



the
Environment Bank

BIODIVERSITY IMPACT CALCULATOR - GUIDANCE FOR USE

FOR LOCAL PLANNING AUTHORITIES

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To accompany Environment Bank Biodiversity Impact Calculator - v1.4 July. 2016

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BIODIVERSITY IMPACT CALCULATOR GUIDANCE

FOR LOCAL PLANNING AUTHORITIES

1. ACCOUNTING FOR IMPACTS ON BIODIVERSITY

Biodiversity impact accounting enables local authorities to introduce a transparent and auditable framework for evaluating the ecological impacts of development and identifying fair and sufficient compensation (for instance via a biodiversity offset), if that is needed. It gives consistent, accountable and coherent outcomes for planners, for developers and for biodiversity, and contributes to the three pillars of sustainable development as set out within the National Planning Policy Framework.

Most of the wildlife outside of our protected areas is declining and the current systems of nature conservation are evidently inadequate. Recognising this, better accounting for the impacts of development on biodiversity, with compensation through a system termed 'biodiversity offsetting', was recommended in Making Space for Nature (Lawton 2010) the Natural Environment White Paper (HM Government 2011) and by the government Ecosystem Market Taskforce (2013), and was recently tested over a two-year period within 6 Defra-approved county-sized pilots. Other local authorities across the country are already introducing the piloted metric as a useful accounting tool for assessing the impacts of development. Defra's own definition of biodiversity offsets in the context of the measurable accounting system and last step in the mitigation hierarchy is that they are "*conservation activities designed to deliver biodiversity benefits in compensation for losses, in a measurable way... biodiversity offsetting has the potential to deliver planning policy requirements for compensation for biodiversity loss in a more effective way*" (Defra website, 2012).

Introducing this metric - now tested and accepted by the planning inspectorate in a number of cases - is a simple, powerful and transparent step for LPAs. It should be noted that the metric does not assume compensatory offsets will be required, and can demonstrate on-site biodiversity gain has been achieved – offsetting is just the final step in compensation for any residual impacts caused by development. In fact, applying the metric often drives up the quality of on-site mitigation so that there is no residual impact to be offset. If an offset is required, the same metric is used to evaluate the predicted gains at offset sites so that no net loss, and preferably gain, of biodiversity is achieved.

Here follows guidance on how to complete a biodiversity impact calculation using the Environment Bank Biodiversity Impact Calculator, which uses the Defra metric to assess development losses and gains to determine if no net loss is deliverable within a development. Where net losses are calculated, biodiversity offsetting is often an effective tool in delivering appropriate compensation.



Please see our toolkit for local planning authorities ‘Accounting for Biodiversity in Planning’ (Environment Bank 2017) for more information on quantifying biodiversity impacts within the planning process, biodiversity offsetting and how to introduce them in your local authority area.

1.2 How it works

The Biodiversity Impact Calculator uses the Defra metric to calculate the biodiversity units of a site both before and after any proposed development; this reveals if the development is likely to cause no net loss, net loss or net gain to biodiversity. It is a transparent metric used to quantify the value of biodiversity at any site and can form an evidence base on required mitigation and on-site compensation of a development, the amount of residual biodiversity impact and, if necessary, the amount of off-site compensation required through a ‘biodiversity offsetting’ scheme.

Should the Biodiversity Impact Calculator determine a residual net loss to biodiversity, after the ‘mitigation hierarchy’ has been followed, and if the development is in accordance with all other local and national planning policy and law, it may be suitable to apply biodiversity offsetting. A biodiversity offsetting scheme will compensate for biodiversity loss from development by habitat creation/restoration projects in strategic local areas to be managed in the long term; gain is measured using the same metric, ensuring that there is no net loss to biodiversity and demonstrating that the development is (for the biodiversity) sustainable.

These principles are in line with the Natural Environment White Paper and are set out in the National Planning Policy Framework:

“The planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government’s commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

“If significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused.”

1.3 Ecologically important sites and protected species

Note that the Biodiversity Impact Calculator does not take into account the designated status of important wildlife sites nor protected species.

As per National and Local policy, sites of high ecological value such as nationally important Sites of Special Scientific Interest, and priority habitats should be protected within the planning process and therefore development will normally not be approved in these areas. Environment Bank policy is that biodiversity offsetting should not be used on any designated sites except as a very last resort and when all due legislative process has been followed.

In addition to this the metric does not take into account the use of a site by protected species. Should any protected species be present they will still need to be appropriately protected from negative impact from the development as per national guidance.

2. BIODIVERSITY IMPACT CALCULATOR GUIDANCE

To be read in support of the Excel EB Biodiversity Impact Calculator v1.4.

The calculator was developed by Environment Bank and uses the metric of assessment published by Defra to support the national offsetting pilots. The Warwickshire, Coventry and Solihull biodiversity assessment tool, developed by Warwickshire County Council in partnership with Environment Bank was used as a basis for this calculator.

The calculator consists of two primary sheets:

- The first is the Biodiversity Impact Calculator - Habitats, into which all parcels of habitat within the development boundary should be entered, in addition to any parcels within adjacent site ownership which may be used as part of the on-site mitigation package and any habitats which may be indirectly impacted by development, such as off-site habitats. Entering effects to these habitats, together with any proposed on-site compensation measures, allows the calculator to assess the net biodiversity balance from the works, be this biodiversity loss (requiring further compensation measures) or biodiversity gain (biodiversity sustainable development).
- The second sheet is the linear features calculator. As hedgerows and other linear features often have a higher biodiversity value per hectare (due to factors such as connectivity), the biodiversity scores are not directly comparable and the linear features must be calculated separately. Hedge condition and length lost is assessed, together with any proposed new features to determine net loss or gain.

Also included are a quick reference sheet, which acts as a reminder of how to fill in the calculator, a definitions sheet and a summary sheet which can be used for reference and included in reports, which also details specific offset requirements.

2.2 Required information

An ecological survey, such as a Preliminary Ecological Appraisal or a survey in support of an Ecological Impact Assessment, of the site must be undertaken in accordance with national guidance, and to include appropriate condition assessments.

The information required to complete the Biodiversity Impact Calculator is:

- Area of each habitat and length of each linear feature;
- Habitat type;
- Habitat condition;
- Impact from development, both directly on-site, and indirectly off-site;
- On-site biodiversity mitigation/compensation measures.

The survey and calculation should include the whole of the development boundary (red line) as a minimum. It is encouraged that it includes habitats on adjacent land within the same ownership (blue line), as where appropriate these can also provide part of the on-site compensation measures package. All habitat mitigation measures within the ownership boundary should be included within the calculation as both existing and proposed habitats.

The development master plan/landscape plan should be consulted to determine what is to happen to each habitat and what habitats will be in place post development. Discussion should be held between the ecologist and the developer/landscape designer to ensure that the mitigation hierarchy is followed and suitable ecological enhancements can be incorporated on site with appropriate ongoing management.

If mapping software is not available you may need to speak to the developer/ architect for relevant areas of each of these habitats and development area.

Alternatively there are a number of free online mapping tools.

- <http://www.arcgis.com/home/webmap/viewer.html>
(sign in with a public account)
- <http://www.daftlogic.com/projects-google-maps-area-calculator-tool.htm>
- <http://www.freemaptools.com/>

2.3 Habitat assessment

The calculator includes set habitat options of those habitats more commonly encountered or more easily defined. When habitats on-site do not easily match habitat options, select the appropriate 'other' habitat and provide more information.

Please contact us if you think there are any gaps in our habitat list, so that we can improve subsequent versions of the calculator.

2.4 Area and length

When calculating the area of a habitat, calculate the habitat compartment boundary and area to the center line of the boundary feature, as you would on a map (e.g. measure the field area to the center of the adjacent hedgerow). The linear features are then calculated by length (width and ground habitat may be part of the condition assessment). Therefore if a hedge is removed the area of the proposed habitat will match the existing.

Habitats are measured in hectares (ha) to a maximum 2d.p.

Linear features are measured in metres (m) to a maximum 1d.p.

Parcels to be assigned a habitat and areas should reflect parcels as identified within the survey plan. Individual trees, although of ecological interest and still a planning concern are not assessed within the calculator. The habitat scattered trees is for discrete parcels of scattered trees, not the combined canopy coverage of individual trees found occasionally across the site.

2.5 Distinctiveness categories

Each habitat is given a distinctiveness score as part of its biodiversity assessment. The distinctiveness of a habitat includes parameters such as species richness, diversity, rarity (at local, regional and international scales) and the degree to which a habitat supports species rarely found in other habitats (Treweek *et. al.* 2010):

- High: 6
- Medium: 4
- Low: 2

When you select the habitat within the calculator the distinctiveness will fill in automatically as per the habitat distinctiveness score set as standard by Defra. There may be situations where these standards need to be changed due to specific site parameters, and in these instances the automatic distinctiveness settings can be edited, if you have sound reasoning why you believe that the habitat should have a different distinctiveness than this standard, just overwrite the box and provide evidence. However be aware that the changes you make must be well justified and are not actually changes to condition of this habitat.

- Note that buildings and hard standing are always assigned null distinctiveness.

2.6 Condition assessments

Prior to completing the calculator you will need to know the area of each habitat and what condition it is in. Condition assessments must be completed for every habitat.



At present, Defra guidance is for condition assessments to be made using criteria set out within the Farm Environmental Plan (FEP) Manual, however this is just a guide and not always suitable; ecological expertise and experience should be used for the final decision and additional questions of the surveyor may be required.

Conditions within the metric are as follows:

- Good: 3
- Moderate: 2
- Poor: 1

To complete a condition assessment within the FEP manual, you need to assess how many of the detailed criteria are met:

- Good condition: All criteria are met.
- Moderate condition: All but 1 criterion are met.
- Poor condition: 2 or more criteria are failed.

Some habitats, namely non priority habitats, do not have detailed condition assessments within the manual, or others may not include relevant features (e.g. ground flora within woodlands and species richness of hedges); however existing condition assessments may provide a framework or starting point to be adapted and aid you to make an appropriate determination.

For example, to assess semi-improved neutral grassland the lowland meadow G06 condition assessment can be used. Two of the six condition assessment criteria refer to indicator species and conditions of BAP (priority) habitat, which is not appropriate for semi-improved grassland. Therefore these criteria can be disregarded and the habitat assessed against condition criteria 1-4.

For all condition assessments, be they following the FEP, tailored or using your own determination, it is helpful to provide information of how each condition was determined within the ecological report or the comment boxes within the calculator.

Low distinctiveness habitats should normally be assigned a poor condition, unless a particular valuable or diverse example of that habitat is present e.g. the difference between most amenity grassland (poor condition) and amenity grassland, short mown but still with increased floristic diversity (moderate condition). For some habitat, it might never be appropriate to assign good condition.

Proposed gardens within residential developments should always be assigned poor condition. Although some gardens can have high wildlife value, there can be no control on how these are managed in the future and so poor condition should be selected.

In addition, be cautious with other proposed habitats; although species rich grassland may be proposed as on-site mitigation within a development, it may never attain a good condition dependent on existing soils, potential management and public use pressures.

A copy of the FEP manual can be found at:

<http://www.naturalengland.org.uk/ourwork/farming/funding/es/hls/fep.aspx>

2.7 Development impacts and the calculator

To complete the calculator you will need to know what is happening to each habitat.

How much of it is to be retained? Can it be protected from negative impacts from development works? If areas are to be retained, is any of it to be put under better management in the future to restore/create a habitat into a better condition? This will help to compensate for other biodiversity losses from the development.

How much of the habitat is to be lost due to required site clearance and development works? What features are to be created as part of the development, including buildings, roads, gardens, open space, hedges and new areas of habitat to be managed for conservation?

If any area of habitat is to be cleared for development works, even if it is to be replaced with a more distinctive habitat, this is still entered on the calculator as a habitat loss and subsequent creation. Only areas which can be protected from development impacts can be recorded as sensitive habitat creation with no prior loss. For example, clearance of tall ruderal vegetation, upon completion of development works open space habitats will be recreated. Or grassland which can be protected from negative impact from development works and will be sensitively planted with new woodland screening such that there will be a transitional phase between the two habitats.

2.8 Risk factors

As part of any proposed habitat creation and restoration projects, risk factors must be taken into account to correct for disparity, delay or risk, these are:

- Temporal Factor - time required to reach target condition;
- Difficulty Factor – risk of failure of target habitat through restoration/creation.

Thus, creation of a habitat which will take many years to get to target condition, or is difficult to recreate, would have a reduced biodiversity value compared to the same habitat already in situ. Therefore to compensate for loss of that original habitat a larger area would be required as an offset.

When selecting the habitats to be created/restored on site the factors fill in automatically. These values may be changed manually if, given your knowledge of the site and/or the proposed management prescriptions, you think different values are appropriate – once again, suitable information must be provided to support this decision.

A detailed management plan taking into account site conditions will be required to inform how each habitat will be successfully created, enhanced and managed in the long term so as to confirm the target distinctiveness, condition and risk factors.

2.9 Guidance on trading of habitats

Within *Technical Paper: the metric for the biodiversity offsetting pilot in England*, Defra, March 2012, Defra discusses the trading of habitat (the compensation of loss of one habitat with creation of another) as follows:

*“One of the guiding principles for developing our approach to offsetting is that it should result in an improvement in the extent or condition of the ecological network. To do this the focus of habitat restoration or creation through offsetting should be on priority habitats. Where development is taking place on habitats in the low distinctiveness band, the offset actions should result in expansion or restoration of habitats in the medium or, preferably, high distinctiveness band. **At no time should an offset result in “trading down”, for instance in the replacement of habitat of high distinctiveness with creation or restoration of a habitat of medium distinctiveness.** Habitats that are of high distinctiveness would generally be expected to be offset with “like for like” i.e. the compensation should involve the same habitat as was lost.”*

Within the calculation of on-site works it is permitted to compensate for low distinctiveness habitat loss with the creation of gardens and amenity areas also of low distinctiveness. However this can only compensate for the loss of low distinctiveness habitat and no further. Should the created amenity grassland generate biodiversity units of greater than the gross loss of low distinctiveness habitat lost, then this remaining value cannot compensate for loss of a higher value habitat.

Running in the background of the calculator is an assessment of habitat creation and restoration against habitat loss, down-trading and like-for-like high distinctiveness habitat requirements. Should there be any trading down of habitats this is corrected within the main assessment of the calculator.

Where possible the principals of trading up and the mitigation hierarchy should still be followed, such that if practical within the scheme, open space areas should be created and managed as species rich grassland and not as low value amenity grassland.

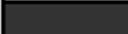
Though trading up of loss of medium habitat is not required, it is encouraged. Creation of medium habitat on site can compensate for the loss of low value habitat, but it cannot compensate for loss of high value habitat.

Loss of high value habitat must be replaced like-for-like. Therefore loss of high distinctiveness grassland cannot be compensated for by pond creation, although pond creation could compensate for loss of medium habitat.

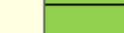
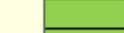
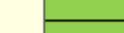
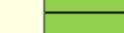
With regard to linear features the same principals of trading apply, though it is suggested that all newly planted hedgerows should be native, species-rich, potentially including trees, and managed to a good condition where feasible within the scheme.

3. COMPLETING THE EB BIODIVERSITY IMPACT CALCULATOR

- The calculator is colour coded to display where actions are required.

KEY	
	No action required
	Enter value
	Drop-down menu
	Calculation
	Automatic lookup
	Result

- Additional guidance is provided at the dropdown boxes and under red comment tabs.

Existing site habitats		Existing habitat distinctiveness	
Please enter <u>all</u> existing habitats within the development site.			
Existing habitat baseline	Habitat area (ha)	Distinctive	Score
Direct Impacts and retained habitats			
			
			
			
			
			
			
			

Please select the existing baseline habitat from the list.
This will automatically generate the appropriate distinctiveness score.

- Should you have any queries regarding the correct completion of the calculator, have any feedback for us, or wish us to validate calculations please contact us.

Environment Bank
 email: admin@environmentbank.com
 Tel: 07527 035359
 Web: www.environmentbank.com

3.2 Existing site

1. Site details

- Fill in the appropriate details regarding the development, amending the date and user with subsequent revisions.

Local Planning Authority:	
Site name:	
Planning application reference number:	
Site grid reference:	
Assessor:	
Date:	
Edit comments:	

2. Habitats

- Using the dropdown menu select the habitats present on site. Enter all habitats within the site boundary.
 - Habitats are grouped under:
 - Built environment;
 - Arable & horticulture;
 - Grassland;
 - Woodland;
 - Heathland;
 - Freshwater;
 - Wetland;
 - Coastal & estuary;
 - Inland rock;
 - Other features.
 - Linear features are grouped under:
 - Hedges;
 - Ditches;
 - Other linear;
 - Similar habitats in different conditions must be entered in different rows on the calculator;
 - One habitat with differing impacts (part lost, part retained), can be entered on the same row.
- The appropriate distinctiveness category will then fill in automatically.



- If parcel identifiers or target notes are available from the survey map and correspond to these habitats they can be entered on the left.

Existing site habitats Please enter <u>all</u> existing habitats within the development site.		Existing habitat distinctiveness		
Parcel ID	Existing habitat baseline	Habitat area (ha)	Distinctive	Score
Direct Impacts and retained habitats		A		B
1	Arable: Cereal crops and arable fields	1.00	Low	2
2	Arable: Arable field margins	0.20	High	6
3	Grassland: Other neutral grassland	0.83	Medium	4

3. Area

- Enter the total area of each habitat in hectares (ha).
 - The area of each habitat must go to the centre of the habitat boundary such that linear features have no area but are calculated by length.

4. Distinctiveness

- This category will be completed automatically once the habitat is selected and follows the distinctiveness guidelines set by Defra.
- Should you believe that there is sufficient evidence to indicate that the distinctiveness should be changed, you can overwrite the 'Distinctiveness' box with the appropriate amendments, once you confirm this the score will self-correct.
 - Only do this if you can provide sufficient reasoning in the comment box or accompanying report.

5. Condition

- Using the drop down menu, enter the current condition of each habitat parcel as assessed using FEP assessment criteria and your ecological expertise.
 - This will automatically fill in the condition score.
 - You must provide satisfactory reasoning of your condition determination.

Existing site habitats Please enter <u>all</u> existing habitats within the development site.		Existing habitat distinctiveness		Existing habitat condition	
Existing habitat baseline	Habitat area (ha)	Distinctive	Score	Condition	Score
Direct Impacts and retained habitats		A	B		C
Arable: Cereal crops and arable fields	1.00	Low	2	Poor	1
Arable: Arable field margins	0.20	High	6	Moderate	2
Grassland: Other neutral grassland	0.83	Medium	4	Good	3

6. Areas of direct impact

- In the appropriate columns: D, F, H on the spreadsheet, enter how much of each habitat is to be:
 - D - Habitats to be retained and maintained:
 - Area of habitat to be protected from harm from development works and thereafter maintained in current condition. - No habitat loss or gain. - No further entry required.
 - e.g. Scrub at margins of site, to be maintained.
 - F - Habitat to be retained and restored:
 - Area of habitat to be retained and protected from harm during development works. Subsequently to be restored/enhanced into a higher distinctiveness and condition. - Biodiversity gain to be generated.
 - Enter target in section 3. - Target habitat to be same habitat type e.g. grassland, and of higher biodiversity value (distinctiveness and condition).
 - e.g. species poor grassland to be restored to species rich grassland.
 - H - Area to be retained with habitat creation:
 - Area to be protected from harm from development works to avoid negative impacts, with subsequent new habitat creation. - Biodiversity gain to be generated
 - Enter target in Section 2. - Target habitat to be of the same or higher distinctiveness and condition.
 - e.g. species poor grassland to be sensitively planted with new native woodland.
- J - This will automatically calculate the area of habitat to be lost due to clearance for development works with subsequent development and habitat recreation.

Existing biodiversity units							
Areas to be retained and protected during development						Habitats to be lost and subsequent recreation	
Habitats to be maintained No further calculation		Habitats to be restored Enter target in section 3		New habitat creation Enter target in section 2		Enter target in section 1	
Area (ha)	Units maintained	Area (ha)	Units to be enhanced	Area (ha)	Units to be enhanced	Area (ha)	Units lost
D	DxBxC=E	F	FxBxC=G	H	HxBxC=I	J	JxBxC=K
				0.40	0.80	0.60	1.20
						0.20	2.40
		0.50	6.00			0.33	3.96

- Existing biodiversity units for each habitat will then be calculated in adjacent columns.
 - Should the biodiversity value column read '#VALUE!' one of the previous cells in the calculator was not adequately completed.

- Totals are visible at the bottom of the table together with the total existing biodiversity units of the site.

7. Areas of indirect negative impact

- Following the steps 1-5 above enter all habitats on site and within the vicinity which have the potential to be indirectly negatively impacted by the development.
 - These could be habitats outside of the site ownership, such as adjacent woodland, which may lose condition due to an increase in light levels from traffic on the proposed adjacent road or from increased public use.
 - Alternatively it could be an area of grassland which is not to be impacted but may be temporarily disturbed by construction traffic or pollution from construction (although measures should be put in place to remove risk of dust/water pollution to adjacent habitats).
 - If a habitat is to be later restored and managed it should be put within the 'retained and enhanced' section.
- The habitat should remain the same, but enter the condition before and after the indirect impacts anticipated from the development.

	Indirect negative impacts Including off site habitats	M	Distinctiveness		Condition		Value of loss from indirect impacts	
			B		C		MxAxB = Oi, Oii	Oi - Oii
Before	Woodland: Native broadleaved woodland	0.40	High	6	Good	3	7.20	
After					Moderate	2	4.80	2.40

- This section is not for habitat enhancement. On site habitat enhancement should be entered as per steps 6 and 10. Any pre-agreed off-site enhancements or biodiversity offsetting schemes will have to be calculated separately, taking into account appropriate risk factors and strategic location, please contact Environment Bank and we can assist with these calculations.

3.3 Gross biodiversity loss

- The Gross Biodiversity Loss score at the end of this top table shows the loss of existing biodiversity units of all habitats to be negatively impacted by this development.
 - i.e. habitats to be lost and indirectly impacted.
- Sufficient compensation through on or off-site measures, generating biodiversity gain equal or greater than this loss, will need to be provided to meet no net loss requirements.

3.4 On-site Compensation

- The completion of the second half of the calculator, detailing the proposed site development and mitigation/compensation measures, is similar to the first, entering each habitat, area and condition; and also the appropriate risk factors.
- Prior to completion of the calculator, the masterplan should be viewed and the final habitat types and areas should be separated:
 - Section 1: Habitat recreation
 - Enter target habitat to be recreated on area negatively impacted by development works.
 - As identified under J in step 6 above.
 - Section 2: Habitat creation
 - Enter new target habitat to be created on land protected during development. To be of higher value than existing.
 - As identified under H in step 6 above.
 - Section 3: Habitat restoration
 - Enter target habitat of retained areas to be restored.
 - As identified under F in step 6 above.

3.5 Habitat recreation

- This section takes into account all areas which were marked as 'lost' under J within the first half of the calculator, such that entered in this section are areas of built environment, amenity areas and compensation habitats on areas which were negatively impacted during development works.
- Please note that some habitats are excluded from this list, including:
 - Semi-natural woodland is excluded as this cannot be recreated, select plantation instead.
 - Improved grassland is excluded as this should not be created on site; grassland creation should either be for amenity use or conservation value and should therefore be species rich of a higher distinctiveness.

8. Follow steps 2-5 above for the habitats created within the development

- Select the appropriate habitats for creation from the drop down list.
 - This will automatically fill in the appropriate distinctiveness.



- For each habitat this can be different for whether a habitat is being created or restored.
- Given the particular conditions of each site, such as soil conditions and nutrients, it may be appropriate to amend these factors. A satisfactory explanation must be provided in each instance.

3.6 Habitat Creation

- This section takes into account all areas recorded under H above, which are to be protected from negative impacts from development works but are to have new habitats created.
- New habitat creation is to be undertaken sensitively. It is required that the distinctiveness and/or condition is higher than that of the existing habitat and management should be sensitive to allow transition from the existing to target habitat.
 - If the target habitat is of lower distinctiveness/condition than the existing, this should be scored as habitat loss and recreation as above.

10. Follow steps 2-5 above for the habitats created within the development

- Enter the target habitat type from the drop down box.
- Enter the appropriate area and select the target condition.
 - The area should match those of the habitats identified under H in the top table.

11. Existing value of enhancement habitats

- The existing value of each habitat to be enhanced must be entered such that the biodiversity gain of the enhancement works (creation/restoration) can be calculated.
 - You can do this by entering the formula “=cell”, such that it re-enters the respective existing biodiversity value ‘I’ of that habitat. E.G. =N20

Existing site habitats		Existing habitat distinctiveness		Existing habitat condition		Habitats to be maintained		Habitats to be restored		New habitat creation	
Please enter all existing habitats within the development site.						No further calculation		Enter target in section 3		Enter target in section 2	
Existing habitat baseline	Habitat area (ha)	Distinctive	Score	Condition	Score	Area (ha)	Units maintained	Area (ha)	Units to be enhanced	Area (ha)	Units to be enhanced
Direct Impacts and retained habitats	A		B		C	D	DxBxC=E	F	FxBxC=G	H	HxBxC=I
Arable: Cereal crops and arable fields	1.00	Low	2	Poor	1					0.40	0.80
Arable: Arable field margins	0.20	High	6	Moderate	2						
Grassland: Other neutral grassland	0.83	Medium	4	Good	3			0.50	6.00		
Total	2.03					Total	0.00	0.00	0.50	6.00	0.40

Proposed habitats on site		Target habitat distinctiveness		Target habitat condition		Temporal factor		Difficulty factor		Biodivers gener
Development, mitigation and onsite compensation										
Target habitat	Area (ha)	Distinctive	Score	Condition	Score	Time (years)	Score	Difficulty	Score	
2: Habitat creation										
Enter new target habitat to be created on land protected during development. To be of higher value than existing	Q2		R2		S2					((Q2 x R2) / T2)
Woodland: Broadleaved plantation	0.40	Medium	4	Moderate	2	20 years	2	Medium	1.5	0.8
Total	0.40									Total
3: Habitat restoration										
Enter target habitat of retained areas to be restored	Q3		R3		S3					((Q3 x R3) / T3)
Grassland: Lowland meadows	0.50	High	6	Moderate	2	10 years	1.4	Low	1	0.0

12. Complete the risk factors as step 9 above

3.7 Habitat restoration

- These should take account of all areas recorded under F above, which are to be retained on site during and post development and protected from negative development impacts, and which are to be put under improved management and enhanced/restored.
- These habitats and areas must accord with the habitats marked for restoration F in the first section.
 - If two separate habitats marked for enhancement in the first section are to be enhanced to the same habitat and condition they can be entered separately within this restoration section, or else their existing value added up appropriately.

13. Follow steps 2-5 above for the habitats enhanced within the development

- Enter the target habitat type from the drop down box.
 - This will automatically fill in the distinctiveness and difficulty.
 - Note that in this example above the target habitat type is different and a higher distinctiveness to the original. Likewise improved grassland could be enhanced to semi-improved grassland, but soil may be too enriched to reach unimproved quality.



- Enter the appropriate area and select the target condition.
 - The area should match those of the habitats to be enhanced from the top table.
 - Target condition should only be one step up from the original unless robust reasoning can be provided with support of the management plan.

14. Follow step 11 to enter existing biodiversity units

- The existing value of each habitat to be enhanced must be entered such that the biodiversity gain of the enhancement works can be calculated.
 - You can do this by entering the formula “=cell”, such that it re-enters the respective existing biodiversity value ‘G’ of that habitat.

15. Complete the risk factors as step 9 above

3.8 Down trading correction

- Biodiversity gain of one distinctiveness cannot compensate for impacts/losses of a higher distinctiveness. In addition losses to high distinctiveness habitats must be compensated like-for-like. This is assessed automatically in the background of the calculator and any required correction value enters here.

3.9 On-site compensation gain

- The onsite compensation gain score at the end of the proposed site table is the sum of all biodiversity gain generated from habitat creation/restoration, taking into account appropriate risk factors and subtracting any required downtrading correction score.

3.10 Net Biodiversity Balance

- The Gross biodiversity loss is subtracted from the onsite compensation gain to give the Net biodiversity balance. This is the residual impact to biodiversity as a result of the development.
 - If the score is positive the box will turn green and this means that a gain to biodiversity has been achieved. The development is ecologically sustainable with regard to no net loss to biodiversity and no offsetting will be required. However a robust and longterm management scheme to deliver and maintain this biodiversity value should be enacted.

- If the score is negative the box will turn red and the percentage of negative biodiversity impact will be calculated. This means that the development was unable to compensate for all impacts on site and will have a residual impact to biodiversity and is not ecologically sustainable without additional compensation measures, which is contrary to the aims of the NPPF.

Trading down correction	0.00	Z
Onsite compensation gain	1.52	OCG = W + X + Y - Z
	NBB = OCG - GBL	
Net biodiversity balance	-8.44	Net loss and biodiversity offsetting requirement
Percentage of gross impact loss	84.77	
Percentage of site biodiversity loss	58.80	

- Has the possibility of on-site ecological enhancements been fully explored, can the scheme be revised? National guidance recommends biodiversity offsetting as a suitable mechanism to deliver appropriate off-site compensation to neutralise the loss to biodiversity from development. If an appropriate method of compensation cannot be agreed planning refusal of the proposal is recommended.

3.11 Linear features

- Linear features are assessed separately on an additional calculator sheet.

Total	0.00
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1. Follow 2 above and select the appropriate habitat from the dropdown list
2. Enter the length of the linear feature in meters.
3. Select the appropriate condition as per step 5. Provide your reasoning.
4. Enter the length of each feature to be retained and managed.
 - The length to be removed will calculate automatically.
5. The compensation requirement automatically generates and is the length of new hedge/linear feature which will be required to compensate for the loss.

Existing Linear Features		Existing Linear Condition		Development Impact		Compensation length requirement
Existing linear baseline	Existing length (m)	Condition	Score	Length to be retained and managed (m)	Length to be removed (m)	
	A		B	C	A - C = D	D x B = E
Hedges/trees: Hedgerows	600.00	Good	3	500.00	100.00	300.00
Hedges/trees: Hedgerows	300.00	Moderate	2	250.00	50.00	100.00
Hedges/trees: Line of trees	100.00	Moderate	2	100.00		0.00
Ditches: Wet Ditch	250.00	Good	3	50.00	200.00	600.00
						0.00
Total	1250.00			900.00	350.00	1000.00

6. Enter the type and length of proposed new features on site

Proposed Linear Features On Site		
Linear ID	New linear features created	Proposed length (m)
		A
	Hedges/trees: Hedgerows	450

- Any required downtrading correction will complete automatically, calculating the net linear balance.

Gross linear loss	1000.00
Onsite linear compensation gain	450.00
Net linear balance	-550.00

3.12 Summary

- There is a second tab to the worksheet which contains a summary of the Biodiversity Impact Calculation which can be copied and used as an overview and within reports and response.

Biodiversity impact accounting	Area (ha)	Units
Existing site	2.03	14.36
Gross biodiversity loss	1.53	9.96
Onsite compensation gain		1.52
Net biodiversity balance		-8.44
Percentage of gross impact loss		84.77
Percentage of site biodiversity loss		58.80

Linear features	Length (m)	Linear units
Total existing length onsite	1250	3350
Linear loss	350	1000
New proposed hedgerows	450	
Net linear balance	-550	

Offsite conservation credit requirement to deliver no net loss to biodiversity

Habitat	Conservation credit requirement
Total habitats (units)	-8.44
Total Linear (m)	-550



4. BIODIVERSITY OFFSETTING

Should there be an unavoidable loss to biodiversity through the development, and if the development is in accordance with all other planning policy and so is likely to be granted permission, then the LPA should insist that compensation for the habitat lost is delivered through the funding of an off-site habitat creation scheme. Through the Environment Bank it is likely that a suitable biodiversity offsetting scheme can be found which can compensate for the habitats and biodiversity loss through long-term conservation projects in the surrounding area which will deliver biodiversity gain.

For more information on biodiversity accounting and offsetting please contact Environment Bank for a copy of the Accounting for Biodiversity in Planning toolkit (Environment Bank 2017).

The Environment Bank are a conservation broker company of high standards who can help match the development with a suitable biodiversity offset site delivering no net loss and often biodiversity gain. We provide the necessary fiscal and legal assurances to satisfy the Local Planning Authority and developers that the scheme is deliverable. Through the funding of these conservation projects with a one-off obligation the developer can compensate for the loss to the development, making development more ecologically sustainable and ensuring no net loss to biodiversity.

For further information on biodiversity offsetting in your authority please contact:

Environment Bank
email: admin@environmentbank.com
Tel: Lou Martland on 07710192295
Web: www.environmentbank.com

5. DEFINITIONS

For the purposes of this calculator definitions are as follows:

Distinctiveness - The distinctiveness of a habitat includes parameters such as species richness, diversity, rarity (at local, regional and international scales) and the degree to which a habitat supports species rarely found in other habitats (Treweek et. al. 2010).

Condition - Refers to the condition of the habitat present. All habitats, including low distinctiveness habitats require condition assessments using the Farm Environment Plan (FEP) manual where applicable, along with ecological expertise. Please see accompanying guidance for more information.

Temporal factor - The time from commencement until the target condition will be reached.

Difficulty factor - The risk of failure for the habitat to reach its target.

Habitat protection - Areas which will be protected from development works, such that no negative impact occurs.

Habitat retention and maintenance - Existing habitats which are not to be negatively impacted by the development and will be maintained in the current condition.

Habitat loss - Areas to be negatively impacted by a development.

Habitat recreation - Habitats created on areas of negatively impacted by development works. E.G. built environment and amenity areas or new conservation habitats.

Habitat creation - New habitats or higher value, created on retained and protected areas. E.G. woodland creation on retained grassland.

Habitat restoration - Habitats which are retained and restored/enhanced to a higher value. E.G. Meadow restoration.

Indirect negative impacts - Habitats which are primarily off-site, which will be retained, but will have a loss in value due to indirect impacts such as light spillage, pollution or increased disturbance.

Gross biodiversity loss - The total biodiversity unit loss of direct and indirect impacts that will require compensation on or off-site.

Trading-down correction - Habitats can only be compensated for by the restoration/creation of habitat of the same, or higher value - for e.g. amenity grassland cannot compensate in any way for the loss of species-rich neutral grassland. High distinctiveness habitat must be compensated for like-for-like.

On-site compensation gain - The total biodiversity gain of all on-site habitats created and restored, but taking into account the downtrading correction.

Net biodiversity balance - The final net biodiversity impact once on-site habitat compensation has been taken into account. A +ve score = biodiversity gain on-site. A -ve score indicates a loss where a biodiversity offset would be recommended.



Percentage of gross impact loss - % of gross biodiversity loss which will not be compensated for through on site measures.

Percentage of site biodiversity loss - % of net biodiversity loss of existing site biodiversity units.