

3 METHODOLOGY

3.1 Familiarisation

Northumberland's HLC project was undertaken in three main stages: familiarisation, mapping character, and analysis. The first, familiarisation, involved building up an understanding of the historical development of the county, as well as making visits to other HLC projects to see work in progress. Specifically this meant consultations with neighbouring regional authorities who were carrying out HLC or who had completed it: Cumbria, North Yorkshire and the RCAHMS for their work in the Scottish Borders. From these visits, and with reference to a number of other projects that were either near completion or had recently been completed in 2005 (primarily Devon, Shropshire, Cheshire and Northamptonshire) an initial methodology was developed.

This stage also required identification of data sources, designing an ArcGIS project and a complementary database. A series of pilot areas were chosen in which to test and refine the methodology. These were based on the civil parishes of Ancroft, Alnham and Whittingham, and Haydon, reflecting the widest variations in the county's landscape from the north Northumberland coastal plain and Cheviot fringe to the Tyne Gap. The pilot study was essential to the final development of the project methodology, after which the main mapping phase of the project could begin.

3.2 Sources

HLC is a broad and generalised exercise, as well as a relatively rapid one. As a result the main sources of information have to cover the whole county and be available digitally for use in a geographic information system (GIS). For the Northumberland HLC Ordnance Survey MasterMap has formed the basis of the project, providing information about roads, field boundaries, settlements and water bodies for example, as well as vegetation types on rough land. However, as MasterMap was designed to be viewed at a scale of around 1:2500 it was essential to use other mapping scales, especially the 1:10,000 series, to get a wider perspective of the landscape. Older OS mapping from the 1970s back to the 1860s was also available digitally and this provided historical landscape information. Although it would have been possible for the project to reference each edition, practically, there was only time to compare the first and second editions (1860s and 1890s) with 21st century mapping. Digital aerial photography from Getmapping (Millennium Map) was also available to the project. This was used to provide information on land use, ground conditions and relict features.

Limited use was also made of non-digital sources. Principally this revolved around an exercise undertaken during the project to map some of the county's Enclosure Awards. Approximately one third have been digitised across the county and they have been used to help inform the analysis stage.

Another, entirely new source of data was created during the project: a physiographic model of Northumberland (see section 2.6 and Appendix 5). This is an aggregation of the data sets which describe the underlying geology, soils and landforms of the county and was primarily used in the analysis stage.

3.3 Software

The project was mapped using ESRI's ArcGIS 9 (ArcMap version 9.1) with information stored in an Microsoft Access 2003 database. As part of the project an Oracle database was designed, to be more fully integrated with the GIS, but its functionality for data entry was not as developed as Access and it was not adopted. Although the software generally performed well throughout the project the ArcGIS software was not always stable, especially during long spells of editing data. Northumberland National Park uses MapInfo (an alternate GIS system) but this accepts common forms of export files from ArcGIS: the data created by ArcGIS has been exported and converted for their use.

3.4 Mapping Methodology

The Northumberland HLC methodology is based on collecting and analysing information, or attributes, about discrete spatial areas that share the same characteristics. These attributes are recorded from the data sources outlined above and are subsequently analysed to create a series of historic landscape character types. This attribute-based approach is consistent with the most recent HLC projects and is less interpretive than early projects.

The process of defining an HLC polygon began with examination of the modern OS mapping, most commonly the 1:10,000 scale map, looking at the patterns and shapes of fields, settlement, industry or woodland, etc. From there a direct comparison could be made with the first edition map from the 1860s, any similarities or differences noted, and a judgement made on the boundary of the HLC polygon. The relevant MasterMap polygons were then selected and copied, pasted and merged into a new shapefile within the GIS. Owing to the large quantity of data involved, each of Northumberland's district (borough) authorities was dealt with separately and at the end of the project all polygons were pasted into a new county shapefile. Relationships in border areas (between districts) were considered carefully as the data gathering programme developed. Once a polygon was defined details about it were then entered into the database with only minimal metadata information being added to the GIS attribute table.

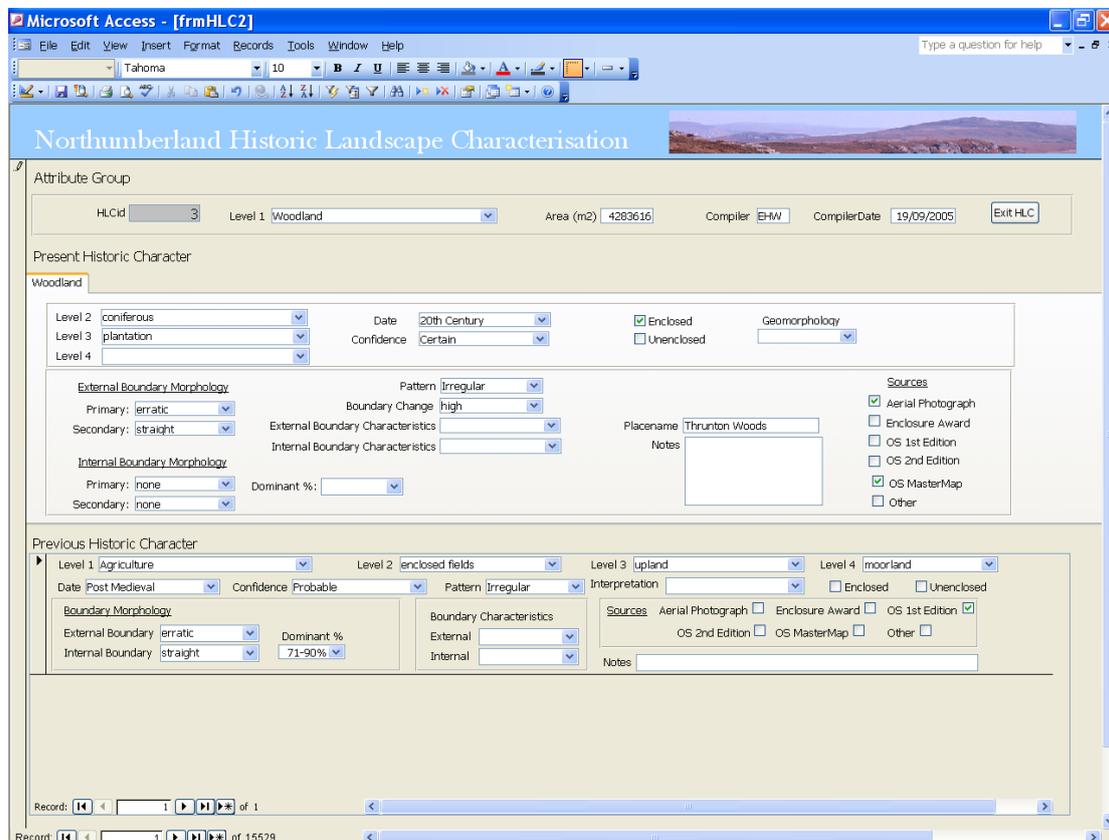


Figure 4: Screenshot of the HLC database

3.5 Database Structure

The database used by Northumberland HLC was structured around the template project design published by English Heritage in 2002. Two main data entry tables were created: one recording current landscape character and the other any previous landscape character; these were linked to a series of related tables holding the terms used in controlled entry lists. The data entry screen was designed with a series of tabs, one for each of the Level 1 categories defined by the Northumberland project (see below), which allowed a different combination of relevant attributes to be displayed for each. A full list of database tables, fields and relationships is provided in Appendix 2 and a brief description follows here. The fields include

attributes about character as well as morphological observations which describe the shape and pattern of the landscape.

HLC ID number

The unique identification number for each polygon, automatically generated by the Access database and recorded separately in the GIS attribute table to create a link between them.

Area

The area of each polygon in square metres, taken from the GIS attribute table.

Compiler and Compiler Date

The compiler's initials and date the record was created.

Level 1, Level 2, Level 3, Level 4

A hierarchical list of land use was devised into which all the HLC polygons could be placed. Using up to four levels this was a quick way of categorising polygons. During the pilot phase this list changed a great deal and even in the early stages of the main mapping stage of the project a few new terms were added. Nine Level 1 categories, or HLC groups, were created: Agriculture, Coast, Communications, Industry, Military, Ornamental, Settlement, Water, and Woodland. These headings were split again at Level 2, Level 3, and Level 4. However, not all of the main headings were split down to Level 3 or Level 4, for example Settlement was only taken to Level 2 using the terms 'farm', 'village' or 'town', whereas Industry could be divided down to Level 4: e.g. Industry > Extractive > Fossil Fuel > Coal opencast. These lists were used for both current and previous landscape character, although some entries were not pertinent to both.

Date

The date field recorded the broad period when the current or previous landscape character type came into being and is based on those used in the Historic Environment Record. Most evidence for the date of landscape features came from the Ordnance Survey. It is possible to distinguish between a mid- and late 19th century origin by using date in conjunction with the Sources field (see below).

Period name	Date range
Prehistoric	500,000BC – AD42
Roman	AD43 – 410
Early medieval	AD411 – 1065
Medieval	AD1066 – 1539
Post-medieval	AD1540 – 1900
20 th century	AD1901 – 2000
21 st century	2001 to present
Unknown	

Table 2: Broad periods and date ranges used to classify Northumberland HLC

Confidence

This is a measure of the confidence for the date and interpretation attributes, which gives a rough indication of likely 'correctness'. Based on the English Heritage template it includes three choices: certain (indicates there is no or very little doubt about the interpretation), probable (suggests an interpretation is highly probable, with a 75-80% chance), and possible (suggests an interpretation is possible but by no means certain, with 50-75% chance). The default value was 'probable'.

Geomorphology

This field was used to give an indication of the physical situation of a polygon where relevant and included the terms, dean, haugh, island, river terrace, and valley bottom.

Interpretation

A list of landscape types was devised to give an indication of the likely processes and origin of polygons. In practice this field was only widely used in the Fieldscales group and included terms such as planned enclosure, amalgamated fields, reverted moorland, and reclaimed dunes.

Field Size

Only applicable to Fieldscales and enclosed Rough Land groups. The predominant field size in an HLC polygon was described as one of three categories: small (< 2 hectares), medium (2 to 10 hectares), and large (> 10 hectares).

Number of fields in polygon

This is a count of the number of enclosures in a polygon as shown on the modern OS MasterMap or 1:10,000 scale map. When used with the number of fields recorded on the first edition OS map it can give an idea of the loss or change of boundary features.

Number of C19 fields

This is a count of the number of enclosures in a polygon as shown on the first edition OS map of the 1860s. When used with the previous field it can give an idea of the loss or change of boundary features, although they do not necessarily refer to the same enclosures.

Boundary change

A rough measure of the degree of boundary change, measured as high, medium, low or none.

Place name

Town, village, farm and woodland names have all been recorded as they appear on the modern OS 1:10,000 map or MasterMap. This has been used in the analysis stage to help suggest origins, eg the 'moor' place name element, and ancient woodland place name elements such as 'hagg' and 'hollins'.

Pattern

Pattern refers to the boundaries and divisions within each polygon and was mainly used to record field boundaries in the Fieldscales group. It is useful for suggesting landscape history since pattern can be related to processes of change, such as planning or lack of it.

Boundary morphology

The shape of boundaries in the Fieldscale, Woodland, and Rough Land groups were recorded. This describes the primary (dominant) and secondary (minority) internal and external boundaries of a polygon. The attributes include, curving, erratic, sinuous, straight, and none. These can be used to suggest origins of boundaries, for example straight surveyed boundaries from post-medieval planned enclosure, and sinuous boundaries reflecting the edges of open fields or furlongs.



Figure 5: Variations in boundary shape: straight field boundaries (left), irregular dog-leg boundaries (middle), and a mix of straight and sinuous boundaries (right). These images are an extract from the Millennium Map, which is copyright Getmapping plc.

Dominance

This is a rough measure of the proportion of internal boundaries which are in the primary (dominant) category. The bands are 51-70%, 71-90% and >91%.

Boundary characteristics

Other boundary characteristics were recorded with a separate list for internal and external boundaries. Internal boundary characteristics include watercourse, dog-leg (where different patterns of strips and furlongs met), S-curve (or the reverse S-shaped boundary which has been laid out on the edge of a strip or furlong of the medieval open fields), coaxial and agglomeration. External boundary characteristics include settlement edge, road, railway, woodland, wavy edge, moorland, and watercourse. Not all boundaries in a polygon must exhibit a characteristic for it to have been recorded.

Sources

A list of the most commonly used sources used to define the type and attributes of a polygon. They include: aerial photograph, Enclosure Award, OS 1st edition, OS 2nd edition, and OS MasterMap. More than one source can be selected for any polygon so, for example, a feature visible on the first edition OS map which is still visible on MasterMap and modern aerial photographs would have all three selected, whereas a feature only visible on MasterMap would have one source selected and by inference must have a previous HLC entry using earlier sources such as the second or first edition OS map.

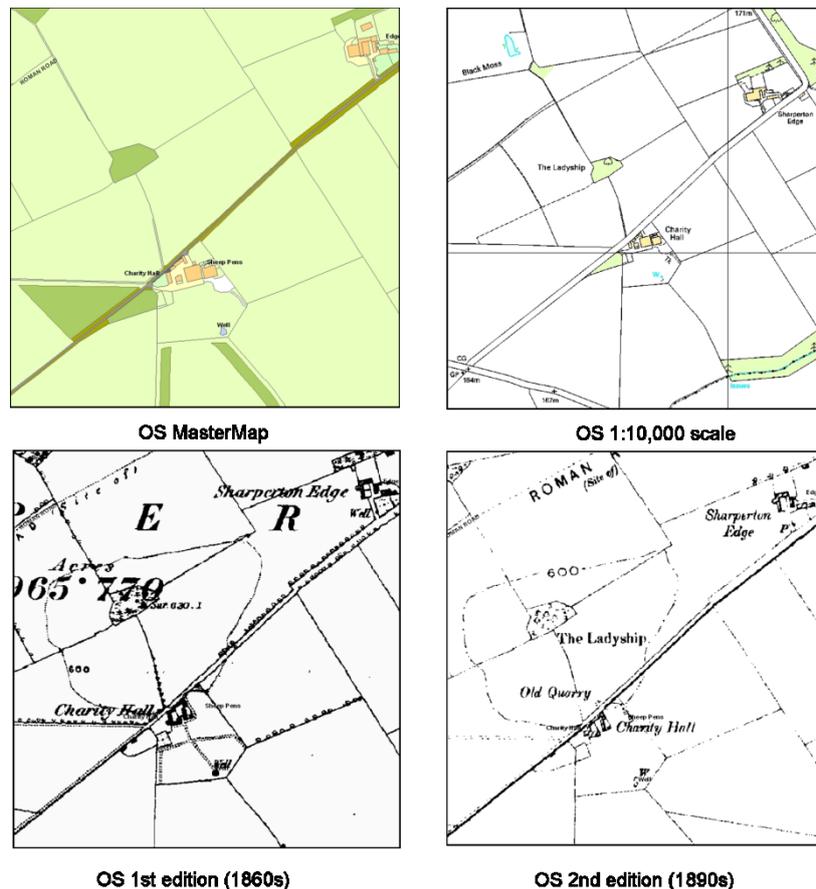


Figure 6: Examples of different map sources used by the HLC.

Notes

A free text field in which additional information or comments could be recorded. In practice this was largely used for recording information from the first edition OS map, such as alternative place names and farm names, as well as names of railway and mineral lines.

3.6 Analysis

Once the mapping stage was completed the database was analysed using a range of Access queries to create a series of Historic Landscape Character Types. These are based on combinations of the attributes described above and can be divided into **ten** broad, or entry-level groups, including Coast, Communications, Fieldscapes, Industry, Military, Ornamental/Parkland/Recreation, Rough Land, Settlement, Water and Woodland. Within these headings some 62 separate historic landscape types have been defined and they are described in the following report.

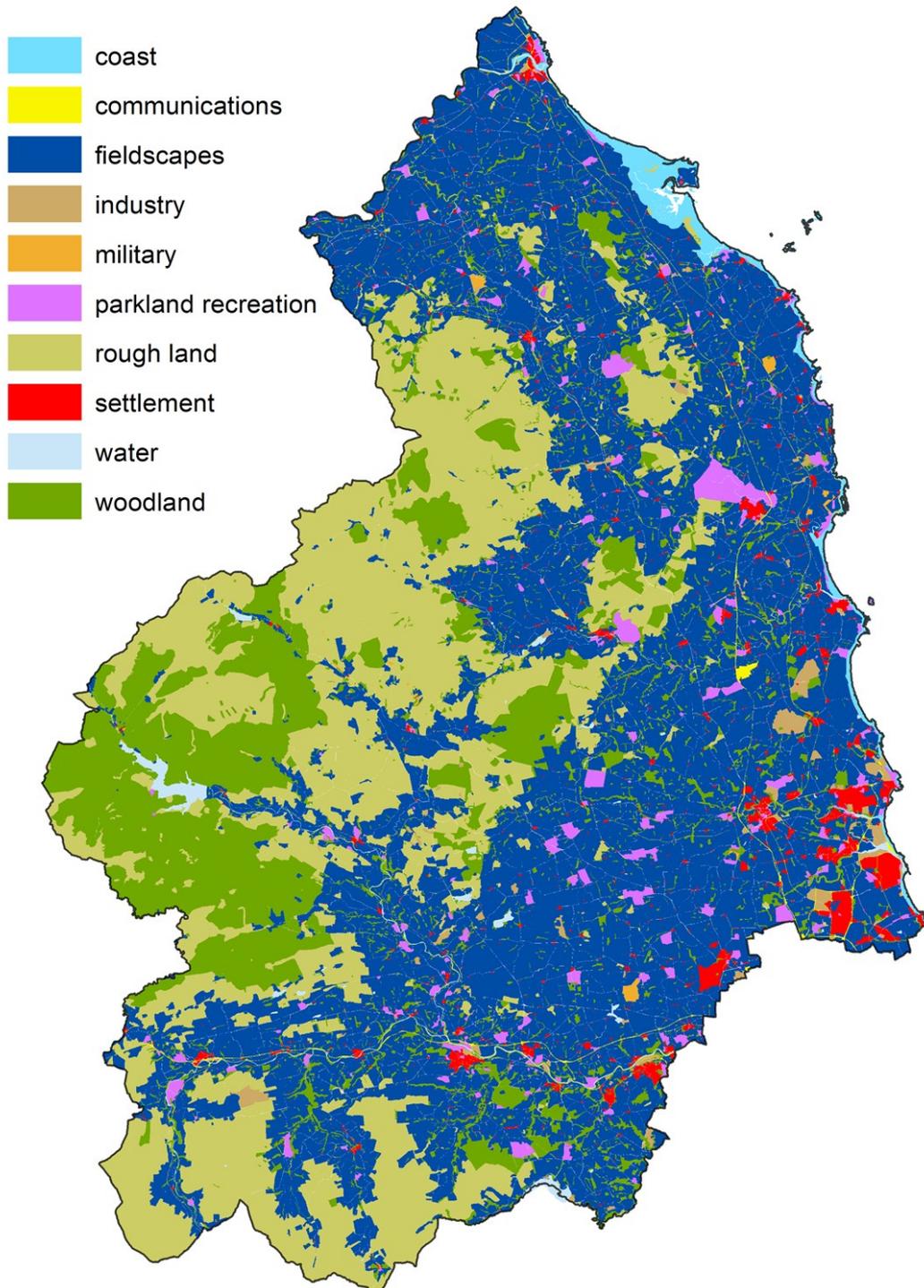


Figure 7: Broad entry level Historic Landscape Character types.