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Developing Indicators and Thresholds for Monitoring the Landscape Impacts of Environmental Stewardship at the National Character Area Scale

Database Users' Guide

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Prepared by LUC in association with Julie Martin Associates
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1 Outline of the Database

1.1 A bespoke database has been developed for the study 'Developing Indicators and Thresholds for Monitoring the Landscape Impacts of Environmental Stewardship at the National Character Area Scale

1.2 This database has been developed with clear data entry forms so that users unfamiliar with access databases can easily use the database to **assess the landscape effects of Environmental Stewardship on the landscape of individual NCAs**.

1.3 **Figure 1** on the following pages sets out the overall structure of the Microsoft Access database and identifies the points at which the assessor needs to take action.

1.4 The following key is used to denote how the information is entered/created:

Action is required by assessor at the time of reviewing an individual NCA – either in the form of preparing free text, tick box selection or dropdown menu selection

No action required by assessor at the time of reviewing an individual NCA as the data is prepopulated

1.5 The different 'data entry forms' of the database are then set out and described in Section 2.

Figure 1: Structure of database

Information	Method of inputting data into database
Evaluation for each theme	
1. Key characteristics/elements	Key characteristics per NCA are pre-populated from the NCA key characteristics database. As part of the BD5303 contract, a searchable database of NCA key characteristics was developed. This database organises key characteristics (both from the Fine-grained assessments and any updates made by Julie Martin) into 13 themes. Information against the seven themes relevant to this study have been used to prepopulate the database.
	For the 50 NCAs the key characteristics have been edited down to a more succinct list for each theme. These inform the selection of objectives and indicators by the assessor. Assessors were provided with the full list of key characteristics by theme as well as a spreadsheet of data showing all uptake from Genesis for the NCA split by theme. In addition to this, Landcover Map 2007 data was provided for each NCA showing the distribution of the broad habitat types across each NCA. The assessors used the three data sources above to review and edit the key characteristic for each NCA to reflect the key landscape elements of that NCA. The stock and uptake data were used as a check to ensure that the edited key characteristics included mention of all relevant landscape elements.
2. Objectives	For each theme, a list of objectives was generated at the outset of the study directly linked to each key landscape element. These were largely informed by the objectives developed during the BD5303 pilot. These objectives are presented in the data entry form as a list for each theme.
3. Selection of relevant objectives	A tickbox selection allows the assessor to mark which objectives are relevant to the NCA being assessed. (For each objective, the assessor uses the edited key characteristics as well as stock and uptake data (described below) to judge whether that objective is relevant to the NCA. Only those objectives marked as relevant form part of the assessment.
4. Indicators	Each objective has a corresponding indicator expressed as a percentage of uptake versus stock (measured as area, length, area or number).
5. Uptake	Drawing on the analysis of Genesis uptake data per NCA, uptake calculations are prepopulated against each objective/indicator and expressed as a total. In addition, to these totals, there is access to the 'raw' options uptake

Information	Method of inputting data into database
	<p>data so that it can be reviewed by scheme group (ELS or HLS) via a button.</p> <p>A series of summary calculations and queries have been set up behind the main database interface to allow the correct information to be pulled through to the right location. This has been done for all NCAs.</p>
6. Stock	<p>Where possible, each indicator has a corresponding stock value that is prepopulated using LCM 2007 analysis by NCA or analysis of other GIS datasets as described in the Method Report.</p> <p>Stock calculations have been generated for each indicator for all NCAs in order for the relevant stock figure to be pulled through to the right location.</p>
7. Thresholds	<p>Threshold values have been set for each indicator for all NCAs. These were set up in a way that allows for 'tweaked' threshold values to recalculate '<i>on the fly</i>'¹. This was important as initial piloting of a few NCAs highlighted where thresholds needed tweaking, and this set up allowed thresholds to be changed and the indicator results to be automatically recalculated.</p>
8. Indicator results	<p>Database analysis of the stock versus uptake values allows this to be prepopulated – usually as a percentage value.</p> <p>These calculations have been set up as a formula that undertakes the calculation within the database. This has been done for all NCAs.</p>
9. Effects Are the effects on the landscape: positive, neutral or negative?	<p>The assessor uses the above information on uptake, stock, and indicator result compared to the threshold to evaluate whether the effects on the landscape for each objective are positive, neutral or negative and uses a drop down list to make this selection.</p>
10. Are the ES option types with greatest potential landscape benefit being taken up?	<p>For each objective, the assessor responds to this question with a Yes or No (selected from a drop down list) and enters the justification for this, if needed.</p>

¹ '*on the fly*' means that the database contains a formula which allows a calculation to be made depending on the data that has been entered. Thus the actual calculation only occurs when the 'button' is clicked.

Information	Method of inputting data into database
11. Overall effects on theme	Following completion of the assessment for each relevant objective, an overall effect of ES on the landscape for that theme is selected (from a drop down list) by the assessor. The values available are strongly positive, positive, neutral, negative and not applicable. This overall effect is a qualitative assessment based on review of the results for all the selected objectives (described further in paras 3.3 – 3.10).
Summary results for all themes	
Theme effect scores	<p>The 'scores' from 11 are automatically assigned to the overall results summary with one 'score' for each theme. The scores are assigned as follows:</p> <ul style="list-style-type: none"> • Strongly positive = 1 • Positive = 0.5 • Neutral = 0 • Not applicable = 0
Total score for overall effect	<p>Based on the summation of the theme effect scores, an overall score for each NCA is generated. The scores are assigned as follows:</p> <ul style="list-style-type: none"> • 0 – 2 = Neutral • 2.5 – 4 = Positive • 4.5+ = Strongly positive
ES seems to be benefiting the landscape in respect of:	This is a free text box for the assessor to complete having reviewed all of the analysis above. This identifies those objectives that have a positive score in respect of landscape contribution.
ES seems to be having more limited impact on:	This is a free text box for the assessor to complete having reviewed all of the analysis above. This identifies those objectives that have a neutral score in respect of landscape contribution.
Detailed comments	A free text box for the assessor to complete having reviewed all of the analysis above. This identifies the overall effect of ES on the landscape of the NCA and identifies the relative contribution of ELS, UELS and HLS

2 The different 'data entry forms' of the database

Main menu screen:

The screenshot shows the 'Frm_Select_NCA - NCA Indicators and Thresholds' main menu screen. The title bar indicates the form name. The ribbon includes 'File', 'Home', 'Create', 'External Data', 'Database Tools', and 'Acrobat'. The 'Database Tools' ribbon is active, showing options like 'Filter', 'Sort & Filter', 'Refresh All', 'Delete', 'More', 'Find', 'Go To', 'Size to Fit Form', 'Switch Windows', and 'Text Formatting'. The main content area is titled 'Landscape Impacts of ES at NCA level'. It features a 'Select NCA:' dropdown box at the top. Below it are four buttons: 'Start NCA assessment', 'Go to summary overview for this NCA', 'View detailed report', and 'View summary report'. At the bottom left is a 'Close database' button. Red arrows point to these elements with the following annotations: 'Click here to start the Assessment' points to 'Start NCA assessment'; 'Click here to see a detailed report for selected NCA' points to 'View detailed report'; 'Click here to go straight to the summary page' points to 'Go to summary overview for this NCA'; 'Click here to see summary report for selected NCA' points to 'View summary report'; 'Use this dropdown box to select an NCA' points to the 'Select NCA:' dropdown; and 'Click here to exit the database' points to 'Close database'. The status bar at the bottom shows 'Record: 1 of 1', 'No Filter', and a 'Search' field. The bottom right corner of the window shows 'Num Lock' and system icons.

Click here to start the Assessment

Click here to see a detailed report for selected NCA

Click here to go straight to the summary page

Click here to see summary report for selected NCA

Use this dropdown box to select an NCA

Click here to exit the database

Assessment form

Form_A - NCA Indicators and Thresholds

File Home Create External Data Database Tools Acrobat

View Paste Copy Cut Filter Filter Ascending Selection Advanced Refresh New Save ABC Spelling Find Replace Go To Size To Switch Fit Form Windows Text Formatting

Views Clipboard Sort & Filter Sort & Filter Remove Sort Toggle Filter Records Delete More Find Select Window

NCA Code: 19 SOUTH CUMBRIA LOW FELS ALT Code: 6 Upland

Select a theme: Semi-natural habitats Key Characteristics can be edited in the left hand box below

Fine-grained Key Characteristics

Species-rich grassland
Heathland
Small lowland bogs, wetlands and mires
Traditional cattle grazing on moorland commons

Key characteristics for the theme are displayed here

Select whether the objective is relevant for this NCA

Prepopulated information

Objective	Is the objective relevant?	Indicator	Uptake	Units	Stock	Thresh	Unit	Indicator result	Effects	Are the ES options with the greatest potential landscape benefit being taken up? Yes/No and add comments/justification
F1 Management/restoration/creation of lowland hay meadows	No	% of acid, calcareous and neutral grassland managed as species-rich grassland under ES	316.0	ha	4,444.8	20	%	7.1	F1	BAP Priority Habitat: 65ha lowland meadows
F2 Management/restoration/creation of upland species-rich grassland	Yes	% of rough, calcareous and neutral grassland managed as species-rich grassland under ES	316.0	ha	8,086.4	20	%	3.9	F2	Neutral Yes
F3 Management/restoration of upland hay meadows	Yes	% of rough, calcareous and neutral grassland managed as hay meadow under ES	319.0	ha	8,086.4	10	%	3.9	F3	Neutral Yes
F4 Management/restoration of lowland hay meadows	No	% of acid, calcareous and neutral grassland managed as hay meadows under ES	316.0	ha	4,444.8	10	%	4.1	F4	
F5 Management/restoration/creation of lowland heathland	No	% of lowland heathland managed as such under ES			4,794.2	10	%		F5	
F6 Management/restoration/creation of fen, lowland raised bog and reedbed	Yes	% of fen marsh and swamp managed as wetland under ES	103.0	ha	90.4	20	%	113.9	F6	Positive Yes BAP Priority Habitats: 777ha floodplain grazing marsh, 527 lowland raised bog
F7 Maintenance and restoration of moorland	Yes	% of moorland managed as such under ES	4,179.0	ha	9,304.0	50	%	44.9	F7	Neutral Yes BAP Priority Habitats: 1002ha Upland heathland
F8 Rewetting of areas of blanket bog, mires and flushes	No	% of blanket bog rewetted			90.4	20	%		F8	
F9 Retention/restoration of traditional cattle grazing on moorland commons	Yes	% of moorland with cattle grazing under ES	4,722.0	ha	9,304.0	5	%	50.8	F9	Positive Yes

Select an effect

Select Yes/No and add justification

View detailed uptake data View detailed stock data View D2 uptake ranked View E5 agreements ranked

Select overall effect on theme: Positive

Go to summary overview Return to main menu

Return to main menu

When all of the themes have been completed, click here to go to go to summary page

Click these buttons to view supporting data for stock and uptake (opens as a table)

Summary overview form

All of the information from the assessment page will load here (relevant objectives only). This data

cannot be edited here, so if changes are required, use the 'Go back to assessment' button below.

NCA Code: 19 SOUTH CUMBRIA LOW FELLS		NE Code: 1900000000					
A4	Semi-natural woodland regeneration	% of scrub maintained as successional areas under ES	105.0	10	%	224.6	Positive
A5	Protection of in-field trees	Number of in-field trees protected under ES	1,612.0	1500	per NCA		Positive
A9	Management and extension of traditional orchards	% of traditional orchards managed under ES	3.0	5	%	7.3	Positive
B1	Management and restoration of hedgerows	% of hedgerows managed under ES	297.7	20	%	21.2	Positive
B2	Creation of new hedgerow lengths	Length of new hedgerows planted	2.1	10	km per NCA		Neutral
B4	Management and restoration of stone walls	% of stone walls managed under ES	10.0	20	%	1.2	Neutral

OVERALL EVALUATION

Overall effect on theme

Woodland/tree cover	Positive	0.5
Field patterns and boundary types	Positive	0.5
Agricultural land use	Positive	0.5
Building materials/design	Positive	0.5
Historic environment	Strongly positive	1
Semi-natural habitats	Positive	0.5
Coast	Positive	0.5
Total score and overall effect:		Positive 4

A summary of the overall effects on themes and an automatically calculating score.

Data cannot be edited here so if changes are required, use the 'Go back to assessment' button below.

ES seems to be benefiting the landscape in respect of:

semi-natural woodland regeneration; protection of in-field trees; extension of traditional orchards; management and restoration of hedgerows; and retention and management of pastures, retention of historic farm buildings, archaeology on grassland, parkland, wetland habitats, traditional cattle grazing and salt marsh.

ES seems to be having more limited impact on:

woodland management and protection; creation of new or replacement hedgerows; management and restoration of the area's distinctive stone walls; restoration of historic farm buildings; and management of species-rich grassland, hay meadow and moorland.

Detailed comments:

Total area of ES uptake of benefit to landscape = 22237ha 56%ELS 33%UELS 11%HLS
ES is having a positive impact overall with ELS as the main driver in relation to in-field trees, hedgerows, pastures, historic buildings, archaeology on grassland, and moorland. HLS is influential in relation to parkland and wood pasture, species-rich grassland and wetlands. The

These text boxes are completed by the assessor at the end of the assessment

Use this button to go back to the assessment page.

Go back to assessment

Close and return to main menu

Use this button to return to the main menu when assessment is complete.

Record: 1 of 1 Filtered Search

Form View

3 The 'rules' for completing the database

3.1 To ensure consistency in how the database is completed for each NCA, a series of rules has been developed based on the experience of completing the first 50 NCAs and as issues of consistency have arisen during Phase 2 of the study.

General

Key characteristics

- Each key characteristic should be on a separate line
- Key characteristics should focus on those landscape elements important to the landscape with the potential to be affected by ES, identifying their condition where known,
- Key characteristics can be added if omissions are identified, either from local knowledge or from evidence in the stock data that the characteristic is present

Semi-natural habitats

- Under Theme F Semi-natural habitats, the area of relevant BAP Priority Habitats has been noted against relevant objectives to compare with the stock identified through LCM and entered into the database. It has also been noted for objective C3 for wet grasslands. Where there is a very significant difference between the LCM data and the BAP data on habitat extent, the BAP Habitat data is deferred to as it is potentially more accurate. In these cases the indicator result is calculated manually by the assessor using the BAP data to represent stock.

- **Moorland** (objective F7) is the one semi-natural habitat where the BAP habitat data is not deferred to. This is because the relevant BAP specifically relates to upland heathland, whereas the objective (and available ES options) relate to a wider range of moorland habitats that are better reflected in the stock data drawn from LCM.

Is the objective relevant?

- Always select yes or no, do not leave blank
- Only select an objective for the negative options when the uptake is above the threshold. Potentially negative options are:
- Field Pattern and Boundary Types:- Objective B6: Area of wider buffer strips / yr round headlands created under ES – these can be negative in small scale landscapes with small fields and irregular boundaries
- Field Pattern and Boundary Types:- Objective B7: Minimal negative landscape impact from deer fencing – Deer fencing is likely to be negative in all landscapes
- Field Pattern and Boundary Types:- Objective B8: Minimal negative landscape impact from fencing along watercourses – This is likely to be negative in most landscapes
- Agricultural Land Use:- Objective C7: Minimal negative landscape impact from fallow plots - ES fallow plots can be negative if on a slope

Are ES options with greatest benefit being taken up?

- **Choice of options** – usually yes; no only where there is negligible (or no) uptake

- **Comments column** – often blank, but fill in where (a) the balance of options should be changed (b) there is a useful option that is not being taken up (c) something is undesirable (negative) or (d) there are other issues such as apparent anomalies in stock data.

Rules for specific objectives

- **Active woodland management** – select in most cases, only omit in landscapes with very little woodland
- **Woodland protection** – select in most cases. Omit in landscapes with very little woodland and/or very arable landscapes where there is limited grazing threat
- **In-field and hedgerow trees** – often there is uptake of in-field trees options in landscapes known to have hedgerow (not in-field) trees. In this case both in-field and hedgerow tree objectives may be relevant. However in-field trees should not be added to the key characteristics as the option *may* have been selected to protect hedgerow trees (options for the protection of hedgerow trees were only introduced in 2010)
- **Orchards** – if not identified as a key characteristic, only select as relevant objective where stock exceeds 30ha and the indicator result is positive
- **Ditches** – where ditches are a distinctive feature only of river valleys within an NCA, score as positive if the uptake exceeds 40km (this is below the stated threshold).
- **Buffer strips** – select as an objective in large scale arable landscapes that would benefit from reinforcement of field patterns where the effect of these buffer strips likely to be positive. Equally select where the threshold is exceeded in small-scale landscapes with an irregular ‘Medieval’ field pattern where effect potentially could be negative
- **Diversity of winter arable landscape** – use selectively and only in landscapes with a high proportion of arable
- **Mixed stocking** – use selectively, only where mixed stock grazing is characteristic and appears to be in decline
- **Historic buildings restoration** – select this in all cases but assess its impact as positive only when there are at least 3 D2 agreements
- **Archaeology on arable/grass/out of cultivation** – only select as a relevant objective where stock exceeds 30ha and the indicator result is positive. If stock exceeds 100ha pick the objective up all the time. The exception to this rule is small NCAs where the stock falls below this level and there is limited uptake but the NCA is known for its archaeological heritage, as in the mining areas of Cornwall. In these cases the relevant objectives will be selected regardless.
- **Archaeology on arable managed as part of wider conservation objectives** – only select when uptake exceeds 20ha.
- **Archaeology on moorland** – when selected only assess as positive when there are at least 3 E5 agreements
- **Parklands** – if not identified as a key characteristic, only select as a relevant objective where stock exceeds 150ha and the indicator result is positive. If the stock is significant, check for evidence of parklands in the NCA, add to the key characteristics and select the objective regardless of the indicator result.

N.B. Overall, the uptake of the directly relevant ES options (i.e. those captured in the database) may be low. This may be because many parklands, especially the more important ones, are funded under HLS capital items (HAP *Historical and archaeological feature protection*, OES *Special projects*) that support the preparation of Conservation Management Plans: these in turn may specify the range of ELS, HLS and capital items to be applied to the parkland which may extend much further than specific parkland options.

- **Species-rich grasslands** – In upland landscapes there may be a mix of upland and lowland habitats. Reference to the BAP Priority

Habitats for that NCA can confirm this mix. In these cases only select Objective F1 or F2 but not both, otherwise there will be double counting

- **Hay meadows** – in upland landscapes select Objective F3 as this will include relevant UELS options. As above do not select Objectives F3 & F4

Coast – the ES options that specifically relate to the coast are for lowland coastal habitats namely salt marshes and sand dunes/vegetated shingle. If these habitats are not present, for example, because the coast is high and cliffed, enter N/A into overall assessment for the theme. In these cases it has to be assumed that uptake for habitats such as scrub management, species-rich grassland and lowland heathland are being applied to coastal as well as inland locations.

Assessing the overall effect of ES on individual themes

3.2 Having assessed the effect of ES on individual objectives (based on whether the threshold is met or not), an overall assessment is made of the effect of ES on each theme.

3.3 Assessing the overall landscape effect of ES per theme is the main element of the assessment that requires careful and considered judgement on the part of the assessor.

3.4 This assessment is based on a three point 'score' as follows:

Effect on theme	Score
ES is having a Strongly Positive Landscape Effect with most (or key) identified thresholds for individual Indicators being exceeded	1
ES is having a Positive Landscape Effect with some identified thresholds for individual Indicators being met	0.5
ES is having a Neutral Landscape Effect with the most or all of the identified thresholds not being met	0

3.5 In most cases the assessment per theme is clear cut and directly follows the guidance set out above, responding to 'the weight of evidence' presented under that theme.

3.6 This is a qualitative response rather than a numerical calculation and this is important as it needs to take account of (a) the key characteristics of that NCA; (b) the pattern of uptake for that theme across all the NCAs; (c) the total area of uptake relative to the nature of the feature being affected (e.g. it is possible that a thresholds is exceeded – e.g. for wetland habitats but the actual area of uptake is small e.g. under 5ha).

3.7 A straight numerical calculation would also be inappropriate because in some NCAs only one objective may be selected under a particular theme while in another a wide range of objectives may be selected (all dependent on landscape character):

3.8 Taking account of the above considerations:

- **Strongly positive:** This is most commonly noted in the case of semi-natural habitats where the key habitats of that NCA have indicator results where all or most of the relevant objectives exceed the threshold (often significantly). This is particularly noticeable in those NCAs targeted for heathland and moorland restoration. This does not mean that ALL selected objectives need to exceed their threshold under that theme (although they

often do). For the Agricultural theme in the Western Mixed ALT a strongly positive assessment might be where the three main grassland objectives – low input, wet and rough grasslands all exceed the identified threshold – this is rare across the NCAs. Equally, for boundary features it will be where all the main boundary types identified as key characteristics exceed their threshold

- **Positive:** This mainly relates to situations where one or more objectives achieve the identified threshold selected for that theme. It may also reflect situations where a number of the selected objectives significantly exceed their threshold but one or two of the objectives identified as particularly important to that landscape have failed to meet their threshold, bringing down the overall result. Three examples are:
 - *Field pattern and boundaries:* In upland landscapes where the hedgerow threshold may be significantly exceeded but that for walls (the most characteristic boundary feature) is not met
 - *Historic environment:* In those landscapes where parkland has been identified as a very important characteristic of the landscape but this threshold is not met even though archaeological thresholds are met or significantly exceeded
 - *Semi-natural habitats:* In situations where a range of habitat objectives exceed their threshold but that for the habitat or habitats for which the NCA is best known are not met.
- **Neutral:** This is most commonly used where none of the selected thresholds are met, or occasionally where the majority score neutral but one or occasionally two thresholds are positive but the total area of uptake is small and / or the threshold is met but this is not one of the most important key characteristics of this particular NCA.

Rules

3.9 In some cases specific rules have been used in making this assessment to ensure consistency between NCAs with very similar results. These rules are:

- *Field boundaries:* Where hedgerows are the dominant boundary feature, the theme result should be *positive* where the hedgerow indicator result is between 20% and 40% and *strongly positive* where the indicator result exceeds 40% (in this case the threshold is 20%). This reflects that the majority of NCAs achieve the hedgerow threshold.
- *Field boundaries:* As above for field walls, where the theme result should be *positive* where the wall indicator result is between 20% and 30% and *strongly positive* where the indicator result exceeds 30% (again the threshold is 20%). This reflects that the wall threshold is less often achieved.
- *Historic environment:* Objective E4 where if this is the only objective under this theme to meet its threshold (50%) then the overall score for the theme should be neutral if the indicator result is 50% - 99%, *positive* if the indicator result is between 100% and 300%, and *strongly positive* if it exceeds 300%. This reflects that (a) the threshold for this objective is frequently met, and (b) the stock measure is imprecise.
- *Semi-natural habitats:* In situations where the overall level of uptake for each objective is small but the thresholds are significantly exceeded (because the areas of remaining habitat are very limited), the assessment for the theme should only be *strongly positive* where the total area of uptake of selected objectives exceeds 350 hectares

3.10 It is the assessment of the individual theme results that is the most challenging aspect of the approach and the most important to get right as it is the sum of these theme results that define the overall result for the NCA. For this reason it is this aspect of the assessment that needs the most cross checking to ensure consistency in thinking between different NCAs. Again though it must be stressed that this is a matter of professional judgement, comparing the results with the key characteristics and considering which are most important to landscape character.

Calculation of overall effect of ES on the NCA

3.11 The overall assessment for each theme is then automatically brought together by the database and summed as follows to give a statement of the overall effect of ES on that NCA.

Overall effect (sum of effects on all themes)	Score
Strongly Positive Landscape Effect	4.5 or more
Positive Landscape Effect	2 - 4
Neutral Landscape Effect	0 – 1.5