Department
for Environment
Food & Rural Affairs

The Statutory Biodiversity Metric

User Guide

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

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

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

Document History

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23rd July 2024	Document history table added. Added biodiversity metric tool definition for private gardens in Table 1. Further clarifications provided through: • new section on private gardens • re-ordering and formatting of guidance • expanding guidance on recording individual trees • expanding guidance on rural lines of trees
3rd July 2025	Definitions added / clarified for: • private gardens • commercial buildings • canals Additional guidance on watercourses including clarifications regarding the riparian zone, additional information on watercourse sections, ditches and technical fish passes. Minor clarifications / additions to guidance provided for: • replacement of felled woodland • rule 4 definition • strategic significance • habitat retention • assessing habitat changes within a private garden • green roofs and walls • recording post development tree size classes Full detail of changes can be found in the version history.

1 Document guidance

Purpose of this guidance

This document provides guidance to support a competent person (assessor or reviewer) using the statutory biodiversity metric calculation tool (hereafter referred to as the biodiversity metric tool).

This guidance has been developed to provide essential information on how to input the relevant data values into the biodiversity metric tool.

It is recommended this guidance is read in full before using the biodiversity metric tool.

An input guide to understand the tool layout and data input process is provided in Appendix A.

Competency requirements

Principles and rules underpin the use of the biodiversity metric tool. The first principle is that the metric assessment should be completed by a competent person.

A competent person has the knowledge and skills to perform specified tasks to complete and review biodiversity metric calculations. You obtain this through training, qualifications, experience, or a combination of them.

Competency is aligned with the British Standard 'Process for designing and implementing biodiversity net gain (BS 8683:202)'.

You should be a qualified assessor to undertake a river condition assessment.

Find out more about the river condition assessment qualification.

Evidencing data

Evidence for metric decisions should be provided and signposted within the 'User comments' column of the biodiversity metric tool.

Use of the biodiversity metric tool

The biodiversity metric tool is used to calculate biodiversity value for the purposes of biodiversity net gain.

Find out more about biodiversity net gain and if you need to use this tool.

You can use the biodiversity metric tool to calculate the biodiversity value of:

- existing habitats
- habitat enhancement
- habitat creation

The biodiversity metric tool can calculate different types of 'biodiversity units'. There are three types of biodiversity units, which are calculated in three separate 'modules' of the metric. These are:

- area habitat units
- hedgerow units
- watercourse units

The biodiversity metric tool can be used throughout all stages of a project, from site selection to detailed design and delivery. The earlier it is applied, the greater the opportunity to design for biodiversity and wider ecological benefits.

Early and repeated use of the biodiversity metric tool can help to:

- assess or audit the biodiversity unit value of an area of land
- compare different biodiversity options for a site
- calculate and forecast biodiversity units and percentage change
- advise on design improvements
- advise on how the results can inform planning decisions
- re-run the calculation as plans develop and change

You should follow up to date industry good practice principles (CIRIA, CIEEM and IEMA) and BS 8683:2021 when using the metric.

Small sites metric

A small sites metric is available for small sites (small developments which do not fall within the meaning of major development as defined in article 2(1) of Town and Country Planning (Development Management Procedure) (England) Order 2015) unless priority habitats, protected sites or European protected species are present on-site.

Find out more about the small sites metric and when it can be used.

2 Terms and definitions

See table 1 for an explanation of the terms used within this guidance.

Table 1 Explanation of guidance terms

Tool term	Explanation
Area habitat	Habitats recorded in the biodiversity metric tool in area (hectares).
Assessor	The competent person completing the biodiversity metric tool.
Biodiversity unit	'Biodiversity units' are used to describe relative biodiversity value. There are three types of biodiversity units: area habitat units, hedgerow units and watercourse units. Each of these are calculated in separate 'modules' of the biodiversity metric.
Commercial building	A building that is not used as a domestic dwelling. Uses could include industrial, retail, leisure, healthcare facilities as listed in The Town and Country Planning (Use Classes) (Amendment) (England) Regulations 2020, 2020 No. 757. Regulation 13 Find out more about commercial, business and service use classes.
Condition	A measure of the habitat against its ecological optimum state. Condition is a way of measuring variation in the quality of patches of the same habitat type.
Condition assessment	The process of assigning habitat condition, to be undertaken by a competent person.
Difficulty	A measure which represents the uncertainty in the effectiveness of management techniques used to enhance or create habitat.
Distinctiveness	A measure based on the type of habitat and its distinguishing features. This includes: • consideration of species richness and rarity • the extent to which the habitat is protected by designations • the degree to which a habitat supports species rarely found in other habitats.
Reviewer	A person reviewing the biodiversity metric outputs to check the biodiversity metric rules, principles and guidance have been followed. A review is usually from a relevant planning authority.

Tool term	Explanation
Habitat type	Users should see 'habitat definitions' tab in the Statutory Metric condition assessment sheets for definitive source classifications for each habitat. The technical data sheets in the statutory biodiversity metric tool (G-1 All Habitats) also list the biodiversity metric habitat types and their source material. Source material includes: • UK Habitat Classification • European Nature Information System habitat type hierarchical view • Water Framework Directive Lake typologies • Natura 2000 (Annex I habitats)
Habitat parcel	A linked area of habitat of the same distinctiveness, condition and strategic significance.
Linear habitat	Habitats recorded in the biodiversity metric according to length (kilometres) instead of area (hectares). This includes habitats in the hedgerow and watercourse modules. It's taken as a centre line measurement along the length of the feature.
Private garden	A garden within the curtilage of a privately owned or tenanted dwellinghouse. The built structures of a privately owned or tenanted dwellinghouse are not considered part of a private garden. Find out more about dwellinghouses.
Project timeframe	The timeframe over which the biodiversity metric calculates gains and losses for specific habitat interventions.
Size	The size of the habitat parcel to be retained, enhanced, created, or lost. Size is measured in hectares for area features or in kilometres for linear features. The biodiversity metric tool accepts size measurements to any number of decimal places.
Spatial risk	Spatial risk represents the relationship between the location of biodiversity loss (on-site) and where the off-site habitat is being delivered. This is applied to off-site interventions only.
Strategic significance	The local significance of the habitat based on its location and the habitat type.

Tool term	Explanation
Time to target condition	The average time taken between starting creation or enhancement of habitats and that habitat reaching its target condition or distinctiveness.

On-site and off-site

On-site refers to all land within a red line boundary of a development.

Off-site, for the purposes of the biodiversity metric tool, refers to land outside of the on-site boundary, which is dedicated to habitat interventions (habitat enhancement or creation), regardless of proximity or ownership.

You should not adjust a project red line boundary to move habitats only subject to enhancement to off-site sections of the biodiversity metric tool.

See more information about setting the red line boundary.

Off-site providers

An off-site provider can create or enhance habitats to generate biodiversity units for developments and allow them to meet their BNG requirement. An off-site provider could be a land manager, a landowner, or an organisation acting as a habitat bank.

If you are an off-site provider completing an assessment of your land, you should complete the off-site sections of the biodiversity metric tool. You can select *'This metric is being used by an off-site provider'* as a spatial risk category before you have agreed to sell the units to a development.

When your off-site biodiversity units are used by a development, they will be subject to a spatial risk multiplier. If you are a development using an off-site provider, you must apply the correct spatial risk multiplier. The biodiversity metric tool will calculate the value of off-site actions relative to the project.

See more about the spatial risk multiplier and how it is applied.

3 Biodiversity metric rules and principles

Biodiversity metric rules

You must follow the biodiversity metric rules set out in table 2.

If you do not follow these rules, you cannot claim a biodiversity net gain.

Table 2 Biodiversity metric rules

Rule	Rule detail
Rule 1	The trading rules of this biodiversity metric must be followed.
Rule 2	Biodiversity unit outputs, for each type of unit, must not be summed, traded, or converted between types. The requirement to deliver at least a 10% net gain applies to each type of unit.
Rule 3	To accurately apply the biodiversity metric formula, you must use the statutory biodiversity metric calculation tool or small sites biodiversity metric tool (SSM) for small sites. The tools remove the need for a user to manually calculate the change in biodiversity value. The tool will summarise the results of the calculation and inform a user whether the biodiversity net gain objective has been met.
Rule 4	In exceptional ecological circumstances, deviation from this biodiversity metric methodology may be permitted by the relevant planning authority. See more about applying rule 4

Trading rules (Rule 1)

The trading rules set minimum habitat creation and enhancement requirements to compensate for specific habitat losses, up to the point of no net loss. They are based on the habitat type and distinctiveness of the lost habitat.

You will find information on how the biodiversity metric tool applies trading rules in table 3.

Table 3 Trading rules (Rule 1) to compensate for losses

Baseline habitat distinctiveness	Area	Hedgerow	Watercourse
Very high	Priority should be given to replacing losses with area habitat units of the same habitat type (see below notes on trading)	Losses must be replaced with hedgerow units of the same habitat type	Priority should be given to replacing losses with watercourse units of the same habitat type (see below notes on trading)
High	Losses must be replaced with area habitat units of the same habitat type	Losses must be replaced with hedgerow units of the same habitat type or of a higher band	Losses must be replaced with watercourse units of the same habitat type
Medium	Losses must be replaced by area habitat units of either medium band habitats within the same broad habitat type or, any habitat from a higher band from any broad habitat type	Losses must be replaced with hedgerow units of the same or of a higher band	Losses must be replaced with watercourse units of the same habitat type
Low	Losses must be replaced with area habitat units of the same or higher band	Losses must be replaced with hedgerow units of the same or of a higher band	Losses must be replaced with watercourse units of a higher band
Very low	Not applicable	Losses must be replaced with hedgerow units of the same or of a higher band	Not applicable

Notes on trading

The trading rules only apply up to the point of no net loss. Once trading rules have been met, biodiversity net gain requirements can be met by the creation and enhancement of any habitat, provided it is within the relevant module.

For example, if a project loses 1 area biodiversity unit (ABU) generated by a high distinctiveness habitat then the trading rules mean that project must provide at least 1 ABU generated by creation or enhancement of the same habitat type which is lost.

The ‘headline results’ tab of the biodiversity metric tool will show whether trading rules have been met. A more detailed breakdown of trading per habitat type can be found in the ‘trading summary’ tabs for each module.

See more about trading summaries here.

Very high distinctiveness habitats

VHDH are highly threatened, internationally scarce habitats which require conservation action. Impacts to these habitats should be avoided in line with planning policy.

VHDH are so valuable that losses cannot always be adequately compensated for. You should talk to the relevant planning authority about how you will meet the biodiversity gain objective for your development when VHDH are impacted.

There is a bespoke compensation option in the biodiversity metric tool, if used:

1. priority should be given to replacing losses with units of the same habitat type
2. if this is not possible, losses should be replaced by appropriate units of the same habitat distinctiveness
3. if this is not possible, losses should be replaced by appropriate area units of a high habitat distinctiveness

You should consider the ecological context of your site and ensure compensation for losses are achievable. In all cases, the biodiversity gain objective still needs to be met.

Compensation for loss of watercourses

Compensation for the loss of any watercourse units should be on a section of watercourse with similar habitat features (were it in a natural state). It should be of a similar size and function. For example:

- impacts on headwaters should not be offset on large lowland rivers
- impacts on chalk rivers should be offset on chalk rivers
- impacts on canals cannot be offset on rivers
- impacts on ditches cannot be offset on canals or rivers

Compensating for loss of high distinctiveness woodland

If woodland creation is required to compensate for the loss of high distinctiveness woodland, you must still meet the trading rules.

You should set a realistic target condition for the created woodland in the biodiversity metric. In most cases this will be ‘poor’ or 'moderate’ condition.

Alternatively, you can enhance existing woodland of the same type to provide the required biodiversity units.

If only enhancement of existing woodlands is used to account for losses of woodland, it will lead to a reduction in the overall area of woodland habitat. As such. woodland creation should be considered, alongside enhancement, to avoid an overall loss of woodland cover and support government targets.

Find out more about government targets to preserve and increase woodland cover.

All other woodland creation

If a woodland is being created and it is not replacing the loss of a high distinctiveness woodland, you should input it into the biodiversity metric tool as either:

- woodland and forest – other woodland, broadleaved
- woodland and forest – other woodland, mixed
- woodland and forest – other coniferous woodland

Replacement for felled woodland

If woodland has been felled within your site and there is no evidence of the lost woodland type and condition, you must:

- use the habitat type 'woodland and forest: felled' as the baseline habitat
- compensate for the loss as if the habitat was a high distinctiveness woodland
- use the post-development habitat type 'replacement for felled woodland' to record the compensation

See more about recording degraded habitats.

Do not use the habitat type 'replacement for felled woodland' to measure biodiversity net gain for other woodland operations, such as coppiced woodland or restocking, unless there is no evidence of the lost woodland type and condition. Where evidence is available, you may use the woodland type and condition that was present prior to the coppicing or restocking as the baseline.

Extending woodland agreements beyond 30 years

You may need to enter a legal agreement to secure woodland habitat for more than 30 years to allow time to meet the target woodland type and condition.

Applying rule 4

When to use rule 4

You should not use rule 4 for most projects. It may be used in exceptional ecological circumstances, occurring when:

- the site has optimal conditions (such as soil condition, hydrology, nutrient status) for restoration of a wildlife-rich or historic natural habitat,
- and the project team has the expertise and resource to deliver the habitat with negligible risk of failure.

It can only be used where one or more of the following applies:

1. Highly complex landscape scale habitat changes such as creation of heathland, heathland grassland mosaic or other mosaic habitats
2. River re-meandering, or
3. Large-scale restoration of natural processes

How to use rule 4 in the biodiversity metric tool

If you meet the requirements to use rule 4 it can be implemented through either:

- deviations from the biodiversity metric trading rules

- use of the ‘habitat created in advance’ function in the biodiversity metric tool

Deviation from biodiversity metric trading rules can occur when there is a clear ecological justification for the habitat intervention which is not being reflected by the biodiversity metric tool.

The use of the ‘habitat created in advance function’ can be used to represent a reduced risk in project delivery allowing the habitat to reach a target habitat type or condition quicker than average. If you need to use this, then:

- the number of years inputted into the ‘habitats created in advance function’ should not exceed the time it takes to reach a poor condition
- see tab ‘G-4 Temporal multipliers’ in the tool, to see these times for the relevant habitat type

Rule 4 can be used to reflect the full ecological benefit provided by these interventions. In all cases, the biodiversity gain objective still needs to be met.

Evidencing use of rule 4

If you meet the requirements to use rule 4, the relevant planning authority should be engaged prior to the submission of the biodiversity gain plan. The LPA needs to be satisfied that the exceptional ecological circumstances in which rule 4 can be applied are occurring.

You should indicate and explain clearly where and how rule 4 has been applied. Evidence will need to be inputted into the biodiversity metric tool (for example, in the user comments) to satisfy the relevant planning authority of the circumstances, showing:

- justification of why the site has optimal conditions for the specific habitat intervention
- specific ecological expertise relevant to the site
- detail of the ecological benefits of the habitat intervention which were not realised by the statutory biodiversity metric

Biodiversity metric principles

Use the biodiversity metric principles in table 4 to inform the use of the biodiversity metric tool.

Table 4 Biodiversity metric principles

Principle number	Principle detail
Principle 1	The metric assessment should be completed by a competent person.
Principle 2	The use of this biodiversity metric does not override existing biodiversity protections, statutory obligations, policy requirements, ecological mitigation hierarchy or any other requirements. This includes consenting or licensing processes, for example woodlands.
Principle 3	This biodiversity metric should be used in accordance with established good practice guidance and professional codes.
Principle 4	This biodiversity metric is not a complex or comprehensive ecological model and is not a substitute for expert ecological advice.
Principle 5	Biodiversity units are a proxy for biodiversity and should be treated as relative values.
Principle 6	This biodiversity metric is designed to inform decisions in conjunction with locally relevant evidence, expert input, or guidance.
Principle 7	Habitat interventions need to be realistic and deliverable within a relevant project timeframe.
Principle 8	Created and enhanced habitats should be, where practical and reasonable, local to any impact and deliver strategically important outcomes for nature conservation.
Principle 9	This biodiversity metric does not enforce a minimum habitat size ratio for compensation of losses. Proposals should aim to: • maintain habitat extent - supporting more, bigger, better and more joined up ecological networks • ensure that proposed or retained habitat parcels are of sufficient size for ecological function

Recording irreplaceable habitats

Irreplaceable habitats

Irreplaceable habitats (as provided for in BNG regulations) are technically very difficult to recreate once destroyed (or recreation would take a significant amount of time). As such, the BNG requirement is disapplied for these habitats. Any losses or deterioration impacts to irreplaceable habitats cannot be calculated by the biodiversity metric tool and they are removed from the baseline.

Impacts to on-site and off-site irreplaceable habitats should be avoided in line with planning policy. Irreplaceable habitats require consideration outside of biodiversity net gain, which must comply with up-to-date policy, legislation and regulations.

Find out more about The Biodiversity Gain Requirements (Irreplaceable Habitat) Regulations 2024.

You must record all on-site irreplaceable habitats within the biodiversity metric tool by selecting ‘yes’ on the irreplaceable habitat column. When you do:

- open the irreplaceable habitats tab
- specify which irreplaceable habitat is present

You must agree bespoke compensation to address losses and deterioration of irreplaceable habitats.

See more about recording bespoke compensation within the metric tool.

Where there are no losses or deterioration of irreplaceable habitat, their enhancement may contribute towards the calculation of post-development biodiversity units.

Ancient woodland

Ancient woodland can be recorded as range of woodland habitat types and must be marked as an irreplaceable habitat within the biodiversity metric tool. Ancient woodlands include:

- ancient semi-natural woodlands (ASNW)
- plantations on ancient woodland sites (PAWS)
- ancient wood-pasture and parkland

To ensure you record ASNW and PAWS, check:

- if the woodland is listed in the Ancient Woodland Inventory Database
- if the woodland meets the criteria set out in the Ancient Woodland Inventory Handbook (for a woodland that is less than 2ha)

Find out more about ancient woodland and advice for making planning decisions.

Ancient and veteran trees

All ancient and veteran trees must be recorded within the biodiversity metric tool and marked as an irreplaceable habitat. Ancient and veteran trees can be found in a range of situations, including within:

- hedgerows
- lines of trees
- woodland
- open habitats
- urban settings

You should record all ancient and veteran trees as individual trees separately on a single data entry row and mark these as an irreplaceable habitat. This includes ancient and veteran trees in woodlands that are not themselves ancient woodlands and those in hedgerows and lines of trees.

Irreplaceable ancient and veteran trees may be found within the biodiversity metric habitat type ‘ecologically valuable line of trees’. The linear length is not irreplaceable, but the component ancient and veteran trees are.

Recording bespoke compensation

If bespoke compensation is used, it must be:

- agreed with the relevant planning authority
- agreed on a case-by-case basis
- removed from any biodiversity net gain calculation

If you select 'bespoke compensation agreed' within the biodiversity metric tool then these losses are removed from the calculation.

Do not record any bespoke compensation action for these losses within the enhancement or creation sheets of the biodiversity metric.

If bespoke compensation is delivered on-site, then this may result in area discrepancies (as bespoke compensation on-site will not be recorded within on-site enhancement or creation sheets). If you deliver bespoke compensation on-site you should:

- record the baseline habitat as 'lost'
- record an equal area of created 'Developed land; sealed surface' (which has a zero-biodiversity value)
- label the area as 'proxy area for bespoke compensation delivered on-site'[3] within the user comments

Calculating a statutory credit requirement

If you cannot meet your BNG requirement on-site or off-site, statutory biodiversity credits may be purchased as a last resort.

Once you have completed your biodiversity metric calculation, the biodiversity metric tool will automatically calculate the remaining units needed to fulfil your BNG requirement. This can be found at the bottom of the 'headline results' tab under the column 'unit deficit'.

Unit Type	Target	Baseline Units	Units Required	Unit Deficit
Habitat units	10.00%	0.00	0.00	0.00
Hedgerow units	10.00%	0.00	0.00	0.00
Watercourse units	10.00%	0.00	0.00	0.00

Figure 1 The unit deficit table within the 'headline results' tab of the biodiversity metric tool.

[3] This is an interim fix, and the biodiversity metric tool will be updated so it can be recorded as bespoke compensation.

The biodiversity metric tool calculates the required number of credits, shown in the ‘Credits calculations’ tab, which is duplicated and summarised in the ‘Credits Summary’ tab. This is separated by tier.

A more detailed breakdown of unit deficit calculation can be found in the ‘credits calculations’ tab.

Credits Required by Tier/Module	
Tier	Credits Required
A1	0.00
A2	0.00
A3	0.00
A4	0.00
A5	0.00
H	0.00
W	0.00

*The spatial risk multiplier has already been applied to calculate these values.

Figure 2 The Credits Summary tab showing the number of statutory biodiversity credits required

The spatial risk multiplier for statutory credits is applied automatically and factored into the Credits Summary, the credits required column therefore shows the count of statutory biodiversity credits required. You can take the numbers shown in the Credits Summary and enter them into the statutory credits estimator tool and credits sales service.

Find out more about statutory biodiversity credits and when you can use them.

4 Habitat quality inputs

The biodiversity metric takes the size of a habitat and accounts for the three core quality components which contribute towards the calculation of biodiversity units, these are:

- distinctiveness
- condition
- strategic significance

For watercourses there are two additional quality components, these are:

- riparian zone encroachment
- watercourse encroachment

All quality components require data values for both baseline and post-development.

Size

Area module

You should record all habitats measured in hectares, such as lakes, intertidal habitats, grassland and woodland, within the area unit module of the metric.

You should record areas of intertidal habitats which are above water at low tide and under water at high tide.

For individual trees, the biodiversity metric tool contains a 'tree helper' which generates an area value based on the tree's diameter at breast height (DBH).

Hedgerow module

You should record hedgerows and lines of trees in kilometres. You should:

- use the centre line measurement along the length of the feature
- use OS maps where possible
- record hedgerows bounding green lanes as two separate lengths
- record double hedgerows as two separate lengths

When accounting for the area adjacent to hedgerows you should:

- map the area of habitat to the centre line of the hedgerow.
- not subtract hedgerow footprint or canopy cover from any area habitat
- not record the loss of area habitat where hedgerows are planted

Watercourse module

You should record watercourses in kilometres. You should use the centre line measurement along the length of the feature, using OS maps where possible.

The area of a watercourse may be recorded in the area module as the category 'watercourse footprint'. There are no biodiversity units associated with this category and all biodiversity units generated by watercourses are reported on within the watercourse module.

Habitat type and distinctiveness

Distinctiveness is a measure based on the type of habitat and its distinguishing features. Professional survey is required to determine habitat type.

The biodiversity metric tool automatically assigns distinctiveness category to your selected habitats.

Table 5 shows biodiversity metric distinctiveness categories and scores.

Table 5 Metric distinctiveness categories and scores applied in the biodiversity metric

Distinctiveness category	Distinctiveness score
Very high	8
High	6
Medium	4
Low	2
Very low (hedgerow module)	1
Very low (area module)	0

Condition

Habitat condition is a measure of the state of a habitat and is used to measure variation between parcels of the same habitat type.

Condition is often linked to past management, present management, and land use.

Table 6 outlines biodiversity metric condition categories and scores.

Table 6 Metric condition categories and scores applied in the biodiversity metric

Condition category	Condition score applied
Good	3
Fairly Good	2.5
Moderate	2
Fairly Poor	1.5
Poor	1
Condition Assessment N/A	1
N/A – Other	0

Condition assessments

You should conduct a condition assessment for all habitat parcels which require you to assign a condition to them in the biodiversity metric tool. You should use the biodiversity metric condition sheets to do this and provide these as evidence to support your assessment.

Find out more about biodiversity metric condition sheets

Biodiversity metric condition sheets can be used to evidence good, moderate or poor condition. Fairly good and fairly poor are intermediate condition categories. If you need to use these, you should:

- complete a biodiversity metric condition assessment sheet
- make site specific judgements using ecological expertise
- explain any deviations against specific condition criterion
- provide ecological reasoning

You should not use the intermediate categories beyond a one-step adjustment from a standard condition sheet result (for example, from 'moderate' condition up to 'fairly good', or down to 'fairly poor') and they should not be used for the post-development calculations unless ecologically justified (as informed by professional advice).

Watercourse condition assessments

There is a separate condition assessment methodology for the watercourse module which does not use a biodiversity metric condition sheet.

See more about watercourse condition assessments.

Strategic significance

Strategic significance is the local significance of the habitat based on its location and habitat type.

You should assess each individual habitat parcel, for on-site and off-site. You should split habitat parcels where they are intersected by:

- a boundary between two areas of different strategic significance
- a planning authority boundary

You should assign strategic significance for off-site habitats using relevant local documents for the off-site location rather than the development location.

Where a Local Nature Recovery Strategy (LNRS) has been published

Where a Local Nature Recovery Strategy (LNRS) has been published, use the LNRS and descriptions set out in table 7 to assign strategic significance.

Find out more about Local Nature Recovery Strategies

Once an LNRS has been published, the baseline strategic significance values for habitat parcels in that area should always be scored as low.

You may need to refer to multiple LNRS areas and make separate assessments for each habitat parcel (including separate assessments for on and off-site habitats).

See guidance published by Local Government Association for worked examples of how strategic significance should be recorded in the transition period leading up to and after publication of a LNRS.

Table 7 Strategic significance categories applied to post-development interventions where a LNRS has been published.

Category	Score	Description
High (Formally identified in local strategy)	1.15	This category can only be applied to post development interventions when: • the location of the habitat parcel has been mapped in the Local Habitat Map[4] as an area where a potential measure has been proposed to help deliver the priorities of that LNRS; and • the proposed intervention is consistent[5] with the mapped potential measure in the LNRS for the habitat parcel You should record that you have applied the published LNRS in your gain plan.
Medium (Location ecologically desirable but not in local strategy)	1.10	This category cannot be applied.
Low (Area / compensation not in local strategy)	1	Where the definitions for high strategic significance are not met. Even if your project is in an area mapped with a potential measure, if the proposed intervention is not consistent with a potential measure proposed by the LNRS for that location, you should record strategic significance as low.

[4] Where the habitat parcel has been mapped with corresponding potential measures in the LNRS

[5] Where developments negatively impact areas that are of particular importance for biodiversity, mapped in the LNRS Local Habitat Maps (such as Local Wildlife Sites), interventions are highly unlikely to be consistent with the potential measures proposed

Where a LNRS has not yet been published

You should use the specified alternative documents, and the descriptions set out in table 8 to assign strategic significance.

When there are no alternative suitable documents for assigning high strategic significance, medium strategic significance can be assigned when the criteria in table 8 are met.

A relevant planning authority should specify alternative documents for assigning strategic significance whilst an LNRS is put in place. Examples include:

- Draft Local Nature Recovery Strategies
- Local Plans and Neighbourhood Plans
- Local Planning Authority Local Ecological Networks
- Tree Strategies and Woodland Strategies
- Area of Outstanding Natural Beauty Management Plans
- Biodiversity Action Plans
- Species conservation and protected sites strategies
- Green Infrastructure Strategies
- River Basin Management Plans
- Catchment Plans and Catchment Planning Systems
- Shoreline management plans
- Estuary Strategies

Where a relevant planning authority has not specified alternative documents for assigning strategic significance before a LNRS is published, the strategic significance should not be marked as high at baseline or post intervention

Table 8 Strategic significance categories where a LNRS has not yet been published

Category	Score	Description
High (Formally identified in local strategy)	1.15	The habitat type is mapped and described as locally ecologically important within a specific location, within documents specified by the relevant planning authority. If your project delivers the mapped habitat creation or enhancement actions set out within specified alternative documents, or enhances an existing habitat identified within specified alternative documents as locally ecologically important, strategic significance can be recorded as high in the post-intervention sheets. If the specified alternative documents identify existing habitat as locally ecologically important within a specified location, strategic significance may be recorded as high in the baseline. You should record the name of the plan the relevant planning authority has specified in the user comments and record that you have used the specified document in your gain plan.
Medium (Location ecologically desirable but not in local strategy)	1.10	This category can be applied when the LPA has not identified a suitable document for assessing strategic significance. Users should: • explain how the habitat type is ecologically important within a specific location • demonstrate the importance of that habitat in providing ecological linkage to other strategically significant locations • use professional judgement When the above criteria are met, strategic significance may be recorded as medium in the baseline and post-intervention sheets.
Low (Area / compensation not in local strategy)	1	Where the definitions for high or medium strategic significance are not met.

5 Defining project actions

Project actions can be assessed as one of three interventions, these are:

- habitat retention
- habitat enhancement
- habitat creation

You should use the descriptions in the sections below to assess interventions to area and hedgerow habitats. Retention, enhancement and creation are described separately for the watercourses.

See more on defining project actions for watercourses.

All baseline habitats should be assessed by these categories once project details are known. The biodiversity metric tool:

- assesses all baseline habitats as 'lost' unless assigned an intervention
- automatically populates enhancement data in the order in which they appear in the baseline tab
- does not allow you to enter the same area or length as both retained and enhanced

You should check alignment of enhancement data when new lines of enhancement are added into the baseline tab, as this may result in data misalignment.

Habitat retention

This description applies to area and hedgerow modules only. You should choose habitat retention when:

- there is no loss of habitat
- habitat is retained in its baseline condition
- there is no action to enhance the habitat

Retained habitats do contribute towards post-development habitat units. However, habitats subject to retention may still require ongoing intervention to maintain their baseline condition.

Where the condition of retained habitat cannot be maintained or enhanced over the project timeframe, you should:

- record the habitat as lost
- record the same area and habitat type as created in a lower condition
- set the 'habitat created in advance' function to 30 plus years
- provide ecological reasoning in the user comments

Habitat enhancement

This description applies to area and hedgerow modules only. You should choose habitat enhancement where the habitat is retained and there is:

- an improvement in condition compared to the baseline state
- a change to a higher distinctiveness habitat within the same broad habitat group compared to the baseline state
- restoration of relict high or very high distinctiveness habitats
- restoration of intertidal habitats

When recording enhancement, you should take measures to ensure condition stays the same (when enhancing distinctiveness) or improves, including when enhancing to a higher distinctiveness habitat.

Restoration of relict high or very high distinctiveness habitats

Where there is restoration of relict high or very high distinctiveness habitats you may record this as an enhancement. You may do this only if there is evidence that restoration is ecologically viable, and there are existing plant communities still visible in the degraded habitat at baseline.

An example of this is restoration of a heathland overplanted with coniferous woodland. In this example you could record the baseline habitat as coniferous woodland, enhanced to heathland.

Restoration of intertidal habitats

If works would result in restoration of coastal processes and intertidal habitats which have been historically lost, you may record areas of low and very low distinctiveness habitats as an intertidal habitat at baseline. You should:

- use images and historic maps to show the previous loss (e.g. LiDAR to show remains of saltmarsh creeks)
- record the intertidal habitat recorded at baseline as in poor condition
- record the restoration as an enhancement of the recorded baseline

You cannot:

- record areas of medium, high or very high distinctiveness terrestrial habitats as an intertidal habitat at baseline
- use this approach for land reclaimed prior to 1850

Examples of where this approach may be used are managed realignment and regulated tidal exchanges.

See more on recording managed realignment and regulated tidal exchange projects.

Habitat creation

This description applies to area and hedgerow modules only. You should choose habitat creation where there is:

- a loss of baseline habitat (and it is replaced with another)
- a change in broad habitat type, such as a change from grassland to woodland

For example, if young native trees and shrubs are planted on an area of arable land to create a new broadleaved woodland, the arable land would be recorded as a loss and the woodland would be recorded as creation.

You should use habitat creation if the works do not clearly fall within the definitions for habitat enhancement or retention.

When you are creating habitat, you also need to compensate for the loss of the baseline habitat. For example, if you create a broadleaved woodland on modified grassland, you would need to compensate for the loss of the grassland in line with the trading rules.

6 Risk multipliers

The biodiversity metric applies three risk multipliers to all post-development enhancement and creation interventions, across all three modules, these are:

- difficulty of creation or enhancement
- temporal risk
- spatial risk

Difficulty of creation or enhancement

The creation and enhancement multipliers represent the uncertainty in the effectiveness of techniques to create or enhance habitats.

The biodiversity metric automatically assigns the delivery risk and score for each habitat, based on its habitat intervention category.

Despite this partial accounting for risk in the biodiversity metric, your proposals should still be based on sound ecological judgement and should consider the ecological context of the change.

Time to target condition

The temporal risk multiplier represents the average time lag between the start of habitat creation or enhancement works and the target outcome. This is known as 'time to target condition'.

Time to target condition is measured in years. The temporal risk multiplier is automatically applied by the biodiversity metric and changes depending on data input.

Advanced or delayed action

You should adjust the temporal risk multiplier to account for any time difference between the loss and compensation, use the:

- 'creation in advance function' to reflect the number of years habitat is created in advance of clearance of the habitat on-site (for example, when habitat banking is used)
- 'delay in starting habitat creation or enhancement' function to reflect the number of years the habitat is absent i.e. from clearance of the habitat to the start of habitat compensation for the loss

Apply these functions for on-site and off-site delivery for all habitat types.

If you need to use these functions, you should provide justification and evidence to the relevant planning authority. You can provide this through:

- referencing project phasing plans
- additional agreements
- showing that target condition of habitats created in advance have been met

Accounting for long construction timelines

You should apply these functions on a phased basis when accounting for long construction timelines.

You should plan to deliver habitat compensation at the earliest possible stage of construction and then the advance function can be applied to each phase. For example, if all habitat compensation is delivered in year 1 of a project, and then habitat is cleared in years 2 and 3, the metric could then reflect a 1 or 2 year advance depending on the phase, which would provide a unit uplift for the project.

Where you cannot deliver habitat in advance, you should plan to deliver habitat compensation alongside each phase of the project where possible to ensure that biodiversity is being compensated for without delay.

If it is not possible to deliver habitat in advance, the delay function should represent the time the habitat is absent on the ground for each phase. For example, if all habitat compensation is delivered in year 3 of a project, and habitat is then cleared either in year 1 or 2, the delay would be 1 or 2 years depending on the phase.

Accounting for temporary losses

You do not need to record a habitat as lost when there are temporary impacts to a habitat and the area can be restored to both:

- baseline habitat type within two years of the initial impact; and
- baseline condition within two years of the initial impact

You can enter these habitats as ‘enhanced’ if there is action to enhance the habitat above its baseline type and condition. If you do, you should apply a 1- or 2-year delay in starting habitat creation or enhancement.

Accounting for temporary losses cannot be used where policies or permissions require that a specific baseline is applied.

Spatial risk

Where a project cannot achieve a net gain in biodiversity units on-site, then off-site units can be used to meet the BNG requirement.

The spatial risk multiplier (SRM) reflects the relationship between the location of on-site biodiversity loss and the location of off-site habitat compensation. It affects the number of biodiversity units provided to a project by penalising proposals where off-site habitat is located at distance from the impact site.

Enter all off-site data into the off-site sheets of the biodiversity metric tool. Use the descriptions provided in table 9 to determine a suitable spatial risk multiplier score.

Table 9 Spatial risk scores and descriptions

Spatial risk category and score	Area and hedgerow modules	Watercourse modules
Within (1.0)	Compensation is within Local Planning Authority (LPA) boundary or National Character Area (NCA) of impact site Intertidal habitats only: Compensation is within Marine Plan Area of impact site	Compensation is within waterbody catchment
Neighbouring (0.75)	Compensation is outside LPA or NCA of impact site, but within neighbouring LPA or NCA Intertidal habitats only: Compensation is outside Marine Plan Area of impact site, but within neighbouring Marine Plan Area	Compensation is outside waterbody catchment, but within operational catchment
Outside (0.5)	Compensation is outside LPA or NCA of impact site and outside neighbouring LPA or NCA Intertidal habitats only: Compensation is outside Marine Plan Area of impact site and outside neighbouring Marine Plan Area	Compensation is outside operational catchment

Compensation across multiple off-site locations

If multiple habitats from multiple off-site locations are required, you should:

- identify the site through a unique off-site reference
- enter the references in the ‘Off-site reference’ column

Intertidal habitat

If your project is implementing a change from a terrestrial habitat in your baseline to an intertidal habitat in your post-intervention (or vice versa), then you should apply the SRM category of the intertidal habitat both to your baseline and post-intervention.

7 Watercourse habitats only

The following sections detail specific assessment methodologies for watercourses.

Watercourse type and distinctiveness

You should assign watercourse type using the definitions provided in table 10.

Table 10 Watercourse distinctiveness categories

Watercourse type and distinctiveness	Biodiversity metric watercourse definition
Priority habitat (very high distinctiveness)	Highly naturally functioning stretches which: • are on the Priority River Habitat Map; or • meet the criteria for inclusion
Other rivers and streams (high distinctiveness)	Rivers and streams that are not classified as Priority River Habitat. You should check: • Statutory Main River Map • Local Data on ordinary watercourses • Internal Drainage data • MAGIC
Canals (medium distinctiveness)	An artificial body of water created for the purposes of navigation, whether it is currently navigable or not (for example, the Grand Union Canal, the Lee Navigation, River Stort Navigation) Note – modified rivers (which have been straightened, over deepened or concrete lined) should not be classed as a canal and should be classed as 'other rivers and streams'. You should check: • Canal and River Network • MAGIC • Historic local data

Watercourse type and distinctiveness	Biodiversity metric watercourse definition
Ditch (medium distinctiveness)	Artificially created linear water-conveyancing features: • Which are less than 5 metres wide; and • Are likely to retain water for more than 4 months of the year Do not record as a ditch if the watercourse meets the definition of: • A higher distinctiveness watercourse habitat; or • A canal
Culvert (low distinctiveness)	A covered channel or pipe designed to prevent the obstruction of a watercourse or drainage path by an artificial construction (as defined by the Flood and Water Management Act 2010). Record culverted sections of any watercourse type as 'culvert'. A site visit may be required to identify extent of culverting.

Additional information on ditches

Use Table 11 to inform classification where additional professional judgement is required (note that not each criterion has to be met to inform classification).

Table 11 Additional information to inform habitat classification

Criteria	Rivers and streams (including headwaters)	Ditches
Hydrology	A feature of broader hydrological systems, including flow paths, patterns, and connections with other rivers; water levels and flows in rivers are more dynamic and less controlled, can be dry in headwaters.	A feature of localised land drainage; water levels are often artificially managed, can be dry for large parts of year. Can include pumps for moving water.

Landscape	Is in hydraulic continuity with a river system (flows into / out of a river system). Origin may be traced to natural source.	Artificial feature within natural landscape; any connections with natural rivers are the result of deliberate human intervention. Cannot be traced to a natural (spring) source.
Topography and gravity	Likely to follow natural landscape contours and influenced by gravity.	Does not drain along topographic flow paths; minimal gradient.
Historical	Evidence of historical features (historic bends or loops, paleo features); course aligns with pre-existing watercourses.	Long term linear; closely aligns with field boundaries; may not be present on historic maps.

Ordnance Survey (OS) maps, historical maps, LiDAR imagery, and topographic contours can assist in these assessments.

Hedgerows and ditches

Some hedgerows and lines of trees have associated ditches. If these meet the definition of a watercourse ditch, you should:

- record that ditch as a length in the watercourse module
- not use the ‘associated with ditch’ habitat types in the hedgerow module

Watercourse sections

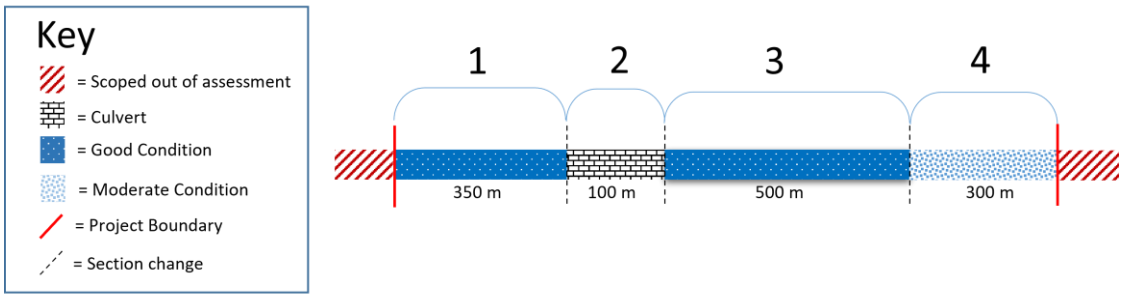
Baseline sections

Once habitat type is determined, you should walk the watercourse and use professional judgement to split a watercourse into sections.

Sections should represent different riverine and riparian characteristics, such as condition and levels of encroachment. You should:

- enter watercourse sections into separate rows in the biodiversity metric tool
- mark if a section is retained or enhanced.
- do not record partial enhancement of a section (instead split the section)

An example of baseline sections, split by condition status, is provided in figure 3.



Existing watercourse type			Distinctiveness		Condition	
Ref	Watercourse type	Length (km)	Distinctiveness	Score	Condition	Score
1	Other rivers and streams	0.35	High	6	Good	3
2	Culvert	0.1	Low	2	Poor	1
3	Other rivers and streams	0.5	High	6	Good	3
4	Other rivers and streams	0.3	High	6	Moderate	2

Figure 3 Recording sections into biodiversity metric rows

Once preliminary sections have been assigned, complete a detailed assessment of each section, collecting information on:

- length
- condition
- the riparian zone
- watercourse encroachment

You may then choose to combine adjacent sections of similar condition once you have completed a full condition assessment of your watercourse.

Condition assessments for watercourses

Watercourse habitat types use different methodologies to assess condition, for:

- culverts – you do not need a condition assessment
- ditches – you should use biodiversity metric condition sheets
- all other watercourses (including canals) – you should conduct a river condition assessment (RCA)

You should be a qualified RCA assessor to conduct a river condition assessment.

Find out more about RCA training.

If you need to conduct an RCA, you should:

- survey at a minimum of one point for each section
- survey a length at least 20% of the total length of the watercourse assessed
- survey at points of known intervention (where possible)

The riparian zone

Defining the riparian zone

The riparian zone is a set area from the bank top of the watercourse. The bank top is where there is a break in slope between the river channel and the surrounding land. Figure 4 shows an illustration of a 10 metre riparian zone (highlighted in blue).

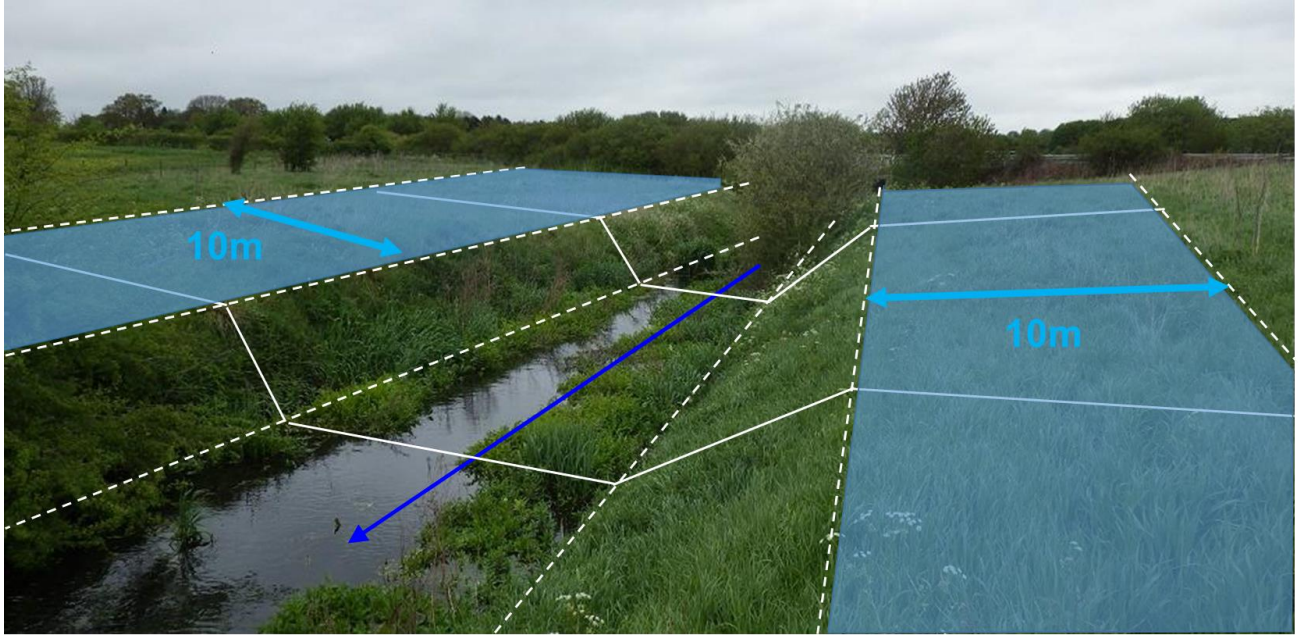


Figure 4 A photo showing a 10 m riparian zone starting from edge of the bank top.

The riparian zone supports features which influence the hydrological, geomorphological and biological functions or processes within the channel. It also provides ecological function for riparian or aquatic species.

Different watercourse habitat types have different riparian zone widths. Table 12 sets out riparian zone widths for different watercourse habitat types.

Table 12: Riparian zone widths for watercourse habitat types

Habitat Type	Riparian Zone Width
Priority rivers	10 metres from the top of each bank
Other rivers and streams	10 metres from the top of each bank
Canals	10 metres from the top of each bank
Ditches	5 metres from the top of each bank
Culverts	Not applicable

Works within a riparian zone

Works to the riparian zone may result in changes to the:

- quality of terrestrial habitats found within the site boundary
- condition of the watercourse through the RCA
- severity of riparian zone encroachment

Any works within the riparian zone should be assessed in the area and hedgerow modules (e.g. changes from excavated or removed watercourse channels).

Works within the riparian zone may also result in loss or gain of watercourse units through changes to condition and riparian zone encroachment.

If the site boundary crosses into the riparian zone, you should:

- include adjacent lengths of watercourse in the watercourse module
- record and assess terrestrial habitats within the area and hedgerow modules if they are within the site boundary

You will need to review riparian zone features across both banks. This includes areas of riparian zone outside of the site boundary. This includes an:

- assessment of the riparian zone vegetation as part of the RCA
- assessment of riparian zone encroachment

Figure 5 illustrates how to determine if a length of watercourse should be included or excluded from an assessment.

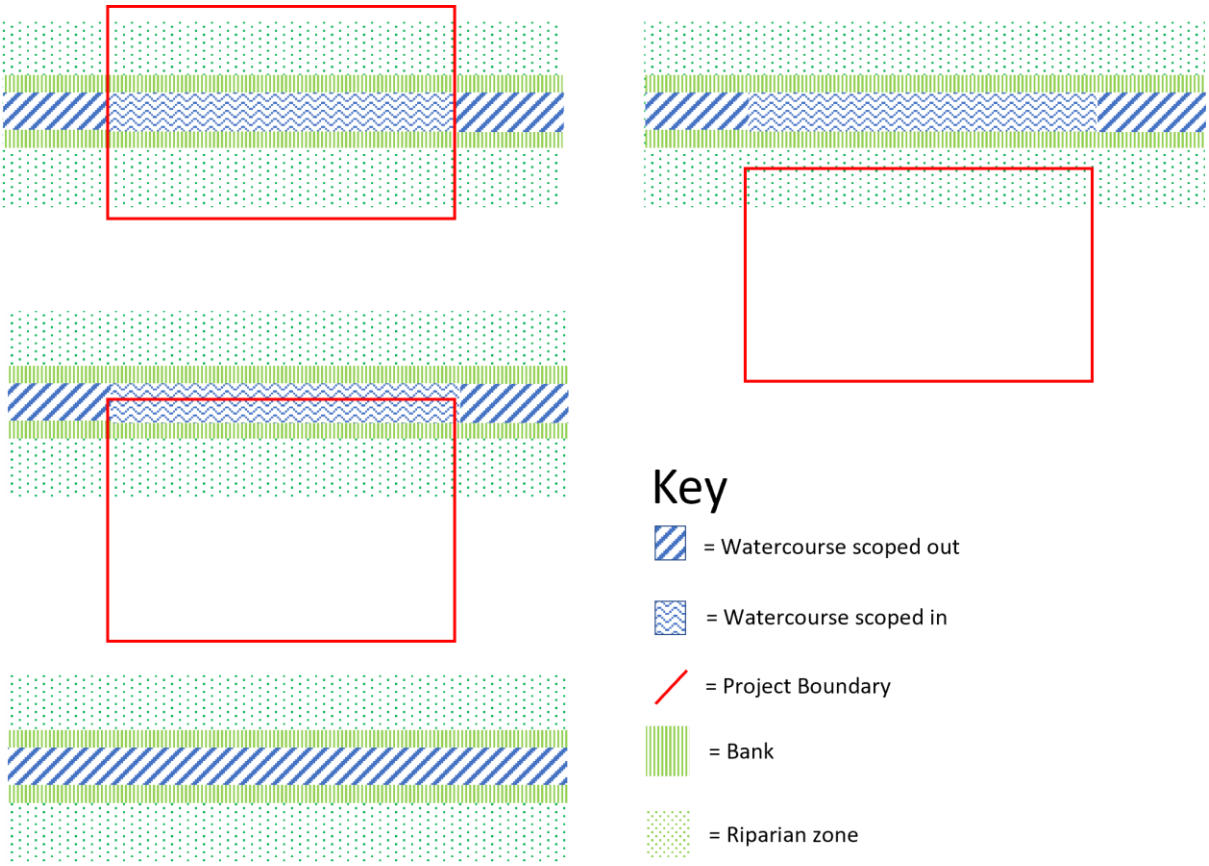


Figure 5 Length of watercourse scoped into the biodiversity metric calculations

Riparian zone encroachment

Riparian zone encroachment is any feature or intervention (within the riparian zone) that reduces the quantity, quality or ecological function of the riparian habitat. This includes:

- buildings or hardstanding
- management practice (including agriculture)
- structures that prevent wildlife from accessing the riverbank

The following features are exceptions and should not be recorded in the baseline:

- established canal or river navigation towpaths
- established footpaths and existing river crossings
- existing small amenity features and utility units where the total footprint is less than 5% of the riparian zone area

The footprint of riparian zone encroachment is the cumulative area of these features or interventions.

Use definitions provided in table 13 to assess encroachment. The assessment can be conducted from either bank. You should:

- conduct an assessment for each watercourse section
- assess the left-hand bank
- assess the right-hand bank

Enter the combination of results within the biodiversity metric tool for each watercourse section. For example, if encroachment was major on the left bank, and major on the right bank, you should select the 'Major / Major' option.

Table 13 Watercourse riparian zone encroachment bands

Riparian zone encroachment band for a bank	Definition for rivers and canals	Definition for Ditches
No encroachment	No encroachment within 10 metres of bank top	No encroachment within 5 metres of bank top
Minor	Any encroachment 8 to 10 metres from the bank top (covering up to 100% of area); or where the footprint of encroachment occupies 0-10% of the riparian zone area 4 to 10 metres from bank top.	Any encroachment 4 to 5 metres from the bank top (covering up to 100% of area); or where the footprint of encroachment occupies 0-10% of the riparian zone area 2 to 5 metres from bank top.
Moderate	Where the footprint of encroachment occupies between 10% to 25% of the riparian zone area 4 to 10 metres from the bank top.	Where the footprint of encroachment occupies between 10% to 25% of the riparian zone area 2 to 5 metres from the bank top.
Major	Any encroachment 0 to 4 metres from the bank top; or Where encroachment occupies greater than 25% of the total riparian zone area 4 to 10 metres from the bank top.	Any encroachment 0 to 2 metres from the bank top; or Where encroachment occupies greater than 25% of the total riparian zone area 2 to 5 metres from the bank top.

Illustrations of riparian encroachment are shown in figures 6, 7 and 8.

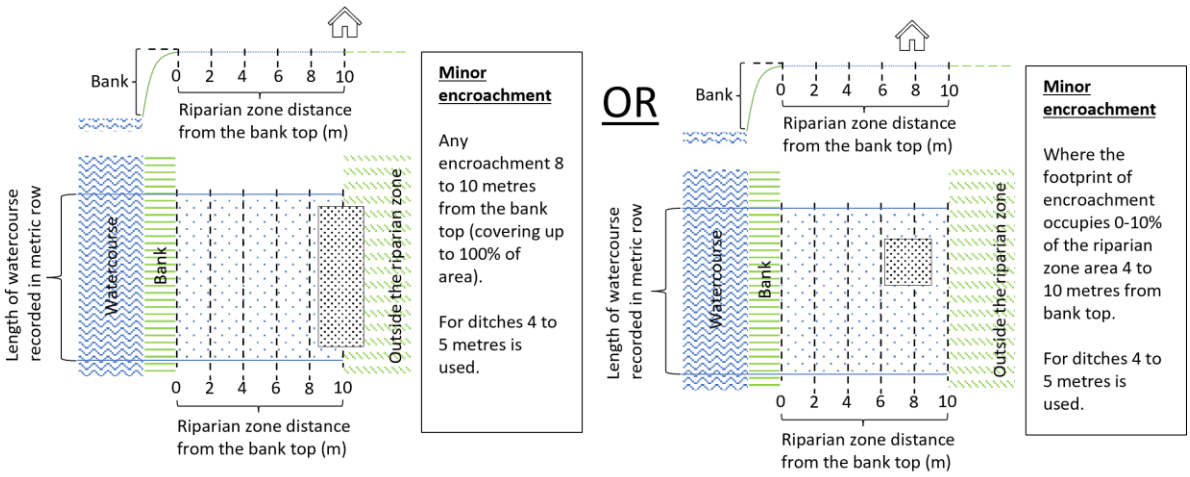


Figure 6 Examples of minor encroachment

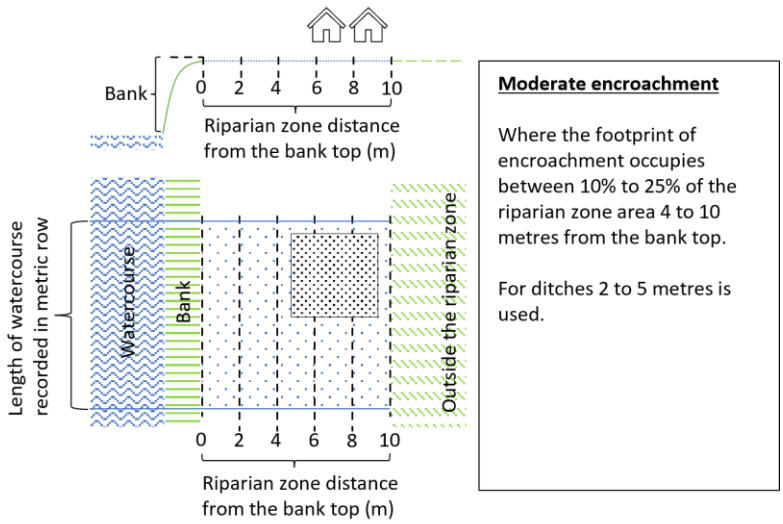


Figure 7 Examples of moderate encroachment

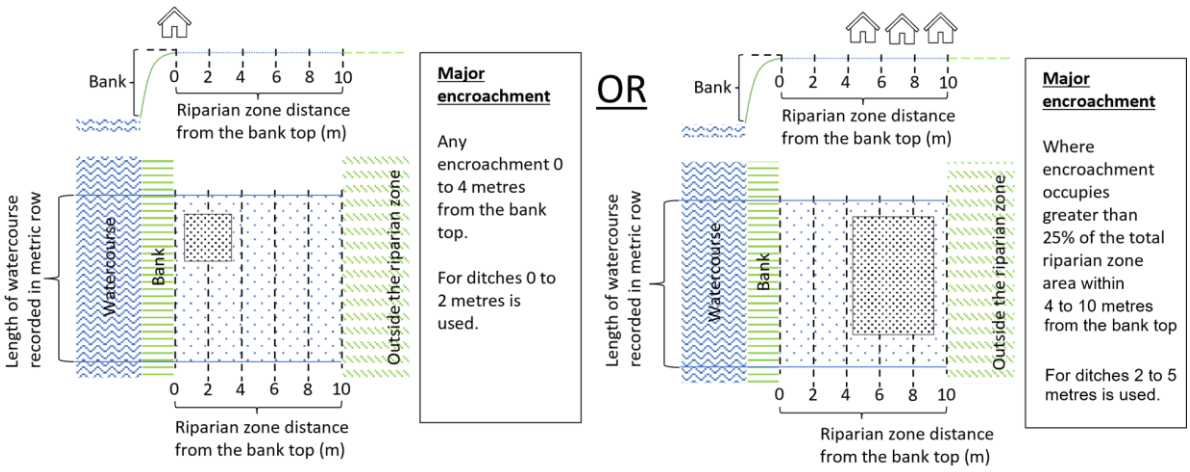


Figure 8 Examples of major encroachment

Watercourse encroachment

Watercourse encroachment can be any feature or action that adversely affects the natural function of the watercourse, or results in localised changes in habitat, species and migratory pathways.

The watercourse encroachment multiplier accounts for development within a riverbank or channel that impacts the function of the river corridor.

Use the descriptions in table 14 to assign a watercourse encroachment band for each watercourse section entered within the biodiversity metric tool. You should assess encroachment at baseline and at post-intervention for each section.

Table 14 Watercourse encroachment bands

Watercourse encroachment band	Multiplier	Description	Examples
No encroachment	1.0	less than 5% of the bank length is an engineered bank revetment and there is no encroachment into the channel	N/A
Minor	0.8	5% to 20% of the bank length is an engineered bank revetment; or there is encroachment across up to 10% of the channel width at any one point	Small headwalls, jetties, pontoons
Major	0.5	greater than 20% of the bank length is an engineered bank revetment; or there is encroachment across greater than 10% of the channel width at any one point	Weirs, large headwalls, bank revetment
N/A - Culvert	0.68	to be used for culverts only	Culverts

You should not record features that are, or have been, introduced to restore the ‘condition’ of the river, reinstate natural riverine processes, or improve migratory pathways as encroachment. Examples include woody beaver dams and soft bank revetment such as coir rolls, willow spiling or floating islands and within river fish passes (such as rock ramps).

Partial removal of watercourse encroachment

In scenarios where either 20% engineered bank revetment, or in-channel structures, cannot be taken out (due to structural reasons or designated use) it may only be possible to action partial restoration of the watercourse.

If these restrictions apply, but action is taken to reduce either the extent of bank revetment or remove an in-channel structure, you may reduce the encroachment multiplier from major to minor within the enhancement tab of the biodiversity metric tool (for example, a weir is removed but not bank revetment for structural reasons).

Technical fish passes

In scenarios where a technical fish pass (a fish pass that is attached to an existing weir/structure) is the only feasible enhancement option you may reduce the watercourse encroachment multiplier from major to minor within the enhancement tab.

Defining watercourse interventions

Use the definitions and descriptions in the sections below to determine if retention, creation or enhancement is applicable to the scheme, and whether to record loss at baseline.

You should consider how the intervention impacts the natural function of the watercourse when deciding which intervention to choose.

Watercourse retention

Watercourse retention is where there are no interventions on the watercourse or riparian zone.

Watercourse enhancement

A watercourse is enhanced where the project interventions promote natural function, processes, and the development of natural habitats. Examples include:

- removing culverts
- restoring natural alignment
- enhancing the riparian zone
- removal of encroachment features
- removal of tidal structures and restoration of tidal processes

You should record increases in the baseline condition, distinctiveness, length or reduction in encroachment, as an enhancement of the baseline watercourse section. You may also:

- split enhanced sections into multiple rows in the metric
- retain RCA information for each split section
- consider if the intervention will also result in impacts to the condition of upstream and downstream sections

Enhanced sections may be longer than baseline sections. For example, where meanders, channels or braiding are included. If the watercourse is re-meandered you should:

- not record any loss of watercourse length
- split the baseline section into a retained and enhanced sections (if applicable)
- record the total enhanced length within the enhanced section

Re-meandering may also result in redundant former watercourse channels. For example, if you create wet woodland in a redundant channel, record the creation of wet woodland within the area module. Record these changes in area habitats within the area module.

Watercourse creation

If your watercourse interventions do not promote natural functions and processes, or the development of natural watercourse habitats, then this is creation. Examples include:

- installing culverts
- trapezoidal channels
- channel straightening
- physical modification
- altering natural alignment
- increases in encroachment

Any interventions that do not promote natural functions and processes should be represented through a recorded decrease in baseline condition, length or distinctiveness of natural river, or a recorded increase in encroachment. You should:

- split any impacted length of a section into a separate row in the metric
- retain RCA information for any split sections
- record a loss of the impacted watercourse section
- record post-intervention lengths within the creation tab reflecting any decreases in condition, length, distinctiveness, or increase in encroachment

You should also consider if the intervention will result in impacts to the condition of upstream and downstream sections.

Creation can also be the installation of a new length of canal or ditch (with no associated loss).

You should record post-intervention lengths within the creation tab. Creation in advance may be set to 10+ years if there are increases in encroachment with no other impacts.

Permanent loss of watercourses

Permanent loss of a watercourse length only applies to canals or ditches (natural rivers cannot be permanently lost).

Other notes on watercourses

Estuaries

Sub-tidal reaches are not included within the watercourse module of the biodiversity metric tool. You can apply the watercourse biodiversity metric if the sub-tidal estuary reaches show riverine features (predominantly in the upper sections of transitional areas between rivers and estuaries).

Water Framework Directive (WFD) data sets show the boundary between riverine and subtidal estuarine reaches. You can use this to inform discussion with the relevant planning authority.

Find out more about the WFD Transitional and Coastal Waterbodies Cycle 2

Weir removal

Where appropriately evidenced, you may assess major engineering works that will significantly influence the watercourse as ‘off-site’ if beyond the project boundary. An example is the removal of a weir.

8 Specific assessment notes

The following sections detail specific assessment notes, these cover:

- setting appropriate targets
- how to assess habitats defined by land-use function
- recording habitat mosaics
- accounting for degraded sites
- assessment notes for specific broad habitat types

Setting appropriate targets

You should follow the metric rules and principles when projecting target habitat type and target condition.

For example, you should prioritise habitats recommended in local plans for retention, creation and enhancement.

Setting appropriate target outcomes

You should provide evidence that project targets are achievable and viable within the project time frame. Any evidence should be supported by ecological good practice.

If the time for a habitat to reach target condition exceeds the project timeframe, then either you, the relevant planning authority or responsible body should consider whether:

- more achievable outcomes would be more appropriate
- a longer project timeframe or agreement is required, for example, where like-for-like replacement of a high distinctiveness habitat is required

Creating and enhancing high and very high distinctiveness habitats

High and very high distinctiveness habitats have very specific environmental requirements to successfully establish.

You should prove how these requirements will be met. You should include reference to:

- habitat size
- management
- environmental conditions and habitat requirements

Landscape plans

You can geo-spatially link habitat parcels recorded in the metric. Record them against landscape and planting plans, so that the size and location of post-development habitats parcels may be fully understood.

Limiting factors

You should incorporate any limiting factors into your assessment of target habitat type and condition, examples include:

- habitat size and fragmentation
- environmental limits to condition and distinctiveness
- any future use of the area which may degrade habitat type and condition

Habitats with a land-use function

A habitat parcel might contain areas which meet the definition of multiple habitat types, sometimes of different distinctiveness scores. For example, arable margins may meet the definition of a higher quality habitat, or an allotment might contain an area of traditional orchard within its boundary. Examples of where this may occur include:

- cropland – arable field margins
- lakes – reservoirs
- urban – allotments
- urban – cemeteries and churchyards
- urban – sustainable drainage system
- urban – actively worked sand pit quarry or open cast mine

When assessing these habitat types, they can be split into individual habitat parcels (of higher value) to avoid under-recording biodiversity. For example, the habitat type ‘urban – actively worked sand pit quarry or open cast mine’ relates to non-vegetated working areas only. Any un-worked areas may meet the definition of other habitat types and may be recorded as these instead.

See additional information is on assessing habitats found within private gardens.

Recording habitat mosaics

Defined mosaics

A ‘defined mosaic’ is a habitat classification which include several habitat types as part of their primary definition. For baseline recording you should record these as their primary biodiversity metric habitat type, these are:

- urban - open mosaic on previously developed land
- grassland - floodplain wetland mosaic and CFGM
- urban – vegetated gardens
- grassland – traditional orchard
- woodland and forest – wood-pasture and parkland

You should still record other habitats if these lie outside the primary habitat description. For example, a pond within a traditional orchard should be recorded and assessed as a separate feature.

Other mosaics

For mosaics not defined by their habitat type you can map the component parts and estimate the proportion of each habitat component.

For example, if a 10ha habitat mosaic is estimated to be 75% calcareous grassland and 25% mixed scrub, record 7.5ha of calcareous grassland and 2.5ha of mixed scrub.

Accounting for degraded sites

If a habitat has been cleared, destroyed or degraded previously, and you should use an earlier baseline, you must:

- use the pre-degradation habitat type as the site’s baseline
- evidence how this habitat type and condition has been determined in the user comments
- record the habitat as lost within the biodiversity metric tool
- account for the time between the habitat loss and compensation using the ‘delay in starting habitat creation or enhancement’ function

See more about the ‘delay in starting habitat creation or enhancement’ function.

You can use data records, imagery and historic field surveys to determine pre-degradation habitat types. Use a precautionary approach when assigning condition scores. For example, assign a higher condition score in the absence of contrary evidence.

Urban broad habitat type

Recording residential development (at post-development)

You should use detailed landscaping plans where available.

Where detailed plans are not available, you should use a default 70:30 ratio of ‘urban – developed land; sealed surface’ to ‘urban – vegetated garden’ when assessing habitats within areas outlined for housing. This ratio:

- does not account for access roads and public open spaces
- may be adjusted for particularly high-density or low-density developments

If adjustments are made you should provide justification in the user comments.

Private gardens

A private garden is a garden within the curtilage of a privately owned or tenanted dwellinghouse. The built structures of a privately owned or tenanted dwellinghouses are not considered part of a private garden.

Private gardens can contain important features for biodiversity, including mature trees and hedgerows. When recording habitats at baseline that are within a private garden, you may need to assess any important features as individual habitat parcels (to avoid under-recording the biodiversity within that garden). This may include:

- recording individual trees
- recording hedgerows
- recording other habitats, such as ponds

See more about which individual trees to record at baseline within private gardens.

All features which are recorded within a private garden at baseline, which will remain within a private garden post-development, may be recorded as retained. This includes where a private garden is split into separate private gardens post-development.

Find out more about recording habitat retention.

The post-development private garden has no public access, and biodiversity net gains cannot be legally secured. As these gains cannot be secured you should only record habitats created within private gardens as either:

- ‘urban – vegetated garden’; or
- ‘urban - unvegetated garden’

When assessing habitat changes within a private garden, you should not:

- record the creation of any new habitats as anything other than ‘urban – vegetated garden’ or ‘urban – unvegetated garden’ habitat types
- record the enhancement of any habitats recorded within the baseline

Green roofs and green walls

Green roofs and walls on commercial buildings

Green roofs and walls on commercial buildings can contribute towards the on-site biodiversity unit scores.

Green roofs on privately owned or tenanted dwellinghouses

Green roofs on privately owned or tenanted dwellinghouses can count towards the on-site biodiversity unit score but should only be recorded as ‘other green roof’ (regardless of design).

Calculating area of green roofs

Green roofs are found on top of buildings. You should:

- subtract the area of green roof from the building footprint
- record any other overlapping habitats

Calculating area of green walls

Areas of green walls generate biodiversity units. You should:

- record vegetated areas of green walls only
- use the area of projected growth for created green walls

As green walls are calculated by their vertical area, this habitat type does not contribute towards the total site area.

Individual trees broad habitat type

When to record individual trees

Individual trees are classed as ‘urban’ or ‘rural’. You should consider the degree of ‘urbanisation’ of habitats around the tree and assign the best fit for the location.

Use the broad habitat type ‘Individual trees’ to record:

- individual rural trees
- individual urban trees
- lines, blocks or groups of trees found within and around the perimeter of urban land

In all circumstances ‘Individual trees’ should be used to record ancient and veteran trees, regardless of location. This could include ancient and veteran trees within hedgerows, ‘rural’ lines of trees and woodlands.

See more about recording ancient and veteran trees

Other clarifications

Do not use the hedgerow module classifications ‘line of trees’ and ‘ecologically valuable line of trees’ to record linear formations of trees in the urban environment. These classifications should only be used for rural lines of trees.

Trees within overgrown non-native and ornamental hedges (for example, leylandii) should not be classified as individual trees, or as lines of trees. Record these as non-native ornamental hedges within the hedgerow module.

Trees recorded as individual trees that will be removed for any purpose, including development, disease, or safety must be recorded in your baseline and recorded as lost.

Do not otherwise record individual trees if they occur within a habitat type characterised by the presence of trees, unless specified within the section on ‘recording individual trees at baseline’, which covers:

- trees within private gardens
- removal of trees within hedgerows
- removal of trees within rural lines of trees
- removal of trees within orchards and wood-pasture and parkland

The tree helper

The biodiversity metric uses set values to represent the area of individual trees depending on their diameter at breast height.

Report the number of individual trees within your project and input tree count into the 'tree helper' within the biodiversity metric tool to generate area values for data input. You can use the tree helper to help calculate the total area for the count of trees in each size class and condition state.

An illustration of the tree helper, which is embedded within the biodiversity metric tool main menu, is shown in figure 9.

Tree helper						
Tree size	Number of trees and area (ha) for each condition state					
	Poor	Area	Moderate	Area	Good	Area
Small		0.0000		0.0000		0.0000
Medium		0.0000		0.0000		0.0000
Large		0.0000		0.0000		0.0000
Very large		0.0000		0.0000		0.0000
Total	0	0.0000	0	0.0000	0	0.0000

Figure 9 The tree helper embedded within the biodiversity metric tool

Tree helper values are a representation of canopy biomass, and are based on the root protection area formula, derived from BS 5837:2012.

Table 15 sets out class sizes of trees and their area equivalent.

Table 15 Tree size classes and area equivalents

Size class	Diameter at breast height (cm)	Biodiversity metric area equivalent (ha)
Small	greater than 7.5cm and less than or equal to 30cm	0.0041
Medium	greater than 30cm and less than or equal to 60cm	0.0163
Large	greater than 60cm and less than or equal to 90cm	0.0366
Very large	greater than 90cm	0.0765

Recording individual trees at baseline

Using the tree helper

Use the tree helper to calculate the area of individual trees at baseline. You should:

- record the habitat underneath the tree canopy separately
- record the condition state of each individual tree
- use the DBH of the largest stem for multi-stemmed trees
- count each individual tree (greater than 7.5cm) within an urban line, group or block of trees

You may need to record individual trees on multiple rows in the biodiversity metric tool if the condition state of individual trees varies within your assessment. Once you have entered your data into the metric, note in the user comments how many trees contribute towards the total area.

You should not:

- reduce any area generated by the tree helper
- deduct the area of individual trees from other habitats recorded underneath the tree canopy

There are additional circumstances when you should report individual trees as part of your baseline, these are outlined below.

Recording baseline trees within private gardens

Record all medium, large and very large individual trees within private gardens.

See more information on assessing habitats within private gardens.

Recording baseline trees within hedgerows and lines of trees

If any medium, large or very large trees within a hedgerow or ‘rural’ line of trees are being removed, record these in the area baseline as individual trees. The removal of trees may also influence distinctiveness or condition of hedgerows and ‘rural’ lines of trees within the hedgerow module.

Where there is no loss (or change of condition) of individual trees within a hedgerow or ‘rural’ line, the individual trees within that feature do not need to be recorded separately in the baseline.

Recording baseline trees within orchards and wood-pasture and parkland

If any medium, large and very large trees within these habitats are being removed, record these in the area baseline as individual trees. Where there is no loss or change in condition to medium, large or very large trees within these habitats, the individual trees do not need to be recorded in the baseline.

Find out more about recording orchards and wood-pasture and parkland.

Recording planted individual trees at post-development

Using the tree helper

Use the tree helper to calculate the area for planted trees. You should:

- record the count of planted individual trees
- enter the count into the tree helper to determine area

You should not:

- count newly planted trees sited within private gardens
- count trees planted as part of hedgerow creation or enhancement
- adjust the area generated by the tree helper

Post-development size classes

When planting new trees, post-development size class is determined by the DBH of the tree at the time of site-planting. You should record newly planted individual trees as ‘small’ (this includes trees planted with a DBH less than 7.5 cm).

Only assess a newly planted tree as ‘medium’ size or above if they meet DBH criteria set out in Table 15 at the time of site-planting.

You should not:

- record natural size increases of retained trees within post-development sheets
- record natural size increases of planted trees within post-development sheets

Creation in advance

Only use ‘creation in advance’ where trees are planted in advance of the development (for example, as screening or as structural landscaping).

Do not factor in the age of nursery stock when assessing 'creation in advance’.

Assessing condition of individual trees

Each individual tree requires a separate condition assessment, unless found within an urban line, urban block or urban group.

Urban blocks and urban groups

The condition of individual trees can be assessed as blocks or groups if found within and around the perimeter of urban land. This includes those along urban streets, highways, railways, canals, and former field boundary trees incorporated into developments.

For example, if a group of trees within the urban environment does not match habitat descriptions for woodland, they may be assessed as a block of individual urban trees.

Forecasting post-development condition of individual trees

When forecasting the condition of individual trees, select an appropriate condition state that can be realistically achieved within the project timeframe (which is usually 30 years).

Intertidal broad habitat type

Recording habitat type for intertidal enhancements

When intertidal habitats are restored by re-establishing natural processes, the resulting enhancement should be recorded as ‘natural’ and not as an artificial habitat type. This could include habitats which establish naturally through managed realignment.

Calculating area of artificial hard structures and integrated greening of grey infrastructure (IGGI)

You should record artificial hard structures and IGGI (including vegetated sea walls) as the surface area (as a plane) of intertidal habitat between mean low water and mean high water. Areas of artificial hard structures and IGGI:

- generate biodiversity units.
- should be recorded at baseline and post-intervention
- do not contribute towards total site area

You may also need to record the footprint of artificial hard structures (including those supporting IGGI) as developed land sealed surface. The footprint:

- does not generate biodiversity units
- should be recorded at baseline and post-intervention
- contributes towards total site area

Managed realignment and regulated tidal exchanges (RTE)

Intertidal processes are highly variable with a wide range of habitat creation and enhancement actions possible with variable success.

Where there is evidence that a managed realignment or RTE project could mitigate variables and risks around creation and enhancement of historic intertidal processes and habitats, you can apply the advance creation or enhancement function to reflect reduced risks.

You can adjust by the following values:

- natural intertidal sediment habitats by 2 years in advance
- natural coastal saltmarsh habitats by 3 years in advance

This can be applied in addition to any time in advance or delay already recorded within a project.

Lakes broad habitat type

Defining lakes and ponds

Waterbodies are recorded as different habitat types depending on area. Record:

- waterbodies less than 2ha as ponds
- waterbodies more than or equal to 2ha as lakes

You should use tier 1 of the WFD Lakes Typology to inform decisions on lake type.

Temporary lakes ponds and pools

The category 'Temporary lakes ponds and pools' is for Mediterranean temporary ponds (H3170) only. You should:

- not use this habitat type to record wetland scrapes
- use ecological judgement to record other temporary waterbodies as the most suitable equivalent

Grassland habitat types

Recording floodplain wetland mosaic and CFGM

Floodplain wetland mosaics are complex systems which contain component habitat types. Areas should be recorded and assessed as Floodplain Wetland Mosaic (FWM) if they are:

- cited within habitat inventories
- not currently cited but identified through professional survey

FWM may include ditches and watercourses. These should be recorded in the watercourse module.

You may find very high distinctiveness or irreplaceable habitats within a FWM. If you do you should:

- deduct the areas of these from the total area of FWM recorded
- record and assess these habitats as separate components

Recording floodplain wetland mosaic creation and enhancement

Any loss of FWM units requires compensation through FWM units.

If new FWM systems are being restored, and compensation for loss to FWM habitat is not required, you can either:

- record the creation as FWM; or
- record component habitats

If you are enhancing component habitats within a FWM and there is no loss of FWM function, you can record this as an enhancement of that component habitat type.

If your project aims to improve the condition of an existing FWM, you can record this as an enhancement of FWM.

Hedgerows habitat types

Natural succession

Where natural succession results in scrub growing directly adjacent to established hedgerows, meaning the hedgerow becomes less defined, you should:

- record the baseline hedgerow as retained
- show the hedgerow as retained in any post-development mapping
- record habitat changes (e.g. the establishment of scrub) adjacent to the hedgerow within the post-development sheet of the area habitat module

9 Biodiversity metric tool results

Preparing a metric for submission

There is a requirement to submit a biodiversity metric tool with the baseline tab completed with a planning application for a development subject to BNG. Planning authorities may also have local requirements for further information to be provided in the biodiversity metric tool.

A completed biodiversity metric tool is required as part of the biodiversity gain plan.

Once your metric is completed you must submit your biodiversity metric tool. To prepare the tool for upload onto a planning portal:

- unhide all sheets using the ‘view all’ button on the start page
- save a copy as a macro disabled excel file (.xlsx)
- check document size is less than 10MB

You may need to replace embedded images to ensure file size remains below 10MB. If you do not take these steps the file may be rejected during the upload process.

Interpreting biodiversity metric tool outputs

The biodiversity metric compares the relative biodiversity worth of a site pre-intervention and post-intervention. The quality and reliability of outputs will depend on the quality of the inputs.

You should use the biodiversity metric and its outputs along with ecological expertise to provide the evidence to inform plans and decisions.

Headline results

Once you’ve input project data the results are presented in the results tab of the biodiversity metric tool.

Figures 10 to 14 show the headline results tables in the order they are presented on the headline results tab. You need to scroll down to the bottom of the tab to see the final headline results.

On-site baseline	*Habitat units*	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
On-site net change (units & percentage)	*Habitat units*	0.00	0.00%
	Hedgerow units	0.00	0.00%
	Watercourse units	0.00	0.00%

Figure 10 The first results summary shows biodiversity units the on-site baseline, on-site post-intervention and total on-site net change in biodiversity units.

Off-site baseline	*Habitat units*	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site net change (units & percentage)	*Habitat units*	0.00	0.00%
	Hedgerow units	0.00	0.00%
	Watercourse units	0.00	0.00%

Figure 11 The next results summary shows biodiversity units for habitat units for the off-site baseline, off-site post-intervention and total off-site net change in biodiversity units. This does not include spatial risk multiplier deductions.

Combined net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	0.00
	Hedgerow units	0.00
	Watercourse units	0.00
Spatial risk multiplier (SRM) deductions	*Habitat units*	0.00
	Hedgerow units	0.00
	Watercourse units	0.00

Figure 12 Before the final results are shown there are two tables which show the sum of the on-site and off-site unit change before the spatial risk multiplier deductions are made, and the biodiversity unit value of spatial risk multiplier deductions.

FINAL RESULTS		
Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	0.00
	Hedgerow units	0.00
	Watercourse units	0.00
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	0.00%
	Hedgerow units	0.00%
	Watercourse units	0.00%

Figure 13 The final results show the total net biodiversity unit and net percentage change for the project, including all on-site and off-site interventions and including spatial risk multiplier deductions.

Trading rules satisfied?	No - Check Trading Summaries ▲
Unacceptable loss of irreplaceable or very high distinctiveness habitat recorded - no bespoke compensation for losses has been agreed ▲ Area created must match area lost for both onsite and offsite ▲	
Input errors/rule breaks present in metric ▲	

Figure 14 This box indicates if trading rules have been met or not. If trading rules have not been satisfied, then a net gain in biodiversity cannot be claimed. The trading rules are not influenced by the spatial risk multiplier and are applied before any spatial risk multiplier deductions. There are also flags inbuilt into the results summary to indicate major errors.

Habitat trading summaries

There is a separate trading summary sheet for each biodiversity metric module. You can navigate to these using tabs at the bottom of the biodiversity metric tool.

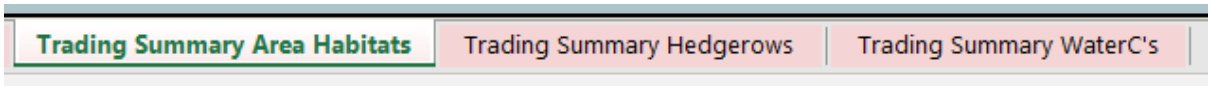


Figure 15 Tabs to navigate to each trading summary.

The trading summary tabs set out how trading rules are being met, and will indicate if there are trading rule violations. At the top of each trading summary tab there is a table which you can use to check if trading rules have been met by the project.

Trading Summary		
Distinctiveness Group	Trading Rule	Trading Satisfied?
Very High	Same habitat required – bespoke compensation option ⚠	Yes ✓
High	Same habitat required =	Yes ✓
Medium	Same broad habitat or a higher distinctiveness habitat required (≥)	Yes ✓
Low	Same distinctiveness or better habitat required ≥	Yes ✓

Figure 16 The trading summary table for the area module. If trading rules are satisfied a 'Yes' will show in the right-hand column. If trading rules are not satisfied, then a 'No' will show.

More detailed information on trading is provided in subsequent figures. Detailed trading results are grouped by distinctiveness, habitat type and broad habitat group. Figure 17 below shows detailed trading information for medium distinctiveness habitats within the area module. Figure 18 shows a summary table for each distinctiveness group, which can be found to the right of each detailed table.

Medium Distinctiveness					
Habitat group	Group	On-site unit change	Off-site unit change	Project wide unit change	Cumulative broad habitat change
Cropland - Arable field margins cultivated annually	Cropland	0.00	0.00	0.00	0.00
Cropland - Arable field margins game bird mix	Cropland	0.00	0.00	0.00	
Cropland - Arable field margins pollen and nectar	Cropland	0.00	0.00	0.00	
Cropland - Arable field margins tussocky	Cropland	0.00	0.00	0.00	
Grassland - Other lowland acid grassland	Grassland	0.00	0.00	0.00	0.00
Grassland - Other neutral grassland	Grassland	0.00	0.00	0.00	
Grassland - Upland acid grassland	Grassland	0.00	0.00	0.00	
Heathland and shrub - Blackthorn scrub	Heathland and shrub	0.00	0.00	0.00	0.00
Heathland and shrub - Bramble scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Gorse scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Hawthorn scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Willow scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Hazel scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Mixed scrub	Heathland and shrub	0.00	0.00	0.00	
Lakes - Ponds (non-priority habitat)	Lakes	0.00	0.00	0.00	0.00
Lakes - Reservoirs	Lakes	0.00	0.00	0.00	
Sparsely vegetated land - Other inland rock and scree	Sparsely vegetated land	0.00	0.00	0.00	0.00
Urban - Cemeteries and churchyards	Urban	0.00	0.00	0.00	0.00
Urban - Biodiverse green roof	Urban	0.00	0.00	0.00	
Individual trees - Urban tree	Individual trees	0.00	0.00	0.00	0.00
Individual trees - Rural tree	Individual trees	0.00	0.00	0.00	
Woodland and forest - Other Scot's pine woodland	Woodland and forest	0.00	0.00	0.00	0.00
Woodland and forest - Other woodland; broadleaved	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Other woodland; mixed	Woodland and forest	0.00	0.00	0.00	
Intertidal sediment - Littoral coarse sediment	Intertidal sediment	0.00	0.00	0.00	0.00
Intertidal sediment - Littoral sand	Intertidal sediment	0.00	0.00	0.00	
Intertidal hard structures - Artificial hard structures with integrated greening of grey infrastructure (IGGI)	Intertidal hard structures	0.00	0.00	0.00	

Figure 17 Detailed trading results table, set out by habitat type and broad habitat group.

Medium Distinctiveness Summary	
Medium Distinctiveness Units available to offset lower distinctiveness deficit	0.00
Medium Distinctiveness broad habitat losses to be offset by trading up	0.00
Medium Distinctiveness Unit deficit (required to meet trading rules)	0.00

Figure 18 Medium distinctiveness summary table.

Detailed results

The detailed results tabs provide a breakdown of biodiversity unit change for each habitat type within the biodiversity metric. This includes the following for each module of the biodiversity metric:

on-site change by broad habitat type
off-site change by broad habitat type
combined on-site and off-site change by broad habitat type

The detailed results also include graphs and charts to aid data interpretation.

10 Appendix A: Biodiversity metric tool data input guide

General information

The biodiversity metric tool has been designed for use with Microsoft Excel.

The biodiversity metric tool works best with macros and content enabled. A macro-disabled version is also available.

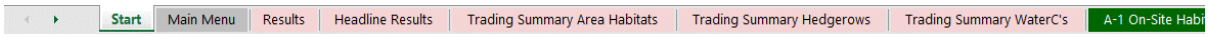
Macros are used for navigation around the tool and for toggling different display modes for streamlined data input.

In the biodiversity metric tool, there are round edged 'buttons', (see figure A). With macros enabled, you can use them to navigate through the tool.

Appendix Figure A Example of a macro enabled button

Buttons are disabled in the macro-disabled version.

Tabs will automatically populate when a button is clicked. The tabs at the bottom of the sheet can be used for navigation. An example of how tabs at the bottom of the sheet are displayed is shown in figure B.



Appendix Figure B Tabs at the bottom of the biodiversity metric tool

Cells within the biodiversity metric tool are colour-coded to aid data entry and interpretation. Icons are also used to convey important information.

See tables A, B and C for more information about the colour coding and iconography used in the tool.

Appendix Table A General colour coding and iconography

Cell formatting	Details
	Fixed cells, no data entry required
	Automatic lookup
	Results cell
	Data entry cells (can be edited)

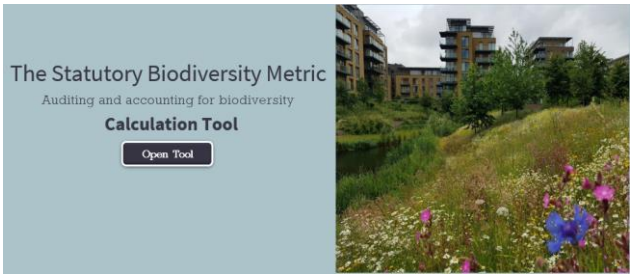
Appendix Table B Trading rule colour coding and iconography

Cell formatting	Details
=	Same habitat required
(≥)	Same broad habitat or a higher distinctiveness habitat required
≥	Same distinctiveness or better habitat required
⚠	Same habitat required - bespoke compensation option ⚠

Appendix Table C Tool data flags colour coding and iconography

Cell formatting	Details
⚠	Attention required
▲	Input error, rules and principles not met
Irreplaceable habitats	Bespoke compensation likely required

Introduction



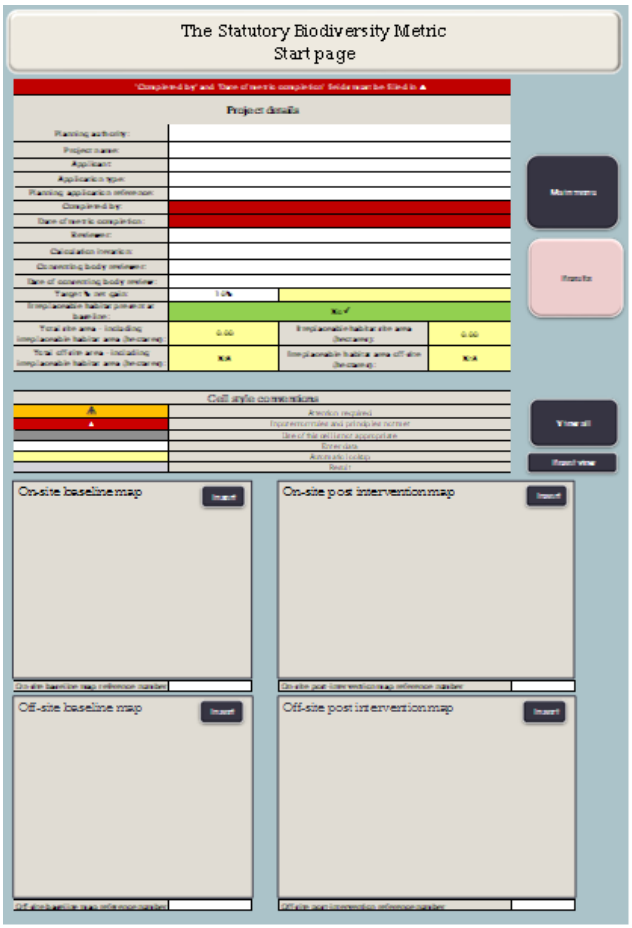
Appendix Figure C The biodiversity metric tool introduction tab

The tool opens on the 'Introduction' tab.

Click on the 'Open tool' button. This will open the 'Start page' tab.

On the macro-disabled version, all tabs will preload at the bottom of the sheet. You can use these to navigate through the tool by clicking on each tab.

Start page tab



Appendix Figure D The biodiversity metric tool start page tab

All project details that are known or available to the user should be entered into the appropriate cells on the start page.

Advice on filling in these cells is provided in table D.

Images or plans for the baseline and post-intervention scenarios can be added at the bottom of the start page.

References can be added to each figure and will be reflected on the appropriate tab later in the metric.

When the start page data entry is complete, click 'Main menu' on the right to open the biodiversity metric tool main menu.

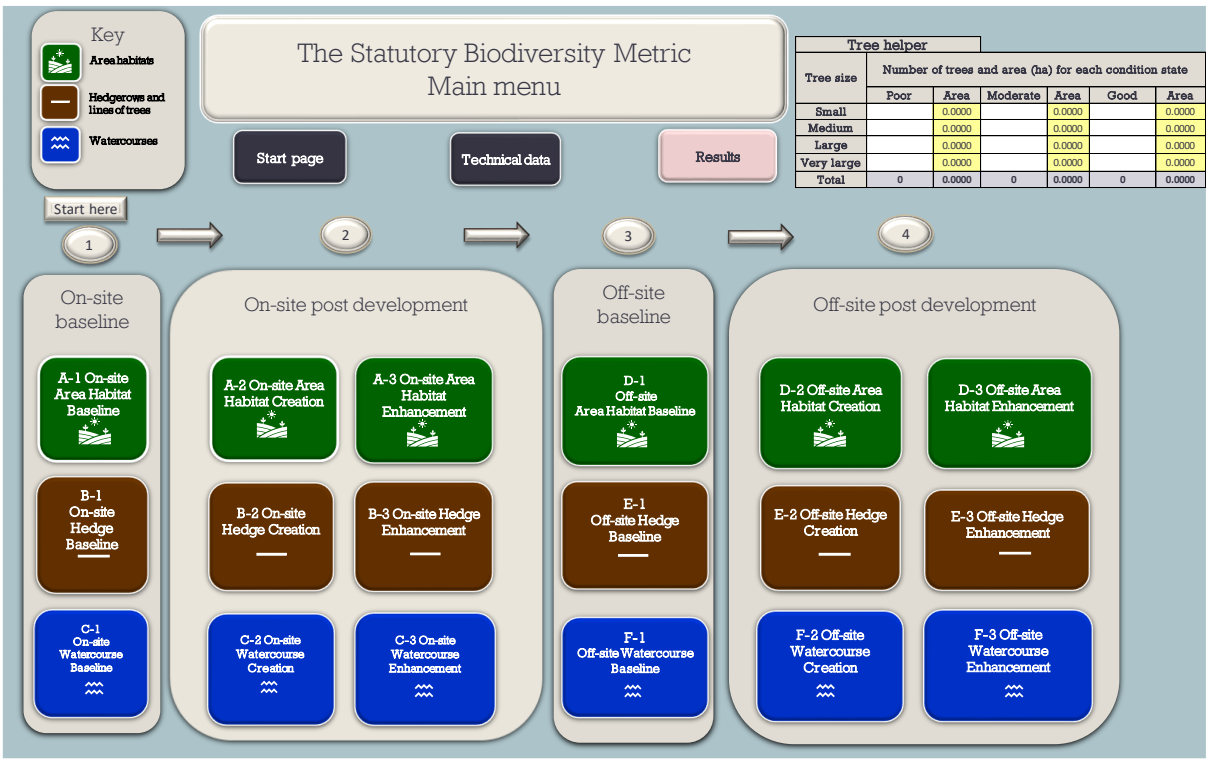
Appendix Table D Table showing project information inputs

Project details	Information to enter (where relevant)
Planning authority	The determining authority for decision making.
Project name	The name of the project and or planning application.
Applicant	The applicant applying for permission or approval.
Application type	The planning application type.
Planning application reference	The planning application reference for the project.
Completed by	The name of the person completing the metric tool.
Date of metric completion	The date the metric assessment was completed (not the date of any survey or baseline data collection).
Reviewer	For use by a person reviewing the metric tool.
Calculation iteration	For version control to distinguish between different iterations of a metric calculation.
Relevant planning authority reviewer	The name of the relevant planning authority reviewer.
Date of relevant planning authority review	The date the metric was reviewed by the relevant planning authority.
Target % gain	The target percentage gain for the project. This defaults to 10%.
Irreplaceable habitat present at baseline	To indicate if irreplaceable habitats are present on a site baseline.
Total site area	No data entry required. This cell automatically displays the total baseline site area (including any irreplaceable habitats) once habitat data sheets have been completed.

Other start page buttons

Main menu	Clicking this button takes you to the main menu.
View all	Clicking this button opens all tabs of the metric.
Reset view	Clicking this button hides all tabs of the metric other than the introduction sheet.
Insert	Clicking this button allows you to choose an image from file to upload baseline and post-intervention mapping.
Results	Clicking this button takes you to the results sheets.

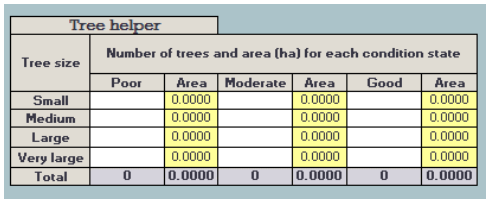
Main menu tab



Appendix Figure E The main menu tab of the biodiversity metric tool

The main menu can be accessed through the 'Main menu' button at the top of each sheet or through the tabs at the bottom of the workbook. Buttons to access the habitat data sheets are organised by:

metric module (rows):
area habitat units (top row)
hedgerows units (middle row)
watercourse units (bottom row)
on-site or off-site baseline and post-development (grouped in columns):
on-site baseline (group 1)
on-site post-development (group 2)
off-site baseline (group 3)
off-site post-development (group 4)



Tree helper

Tree size	Number of trees and area (ha) for each condition state					
	Poor	Area	Moderate	Area	Good	Area
Small		0.0000		0.0000		0.0000
Medium		0.0000		0.0000		0.0000
Large		0.0000		0.0000		0.0000
Very large		0.0000		0.0000		0.0000
Total	0	0.0000	0	0.0000	0	0.0000

Appendix Figure F The tree helper

The main menu also includes a tree helper to convert the number of individual trees into an area for data input.

Other main menu buttons

Start page	Clicking this button takes you back to the metric start page.
Technical data	Clicking this button takes you to technical data sheets G-1 to G-8 which detail the data tables and values used by the metric. It can also navigate to the 'Phase 1 Translation tool' sheet which can be used as an aid to convert historic Phase 1 data into other classification systems used by the metric.
Results	Clicking this button takes you to the results sheets.

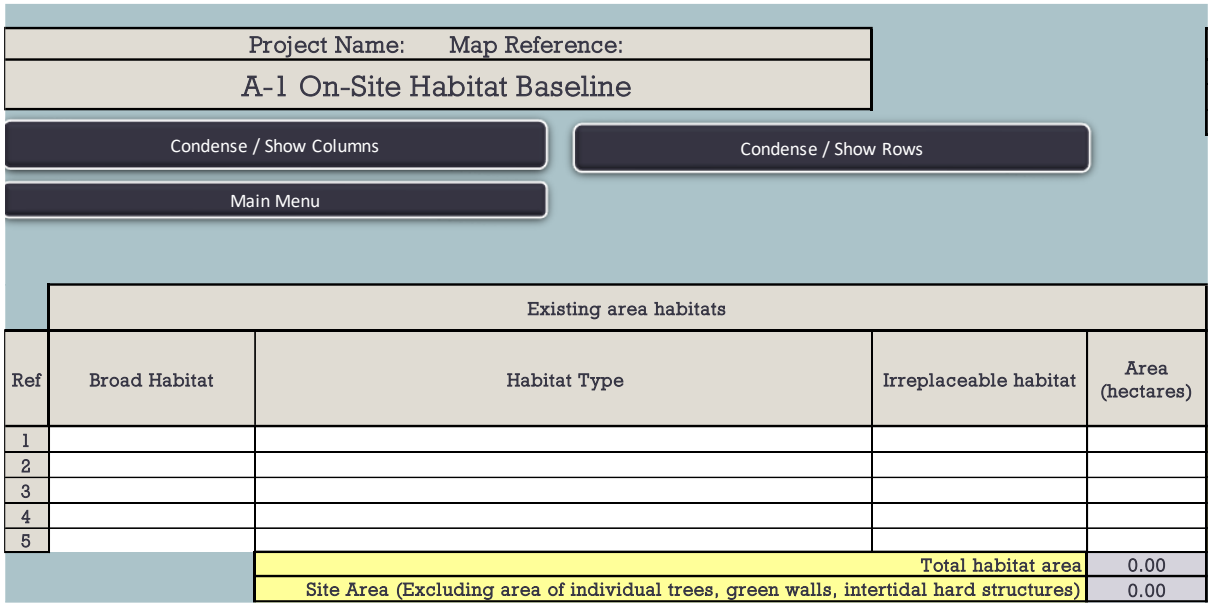
Data entry sheets

From the main menu you can navigate to relevant data entry sheets. Figure G shows a screen shot of a data input sheet. Fill in the white boxes with your project data.

Specific instructions for each data entry sheet are provided in the table E below. It is recommended that all rows and columns are expanded until all data has been entered. This will avoid any data being obscured. The view can then be toggled.

Each data sheet hosts:

- a summary table proving a running total of unit and percentage change (at the top of the sheet)
- an area converter (m^2 to ha) at the bottom of the sheet
- three functional buttons at the top left of the sheet



Appendix Figure G Screenshot of Tab A-1 data input sheet of the biodiversity metric tool. White cells are for data input.

The functions of the 3 buttons hosted at the top left of each data entry sheet are:

Main menu	Click to navigate back to the main menu.
Condense / Show Columns	Click to hide and expand columns. When hidden, only key data and information is displayed.
Condense / Show Rows	Click to hide and expand rows. Blank rows are hidden when toggled.

Appendix Table E Data input methods for data entry sheets

Data requiring manual input	Input method	Notes	Applicable sheets
Broad habitat	Dropdown list	None.	Area habitat baseline and creation sheets.
Habitat type	Dropdown list	Broad habitat should be selected first.	All sheets.
Irreplaceable habitat	Dropdown list	Must be filled in for all applicable rows.	Area habitat baseline sheets.
Proposed broad habitat	Dropdown list	For enhancement only, can be changed where the proposed habitat differs from the baseline.	Area habitat enhancement sheets.
Proposed habitat or proposed watercourse type	Dropdown list	None.	All enhancement sheets.
Area	Manual input (hectares)	Area can be entered to any number of decimal places.	All area habitat baseline and creation sheets.
Condition	Dropdown list	The list of condition options will not generate unless habitat type is selected.	All sheets.
Strategic significance	Dropdown list	None.	All sheets.
Area retained	Manual input (hectares)	An area cannot be both ‘Retained’ and ‘Enhanced’.	All area habitat baseline sheets.
Area enhanced	Manual input (hectares)	An area cannot be both ‘Retained’ and ‘Enhanced’.	All area habitat baseline sheets.

Data requiring manual input	Input method	Notes	Applicable sheets
Bespoke compensation agreed for losses of VHDH or Irreplaceable habitat	Dropdown list	See detailed guidance.	Area habitat and watercourse baseline sheets.
User comments	Manual input	None.	All sheets.
Consenting body (relevant planning authority) comments	Manual input	None.	All sheets.
Habitat reference	Manual input	Space for users to reference habitat parcel by unique codes.	All sheets.
Hedge number or New hedge number	Manual input	Can be used to aid cross-referencing to maps.	All baseline and creation hedgerow sheets.
Length	Manual input (km)	Length can be to any number of decimal places.	All hedgerow and watercourse sheets.
Length retained	Manual input (km)	A length cannot be both 'Retained' and 'Enhanced'.	Hedgerow and watercourse baseline sheets.
Length enhanced	Manual input (km)	A length cannot be both 'Retained' and 'Enhanced'.	Hedgerow and watercourse baseline sheets.
Watercourse type	Dropdown list	Condition options will not appear until watercourse type is selected.	All watercourse sheets.
Watercourse encroachment	Dropdown list	None.	All watercourse sheets.

Data requiring manual input	Input method	Notes	Applicable sheets
Riparian encroachment	Dropdown list	None.	All watercourse sheets.
Habitat created in advance (years)	Dropdown list (years)	If nothing is entered, the metric will assume that the habitat will not be created in advance.	All creation and enhancement sheets.
Delay in starting habitat creation (years)	Dropdown list (years)	If nothing is entered, the metric will assume that there will be no delay.	All creation and enhancement sheets.
Spatial risk category	Dropdown list	See detailed guidance.	All off-site sheets.
Off-site reference	Manual input	Where an off-site gain site is split across multiple SRM values use separate references.	All off-site sheets.
Baseline ref	Manual input	Space for users to reference habitat parcel by unique codes.	All off-site creation sheets.

Navigating to the results

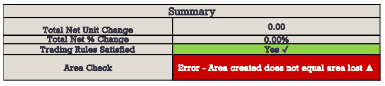
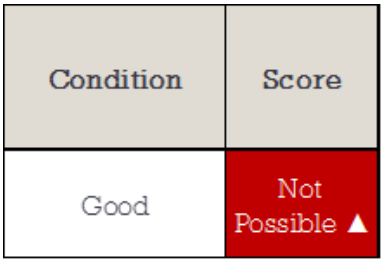
From the 'Main menu', select the 'Results' button located in the top right-hand side of the page. The results are presented in separate sections. Click on the button for the appropriate section to access the results.

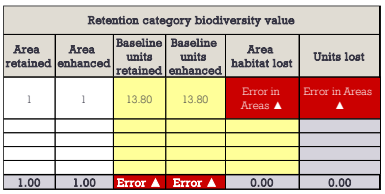
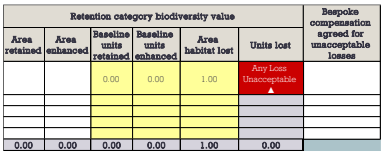
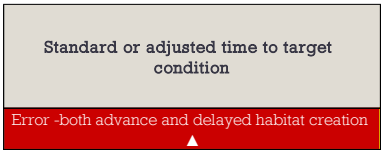
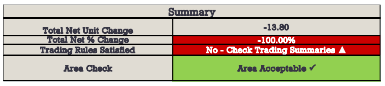
Headline results	Click to see overall net changes in biodiversity units and percentage, separated into three sheets.
Detailed results	Click to understand the proposed changes in habitats and areas.
Habitat trading summaries	Click to see details of trading between habitat types and an indication of whether the development has met trading rules.
Off-site summary	Click to see details of where off-site habitats are provided.
Irreplaceable habitats summary	Click to access the irreplaceable habitats summary tab
Credits Summary	Click to access the credits summary.

Tool troubleshooting

Table F summarise common issues and any actions required to resolve these. In most cases, an ‘error’ or ‘check’ flag will appear to show that a problem has been encountered and to point the user to where this may have occurred.

Appendix Table F A troubling shooting guide for metric flags

Issue	Action
The total baseline habitat area or length does not sum correctly	‘Total area’ / ‘Total length’ (summed at the bottom of the column) is displayed to two decimal places. This may result in small rounding discrepancies on large sites with many small parcels of habitat. The metric uses the true value entered in each row to calculate overall change in units (and not the displayed rounded value) to calculate. These rounding errors do not impact the results of the calculation.
An error flag is triggered if there is a discrepancy bigger than 0.01ha that needs to be addressed  Summary Total Net Unit Change: 0.00 Total Net % Change: 0.00% Trading Rules Satisfied: Yes ✓ Area Check: Error - Area created does not equal area lost ▲	Check the area of habitat entered in the tool for errors or provide justification as to why areas do not match.
Condense / show functions are not working	These functions only work for the enhancement tab if the baseline tab is filled in.
There are not enough data entry rows in the biodiversity metric tool for the site	The metric allows for 248 rows of data entry. It is good practice to put different habitat parcels into different rows. If required, multiple parcels of the same habitat type, condition and strategic significance can be combined into one row if the post-development outcome for those habitat parcels is the same.
The condition score is flagged as ‘not possible’,  Condition: Good Score: Not Possible ▲	The habitat type is not compatible with the selected condition score. This can occur if the habitat type selection is changed mid-way through data entry. Re-enter a valid condition input and the error message will disappear.

Issue	Action
Error in areas  Retention category biodiversity value Area retained / Area enhanced / Baseline units retained / Baseline units enhanced / Area habitat lost / Units lost 1 / 1 / 13.80 / 13.80 / Error in Areas ▲ / Error in Areas ▲ 1.00 / 1.00 / Error ▲ / Error ▲ / 0.00 / 0.00	If the area of habitat in both categories (enhancement and retained) exceeds the total area of habitat in a row, then the metric tool will not resolve. Any areas marked as enhanced should not also be recorded as retained. Ensure the areas retained and enhanced are not greater than the total area of habitat entered.
Any loss unacceptable  Retention category biodiversity value / Bespoke compensation agreed for unacceptable losses Area retained / Area enhanced / Baseline units retained / Baseline units enhanced / Area habitat lost / Units lost 0.00 / 0.00 / 1.00 / Any Loss Unacceptable ▲ 0.00 / 0.00 / 0.00 / 0.00 / 1.00 / 0.00	Once bespoke compensation is agreed, 'Yes' can be selected in the 'Bespoke compensation agreed for unacceptable losses' cell. This will clear the flag.
Using 'Fairly' condition categories A 'Fairly' Category has been used - check evidence to ensure this is appropriate ⚠	Assigning a habitat either of the condition types with the qualifier 'fairly' will cause a check flag to be raised. Provide sound ecological evidence to justify the use of fairly categories.
An error flag is triggered stating that both advance and delayed habitat creation have been implemented  Standard or adjusted time to target condition Error -both advance and delayed habitat creation ▲	Both advance and delayed creation cannot be used on the same habitat. Select either the advance creation or the delayed creation but not both. If two parcels of the same habitat are to be created in a staggered approach, then use two rows in the metric to present these separately.
The tool is not calculating a value for enhanced habitats	This occurs if there is a trading error in either the distinctiveness or condition. Condition must stay the same or improve, including when enhancement to a higher distinctiveness habitat.
'No – check trading summaries' error check.  Summary Total Net Unit Change: -13.80 Total Net % Change: -100.00% Trading Rules Satisfied: No - Check Trading Summaries ▲ Area Check: Area Acceptable ✓	The error flag appears if the trading rules are not met (at the top of each habitat tab, in the trading summaries and within the headline results). Consult the relevant trading summary tab for details on why the trading rules have been broken.