2. Methodology.

Introduction.

2.1 This section will outline the methodology of the Shropshire HLC, which was designed take account of four key concerns: -

- Shropshire's county boundary encompasses a huge variety of different landscapes. At a broad scale, this is reflected by the six Countryside Character Areas that partially or wholly cover the county (Countryside Agency 1999): -
  - Oswestry Uplands – formed from Carboniferous rocks, this upland region lies on the north-western fringes of the county, to the west of Oswestry. It is has a distinctly Welsh character, which is reflected in its vernacular architecture and place names.
  - Shropshire, Cheshire and Staffordshire Plain – an undulating lowland region formed on glacial drift deposits over Triassic sandstones and marls, interrupted by upstanding ridges of harder sandstone. In Shropshire, it includes significant areas of wetlands, in the form of meres (e.g. Cole Mere), mosses (e.g. Whixhall Moss) and the remnants of once extensive valley mire systems (e.g. Baggy Moor). It is punctuated by low sandstone hills, which run across the region on a loosely southwest – northeast axis. Its southern boundary coincides with the valley of the River Severn, which meanders across the lowlands of central Shropshire, from the Welsh border to the Severn Gorge.
  - Mid-Severn Sandstone Plateau – A rolling plateau of Permo-Triassic sandstone, which give way in the west to Upper Carboniferous marl, sandstone and conglomerate, and in the north and south to Carboniferous Coal Measures. The Permo-Triassic sandstones are overlain by brown sandy soils, brown earths and podsols, which historically supported extensive tracts of heathland. Within Shropshire, the plateau is also dissected by the river valleys of the Severn and the Worfe.
  - Shropshire Hills – this region of hill country is formed of a complex sequence of Palaeozoic rocks and covers most of the western, southern parts of the county. It comprises a series of ridges with a south-west/ north-east axis. The higher ground on the Stipperstones, The Long Mynd and the Clee Hills remains unenclosed and supports extensive tracts of moorland, whilst the intervening valleys are characterised by ancient agricultural landscapes. Extensive evidence for extractive industries also exists around the Stiperstones (lead and barytes mining) and the Clees (coal and ironstone mining and dolerite quarrying).

  - Clun and North West Herefordshire Hills - The Clun Forest, in south-western corner of the county, represents a plateau of Silurian mudstones and siltstones which is cut by the deeply incised valleys of the rivers Unk, Clun and Teme. As a result, the hills in this area have rounded profiles and the valleys are separated by larger expanses of higher ground. As in the Shropshire Hills, this valley floors and lower valley side are characterised by ancient field patterns, whilst the upper slopes were occupied by large areas of rough grazing land until their enclosure in the 18th and 19th centuries.

- Because the project was designed to run for 18 mths, and the study area (Shropshire, England's largest inland county, plus TWUA) is not a small area (3488 sq km), the methodology was calibrated to allow a fairly rapid and high level characterisation.
- It was intended that the results of the HLC project would be integrated with the existing Shropshire LCA from the outset. As a result the HLC adopted of a broadly similar data structure.

2.2 HLC was conceived as a relatively rapid form of desk based assessment, which relies on a limited but consistent range of sources (Fairclough 1999, Aldred and Fairclough 2003). Consequently, the county wide data sets available in a GIS format formed the principle data sources for Shropshire HLC project (e.g. maps, sets of aerial photographs, digital data sets generated by agencies such as the Forestry Commission). These were supplemented, to some extent, by more detailed sources such as the Victoria County History volumes and the Foxall Tithe Award transcription maps when they became available. A list of the main sources used in the project can be found in Appendix 2.

2.3 The Shropshire HLC project adopted an *attribute-based* approach, whereby historic landscape character types were defined through analysis of the combinations in which certain HLC attributes occur. For example, areas of predominantly small fields (Attribute 1), that have predominantly sinuous boundaries (Attribute 2), some or all of which have 's-curve' morphology (Attribute 3), can be defined as 'piecemeal enclosure' (HLC character type).

2.4 Each HLC unit or 'polygon' was defined in a GIS systems in relation to nine broad attribute groups (Unenclosed land, Fieldscapes, Woodland, Water and Valley Floor, Industrial and Extractive, Military, Onamental, Parkland and Recreational, Settlement and Orchards). Further information about the attributes of each polygon was captured in a bespoke project database. As such, the inherent subjectivity of the process of interpreting map based sources was framed and controlled by a transparent, attribute-based approach.

2.5 HLC Types are then defined through analysis of this data, rather than being pre-determined at the outset. The historic landscape character types are generic in nature: they may occur in different parts of the

landscape but in each case they are defined by the same combinations of HLC attributes.

2.6 The LCA methodology maintains a distinction between a relatively objective initial phase of characterisation and the subsequent use of judgement to inform decision-making processes (The Countryside Agency and Scottish Natural Heritage 2002).

2.7 The attribute-based approach was intended to make the characterisation processes itself as 'objective' as possible. To use the terminology adopted by Aldred and Fairclough (2003), the Shropshire project used a multi-mode type 2 methodology. In other words, the inherent subjectivity of the process of interpreting map based sources was framed and controlled by a transparent, attribute-based approach and GIS. The intention, when basing the definition of HLC Types on the analysis of a solid set of criteria, was to make the resulting HLC Types defensible to planners and other 'end users'

HLC GIS Polygons.

Introduction.

2.8 The Shropshire HLC project utilised Shropshire County Council's corporate GIS package (ESRI's ArcView v3.3)[1]. Digitisation took place directly onto Ordnance Survey 1:10,000 digital raster maps.

2.9 The GIS component was supported by a Microsoft Access database, within which information about each HLC polygon was captured (see below).

2.10 The basic unit of analysis is the HLC 'polygon'. Each polygon covers a discrete geographical area that contains a particular combination of HLC attributes and, therefore, can be assigned a single historic landscape character type. In this sense, these units can be seen as loosely equivalent to LCA LDUs, although much smaller in size.

2.11 In this section the factors that determine what is included within each polygon will be outlined.

Defining HLC polygons.

2.12 Each polygon was defined on the basis that: -

- All areas included within it posed characteristics that could be assigned to the same *attribute group* (e.g. unimproved land, fieldscapes etc.)
- All areas included within it shared a common set of *attributes* (e.g. all of the woodland included within the polygon is broadleaved and has one or more wavy external boundaries etc.).

[1] Shropshire County Council upgraded to ArcGIS 9.1 in Jan 2006 and all HLC GIS files have now been migrated to the new system.

- All areas within it could be interpreted as having the same previous landscape character (i.e. all of the fields within the polygon contain evidence of medieval strip fields).

2.13 Because each polygon possessed these qualities it was possible to assign the same current and previous[2] historic landscape character type to all of the areas within it.

Polygon areas.

2.14 Shropshire HLC polygons define areas of no smaller than 1ha in size. The pilot studies conducted for the Devonshire HLC project demonstrated that areas below this size are too small to determine *landscape* character (Turner 2001). Consequently, such units were incorporated into adjacent polygons.

2.15 The only exception to this was made for the settlement attribute group, in instances where small areas of 'growth' and redevelopment were identified within or around the fringes of a settlement.

HLC data structure.

Introduction.

2.16 Each polygon has four different levels of data attached to it. These were recorded within the project database, which is analysed in order to create the final HLC Types. This section describes the data structure in detail.

Data Level 1 – polygon identification code and location.

2.17 Data Level 1 captured four basic categories of data that provide each polygon with a unique identification code and a definition of its geographical location.

2.18 These categories are defined as: -

- *Polygon I.D. No.* – Each polygon has its own unique identification code. The first part of the code consists of a 'character code', which corresponds to the attribute group to which the polygon has been assigned (see table below).

[2] See paragraph 2.18 for a definition of 'previous landscape character'.

Table 1 – HLC Attribute Groups

Character Code	Attribute Group
UI	Unimproved land
F	Fieldscapes
W	Woodlands
Wvf	Water and Valley Floor
Ind	Industrial
Mil	Military
Opr	Ornamental, parkland and recreational
Set	Settlements
O	Orchards

The second part of the polygon identification code is a unique number (e.g. F4681, Opr23, Set245 etc.)

- *Central grid ref.* – The approximate central grid reference (to eight figures) of each polygon was recorded.
- *LCA landscape description unit (LDU) identification code* – This was intended to aid cross reference with LCA.
- *Modern parish name* – The modern parishes that each polygon lies within was recorded. In cases where a polygon extended across a parish boundary, the name of the parish within which the greatest part of polygon lay was recorded.

Data Level 2 – attribute descriptions.

2.19 Each polygon was assigned to one of the nine broad *attribute groups* that have been defined at the outset, in order to allow finer-grained analysis to proceed (see Table 1 above).

2.20 Each attribute group has a series of different *attributes* attached to it. Once a polygon has been assigned to a particular attribute group it's attributes are then be defined. A number of different sources of information are used to help determine what these attributes are (see Appendix 2). The following table summarises the different attributes: -

Table 2 – HLC Attributes

Attribute Group	Attribute
1. Unimproved Land	Enclosed (Yes/ No)
	Elevation (higher ground [≥ 244m], lower ground [< 244m])[3]
	Type of ground (heathland, moorland, hill pasture)
	Interpretation of previous character – see level three.
	Additional notes
2. Fieldscapes	Predominant field size (small, small-medium, medium-large, large-very large)[4]
	Predominant field shape (irregular, rectilinear)
	Predominant boundary morphology (straight, sinuous, curvilinear)
	Secondary boundary morphology (straight, sinuous, curvilinear, none)
	Other internal boundary morphology (non, dog leg, s-curve, following watercourse, co-axial)
	Other external boundary morphology (sinuous, settlement edge, line of communication [e.g. a road, canal or railway], woodland, none).
	No. of fields lost since 1st ed 6" OS map
	Interpretation of previous character – see Level 3
	Additional notes
3. Woodland	Nature of boundaries (straight, sinuous, curvilinear)
	Is it present on the 1st Ed 6" OS map? (Yes/ No)
	Is it designated as being ancient semi-natural? (Yes/ No)
	Forestry Commision Indicative forestry designation (Broadleaved, Coniferous, Felled, Mixed, Shrub, Young Trees, None)
	Interp. of previous character – see level three.
	Additional notes.
4. Water and Valley Floor Fields	Type (open water, raised bog/ 'moss', floodplain)
	If open water is it natural (Yes/ No)
	If man made is it a lake/pond, marl pit or reservoir?
	Additional notes
5. Industrial and extractive	Type (stone quarry, gravel quarry, disused mine with associated spoil tips, industrial complex or factory)
	If a quarry is it active? (Yes/ No)
	If a disused mine with associated spoil tips, is it a former colliery or metal ore mine?
	Additional notes
6. Military	Type of installation (airfield, barracks, ordnance depot).
	Current use (abandoned, active but used for other purposes, still used by the military)
	Additional notes
7. Ornamental, parkland and recreational	Type (garden or 'designed' landscapes, golf course, race course, sports field, other parkland)
	Additional notes
8. Settlement	Type (historic core [pre 1800], pre-1880s, redeveloped pre-1880s, post-1880s]).
	Additional notes.
9. Orchards	Present on 1st ed. 6" OS map? (Yes/ No)
	Additional notes

[3] For the purposes of their Uplands Initiative the Royal Commission on the Ancient and Historical Monuments of Wales (2002) has defined 'upland' as being all land above the 244m (800ft) contour.

[4] For purposes of the HLC these terms can be defined as follows, based upon the national definitions used for the Landscape Character Assessment.
Small fields = < 2ha
Small-Medium fields = 2.1-4ha
Medium-Large fields = 4.1-8ha
Large-very large fields = > 8.1ha

Data Level 3 – interpretation of previous historic landscape character (where relevant).

2.21 For some polygons evidence existed, either in the form of extant archaeological remains or documentary sources, which indicated that it had a different historic landscape character in the past to the one it has in the present. For instance, on the Clee Hills of south-eastern Shropshire extensive areas of post-medieval coal and ironstone workings lie in areas that have now reverted back to rough pasture. In other cases the previous landscape character of a polygon can be inferred. For example, strip fields within an open field system would once have existed in areas where piecemeal enclosure can be identified. Interpretation this evidence allowed a previous historic landscape character to be assigned to many polygons, thus adding further 'time-depth' to the HLC.

2.22 The interpretation of the previous landscape character of a polygon were structured as follows -

- *Previous HLC attribute group* – This indicates the attribute group to which the polygon has been assigned.
- *Previous HLC character description* – This field was initially populated with standardised key phrases (e.g. strip fields, unenclosed common, open heath etc.) that relate to the previous landscape character of the polygon. In the final analysis these were used to determine a set of Previous HLC Types (see Data Level 4 below), the names of which were used to overwrite the key phrases.
- *Period* – This describes the period to which a polygon's previous landscape character can be assigned. For the purposes of the HLC project the following period definitions will be used: -

Table 3 – HLC Period Classifications (based on standard period definitions used by the Shropshire SMR).

Period Name	Dates
Prehistoric	500,000 BC – AD 42
Roman	AD 43 – AD 409
Saxon	AD 410 – AD 1065
Medieval	AD 1066 – AD 1499
Post-Medieval	AD 1500 – AD 1799
Industrial	AD 1800 – AD 1913
Post-1914	AD 1914 – AD 1945
Post-War	AD 1945 – present

- *Degree of confidence* – This field provides a measure of the degree of certainty about the interpretation of a polygon's previous landscape character. Following Turner (2001), Table 4 provides definitions for the levels of confidence assigned to each HLC polygon.

Table 4 – Definitions of degrees of certainty used in HLC.

Degree of certainty	Definition
Certain	Indicates that there is no doubt about the interpretation.
Probable	Suggests that an interpretation is highly probable (approximately over 80% chance).
Possible	Suggests that an interpretation is possible but by no means certain (approximately over 50% chance).

- *Source/reference* – An acknowledgement of the source(s) upon which the interpretation is based.

Data Level 4 – current historic landscape character.

2.23 The current historic landscape character of each polygon was determined through analysis of Level 2 and Level 3 data once data capture was completed (see Appendix 2 and below for details of the methodology). The current 'character type' description has the following structure: -

- *Historic character* – This field was populated once data capture and analysis was completed (see below). It contains the names of the Current HLC Type assigned to each polygon.
- *Period* – This field defines the period in which the current landscape character came into being, using the same definitions set out in data level 3 (see above). However, in the case of polygons that have been assigned to the settlement attribute group, the 'industrial' period will be sub-divided into an early (*c* 1800-1880s) and a late (*c* 1880s – 1950s) phase.
- *Map Source* (settlement attribute group only) - this field defines the map source upon which the interpretation of the historic landscape character of the polygon is based. The four categories are as follows
  - CMHTS/ SUAD[5] historic core definition

[5] The Central Marches Historic Towns Survey and the Shrewsbury Urban Archaeological Database.

- 1880s 1st Edition 6" OS map
- 1950s/60s 1:10,560 SMR OS maps
- Modern 1:10,000 digital map

- *Confidence* – In the case of current landscape character the confidence measure relates solely to the period designation. The confidence levels are the same as those recorded in Data Level 3 (see Table 4 above).

Definition of historic landscape character types.

2.24 Following the completion of the digitisation phase of the pilot studies the data within the database was analysed in order to determine a series of Current and Previous HLC types (see Appendix 2 for full details of the methodology).

2.25 Each Current and Previous HLC Type was assigned a numeric code which were be used to define a legend within the GIS.

2.26 Data relating to the current and previous Attribute Group, the Current and Previous HLC Type code and name, the period and field loss[6] was imported into the GIS data set via a Structured Query Language (SQL) connection. This was then joined to the HLC Shapefile.

[6] Only applies to HLC polygons assigned to the 'Fieldscapes' attribute group.