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

## **Description of the Method and Database**

Final Report

Prepared by LUC in association with Julie Martin Associates

November 2013

**This project is supported by the Rural Development Programme for England, for which Defra is the Managing Authority, part financed by the European Agricultural Fund for Rural Development: Europe investing in rural areas**

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

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# 1 Introduction

1.1 The aim of this study as set out in the brief has been to:

“ provide a comprehensive set of indicators and threshold values of landscape impact at the National Character Area (NCA) scale for a defined number of NCAs. This is intended to help better monitor the landscape impact of Environmental Stewardship and to facilitate improved future agri-environment delivery that will secure good and enhanced landscape benefits through the targeting of appropriate land management options to particular places and in the quantity needed to have a significant landscape impact”.

1.2 This study builds directly on the work that LUC and Julie Martin Associates undertook as part of the BD5303 contract. BD5303 was a three-year study undertaken on behalf of Defra and Natural England that ‘Developed a Method for Reporting & Monitoring the Direct and Cumulative Impacts of Environmental Stewardship on the Maintenance and Enhancement of Landscape Character and Quality’.

1.3 As the approach to the identification of Indicators and Thresholds had been developed in BD5303, as part of this study, the team has considered how the approach could be refined further through the development of a separate bespoke database. This database has been developed in order to support a consistent approach for identifying and capturing values across all NCAs.

1.4 This study has been conducted in two phases:

- **Phase 1:** February – end March 2013 involved designing and developing the bespoke database and, using this database, assessed the landscape effects of ES against the identified indicators and thresholds in 50 NCAs that had been selected by Natural England
- **Phase 2:** April – September 2013 involved:
  - Refining the database further (primarily the use of base data but also alteration of one or two thresholds) based on the experience of Phase 1
  - Assessing the remaining 109 NCAs using the revised database. This included re-assessing the 18 NCAs that had originally been assessed in BD5303 but without the benefit of the database.
  - Checking the results of the assessment across all 159 NCAs to ensure consistency of approach and cross comparability, updating the first 50 where thresholds had changed, and ensuring that all updates in the approach were carried back into the assessments of the first 50 NCAs.

1.5 The first 50 NCAs prioritised those that encompass protected landscapes (AONBs, National Parks and Heritage Coasts), not covered in the initial 18 NCAs of BD5303, as well as those where Nature Improvement Area (NIA) projects have commenced.

1.6 Overall, the approach and database have been developed to ensure that the process is transparent, repeatable and future-proofed so that Natural England can implement and adapt this information source if required in the future.

1.7 The remainder of this report is set out as follow:

- **Chapter 2:** Describes the methodology developed under BD5303 – including a description of the data used.
  - **Chapter 3:** Describes the refinement of the methodology for the bespoke database
  - **Chapter 4:** Describes the bespoke database and its application as a tool to enable the consistent analysis of the landscape effects of ES at the NCA scale.
- 1.8 A separate **User's Guide** describes how the database can be used to assess the landscape effects of Environmental Stewardship at the NCA level. **This includes the 'rules' that have been developed to ensure the consistent completion of the database across different NCAs.**

## 2 Methodology developed under BD5303

### Overall aim

- 2.1 As part of the R & D study BD5303 an approach was developed to measure the effects of the *selection, use and location* of Environmental Stewardship on 'the maintenance and enhancement of landscape character and quality' at the level of individual NCAs.
- 2.2 The approach is specifically concerned with identifying the landscape impacts (positive and negative) of Environmental Stewardship (both ELS and HLS) rather than considering the wider effects of landscape change. It is concerned with identifying indicators and thresholds that enable assessment of the relative scale of landscape impact brought about by Environmental Stewardship.

### Definitions

- 2.3 The definitions adopted through this approach are:
  - **Indicator** – Measure of change in a key landscape characteristic or element
  - **Threshold** – Level and/or distribution of option uptake that would cause significant (i.e. noticeable) change to the landscape.

### The overall assessment approach

- 2.4 The approach is structured around a series of explicit evaluation and monitoring questions. The same broad assessment process can be applied to both the six Agricultural Landscape Types (ALTs) and NCAs. As part of BD5303 the approach was tested on 18 sample NCAs and all ALTs.
- 2.5 The six Agricultural Landscape Types (ALTs) are made up of groupings of NCAs that together cover the whole of England (identified by Swanwick et al (2007))<sup>1</sup>. These are: Chalk and Limestone Mixed; Eastern Arable; South East Mixed (Wooded); Eastern Mixed; Upland Fringe and Upland.
- 2.6 A central concern of the approach has been to consider what constitutes 'maintenance and enhancement of landscape character and quality'. There is a need for a reference source here i.e. agreed landscape objectives, such as those for the NCAs. These in turn should inform the development of indicators.

### Evaluation and monitoring questions

- 2.7 Experience from Countryside Quality Counts (CQC) suggests that the following key questions set the sequential steps by which to assess the overall landscape impacts of ES at the strategic level:

---

<sup>1</sup> Swanwick C, Hanley N and Termansen M (2007) Scoping Study on Agricultural Landscape Valuation. Report for Defra, London [www.naturalengland.org.uk/ourwork/landscape/englands/character/areas/default.aspx](http://www.naturalengland.org.uk/ourwork/landscape/englands/character/areas/default.aspx)

- 1) What are the key landscape characteristics / elements of the area that may be affected by ES?
  - 2) What are the objectives for those characteristics / elements?
  - 3) Which ES options potentially may influence the key characteristics / elements?
  - 4) What indicators could help in reaching judgements on whether these changes are consistent with landscape objectives for the area?
  - 5) What is the level of uptake of ES options that would influence key characteristics/ elements or add new features?
  - 6) What is the stock i.e. extent of the key characteristics / elements within the area (where relevant and possible to measure)?
  - 7) What are the indicator results i.e. levels of ES uptake as a % of overall stock
  - 8) What threshold level/ pattern of uptake might be significant to landscape character and quality?
  - 9) Are the effects on the landscape positive, neutral or negative (and why)?
- 2.8 These questions have framed the approach and have defined the structure of the outputs for each NCA, assessed as part of the BD5303 study. This has enabled a view to be reached on the effects of ES on landscape character and quality within these particular NCAs.

### Landscape themes

- 2.9 The overall assessment approach is structured around seven landscape themes with the above sequence of questions considered for each landscape theme in turn. These landscape themes are:
- Woodlands and tree cover (including traditional orchards)
  - Field patterns and boundary types
  - Agricultural land use
  - Traditional farm buildings
  - Historic environment (including parkland)
  - Semi-natural habitats
  - Coast

### Data needs

#### Base data

- 2.10 The base data required to inform the above questions are as follows:
- The key landscape characteristics of each NCA
  - The level of uptake of ES options (measured as area, length or item depending on the option) as provided in the Genesis dataset for the date September 2010.
  - The spatial distribution of this ES uptake across England by NCA, based on a national GIS dataset held by Natural England (cut to individual NCAs).



- The 'stock' (amount) of individual key landscape characteristics by NCA based on an analysis of relevant Land Cover Map (LCM) 2007 data.
- The spatial distribution of this stock based on GIS analysis of LCM 2007 by NCA.
- The length of boundary features by NCA taken from Countryside Survey 2007 field survey data; and woodland perimeters from LCM 2007 and the National Forest Inventory.
- Supporting digital data on the distribution of certain key landscape characteristics by NCA that are poorly or not covered by LCM, These include the National Forest Inventory and a range of datasets relating to the historic environment:
  - Traditional orchards: Traditional Orchards BAP Priority Habitat Inventory for England v2.2 available on MAGIC.
  - Parklands: English Heritage Registered Parks and Gardens dataset on MAGIC plus the separate GIS dataset held by Natural England on Extant Parkland 1995 and 1918 (allowing analysis of loss). This dataset only covers unregistered parks and gardens.
  - Historic Environment / Archaeology: Scheduled Monuments dataset on MAGIC, the Scheduled Monuments at Risk dataset plus the SHINE (Selected Heritage Inventory for Natural England) dataset held by Natural England. This is a national GIS dataset that identifies the main currently known archaeological features, both above and below ground.
  - English Heritage Listed Buildings.

### Use of these base data

2.11 The above base data have been used to directly inform the approach.

- 1) **Database:** The key datasets have been brought together in an Access database that captures (a) the key landscape characteristics of each NCA grouped by the themes noted above; (b) a comprehensive list of every ES option, their potential landscape effects (drawing on the BD5303 Field Survey results), and, additionally, information on the scheme to which each option belongs – (ELS, UELS, HLS); and (c) the uptake of each option by each NCA based on the data in Genesis.
- 2) **Database links:** For each key landscape characteristic, links have been made to those options that have the potential to affect it and in turn to the uptake of those options. Each option has only been linked to one key characteristic (to avoid double counting) but each key characteristic is likely to be affected by a suite of options, so any one characteristic is likely to be linked to a range of options.
- 3) **Stock:** In order to understand the stock (i.e. the extent of each key characteristic) in each NCA, analysis of LCM 2007 GIS data was undertaken. LCM 2007 data was cut to each NCA and analysed using GIS to calculate total stock under each broad habitat and sub-habitat. For some key characteristics, LCM 2007 data were not the best available and additional GIS data sources were interrogated as noted above, such as Natural England's Traditional Orchards Inventory and other historic environment data sources. For linear/boundary features, non-spatial field survey data from the 2007 Countryside Survey was interrogated as well as the National Forest Inventory from

the Forestry Commission to identify the boundary lengths of woodland blocks within each NCA.

- 4) **Published maps:** In piloting the approach under BD5303, an ESRI ArcReader published map was prepared for each NCA to identify the location of area options and stock. ArcReader is a GIS viewer that allows the user to zoom and pan around the map switching layers on and off as desired. For each NCA, the published map paired spatial stock and uptake data for each key characteristic allowing uptake to be viewed as a layer on top of the baseline stock data. The uptake data that was used for these maps was Natural England's ES uptake GIS dataset (2010). Using GIS, the national ES uptake dataset was cut to each NCA generating a polygon dataset of field parcels and option uptake within them. The uptake data was shown as either ELS, UELS or HLS. In addition, stock data (a combination of Land Cover Map 2007 and other data) was cut to each NCA in GIS. This was to make the maps faster and more efficient for the assessor.

## The separate steps in the approach

2.12 The description that follows sets out the separate steps in the approach that directly reflect the evaluation and monitoring questions set out in para 2.7 above. In this approach these questions are addressed **in turn for each of the landscape themes** (para 2.9).

### 1) What are the key characteristics / elements of the NCA?

- These key characteristics were informed by the database of NCA key characteristics developed under BD5303 with further information being sought as necessary from the original and fine-grained NCA descriptions.
- Only two or three of the most important characteristics or elements were recorded per theme (focusing solely on those that may be affected by ES)
- Where relevant, the distribution of key characteristics / elements within the landscape were noted to help assess the appropriateness of the location of ES options.

### 2) What are the relevant objectives?

- These are essential both to the development of indicators and to the assessment of effects.
- Objectives were informed by the original and fine-grained NCA assessments; they are common sense and brief.
- Where there were gaps in coverage of objectives for some landscape elements these were plugged, informed both by the stock and uptake data, as well as the landscape descriptions of the NCAs and, where they had been completed, by the Key Facts and Data of the NCA Profiles.
- The new objectives forming part of the updated NCA Profiles were not used during BD5303 as they were still in development and their concerns stretch beyond the application of agri-environment schemes.

### 3) Which ES options may potentially influence the key characteristics/ elements?

- In most cases relevant options were clear from review of the ES handbooks' option categories and were also informed by the BD5303 database (para 2.11(1)).
- Review of all the potential options is important to understand the impacts of ES option selection. Are the right options (i.e. those that will offer optimal landscape benefit) being selected?
- As noted in para 2.11(2) most key characteristics/elements will have the potential to be affected by more than one ES option.
- There is also a need to consider which options may be adding **new features** to the landscape and whether the landscape effects are likely to be positive or negative. New features primarily relates to the Arable options for buffer strips and other margin, block and plot options (again for Arable).

### 4) What indicators can help in reaching judgements?

- The indicators flow from both the objectives and from the options with the greatest uptake – and hence their selection requires judgement.
- In most cases 2-3 indicators per landscape theme were identified as sufficient.
- Sometimes there may be an objective but no relevant uptake (and occasionally uptake but no relevant objective).
- Indicators are similar but not necessarily the same for all landscapes of the same ALT, because key characteristics differ.
- Where possible indicators are expressed as ES uptake as a % of stock – but this is not possible for some themes which have no available stock figures.
- Where no stock figure was available, uptake level was expressed as a number (area or length) to form a simple indicator.
- For some themes surrogate stock data have been used, e.g. listed buildings as a surrogate for historic farm buildings – obviously these will provide less reliable indicators but they may still be better than no stock figure.

### 5) What is the level of uptake of relevant ES options?

- This relates directly back to Step 3 'Which ES options may potentially influence the key characteristics/ elements?'
- Generally uptake for an obvious group of options with similar or related landscape effects was recorded rather than uptake for individual options (although there are some exceptions to this, e.g. haymaking where an individual option will have a very distinctive landscape effect).
- The focus is on the options with the greatest uptake – again an element of judgement is required.
- Where there is no uptake (but uptake would have been expected) this was also noted.

### 6) What is the stock of key characteristics / elements?

- As identified in para 2.11(3) above, this was largely based on an analysis of LCM (2007).

- There were some difficulties in interpreting LCM classes and deciding which classes are most relevant to different ES option groups. As one example LCM has no separate recognition of wet grasslands (discussed in the supporting notes at the end of this section).

## 7) What are the indicator results?

- For each indicator this specifically compared area / length of relevant ES option uptake with the overall stock of that key characteristic to create a percentage figure.

## 8) What threshold level/ pattern of uptake might be significant to landscape character and quality?

- Uptake thresholds have been developed to indicate the level at which landscape effects may be considered 'significant'.
- Thresholds very broadly reflect the level at which effects are likely to be noticeable.
- They have also been set at levels that will help identify which NCAs are performing relatively better and which relatively worse.
- Because most thresholds are expressed as uptake as a % of stock, they can be the same across all NCAs.
- However where thresholds are based on uptake level only and not as % of stock they need to be interpreted with greater caution.
- This applies to deer fencing, fencing along watercourses, in-field trees, bankside trees, fallow plots etc.

## 9) What are the effects of ES on the landscape?

2.13 This question is answered under three headings.

### *Overall effects*

- Effects were classed as positive, neutral or negative by reference to:
  - i. the objectives for that theme
  - ii. the identified landscape effects of individual options (as described in the database.
  - iii. the uptake thresholds (as described above).
- In a few cases, e.g. wide buffer strips in arable, the effects will depend on the landscape context<sup>2</sup> and so no definitive assessment of effects may be made.

### *Distribution*

- Comments were made on the geographical distribution of effects where possible, using the published maps comparing the distribution of stock versus uptake.
- The assessment considers whether or not option uptake appears to occur in locations that are consistent with landscape character and objectives, and flags up any issues

<sup>2</sup> Wide buffer strips from the field surveys have been identified as positive in large-scale arable landscapes where they can help define overall field pattern, especially where this has been weakened by past hedgerow loss. On the other hand they can distort the field pattern where applied to small-scale-fields of irregular shape – detracting from their intrinsic shape and often traditional character, reflecting past medieval field patterns.

that may need further consideration (e.g. woodland that appears inappropriately located on moorland tops).

#### *Are the right ES options being selected?*

- This section comments on whether there has been sufficient uptake of the options with the greatest landscape benefit, and on whether there are other options that should be focused on in this NCA.

## **10) Overview**

2.14 At the end of each NCA assessment a summary was provided of:

- the themes affected/ not affected by ES;
- the respective influences of ELS and HLS; and
- whether ES is having a strongly positive, positive or neutral effect on the landscape as a whole, based on the nature and scale of its influence on all the different landscape themes.

## **Supporting notes on the approach**

2.15 The notes below describe further considerations that have guided the approach in terms of its application to the individual landscape themes.

### **Woodlands and tree cover**

- The assessment focused on broadleaved woodlands and tree cover as conifers are generally not managed under ES.
- In-field and hedgerow trees were included under this heading.
- Woodland management uptake levels (and hence the threshold of change) are relatively low across all NCAs primarily because the major driver of woodland management is the England Woodland Grant Scheme.
- There are no stock figures for in-field (or hedgerow) trees so a crude uptake level was used as an indicator here.
- LCM orchards does not provide a reliable stock measure – for example it does not record orchard areas in landscapes such as the Herefordshire Lowlands that definitely have orchards – for this reason the Traditional Orchards BAP Priority Habitat Inventory for England v2.2 available on MAGIC was used to provide the stock data for this element of the analysis.

### **Field patterns and boundary types**

- The NCAs with the greatest uptake of deer fencing, fencing along watercourses and wide buffer strips in arable were identified and comments on the effects of these options were made where appropriate.

### **Agricultural land use**

- The main indicators here are all those options that relate directly or indirectly to the retention of permanent pasture.

- Care is needed to avoid double counting of uptake relative to semi-natural grassland.
- Stock data are generally taken from LCM rough and/or permanent grassland.
- For arable fallow plots (potential negative effect) uptake level was used as a crude indicator (as clearly there is no stock as these are new introduced features).

### Traditional farm buildings

- Listed buildings were used as a surrogate stock measure – but note that many historic farm buildings are not listed and many listed buildings are not farm buildings, so this is less than ideal.
- Strongly positive effects (e.g. Orton Fells, North Pennines) may reflect presence of field barns (although these are not listed among the key characteristics for these areas).
- There are some signs that uptake levels are depressed in peri-urban areas where there is high demand for barn conversions to residential use.
- There is extremely low uptake of capital items (max 5-10 per NCA).
- As there is no uptake mapping, no comments on distribution have been made.

### Semi-natural habitats

- In upland and upland fringe ALTs, the stock of semi-natural grassland has been assumed to be LCM rough grassland.
- In lowland ALTs the stock of semi-natural grassland has been assumed to be LCM acid, calcareous and neutral grassland (these figures seem to be particularly unreliable, especially those for calcareous grassland).
- Again care was needed to avoid double counting of uptake relative to agricultural land use.

## The overall effectiveness of the approach

- 2.16 Overall, the approach has proved effective in distinguishing the different effects of ES in different types of landscape. Based on the simple premise of using the key landscape characteristics and their associated landscape objectives as a guide, and comparing (a) the relevant stock data for that key characteristic with (b) the relevant ES uptake data, the approach follows a simple step by step approach which clearly shows how the assessment of ES effects has been identified.

### Thresholds

- 2.17 As identified in academic literature, even where the science is strong, thresholds are rarely absolutes but are defined as a policy tool to aid decision-making. In the approach described above the thresholds are judgement-based closely informed by:
- The effects of ES options observed in the field (as part of BD5303) and recorded in the database.
  - The effects of different levels of uptake observed in the field (again as identified in BD5303).



- The uptake and stock levels identified across NCAs: these levels are essential to know before setting the thresholds because the change brought about by ES needs to be seen in context.
- 2.18 However, overall the threshold's **aim is to help judge the significance of the change in the landscape, positive or negative**, introduced by Environmental Stewardship option uptake. Fundamentally the thresholds have been set at:
- levels at which change would be expected to be noticeable; and
  - levels that help to differentiate between NCAs that are doing well under ES and NCAs that are doing less well.
- 2.19 As noted above, these thresholds are normally expressed as a specific percentage of relevant ES uptake relative to the stock. Where there is no stock data the threshold has been set as a set number or area of the landscape feature in question under option.
- 2.20 Higher thresholds are set for those indicators where:
- there is a high stock and where significant uptake is needed to create any noticeable effect in the wider landscape, such as the conservation of hedgerows (a key landscape feature in most landscapes) and retention of winter stubbles in arable landscapes; and
  - the stock is small and dwindling and therefore significant uptake is necessary as in some semi-natural habitats.
- 2.21 In addition, the thresholds are particularly high at 50% for the management of archaeological features on grassland and on arable. This reflects that the measurement of stock is accurate, based on the combined measurement of the area of scheduled monuments and of non-scheduled sites identified through Natural England's SHINE dataset. It also reflects that, compared to other options, very high levels of uptake have been recorded at least in some NCAs.
- 2.22 Conversely thresholds have been set low for woodland management (at 5% of total stock) recognising that the more dominant grant scheme for woodland is the England Woodland Grant Scheme (EWGS).
- 2.23 Thresholds have also been tempered by the ES uptake figures. For example, there has generally been very low uptake for traditional orchard ES options across the whole country and for parkland and hay meadows also. As a consequence the threshold has been set low with an uptake at 5% of stock for orchards and 10% for parklands and hay meadows to ensure that where there has been some noticeable uptake this is captured.

### Assessing landscape effects

- 2.24 In this approach, as described above, the effects of ES on landscape character and quality have been judged for each objective by comparing the indicator result (Question 7) with the stated threshold (Question 8) with effects classed as:
- **positive** if the threshold is met or exceeded;
  - **neutral** if the threshold is not met but the options are not having a negative effect on the landscape;
  - **negative** if one or more options are having a negative effect on the landscape (these options are few in number and relate to extensive protective fencing and some forms of arable plots) and have sufficient uptake to meet or exceed the stated threshold.

In some cases the threshold may be over 100% i.e there is more uptake than there is identified stock, This is primarily noted in the objectives for semi-natural habitats. In nearly all cases this is explained by a very high level of habitat restoration i.e where a habitat is being put back. It is also noted for archaeology on grassland and arable where the stock is based on the area of Scheduled Monuments and SHINE. In these cases it is assumed that, in addition, the FERS and FEPS are responding to local archaeological sites identified on the Historic Environment Record of the local authority.

2.25 The approach then takes a further two steps (a) to summarise the effects of ES on the individual landscape themes of each NCA; and (b) to draw together these summaries for each theme to provide an overview of the landscape effects of ES on the NCA as a whole, as follows:

### *Assessing the effect of ES on each landscape theme*

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

- 1 point: ES is having a **strongly positive** landscape effect with most (or key) identified thresholds of individual indicators (within that theme) being met or exceeded;
- 0.5 points: ES is having a **positive** landscape effect with some identified thresholds for individual indicators (within that theme) being met;
- 0 points: ES is having a **neutral** landscape effect with most or all the identified thresholds not being met.

(This is described further in paras 4.10 – 4.15)

### *Overview of the landscape effects of ES on the NCA (or ALT) as a whole*

2.27 In turn, to summarise the effects of ES on the landscape of the NCA as a whole, the assessment findings are drawn together as follows:

- **Strongly positive** for the landscape of the NCA where the sum of the theme 'scores' = 4.5 – 6
- **Positive** for the landscape of the NCA where the sum of the theme 'scores' = 2 – 4
- **Neutral** for the landscape of the NCA where the sum of the theme 'scores' = 0 – 1.5

2.28 In the case of the NCA (and ALT) assessments described here, the purpose has been to assess the effect of ES over *whole landscapes*. It has been important, therefore, to keep the assessment scores simple against the huge amounts of other data that are being analysed in terms of the measurement of stock and the range of options and their uptake being considered. In this assessment the score of 'positive' brings together those options that are enhancing, conserving and maintaining the landscape. This recognises that it is as important to conserve existing landscape features as it is to restore or re-create them.



## 3 Refining the methodology

- 3.1 This study has considered how the approach developed under BD5303 and described in the last Chapter could be refined further through the development of a separate bespoke database and further consideration of the objectives and indicators. This Chapter sets out how the method has been refined in order to support a consistent approach for identifying and capturing values across all NCAs.
- 3.2 In short the main developments and changes to the method adopted in this study compared to the original work under BD5303 are as follows:
- This study has utilised 2013 ES uptake data from Genesis rather than the 2010 data used in BD5303. This brings the assessment up-to-date. In addition, these data are considered by Natural England to be more accurate than the 2010 data both in the analysis of the uptake figures and the split between the NCAs.
  - As a consequence of using this updated data no spatial analysis has been undertaken of the distribution of stock versus uptake, other than aspects of the historic environment. This is because there is no current dataset that shows the spatial distribution of ES options other than as point data. In addition, although the location of options is very important in terms of their landscape effects, we found during BD5303 that the broad brush nature of LCM significantly reduces the value of this spatial analysis and the costs of undertaking this additional work were felt to be disproportionately high compared to the added insights that it might provide.
  - The use of a bespoke database ensures greater consistency across the individual NCA assessments and allows the data on ES uptake and stock to be prepopulated, greatly increasing the clarity of the thought process and the speed at which the assessments can be done, as well as ensuring cross comparability between the individual NCA assessments. It also greatly increases the speed of any subsequent analysis (such as the number of NCAs showing a particular characteristic) as all the relevant data and assessment results are held in the database and can be extracted into a spreadsheet for rapid analysis.
- 3.3 This Chapter describes the data sources, the refinement of objectives, indicators and thresholds and identification of relevant uptake data that have been used in the bespoke database. Then Chapter 4 describes the development of the bespoke Access database, application of the approach, issues identified and the overall benefits.

### The 50 NCAs assessed during Phase 1

- 3.4 The 50 NCAs assessed during Phase 1 of this study are shown in **Table 3.1**.

**Table 3.1: The 50 NCAs used in Phase 1 reported at the end of March 2013**

<b>Agricultural Landscape Type</b>	<b>NCA code</b>	<b>NCA name</b>
Chalk and Limestone Mixed	30	SOUTHERN MAGNESIAN LIMESTONE
Chalk and Limestone Mixed	92	ROCKINGHAM FOREST
Chalk and Limestone Mixed	95	NORTHAMPTONSHIRE UPLANDS
Chalk and Limestone Mixed	107	COTSWOLDS
Chalk and Limestone Mixed	110	CHILTERNS
Chalk and Limestone Mixed	116	BERKSHIRE AND MARLBOROUGH DOWNS
Chalk and Limestone Mixed	119	NORTH DOWNS
Chalk and Limestone Mixed	125	SOUTH DOWNS
Chalk and Limestone Mixed	127	ISLE OF WIGHT
Chalk and Limestone Mixed	130	HAMPSHIRE DOWNS
Chalk and Limestone Mixed	132	SALISBURY PLAIN AND WEST WILTSHIRE DOWNS
Chalk and Limestone Mixed	136	SOUTH PURBECK
Chalk and Limestone Mixed	137	ISLE OF PORTLAND
Chalk and Limestone Mixed	141	MENDIP HILLS
Eastern Arable	39	HUMBERHEAD LEVELS
Eastern Arable	48	TRENT AND BELVOIR VALES
Eastern Arable	77	NORTH NORFOLK COAST
Eastern Arable	80	THE BROADS
Eastern Arable	82	SUFFOLK COAST AND HEATHS
Eastern Arable	86	SOUTH SUFFOLK AND NORTH ESSEX CLAYLAND
SE Mixed (Wooded)	81	GREATER THAMES ESTUARY
SE Mixed (Wooded)	121	LOW WEALD
SE Mixed (Wooded)	124	PEVENSEY LEVELS
SE Mixed (Wooded)	126	SOUTH COAST PLAIN
SE Mixed (Wooded)	131	NEW FOREST
SE Mixed (Wooded)	135	DORSET HEATHS

Western mixed	20	MORECAMBE BAY LIMESTONES
Western mixed	31	MORECAMBE COAST AND LUNE ESTUARY
Western mixed	32	LANCASHIRE AND AMOUNDERNESS PLAIN
Western mixed	61	SHROPSHIRE, CHESHIRE AND STAFFORDSHIRE PLAIN
Western mixed	62	CHESHIRE SANDSTONE RIDGE
Western mixed	67	CANNOCK CHASE AND CANK WOOD
Western mixed	89	NORTHAMPTONSHIRE VALES
Western mixed	97	ARDEN
Western mixed	104	SOUTH HEREFORDSHIRE AND OVER SEVERN
Western mixed	108	UPPER THAMES CLAY VALES
Upland Fringe	38	NOTTINGHAMSHIRE, DERBYSHIRE AND YORKSHIRE COALFIELD
Upland Fringe	103	MALVERN HILLS
Upland Fringe	144	QUANTOCK HILLS
Upland Fringe	147	BLACKDOWNS
Upland Fringe	151	SOUTH DEVON
Upland Fringe	152	CORNISH KILLAS
Upland	19	SOUTH CUMBRIA LOW FELLS
Upland	53	SOUTH WEST PEAK
Upland	65	SHROPSHIRE HILLS
Upland	98	CLUN AND NORTH WEST HEREFORDSHIRE HILLS
Upland	145	EXMOOR
Upland	153	BODMIN MOOR
Upland	156	WEST PENWITH
Upland	157	THE LIZARD

## Data sources

### 3.5 The following data sources were made used in the bespoke database.

## Uptake data

### Genesis data 2013

- 3.6 The BD5303 study was underpinned by the Natural England Genesis data on ES option uptake for 2010. In order to make the assessments as up to date as possible, an extract from the live Genesis database showing ES option uptake across England was provided by Natural England. This dataset details uptake against every ES option by NCA at February 2013 and was provided as a spreadsheet. Using this updated data was particularly important as since 2010 the classic schemes have ended and land may have passed from the classic schemes to ES.
- 3.7 The ES option uptake is measured as an area, a length, an item or a number of agreements depending on the option.

### Spatial ES option uptake data 2010

- 3.8 Additionally, a GIS dataset for ES options that was provided by Natural England for BD5303 was utilised for one of the historic environment objectives. The data is dated 2010 and it was not possible to update this data for this study, as a full spatial dataset of ES uptake has not been prepared since this date.

## Stock data

### Land Cover Map (LCM) 2007

- 3.9 Land Cover Map 2007 was provided by Natural England. This GIS dataset has been derived from satellite images and digital cartography and gives land cover information for the entire UK. Although the LCM data does not exactly match the requirements of the study in terms of mapping key landscape features, it was advised that we should use this data so that there was a constant running through the assessment. As an example of the limitations of LCM for this work, there is no LCM category for wet grassland, so in this case, rough grassland has been used as a proxy for this landscape feature. A considerable amount of effort has gone into trying to find the best broad habitat sub-categories to reflect different key characteristics and also to prevent double counting of stock but this is not an exact science. Nevertheless, having a measure of stock against which to compare ES uptake is a major step forward for this type of assessment. The use of LCM across all NCAs provides a constant measure greatly increasing the accuracy of cross comparison between NCAs.
- 3.10 The list of Broad Habitats and Broad Habitat Sub-categories in LCM is shown below in **Table 3.2**.

**Table 3.2: LCM Broad habitats and sub-categories**

Broad habitat	Broad habitat sub category	Code
Acid grassland	Acid grassland	Ga
Acid grassland	Bracken dominated grassland	Br
Arable and horticulture	Arable bare	Aba
Arable and horticulture	Arable Stubble	Ast
Arable and horticulture	Arable unknown	Au
Arable and horticulture	Arable wheat	Aw

Arable and horticulture	Orchard	O
Bog	Bog	Bo
Bog	Bog, grass dominated	Bg
Bog	Bog, heather dominated	Bh
Broad leaved, mixed and yew woodland	Deciduous	D
Broad leaved, mixed and yew woodland	Mixed	M
Broad leaved, mixed and yew woodland	Scrub	Sc
Built up areas and gardens	Bare	Ba
Built up areas and gardens	Suburban	Us
Built up areas and gardens	Urban	U
Built up areas and gardens	Urban industrial	Ui
Calcareous grassland	Calcareous grassland	Gc
Coniferous woodland	Conifer	C
Coniferous woodland	Felled	Fd
Coniferous woodland	Recent (<10 years)	Cn
Dwarf shrub heath	Burnt heather	Hb
Dwarf shrub heath	Gorse	Hg
Dwarf shrub heath	Heather and dwarf shrub	H
Dwarf shrub heath	Heather grass	Hga
Fen marsh and swamp	Fen marsh and swamp	F
Freshwater	Flooded	Wf
Freshwater	Lake	Wl
Freshwater	River	Wr
Improved grassland	Hay	Gh
Improved grassland	Improved	Gi
Inland rock	Despoiled land	Ud
Inland rock	Inland rock	Ib

Littoral rock	Littoral rock	Lr
Littoral sediment	Littoral mud	Lm
Littoral sediment	Littoral sand	Ls
Littoral sediment	Saltmarsh	Sm
Littoral sediment	Saltmarsh grazing	Smg
Montane habitats	Montane habitats	Z
Neutral grassland	Neutral grassland	Gn
Rough low-productivity grassland	Rough low-productivity grassland	Gr
Salt water	Estuary	We
Salt water	Sea water	Ws
Supra-littoral rock	Supra-littoral rock	Sr
A. Supra-littoral sediment	Sand dune	Sd
Supra-littoral sediment	Sand dune with shrubs	Sds
Supra-littoral sediment	Shingle	Sh
Supra-littoral sediment	Shingle vegetated	Shv

### *Countryside Survey 2007 field survey data*

- 3.11 LCM covers area features i.e. land cover but it does not provide a measure of linear features. In successive studies that have assessed the landscape effects of agri-environment schemes no stock data has been available against which to assess the uptake of linear features. For this study Countryside Survey data have been extracted from the published CIS files for the linear results of the 2007 Survey. These have been downloaded from the CS2007 website. The estimates for the NCAs are based on the proportional mix of land classes within each of them and assumes that each is representative of the general type of landscape in the land classes. Thus the data show what you would expect 'on average' in that NCA and do not represent real data collected from the CS grid squares within them. Statistically using Countryside Survey results to make such estimates, one should be looking at larger areas (circa 4000 km<sup>2</sup>). The estimates are more unreliable the smaller the area - some NCAs are very small. This needs to be borne in mind when reviewing the results of the assessment.
- 3.12 Thus the estimates represent the 'average conditions' in each NCA based on the combination of land classes occurring there. The Countryside Survey squares may be in other NCAs. This is clearly a significant limitation of the approach but represents a major step forward in agri-environment monitoring to the extent that this is the first time that a stock figure has been estimated for linear features.
- 3.13 The one specific **caveat** that needs to be placed on the current assessment of linear feature stock is the lengths of **stone walls** in the Chalk and Limestone Mixed Agricultural

Landscape Type. The issue is that the model has proportionally attributed the length of stone walls to all NCAs in this ALT whereas the walls are only found in the Limestone NCAs of this ALT (such as the Mendips and Cotswolds) and not the Chalk NCAs. Unfortunately this error cannot be corrected as it reflects the way in which the data has been generated. However, it does not overly affect the current assessment. This is because (a) in the Chalk NCAs the stone wall objective was not selected and therefore did not affect the outcomes of the assessment; and (b) in the Limestone NCAs the stone wall threshold was largely not being achieved even with a low stock level. An increased level of stock in these NCAs will only accentuate this failure.

### *Supporting GIS data on distribution of key characteristics poorly or not covered by LCM*

- 3.14 In addition, there were other key characteristics where LCM was considered very unreliable in providing a measure of stock or where LCM simply did not provide the stock data. In these cases other stock data have been used and calculated per NCA (as in BD5303), as follows:
- **Woodland:** The Forestry Commission National Forest Inventory was used to calculate the amount and type of woodland in each NCA. It was additionally used to calculate the perimeter of woodlands in NCAs.
  - **Traditional Orchards:** The Traditional Orchards BAP Priority Habitat Inventory for England v2.2 has been used to calculate coverage of orchards as traditional orchards are not well represented in Land Cover Map, as in BD5303.
  - **Parklands:** The total stock of parklands has been identified from a combination of the English Heritage Register of Parks and Gardens dataset plus the separate GIS dataset held by Natural England on Extant Parkland 1995 and 1918 (allowing analysis of loss). The latter dataset only covers unregistered parks and gardens.
  - **Historic Environment/Archaeology:** The extent of the archaeological resource has been identified from the English Heritage Scheduled Monuments dataset plus the SHINE (Selected Heritage Inventory for Natural England) dataset held by Natural England. The latter is a national GIS dataset that identifies main currently known archaeological features, both above and below ground, excluding Scheduled Monuments. Where relevant, this has been limited to stock of the above features on a particular habitat from LCM, namely, arable (for objective E1) and grassland (objective E3).
  - **Listed Buildings:** The English Heritage Listed Buildings data has been used in this assessment. This has been used as a **proxy figure** of stock when assessing the relative effect of uptake of ES options relating to the maintenance and restoration of historic farm buildings. It is appreciated that this is a poor proxy but it is the only figure available as English Heritage's assessment of farmsteads across England has yet to be completed.
- 3.15 In the case of **semi-natural habitats**, the area of most habitats is recorded in LCM and it is these figures that have been entered into the bespoke database. However, there were considerable concerns about the accuracy of these data, especially for semi-natural grasslands and wetland habitats. For this reason, at the beginning of Phase 2, detailed consideration was given to replacing the LCM stock figures for semi-natural habitats with the area calculated for the BAP Priority Habitats identified in Nature on the Map (MAGIC).



- 3.16 The objectives where it was considered that BAP Priority Habitat data might be used as possible alternatives to LCM data to provide the stock measure are indicated in **Table 3.3** below:

**Table 3.3: Objectives where the area of BAP Priority Habitats has been compared with the equivalent LCM stock data**

Objective <sup>1</sup>	Subject	BAP Priority Habitats
C3	Wet grasslands	Coastal and floodplain grazing marsh Purple moor grass and rush pasture
F1	Lowland species-rich grassland	Lowland meadows Lowland calcareous grassland
F2	Upland species-rich grassland	Upland calcareous grassland Limestone pavement
F3	Upland hay meadows	Upland hay meadows
F4	Lowland hay meadows	Same as F1
F5	Lowland heathland	Lowland heathland Lowland dry acid grassland
F6	Wetland	Fen Lowland raised bog Reedbed
F7	Moorland	Upland heathland
F8	Blanket bog, mires and flushes	Blanket bogs

1: The prefix is the letter of the Landscape Theme – C= Agricultural Land Use; F = Semi-natural Habitats

- 3.17 Maps were prepared comparing the spatial distribution across England of the existing (LCM-based) stock measures and these potential new stock measures; and the strengths and weaknesses of the alternative datasets were considered. This exercise revealed that if the BAP data were to be substituted for LCM data, in many cases new issues would arise. This is because the BAP Priority Habitats data tend to focus on specific habitat types and do not necessarily correspond well to the general land cover types that have been used elsewhere in this assessment. In addition, the BAP habitat types do not always form easily recognisable landscape elements or features. Use of BAP data might therefore divert attention from the broader landscape impacts of ES. It could also introduce a focus on habitats (as such) that would be inappropriate to this study and would risk duplicating the separate ES biological monitoring work that is being undertaken.
- 3.18 Nonetheless it was recognised that in some cases the BAP data are more accurate and detailed than the corresponding LCM data. Hence a decision was taken to refer to the BAP data and the mapping described above, in addition to the LCM data, when making judgements on ES landscape impacts, where relevant and helpful. In a few cases, where there were obvious difficulties or anomalies with the LCM stock data, reliance was instead



placed on the relevant BAP data. When this occurred, a note was made within the database.

- 3.19 A further issue that emerged during Phase 2 was that the area of BAP Priority Habitat by NCA for fens identified in Nature on the Map on MAGIC differs from that reported in the Key Facts and Data for each NCA on the Natural England website. This is because the area of fen generally is thought to be inaccurate and, erring on the side of caution, the figures have been removed from the Key Facts and Data unless there has been some form of verification whereas they have not been removed from Nature on the Map.
- 3.20 When referring to BAP data, all areas have been taken from the Key Facts and Data and noted in the database. It was also noted that the data on area of BAP coastal and floodplain grazing marsh are considered to be inaccurate but at least form a cross comparison with the proxy data taken from LCM.

## Developing objectives, indicators and thresholds and identification of relevant uptake data

### Review of key landscape characteristics

- 3.21 As part of the BD5303 contract, a searchable database of NCA key characteristics was developed. This database organises key landscape 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 (i.e. those aspects of the landscape that may be influenced by ES) was extracted, edited and manually entered into the database, focusing on those key characteristic elements of the landscape that may be directly influenced by ES. As far as possible these were accompanied by enough supporting information to give an understanding of *why* these elements are important in the landscape.
- 3.22 The seven themes against which key landscape characteristics were identified (as in BD5303) are:
- A. Woodland and tree cover
  - B. Field pattern and boundary types
  - C. Agricultural land use
  - D. Traditional farm buildings
  - E. Historic environment
  - F. Semi-natural habitats
  - G. Coast

### Developing objectives

- 3.23 Building on the pilot work undertaken for BD5303, a generic list of 46 objectives has been developed. Each objective relates to a key landscape feature and the list represents the full set of potential objectives required for rolling out the assessment across all 159 NCAs (both upland and lowland) taking account of the scope of ES. The number of objectives per theme is summarised in **Table 3.4** and set out in **Appendix 1**.

**Table 3.4: Number of objectives per theme**

Themes	Number of objectives								
A. Woodland and trees	A1	A2	A3	A4	A5	A6	A7	A8	A9
B. Field pattern and boundary types	B1	B2	B3	B4	B5	B6	B7	B8	
C. Agricultural land use	C1	C2	C3	C4	C5	C6	C7		
D. Traditional farm buildings	D1	D2							
E. Historic environment	E1	E2	E3	E4	E5	E6	E7	E8	
F. Semi-natural habitats	F1	F2	F3	F4	F5	F6	F7	F8	F9
G Coast	G1	G2	G3						

### Deciding on the classification of individual objectives (which theme?)

3.24 The full set of objectives has been defined through consideration of all relevant key landscape characteristics that had been identified as part of the fine-grained landscape work (2004) and the identified landscape effects of individual ES options and groups of options with the same landscape effect identified through BD5303.

3.25 This then raised the question of which landscape objectives go under which themes? In the main this was self-evident e.g. with woodlands considered under the theme for 'Woodland and Trees'. However, there are certain objectives that could fall in more than one landscape theme. These, and the decisions reached, are as follows:

- **Traditional orchards:** Many would regard these as an historic feature, which indeed they are, but they have been put under 'Woodland and Trees' because they clearly affect the treed character of the landscape.
- **Parkland:** Parklands are clearly historic features but the ES options are for 'Parkland and Wood Pasture'. After consideration parklands have been put under the 'Historic Environment' theme as this, logically, is where they would be expected as it is their historic design and resonance that makes them stand out in the landscape. However, it does cause some anomalous results (which are noted) in places such as the New Forest where the relevant options have been primarily selected for the conservation of wood pasture.
- **Wet grassland:** This objective is made up of two slightly different features (a) rush pastures that may be associated with river valleys but may equally be associated with many other grasslands associated with impeded drainage (e.g. Culm grassland) – these are covered by options for the management of rush pasture; and (b) river floodplain grasslands which are now often improved but where there are opportunities to enhance their wetland characteristics. Under ES these are covered by HLS options HK9 - 14 which support the maintenance, restoration and creation of wet grassland characteristics for breeding and overwintering waders. In landscape terms these are helping to maintain and restore wetland habitat in what may otherwise be intensively farmed landscapes. It might be thought that these two groups should have been considered separately but in many areas they are closely interrelated. Equally it might be thought that the objective for wet grassland should fall under the theme of 'Semi-natural Habitats' but often these are not semi-natural habitats nor are the options for semi-natural habitats – these are agriculturally managed areas and therefore are

included under the 'Agricultural land use' theme. Nevertheless, the area of the two BAP Priority Habitats 'Coastal and Floodplain Grazing Marsh' and 'Purple Moor Grass and Rush Pasture' have been used as a comparator to assess the stock of wet grasslands (para 3.18) compared to the proxy measure of Rough Grassland which is the nearest stock measure that could be identified through LCM.

- **Water meadows:** In the ES Handbooks these are seen as historic features which indeed they are, but they have been classified under the 'Agricultural land use' theme as, in landscape terms, they are seen as part of the 'wet grassland landscape' forming part of the strongly riverine character of the valley floor.
- **Ponds:** The management of water features under ES is primarily to enhance their wildlife value. Yet, in landscape terms, they are most commonly identified for their historic associations (the dew ponds of the chalk downs, monastic fish ponds, and the hammer ponds of the Wealden iron industry). Water features have therefore been included under the 'Historic Environment' theme. Where there has been a high uptake for the relevant ES options but it is clear that this is primarily for wildlife benefit, as in the conservation management of gravel pits and subsidence flashes, the relevant objectives have been selected and assessed but the overall assessment for the 'Historic Environment' theme does not place great weight on the assessment results for these water features as it could give skewed results for the Historic Environment (paras. 4.10 – 4.15).

### Developing indicators

- 3.26 For each objective, a linked indicator was generated drawing on the experience gained through the work undertaken under BD5303. Indicators are expressed as a percentage of ES uptake versus stock (either as a percentage of area or a percentage of length depending on how the relevant ES options are measured). As in the BD5303 assessment, where no stock figure is available, uptake level (area, length or number as in trees) may form a simple indicator.
- 3.27 During BD5303 and at the outset of this study significant effort was put into ensuring that the right stock data was selected for each indicator (paras 3.9 – 3.20) and also the right ES uptake data (paras 3.31 – 3.34).

### Setting thresholds

- 3.28 Building on the experience of the BD5303 pilots, a draft threshold was set for each indicator and tested through some early piloting of the newly formed database. These thresholds help the assessor to evaluate whether ES is having a positive, neutral or negative effect on an objective.
- 3.29 As in BD5303, these thresholds are normally expressed as a specific percentage of relevant ES uptake relative to the stock. Where there is no stock data the threshold has been set as a set number or area of the landscape feature in question under option. The factors that have influenced the threshold levels are the same as in BD5303 and are set out in paras 2.17 – 2.23).

### Final list of objectives and indicators

- 3.30 All of the above information has been aggregated into a master table which sets out each of the objectives per theme, with its corresponding indicator, relevant uptake and stock data as well as the threshold. This information is shown in **Appendix 1**.

## Detailed description of uptake for each theme

- 3.31 **Appendix 2** then details the individual ES options that have been selected against each objective and linked indicator. As will be evident from this table, the relevant ES uptake against individual objectives and indicators may be a single ES option but is more often made up of a range of ES options that are deemed to contribute to that particular landscape objective. The selection of these options has built on detailed work undertaken during BD5303 that viewed options in the field and assessed their landscape effects.
- 3.32 In selecting the options care has been taken to ensure that all options against a particular indicator are measured in the same way, as clearly numbers and areas cannot be added together, nor can km lengths and areas. Also in the way that the database has been set up, it is possible to view the contribution of every single option to the achievement of each objective in each NCA, including the relative contribution of ELS, UELS and HLS, as these may be important considerations in subsequent analysis.
- 3.33 As for the stock data, care has been taken to ensure that an option is only attributed to one objective to avoid double counting. Only in one case has an option group been attributed to more than one objective and that is the management, restoration and creation of water meadows which are attributed both to the objective for wet grassland and to the objective for the conservation of traditional water meadows. As uptake levels are so low for these options this 'double counting' will have no effect on the overall assessment.
- 3.34 All uptake data has been extracted from Genesis capturing ES uptake at the end of February 2013. The one exception is uptake for the objective E2 'Retention and management of archaeology on arable as part of wider conservation objectives'. Uptake data for this objectives has been calculated using GIS data for ES option uptake for 2010 that was provided by Natural England. The specific purpose of this objective was to see if 'other' non-archaeological ES options were being used to help conserve the archaeological resource while also meeting other wider conservation objectives, such as options for resource protection and habitats that require the reversion of arable land to grassland. The database results suggest that, in reality, archaeology is rarely being protected by 'other' relevant ES options.
- 3.35 The only option types that were NOT included in the assessment, are as follows:
- **Universal requirements.**
  - Most **capital items** as in most cases it is not clear to what situation they apply (e.g. Bracken clearance could be applied to many situations). They are also generally but not always supplementary to a chosen HLS option (and if measured as an area could result in double counting). The main capital items that have been included are those that clearly apply to one asset and that asset may be a key landscape features, as in the coppicing of bankside trees.
  - **Supplements** as these will end up in double counting in that they are supplementary to other options. These have only been included where they have a very noticeable landscape effect in their own right, primarily the re-wetting of blanket bog and lowland hay making.
  - Options **new in 2013** and therefore up-take likely to be very low.
  - Options that were **dropped pre RDPE** or are currently excluded.
  - Options that are likely to be **largely invisible** in the landscape e.g. those relating to the under-sowing of maize crops and the like for natural resource protection, and also bird winter feeding options.

- EF1,EK1, EL1 Field Corners where landscape effect is so dependent on where they are located and therefore it is very difficult to judge whether they are positive or negative.
- As above, for many of the seeding mixes (e.g. Bird seed mixes) where they can be applied as a buffer strip or a block and therefore their landscape effect can be highly variable (as an edge treatment they can be positive but as a block their effects will be adverse on the landscape). The same also applies to the creation of in-field grass areas for resource protection.

## 4 The Access database and application of the approach

### Development of the Access database

4.1 The bespoke database developed for this study has the following elements:

- Clear data entry forms have been developed allowing those unfamiliar with access databases to complete the individual NCA analyses.
- For each NCA there is one data entry form for each theme
- For each theme the database and the data entry forms have been structured around the nine evaluation and monitoring questions identified in Chapter 2.
- The data entry forms have been built up horizontally moving from left to right through the evaluation questions making it easier to see the flow of information relating to each evaluation question (rather than vertically as in the BD5303 NCA indicator and threshold Word tables).
- For each NCA the database pre-populates the data entry forms for each theme with the relevant information **for each objective** in turn under that theme. This information is (a) the area of ES uptake by relevant options; (b) the area / length of the relevant stock of the key landscape feature for that objective; (c) the relevant threshold; and (d) based on the information entered, the database calculates the indicator result (uptake as a percentage of stock).
- Thus completion of the data entry form per theme, once the key characteristics have been entered, requires the selection of the most appropriate objectives under that theme (responding to the key characteristics).
- The assessor then needs to (a) check the pre-populated data; (b) check the indicator score derived by the database from a comparison of relevant stock and uptake data; and look at BAP stock data where relevant (para 3.18); (c) identify whether for that objective the effect on the landscape is positive, neutral or negative (see para 2.24).
- Once all objectives have been assessed for an individual theme, the assessor has to identify whether the sum of the results for the selected objectives under that theme are together having a strongly positive, positive, neutral or negative effect on the landscape (para 2.26). This is purposefully a qualitative assessment rather than a numerical calculation (see paras 4.20 – 4.15).
- On the basis of the identified results for each landscape theme, the database then calculates the result for the NCA as a whole by summing the overall results for each theme (para 2.27).

4.2 In **Table 4.1** below the overall structure of the Microsoft Access database is illustrated. The database has been developed to facilitate the assessment and follows the logical thought process that the assessors need to follow in order to arrive at the final assessment for each NCA.

4.3 The following key is used in **Table 4.1** 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

**Table 4.1: Database structure**

Information	Method of inputting data into database
<b>Evaluation for each theme</b>	
<b>1. Key characteristics/elements</b>	<p>Key characteristics per NCA are pre-populated from the NCA key characteristics database.</p> <p>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.</p> <p>The key characteristics are edited down to a more succinct list for each theme. These inform the selection of objectives and indicators by the assessor.</p> <p>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 characteristics for each NCA to reflect the key landscape <b>elements</b> 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.</p>
<b>2. Objectives</b>	<p>For each theme, a list of objectives was generated at the outset of the study directly linked to each key landscape element likely to be identified. These objectives were largely informed by the objectives developed during the BD5303 pilot.</p> <p>These objectives are presented in the data entry form as a list for each theme.</p>
<b>3. Selection of relevant objectives</b>	<p>A tickbox selection allows the assessor to mark which objectives are relevant to the NCA being assessed.</p> <p>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.</p>
<b>4. Indicators</b>	<p>Each objective has a corresponding indicator expressed as a percentage of uptake versus stock (measured as area, length, area or number).</p>
<b>5. Uptake</b>	<p>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 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>

Information	Method of inputting data into database
<b>6. Stock</b>	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 previous Chapter.  Stock calculations have been generated for each indicator for <b>all</b> NCAs in order for the relevant stock figure to be pulled through to the right location.
<b>7. Thresholds</b>	Threshold values have been set for each indicator for <b>all</b> NCAs. These were set up in a way that allows for 'tweaked' threshold values to recalculate ' <i>on the fly</i> '. <sup>3</sup> 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.
<b>8. Indicator results</b>	Database analysis of the stock versus uptake values allows this to be prepopulated on screen – usually as a percentage value.  These calculations have been set up as a formula that undertakes the calculation within the database. This has been done for <b>all</b> NCAs.
<b>9. Effects</b> Are the effects on the landscape: positive, neutral or negative?	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.
<b>10. Are the ES option types with greatest potential landscape benefit being taken up?</b>	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.
<b>11. Overall effects on theme</b>	Following completion of the assessment for each relevant objective, an overall effect of ES on 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 4.10 – 4.15).
<b>Summary results for all themes</b>	
<b>Theme effect scores</b>	The 'scores' from 11 are automatically assigned to the overall results summary with one 'score' for each theme. The scores are assigned as follows: <ul style="list-style-type: none"> <li>• Strongly positive = 1</li> <li>• Positive = 0.5</li> <li>• Neutral = 0</li> <li>• Not applicable = 0</li> </ul>
<b>Total score for overall effect</b>	Based on the summation of the theme effect scores, an overall score for each NCA is generated by the database. The scores are assigned as follows: <ul style="list-style-type: none"> <li>• 0 – 2 = Neutral</li> <li>• 2.5 – 4 = Positive</li> </ul>

<sup>3</sup> '*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
	<ul style="list-style-type: none"> <li>4.5+ = Strongly positive</li> </ul>
<b>ES seems to be benefiting the landscape in respect of:</b>	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.
<b>ES seems to be having more limited impact on:</b>	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.
<b>Detailed comments</b>	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

## Applying the approach

- 4.4 The overall approach has been applied to all 159 NCAs as identified above other than the Isles of Scilly. Specific aspects that are worth noting are:

### Differences from the BD5303 approach

- 4.5 As already identified, the bespoke database provides a formalised approach for achieving the same outputs per NCA as that developed under BD5303, greatly assisted by the pre-population of the data entry forms with the necessary supporting data.
- 4.6 Other than the significant automation of the approach, the other main differences from BD5303 are as follows:
- Number of selected key characteristics and objectives:** Under BD5303, as the whole process was manual, the number of identified key characteristics and associated objectives were limited to 2-3 per theme per NCA. Using the bespoke database, greater automation has allowed a wider range of key characteristics to be identified per theme, where these are all important to the landscape of the NCA. In turn, this has meant that the number of selected objectives relating to these characteristics has increased. This increase in the number of selected objectives particularly relates to:
    - Theme A Woodlands and trees: In many NCAs woodlands, field trees, hedgerow trees, bankside trees and orchards will all be important key landscape characteristics meaning that at least 5 objectives may be selected in a single NCA
    - Theme F Semi-natural habitats: Many NCAs have a considerable range of semi-natural habitats and this is reflected in the number of objectives selected under this theme.
  - Number of ES options linked to each objective:** Again, as the database has automated the whole process, a fuller range of options has been linked to each objective (so long as they all have a similar landscape outcome). Thus the options linked to the sum of objectives in the database make up the majority of ES options with the exception of (a) certain capital items; and (b) where similar options have different forms of measurement and therefore cannot be added together – this primarily relates

to Arable plot and block options where some are measured by area and others by number (of plots).

- 4.7 A further difference has been reference to the area of BAP Priority Habitats as a cross check on the area of semi-natural habitats, as discussed in paras 3.17 – 3.20 under Theme F Semi-natural habitats and also for objective C3 for wet grasslands. The one semi-natural habitat where the BAP habitat data on extent is not deferred to is under objective F7 for Moorland. This is because the relevant BAP figure 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.

### Setting rules for assessors

- 4.8 To ensure consistency in how the database is completed for each NCA a series of rules have 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. These rules are as follows (these are also repeated in the separate User's Guide:

#### 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.

##### 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. It is here that the area of BAP Priority Habitats has been noted (paras 3.17 – 3.20).

### *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 is 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 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.

4.9 **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 landscape effects of ES per theme

4.10 Assessment of the landscape effect of ES against individual objectives is straightforward in that it is directly guided by whether the identified threshold for that objective is met or not (para 2.24). However, 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.

4.11 As already noted, this assessment is based on a three point 'score' as follows:

- 1 point: ES is having a **strongly positive** landscape effect with most (or key) identified thresholds of individual indicators (within that theme) being met or exceeded.
- 0.5 points: ES is having a **positive** landscape effect with some identified thresholds for individual indicators (within that theme) being met
- 0 points: ES is having a **neutral** landscape effect with most or all the identified thresholds not being met.

4.12 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.

4.13 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).

4.14 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):

4.15 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

4.16 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

4.17 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.

## Identified data issues

4.18 Through this study it has become clear that there are some significant data issues. The absolute accuracy of the results therefore cannot be assured. The main issues are:

### Uptake data

- **Lack of comparability between 2010 and 2013 data:** At the outset we compared 2010 and 2013 Genesis data and found that some options had had dramatic increases whereas others had had significant decreases. This is in part explained by the unallocated options (see below), but not entirely as there are some examples such as option EK2 *Low input grasslands* where this would not explain the difference: EK2 shows a reduction between 2010 and 2013, but the unallocated amount is only 30ha. Looking across the uptake data for each NCA, they show some large decreases in uptake that cannot easily be explained. However, it is considered by Natural England that the 2013 uptake data used in this study is significantly more accurate than the 2010 data. This reflects that a number of fundamental glitches in data recording (nothing to do with scheme/agreement changes etc) have, since 2010, been cleaned up.
- **There is a considerable % of the uptake data (2013) that remains unallocated:** There remains a large amount of unallocated data within the Genesis dataset. This is where the NCA details have not been captured within the (largely) automated Genesis system. Particular options that are often unallocated include options B1-14 *Boundary features* (amounting to over 100,000km of uptake); EC23 *Establishment of hedgerow trees* (approximately 1165 trees); option EC3 *Maintenance of woodland fences* (over 2000km), ED1 *Maintenance of weatherproof traditional farm buildings* (approximately 1,375,231sq m), EF2 *Wild bird seed mixture*, EF6 *overwintering stubble*, EF22 *Extended overwintered stubble* (almost 7,500ha); EJ11 *Maintenance of watercourse fencing* (almost 650km). Overall there is:
  - Over 185,000ha of area-based uptake is unallocated
  - Over 105,000km of length-based uptake is unallocated
  - 8500 No. item-based uptake is unallocated.
- Uptake data can range from significantly exceeding the threshold in some NCAs to negligible in others: Clearly it has been the purpose of this assessment to identify where uptake is significant and where it is not. But in the option uptake for archaeology it is very noticeable that in some NCAs uptake can exceed the threshold by 200% and in one case by 900% (particularly noticeable in the NCAs of the Chalkland and Limestone ALT) while in others the uptake is negligible. These differences may be the case but the differences are extreme which beg questions.

### Stock data

- **LCM stock measures:** The LCM stock measures are likely to be fairly accurate when reflecting large total areas of stock but have the potential to become less accurate the smaller the areas. This illustrated by orchards. LCM data for orchards was trialled, but mapping within LCM 2007 is limited to the north east of the country. Orchards are a tricky class to identify through satellite image classification as spectrally they are very similar to other habitats (parkland, gardens with scattered trees, scrub with underlying

grassland etc), and in the areas where they are present they tend to be present at quite a low level (probably < 1% of the area across the full satellite scene), which makes it difficult to find sufficient good training areas for accurate classification. It is for this reason that BAP Priority Habitat and other data have been used as comparators for the characteristics where LCM appears most problematic, although it is noted that BAP figures are also unreliable for certain habitats (para 3.18 – 3.20).

- **Linear features:** The limitations of the stock data have been outlined in paras 3.11-3.13.

4.19 Despite the limitations identified above, the database still provides the most accurate assessment to-date of stock compared to ES uptake. It therefore provides a step forward in thinking recognising that all previous assessments have relied on uptake figures alone.

### Overall benefits of the approach

4.20 This assessment approach provides a **consistent** assessment of the landscape effects of ES **within and across** NCAs. This is potentially an important policy tool. In particular the approach helps to identify:

- the overall effect of ES on the landscape of each NCA as a whole (the primary purpose of the approach) with the assessment closely guided by the key landscape characteristics of the NCA in question;

4.21 The approach also:

- Takes account of the stock of the individual characteristic landscape elements and is judged through a series of landscape thresholds (one for each selected landscape objective) that ensures consistency of assessment between different NCAs.
- Provides a consistent framework against which to consider the landscape effects of ES. This is achieved by reviewing the effects of ES within and across particular themes A Woodland and trees; B Field patterns and boundary features; C Agricultural land uses; D Traditional farm buildings; E Historic environment; F Semi-natural habitats; and G the Coast. This allows the balance of landscape effects between these different themes to be quickly and easily understood, so giving a more nuanced view of the landscape effects of ES on the landscape of each NCA as a whole and between NCAs.
- Enables quick identification of where the emphasis of ES uptake should be focused in the future within each theme for the benefit of the landscape.
- Helps to identify which options that would particularly benefit the landscape are being poorly utilised.
- Can inform policy by illustrating where options and their level of uptake are having a strongly beneficial effect on the landscape and conversely where they are not.





# Appendix 1

**Table A1: Master table of objectives, their linked indicators, thresholds, nature of options selected, their unit of measurement and the relevant stock data**

Code	Key word	Objective	Indicator	Threshold	Unit	Description of uptake	Measurement unit	Description of stock
<b>Woodland/tree cover</b>								
A1	Woodland	Active woodland management	% of woodland managed under ES	5	%	Woodland management	ha	NFI broadleaved, coppice and wood pasture
A2	Woodland	Woodland protection	% of woodland perimeter with fencing maintained under ES	10	%	Woodland fencing plus UC5	km	NFI broadleaved and coppice perimeter
A3	Woodland	Woodland creation	Woodland creation under ES as % of existing woodland	1	%	Woodland creation	ha	NFI broadleaved and coppice
A4	Woodland	Semi-natural woodland regeneration	% of scrub maintained as successional areas under ES	10	%	Maintenance of successional areas	ha	NFI scrub
A5	In-field trees	Protection of in-field trees	Number of in-field trees protected under ES	1500	per NCA	In-field trees	tree	N/A

Code	Key word	Objective	Indicator	Threshold	Unit	Description of uptake	Measurement unit	Description of stock
A6	Hedgerow trees	Protection of hedgerow trees	Area of hedgerow trees protected under ES	500	ha per NCA	Protection of hedgerow trees	ha	N/A
A7	Hedgerow trees	Renewal of hedgerow trees	Number of hedgerow trees established under ES	500	per NCA	Establishment of hedgerow trees	tree	N/A
A8	Riparian trees	Management of riverside / bankside trees	Number of bankside trees coppiced	500	per NCA	CI coppicing of bankside trees	tree	N/A
A9	Orchards	Management and extension of traditional orchards	% of traditional orchards managed under ES	5	%	Orchard creation; orchard management and restoration	ha	Orchards BAP habitat
<b>Field patterns and boundary types</b>								
B1	Hedgerows	Management and restoration of hedgerows	% of hedgerows managed under ES	20	%	Hedgerow management; hedgerow restoration and planting; management of hedgerows of very high environmental value; hedge and ditch management; C1 hedgerows	km	CS hedges
B2	Hedgerows	Creation of new hedgerow lengths	Length of new hedgerows planted	10	km per NCA	CI New hedge planting	km	N/A

Code	Key word	Objective	Indicator	Threshold	Unit	Description of uptake	Measurement unit	Description of stock
B3	Ditches	Management and restoration of ditches / dykes	Length of ditches / dykes managed under ES	500	km per NCA	Ditch management; CI restoration / creation of ditches and dykes	km	N/A
B4	Stone walls	Management and restoration of stone walls	% of stone walls managed under ES	20	%	Stone wall protection and management; stone wall restoration; CI restoration of stone walls'	km	CS walls
B5	Earth banks/stone-faced hedgebanks	Management and restoration of banks	% of banks managed under ES	20	%	Earth bank management; earth bank restoration; stone-faced hedgebank management; CI restoration of stone-faced hedgebanks; CI restoration of earth banks'	km	CS banks/grass strips
B6	Wider buffer strips	Reinforcement of field patterns in arable areas	Area of wider buffer strips / yr round headlands created under ES	1000	ha per NCA	Wider buffer strips in arable; floristically enhanced buffer strips unharvested cereal headlands	ha	N/A
B7	Deer fencing	Minimal negative landscape impact from deer fencing	Length of ES deer fencing	5	km per NCA	Deer fencing	km	N/A

Code	Key word	Objective	Indicator	Threshold	Unit	Description of uptake	Measurement unit	Description of stock
B8	Fencing along watercourses	Minimal negative landscape impact from fencing along watercourses	Length of ES fencing along watercourses	30	km per NCA	Fencing along watercourses	km	N/A
<b>Agricultural land use</b>								
C1	Arable land	Diversity of winter arable landscape	% of arable land with overwintering stubbles under ES	20	%	Overwintering stubbles	ha	LCM Aba, Ab, Ast, Au, Aw
C2	Permanent grasslands	Retention of mixed/pastoral character	% of improved grassland managed as low input grassland under ES	20	%	Grassland creation to prevent erosion and encourage water infiltration and a reduction in nutrient leaching; permanent low-input grassland management	ha	LCM Gi, Gh
C3	Wet grasslands	Retention and management of wet grasslands	% of rough grassland managed as wet grassland under ES	20	%	Wet grassland creation; wet grassland management or restoration; rush pasture management; traditional water meadow management or restoration	ha	LCM Gr

Code	Key word	Objective	Indicator	Threshold	Unit	Description of uptake	Measurement unit	Description of stock
C4	Rough pasture	Retention and management of rough pasture	% of rough grassland managed as semi-improved/rough grassland under ES	20	%	Semi-improved/rough grassland creation; semi-improved/rough grassland management or restoration; enclosed upland semi-natural/rough pasture management; upland semi-natural/rough pasture management or restoration;	ha	LCM Gr
C5	Mixed stocking	Retention/restoration of traditional mixed stock grazing	% of permanent pasture managed as mixed stocking under ES	20	%	Mixed stocking	ha	LCM Gh, Gi, Gr
C6	Water meadows	Retention and management of traditional water meadows	Area of traditional water meadow management under ES	100	ha per NCA	Traditional water meadow management or restoration	ha	N/A
C7	Fallow plots	Minimal negative landscape impact from fallow plots	Number of ES fallow plots	500	per NCA	Fallow plots/margins	plot	N/A
<b>Building materials/design</b>								
D1	Traditional farm buildings	Retention of historic farm buildings	% of historic buildings maintained under ES	10	%	Historic buildings	m <sup>2</sup> /100 = 41pprox. no	Count of listed buildings

Code	Key word	Objective	Indicator	Threshold	Unit	Description of uptake	Measurement unit	Description of stock
D2	Traditional farm buildings	Restoration of historic farm buildings	Number of agreements with historic building restoration			CI Restoration of historic buildings	No of agreements	N/A
Historic environment								
E1	Archaeological features	Retention and management of archaeology on arable	% of archaeological resource on arable under relevant ES archaeology options for arable	50	%	Archaeological features taken out of cultivation; Reduced depth of cultivation	ha	SMR plus SHINE on arable
E2	Archaeological features	Retention and management of archaeology on arable as part of wider conservation objectives	% of archaeological resource on arable protected by 'other' ES options that have a positive impact on archaeology'	25	%	Semi-improved grassland creation; Grassland creation to prevent erosion and encourage water infiltration and a reduction in nutrient leaching; Species rich grassland creation; Lowland heathland creation BUT ONLY option H04.  Uptake of these options is limited to locations where they are found on SMR or SHINE sites using GIS for the purposes of assessing this objective.	ha	SMR plus SHINE on arable

Code	Key word	Objective	Indicator	Threshold	Unit	Description of uptake	Measurement unit	Description of stock
E3	Archaeological features	Retention and management of archaeology on grass	% of archaeological resource on grassland under relevant ES archaeology options for grassland	50	%	Management of archaeological sites under grassland.	Ha	SMR plus SHINE on grass
E4	Archaeological features	Removal of archaeological features from cultivation	Land removed from cultivation as % of vulnerable SMAR area	50	%	Archaeological features taken out of cultivation; Reduced depth of cultivation	ha	SMAR area where vulnerability relates to landscape management practices
E5	Archaeological features	Retention and increased visibility of archaeology on moorland	Number of agreements with archaeological resource on moorland under relevant ES option for archaeology			Maintaining archaeological visibility on moorland;	No of agreements	SMR plus SHINE on moorland (LCM Ga, Bo, Bg, Bh, Hb, Hg, H, Hga)
E6	Parkland	Retention and management of parkland/wood pasture	% of parkland/wood pasture under ES options for parkland/wood pasture	10	%	All parkland sub-categories	ha	EH Registered Parks and Gardens plus NE unregistered parks and gardens
E7	Water features	Retention and management of larger water features	Number of larger water features (over 100m2) managed under ES	20	per NCA	Q2	no	N/A



Code	Key word	Objective	Indicator	Threshold	Unit	Description of uptake	Measurement unit	Description of stock
E8	Small ponds (under 100m2)	Retention and management of small ponds	Number of small ponds (under 100m2) managed under ES	20	per NCA	Q1	no	N/A
<b>Semi-natural habitats</b>								
F1	Species-rich grassland (lowland)	Management/restoration/creation of lowland species-rich grassland	% of acid, calcareous and neutral grassland managed as species-rich grassland under ES	20	%	HK6, HK7, HK8	ha	LCM Ga, Gc, Gn in ALTs 1-4
F2	Species-rich grassland (upland)	Management/restoration/creation of upland species-rich grassland	% of rough, calcareous and neutral grassland managed as species-rich grassland under ES	20	%	HK6, HK7, HK8	ha	LCM Gr, Gc, Gn in ALTs 5-6
F3	Upland hay meadows	Management/restoration of upland hay meadows	% of rough, calcareous and neutral grassland managed as hay meadow under ES	10	%	L20, HK18 Hay making supplement	ha	LCM Gr, Gc, Gn in ALTs 5-6
F4	Lowland hay meadows	Management of lowland hay meadows	% of acid, calcareous, neutral and wet grassland managed as hay meadows	10	%	HK18 Hay making supplement	ha	LCM Ga, Gc, Gn in ALTs 1-4,

Code	Key word	Objective	Indicator	Threshold	Unit	Description of uptake	Measurement unit	Description of stock
F5	Lowland heathland	Management/restoration/creation of lowland heathland	% of lowland heathland managed as such under ES	10	%	Lowland heathland creation; lowland heathland management or restoration	ha	LCM Hb, Hg, H, Hga
F6	Wetland	Management/restoration/creation of fen, lowland raised bog and reedbed	% of fen marsh and swamp managed as wetland under ES	20	%	All wetland sub-categories	ha	Fen, lowland raised bog and reedbed habitat
F7	Moorland	Maintenance and restoration of moorland	% of moorland managed as such under ES	50	%	Maintenance and restoration of moorland, creation of upland heathland	ha	LCM Ga, Bo, Bg, Bh, Hb, Hg, H, Hga
F8	Upland blanket bog	Rewetting of areas of blanket bog, mires and flushes	% of blanket bog rewetted	20	%	L13. Moorland re-wetting supplement	ha	LCM Bg, Bh, Bo
F9	Cattle grazing on moorland	Retention/restoration of traditional cattle grazing on moorland commons	% of moorland with cattle grazing under ES	5	%	Cattle grazing on moorland	ha	LCM Ga, Bo, Bg, Bh, Hb, Hg, H, Hga
<b>Coast</b>								
G1	Saltmarsh	Conservation and management of salt marsh	% of salt marsh managed as such under ES	10	%	Salt marsh management or restoration	ha	Sm, Smg

Code	Key word	Objective	Indicator	Threshold	Unit	Description of uptake	Measurement unit	Description of stock
G2	Sand dunes	Conservation and management of sand dunes	% of sand dunes managed as such under ES	10	%	Sand dune management or restoration	ha	Sd, Sds
G3	New coastal habitat	Creation of new coastal habitats	Area of new coastal habitat created on farmland under ES	100	ha per NCA	Inter-tidal and saline habitat creation; vegetated shingle and sand dunes creation	ha	N/A

## Appendix 2

**Table A2: Selection of ES options relating to each objective and linked indicator**

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
Woodland/tree cover							
A1	Active woodland management	HC7	C7	Maintenance of woodland	HLS	Woodland management	ha
A1	Active woodland management	HC8	C8	Restoration of woodland	HLS	Woodland management	ha
A2	Woodland protection	OC3	C3	Maintenance of woodland fences	OELS	Woodland fencing	km
A2	Woodland protection	EC3	C3	Maintenance of woodland fences	ELS	Woodland fencing	km
A2	Woodland protection	UOC5	C5	Sheep fencing around small woodlands	UOELS	Woodland fencing	km
A2	Woodland protection	UC5	C5	Sheep fencing around small woodlands	UELS	In-field trees	km
A3	Woodland creation	HC10	C10	Creation of woodland outside Severely Disadvantaged Areas	HLS	Woodland creation	ha
A3	Woodland creation	HC9	C9	Creation of woodland in Severely Disadvantaged Areas	HLS	Woodland creation	ha

<b>Code</b>	<b>Objective</b>	<b>Option code</b>	<b>Simplified option code</b>	<b>Option name</b>	<b>Scheme</b>	<b>Sub category</b>	<b>Units</b>
A4	Semi-natural woodland regeneration	HC15	C15	Maintenance of successional areas and scrub	HLS	Maintenance of successional areas	ha
A4	Semi-natural woodland regeneration	HC16	C16	Restoration of successional areas and scrub	HLS	Maintenance of successional areas	ha
A4	Semi-natural woodland regeneration	HC17	C17	Creation of successional areas and scrub	HLS	Maintenance of successional areas	ha
A5	Protection of in-field trees	EC1	C1	Protection of in-field trees on arable land	ELS	In-field trees	Tree
A5	Protection of in-field trees	OHC1	C1	Protection of in-field trees on rotational land	OHLS	In-field trees	Tree
A5	Protection of in-field trees	HC1	C1	Protection of in-field trees on arable land	EHLS	In-field trees	Tree
A5	Protection of in-field trees	OC1	C1	Protection of in-field trees on rotational land	OELS	In-field trees	Tree
A5	Protection of in-field trees	HC2	C2	Protection of in-field trees on grassland	EHLS	In-field trees	Tree
A5	Protection of in-field trees	EC2	C2	Protection of in-field trees on grassland	ELS	In-field trees	Tree
A5	Protection of in-field trees	OC2	C2	Protection of in-field trees on organic grassland	OELS	In-field trees	Tree
A5	Protection of in-field trees	OHC2	C2	Protection of in-field trees on	OHLS	In-field trees	Tree

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
				organic grassland			
A5	Protection of in-field trees	HC5	C5	Ancient trees in arable fields	HLS	In-field trees	Tree
A5	Protection of in-field trees	HC6	C6	Ancient trees in intensively managed grass fields	HLS	In-field trees	Tree
A6	Protection of hedgerow trees	EC24	C24	Hedgerow tree buffer strips on cultivated land NEW in 2010	ELS	Protection of hedgerow trees	ha
A6	Protection of hedgerow trees	OHC24	C24	Hedgerow tree buffer strips on rotational land	OHLS	Protection of hedgerow trees	ha
A6	Protection of hedgerow trees	HC24	C24	Hedgerow tree buffer strips on cultivated land	EHLS	Protection of hedgerow trees	ha
A6	Protection of hedgerow trees	OC24	C24	Hedgerow tree buffer strips on rotational land NEW in 2010	OELS	Protection of hedgerow trees	ha
A6	Protection of hedgerow trees	OC25	C25	Hedgerow tree buffer strips on organic grassland NEW in 2010	OELS	Protection of hedgerow trees	ha
A6	Protection of hedgerow trees	OHC25	C25	Hedgerow tree buffer strips on grassland NEW in 2010	OHLS	Protection of hedgerow trees	ha
A6	Protection of hedgerow trees	EC25	C25	Hedgerow tree buffer strips on grassland NEW in 2010	ELS	Protection of hedgerow trees	ha
A6	Protection of hedgerow trees	HC25	C25	Hedgerow tree buffer strips on grassland NEW in 2010	EHLS	Protection of hedgerow trees	ha
A7	Renewal of hedgerow trees	EC23	C23	Establishment of hedgerow	ELS	Establishment of	Tree

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
				trees by tagging NEW in 2010		hedgerow trees	
A7	Renewal of hedgerow trees	OC23	C23	Establishment of hedgerow trees by tagging NEW in 2010	OELS	Establishment of hedgerow trees	Tree
A8	Management of riverside / bankside trees	CBT	CBT	Coppicing bankside trees	HLSC	Coppicing of bankside trees	Number
A9	Management and extension of traditional orchards	HC18	C18	Maintenance of high-value traditional orchards	HLS	Orchard management & restoration	ha
A9	Management and extension of traditional orchards	HC19	C19	Maintenance of traditional orchards in production	HLS	Orchard management & restoration	ha
A9	Management and extension of traditional orchards	HC20	C20	Restoration of traditional orchards	HLS	Orchard management & restoration	ha
A9	Management and extension of traditional orchards	HC21	C21	Creation of traditional orchards	HLS	Orchard creation	ha
<b>Field patterns and boundary types</b>							
B1	Management and restoration of hedgerows	EB1	B1	Hedgerow management on both sides of a hedge	ELS	Hedgerow Management	km
B1	Management and restoration of hedgerows	OB1	B1	Hedgerow management on both sides of a hedge	OELS	Hedgerow Management	km
B1	Management and restoration of hedgerows	EB10	B10	Combined hedge and ditch management (incorporating EB3 Enhanced hedgerow management)	ELS	Hedge & Ditch management	km



Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
B1	Management and restoration of hedgerows	OB10	B10	Combined hedge and ditch management(incorporating OB3/EB3 Enhanced hedgerow management)	OELS	Hedge & Ditch management	km
B1	Management and restoration of hedgerows	UOB14	B14	Hedgerow restoration	UOELS	Hedgerow restoration and planting	km
B1	Management and restoration of hedgerows	OB14	B14	Hedgerow restoration	OELS	Hedgerow restoration and planting	km
B1	Management and restoration of hedgerows	EB14	B14	Hedgerow restoration	ELS	Hedgerow restoration and planting	km
B1	Management and restoration of hedgerows	UB14	B14	Hedgerow restoration	UELS	Hedgerow restoration and planting	km
B1	Management and restoration of hedgerows	OB2	B2	Hedgerow management on one side of a hedge	OELS	Hedgerow Management	km
B1	Management and restoration of hedgerows	EB2	B2	Hedgerow management on one side of a hedge	ELS	Hedgerow Management	km
B1	Management and restoration of hedgerows	OB3	B3	Enhanced hedgerow management	OELS	Hedgerow Management	km
B1	Management and restoration of hedgerows	EB3	B3	Enhanced hedgerow management	ELS	Hedgerow Management	km
B1	Management and restoration of hedgerows	OB8	B8	Combined hedge and ditch management (incorporating OB1/EB1 Hedgerow	OELS	Hedge & Ditch management	km

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
				management)			
B1	Management and restoration of hedgerows	EB8	B8	Combined hedge and ditch management (incorporating EB1 Hedgerow management)	ELS	Hedge & Ditch management	km
B1	Management and restoration of hedgerows	EB9	B9	Combined hedge and ditch management (incorporating EB2 Hedgerow management)	ELS	Hedge & Ditch management	km
B1	Management and restoration of hedgerows	OB9	B9	Combined hedge and ditch management (incorporating OB2/EB2 Hedgerow management)	OELS	Hedge & Ditch management	km
B1	Management and restoration of hedgerows	HB11	HB11	Management of hedgerows of very high environmental value (both sides)	HLS	Management of hedgerows of very high environmental value	km
B1	Management and restoration of hedgerows	HB12	HB12	Management of hedgerows of very high environmental value (one side)	HLS	Management of hedgerows of very high environmental value	km
B1	Management and restoration of hedgerows	HF	HF	Hedgerow supplement – removal of old fence lines	HLSC	Hedgerows	km
B1	Management and restoration of hedgerows	HR	HR	Hedgerow restoration including laying, coppicing and gapping up	HLSC	Hedgerows	km
B1	Management and restoration of hedgerows	HR2010	HR	Hedgerow restoration includes laying, coppicing and gapping	HLSC	Hedgerows	km

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
				up			
B1	Management and restoration of hedgerows	HSC	HSC	Hedgerow supplement – substantial pre-work	HLSC	Hedgerows	km
B1	Management and restoration of hedgerows	HSL	HSL	Hedgerow supplement – top binding and staking	HLSC	Hedgerows	km
B2	Creation of new hedgerow lengths	PH	PH	Hedgerow planting – new hedges	HLSC	New hedge planting	km
B3	Management and restoration of ditches / dykes	EB6	B6	Ditch management	ELS	Ditch management	km
B3	Management and restoration of ditches / dykes	OB6	B6	Ditch management	OELS	Ditch management	km
B3	Management and restoration of ditches / dykes	EB7	B7	Half ditch management	ELS	Ditch management	km
B3	Management and restoration of ditches / dykes	OB7	B7	Half ditch management	OELS	Ditch management	km
B3	Management and restoration of ditches / dykes	DR	DR	Ditch, dyke and rhine restoration	HLSC	Restoration / creation of ditches and dykes	km
B3	Management and restoration of ditches / dykes	HB14	HB14	Management of ditches of very high environmental value NEW in 2010	HLS	Ditch management	km
B3	Management and restoration of ditches / dykes	WDC	WDC	Creation of ditches – rhines and dykes	HLSC	Restoration / creation of ditches and dykes	km

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
B3	Management and restoration of ditches / dykes	WGC	WGC	Creation of gutters	HLSC	Restoration / creation of ditches and dykes	km
B4	Management and restoration of stone walls	EB11	B11	Stone wall protection and maintenance	ELS	Stone wall protection and management	km
B4	Management and restoration of stone walls	UOB11	B11	Stone wall protection and maintenance on/above the moorland line	UOELS	Stone wall protection and management	km
B4	Management and restoration of stone walls	UB11	B11	Stone wall protection and maintenance on or above the Moorland Line	UELS	Stone wall protection and management	km
B4	Management and restoration of stone walls	OB11	B11	Stone wall protection and maintenance	OELS	Stone wall protection and management	km
B4	Management and restoration of stone walls	UB17	B17	Stone wall restoration	UELS	Stone wall restoration	km
B4	Management and restoration of stone walls	UOB17	B17	Stone wall restoration	UOELS	Stone wall restoration	km
B4	Management and restoration of stone walls	TW	TW	Stone wall supplement – top wiring	HLSC	Restoration of stone walls	km
B4	Management and restoration of stone walls	WR2010	WR	Stone wall restoration	HLSC	Restoration of stone walls	km
B4	Management and restoration of stone walls	WR	WR	Stone wall restoration	HLSC	Restoration of stone walls	km

<b>Code</b>	<b>Objective</b>	<b>Option code</b>	<b>Simplified option code</b>	<b>Option name</b>	<b>Scheme</b>	<b>Sub category</b>	<b>Units</b>
B4	Management and restoration of stone walls	WRD	WRD	Stone wall supplement – difficult sites	HLSC	Restoration of stone walls	km
B4	Management and restoration of stone walls	WRQ	WRQ	Stone wall supplement – stone from quarry	HLSC	Restoration of stone walls	km
B4	Management and restoration of stone walls	WRS	WRS	Stone wall supplement – stone from holding	HLSC	Restoration of stone walls	km
B5	Management and restoration of banks	OB12	B12	Earth bank management on both sides NEW in 2010	OELS	Earth bank management	km
B5	Management and restoration of banks	EB12	B12	Earth bank management on both sides NEW in 2010	ELS	Earth bank management	km
B5	Management and restoration of banks	UOB12	B12	Earth bank management (both sides) on/above the moorland line	UOELS	Earth bank management	km
B5	Management and restoration of banks	UB12	B12	Earth bank management on both sides on or above the Moorland Line	UELS	Earth bank management	km
B5	Management and restoration of banks	OB13	B13	Earth bank management on one side NEW in 2010	OELS	Earth bank management	km
B5	Management and restoration of banks	EB13	B13	Earth bank management on one side NEW in 2010	ELS	Earth bank management	km
B5	Management and restoration of banks	UB13	B13	Earth bank management on one side on or above the Moorland	UELS	Earth bank management	km

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
				Line			
B5	Management and restoration of banks	UB15	B15	Stone-faced hedgebank restoration	UELS	Stone-faced hedgebank restoration	km
B5	Management and restoration of banks	UOB15	B15	Stone-faced hedgebank restoration	UOELS	Stone-faced hedgebank restoration	km
B5	Management and restoration of banks	UOB16	B16	Earth bank restoration	UOELS	Earth bank restoration	km
B5	Management and restoration of banks	UB16	B16	Earth bank restoration	UELS	Earth bank restoration	km
B5	Management and restoration of banks	UB4	B4	Stone-faced hedgebank management on both sides on or above the Moorland Line	UELS	Stone-faced Hedgebank management	km
B5	Management and restoration of banks	OB4	B4	Stone-faced hedgebank management on both sides	OELS	Stone-faced Hedgebank management	km
B5	Management and restoration of banks	EB4	B4	Stone-faced hedgebank management on both sides	ELS	Stone-faced Hedgebank management	km
B5	Management and restoration of banks	UOB4	B4	Stone-faced hedgebank management (both sides) on/above ML	UOELS	Stone-faced hedgebank management	km
B5	Management and restoration of banks	UB5	B5	Stone-faced hedgebank management on one side on or above the Moorland Line	UELS	Stone-faced Hedgebank management	km

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
B5	Management and restoration of banks	EB5	B5	Stone-faced hedgebank management on one side	ELS	Stone-faced Hedgebank management	km
B5	Management and restoration of banks	UOB5	B5	Stone-faced hedgebank management (one side) on/above ML	UOELS	Stone-faced hedgebank management	km
B5	Management and restoration of banks	OB5	B5	Stone-faced hedgebank management on one side	OELS	Stone-faced Hedgebank management	km
B5	Management and restoration of banks	EC	EC	Creation of new earth banks NEW in 2010	HLSC	Restoration of earth banks	km
B5	Management and restoration of banks	ER	ER	Earth bank restoration	HLSC	Restoration of earth banks	km
B5	Management and restoration of banks	ER2010	ER	Earth bank restoration	HLSC	Restoration of earth banks	km
B5	Management and restoration of banks	ERC	ERC	Casting up supplement – hedge bank options	HLSC	Restoration of earth banks	km
B6	Reinforcement of field patterns in arable areas	HE10	E10	Floristically enhanced grass buffer strips (non-rotational)	HLS	Floristically enhanced buffer strip	ha
B6	Reinforcement of field patterns in arable areas	EE12	E12	Supplement to add wildflowers to buffer strips and field corners	ELS	Floristically enhanced buffer strip	ha
B6	Reinforcement of field patterns in arable areas	HE2	E2	4 m buffer strips on cultivated land	EHLS	Wider buffer strips in arable (4/6m-12m)	ha



Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
B6	Reinforcement of field patterns in arable areas	EE2	E2	4 m buffer strips on cultivated land	ELS	Wider buffer strips in arable (4/6m-12m)	ha
B6	Reinforcement of field patterns in arable areas	OE2	E2	4 m buffer strips on rotational land	OELS	Wider buffer strips in arable (4/6m-12m)	ha
B6	Reinforcement of field patterns in arable areas	OHE2	E2	4 m buffer strips on rotational land	OHLS	Wider buffer strips in arable (4/6m-12m)	ha
B6	Reinforcement of field patterns in arable areas	OE3	E3	6 m buffer strips on rotational land	OELS	Wider buffer strips in arable (4/6m-12m)	ha
B6	Reinforcement of field patterns in arable areas	OHE3	E3	6 m buffer strips on rotational land	OHLS	Wider buffer strips in arable (4/6m-12m)	ha
B6	Reinforcement of field patterns in arable areas	HE3	E3	6 m buffer strips on cultivated land	EHLS	Wider buffer strips in arable (4/6m-12m)	ha
B6	Reinforcement of field patterns in arable areas	EE3	E3	6 m buffer strips on cultivated land	ELS	Wider buffer strips in arable (4/6m-12m)	ha
B6	Reinforcement of field patterns in arable areas	EE9	E9	6 m buffer strips on cultivated land next to a watercourse NEW in 2010	ELS	Wider buffer strips in arable (4/6m-12m)	ha
B6	Reinforcement of field patterns in arable areas	OHE9	E9	6 m buffer strips on rotational land next to a	OHLS	Wider buffer strips in arable (4/6m-12m)	ha
B6	Reinforcement of field patterns in arable areas	OE9	E9	6 m buffer strips on rotational land next to a	OELS	Wider buffer strips in arable (4/6m-12m)	ha

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
B6	Reinforcement of field patterns in arable areas	RHF10	F10	No longer used Non payment version of HF10	EHLS	Unharvested cereal headlands	ha
B6	Reinforcement of field patterns in arable areas	HF10	F10	Unharvested cereal headlands	HLS	Unharvested cereal headlands	ha
B6	Reinforcement of field patterns in arable areas	REF10	F10	No longer used Non payment version of EF10	ELS	Unharvested cereal headlands	ha
B6	Reinforcement of field patterns in arable areas	EF10	F10	Unharvested cereal headlands	ELS	Unharvested cereal headlands	ha
B6	Reinforcement of field patterns in arable areas	HF10NR	F10	Unharvested cereal headlands NR	HLS	Unharvested cereal headlands	ha
B6	Reinforcement of field patterns in arable areas	HF14	F14	Unharvested, fertiliser-free conservation headland	HLS	Unharvested cereal headlands	ha
B6	Reinforcement of field patterns in arable areas	RHF14	F14	No longer used Non payment version of HF14	HLS	Unharvested cereal headlands	ha
B6	Reinforcement of field patterns in arable areas	HF14NR	F14	Unharvested, fertiliser-free conservation headland NR	HLS	Unharvested cereal headlands	ha
B6	Reinforcement of field patterns in arable areas	OJ9	J9	12 m buffer strips for watercourses on rotational land NEW in 2009	OELS	Wider buffer strips in arable (4/6m-12m)	ha
B6	Reinforcement of field patterns in arable areas	HJ9	J9	12 m buffer strips for watercourses on cultivated land	EHLS	Wider buffer strips in arable (4/6m-12m)	ha

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
B6	Reinforcement of field patterns in arable areas	EJ9	J9	12 m buffer strips for watercourses on cultivated land NEW in 2009	ELS	Wider buffer strips in arable (4/6m-12m)	ha
B6	Reinforcement of field patterns in arable areas	OHJ9	J9	12 m buffer strips for watercourses on cultivated land NEW in 2009	OHLS	Wider buffer strips in arable (4/6m-12m)	ha
B7	Minimal negative landscape impact from deer fencing	FD	FD	Deer fencing	HLSC	Deer fencing	km
B8	Minimal negative landscape impact from fencing along watercourses	OHJ11	J11	Maintenance of watercourse fencing	OHLS	Fencing along watercourses	km
B8	Minimal negative landscape impact from fencing along watercourses	EJ11	J11	Maintenance of watercourse fencing NEW in 2009	ELS	Fencing along watercourses	km
B8	Minimal negative landscape impact from fencing along watercourses	OJ11	J11	Maintenance of watercourse fencing NEW in 2009	OELS	Fencing along watercourses	km
B8	Minimal negative landscape impact from fencing along watercourses	HJ11	J11	Maintenance of watercourse fencing	EHLS	Fencing along watercourses	km
B8	Minimal negative landscape impact from fencing along watercourses	UOJ3	J3	Post and wire fencing along watercourses	UOELS	Fencing along watercourses	km

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
B8	Minimal negative landscape impact from fencing along watercourses	UJ3	J3	Post and wire fencing along watercourses	UELS	Fencing along watercourses	km
<b>Agricultural land use</b>							
C1	Diversity of winter arable landscape	HF15	F15	Reduced herbicide cereal crops followed by overwintered stubble	HLS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	HF15NR	F15	Reduced herbicide cereal crops following overwintered stubble NR	HLS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	RHF15	F15	No longer used Non payment version of HF15	EHLS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	EF15	F15	Reduced herbicide cereal crops followed by overwintered stubble NEW in 2010	ELS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	OEF15	F15	Reduced herbicide cereal crops followed by overwintered stubble NEW in 2010	OELS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	EF22	F22	Extended overwintered stubble NEW in 2010	ELS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	OEF22	F22	Extended overwintered stubble NEW in 2010	OELS	Overwintering stubbles	ha

<b>Code</b>	<b>Objective</b>	<b>Option code</b>	<b>Simplified option code</b>	<b>Option name</b>	<b>Scheme</b>	<b>Sub category</b>	<b>Units</b>
C1	Diversity of winter arable landscape	ROF6	F6	No longer used Non payment version of OF6	OELS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	EF6	F6	Overwintered stubble	ELS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	ROHF6	F6	No longer used Non payment version of OHF6	OHLS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	REF6	F6	No longer used Non payment version of EF6	ELS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	HF6	F6	Overwintered stubble	EHLS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	RHF6	F6	No longer used Non payment version of HF6	EHLS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	OHF6	F6	Overwintered stubble	OHLS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	OF6	F6	Overwintered stubble	OELS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	EG4	G4	Cereals for whole-crop silage followed by overwintered stubble	ELS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	HG4	G4	Cereals for whole-crop silage followed by overwintered stubble	EHLS	Overwintering stubbles	ha

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
C1	Diversity of winter arable landscape	ROG4	G4	No longer used Non payment version of OG4	OELS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	OG4	G4	Cereals for whole-crop silage followed by overwintered stubble	OELS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	ROHG4	G4	No longer used Non payment version of OHG4	OHLS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	OHG4	G4	Cereals for whole-crop silage followed by overwintered stubble	OHLS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	RHG4	G4	No longer used Non payment version of HG4	EHLS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	REG4	G4	No longer used Non payment version of EG4	ELS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	HG5	G5	Brassica fodder crops followed by overwintered stubble	HLS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	ROHG5	G5	No longer used Non payment version of OHG5	OHLS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	REG5	G5	No longer used Non payment version of EG5	ELS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	EG5	G5	Brassica fodder crops followed by over-wintered stubbles	ELS	Overwintering stubbles	ha

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
C1	Diversity of winter arable landscape	OG5	G5	Brassica fodder crops followed by over-wintered stubbles	OELS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	ROG5	G5	No longer used Non payment version of OG5	OELS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	OHG5	G5	Brassica fodder crops followed by over-wintered stubbles (org)	OHLS	Overwintering stubbles	ha
C1	Diversity of winter arable landscape	RHG5	G5	No longer used Non payment version of HG5	HLS	Overwintering stubbles	ha
C2	Retention of mixed/pastoral character	HJ3	HJ3	Arable reversion to unfertilised grassland to prevent erosion or run-off	HLS	Grassland creation to prevent erosion and encourage water infiltration and a reduction in nutrient leaching	ha
C2	Retention of mixed/pastoral character	HJ4	HJ4	Arable reversion to grassland with low fertiliser input to prevent erosion or run-off	HLS	Grassland creation to prevent erosion and encourage water infiltration and a reduction in nutrient leaching	ha
C2	Retention of mixed/pastoral character	EK2	K2	Permanent grassland with low inputs	ELS	Permanent low-input grassland management	ha
C2	Retention of mixed/pastoral character	OHK2	K2	Permanent grassland with low inputs	OHLS	Permanent low-input grassland management	ha



<b>Code</b>	<b>Objective</b>	<b>Option code</b>	<b>Simplified option code</b>	<b>Option name</b>	<b>Scheme</b>	<b>Sub category</b>	<b>Units</b>
C2	Retention of mixed/pastoral character	OK2	K2	Permanent grassland with low inputs	OELS	Permanent low-input grassland management	ha
C2	Retention of mixed/pastoral character	HK2	K2	Permanent grassland with low inputs	EHLS	Permanent low-input grassland management	ha
C2	Retention of mixed/pastoral character	HK3	K3	Permanent grassland with very low inputs	EHLS	Permanent low-input grassland management	ha
C2	Retention of mixed/pastoral character	EK3	K3	Permanent grassland with very low inputs	ELS	Permanent low-input grassland management	ha
C2	Retention of mixed/pastoral character	OHK3	K3	Permanent grassland with very low inputs	OHLS	Permanent low-input grassland management	ha
C2	Retention of mixed/pastoral character	OK3	K3	Permanent grassland with very low inputs	OELS	Permanent low-input grassland management	ha
C2	Retention of mixed/pastoral character	OL2	L2	Permanent grassland with low inputs in SDAs	OELS	Permanent low-input grassland management	ha
C2	Retention of mixed/pastoral character	HL2	L2	Permanent grassland with low inputs in SDAs	EHLS	Permanent low-input grassland management	ha
C2	Retention of mixed/pastoral character	OHL2	L2	Permanent grassland with low inputs in SDAs	OHLS	Permanent low-input grassland management	ha
C2	Retention of mixed/pastoral character	EL2	L2	Permanent grassland with low inputs in SDAs	ELS	Permanent low-input grassland management	ha
C2	Retention of mixed/pastoral	UHL21	L21	No cutting strip within	UHLS	Permanent low-input	ha

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
	character			meadows		grassland management	
C2	Retention of mixed/pastoral character	UOHL21	L21	No cutting strip within meadows	UOHLs	Permanent low-input grassland management	ha
C2	Retention of mixed/pastoral character	UL21	L21	No cutting strip within meadows	UELS	Permanent low-input grassland management	ha
C2	Retention of mixed/pastoral character	UOL21	L21	No cutting strip within meadows	UOELS	Permanent low-input grassland management	ha
C2	Retention of mixed/pastoral character	HL3	L3	Permanent grassland with very low inputs in SDAs	EHLS	Permanent low-input grassland management	ha
C2	Retention of mixed/pastoral character	OHL3	L3	Permanent grassland with very low inputs in SDAs	OHLS	Permanent low-input grassland management	ha
C2	Retention of mixed/pastoral character	OL3	L3	Permanent grassland with very low inputs in SDAs	OELS	Permanent low-input grassland management	ha
C2	Retention of mixed/pastoral character	EL3	L3	Permanent grassland with very low inputs in SDAs	ELS	Permanent low-input grassland management	ha
C3	Retention and management of wet grasslands	HD10	D10	Maintenance of traditional water meadows	HLS	Traditional water meadow management or restoration	ha
C3	Retention and management of wet grasslands	HD11	D11	Restoration of traditional water meadows	HLS	Traditional water meadow management or restoration	ha
C3	Retention and management of	HK10	K10	Maintenance of wet grassland	HLS	Wet grassland	ha

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
	wet grasslands			for wintering waders and wildfowl		management or restoration for breeding waders or wintering waders and wildfowl	
C3	Retention and management of wet grasslands	HK11	K11	Restoration of wet grassland for breeding waders	HLS	Wet grassland management or restoration for breeding waders or wintering waders and wildfowl	ha
C3	Retention and management of wet grasslands	HK12	K12	Restoration of wet grassland for wintering waders and wildfowl	HLS	Wet grassland management or restoration for breeding waders or wintering waders and wildfowl	ha
C3	Retention and management of wet grasslands	HK13	K13	Creation of wet grassland for breeding waders	HLS	Wet grassland creation for breeding waders or wintering waders and wildfowl	ha
C3	Retention and management of wet grasslands	HK14	K14	Creation of wet grassland for wintering waders and wildfowl	HLS	Wet grassland creation for breeding waders or wintering waders and wildfowl	ha
C3	Retention and management of wet grasslands	OK4	K4	Management of rush pastures	OELS	Rush pasture management	ha

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
C3	Retention and management of wet grasslands	HK4	K4	Management of rush pastures	EHLS	Rush pasture management	ha
C3	Retention and management of wet grasslands	EK4	K4	Management of rush pastures	ELS	Rush pasture management	ha
C3	Retention and management of wet grasslands	OHK4	K4	Management of rush pastures	OHLS	Rush pasture management	ha
C3	Retention and management of wet grasslands	HK9	K9	Maintenance of wet grassland for breeding waders	HLS	Wet grassland management or restoration for breeding waders or wintering waders and wildfowl	ha
C3	Retention and management of wet grasslands	EL4	L4	Management of rush pastures in SDAs	ELS	Rush pasture management	ha
C3	Retention and management of wet grasslands	OL4	L4	Management of rush pastures in SDAs	OELS	Rush pasture management	ha
C3	Retention and management of wet grasslands	OHL4	L4	Management of rush pastures in SDAs	OHLS	Rush pasture management	ha
C3	Retention and management of wet grasslands	HL4	L4	Management of rush pastures in SDAs	EHLS	Rush pasture management	ha
C4	Retention and management of rough pasture	HK15	K15	Maintenance of grassland for target features	HLS	Semi improved/rough grassland management or restoration	ha

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
C4	Retention and management of rough pasture	HK16	K16	Restoration of grassland for target features	HLS	Semi improved/rough grassland management or restoration	ha
C4	Retention and management of rough pasture	HK17	K17	Creation of grassland for target features	HLS	Semi-improved grassland creation	ha
C4	Retention and management of rough pasture	UHL22	L22	Management of enclosed rough grazing for birds	UHLS	Enclosed upland semi-natural/rough pasture management	ha
C4	Retention and management of rough pasture	UOHL22	L22	Management of enclosed rough grazing for birds	UOHLs	Enclosed upland semi-natural/rough pasture management	ha
C4	Retention and management of rough pasture	UOL22	L22	Management of enclosed rough grazing for birds	UOELS	Enclosed upland semi-natural / rough pasture management	ha
C4	Retention and management of rough pasture	UL22	L22	Management of enclosed rough grazing for birds	UELS	Enclosed upland semi-natural/rough pasture management	ha
C4	Retention and management of rough pasture	UL23	L23	Management of upland grassland for birds	UELS	Upland semi-natural/rough pasture management or restoration	ha
C4	Retention and management of rough pasture	UHL23	L23	Management of upland grassland for birds	UHLS	Upland semi-natural/rough pasture management or	ha

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
						restoration	
C4	Retention and management of rough pasture	UOHL23	L23	Management of upland grassland for birds	UOHL5	Upland semi-natural/rough pasture management or restoration	ha
C4	Retention and management of rough pasture	UOL23	L23	Management of upland grassland for birds	UOELS	Upland semi-natural/rough pasture management or restoration	ha
C4	Retention and management of rough pasture	EL5	L5	Enclosed rough grazing	ELS	Enclosed upland semi-natural/rough pasture management	ha
C4	Retention and management of rough pasture	OL5	L5	Enclosed rough grazing	OELS	Enclosed upland semi-natural/rough pasture management	ha
C4	Retention and management of rough pasture	OHL5	L5	Enclosed rough grazing	OHLS	Enclosed upland semi-natural/rough pasture management	ha
C4	Retention and management of rough pasture	HL5	L5	Enclosed rough grazing	EHLS	Enclosed upland semi-natural/rough pasture management	ha
C4	Retention and management of rough pasture	HL7	L7	Maintenance of rough grazing for birds	HLS	Upland semi-natural/rough pasture management or restoration	ha

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
C4	Retention and management of rough pasture	HL8	L8	Restoration of rough grazing for birds	HLS	Upland semi-natural/rough pasture management or restoration	ha
C5	Retention/restoration of traditional mixed stock grazing	OK5	K5	Mixed stocking	OELS	Mixed stocking	ha
C5	Retention/restoration of traditional mixed stock grazing	OHK5	K5	Mixed stocking	OHLS	Mixed stocking	ha
C5	Retention/restoration of traditional mixed stock grazing	HK5	K5	Mixed stocking	EHLS	Mixed stocking	ha
C5	Retention/restoration of traditional mixed stock grazing	EK5	K5	Mixed stocking	ELS	Mixed stocking	ha
C6	Retention and management of traditional water meadows	HD10	D10	Maintenance of traditional water meadows	HLS	Traditional water meadow management or restoration	ha
C6	Retention and management of traditional water meadows	HD11	D11	Restoration of traditional water meadows	HLS	Traditional water meadow management or restoration	ha
C7	Minimal negative landscape impact from fallow plots	REF8	F8	No longer used Non payment version of EF8	ELS	Fallow plots/margins	Plot
C7	Minimal negative landscape impact from fallow plots	HF8	F8	Skylark plots	EHLS	Fallow plots/margins	Plot

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
C7	Minimal negative landscape impact from fallow plots	OHF8	F8	Skylark plots	OHLS	Fallow plots/margins	Plot
C7	Minimal negative landscape impact from fallow plots	RHF8	F8	No longer used Non payment version of HF8	EHLS	Fallow plots/margins	Plot
C7	Minimal negative landscape impact from fallow plots	EF8	F8	Skylark plots	ELS	Fallow plots/margins	Plot
C7	Minimal negative landscape impact from fallow plots	ROHF8	F8	No longer used Non payment version of OHF8	OHLS	Fallow plots/margins	Plot
C7	Minimal negative landscape impact from fallow plots	OF8	F8	Skylark plots	OELS	Fallow plots/margins	Plot
<b>Building materials/design</b>							
D1	Retention of historic farm buildings	HD1	D1	Maintenance of weatherproof traditional farm buildings	EHLS	Historic buildings	Approx number
D1	Retention of historic farm buildings	OHD1	D1	Maintenance of weatherproof traditional farm buildings	OHLS	Historic buildings	Approx number
D1	Retention of historic farm buildings	ED1	D1	Maintenance of weatherproof traditional farm buildings	ELS	Historic buildings	Approx number
D1	Retention of historic farm buildings	OD1	D1	Maintenance of weatherproof traditional farm buildings	OELS	Historic buildings	Approx number
D1	Retention of historic farm buildings	UD12	D12	Maintenance of weatherproof traditional farm buildings in	UELS	Historic buildings	Approx number



Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
				remote locations			
D1	Retention of historic farm buildings	UOHD12	D12	Maintenance of remote weatherproof traditional farm buildings	UOHL5	Historic buildings	m2
D1	Retention of historic farm buildings	UHD12	D12	Maintenance of remote weatherproof traditional farm buildings	UHLS	Historic buildings	Approx number
D2	Restoration of historic farm buildings	HTB	HTB	Restoration of historic buildings	HLSC	Restoration of historic buildings	No of agreements
<b>Historic environment</b>							
E1	Retention and management of archaeology on arable	OD2	D2	Take out of cultivation archaeological features currently on rotational land	OELS	Archaeological features taken out of cultivation	ha
E1	Retention and management of archaeology on arable	ED2	D2	Take out of cultivation archaeological features currently on cultivated land	ELS	Archaeological features taken out of cultivation	ha
E1	Retention and management of archaeology on arable	OHD2	D2	Take archaeological features out of cultivation (Org)	OHLS	Archaeological features taken out of cultivation	ha
E1	Retention and management of archaeology on arable	HD2	D2	Take archaeological features out of cultivation	EHLS	Archaeological features taken out of cultivation	ha
E1	Retention and management of archaeology on arable	ED3	D3	Reduced-depth, non-inversion cultivation on archaeological	ELS	Reduced depth of cultivation	ha

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
				features (minimum till)			
E1	Retention and management of archaeology on arable	OHD3	D3	Low depth, non-inversion cultivation on archaeological features	OHLS	Reduced depth of cultivation	ha
E1	Retention and management of archaeology on arable	HD3	D3	Low depth, non-inversion cultivation on archaeological features	EHLS	Reduced depth of cultivation	ha
E1	Retention and management of archaeology on arable	OD3	D3	Reduced-depth, non-inversion cultivation on archaeological features (minimum till)	OELS	Reduced depth of cultivation	ha
E1	Retention and management of archaeology on arable	HD6	D6	Crop establishment by direct drilling (non-rotational)	HLS	Reduced depth of cultivation	ha
E1	Retention and management of archaeology on arable	HD7	D7	Arable reversion by natural regeneration	HLS	Archaeological features taken out of cultivation	ha
E2	Retention and management of archaeology on arable as part of wider conservation objectives	HJ4	J4	Arable reversion to grassland with low fertiliser input to prevent erosion or run-off (on Scheduled Monuments or SHINE area only)	HLS	Grassland creation to prevent erosion and encourage water infiltration and a reduction in nutrient leaching	ha
E2	Retention and management of archaeology on arable as part of wider conservation objectives	HK17	K17	Creation of grassland for target features (on Scheduled Monuments or SHINE area only)	HLS	Semi-improved grassland creation	ha

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
E2	Retention and management of archaeology on arable as part of wider conservation objectives	HK8	K8	Creation of species-rich, semi-natural grassland (on Scheduled Monuments or SHINE area only)	HLS	Species rich grassland creation	ha
E2	Retention and management of archaeology on arable as part of wider conservation objectives	HO4	O4	Creation of lowland heathland from arable or improved grassland (on Scheduled Monuments or SHINE area only)	HLS	Lowland heathland creation	ha
E3	Retention and management of archaeology on grass	ED4	D4	Management of scrub on archaeological features	ELS	Management of archaeological sites under grassland	ha
E3	Retention and management of archaeology on grass	HD4	D4	Management of scrub on archaeological features	EHLS	Management of archaeological sites under grassland	ha
E3	Retention and management of archaeology on grass	OHD4	D4	Management of scrub on archaeological features	OHLS	Management of archaeological sites under grassland	ha
E3	Retention and management of archaeology on grass	OD4	D4	Management of scrub on archaeological features	OELS	Management of archaeological sites under grassland	ha
E3	Retention and management of archaeology on grass	OD5	D5	Management of archaeological features on grassland	OELS	Management of archaeological sites under grassland	ha
E3	Retention and management of	HD5	D5	Management of archaeological	EHLS	Management of archaeological sites	ha

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
	archaeology on grass			features on grassland		under grassland	
E3	Retention and management of archaeology on grass	OHD5	D5	Management of archaeological features on grassland	OHLS	Management of archaeological sites under grassland	ha
E3	Retention and management of archaeology on grass	ED5	D5	Management of archaeological features on grassland	ELS	Management of archaeological sites under grassland	ha
E4	Removal of archaeological features from cultivation	OD2	D2	Take out of cultivation archaeological features currently on rotational land	OELS	Archaeological features taken out of cultivation	ha
E4	Removal of archaeological features from cultivation	ED2	D2	Take out of cultivation archaeological features currently on cultivated land	ELS	Archaeological features taken out of cultivation	ha
E4	Removal of archaeological features from cultivation	HD2	D2	Take archaeological features out of cultivation	EHLS	Archaeological features taken out of cultivation	ha
E4	Removal of archaeological features from cultivation	OHD2	D2	Take archaeological features out of cultivation (Org)	OHLS	Archaeological features taken out of cultivation	ha
E4	Removal of archaeological features from cultivation	ED3	D3	Reduced-depth, non-inversion cultivation on archaeological features (minimum till)	ELS	Reduced depth of cultivation	ha
E4	Removal of archaeological features from cultivation	HD3	D3	Low depth, non-inversion cultivation on archaeological features	EHLS	Reduced depth of cultivation	ha

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
E4	Removal of archaeological features from cultivation	OD3	D3	Reduced-depth, non-inversion cultivation on archaeological features (minimum till)	OELS	Reduced depth of cultivation	ha
E4	Removal of archaeological features from cultivation	OHD3	D3	Low depth, non-inversion cultivation on archaeological features	OHLS	Reduced depth of cultivation	ha
E4	Removal of archaeological features from cultivation	HD6	D6	Crop establishment by direct drilling (non-rotational)	HLS	Reduced depth of cultivation	ha
E4	Removal of archaeological features from cultivation	HD7	D7	Arable reversion by natural regeneration	HLS	Archaeological features taken out of cultivation	ha
E5	Retention and increased visibility of archaeology on moorland	UOD13	D13	Maintaining visibility of archaeological features on moorland	UOELS	Maintaining archaeological visibility on moorland	No of agreements
E5	Retention and increased visibility of archaeology on moorland	UD13	D13	Maintaining visibility of archaeological features on moorland	UELS	Maintaining archaeological visibility on moorland	No of agreements
E5	Retention and increased visibility of archaeology on moorland	UOHD13	D13	Maintaining visibility of archaeological features on moorland	UOHLS	Maintaining archaeological visibility on moorland	No of agreements
E5	Retention and increased visibility of archaeology on moorland	UHD13	D13	Maintaining visibility of archaeological features on moorland	UHLS	Maintaining archaeological visibility on moorland	No of agreements
E6	Retention and management of	HC12	C12	Maintenance of wood pasture	HLS	Parkland management	ha

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
	parkland/wood pasture			and parkland		or restoration	
E6	Retention and management of parkland/wood pasture	HC13	C13	Restoration of wood pasture and parkland	HLS	Parkland management or restoration	ha
E6	Retention and management of parkland/wood pasture	HC14	C14	Creation of wood pasture	HLS	Creation of wood pasture	ha
E7	Retention and management of larger water features	HQ2	Q2	Maintenance of ponds of high wildlife value (more than 100 m2)	HLS	Water feature management or restoration	Number
E8	Retention and management of small ponds	HQ1	Q1	Maintenance of ponds of high wildlife value (less than 100 m2)	HLS	Water feature management or restoration	Number
<b>Semi-natural habitats</b>							
F1	Management/restoration/creation of lowland species-rich grassland	HK6	K6	Maintenance of species-rich, semi-natural grassland	HLS	Species-rich grassland management or restoration	ha
F1	Management/restoration/creation of lowland species-rich grassland	HK7	K7	Restoration of species-rich, semi-natural grassland	HLS	Species-rich grassland management or restoration	ha
F1	Management/restoration/creation of lowland species-rich grassland	HK8	K8	Creation of species-rich, semi-natural grassland	HLS	Species rich grassland creation	ha
F2	Management/restoration/creation of upland species-rich	HK6	K6	Maintenance of species-rich, semi-natural grassland	HLS	Species-rich grassland management or	ha

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
	grassland					restoration	
F2	Management/restoration/creation of upland species-rich grassland	HK7	K7	Restoration of species-rich, semi-natural grassland	HLS	Species-rich grassland management or restoration	ha
F2	Management/restoration/creation of upland species-rich grassland	HK8	K8	Creation of species-rich, semi-natural grassland	HLS	Species rich grassland creation	ha
F3	Management/restoration of upland hay meadows	HK18	K18	Haymaking supplement	HLS	K18 Hay making supplement	ha
F3	Management/restoration of upland hay meadows	UOL20	L20	Haymaking	UOELS	Species-rich grassland management or restoration	ha
F3	Management/restoration of upland hay meadows	UOHL20	L20	Haymaking	UOHLs	Species-rich grassland management or restoration	ha
F3	Management/restoration of upland hay meadows	UL20	L20	Haymaking	UELS	Species-rich grassland management or restoration	ha
F3	Management/restoration of upland hay meadows	UHL20	L20	Haymaking	UHLS	Species-rich grassland management or restoration	ha
F4	Management of lowland hay meadows	HK18	K18	Haymaking supplement	HLS	K18 Hay making supplement	ha

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
F5	Management/restoration/creation of lowland heathland	HO1	O1	Maintenance of lowland heathland	HLS	Lowland heathland management & restoration	ha
F5	Management/restoration/creation of lowland heathland	HO2	O2	Restoration of lowland heathland	HLS	Lowland heathland management & restoration	ha
F5	Management/restoration/creation of lowland heathland	HO3	O3	Restoration of forestry areas to lowland heathland	HLS	Lowland heathland creation	ha
F5	Management/restoration/creation of lowland heathland	HO4	O4	Creation of lowland heathland from arable or improved grassland	HLS	Lowland heathland creation	ha
F5	Management/restoration/creation of lowland heathland	HO5	O5	Creation of lowland heathland on worked mineral sites	HLS	Lowland heathland creation	ha
F6	Management/restoration/creation of fen, lowland raised bog and reedbed	HQ10	Q10	Restoration of lowland raised bog	HLS	Lowland raised bog management or restoration	ha
F6	Management/restoration/creation of fen, lowland raised bog and reedbed	HQ3	Q3	Maintenance of reedbeds	HLS	Reed bed management or restoration	ha
F6	Management/restoration/creation of fen, lowland raised bog and reedbed	HQ4	Q4	Restoration of reedbeds	HLS	Reed bed management or restoration	ha
F6	Management/restoration/creation of fen, lowland raised bog	HQ5	Q5	Creation of reedbeds	HLS	Reed bed creation	ha



Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
	and reedbed						
F6	Management/restoration/creation of fen, lowland raised bog and reedbed	HQ6	Q6	Maintenance of fen	HLS	Fen management or restoration	ha
F6	Management/restoration/creation of fen, lowland raised bog and reedbed	HQ7	Q7	Restoration of fen	HLS	Fen management or restoration	ha
F6	Management/restoration/creation of fen, lowland raised bog and reedbed	HQ8	Q8	Creation of fen	HLS	Fen creation	ha
F6	Management/restoration/creation of fen, lowland raised bog and reedbed	HQ9	Q9	Maintenance of lowland raised bog	HLS	Lowland raised bog management or restoration	ha
F7	Maintenance and restoration of moorland	HL10	L10	Restoration of moorland	HLS	Maintenance & Restoration of moorland	ha
F7	Maintenance and restoration of moorland	HL11	L11	Creation of upland heathland	HLS	Creation of upland heathland	ha
F7	Maintenance and restoration of moorland	UHL17	L17	No supplementary feeding on moorland	UHLS	Maintenance & Restoration of moorland	ha
F7	Maintenance and restoration of moorland	UOL17	L17	No supplementary feeding on moorland	UOELS	Maintenance & Restoration of moorland	ha

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
F7	Maintenance and restoration of moorland	UOHL17	L17	No supplementary feeding on moorland	UOHLs	Maintenance & Restoration of moorland	ha
F7	Maintenance and restoration of moorland	UL17	L17	No supplementary feeding on moorland	UELS	Maintenance & Restoration of moorland	ha
F7	Maintenance and restoration of moorland	HL6	L6	Unenclosed moorland rough grazing	EHLS	Maintenance & Restoration of moorland	ha
F7	Maintenance and restoration of moorland	EL6	L6	Unenclosed moorland rough grazing	ELS	Maintenance & Restoration of moorland	ha
F7	Maintenance and restoration of moorland	HL9	L9	Maintenance of moorland	HLS	Maintenance & Restoration of moorland	ha
F8	Rewetting of areas of blanket bog, mires and flushes	HL13	L13	Moorland re-wetting supplement	HLS	L13. Moorland re-wetting supplement	ha
F9	Retention/restoration of traditional cattle grazing on moorland commons	UOHL18	L18	Cattle grazing on upland grassland and moorland	UOHLs	Cattle grazing on moorland	ha
F9	Retention/restoration of traditional cattle grazing on moorland commons	UL18	L18	Cattle grazing on upland grassland and moorland	UELS	Cattle grazing on moorland	ha

Code	Objective	Option code	Simplified option code	Option name	Scheme	Sub category	Units
F9	Retention/restoration of traditional cattle grazing on moorland commons	UHL18	L18	Cattle grazing on upland grassland and moorland	UHLS	Cattle grazing on moorland	ha
F9	Retention/restoration of traditional cattle grazing on moorland commons	UOL18	L18	Cattle grazing on upland grassland and moorland	UOELS	Cattle grazing on moorland	ha
<b>Coast</b>							
G1	Conservation and management of salt marsh	HP5	P5	Maintenance of coastal salt marsh	HLS	Salt marsh management or restoration	ha
G1	Conservation and management of salt marsh	HP6	P6	Restoration of coastal salt marsh	HLS	Salt marsh management or restoration	ha
G2	Conservation and management of sand dunes	HP1	P1	Maintenance of sand dunes	HLS	Sand dune management or restoration	ha
G2	Conservation and management of sand dunes	HP2	P2	Restoration of sand dunes	HLS	Sand dune management or restoration	ha
G3	Creation of new coastal habitats	HP4	P4	Creation of coastal vegetated shingle and sand dunes on grassland	HLS	Vegetated shingle & sand dune creation	ha
G3	Creation of new coastal habitats	HP7	P7	Creation of inter-tidal and saline habitat on arable land	HLS	Inter-tidal & saline habitat creation	ha
G3	Creation of new coastal habitats	HP8	P8	Creation of inter-tidal and saline habitat on grassland	HLS	Inter-tidal & saline habitat creation	ha

<b>Code</b>	<b>Objective</b>	<b>Option code</b>	<b>Simplified option code</b>	<b>Option name</b>	<b>Scheme</b>	<b>Sub category</b>	<b>Units</b>
G3	Creation of new coastal habitats	HP9	P9	Creation of inter-tidal and saline habitat by non-intervention	HLS	Inter-tidal & saline habitat creation	ha