and young trees.
6. Standing and fallen dead wood of over 20 cm diameter are present including fallen large dead branches/stems and stumps.
7. Wetland habitat if they exist within the wood has little sign of drainage or channel straightening.
8. The area is protected from damage by agricultural and other adjacent operations.
9. There should be no evidence of inappropriate management (e.g. deep ruts, animal poaching or compaction).
10. Invasive non-native plants are below 5% (see list below).
11. No signs of significant nutrient enrichment present.

12. More than 3 different native trees and 3 shrub species in an average 10 m radius.

Condition	Assessment Criteria	Score
Good	<ul style="list-style-type: none"> <li>Meets at least 10 of the criteria with only minor variation.</li> <li>No more than 1 of the indicators of poor condition are present:</li> <li>Stands of native trees that do not obviously originate from planting should be classified as native semi-natural woodland.</li> </ul>	3
Moderate	<ul style="list-style-type: none"> <li>Clearly fails at least 2 of the criteria above.</li> <li>OR invasive non-native plants are 5-20%.</li> <li>OR where non-native species comprise more than 20% of the canopy, the woodland should be recorded as either non-native plantation or mixed woodland.</li> <li>A mixed woodland is woodland with native and non-native species. (This includes woodlands established by planting and by natural regeneration.)</li> <li>Trees of similar age and height structure throughout the woodland.</li> <li>Little standing or fallen deadwood present.</li> </ul>	2
Poor	<p>The following characteristics can help to identify plantations: (note: BAP woodlands can be plantation woodlands)</p> <ul style="list-style-type: none"> <li>Non-native trees often of a single species or the same age are the dominant component;</li> <li>OR invasive non-native plants are greater than 20%.</li> <li>Mixed species show a consistent planting pattern across the site.</li> <li>Original planting lines, or remains of planting lines, can be seen.</li> <li>Drainage features and channel straightening of watercourses.</li> </ul>	1

**Undesirable species:**

- American skunk cabbage *Lysichiton americanus*
- Himalayan balsam *Impatiens glandulifera*
- Japanese knotweed *Fallopia japonica*
- Cherry Laurel *Prunus laurocerasus*
- Shallon *Gaultheria shallon*
- Snowberry *Symphoricarpos albus*
- Variegated yellow archangel *Lamiastrum galeobdolon* subsp. *argentatum*
- Rhododendron *Rhododendron ponticum*

Factsheets of these invasive non-native plant species can be found on the GB non-native species secretariat website.

<http://www.nonnativespecies.org/home/index.cfm>

**Notes**

The following information should be recorded:

- Dominant tree species.

- Regenerating tree or shrub species.
- Ground flora species – any specialist woodland plants present.
- The average age class throughout the wood – establishment (E), semi-mature (S/M), mature (M) or ancient (A).
- Whether the woodland is accessed by livestock and amount of deer pressure.
- Past management – whether any trees are coppiced or pollarded;
- Threats – damage by pests, invasion by undesirable species, overgrazing or the presence of non-native species.

### **Additional information relevant to data collection**

#### **Woodland - Felled woodland**

The condition assessment of this habitat type needs to be based – so far as possible - on the trees that stood on the site prior to felling. It should be possible to determine what these were from the stumps, bark and leaf litter. It should then be recorded as the original woodland type, the age of the trees and note that it has been felled. Condition assessment will be harder in these situation, but should be considered good unless good ecological justification can be given preferably with accompanying photographic evidence.

If it is not possible to record the woodland type, record any tree recovery or seedlings present between the stumps. Where felling occurred a considerable time previously (4-5 year +) with no obvious replanting progressing it may be appropriate in some circumstances to classify as the predominant habitat that is now replacing the felled trees (with stumps still present), particularly when they have high biodiversity value such as heathland or grassland development. Notes of what other species are present on the site will need to be recorded, such as ground flora; felled brash predominates; heather present; grass species; scrub and tree species regenerating etc.

#### **Woodland - Planted young trees**

This is recently planted trees (often in tree tubes) within grassland. Where the tree species planted match another woodland description they should be recorded under this description (with a note to state the tree age and that recently planted). If none match then they can be recorded under this catch all category. The grassland sward species and herbs present should also be recorded and described in field notes. Particular note should be made of habitat enhancement practices, such as where native flowers and herbs are created surrounding the planting, to give a wildlife boost until full tree canopy has developed.

#### **Woodland and forest - Wood-pasture and parkland**

These are mosaic habitats valued for their trees, especially veteran and ancient trees, with a grazed grassland below. They have open grown trees, sometimes in clumps, but with space between them. They may contain patches of scrub in some circumstances. If it is clearly this habitat then it needs to be recorded under this habitat type for all the area being surveyed. But for condition it may well be preferable to condition assess and map different components separately using different sheets. Please record how this was done, along with recording area amounts for each split section. So below the tree canopy use the woodland condition table; in open grassland use the grassland condition; on mappable areas of scrub use the scrub condition etc. This is relatively complex on the different components of the mosaic, but will be useful for large areas of parkland being surveyed. To make an accurate assessment

of the biodiversity value we need to know if the grassland is made of poor or good quality species composition, is the scrub of high quality, the age of the trees and key feature etc. This is likely to involve quite extensive field notes and ecological report to capture this information accurately.

Wood pasture and parkland that has been converted to other land uses such as arable fields, forestry and amenity land but where veteran trees survive are still of high nature conservation interest. They offer great opportunities for restoration to increase biodiversity habitat and should still be recorded under this category with the potential to provide wildlife gain highlighted.

BETA TEST

## Part 1b - Condition assessment of hedgerows and lines of trees

1.13 A series of eight 'attributes', representing key physical characteristics, are used for this assessment. The attributes, and the minimum criteria for achieving a 'favourable condition' in each, are set out in Table TS1-2. The attributes use similar favourable condition criteria to the 'Hedgerow Survey Handbook' and the handbook is the recommended source of reference for assessing hedgerow attributes.

**TABLE TS1-2:** Hedgerow attributes and criteria for meeting 'favourable condition'

Hedgerow favourable condition attributes		
Attributes and functional groupings (A, B, C & D)	Criteria (the minimum requirements for 'favourable condition')	Description
A1. Height	>1.5 m average along length	<p>The average height of woody growth estimated from base of stem to the top of shoots, excluding any bank beneath the hedgerow, any gaps or isolated trees.</p> <p>Newly laid or coppiced hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice )</p> <p>A newly planted hedgerow does not pass this criterion (unless it is &gt; 1.5 m height)</p>
A2. Width	>1.5 m average along length	<p>The average width of woody growth estimated at the widest point of the canopy, excluding gaps and isolated trees.</p> <p>Outgrowths (e.g. blackthorn suckers) are only included in the width estimate when they &gt;0.5 m in height.</p> <p>Laid, coppiced, cut and newly planted hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice<sup>4</sup>)</p>
B1. Gap – hedge base	Gap between ground and base of canopy <0.5 m for >90% of length (unless 'line of trees')	<p>This is the vertical gappiness of the woody component of the hedgerow, and its distance from the ground to the lowest leafy growth.</p> <p>Certain exceptions to this criterion are acceptable (see page 65 of the Hedgerow Survey Handbook)</p>

<sup>4</sup> HedgeLink (<http://hedgeline.org.uk/index.php>) provides a resource of management advice for hedgerows.

B2. Gap - hedge canopy continuity	<ul style="list-style-type: none"> <li>Gaps make up &lt;10% of total length and</li> <li>No canopy gaps &gt;5 m</li> </ul>	<p>This is the horizontal gappiness of the woody component of the hedgerow. Gaps are complete breaks in the woody canopy (no matter how small).</p> <p>Access points and gates contribute to the overall gappiness, but are not subject to the &gt;5 m criterion (as this is the typical size of a gate)</p>
C1. Undisturbed ground and perennial vegetation	<p>&gt;1 m width of undisturbed ground with perennial herbaceous vegetation for &gt;90% of length</p> <ul style="list-style-type: none"> <li>measured from outer edge of hedgerow, and is present on one side of the hedge (at least)</li> </ul>	<p>This is the horizontal gappiness of the woody component of the hedgerow. Gaps are complete breaks in the woody canopy (no matter how small).</p> <p>Access points and gates contribute to the overall gappiness, but are not subject to the &gt;5 m criterion (as this is the typical size of a gate)</p>
C2. Undesirable perennial vegetation	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground	The indicator species used are nettles ( <i>Urtica</i> spp.), cleavers ( <i>Galium aparine</i> ) and docks ( <i>Rumex</i> spp.). Their presence, either singly or together, should not exceed the 20% cover threshold.
D1. Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species	Neophytes are plants that have naturalised in the UK since AD 1500. For information on neophytes see the <a href="#">JNCC website</a> and for information on invasive non-native species see the <a href="#">GB Non-Native Secretariat website</a> .
D2. Current damage	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities	<p>This criterion addresses damaging activities that may have led to or lead to deterioration in other attributes.</p> <p>This could include evidence of pollution, piles of manure or rubble, or inappropriate management practices (e.g. excessive hedge cutting)</p>

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

1.15 Hedgerow and line of trees condition assessment generates a weighting (score) ranging from 1-3, which is used within the biodiversity metric 2.0. The scores for each are set out in tables TS1-3 and TS1-4 below.

**TABLE TS1-3: Hedgerow condition assessment and weighting**

<b>Condition categories for hedgerows</b>		
<b>Category</b>	<b>Maximum number of attributes that can fail to meet 'favourable condition' criteria in Table TS1-.2</b>	<b>Weighting (score)</b>
Good	No more than 2 failures in total and no more than 1 in any functional group.	3
Moderate	No more than 4 failures in total and fails both attributes in a maximum of one functional group e.g. fails attribute 1 & 2, 5 & 7 = Moderate condition.	2
Poor	Fails a total of more than 4 attributes or both attributes in more than one functional group.	1

Condition assessment of a line of trees

1.16 Condition assessment for a line of trees is based on continuity of the canopy only, as set out in Table TS1-4.

**TABLE TS1-4: Line of tree condition assessment and weighting**

<b>Condition categories for lines of trees</b>		
<b>Category</b>	<b>Continuity of tree canopy</b>	<b>Weighting (score)</b>
Good	Mature trees with continuous canopy Definition: <ul style="list-style-type: none"> <li>• a 'mature tree' in this context is one that is at least 1/3 expected fully mature height</li> <li>• gaps make up &lt;10% of total length and there are no canopy gaps &gt;5 m</li> </ul>	3
Moderate	Continuous canopy Definition: <ul style="list-style-type: none"> <li>• trees &lt; 1/3 expected fully mature height</li> <li>• gaps make up &lt;10% of total length and there are no canopy gaps &gt;5 m</li> </ul>	2
Poor	Broken canopy Definition: <ul style="list-style-type: none"> <li>• gaps make up &gt;10% and / or gaps are &gt;5 m in length.</li> </ul>	1

## Part 1c - The Rivers and Streams Condition Assessment

- 1.17 The rivers and streams condition assessment is based on the extent and diversity of observed physical features in the river channel and riparian zone (including the physical structure of vegetation) as well as the extent and types of any human modifications. The physical state of a river reach is a useful proxy for determining overall riverine ecological quality but it needs to be attuned to the type of river under consideration.
- 1.18 The rivers and streams condition assessment is based on geomorphic principles that are an extension of established citizen science surveys<sup>5</sup>. The assessment, called the River Metric Survey, is implemented in two parts<sup>6</sup>. A largely desk-based reach-scale assessment indicates the current river type. A subreach scale assessment based entirely on field survey captures physical features / habitats, vegetation structural features, and human interventions to assess the condition of the river at the development site, taking into account the type of river.

### Part 1 - Reach scale desk-based assessment

- 1.19 The river is assigned to one of 13 river types that are likely to be encountered in England (Figure 8-2). These are a subgroup of 22 broad types of river that have been identified for Europe<sup>7,8</sup>, including the United Kingdom<sup>9</sup>. The river type is determined firstly by identifying a homogenous reach that contains the proposed intervention site. This reach is identified using the latest Ordnance Survey (1:10,000 scale) maps or air photographs (e.g. Google Earth) and searching upstream and downstream from the proposed intervention site. To delimit the start and end point, a homogeneous river reach will show a reasonably consistent planform with no major tributary streams, on-line large lakes or reservoirs, as these could cause a marked change in the flow regime and sediment load.
- 1.20 Once the reach is determined, its gradient and 4 properties of its planform are measured to support an initial assessment of the river type. This is further refined using 4 properties of the river bed sediments observed in field surveys of sub-reaches (see below). The assignment of this indicative river type is automatically carried out within the River Metric Survey information system.

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<sup>5</sup> See: <https://modularriversurvey.org/river-metric>

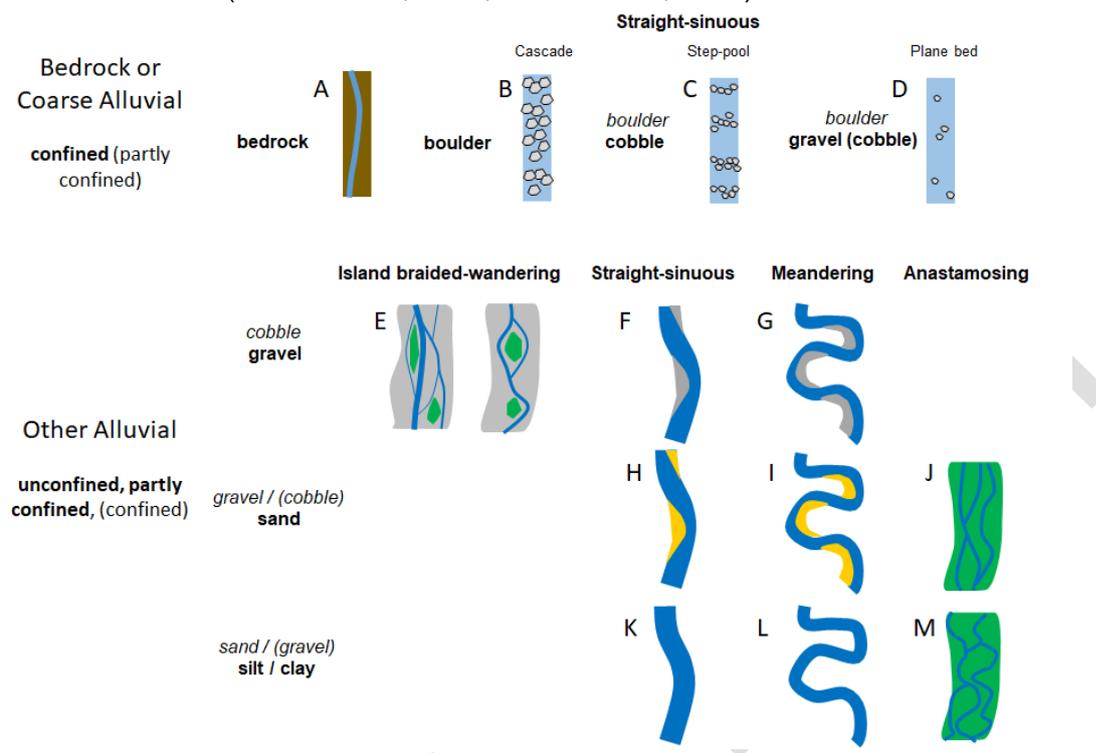
<sup>6</sup> For further information on the method please visit (<https://modularriversurvey.org/river-metric>).

<sup>7</sup> GURNELL ET AL., 2016. A multi-scale hierarchical framework for developing understanding of river behaviour to support river management. *Aquatic Sciences*, 78(1): 1-16.

<sup>8</sup> RINALDI, M., GURNELL, A.M., GONZÁLEZ DEL TÁNAGO, M., BUSSETTINI, M. & HENDRIKS, D., 2016. Classification of river morphology and hydrology to support management and restoration. *Aquatic Sciences*, 78(1): 17-33.

<sup>9</sup> ENGLAND AND GURNELL, 2016. England, J. and Gurnell, A.M. (2016) Incorporating Catchment to Reach Scale Processes into Hydromorphology Assessment in the UK. *Water and Environment Journal*, 30: 22–30.

**FIGURE TS1-1:** 13 river types found in Britain based on valley confinement, planform and bed material size (Gurnell et al., 2016, Rinaldi et al., 2016)



## Part 2 - Sub-reach scale field assessment

- 1.21 The field element employs the Monitoring of River Physical habitat (MoRPh) survey<sup>10,11</sup>, which is applied to short lengths of river. For the River Metric Survey, 5 MoRPh field surveys are conducted on contiguous lengths (modules) of river. Each MoRPh module covers a river length that is approximately twice the river width (typically 10, 20, 30 or 40 m in length). Completing 5 contiguous modules provides information for a 50 to 200 m long sub-reach. Depending on the size of the development, the sub-reach survey of 5 modules is repeated to capture at least 20% of the total river length under consideration (i.e. 1 sub-reach survey every 250 to 1000 m). The River Metric Survey captures information on sediments, vegetation, morphological and water-related features; and the extent and severity of physical modification within the channel, channel margins, banks and riparian zone (to 10 m from the bank tops).
- 1.22 Once each set of observations for 5 contiguous modules is entered into the River Metric Survey information system, indicators of the condition of the sub-reach are automatically provided as well as an overall condition score (Table TS1-5). The condition score is scaled to a range that is achievable by the particular river type. In addition, guidance is given on which specific geomorphic features are expected, or highly likely, to be observed in the field surveys if the river is functioning according to river type.

<sup>10</sup> SHUKER, L.J., GURNELL, A.M., WHARTON, G., GURNELL, D.J., ENGLAND, J., FINN LEEMING, B. & BEACH, E., 2017. MoRPh: a citizen science tool for monitoring and appraising physical habitat changes in rivers. *Water and Environment Journal*, 31(3): 418-424.

<sup>11</sup> GURNELL, A.M., ENGLAND, J., SHUKER, L., WHARTON, G. (in review). The contribution of citizen science volunteers to river monitoring and management: International and national perspectives and the example of the MoRPh survey.

- The extent of the River Metric Survey is only required within the red line boundary of the intervention site (on-site and off-site).
- Surveyors are required to be accredited to use the River Metric Survey and be suitably qualified / experienced to identify the sources of modifications on the site and their potential solutions.
- A low risk condition assessment can be used in situations where the impact on the river reach is considered low, see below in section, Riparian Zone.

**TABLE TS1-5:** Condition weightings for rivers and streams

<b>Classification</b>	<b>Weighting</b>
<b>Good</b>	5
<b>Fairly Good</b>	4
<b>Moderate</b>	3
<b>Fairly Poor</b>	2
<b>Poor</b>	1

## Part 2 – Considerations that have shaped biodiversity metric 2.0

2.1. Biodiversity metric 2.0 has benefited from expert input that has informed and shaped its development. This technical supplement section aims to provide an overview of the considerations and rationale that have shaped and informed different component parts of the metric, for example distinctiveness or time to target condition or even the habitat definitions. The detailed value tables and methodologies are presented in other parts of the technical supplement and user guide. This section includes considerations on:

- Distinguishing waterbody types
- Distinctiveness of habitats
- Condition
- Connectivity
- Habitat creation and restoration risks
- Time to Target Condition

### Distinguishing waterbody types

- 2.2. For the purposes of biodiversity metric 2.0 waterbodies with an area of  $\leq 1$  ha are classified as ponds and waterbodies with an area  $\geq 2$  ha are classified as lakes. Waterbodies between 1 and 2 ha need to be classified as either a pond or lake based on expert judgement. Table TS1-1 should be used to inform decisions on lake type.
- 2.3. Water body 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 original or optimum state. It also makes assessment of natural lake type difficult to judge in the field. For the biodiversity metric 2.0 we have adopted the pragmatic approach used in the Water Framework Directive (WFD) Lakes Typology.
- 2.4. 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 1 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](#), by searching for a lake then clicking on the typology tab and looking at the 'geology type'.
- 2.5. The relationship between WFD waterbody types and various other typologies can be found in the Table **TS2-1** below. Ponds can be classified using the WFD typology, but the data is often not available to do so. Temporary water bodies and highly fluctuating water bodies are not captured in the WFD typology and so are included separately.

### TABLE TS2-1: Comparability of habitat descriptions and typologies

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 JNCC vegetation types and WFD

alkalinity/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.

Biodiversity metric 2.0 lake types	WFD alkalinity/colour types	Priority Habitat types	Habitats Directive Annex 1 types	JNCC vegetation types
High alkalinity lakes	High alkalinity	Naturally eutrophic standing waters > 2 ha	Natural eutrophic lakes H3150	<b>E, G, I, H</b>
Marl Lakes	Marl	Mesotrophic lakes > 2 ha	Hard oligo-mesotrophic with <i>Chara</i> spp. H3140	<b>B, C2, E, F, G, I</b>
Moderate alkalinity lakes	Moderate alkalinity		Oligotrophic to mesotrophic standing waters H3130	<b>D, E,</b>
Low alkalinity lakes	Low alkalinity	Oligotrophic and dystrophic lakes > 2 ha	Oligotrophic standing waters of sandy plains H3110	<b>B, C1, C2,</b>
			Natural dystrophic lakes and ponds H3160	
Peat Lakes	Peat			
Reservoirs	WFD typology does not include			
Aquifer fed naturally fluctuating water bodies	WFD typology does not include hydrological regime	Aquifer fed naturally fluctuating water bodies	In England the known examples of this type are also eutrophic lakes H3150.	<b>B, I</b>
Ponds (Priority Habitat) Ponds (Non-Priority Habitat) Temporary lakes, ponds and pools	WFD typology does not refer specifically to ponds	Ponds < 2 ha	*Mediterranean temporary ponds H3170  Ponds and pools can represent any of the above habitat types	
Ditches	WFD typology does not include			

### Distinctiveness of habitats

2.6. In biodiversity metric 2.0 habitats have been assigned to distinctiveness bands based on the following criteria of distinguishing features;

- Total amount of remaining habitat in England (it's rarity)
- % of habitat protected in SSSI: where less is protected in SSSI's, it is considered of higher distinctiveness

- UK Priority Habitat Status<sup>12</sup>: Priority Habitats area classed as High or Very High
- European Red List Categories for the habitat (see Box TS3-1)

**BOX TS2-1: European Red List of Habitat Information Box**

- Red list for European Habitats category quoted is based on the European Union (EU28) list
- The Red list corresponds to the EUNIS Classification Code and Description

*The red list uses;*

- 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

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

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 often is difficult or impossible to separate biotic and abiotic degradation processes, Criteria C and D have been combined in this project (Criterion C/D), with the option to separate where data were available.

To understand when something is Critical, Endangered, Vulnerable see tables in Appendix 2: IUCN Red List of Ecosystems Criteria, Version 2.1

<https://portals.iucn.org/library/sites/library/files/documents/2016-010.pdf>

The European Red List of Habitats 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.

- 2.7. For freshwater bodies an alternative red list approach has been used as the criterion (see table TS2-2). The major reason for this is that the extent or area of freshwater bodies is not often reduced but quality (chemical, biotic etc.) can have been fundamentally changed and have effectively degraded 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 criteria were the criteria primarily driving the red list categories assigned to standing water habitats at the European level and reported in the table (TS2-2) below. The recent article 17 reporting 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 IUCN categories is shown below. Whilst this suggests a worryingly large area of the habitat may be degraded and it remains least concern, application

<sup>12</sup> <http://jncc.defra.gov.uk/page-5706>

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.

**Table TS2-2: Alternative red list criterion for freshwater habitats.**

European Red List Categories	Adapted alternative to RED LIST for criteria C & D used in this assessment
<p><b>Critical (CR)</b> When the evidence indicates that it meets any of the criteria A to E for <b>Critical</b> (i.e. for quantity 80% loss in past 50 years), and is then considered to be at an extremely high risk of collapse.</p>	<p>Only relevant if severity of impact is thought to be extremely severe</p>
<p><b>Endangered (EN)</b> When the evidence indicates that it meets any of the criteria A to E for <b>Endangered</b> (i.e. for quantity 50% loss in past 50 yrs.) and considered to be at a very high risk of collapse.</p>	<p>≥90% of the extent of the habitat degraded</p>
<p><b>Vulnerable (VU)</b> When the best available evidence indicates that it meets any of the criteria A to E for <b>Vulnerable</b> (i.e. for quantity 30% loss in last 50 yrs.), and is then considered to be at a high risk of collapse.</p>	<p>&lt;90 - ≥70% of the extent of the habitat degraded</p>
<p><b>Near Threatened (NT)</b> 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.</p>	<p>&lt;70 - ≥50% of the extent of the habitat degraded</p>
<p><b>Least Concern (LC)</b> 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.</p>	<p>&lt; 50% of the extent of the habitat degraded</p>

2.8. There are some challenges with using different criteria mainly due to complications of different habitat classification systems. The UK Priority Habitats (PH) do not read directly to the European Habitats (Annex 1<sup>13</sup>) and the European Red List of Habitats uses the EUNIS habitat classification<sup>14</sup> which does not match completely to the other two classifications. They all have strengths and weaknesses and were developed to solve certain issues. Biodiversity metric 2.0 has the UK Habitat Classification (v1, 2018) at its core. Using available translation tools other classifications were transposed to the UK Habitat Classification and this has been used as the basis for the allocation of distinctiveness bands (see Tables TS3-4 to TS3-13). The inter-relationships between the various classification systems are shown within these tables.

2.9. Priority Habitat Inventory v2 2018 was the primary source of data to inform the criterion 'Area of habitat extent and % of remaining habitat in SSSIs'. In some instances, further additions from the Natural England Habitat specialists were

<sup>13</sup> <http://jncc.defra.gov.uk/page-1523>

<sup>14</sup> <https://www.eea.europa.eu/data-and-maps/data/eunis-habitat-classification>

included where these are the more certain and commonly used figures for those habitats.

- 2.10. The European Red List has been used to highlight how rare or endangered a habitat is at a European and consequently international scale. But there may be some habitats that are much rarer and important in an England or UK context (i.e. they are much more common on the continent). Also there may be habitats which are very rare elsewhere but reasonably common here so some adjustments were made to reflect the state of knowledge when applying this criterion.
- 2.11. Having compiled this basic data about each of the habitats they were then assigned to a distinctiveness category. Table TS2-3 shows the categories and the thresholds used for assignment.

**Table TS2-3: Habitat Distinctiveness Bands and criterion thresholds**

Distinctiveness Band	Criterion Threshold
Very High Distinctiveness	<ul style="list-style-type: none"> <li>Small amount of remaining habitat with a lot of it unprotected by designation.</li> <li>Endangered or Critical European red List habitats.</li> </ul>
High Distinctiveness	<ul style="list-style-type: none"> <li>Remaining Priority Habitats not in very high distinctiveness band &amp; other red list of habitats.</li> </ul>
Medium Distinctiveness	<ul style="list-style-type: none"> <li>Non-Priority Habitats with significant wildlife benefit and 1 replaceable Priority Habitat (Arable field Margins).</li> </ul>
Low Distinctiveness	<ul style="list-style-type: none"> <li>Agricultural and Urban land use of lower biodiversity value.</li> </ul>
Very Low Distinctiveness	<ul style="list-style-type: none"> <li>Urban – with artificial structure which are un-vegetated, unsealed surface or built linear features of very low biodiversity value.</li> </ul>

**Table TS2-4: Habitats classified as being of Very High Distinctiveness**

Key: **BOLD** text= Priority Habitat; **Green** text= Annex 1 Habitat; **Blue** text= EUNIS code

Habitat Description (Priority Habitat in BOLD)	Total amount of habitat remaining	Total amount of habitat remaining	European Red List Categories (EUNIS code)	Notes
<b>Grassland - Lowland dry acid grassland</b>	14,881 Ha (PHI) 20, 142 Ha (UK BAP)	60%	Vulnerable (E1.7) Endangered (E1.9a) Endangered (E3.52) Least Concern (E5.31)	
<b>Grassland - Lowland meadows</b>	18,008 Ha (PHI) 7, 282 Ha (UK BAP)	52.6%	Vulnerable (E2.1) Vulnerable (E2.2)	Floodplain meadows (E3.41) considered the most endangered

			<b>Endangered</b> (E3.41)	
<b>Grassland - Upland hay meadows</b>	1,928 Ha (PHI) 870 Ha (UK BAP)	39.1%	<b>Vulnerable</b> (E2.3)	
<b>Heathland and shrub - Mountain heaths and willow scrub</b>	1,408 Ha	79%		
<i>(H4060) Alpine and subalpine heaths</i>	1,232 Ha	100%	<b>Least Concern</b> (F2.2a)	
<i>(H4080) Mountain willow scrub</i>	0.5 Ha	100%	<b>Near Threatened</b> (F2.1)	
<i>(H6430) Tall herb communities</i>	unknown	unknown		
<b>Lakes - Aquifer fed naturally fluctuating water bodies</b>	20 Ha	100%	Unknown	Figures for this habitat type are intrinsically difficult due to the fluctuating water levels. Only known in Breckland.
<b>Sparsely vegetated land - Calaminarian grasslands</b> <i>(H6130) Grasslands on soils rich in heavy metals</i>	152 Ha	88%	<b>Endangered</b> (E1.B)	
<b>Sparsely vegetated land - Limestone pavements</b> (H8240)	2,481 Ha	84.7%	<b>Least Concern</b> (H3.5a)	Outcrops of limestone, comprising flat slabs of rock.
<b>Rivers – On Priority Habitat Rivers and Streams Map</b>				
<b>Rivers - Class 1-River Naturalness Assessment</b>				
<b>Wetland - Blanket bog</b> <i>(H7130) Blanket Bog</i>	230,114 Ha	68.8%	<b>Near Threatened</b> (D1.2)	
Wetland – Degraded Blanket Bog				
<b>Wetland - Depressions on Peat substrates (H7150)</b>	Unknown	unknown	<b>Vulnerable</b> (D2.2a) Partial only <b>Vulnerable</b> (D2.2c) Partial only <b>Vulnerable</b> (D2.2a) Partial only	
<b>Wetland – Fens</b> (both Upland & Lowland types)	34,634 ha	65%		

<i>(H7210) Calcium-rich fen dominated by great fen sedge</i>			<b>Endangered</b> (D4.1b) <b>Vulnerable</b> (D4.1c)	
<i>(H7220) Hard-water springs depositing lime;</i>			(Partial) <b>Endangered</b> (D4.1a)	
<i>(H7230) Alkaline Fens Calcium-rich springwater-fed fens;</i>			<b>Endangered</b> (D4.1a) <b>Vulnerable</b> (D4.1c)	
<i>(H7240) Alpine pioneer flush/mire formations.</i>			<b>Vulnerable</b> (D4.2)	
Poor fen (D2.2a)			<b>Vulnerable</b> (D2.2a)	
Intermediate fen and soft-water spring mire (D2.2c)			<b>Vulnerable</b> (D2.2c)	
<b>Wetland - Lowland raised bog</b>	9,090 Ha (PHI) 17,411 ha (Annex 1, 2018)	90%  47%	<b>Endangered</b> (D1.1)	
<i>(H7110) Active raised bogs</i>	3,727 ha			
<i>(H7120) Degraded raised bog</i>	13,684 ha			
<b>Wetland – Oceanic Valley Mire<sup>15</sup> (D2.1)</b>			<b>Vulnerable</b> (D2.1)	
<b>Wetland - Purple moor grass and rush pastures</b> <i>(H6410) Molinia meadows on calcareous, peaty or clayey-silt-laden soils</i>	7,117 Ha (PHI) 21, 544 Ha (UK BAP)	30%	<b>Endangered</b> (E3.5)	Developed through past historical management practices often from other Fen and Mire habitats over long time scales.
<b>Wetland - Transition mires<sup>16</sup> and quaking bogs (H7140)</b>			<b>Vulnerable</b> (D2.2c) <b>Vulnerable</b> (D2.3a)	

<sup>15</sup> No clearly related Annex I type. Small parts may qualify for 7150, and locally the habitat may have been assigned under Annex I type 7110 (active raised Bog). <https://forum.eionet.europa.eu/european-red-list-habitats/library/terrestrial-habitats/d.-mires-and-bogs/d2.1-oceanic-valley-bog-1>

<sup>16</sup> 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.

**Table TS2-4: Cropland and Urban habitats classified as being of High Distinctiveness**

Habitat Description (Priority Habitat in BOLD)	Total amount of habitat remaining	% of habitat Protected in SSSI	European Red List Categories	Notes
<b>Cropland - Traditional orchards</b>	14,853 Ha	0.3%	Not Listed	
<b>Urban - Open Mosaic Habitats on Previously Developed Land</b>	Unknown	Very Little	Not Listed	

**Table TS2-5: Grassland and Heathland (inc. upland and scree) habitats classified as being of High Distinctiveness**

Habitat Description (Priority Habitat in BOLD)	Total amount of habitat remaining	% of habitat Protected in SSSI	European Red List Categories	Notes
<b>Grassland – Floodplain Wetland Mosaic</b> (CFGM; previously Coastal Floodplain Grazing Marsh) <b>Coastal &amp; Floodplain Grazing Marsh</b> <i>Soon to become</i> Floodplain Wetland Mosaic	218,283 Ha	14.7%		CFGM was often improved grassland. Little of PH Quality, hence small amount designated, sits on degraded fen and coastal habitats that need restoration. Species rich sward would classify it as Lowland Meadow.
<b>Grassland - Lowland calcareous grassland</b>	57,189 Ha (PHI) 38,687 Ha (BAP)	65.8%	Vulnerable (E1.2a)	
<b>Grassland - Upland calcareous grassland</b>	11,242 Ha (PHI)	81.4%	Vulnerable (E1.26)	
<b>Grassland – Tall Herb communities</b>	Not Known	Expected High		
<b>Heathland and shrub - Lowland Heathland</b>	50,987 Ha (PHI)	78%	Vulnerable	
<i>(H4010) Wet heathland with cross-leaved heath; lowland</i>	17,667 Ha		Vulnerable (F4.1)	
<i>(H4020) Wet heathland with Dorset heath and cross-leaved heath</i>	2,661 Ha		Vulnerable (F4.1)	
<i>(H4030) Dry heaths; lowland</i>	26,139 Ha		Vulnerable (F4.2)	
<i>(H4040) Dry coastal heaths with Cornish heath</i>	2,212 Ha		Vulnerable (F4.2)	

<b>Heathland and shrub - Sea buckthorn scrub (Annex 1)</b> <i>(H2160) Dunes with Hippophae rhamnoides (Sea Buckthorn)</i>	unknown	100%		East coast sand dunes
<b>Heathland and shrub - Upland Heathland</b>	276,885 Ha			
<i>(H4010) Wet heathland with cross-leaved heath; upland</i>	40,436 ha	c.95%?		
<i>(H4030) Dry heaths; upland</i>	236,449	72%		
<b>Sparsely vegetated land - Inland rock outcrop and scree habitats</b>				
<i>(H8110) Acidic scree</i>	3,250 Ha	c.80%	Least Concern (B2.5)	
<i>(H8120) Base-rich scree</i>	400 Ha	c.95%	Least Concern (B2.6c)	
<i>(H8210) Plants in crevices in base-rich rocks</i>	300 Ha	c.95%		
<i>(H8220) Plants in crevices in acid rocks</i>	1,250 Ha	c.80%		
<i>(H6430) Tall herb communities</i>	unknown	unknown		

**Table TS2-6: Wetland habitats classified as being of High Distinctiveness**

Habitat Description	Total amount of habitat remaining	% of habitat Protected in SSSI	European Red List Categories (EUNIS code)	Notes
<b>Wetland - Reedbeds</b>	2,956 Ha	79.8%	Not on list	An early successional Fen community that is classified separately in the UK Priority Habitat classification.

**Table TS2-7: Freshwater lake and pond habitats classified as being of High Distinctiveness**

Habitat Description	Total amount of habitat remaining	% of habitat Protected in SSSI	European Red List Categories (EUNIS code)	Alternative to red list using condition %	Notes
Low alkalinity lakes (H3110)	3,985 Ha	40%	Least Concern (C1.1b)	Vulnerable	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.
Moderate alkalinity lakes (H3130)	5,700 Ha	32%	Least Concern (C1.1b)	Vulnerable	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.
High alkalinity lakes (H3150)	20,351 Ha	14%	Near Threatened (C1.2b)	Endangered	Article 17 reporting found only 3% of surveyed lake area was in 'good' condition for these lakes; they clearly are Endangered.
Marl lakes (H3140)	584 Ha	21.7%	Vulnerable (C1.2a)	Near Threatened	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.
Peat lakes (H3160)	1,275 Ha	5%	Near Threatened (C1.4)	Endangered	Article 17 reporting found less than 1% of

					surveyed lake area was in 'good' condition for these lakes; they clearly are endangered.
Ponds	4159 Ha	1.5%		Vulnerable	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.
Aquifer fed naturally fluctuating water bodies	20 Ha	100%	Near Threatened (C1.2b)	Unknown	Figures for this habitat type are intrinsically difficult due to the fluctuating water levels. Only known in Breckland.
Temporary lakes, ponds and pools		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.
Rivers and lakes - Reservoirs	Unknown			Not assessed	Whilst some canals & ditches and reservoirs are
Rivers and lakes - Canals	Unknown			Not assessed	

Rivers and lakes - Ditches	Unknown			Not assessed	in SSSIs, there is no national inventory which would allow us to produce these figures.
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**Table TS3-2: River habitats classified as being of High Distinctiveness**

<b>Habitat Description</b> [River BAP Priority Descriptions (2011) <a href="http://jncc.defra.gov.uk/page-5706">http://jncc.defra.gov.uk/page-5706</a> ]	<b>Total amount of habitat remaining</b>	<b>% of habitat Protected in SSSI</b>	<b>European Red List Categories (EUNIS code)</b>	<b>Notes</b>
<b>Rivers - Class 2 or 3 -River Naturalness Assessment</b>				
<b>Rivers - Headwater Streams</b>				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.
<b>Rivers - Chalk Rivers</b>			EUNIS code 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.
<b>Rivers - Abundance of Water- Crowfoots</b> <i>Includes (H3260) Rivers with floating vegetation</i>				
<b>Rivers - Active Shingle Rivers</b>				

**Table TS2-9: Coastal habitats classified as being of High Distinctiveness**

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

**Table TS2-10: Woodland habitats classified as being of High Distinctiveness**

The Metric excludes ancient woodland (either determined from inventory or field survey of indicator species) and veteran trees as this is irreplaceable habitat and outside the metric parameters. The figures used on remaining habitat are inclusive of ancient woodland as these are the most commonly referred to data on extent.

Habitat Description	Total amount of habitat remaining	% of habitat Protected in SSSI	European Red List Categories	Notes
Deciduous woodland	735,055 Ha	13%		17% of Ancient woodland in SSSI.
<b>Woodland and forest - Upland mixed ashwoods</b>			Near Threatened (G1.A)	
<i>(H9180) Lime-maple woodlands of rocky slopes</i>				
<b>Woodland and forest - Upland oakwood</b>			Near Threatened (G1.A) Vulnerable (G1.8)	
<i>(H91A0) Western acidic oak woodland</i>				
<b>Woodland and forest - Wet woodland</b>				
<i>(H91E0) Alder woodland on floodplains</i>			Near Threatened (G1.1)	
<i>(H91D0) Bog woodland</i>			Vulnerable (G1.5)	
<b>Woodland and forest - Lowland beech and yew woodland</b>			Near Threatened (G1.62, G1.6a & b)	
<i>(H9120) Beech forests on acid soils.</i>				
<i>(H9130) Beech forests on neutral to rich soils.</i>				
<i>(H91J0) Yew-dominated woodland.</i>			Least Concern (G3.9a)	
<i>(H5110) Natural box scrub</i>				
<b>Woodland and forest - Lowland mixed deciduous woodland</b>				
<b>Woodland and forest - Native pine woodlands</b>			Near Threatened (G3.41 & G3.4a)	
<i>(H91C0) Caledonian forest</i>				
<b>Woodland and forest - Upland birchwoods</b>				
<b>Woodland – Wood pasture &amp; Parkland</b>				

**Table TS2-11: Habitats classified as being of Medium Distinctiveness**

Non Priority Habitats with wildlife benefit and a single re-creatable Priority Habitat

Habitat Description	Total amount of habitat remaining	% of habitat Protected in SSSI	European Red List Categories	Notes
<b>Cropland - Arable field margins</b>	N/A	Very little	No	
Grassland - Other neutral grassland	N/A	Very little	No	
Grassland - Other lowland acid grassland	N/A	Very little	No	
Grassland - Upland acid grassland	N/A	Some	No	
Grassland - Bracken	N/A	Very little	No	
Heathland and shrub - Blackthorn scrub (non-Priority Habitat)	N/A	Very little	No	
Heathland and shrub - Bramble scrub	N/A	Very little	No	
Heathland and shrub - Gorse scrub	N/A	Some	No	Some Gorse scrub (Western Gorse & Dwarf Gorse, <i>Ulex gallii</i> & <i>Ulex minor</i> ) is also a big component of some areas of Upland Dry Heath & Lowland Heath should be recorded as such.
Heathland and shrub - Hawthorn scrub	N/A	Some	No	
Heathland and shrub - Hazel scrub	N/A	Very little	No	The majority will be a Woodland PH type above.
Heathland and shrub - Mixed scrub	N/A	Very little	No	
Heathland and Shrub – Sea Buckthorn scrub (other)	N/A	Very little	No	
Lakes - Reservoirs	N/A		No	
Lakes - Ditches	N/A		No	
Rivers – Class 4 or 5 - River naturalness status.	N/A		No	
Rivers & Streams (Other/ None-Priority Habitat)	N/A	None	No	If not in one of the 5 priority River descriptions then use category. If

				high quality natural function expect it to fit above.
Rivers - Canals	N/A	Very little	No	
Sparsely vegetated land - Other inland rock and scree (none-Priority Habitat)	N/A	Very little	No	
Woodland and forest - Felled	N/A	Very little	No	
Woodland and forest - Other Scot's Pine woodland	N/A	Very little	No	
Woodland and forest - Other woodland; broadleaved	N/A	Very little	No	
Woodland and forest - Other woodland; mixed	N/A	Very little	No	
Woodland and forest - Other woodland, young trees planted	N/A	None	No	See notes in Data collection & fieldwork.
Urban - Allotments	N/A	None	No	
Urban - Artificial lake or pond	N/A	None	No	
Urban - Brown roof	N/A	None	No	Wildlife rich examples.
Urban - Cemeteries and churchyards	N/A	Some	No	
Urban - Extensive green roof	N/A	None	No	Wildlife rich examples.
Urban - Woodland	N/A	None	No	
Urban – Orchard (non-priority habitat)	N/A	None	No	

**Table TS2-12: Habitats classified as being of Low Distinctiveness**  
Agricultural and Urban land use of low biodiversity interest

Habitat Description	Total amount of habitat remaining	% of habitat Protected in SSSI	European Red List Categories	Notes
Cropland - Cereal crops	N/A	None	No	
Cropland - Cereal crops other	N/A	None	No	
Cropland - Horticulture	N/A	None	No	
Cropland - Intensive orchards	N/A	None	No	
Cropland - Non-cereal crops	N/A	None	No	
Cropland - Temporary grass and clover leys	N/A	None	No	

Grassland - Modified grassland	N/A	Very little	No	
Heathland and shrub - Rhododendron scrub	N/A	None	No	
Urban – Amenity grassland	N/A	None	No	
Urban - Bioswale	N/A	None	No	When wildlife rich could be Medium Distinctiveness.
Urban - Façade-bound green wall	N/A	None	No	
Urban - Ground based green wall	N/A	None	No	
Urban - Ground level planters	N/A	None	No	
Urban - Intensive green roof	N/A	None	No	
Urban - Introduced shrub	N/A	None	No	
Urban - Rain garden	N/A	None	No	
Urban - Sand pit quarry or open cast mine	N/A	None	No	Potential to uplifted to other habitat types
Urban – Street Trees	N/A	None	No	
Urban - Suburban/ mosaic of developed/ natural surface	N/A	None	No	
Urban - Sustainable urban drainage feature	N/A	None	No	
Urban - Vacant/derelict land/ bare ground	N/A	None	No	
Urban - Vegetated garden	N/A	None	No	
Woodland and forest - Other coniferous woodland	N/A	None	No	

**Table TS2-13: Habitats classified as being of Very Low Distinctiveness**

Habitat Description	Total amount of habitat remaining	% of habitat Protected in SSSI	European Red List Categories	Notes
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	

## Condition

- 2.12. The details of what to assess to arrive at a decision about the condition of a habitat are set out in the individual tables in part 1 of this document.
- 2.13. The approach used is analogous to that used for Common Standards Monitoring<sup>17</sup> of protected sites in the UK where key attributes and positive and negative indicators are used. Thus you could have a high distinctiveness habitat that is poor condition because of a large number of negative indicators such as invasive non-native plants.
- 2.14. Here we are looking at a broader set of attributes that covers both the best and poorest examples of priority habitats, along with those that have fallen below this quality but have potential to be restored.

## Connectivity

- 2.15. Early in the development phase of biodiversity metric 2.0 an expert workshop considered that some reflection of importance of spatial dimensions of habitats was important to include. Connectivity is a component of the spatial dimension of habitats that was felt to be a priority.
- 2.16. Connectivity is a complex idea embodying a range of concepts and challenges, not least 'connected for what?'. Sticking to the simple and pragmatic principles underpinning biodiversity metric 2.0, the focus of connectivity in metric is the relationship of a particular habitat patch to other surrounding **similar** or **related** semi-natural habitats facilitating flows of species and ecosystem services. By **similar** habitats we mean, for example, multiple patches of calcareous grassland. By **related** habitats we mean habitats often found in association as part of a dynamic complex, for example lowland heath and scrub.
- 2.17. In the beta version of biodiversity metric 2.0 all High and Very High distinctiveness habitats should be assigned a Medium connectivity multiplier, other habitats a Low connectivity multiplier. A connectivity tool will be published in an updated version of biodiversity metric 2.0. using an approach based upon the habitat fragmentation or 'structural connectivity' model with the National Biodiversity Climate Change Vulnerability Model (NBCCVM)<sup>18</sup> to assess connectivity. It encompasses the ideas of:
- Larger habitat patches being less susceptible to extreme events.
  - Accommodation of a wider range of soil types, topography and microclimate affords greater niche variation.
  - Potential for species dispersal and local re-colonisation to be facilitated.
  - Patch size and permeability of surrounding landscape being important for persistence of biodiversity.

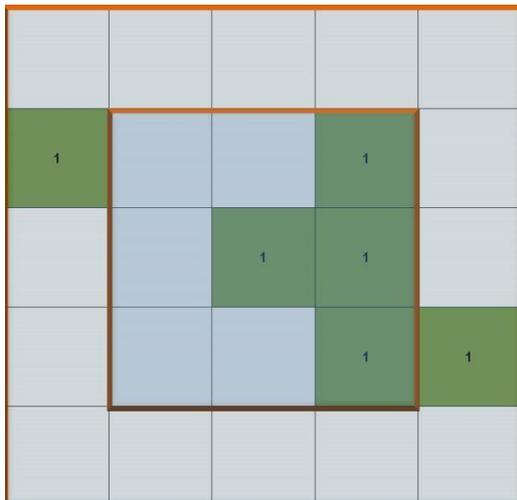
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<sup>17</sup> JNCC, Common Standards Monitoring, 2017 update <http://jncc.defra.gov.uk/page-2273>

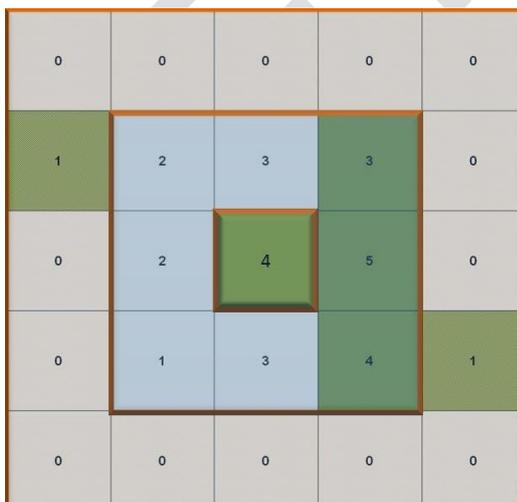
<sup>18</sup> For more information about the NBCCVM see: TAYLOR, S., KNIGHT, M. & HARFOOT, A. 2014. National biodiversity climate change vulnerability model. Natural England Research Report NERR054. Natural England. ISBN 978-1-78354-084-6.

- 2.18. This connectivity (habitat aggregation) approach uses Open Access habitat data to generate a score for each cell, in effect the area of land subject to the development proposal. Figure TS2-1 illustrates how this iterative process works, but in simple terms “for any cell containing a given habitat, the more cells there are in the surrounding 1 km square which contain a similar or related habitat, and the closer they are aggregated around the central cell, the higher the score of that cell” (Taylor *et al*, 2014, p13). In practice, the calculation will be automated using a freely available GIS tool to generate output that can be fed into the metric calculation. Connectivity is applied both pre and post intervention scenarios as it is a quality attribute of a patch of habitat that is considered to be, at least in part, a driver of its long term ecological and biodiversity functionality.
- 2.19. This method generates a range of possible aggregation scores for the central cell within the range 9 to 81. The score attributed to the cell can then be used to assign a connectivity multiplier to the pre ( $T_0$ ) and post ( $T_1$ ) intervention scenarios.

**Figure TS2-1:** Illustrating how the habitat aggregation approach generates a connectivity score for each habitat ‘cell’ (after Taylor *et al*, 2014)



(a) The habitat presence grid attributes cells containing the habitat a value of 1 and those without 0.



(b) For each cell the model sums values for adjacent cells are add to home cell (max value = 9).

0	0	0	0	0
1	2	3	3	0
0	2	27	5	0
0	1	3	4	1
0	0	0	0	0

(c) This process is repeated for a second iteration summing values generated in (b) above.

### Habitat creation and restoration risks

- 2.20. The development of habitat restoration techniques in **applied ecology** has grown massively in recent decades. Habitat types that were considered very tricky have become better understood; more practical experience has built up with greater knowledge of what factors work well and have been key to successful implementation.
- 2.21. 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. On well-established semi-natural habitats, even when in a severely degraded state, restoration is nearly always far more effective than restoration on sites without the historical habitat underpinning. In short creation and restoration are treated as a risk in biodiversity metric 2.0. There are three possible categories for any habitat (low, medium, high). Here we:
- Set out factors that potentially influence the degree of difficulty that were considered.
  - Provide a table of the creation and restoration difficulty categories.

### Factors influencing the difficulty of habitat restoration and creation

#### Hydrological Requirements

- 2.22. All habitats are influenced by water availability and where the water table is found at different times of the year. Some of the habitats are tolerant of variable water levels, while others need exact conditions. The wetland habitats unsurprisingly need water at surface with little drying out in the summer months. Creating and restoring natural control of hydrology is often complex and time-consuming.

#### Seed Source or Biological Material requirements

- 2.23. The availability of the plants that make up the habitat will restrict how successful a restoration can be and particularly the speed that it occurs. Where areas do not need intervention and natural succession can occur these will be the easiest to restore. Where initial seeding is needed and then little follow up care we have given this a medium score.

- 2.24. When complex seeds (that are hard to get to germinate) and establishment techniques are required we have given this the highest score.

### **Future Constraints**

- 2.25. We already have locked in a climate change of plus 2°C and a sea level increase of around 1 m in height. Species have already been responding to the 1°C increase we have already had in the last 40 years. This section highlights how these and other future constraints will affect the new or restored habitats as sensitivity varies across habitats and locations.

### **Low Soil Nutrient Status**

- 2.26. The nutrient levels in soils or water determine the productivity of plants and how dominant particular species become in a habitat. In a temperate climate like Britain with few extremes of pH and climate, soil fertility will be determining much of the plant productivity. Consequently soil nutrients along with soil depth and hydrology will be a main driver in community composition of the habitat being created.
- 2.27. The low nutrient status of a sites soils, those with low nitrogen and phosphate etc., is a key factor in the plant species diversity and potential to create habitats. All Priority Habitat types require a low nutrient soil status to prosper, the plants within them would get outcompeted by faster growing more competitive, commoner plants favoured in higher nutrient soils. These commoner plants are mostly less important for wildlife. Widespread issues have been caused by pollution increasing nutrients from rainfall and why nitrogen deposition is affecting the diversity of plant species within them. If a diverse, 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 is low.

### **Trophic Status Conditions**

- 2.28. We recognise the following trophic statuses:
- **Trophic Status** describes bodies of water and terrestrial soils based on the amount of biological activity they sustain.
  - **Oligotrophic** (have the least amount of biological productivity, needing "good" water quality);
  - **Mesotrophic** (having a moderate level of biological activity, requiring "fair" water quality); or
  - **Eutrophic** (having the highest amount of biological activity, with "poor" water quality).
- 2.29. Nutrients such as nitrogen and phosphorus tend to be limiting resources in standing water bodies and for many terrestrial habitats, so increased concentrations tend to result in increased plant growth favouring the more competitive/vigorous plants. Consequently, a body of water's or soil's trophic state may sometimes be used to make a rough estimate of its biological condition.

### **Water Quality Needs**

- 2.30. Water quality effects sites and the quality of any habitat within them. When Water Quality is poor it brings nutrients into a site that will control both the types of flora and fauna and how they compete effectively with each other. Biodiversity needs a low nutrient environment, which are very rare with high quality water. A direct

relationship exists between low nutrient environment and greater variety of biodiversity.

### Ongoing Management Requirements

- 2.31. When little or no ongoing management is required habitat restoration and creation become easier. This highlights those habitats that will need regular management, through activities such as hay cutting and grazing etc. These management practices allow the continued existence of high quality biodiversity on the site.

### Categorising habitat creation and restoration

- 2.32. Using the factors described above and with reference to Entec (2011)<sup>19</sup>, Entec/Amec (2013)<sup>20</sup>, Amec (2016)<sup>21</sup> and expert input, each Priority Habitat was scored using the matrix set out in table TS2-14, to determine the difficulty of creating or restoring it. The results of that exercise are shown in table TS2-15. Using these results as a guide, and with additional expert input, each of the UK Habitat Classification habitats used within biodiversity metric 2.0 was then assigned a difficulty category of high, medium or low (see table TS3-1).

**Table TS2-14: Scoring Attributes for Habitat Restoration and Creation**

Maximum Possible Score (3 x 9 columns) = 27

Minimum Score (unless N/A present) = 9

	Low	Medium	High
SCORE	1	2	3
<b>Technical difficulty of Restoration/ Creation</b>	Land Abandonment	Limited Preparation	Significant Engineering
<b>Hydrological Requirements</b>	Basic	Moderate	Complex
<b>Seed Source / biological material requirements</b>	Natural Succession	Initial seeding	Extensive planting and seeding
<b>Future constraints inc. Climate Change</b>	Low	Medium	High & or Sea Level Rise
<b>Low Soil Nutrient Status</b>	Greater tolerance	Important	Critical
<b>Trophic Status Conditions</b>	Eutrophic (Abundant Nutrients available)	Mesotrophic (Medium amounts of nutrient is available)	Oligotrophic (Very Little nutrients available)

<sup>19</sup> Entec (2011) Developing tools to evaluate the consequences for biodiversity of options for coastal zone adaptation to climate change - WC0726  
<http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=2&ProjectID=16071>

<sup>20</sup> Entec/Amec (2013) *Ease of Habitat Transformation/ Restoration* Report for Natural England

<sup>21</sup> AMEC (2016) Developing Datasets for Biodiversity 2020: Outcome 1D (2016).

<http://publications.naturalengland.org.uk/publication/5109098148790272>

<b>Water Quality Needs</b>	Poor	Fair	Good
<b>Ongoing Management Requirements</b>	Low intensity	Ongoing Management Requirements	Low intensity

BETA TEST

**Table TS2-15: Difficulty of creating and restoring Priority Habitats**

Habitat	Score	Technical difficulty of Restoration	Technical difficulty of Creation	Hydrological Requirements	Seed Source / biological material requirements	Future Constraints inc. Climate Change	Low Soil Nutrient Status	Trophic status conditions <sup>22</sup>	Water Quality Needs	Ongoing Management Requirements
		[Land Abandonment; Limited Preparation; Significant Engineering]	[Land Abandonment; Limited Preparation; Significant Engineering]	[Complex, Moderate, Basic]	[High, Medium & Low] [Natural Succession; Initial seeding; Extensive planting and seeding]	[Low, Medium, High & Sea Level Rise]	[Critical; Important; Greater tolerance]	Oligotrophic (Very Little available), Mesotrophic (Medium)	[Good, Fair, Poor]	[Low intensity 5yrs +; Annual or continuous]
<b>Blanket Bog</b>	23	High	High	Complex	Initial Seeding & Natural Succession	Medium	Important	Oligotrophic	Good WQ	Low to medium
<b>Coastal &amp; Flood plain Grazing Marsh</b>	14	Medium	N/A	Moderate	Natural Succession	Medium	Greater Tolerance	Mesotrophic	Fair to Good WQ	Moderate
<b>Floodplain Mosaic</b>	19	Medium	Medium	Complex to Moderate	Natural Succession	Medium	Important	Oligotrophic	Good WQ	Low
<b>Lowland Fen</b>	24	High	High	Complex	Initial Seeding & Natural Succession	High	Important	Oligotrophic	Good WQ	Various at site
<b>Lowland Raised Bog</b>	25	High	High	Complex	Initial Seeding & Natural Seccession	High	Important	Oligotrophic	Good WQ	Continuous
<b>Purple moor-grass and rush pasture</b>	23	Medium	High	Complex	Initial Seeding or Natural Succession	High	Important	Oligotrophic	Good WQ	Various at site

<sup>22</sup> **Trophic State** is a classification system designed to rate bodies of water based on the amount of biological activity they sustain.

<b>Reedbed</b>	18	Medium	Medium	Moderate	Initial Seeding	High	Greater Tolerance	Mesotrophic	Fair WQ	Moderate - to prevent succession
<b>Coastal Sand Dune</b>	14	Medium	High	Basic	Natural Succession & initial planting	Sea level rise	Important	N/A	N/A	Low
<b>Coastal Vegetated Shingle</b>	13	Medium	High	Basic	Natural Succession	Sea level rise	Important	N/A	N/A	Low
<b>Maritime Cliff and Slope</b>	13	Low	Medium	Basic	Natural Succession	Sea level Rise	Important	Mesotrophic	N/A	Low
<b>Saltmarsh</b>	13	Medium	Medium	Moderate	Natural Succession	Sea level Rise	Greater Tolerance	Eutrophic	N/A	Low
<b>Saline Lagoons</b>	13	Medium	Medium	Moderate	Natural Succession	Sea level Rise	Greater Tolerance	Eutrophic	N/A	Low
<b>Mudflats</b>	11	Medium	Low	Basic	Natural Succession	Sea level Rise	Greater Tolerance	Eutrophic	N/A	Low
<b>Ancient Woodlands (England – wide)</b>	10	Low	N/A	Basic	Natural succession over a long time (100 + yrs)	Low	Critical	Mesotrophic	N/A	Low
<b>Deciduous Woodland</b>	12	Low	Low	Basic	Tree Planting	Low	Important	Mesotrophic	N/A	Low
<b>Traditional Orchards HAP</b>	12	Low	N/A	Basic	Tree Planting	Low	Greater Tolerance	Mesotrophic	N/A	Annual
<b>Woodpasture &amp; Parkland</b>	11	Low	N/A	Basic	Planting	Low	Important	Mesotrophic	N/A	Low
<b>Limestone Pavements</b>	11	Low	N/A	Basic	Natural Succession	Low	Critical	Oligotrophic	N/A	Low
<b>Lowland Calcareous Grassland</b>	14	Low	Medium	Basic	Initial Seeding	Low	Critical	Oligotrophic	N/A	Continuous

<b>Lowland Dry Acid Grassland</b>	13	Low	Medium	Basic	Natural Succession	Low	Critical	Oligotrophic	N/A	Continuous
<b>Lowland Meadows</b>	16	Low	Medium	basic	Initial Seeding / Green hay spreading	Low	Critical	Oligotrophic	N/A	Continuous cutting
<b>Upland Calcareous Grassland</b>	14	Low	Low	Low	Natural Succession	Low	Critical	Oligotrophic	N/A	Continuous
<b>Upland Hay Meadow</b>	17	Medium	Medium	Low	Initial Seeding / Green hay spreading	Low	Critical	Oligotrophic	N/A	Continuous cutting
<b>Lowland Heathland</b>	16	Medium	Medium (initial seeding may be needed for creation)	Medium	Natural Succession for restoration	Low	Important	Oligotrophic	N/A	Continuous (combining cutting, grazing and/or burning)
<b>Upland Heathland</b>	12	Low	Low	Low	Natural Succession	Low	Important	Oligotrophic	N/A	Moderate

### **Time to target condition of the habitats**

- 2.33. Many factors influence how long a habitat takes to go 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. 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.
- 2.34. For the purposes of biodiversity metric 2.0 average time estimates need to be 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. Average estimates of the 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. The time to target condition estimates are shown in the Data Tables in Part 3.

### **Part 3 - Data tables for biodiversity metric 2.0**

- 3.1. These tables give the standard values used for quality attributes and risks in biodiversity metric 2.0. For advice on how you assign values for the attributes and risks that are assessed on a habitat patch by patch basis please see Part 1 of the Technical Supplement (for advice on habitat condition) or the User Guide (for advice on strategic significance, connectivity and spatial risk).
- 3.2. Two versions of each table are provided: one giving categorical values and one numerical values used in calculations.

BETA TEST

## Habitat Area Data Tables

**TABLE TS3-1: Area Habitat data values (categorical values) excluding time to target condition for enhancement and restoration (see Table TS3-2) – July 2019**

Key: '-' indicates that an option is not possible or permitted within the metric calculation

Area Habitat	Distinctiveness	Difficulty of		Time (years) to target condition for habitat <b>creation</b>						
		Creation or accelerated succession	Enhancement or restoration	Good	Fairly Good	Moderate	Fairly Poor	Poor	N/A Agricultural	N/A Other
Cropland - Arable field margins cultivated annually	Medium	Low	Low	1	1	1	1	1	1	-
Cropland - Arable field margins game bird mix	Medium	Low	Low	1	1	1	1	1	1	-
Cropland - Arable field margins pollen & nectar	Medium	Low	Low	1	1	1	1	1	1	-
Cropland - Arable field margins tussocky	Medium	Low	Low	5	4	3	2	1	1	-
Cropland - Cereal crops	Low	Low	Low	1	1	1	1	1	1	-
Cropland - Cereal crops other	Low	Low	Low	1	1	1	1	1	1	-
Cropland - Cereal crops winter stubble	Medium	Low	Low	1	1	1	1	1	1	-
Cropland - Horticulture	Low	Low	Low	1	1	1	1	1	1	-
Cropland - Intensive orchards	Low	Low	Low	1	1	1	1	1	1	-
Cropland - Non-cereal crops	Low	Low	Low	1	1	1	1	1	1	-
Cropland - Temporary grass & clover leys	Low	Low	Low	1	1	1	1	1	1	-

Area Habitat	Distinctiveness	Difficulty of		Time (years) to target condition for habitat <b>creation</b>						
		Creation or accelerated succession	Enhancement or restoration	Good	Fairly Good	Moderate	Fairly Poor	Poor	N/A Agricultural	N/A Other
Cropland - Traditional orchards	High	Low	Medium	30	25	20	10	5	-	-
Grassland - Bracken	Medium	Low	Low	5	4	3	2	1	-	-
Grassland - Floodplain Wetland Mosaic (CFGM)	High	High	High	30	25	20	15	10	-	-
Grassland - Lowland calcareous	High	High	High	30	25	20	15	10	-	-
Grassland - Lowland dry acid	Very High	High	Medium	30	25	20	15	10	-	-
Grassland - Lowland meadows	Very High	High	Medium	15	12	10	8	5	-	-
Grassland - Modified grassland	Low	Low	Low	15	12	10	5	1	1	-
Grassland - Other lowland acid	Medium	Low	Low	15	12	10	5	1	-	-
Grassland - Other neutral grassland	Medium	Low	Low	15	12	10	5	1	-	-
Grassland - Tall herb communities	High	High	High	30	25	20	15	10	-	-
Grassland - Upland acid grassland	Medium	Low	Low	15	12	10	5	1	-	-
Grassland - Upland calcareous	High	High	High	25	20	15	12	10	-	-
Grassland - Upland hay meadows	Very High	High	Medium	20	18	15	12	10	-	-
Heathland & shrub - Blackthorn scrub	Medium	Low	Low	7	5	3	2	1	-	-
Heathland & shrub - Bramble scrub	Medium	Low	Low	5	4	3	2	1	-	-

Area Habitat	Distinctiveness	Difficulty of		Time (years) to target condition for habitat <b>creation</b>						
		Creation or accelerated succession	Enhancement or restoration	Good	Fairly Good	Moderate	Fairly Poor	Poor	N/A Agricultural	N/A Other
Heathland & shrub - Gorse scrub	Medium	Low	Low	10	7	5	3	1	-	-
Heathland & shrub - Hawthorn scrub	Medium	Low	Low	7	5	3	2	1	-	-
Heathland & shrub - Hazel scrub	Medium	Medium	Medium	15	12	10	7	5	-	-
Heathland & shrub - Lowland Heathland	High	High	Medium	32+	25	20	15	10	-	-
Heathland & shrub - Mixed scrub	Medium	Low	Low	7	5	3	2	1	-	-
Heathland & shrub - Mountain heaths and willow scrub	Very High	High	High	32+	32+	25	23	15	-	-
Heathland & shrub - Rhododendron scrub	Low	Low	Low	7	5	3	2	1	-	-
Heathland & shrub - Sea buckthorn scrub (Annex 1)	High	Medium	Medium	7	5	3	2	1	-	-
Heathland & shrub - Sea buckthorn scrub (other)	Medium	Low	Low	7	5	3	2	1	-	-
Heathland & shrub - Upland Heathland	High	Medium	Medium	30	25	20	15	10	-	-
Lakes - Aquifer fed naturally fluctuating water bodies	Very High	Very High	High	30	20	15	10	1	-	-
Lakes - Ditches	Medium	Low	Medium	10	7	5	3	1	-	-
Lakes - High alkalinity lakes	High	Medium	Medium	10	7	5	3	2	-	-

Area Habitat	Distinctiveness	Difficulty of		Time (years) to target condition for habitat <b>creation</b>						
		Creation or accelerated succession	Enhancement or restoration	Good	Fairly Good	Moderate	Fairly Poor	Poor	N/A Agricultural	N/A Other
Lakes - Low alkalinity lakes	High	High	Medium	30	20	15	10	5	-	-
Lakes - Marl Lakes	High	High	High	20	15	10	7	5	-	-
Lakes - Moderate alkalinity lakes	High	High	High	20	15	10	7	5	-	-
Lakes - Peat Lakes	High	High	High	30	20	15	10	5	-	-
Lakes - Ponds (Non-Priority Habitat)	High	Low	Low	5	4	3	2	1	-	-
Lakes - Ponds (Priority Habitat)	High	Medium	High	10	7	5	3	2	-	-
Lakes - Reservoirs	Medium	Medium	Medium	10	7	5	3	1	-	-
Lakes - Temporary lakes, ponds and pools	High	Medium	Medium	10	7	5	3	2	-	-
Sparsely vegetated land - Calaminarian grasslands	Very High	Very High	Medium	10	7	5	3	2	-	-
Sparsely vegetated land - Coastal sand dunes	High	Very High	Medium	20	15	10	7	5	-	-
Sparsely vegetated land - Coastal vegetated shingle	High	Very High	Medium	20	15	10	7	5	-	-
Sparsely vegetated land - Ruderal	Low	Low	Medium	5	4	3	2	1	-	-
Sparsely vegetated land - Inland rock outcrop & scree habitats	High	High	Low	32+	25	20	15	10	-	-

Area Habitat	Distinctiveness	Difficulty of		Time (years) to target condition for habitat <b>creation</b>						
		Creation or accelerated succession	Enhancement or restoration	Good	Fairly Good	Moderate	Fairly Poor	Poor	N/A Agricultural	N/A Other
Sparsely vegetated land - Limestone pavement	Very High	Very High	Medium	32+	32+	32+	32+	32+	-	-
Sparsely vegetated land - Maritime cliff and slopes	High	High	Medium	32+	25	15	10	5	-	-
Sparsely vegetated land - Other inland rock and scree	Medium	Medium	Medium	20	15	10	7	5	-	-
Urban - Allotments	Medium	Low	Low	1	1	1	1	1	-	-
Urban - Amenity grassland	Low	Low	Low	-	-	3	2	1	-	-
Urban - Artificial lake or pond	Medium	Low	Low	5	4	3	2	1	-	-
Urban - Artificial vegetated, unsealed surface	Very Low	Low	Low	1	1	1	1	1	-	-
Urban - Bioswale	Low	Medium	Low	3	2	1	1	1	-	-
Urban - Brown roof	Medium	Medium	Low	10	7	5	3	1	-	-
Urban - Built linear features	Very Low	Low	Low	0	0	0	0	0	-	-
Urban - Cemeteries and churchyards	Medium	Medium	Low	20	17	15	12	10	-	-
Urban - Developed land; sealed surface	Very Low	Low	Medium	0	0	0	0	0	-	0
Urban - Extensive green roof	Medium	Medium	Medium	5	4	3	2	1	-	-
Urban - Façade-bound green wall	Low	Medium	Medium	5	4	3	2	1	-	-

Area Habitat	Distinctiveness	Difficulty of		Time (years) to target condition for habitat <b>creation</b>						
		Creation or accelerated succession	Enhancement or restoration	Good	Fairly Good	Moderate	Fairly Poor	Poor	N/A Agricultural	N/A Other
Urban - Ground based green wall	Low	Medium	Medium	5	4	3	2	1	-	-
Urban - Ground level planters	Low	Low	Low	1	1	1	1	1	-	-
Urban - Intensive green roof	Low	Low	Low	10	8	5	3	1	-	-
Urban - Introduced shrub	Low	Low	Low	1	1	1	1	1	-	-
Urban - Open Mosaic Habitats on Previously Developed Land	High	Medium	Medium	10	7	4	2	0	-	-
Urban - Orchard	Medium	Low	Low	25	20	15	10	5	-	-
Urban - Rain garden	Low	Low	Low	1	1	1	1	1	-	-
Urban - Sand pit quarry or open cast mine	Low	Medium	Medium	1	1	1	1	1	-	-
Urban - Street Tree	Low	Low	Low	-	-	27	-	-	-	-
Urban - Suburban/ mosaic of developed/ natural surface	Low	Low	Low	5	4	3	2	1	-	-
Urban - Sustainable urban drainage feature	Low	Medium	Medium	5	4	3	2	1	-	-
Urban - Un-vegetated garden	Very Low	Low	Low	-	-	-	-	-	-	0
Urban - Vacant/derelict land/ bare ground	Low	Low	Low	1	1	1	1	1	-	-
Urban - Vegetated garden	Low	Low	Low	5	4	3	2	1	-	-
Urban - Woodland	Medium	Low	Low	32+	30	27	25	20	-	-

Area Habitat	Distinctiveness	Difficulty of		Time (years) to target condition for habitat <b>creation</b>						
		Creation or accelerated succession	Enhancement or restoration	Good	Fairly Good	Moderate	Fairly Poor	Poor	N/A Agricultural	N/A Other
Wetland - Blanket bog	Very High	Very High	High	32+	32+	30	25	15	-	-
Wetland - Depressions on Peat substrates (H7150)	Very High	Very High	High	32+	32+	30	25	15	-	-
Wetland - Fens (upland & lowland)	Very High	High	High	30	25	15	12	10	-	-
Wetland - Lowland raised bog	Very High	Very High	High	32+	32+	30	20	15	-	-
Wetland – Oceanic Valley Mire [insert footnote] (D2.1)	Very High	Very High	High	32+	32+	30	20	15	-	-
Wetland - Purple moor grass & rush pastures	Very High	High	High	30	25	20	15	10	-	-
Wetland - Reedbeds	High	Medium	Medium	15	12	10	7	5	-	-
Wetland - Transition mires & quaking bogs (H7140)	Very High	Very High	High	32+	32+	30	25	15	-	-
Woodland & forest - Felled	Medium	Low	Low	32+	32+	32+	32+	32+	-	-
Woodland & forest - Lowland beech and yew woodland	High	High	High	32+	32+	32+	32+	32+	-	-
Woodland & forest - Lowland mixed deciduous woodland	High	High	High	32+	32+	32+	32+	32+	-	-
Woodland & forest - Native pine woodlands	High	High	High	32+	32+	32+	30	25	-	-
Woodland a& forest - Other coniferous woodland	Low	Low	Low	32+	32+	25	20	15	-	-

Area Habitat	Distinctiveness	Difficulty of		Time (years) to target condition for habitat <b>creation</b>						
		Creation or accelerated succession	Enhancement or restoration	Good	Fairly Good	Moderate	Fairly Poor	Poor	N/A Agricultural	N/A Other
Woodland & forest - Other Scot's Pine woodland	Medium	Medium	Medium	32+	32+	32+	25	20	-	-
Woodland & forest - Other woodland; broadleaved	Medium	Medium	Medium	32+	32+	30	25	20	-	-
Woodland & forest - Other woodland; mixed	Medium	Medium	Medium	32+	30	25	20	15	-	-
Woodland & forest - Other woodland; Young Trees planted	Medium	Low	Low	32+	32+	32+	30	25	-	-
Woodland & forest - Upland birchwoods	High	Medium	Medium	32+	30	25	20	15	-	-
Woodland & forest - Upland mixed ashwoods	High	High	High	32+	32+	32+	30	25	-	-
Woodland & forest - Upland oakwood	High	High	High	32+	32+	32+	32+	32+	-	-
Woodland & forest - Wet woodland	High	Medium	Medium	32+	30	25	20	15	-	-
Woodland & forest - Wood-pasture & parkland	High	Very High	High	32+	32+	32+	32+	32+	-	-



Area Habitat	Time to target condition (years) for <b>enhancement or restoration</b>																
	With elevation to higher distinctiveness habitat							Distinctiveness unchanged									
	N/A - Other	N/A - Agricultural	Poor	Fairly Poor	Moderate	Fairly Good	Good	Poor - Fairly Poor	Poor - Moderate	Poor - Fairly Good	Poor - Good	Fairly Poor - Moderate	Fairly Poor - Fairly Good	Fairly Poor - Good	Moderate - Fairly Good	Moderate - Good	Fairly Good - Good
Cropland - Temporary grass & clover leys	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Cropland - Traditional orchards	-	-	5	10	20	25	30	5	15	20	25	10	15	20	5	10	5
Grassland - Bracken	-	-	1	2	3	4	5	1	2	3	5	1	2	3	1	2	1
Grassland - Floodplain Wetland Mosaic (CFGM)	-	-	10	15	20	25	30	5	20	25	30	5	10	15	5	10	5
Grassland - Lowland calcareous	-	-	10	15	20	25	30	10	15	20	25	10	15	20	10	15	10
Grassland - Lowland dry acid	-	-	10	15	20	25	20	5	10	10	30	5	10	15	5	10	5
Grassland - Lowland meadows	-	-	5	8	10	12	15	5	5	8	10	8	12	15	3	5	5
Grassland - Modified grassland	-	1	1	5	10	12	15	5	10	12	25	10	15	20	10	15	10
Grassland - Other lowland acid	-	-	1	5	10	12	15	5	10	12	25	10	15	20	10	15	10
Grassland - Other neutral grassland	-	-	1	5	10	12	15	5	10	12	25	10	15	20	10	15	10
Grassland - Tall herb communities	-	-	10	15	20	25	30	15	20	25	30	5	10	15	5	10	5
Grassland - Upland acid grassland	-	-	1	5	10	12	15	5	10	12	25	10	15	20	10	15	10
Grassland - Upland calcareous	-	-	10	12	15	20	25	10	15	18	20	18	15	18	10	10	10

Area Habitat	Time to target condition (years) for <b>enhancement or restoration</b>																
	With elevation to higher distinctiveness habitat							Distinctiveness unchanged									
	N/A - Other	N/A - Agricultural	Poor	Fairly Poor	Moderate	Fairly Good	Good	Poor - Fairly Poor	Poor - Moderate	Poor - Fairly Good	Poor - Good	Fairly Poor - Moderate	Fairly Poor - Fairly Good	Fairly Poor - Good	Moderate - Fairly Good	Moderate - Good	Fairly Good - Good
Grassland - Upland hay meadows	-	-	10	12	15	18	20	10	15	18	20	18	15	18	10	7	10
Heathland & shrub - Blackthorn scrub	-	-	1	2	3	5	7	1	2	3	5	1	2	3	1	2	1
Heathland & shrub - Bramble scrub	-	-	1	2	3	4	5	1	2	3	5	1	2	3	1	2	1
Heathland & shrub - Gorse scrub	-	-	1	3	5	7	10	1	5	7	10	3	5	3	2	3	2
Heathland & shrub - Hawthorn scrub	-	-	1	2	3	5	7	1	5	7	10	3	5	3	2	3	2
Heathland & shrub - Hazel scrub	-	-	5	7	10	12	15	5	7	12	15	12	15	12	5	7	5
Heathland & shrub - Lowland Heathland	-	-	10	15	20	25	32+	10	15	20	25	10	15	20	10	15	10
Heathland & shrub - Mixed scrub	-	-	1	2	3	5	7	1	5	7	10	3	5	3	2	3	2
Heathland & shrub - Mountain heaths and willow scrub	-	-	15	23	25	32+	32+	15	23	25	32+	32+	32+	25	20	25	10
Heathland & shrub - Rhododendron scrub	-	-	1	2	3	5	7	1	2	3	5	1	2	3	1	2	1
Heathland & shrub - Sea buckthorn scrub (Annex 1)	-	-	1	2	3	5	7	1	2	3	5	1	2	3	1	2	1
Heathland & shrub - Sea buckthorn scrub (other)	-	-	1	2	3	5	7	1	2	3	5	1	2	3	1	2	1

Area Habitat	Time to target condition (years) for <b>enhancement or restoration</b>																
	With elevation to higher distinctiveness habitat							Distinctiveness unchanged									
	N/A - Other	N/A - Agricultural	Poor	Fairly Poor	Moderate	Fairly Good	Good	Poor - Fairly Poor	Poor - Moderate	Poor - Fairly Good	Poor - Good	Fairly Poor - Moderate	Fairly Poor - Fairly Good	Fairly Poor - Good	Moderate - Fairly Good	Moderate - Good	Fairly Good - Good
Heathland & shrub - Upland Heathland	-	-	10	15	20	25	30	10	15	20	25	10	15	20	10	15	10
Lakes - Aquifer fed naturally fluctuating water bodies	-	-	1	10	15	20	30	10	15	20	30	5	10	20	5	15	10
Lakes - Ditches	-	-	1	3	5	7	10	3	5	7	10	2	4	7	2	5	3
Lakes - High alkalinity lakes	-	-	2	3	5	7	10	3	5	7	10	3	5	7	5	5	5
Lakes - Low alkalinity lakes	-	-	5	10	15	20	30	10	15	20	30	5	10	20	5	15	10
Lakes - Marl Lakes	-	-	5	7	10	15	20	5	8	13	18	13	8	13	5	10	5
Lakes - Moderate alkalinity lakes	-	-	5	7	10	15	20	5	8	13	18	13	8	13	5	10	5
Lakes - Peat Lakes	-	-	5	10	15	20	30	10	15	20	30	5	20	20	5	10	10
Lakes - Ponds (Non- Priority Habitat)	-	-	2	3	5	7	10	1	3	5	8	1	4	7	2	5	3
Lakes - Ponds (Priority Habitat)	-	-	1	2	3	4	5	1	2	3	5	1	2	3	1	2	1
Lakes - Reservoirs	-	-	1	3	5	7	10	3	5	7	10	2	4	7	2	5	3
Lakes - Temporary lakes, ponds and pools	-	-	2	3	5	7	10	1	3	5	8	1	4	7	2	5	3
Sparsely vegetated land - Calaminarian grasslands	-	-	2	3	5	7	10	1	3	5	8	1	4	7	2	5	3

Area Habitat	Time to target condition (years) for <b>enhancement or restoration</b>																
	With elevation to higher distinctiveness habitat							Distinctiveness unchanged									
	N/A - Other	N/A - Agricultural	Poor	Fairly Poor	Moderate	Fairly Good	Good	Poor - Fairly Poor	Poor - Moderate	Poor - Fairly Good	Poor - Good	Fairly Poor - Moderate	Fairly Poor - Fairly Good	Fairly Poor - Good	Moderate - Fairly Good	Moderate - Good	Fairly Good - Good
Sparsely vegetated land - Coastal sand dunes	-	-	5	7	10	15	20	7	10	15	20	20	18	18	10	12	12
Sparsely vegetated land - Coastal vegetated shingle	-	-	5	7	10	15	20	7	10	15	20	20	18	18	10	12	12
Sparsely vegetated land - Ruderal	-	-	1	2	3	4	5	1	2	3	5	1	2	3	1	2	1
Sparsely vegetated land - Inland rock outcrop & scree habitats	-	-	10	15	20	25	32+	10	15	25	32+	20	25	27	15	20	15
Sparsely vegetated land - Limestone pavement	-	-	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+
Sparsely vegetated land - Maritime cliff and slopes	-	-	10	15	20	25	32+	10	15	20	25	10	15	20	10	15	10
Sparsely vegetated land - Other inland rock and scree	-	-	14	10	28	7	19	10	15	25	32+	20	25	27	15	20	15
Urban - Allotments	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Urban - Amenity grassland	-	-	1	2	3	-	-	2	3	-	-	2	-	-	-	-	-
Urban - Artificial lake or pond	-	-	1	2	3	4	5	1	2	3	5	1	2	3	1	2	1
Urban - Artificial vegetated, unsealed surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Area Habitat	Time to target condition (years) for <b>enhancement or restoration</b>																
	With elevation to higher distinctiveness habitat							Distinctiveness unchanged									
	N/A - Other	N/A - Agricultural	Poor	Fairly Poor	Moderate	Fairly Good	Good	Poor - Fairly Poor	Poor - Moderate	Poor - Fairly Good	Poor - Good	Fairly Poor - Moderate	Fairly Poor - Fairly Good	Fairly Poor - Good	Moderate - Fairly Good	Moderate - Good	Fairly Good - Good
Urban - Bioswale	-	-	1	1	1	2	3	1	2	2	3	3	3	3	2	2	2
Urban - Brown roof	-	-	1	3	5	7	10	1	5	7	10	5	8	10	5	5	3
Urban - Built linear features	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Urban - Cemeteries and churchyards	-	-	10	12	15	17	20	5	10	15	20	15	15	20	10	15	5
Urban - Developed land; sealed surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Urban - Extensive green roof	-	-	1	2	3	4	5	1	2	3	5	1	2	3	1	2	1
Urban - Façade-bound green wall	-	-	1	2	3	4	5	1	2	3	5	1	2	3	1	2	1
Urban - Ground based green wall	-	-	1	2	3	4	5	1	2	3	5	1	2	3	1	2	1
Urban - Ground level planters	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Urban - Intensive green roof	-	-	1	3	5	8	10	3	5	8	10	3	8	8	3	5	2
Urban - Introduced shrub	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Urban - Open Mosaic Habitats on Previously Developed Land	-	-	0	2	4	7	10	2	4	7	10	2	5	8	3	4	3
Urban - Orchard	-	-	5	10	15	20	25	5	10	20	25	10	15	20	5	10	5
Urban - Rain garden	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Area Habitat	Time to target condition (years) for <b>enhancement or restoration</b>																
	With elevation to higher distinctiveness habitat							Distinctiveness unchanged									
	N/A - Other	N/A - Agricultural	Poor	Fairly Poor	Moderate	Fairly Good	Good	Poor - Fairly Poor	Poor - Moderate	Poor - Fairly Good	Poor - Good	Fairly Poor - Moderate	Fairly Poor - Fairly Good	Fairly Poor - Good	Moderate - Fairly Good	Moderate - Good	Fairly Good - Good
Urban - Sand pit quarry or open cast mine	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Urban - Street Tree	-	-	20	25	27	30	32+	5	7	10	15	10	12	32+	10	20	10
Urban - Suburban/ mosaic of developed/ natural surface	-	-	1	2	3	4	5	1	2	3	5	1	2	3	1	2	1
Urban - Sustainable urban drainage feature	-	-	1	2	3	4	5	1	2	3	5	1	2	3	1	2	1
Urban - Un-vegetated garden	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Urban - Vacant/derelict land/ bare ground	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Urban - Vegetated garden	-	-	1	2	3	4	5	1	2	3	5	1	2	3	1	2	1
Urban - Woodland	-	-	20	25	27	30	32+	5	10	15	32+	15	20	15	10	10	10
Wetland - Blanket bog	-	-	15	25	30	32+	32+	10	20	25	30	10	20	20	10	15	10
Wetland - Depressions on Peat substrates (H7150)	-	-	15	25	30	32+	32+	10	20	25	30	10	20	20	10	15	10
Wetland - Fens (upland & lowland)	-	-	10	12	15	25	30	10	12	15	15	10	15	15	10	10	10
Wetland - Lowland raised bog	-	-	15	20	30	32+	32+	10	20	25	30	10	20	20	10	15	10

Area Habitat	Time to target condition (years) for <b>enhancement or restoration</b>																
	With elevation to higher distinctiveness habitat							Distinctiveness unchanged									
	N/A - Other	N/A - Agricultural	Poor	Fairly Poor	Moderate	Fairly Good	Good	Poor - Fairly Poor	Poor - Moderate	Poor - Fairly Good	Poor - Good	Fairly Poor - Moderate	Fairly Poor - Fairly Good	Fairly Poor - Good	Moderate - Fairly Good	Moderate - Good	Fairly Good - Good
Wetland – Oceanic Valley Mire [insert footnote] (D2.1)	-	-	15	20	30	32+	32+	10	20	25	30	10	20	20	10	15	10
Wetland - Purple moor grass & rush pastures	-	-	10	12	15	17	20	5	10	15	20	15	15	20	10	15	5
Wetland - Reedbeds	-	-	5	7	10	12	15	5	10	12	15	7	10	12	7	10	5
Wetland - Transition mires & quaking bogs (H7140)	-	-	15	25	30	32+	32+	10	20	25	30	10	20	20	10	15	10
Woodland & forest - Felled	-	-	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	10
Woodland & forest - Lowland beech and yew woodland	-	-	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	10
Woodland & forest - Lowland mixed deciduous woodland	-	-	32+	32+	32+	32+	32+	10	15	32+	32+	25	25	25	20	20	10
Woodland & forest - Native pine woodlands	-	-	25	30	32+	32+	32+	10	15	20	32+	15	20	25	10	15	10
Woodland a& forest - Other coniferous woodland	-	-	15	20	25	32+	32+	10	15	20	32+	15	20	25	10	15	10
Woodland & forest - Other Scot's Pine woodland	-	-	20	25	32+	32+	32+	10	15	20	32+	15	20	25	10	15	10

Area Habitat	Time to target condition (years) for <b>enhancement or restoration</b>																
	With elevation to higher distinctiveness habitat							Distinctiveness unchanged									
	N/A - Other	N/A - Agricultural	Poor	Fairly Poor	Moderate	Fairly Good	Good	Poor - Fairly Poor	Poor - Moderate	Poor - Fairly Good	Poor - Good	Fairly Poor - Moderate	Fairly Poor - Fairly Good	Fairly Poor - Good	Moderate - Fairly Good	Moderate - Good	Fairly Good - Good
Woodland & forest - Other woodland; broadleaved	-	-	20	25	30	32+	32+	10	15	20	32+	15	20	25	10	15	10
Woodland & forest - Other woodland; mixed	-	-	15	20	25	30	32+	10	10	15	32+	15	20	25	10	15	10
Woodland & forest - Other woodland; Young Trees planted	-	-	25	30	32+	32+	32+	10	15	20	32+	15	20	25	10	15	10
Woodland & forest - Upland birchwoods	-	-	15	20	25	30	32+	10	15	20	32+	15	20	25	10	15	10
Woodland & forest - Upland mixed ashwoods	-	-	25	30	32+	32+	32+	10	15	20	32+	15	20	25	10	15	10
Woodland & forest - Upland oakwood	-	-	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+
Woodland & forest - Wet woodland	-	-	15	20	25	30	32+	10	10	15	32+	15	20	25	10	15	10
Woodland & forest - Wood-pasture & parkland	-	-	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+	32+

**TABLE TS3-3: Area Habitat data values (numerical values used in Calculation Tool) excluding time to target condition for enhancement and restoration – July 2019 (see Table TS3-4)**

Key: '-' indicates that an option is not possible or permitted within the metric calculation

Area Habitat	Distinctiveness	Difficulty of		Time (years) to target condition for habitat <b>creation</b>						
		Creation or accelerated succession	Enhancement or restoration	Good	Fairly Good	Moderate	Fairly Poor	Poor	N/A Agricultural	N/A Other
Cropland - Arable field margins cultivated annually	4	1	1	0.965	0.965	0.965	0.965	0.965	0.965	-
Cropland - Arable field margins game bird mix	4	1	1	0.965	0.965	0.965	0.965	0.965	0.965	-
Cropland - Arable field margins pollen & nectar	4	1	1	0.965	0.965	0.965	0.965	0.965	0.965	-
Cropland - Arable field margins tussocky	4	1	1	0.837	0.867	0.899	0.931	0.965	0.965	-
Cropland - Cereal crops	2	1	1	0.965	0.965	0.965	0.965	0.965	0.965	-
Cropland - Cereal crops other	2	1	1	0.965	0.965	0.965	0.965	0.965	0.965	-
Cropland - Cereal crops winter stubble	4	1	1	0.965	0.965	0.965	0.965	0.965	0.965	-
Cropland - Horticulture	2	1	1	0.965	0.965	0.965	0.965	0.965	0.965	-
Cropland - Intensive orchards	2	1	1	0.965	0.965	0.965	0.965	0.965	0.965	-
Cropland - Non-cereal crops	2	1	1	0.965	0.965	0.965	0.965	0.965	0.965	-
Cropland - Temporary grass & clover leys	2	1	1	0.965	0.965	0.965	0.965	0.965	0.965	-
Cropland - Traditional orchards	6	1	0.67	0.343	0.410	0.490	0.700	0.837	-	-
Grassland - Bracken	4	1	1	0.837	0.867	0.899	0.931	0.965	-	-

Area Habitat	Distinctiveness	Difficulty of		Time (years) to target condition for habitat <b>creation</b>						
		Creation or accelerated succession	Enhancement or restoration	Good	Fairly Good	Moderate	Fairly Poor	Poor	N/A Agricultural	N/A Other
Grassland - Floodplain Wetland Mosaic (CFGM)	6	0.33	0.33	0.343	0.410	0.490	0.586	0.700	-	-
Grassland - Lowland calcareous	6	0.33	0.33	0.343	0.410	0.490	0.586	0.700	-	-
Grassland - Lowland dry acid	8	0.33	0.67	0.343	0.410	0.490	0.586	0.700	-	-
Grassland - Lowland meadows	8	0.33	0.67	0.586	0.652	0.700	0.752	0.837	-	-
Grassland - Modified grassland	2	1	1	0.586	0.652	0.700	0.837	0.965	0.965	-
Grassland - Other lowland acid	4	1	1	0.586	0.652	0.700	0.837	0.965	-	-
Grassland - Other neutral grassland	4	1	1	0.586	0.652	0.700	0.837	0.965	-	-
Grassland - Tall herb communities	6	0.33	0.33	0.343	0.410	0.490	0.586	0.700	-	-
Grassland - Upland acid grassland	4	1	1	0.586	0.652	0.700	0.837	0.965	-	-
Grassland - Upland calcareous	6	0.33	0.33	0.410	0.490	0.586	0.652	0.700	-	-
Grassland - Upland hay meadows	8	0.33	0.67	0.490	18.000	0.586	0.652	0.700	-	-
Heathland & shrub - Blackthorn scrub	4	1	1	0.779	0.837	0.899	0.931	0.965	-	-
Heathland & shrub - Bramble scrub	4	1	1	0.837	0.867	0.899	0.931	0.965	-	-
Heathland & shrub - Gorse scrub	4	1	1	0.700	0.779	0.837	0.899	0.965	-	-

Area Habitat	Distinctiveness	Difficulty of		Time (years) to target condition for habitat <b>creation</b>						
		Creation or accelerated succession	Enhancement or restoration	Good	Fairly Good	Moderate	Fairly Poor	Poor	N/A Agricultural	N/A Other
Heathland & shrub - Hawthorn scrub	4	1	1	0.779	0.837	0.899	0.931	0.965	-	-
Heathland & shrub - Hazel scrub	4	0.67	0.67	0.586	0.652	0.700	0.779	0.837	-	-
Heathland & shrub - Lowland Heathland	6	0.33	0.67	0.320	0.410	0.490	0.586	0.700	-	-
Heathland & shrub - Mixed scrub	4	1	1	0.779	0.837	0.899	0.931	0.965	-	-
Heathland & shrub - Mountain heaths and willow scrub	8	0.33	0.33	0.320	0.320	0.410	0.441	0.586	-	-
Heathland & shrub - Rhododendron scrub	2	1	1	0.779	0.837	0.899	0.931	0.965	-	-
Heathland & shrub - Sea buckthorn scrub (Annex 1)	6	0.67	0.67	0.779	0.837	0.899	0.931	0.965	-	-
Heathland & shrub - Sea buckthorn scrub (other)	4	1	1	0.779	0.837	0.899	0.931	0.965	-	-
Heathland & shrub - Upland Heathland	6	0.67	0.67	0.343	0.410	0.490	0.586	0.700	-	-
Lakes - Aquifer fed naturally fluctuating water bodies	8	0.1	0.33	0.343	0.490	0.586	0.700	0.965	-	-
Lakes - Ditches	4	1	0.67	0.700	0.779	0.837	0.899	0.965	-	-
Lakes - High alkalinity lakes	6	0.67	0.67	0.700	0.779	0.837	0.899	0.931	-	-
Lakes - Low alkalinity lakes	6	0.33	0.67	0.343	0.490	0.586	0.700	0.837	-	-
Lakes - Marl Lakes	6	0.33	0.33	0.490	0.586	0.700	0.779	0.837	-	-

Area Habitat	Distinctiveness	Difficulty of		Time (years) to target condition for habitat <b>creation</b>						
		Creation or accelerated succession	Enhancement or restoration	Good	Fairly Good	Moderate	Fairly Poor	Poor	N/A Agricultural	N/A Other
Lakes - Moderate alkalinity lakes	6	0.33	0.33	0.490	0.586	0.700	0.779	0.837	-	-
Lakes - Peat Lakes	6	0.33	0.33	0.343	0.490	0.586	0.700	0.837	-	-
Lakes - Ponds (Non-Priority Habitat)	6	1	1	0.837	0.867	0.899	0.931	0.965	-	-
Lakes - Ponds (Priority Habitat)	6	0.67	0.33	0.700	0.779	0.837	0.899	0.931	-	-
Lakes - Reservoirs	4	0.67	0.67	0.700	0.779	0.837	0.899	0.965	-	-
Lakes - Temporary lakes, ponds and pools	6	0.67	0.67	0.700	0.779	0.837	0.899	0.931	-	-
Sparsely vegetated land - Calaminarian grasslands	4	0.1	0.67	0.700	0.779	0.837	0.899	0.931	-	-
Sparsely vegetated land - Coastal sand dunes	6	0.1	0.67	0.490	0.586	0.700	0.779	0.837	-	-
Sparsely vegetated land - Coastal vegetated shingle	6	0.1	0.67	0.490	0.586	0.700	0.779	0.837	-	-
Sparsely vegetated land - Ruderal	2	1	0.67	0.837	0.867	0.899	0.931	0.965	-	-
Sparsely vegetated land - Inland rock outcrop & scree habitats	6	0.33	1	0.320	0.410	0.490	0.586	0.700	-	-
Sparsely vegetated land - Limestone pavement	8	0.1	0.67	0.320	0.320	0.320	0.320	0.320	-	-

Area Habitat	Distinctiveness	Difficulty of		Time (years) to target condition for habitat <b>creation</b>						
		Creation or accelerated succession	Enhancement or restoration	Good	Fairly Good	Moderate	Fairly Poor	Poor	N/A Agricultural	N/A Other
Sparsely vegetated land - Maritime cliff and slopes	6	0.33	0.67	0.320	0.410	0.586	0.700	0.837	-	-
Sparsely vegetated land - Other inland rock and scree	4	0.67	0.67	0.490	0.586	0.700	0.779	0.837	-	-
Urban - Allotments	4	1	1	0.965	0.965	0.965	0.965	0.965	-	-
Urban - Amenity grassland	2	1	1	-	-	0.899	0.931	0.965	-	-
Urban - Artificial lake or pond	4	1	1	0.837	0.867	0.899	0.931	0.965	-	-
Urban - Artificial vegetated, unsealed surface	0	1	1	0.965	0.965	0.965	0.965	0.965	-	-
Urban - Bioswale	2	0.67	1	0.899	0.931	0.965	0.965	0.965	-	-
Urban - Brown roof	4	0.67	1	0.700	0.779	0.837	0.899	0.965	-	-
Urban - Built linear features	0	1	1	1.000	1.000	1.000	1.000	1.000	-	-
Urban - Cemeteries and churchyards	4	0.67	1	0.490	0.546	0.586	0.652	0.700	-	-
Urban - Developed land; sealed surface	0	1	0.67	1.000	1.000	1.000	1.000	1.000	-	1.000
Urban - Extensive green roof	4	0.67	0.67	0.837	0.867	0.899	0.931	0.965	-	-
Urban - Façade-bound green wall	2	0.67	0.67	0.837	0.867	0.899	0.931	0.965	-	-
Urban - Ground based green wall	2	0.67	0.67	0.837	0.867	0.899	0.931	0.965	-	-

Area Habitat	Distinctiveness	Difficulty of		Time (years) to target condition for habitat <b>creation</b>						
		Creation or accelerated succession	Enhancement or restoration	Good	Fairly Good	Moderate	Fairly Poor	Poor	N/A Agricultural	N/A Other
Urban - Ground level planters	2	1	1	0.965	0.965	0.965	0.965	0.965	-	-
Urban - Intensive green roof	2	1	1	0.700	0.752	0.837	0.899	0.965	-	-
Urban - Introduced shrub	2	1	1	0.965	0.965	0.965	0.965	0.965	-	-
Urban - Open Mosaic Habitats on Previously Developed Land	6	0.67	0.67	0.700	0.779	0.867	0.931	1.000	-	-
Urban - Orchard	4	1	1	0.410	0.490	0.586	0.700	0.837	-	-
Urban - Rain garden	2	1	1	0.965	0.965	0.965	0.965	0.965	-	-
Urban - Sand pit quarry or open cast mine	2	0.67	0.67	0.965	0.965	0.965	0.965	0.965	-	-
Urban - Street Tree	2	1	1	-	-	0.382	-	-	-	-
Urban - Suburban/ mosaic of developed/ natural surface	2	1	1	0.837	0.867	0.899	0.931	0.965	-	-
Urban - Sustainable urban drainage feature	2	0.67	0.67	0.837	0.867	0.899	0.931	0.965	-	-
Urban - Un-vegetated garden	0	1	1	-	-	-	-	-	-	1.000
Urban - Vacant/derelict land/ bare ground	2	1	1	0.965	0.965	0.965	0.965	0.965	-	-
Urban - Vegetated garden	2	1	1	0.837	0.867	0.899	0.931	0.965	-	-
Urban - Woodland	4	1	1	0.320	0.343	0.382	0.410	0.490	-	-
Wetland - Blanket bog	8	0.1	0.33	0.320	0.320	0.343	0.410	0.586	-	-

Area Habitat	Distinctiveness	Difficulty of		Time (years) to target condition for habitat <b>creation</b>						
		Creation or accelerated succession	Enhancement or restoration	Good	Fairly Good	Moderate	Fairly Poor	Poor	N/A Agricultural	N/A Other
Wetland - Depressions on Peat substrates (H7150)	8	0.1	0.33	0.320	0.320	0.343	0.410	0.586	-	-
Wetland - Fens (upland & lowland)	8	0.33	0.33	0.343	0.410	0.586	0.652	0.700	-	-
Wetland - Lowland raised bog	8	0.1	0.33	0.320	0.320	0.343	0.490	0.586	-	-
Wetland – Oceanic Valley Mire [insert footnote] (D2.1)	8	0.1	0.33	0.320	0.320	0.343	0.490	0.586	-	-
Wetland - Purple moor grass & rush pastures	8	0.33	0.33	0.343	0.410	0.490	0.586	0.700	-	-
Wetland - Reedbeds	6	0.67	0.67	0.586	0.652	0.700	0.779	0.837	-	-
Wetland - Transition mires & quaking bogs (H7140)	8	0.1	0.33	0.320	0.320	0.343	0.410	0.586	-	-
Woodland & forest - Felled	4	1	1	0.320	0.320	0.320	0.320	0.320	-	-
Woodland & forest - Lowland beech and yew woodland	6	0.33	0.33	0.320	0.320	0.320	0.320	0.320	-	-
Woodland & forest - Lowland mixed deciduous woodland	6	0.33	0.33	0.320	0.320	0.320	0.320	0.320	-	-
Woodland & forest - Native pine woodlands	6	0.33	0.33	0.320	0.320	0.320	0.343	0.410	-	-
Woodland a& forest - Other coniferous woodland	2	1	1	0.320	0.320	0.410	0.490	0.586	-	-

Area Habitat	Distinctiveness	Difficulty of		Time (years) to target condition for habitat <b>creation</b>						
		Creation or accelerated succession	Enhancement or restoration	Good	Fairly Good	Moderate	Fairly Poor	Poor	N/A Agricultural	N/A Other
Woodland & forest - Other Scot's Pine woodland	4	0.67	0.67	0.320	0.320	0.320	0.410	0.490	-	-
Woodland & forest - Other woodland; broadleaved	4	0.67	0.67	0.320	0.320	0.343	0.410	0.490	-	-
Woodland & forest - Other woodland; mixed	4	0.67	0.67	0.320	0.343	0.410	0.490	0.586	-	-
Woodland & forest - Other woodland; Young Trees planted	4	1	1	0.320	0.320	0.320	0.343	0.410	-	-
Woodland & forest - Upland birchwoods	6	0.67	0.67	0.320	0.343	0.410	0.490	0.586	-	-
Woodland & forest - Upland mixed ashwoods	6	0.33	0.33	0.320	0.320	0.320	0.343	0.410	-	-
Woodland & forest - Upland oakwood	6	0.33	0.33	0.320	0.320	0.320	0.320	0.320	-	-
Woodland & forest - Wet woodland	6	0.67	0.67	0.320	0.343	0.410	0.490	0.586	-	-
Woodland & forest - Wood-pasture & parkland	6	0.1	0.33	0.320	0.320	0.320	0.320	0.320	-	-



Area Habitat	Time to target condition (years) for <b>enhancement or restoration</b>																
	With elevation to higher distinctiveness habitat							Distinctiveness unchanged									
	N/A - Other	N/A - Agricultural	Poor	Fairly Poor	Moderate	Fairly Good	Good	Poor - Fairly Poor	Poor - Moderate	Poor - Fairly Good	Poor - Good	Fairly Poor - Moderate	Fairly Poor - Fairly Good	Fairly Poor - Good	Moderate - Fairly Good	Moderate - Good	Fairly Good - Good
Cropland - Temporary grass & clover leys	-	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
Cropland - Traditional orchards	-	-	0.837	0.700	0.490	0.410	0.343	0.837	0.586	0.490	0.410	0.700	0.586	0.490	0.837	0.700	0.837
Grassland - Bracken	-	-	0.965	0.931	0.899	0.867	0.837	0.965	0.931	0.899	0.837	0.965	0.931	0.899	0.965	0.931	0.965
Grassland - Floodplain Wetland Mosaic (CFGM)	-	-	0.700	0.586	0.490	0.410	0.343	0.837	0.490	0.410	0.343	0.837	0.700	0.586	0.837	0.700	0.837
Grassland - Lowland calcareous	-	-	0.700	0.586	0.490	0.410	0.343	0.700	0.586	0.490	0.410	0.700	0.586	0.490	0.700	0.586	0.700
Grassland - Lowland dry acid	-	-	0.700	0.586	0.490	0.410	0.490	0.837	0.700	0.700	0.343	0.837	0.700	0.586	0.837	0.700	0.837
Grassland - Lowland meadows	-	-	0.837	0.752	0.700	0.652	0.586	0.837	0.837	0.752	0.700	0.752	0.652	0.586	0.899	0.837	0.837
Grassland - Modified grassland	-	0.965	0.965	0.837	0.700	0.652	0.586	0.837	0.700	0.652	0.410	0.700	0.586	0.490	0.700	0.586	0.700
Grassland - Other lowland acid	-	-	0.965	0.837	0.700	0.652	0.586	0.837	0.700	0.652	0.410	0.700	0.586	0.490	0.700	0.586	0.700
Grassland - Other neutral grassland	-	-	0.965	0.837	0.700	0.652	0.586	0.837	0.700	0.652	0.410	0.700	0.586	0.490	0.700	0.586	0.700
Grassland - Tall herb communities	-	-	0.700	0.586	0.490	0.410	0.343	0.586	0.490	0.410	0.343	0.837	0.700	0.586	0.837	0.700	0.837
Grassland - Upland acid grassland	-	-	0.965	0.837	0.700	0.652	0.586	0.837	0.700	0.652	0.410	0.700	0.586	0.490	0.700	0.586	0.700
Grassland - Upland calcareous	-	-	0.700	0.652	0.586	0.490	0.410	0.700	0.586	0.527	0.490	0.527	0.586	0.527	0.700	0.700	0.700

Area Habitat	Time to target condition (years) for <b>enhancement or restoration</b>																
	With elevation to higher distinctiveness habitat							Distinctiveness unchanged									
	N/A - Other	N/A - Agricultural	Poor	Fairly Poor	Moderate	Fairly Good	Good	Poor - Fairly Poor	Poor - Moderate	Poor - Fairly Good	Poor - Good	Fairly Poor - Moderate	Fairly Poor - Fairly Good	Fairly Poor - Good	Moderate - Fairly Good	Moderate - Good	Fairly Good - Good
Grassland - Upland hay meadows	-	-	0.700	0.652	0.586	0.527	0.490	0.700	0.586	0.527	0.490	0.527	0.586	0.527	0.700	0.779	0.700
Heathland & shrub - Blackthorn scrub	-	-	0.965	0.931	0.899	0.837	0.779	0.965	0.931	0.899	0.837	0.965	0.931	0.899	0.965	0.931	0.965
Heathland & shrub - Bramble scrub	-	-	0.965	0.931	0.899	0.867	0.837	0.965	0.931	0.899	0.837	0.965	0.931	0.899	0.965	0.931	0.965
Heathland & shrub - Gorse scrub	-	-	0.965	0.899	0.837	0.779	0.700	0.965	0.837	0.779	0.700	0.899	0.837	0.899	0.931	0.899	0.931
Heathland & shrub - Hawthorn scrub	-	-	0.965	0.931	0.899	0.837	0.779	0.965	0.837	0.779	0.700	0.899	0.837	0.899	0.931	0.899	0.931
Heathland & shrub - Hazel scrub	-	-	0.837	0.779	0.700	0.652	0.586	0.837	0.779	0.652	0.586	0.652	0.586	0.652	0.837	0.779	0.837
Heathland & shrub - Lowland Heathland	-	-	0.700	0.586	0.490	0.410	0.320	0.700	0.586	0.490	0.410	0.700	0.586	0.490	0.700	0.586	0.700
Heathland & shrub - Mixed scrub	-	-	0.965	0.931	0.899	0.837	0.779	0.965	0.837	0.779	0.700	0.899	0.837	0.899	0.931	0.899	0.931
Heathland & shrub - Mountain heaths and willow scrub	-	-	0.586	0.441	0.410	0.320	0.320	0.586	0.441	0.410	0.320	0.320	0.320	0.410	0.490	0.410	0.700
Heathland & shrub - Rhododendron scrub	-	-	0.965	0.931	0.899	0.837	0.779	0.965	0.931	0.899	0.837	0.965	0.931	0.899	0.965	0.931	0.965
Heathland & shrub - Sea buckthorn scrub (Annex 1)	-	-	0.965	0.931	0.899	0.837	0.779	0.965	0.931	0.899	0.837	0.965	0.931	0.899	0.965	0.931	0.965
Heathland & shrub - Sea buckthorn scrub (other)	-	-	0.965	0.931	0.899	0.837	0.779	0.965	0.931	0.899	0.837	0.965	0.931	0.899	0.965	0.931	0.965

Area Habitat	Time to target condition (years) for <b>enhancement or restoration</b>																
	With elevation to higher distinctiveness habitat							Distinctiveness unchanged									
	N/A - Other	N/A - Agricultural	Poor	Fairly Poor	Moderate	Fairly Good	Good	Poor - Fairly Poor	Poor - Moderate	Poor - Fairly Good	Poor - Good	Fairly Poor - Moderate	Fairly Poor - Fairly Good	Fairly Poor - Good	Moderate - Fairly Good	Moderate - Good	Fairly Good - Good
Heathland & shrub - Upland Heathland	-	-	0.700	0.586	0.490	0.410	0.343	0.700	0.586	0.490	0.410	0.700	0.586	0.490	0.700	0.586	0.700
Lakes - Aquifer fed naturally fluctuating water bodies	-	-	0.965	0.700	0.586	0.490	0.343	0.700	0.586	0.490	0.343	0.837	0.700	0.490	0.837	0.586	0.700
Lakes - Ditches	-	-	0.965	0.899	0.837	0.779	0.700	0.899	0.837	0.779	0.700	0.931	0.867	0.779	0.931	0.837	0.899
Lakes - High alkalinity lakes	-	-	0.931	0.899	0.837	0.779	0.700	0.899	0.837	0.779	0.700	0.899	0.837	0.779	0.837	0.837	0.837
Lakes - Low alkalinity lakes	-	-	0.837	0.700	0.586	0.490	0.343	0.700	0.586	0.490	0.343	0.837	0.700	0.490	0.837	0.586	0.700
Lakes - Marl Lakes	-	-	0.837	0.779	0.700	0.586	0.490	0.837	0.752	0.629	0.527	0.629	0.752	0.629	0.837	0.700	0.837
Lakes - Moderate alkalinity lakes	-	-	0.837	0.779	0.700	0.586	0.490	0.837	0.752	0.629	0.527	0.629	0.752	0.629	0.837	0.700	0.837
Lakes - Peat Lakes	-	-	0.837	0.700	0.586	0.490	0.343	0.700	0.586	0.490	0.343	0.837	0.490	0.490	0.837	0.700	0.700
Lakes - Ponds (Non- Priority Habitat)	-	-	0.931	0.899	0.837	0.779	0.700	0.965	0.899	0.837	0.752	0.965	0.867	0.779	0.931	0.837	0.899
Lakes - Ponds (Priority Habitat)	-	-	0.965	0.931	0.899	0.867	0.837	0.965	0.931	0.899	0.837	0.965	0.931	0.899	0.965	0.931	0.965
Lakes - Reservoirs	-	-	0.965	0.899	0.837	0.779	0.700	0.899	0.837	0.779	0.700	0.931	0.867	0.779	0.931	0.837	0.899
Lakes - Temporary lakes, ponds and pools	-	-	0.931	0.899	0.837	0.779	0.700	0.965	0.899	0.837	0.752	0.965	0.867	0.779	0.931	0.837	0.899
Sparsely vegetated land - Calaminarian grasslands	-	-	0.931	0.899	0.837	0.779	0.700	0.965	0.899	0.837	0.752	0.965	0.867	0.779	0.931	0.837	0.899

Area Habitat	Time to target condition (years) for <b>enhancement or restoration</b>																
	With elevation to higher distinctiveness habitat							Distinctiveness unchanged									
	N/A - Other	N/A - Agricultural	Poor	Fairly Poor	Moderate	Fairly Good	Good	Poor - Fairly Poor	Poor - Moderate	Poor - Fairly Good	Poor - Good	Fairly Poor - Moderate	Fairly Poor - Fairly Good	Fairly Poor - Good	Moderate - Fairly Good	Moderate - Good	Fairly Good - Good
Sparsely vegetated land - Coastal sand dunes	-	-	0.837	0.779	0.700	0.586	0.490	0.779	0.700	0.586	0.490	0.490	0.527	0.527	0.700	0.652	0.652
Sparsely vegetated land - Coastal vegetated shingle	-	-	0.837	0.779	0.700	0.586	0.490	0.779	0.700	0.586	0.490	0.490	0.527	0.527	0.700	0.652	0.652
Sparsely vegetated land - Ruderal	-	-	0.965	0.931	0.899	0.867	0.837	0.965	0.931	0.899	0.837	0.965	0.931	0.899	0.965	0.931	0.965
Sparsely vegetated land - Inland rock outcrop & scree habitats	-	-	0.700	0.586	0.490	0.410	0.320	0.700	0.586	0.410	0.320	0.490	0.410	0.382	0.586	0.490	0.586
Sparsely vegetated land - Limestone pavement	-	-	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320
Sparsely vegetated land - Maritime cliff and slopes	-	-	0.700	0.586	0.490	0.410	0.320	0.700	0.586	0.490	0.410	0.700	0.586	0.490	0.700	0.586	0.700
Sparsely vegetated land - Other inland rock and scree	-	-	0.607	0.700	0.369	0.779	0.508	0.700	0.586	0.410	0.320	0.490	0.410	0.382	0.586	0.490	0.586
Urban - Allotments	-	-	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
Urban - Amenity grassland	-	-	0.965	0.931	0.899	-	-	0.931	0.899	-	-	0.931	-	-	-	-	-
Urban - Artificial lake or pond	-	-	0.965	0.931	0.899	0.867	0.837	0.965	0.931	0.899	0.837	0.965	0.931	0.899	0.965	0.931	0.965
Urban - Artificial vegetated, unsealed surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Biodiversity metric 2.0 – Technical supplement

Area Habitat	Time to target condition (years) for <b>enhancement or restoration</b>																
	With elevation to higher distinctiveness habitat							Distinctiveness unchanged									
	N/A - Other	N/A - Agricultural	Poor	Fairly Poor	Moderate	Fairly Good	Good	Poor - Fairly Poor	Poor - Moderate	Poor - Fairly Good	Poor - Good	Fairly Poor - Moderate	Fairly Poor - Fairly Good	Fairly Poor - Good	Moderate - Fairly Good	Moderate - Good	Fairly Good - Good
Urban - Bioswale	-	-	0.965	0.965	0.965	0.931	0.899	0.965	0.931	0.931	0.899	0.899	0.899	0.899	0.931	0.931	0.931
Urban - Brown roof	-	-	0.965	0.899	0.837	0.779	0.700	0.965	0.837	0.779	0.700	0.837	0.752	0.700	0.837	0.837	0.899
Urban - Built linear features	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Urban - Cemeteries and churchyards	-	-	0.700	0.652	0.586	0.546	0.490	0.837	0.700	0.586	0.490	0.586	0.586	0.490	0.700	0.586	0.837
Urban - Developed land; sealed surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Urban - Extensive green roof	-	-	0.965	0.931	0.899	0.867	0.837	0.965	0.931	0.899	0.837	0.965	0.931	0.899	0.965	0.931	0.965
Urban - Façade-bound green wall	-	-	0.965	0.931	0.899	0.867	0.837	0.965	0.931	0.899	0.837	0.965	0.931	0.899	0.965	0.931	0.965
Urban - Ground based green wall	-	-	0.965	0.931	0.899	0.867	0.837	0.965	0.931	0.899	0.837	0.965	0.931	0.899	0.965	0.931	0.965
Urban - Ground level planters	-	-	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
Urban - Intensive green roof	-	-	0.965	0.899	0.837	0.752	0.700	0.899	0.837	0.752	0.700	0.899	0.752	0.752	0.899	0.837	0.931
Urban - Introduced shrub	-	-	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
Urban - Open Mosaic Habitats on Previously Developed Land	-	-	1.000	0.931	0.867	0.779	0.700	0.931	0.867	0.779	0.700	0.931	0.837	0.752	0.899	0.867	0.899
Urban - Orchard	-	-	0.837	0.700	0.586	0.490	0.410	0.837	0.700	0.490	0.410	0.700	0.586	0.490	0.837	0.700	0.837
Urban - Rain garden	-	-	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965

Area Habitat	Time to target condition (years) for <b>enhancement or restoration</b>																
	With elevation to higher distinctiveness habitat							Distinctiveness unchanged									
	N/A - Other	N/A - Agricultural	Poor	Fairly Poor	Moderate	Fairly Good	Good	Poor - Fairly Poor	Poor - Moderate	Poor - Fairly Good	Poor - Good	Fairly Poor - Moderate	Fairly Poor - Fairly Good	Fairly Poor - Good	Moderate - Fairly Good	Moderate - Good	Fairly Good - Good
Urban - Sand pit quarry or open cast mine	-	-	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
Urban - Street Tree	-	-	0.490	0.410	0.382	0.343	0.320	0.837	0.779	0.700	0.586	0.700	0.652	0.320	0.700	0.490	0.700
Urban - Suburban/ mosaic of developed/ natural surface	-	-	0.965	0.931	0.899	0.867	0.837	0.965	0.931	0.899	0.837	0.965	0.931	0.899	0.965	0.931	0.965
Urban - Sustainable urban drainage feature	-	-	0.965	0.931	0.899	0.867	0.837	0.965	0.931	0.899	0.837	0.965	0.931	0.899	0.965	0.931	0.965
Urban - Un-vegetated garden	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Urban - Vacant/derelict land/ bare ground	-	-	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
Urban - Vegetated garden	-	-	0.965	0.931	0.899	0.867	0.837	0.965	0.931	0.899	0.837	0.965	0.931	0.899	0.965	0.931	0.965
Urban - Woodland	-	-	0.490	0.410	0.382	0.343	0.320	0.837	0.700	0.586	0.320	0.586	0.490	0.586	0.700	0.700	0.700
Wetland - Blanket bog	-	-	0.586	0.410	0.343	0.320	0.320	0.700	0.490	0.410	0.343	0.700	0.490	0.490	0.700	0.586	0.700
Wetland - Depressions on Peat substrates (H7150)	-	-	0.586	0.410	0.343	0.320	0.320	0.700	0.490	0.410	0.343	0.700	0.490	0.490	0.700	0.586	0.700
Wetland - Fens (upland & lowland)	-	-	0.700	0.652	0.586	0.410	0.343	0.700	0.652	0.586	0.586	0.700	0.586	0.586	0.700	0.700	0.700
Wetland - Lowland raised bog	-	-	0.586	0.490	0.343	0.320	0.320	0.700	0.490	0.410	0.343	0.700	0.490	0.490	0.700	0.586	0.700

Area Habitat	Time to target condition (years) for <b>enhancement or restoration</b>																
	With elevation to higher distinctiveness habitat							Distinctiveness unchanged									
	N/A - Other	N/A - Agricultural	Poor	Fairly Poor	Moderate	Fairly Good	Good	Poor - Fairly Poor	Poor - Moderate	Poor - Fairly Good	Poor - Good	Fairly Poor - Moderate	Fairly Poor - Fairly Good	Fairly Poor - Good	Moderate - Fairly Good	Moderate - Good	Fairly Good - Good
Wetland – Oceanic Valley Mire [insert footnote] (D2.1)	-	-	0.586	0.490	0.343	0.320	0.320	0.700	0.490	0.410	0.343	0.700	0.490	0.490	0.700	0.586	0.700
Wetland - Purple moor grass & rush pastures	-	-	0.700	0.652	0.586	0.546	0.490	0.837	0.700	0.586	0.490	0.586	0.586	0.490	0.700	0.586	0.837
Wetland - Reedbeds	-	-	0.837	0.779	0.700	0.652	0.586	0.837	0.700	0.652	0.586	0.779	0.700	0.652	0.779	0.700	0.837
Wetland - Transition mires & quaking bogs (H7140)	-	-	0.586	0.410	0.343	0.320	0.320	0.700	0.490	0.410	0.343	0.700	0.490	0.490	0.700	0.586	0.700
Woodland & forest - Felled	-	-	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.700
Woodland & forest - Lowland beech and yew woodland	-	-	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.700
Woodland & forest - Lowland mixed deciduous woodland	-	-	0.320	0.320	0.320	0.320	0.320	0.700	0.586	0.320	0.320	0.410	0.410	0.410	0.490	0.490	0.700
Woodland & forest - Native pine woodlands	-	-	0.410	0.343	0.320	0.320	0.320	0.700	0.586	0.490	0.320	0.586	0.490	0.410	0.700	0.586	0.700
Woodland a& forest - Other coniferous woodland	-	-	0.586	0.490	0.410	0.320	0.320	0.700	0.586	0.490	0.320	0.586	0.490	0.410	0.700	0.586	0.700
Woodland & forest - Other Scot's Pine woodland	-	-	0.490	0.410	0.320	0.320	0.320	0.700	0.586	0.490	0.320	0.586	0.490	0.410	0.700	0.586	0.700

Area Habitat	Time to target condition (years) for <b>enhancement or restoration</b>																
	With elevation to higher distinctiveness habitat							Distinctiveness unchanged									
	N/A - Other	N/A - Agricultural	Poor	Fairly Poor	Moderate	Fairly Good	Good	Poor - Fairly Poor	Poor - Moderate	Poor - Fairly Good	Poor - Good	Fairly Poor - Moderate	Fairly Poor - Fairly Good	Fairly Poor - Good	Moderate - Fairly Good	Moderate - Good	Fairly Good - Good
Woodland & forest - Other woodland; broadleaved	-	-	0.490	0.410	0.343	0.320	0.320	0.700	0.586	0.490	0.320	0.586	0.490	0.410	0.700	0.586	0.700
Woodland & forest - Other woodland; mixed	-	-	0.586	0.490	0.410	0.343	0.320	0.700	0.700	0.586	0.320	0.586	0.490	0.410	0.700	0.586	0.700
Woodland & forest - Other woodland; Young Trees planted	-	-	0.410	0.343	0.320	0.320	0.320	0.700	0.586	0.490	0.320	0.586	0.490	0.410	0.700	0.586	0.700
Woodland & forest - Upland birchwoods	-	-	0.586	0.490	0.410	0.343	0.320	0.700	0.586	0.490	0.320	0.586	0.490	0.410	0.700	0.586	0.700
Woodland & forest - Upland mixed ashwoods	-	-	0.410	0.343	0.320	0.320	0.320	0.700	0.586	0.490	0.320	0.586	0.490	0.410	0.700	0.586	0.700
Woodland & forest - Upland oakwood	-	-	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320
Woodland & forest - Wet woodland	-	-	0.586	0.490	0.410	0.343	0.320	0.700	0.700	0.586	0.320	0.586	0.490	0.410	0.700	0.586	0.700
Woodland & forest - Wood-pasture & parkland	-	-	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320

## Hedgerow and Line of Trees Data Tables

TABLE TS3-5: Hedgerow and Line of Trees data values (categorical values) – July 2019

Hedgerow Type	Distinctiveness Band	Difficulty		Time to target condition (years)					
		of creation	of enhancement or restoration	To create a habitat			To enhance or restore a habitat		
				Poor	Moderate	Good	Poor to Moderate	Poor to Good	Moderate to Good
Hedge Ornamental Non Native	Very Low	Low	Low	1	2	5	1	5	3
Line of Trees	Low	Low	Low	1	20	30	20	30	10
Line of Trees - associated with bank or ditch	Low	Low	Low	1	20	30	20	30	10
Line of Trees (ecologically valuable)	Medium	Medium	Medium	1	20	30	20	30	10
Line of Trees (ecologically valuable) with bank or ditch	Medium	Medium	Medium	1	20	30	20	30	10
Native Hedgerow	Low	Low	Low	1	5	10	3	5	2
Native Hedgerow - associated with bank or ditch	Medium	Medium	Medium	1	5	10	3	5	2
Native Hedgerow with trees	Low	Low	Low	1	10	20	6	10	4
Native Hedgerow with trees - associated with bank or ditch	Medium	Medium	Medium	1	10	20	6	10	4
Native Species Rich Hedgerow	Medium	High	Medium	1	5	10	3	5	2
Native Species Rich Hedgerow - associated with bank or ditch	High	High	Medium	1	5	10	3	5	2
Native Species Rich Hedgerow with trees	Medium	High	Medium	1	10	20	6	10	4

**TABLE TS3-6: Hedgerow and Line of Trees data values (numerical values used in Calculation Tool) – July 2019**

Hedgerow Type	Distinctiveness Band	Difficulty		Time to target condition (years)					
		of creation	of enhancement or restoration	To create a habitat			To enhance or restore a habitat		
				Poor	Moderate	Good	Poor to Moderate	Poor to Good	Moderate to Good
Hedge Ornamental Non Native	1	1	1	0.965	0.931	0.837	0.965	0.837	0.899
Line of Trees	2	1	1	0.965	0.490	0.343	0.490	0.343	0.700
Line of Trees - associated with bank or ditch	2	1	1	0.965	0.490	0.343	0.490	0.343	0.700
Line of Trees (ecologically valuable)	4	0.67	0.67	0.965	0.490	0.343	0.490	0.343	0.700
Line of Trees (ecologically valuable) with bank or ditch	4	0.67	0.67	0.965	0.490	0.343	0.490	0.343	0.700
Native Hedgerow	2	1	1	0.965	0.837	0.700	0.899	0.837	0.931
Native Hedgerow - associated with bank or ditch	4	0.67	0.67	0.965	0.837	0.700	0.899	0.837	0.931
Native Hedgerow with trees	2	1	1	0.965	0.700	0.490	0.808	0.700	0.867
Native Hedgerow with trees - associated with bank or ditch	4	0.67	0.67	0.965	0.700	0.490	0.808	0.700	0.867
Native Species Rich Hedgerow	4	0.1	0.67	0.965	0.837	0.700	0.899	0.837	0.931
Native Species Rich Hedgerow - associated with bank or ditch	6	0.1	0.67	0.965	0.837	0.700	0.899	0.837	0.931
Native Species Rich Hedgerow with trees	4	0.1	0.67	0.965	0.700	0.490	0.808	0.700	0.867

## River Data Tables

**TABLE TS3-7: River data vales (categorical values) excluding time to target condition for enhancement and restoration – July 2019 (see Table TS3-8)**

River Habitat	Distinctiveness	Difficulty of		Time to target condition (years) for <b>creation</b>				
		Creation	Enhancement or restoration	Good	Fairly Good	Moderate	Fairly Poor	Poor
Active Shingle Rivers	High	High	High	Medium	10	8	5	2
Canals	Moderate	Moderate	High	Medium	10	8	5	2
Chalk Rivers	High	High	High	Medium	10	8	5	2
Class 1- River Naturalness Assessment	Very High	Very High	High	Medium	10	8	5	2
Class 2 or 3 - River Naturalness Assessment	High	High	High	Medium	10	8	5	2
Class 4 or 5 - River Naturalness Assessment	Moderate	Moderate	High	Medium	10	8	5	2
Headwater Streams	High	High	High	Medium	10	8	5	2
On Priority Habitat Rivers Map	Very High	Very High	High	Medium	10	8	5	2
Rivers - Abundance of Water-Crowfoots	High	High	High	Medium	10	8	5	2
Rivers & Streams (Other)	Moderate	Moderate	High	Medium	10	8	5	2

**TABLE TS3-8: River data vales (categorical values used in Calculation Tool) for time to target condition for enhancement and restoration – July 2019**

River Habitat Type	Time to target condition (years) for <b>enhancement or restoration</b>													
	With elevation to higher distinctiveness habitat					Distinctiveness unchanged								
	Poor	Fairly Poor	Moderate	Fairly Good	Good	Poor - Fairly Poor	Poor - Moderate	Poor - Fairly Good	Poor - Good	Fairly Poor - Moderate	Fairly Poor - Fairly Good	Fairly Poor - Good	Moderate - Fairly Good	Moderate - Good
Active Shingle Rivers	10	10	10	10	10	10	8	5	2	1	10	8	5	2
Canals	10	10	10	10	10	10	8	5	2	1	10	8	5	2
Chalk Rivers	10	10	10	10	10	10	8	5	2	1	10	8	5	2
Class 1-River Naturalness Assessment	10	10	10	10	10	10	8	5	2	1	10	8	5	2
Class 2 or 3 -River Naturalness Assessment	10	10	10	10	10	10	8	5	2	1	10	8	5	2
Class 4 or 5 - River Naturalness Assessment	10	10	10	10	10	10	8	5	2	1	10	8	5	2
Headwater Streams	10	10	10	10	10	10	8	5	2	1	10	8	5	2
On Priority Habitat Rivers Map	10	10	10	10	10	10	8	5	2	1	10	8	5	2
Rivers - Abundance of Water-Crowfoots	10	10	10	10	10	10	8	5	2	1	10	8	5	2
Rivers & Streams (Other)	10	10	10	10	10	10	8	5	2	1	10	8	5	2

**TABLE TS3-9: River data values (numerical values) excluding time to target condition for enhancement and restoration – July 2019 (see Table TS3-10)**

River Habitat	Distinctiveness	Difficulty of		Time to target condition (years) for <b>creation</b>				
		Creation	Enhancement or restoration	Good	Fairly Good	Moderate	Fairly Poor	Poor
Active Shingle Rivers	6	0.33	0.67	0.700	0.752	0.837	0.931	0.965
Canals	4	0.33	0.67	0.700	0.752	0.837	0.931	0.965
Chalk Rivers	6	0.33	0.67	0.700	0.752	0.837	0.931	0.965
Class 1- River Naturalness Assessment	8	0.33	0.67	0.700	0.752	0.837	0.931	0.965
Class 2 or 3 - River Naturalness Assessment	6	0.33	0.67	0.700	0.752	0.837	0.931	0.965
Class 4 or 5 - River Naturalness Assessment	4	0.33	0.67	0.700	0.752	0.837	0.931	0.965
Headwater Streams	6	0.33	0.67	0.700	0.752	0.837	0.931	0.965
On Priority Habitat Rivers Map	8	0.33	0.67	0.700	0.752	0.837	0.931	0.965
Rivers - Abundance of Water-Crowfoots	6	0.33	0.67	0.700	0.752	0.837	0.931	0.965
Rivers & Streams (Other)	4	0.33	0.67	0.700	0.752	0.837	0.931	0.965

**TABLE TS3-10: River data vales (numerical values used in Calculation Tool) for time to target condition for enhancement and restoration – July 2019**

River Habitat Type	Time to target condition (years) for <b>enhancement or restoration</b>													
	With elevation to higher distinctiveness habitat					Distinctiveness unchanged								
	Poor	Fairly Poor	Moderate	Fairly Good	Good	Poor - Fairly Poor	Poor - Moderate	Poor - Fairly Good	Poor - Good	Fairly Poor - Moderate	Fairly Poor - Fairly Good	Fairly Poor - Good	Moderate - Fairly Good	Moderate - Good
Active Shingle Rivers	0.700	0.700	0.700	0.700	0.700	0.700	0.752	0.837	0.931	0.965	0.700	0.752	0.837	0.931
Canals	0.700	0.700	0.700	0.700	0.700	0.700	0.752	0.837	0.931	0.965	0.700	0.752	0.837	0.931
Chalk Rivers	0.700	0.700	0.700	0.700	0.700	0.700	0.752	0.837	0.931	0.965	0.700	0.752	0.837	0.931
Class 1-River Naturalness Assessment	0.700	0.700	0.700	0.700	0.700	0.700	0.752	0.837	0.931	0.965	0.700	0.752	0.837	0.931
Class 2 or 3 -River Naturalness Assessment	0.700	0.700	0.700	0.700	0.700	0.700	0.752	0.837	0.931	0.965	0.700	0.752	0.837	0.931
Class 4 or 5 - River Naturalness Assessment	0.700	0.700	0.700	0.700	0.700	0.700	0.752	0.837	0.931	0.965	0.700	0.752	0.837	0.931
Headwater Streams	0.700	0.700	0.700	0.700	0.700	0.700	0.752	0.837	0.931	0.965	0.700	0.752	0.837	0.931
On Priority Habitat Rivers Map	0.700	0.700	0.700	0.700	0.700	0.700	0.752	0.837	0.931	0.965	0.700	0.752	0.837	0.931
Rivers - Abundance of Water-Crowfoots	0.700	0.700	0.700	0.700	0.700	0.700	0.752	0.837	0.931	0.965	0.700	0.752	0.837	0.931
Rivers & Streams (Other)	0.700	0.700	0.700	0.700	0.700	0.700	0.752	0.837	0.931	0.965	0.700	0.752	0.837	0.931