

CHAPTER 2. METHODOLOGY

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The characterisation methodology created for the Cumbria and Lake District HLC project evolved over a period of several months. The development of the methodology was assisted by the characterisation of two pilot areas, and discussion with regional academic and historic environment specialists at a steering seminar. There was also a meeting with Joy Ede, the Lancashire HLC project officer. The principal aim of the first stage of the project was to develop an effective and systematic way of mapping the historic elements of the modern landscape, and of organising and storing that information. The mapping was undertaken digitally, and the accompanying data was stored in a database, using a Geographical Information System (GIS). The process was influenced by a number of diverse factors, which affected the structure of the database and the data content. The factors ranged from the availability of sources which could be effectively employed, through newly emerging GIS technology, to the impact of the wider group consultation on the project, and the influence of earlier HLC methodologies.

Sources

The main source data for the mapping exercise had to be available for the whole county and suitable for use in a GIS. Available data was of two types; digital and paper-based. The mapping phase of the project was based on digital data, and was used to obtain all modern mapping information, such as roads, field boundaries, water bodies, woodland and settlement. The first modern digital map base used was OS Land-Line®. This was replaced during the early part of the project by OS MasterMap when it became available. This not only provided a new map base, but changed the way the

information was mapped (see below, GIS Technology). Other Ordnance Survey maps, at scales of 1:10,000 and 1:50,000, were also available digitally. Land use information was obtained from a digitised version of the County's Phase One Habitat Survey, with additional information taken from OS MasterMap. Historical landscape information was gleaned from digital versions of the OS first and second edition maps, dating to the 1860s and 1890s respectively. Digitised vertical aerial photographs of the County became available after the commencement of the project, and these were used to provide more detailed information on ground conditions and land use when required.

A wider selection of sources were available in paper format, including 1:25,000 OS Outdoor Leisure™ and Explorer™ maps across the entire county. Antiquarian county-scale maps of the late eighteenth century¹ were used for information on pre-nineteenth century settlement and roads. Some landscape surveys were used, in the main covering some of the extensive National Trust landholdings within the National Park, and numerous articles and books on various aspects of the historic landscape in the region. These were used to support interpretation in the mapping process, but applying most of these to an HLC in any uniform way would have proved impossible, as they did not provide county-wide coverage. The scope of the project did not allow for systematic use of historic manuscript maps and plans, such as tithe, enclosure or estate maps. These were not available digitally and the collections are dispersed between four separate records offices across

¹ Jeffreys 1770; Donald 1776; Yates 1786

the County. Even so, some information on planned enclosures of the late eighteenth and early nineteenth century was obtained from the work carried out by Professor Ian Whyte in Westmorland and Lancashire-over-Sands.²

GIS Technology

The mapping and recording of the landscape was carried out using MapInfo®, a Windows-based GIS application which allowed the spatial plotting of landscape features, and the recording of attributes in an associated database. The initial mapping process was based on the Land-Line® map base. This involved manually digitising areas with shared landscape attributes, using a layer of polygons created by the 'enclose' function in MapInfo®.

Part-way through the project, OS MasterMap became available and this replaced LandLine® as the map base. MasterMap provided a topographical layer of polygons, for fields, buildings, roads, etc, which could be used as the basis for the mapping process, and attribute data was attached to them. This speeded up the process of mapping significantly, as the polygons were pre-existing and had only to be given attribute data. The main drawback of this methodology was the resultant size of the digital layer and its associated database. The landforms on which the polygons were based mapped the landscape in great detail. Thus, instead of one polygon per field or length of road, there were usually a number reflecting changes in topography, verges, road junctions, rock outcrops, and so on. This created vast amounts of duplication in the database, with identical data being attached to large numbers of small polygons. This was, in some cases, further complicated by overlapping polygons. It was possible to simplify the data by amalgamating polygons,

but this was found to be time-consuming and required regular and lengthy maintenance of the database. Overall, the main impact, of using MasterMap polygons for the basis of the mapping, was on the time needed to analyse the data once the mapping process was complete.

The enormous numbers of polygons required a large amount of computer processing resources and time in order to run queries. Consequently, the mapping data for the County was divided into a series of smaller databases, using the district council boundaries. The Lake District National Park database was compiled from data taken from the four district council areas which have land within the Park. Even so, queries run on the entire database for the Lake District National Park would take several hours to complete.

Mapping Methodology

The Cumbria HLC employed an attribute-based approach to the mapping process, in which each parcel of the landscape was assessed systematically against a set number of specific pre-determined criteria. The aim of the mapping was to identify the historic attributes of the modern landscape, including natural and built environment features, such as fields, woods, water bodies, roads, settlement, industry, etc. The attribute-based methodology has become the accepted way of undertaking historic landscape characterisation. Earlier HLC projects used fewer attributes and tended to record much of the detail within free text fields. As HLC methodologies have developed, this has changed into a more rigid database structure, using a system of codified fields to record as much information as possible. The database structure used by the Cumbria HLC was developed from the approach taken by the Lancashire HLC project.

The database comprised a series of fields which recorded the attributes of

² Whyte 2003

landscape features on modern maps. Fields were also included which recorded the attributes of the same features on the Ordnance Survey first edition maps of the mid-nineteenth century, as well as the degree of change between the two. Each field had a drop-down menu containing selectable values. During the initial stages of the project, there was a degree of flexibility, and some new categories were added, particularly within the interpretation fields. As the characterisation progressed, however, the creation of new categories ceased, as this would have risked distorting the existing data. For example, aerial photographic data made it possible to distinguish between rough grassland and heather land cover, but this was not made available until mapping had progressed significantly. Although, heather and rough grassland are recorded on the Phase1 habitat map, this was not used as the information was 20 years old, and heather regeneration has since been encouraged through agri-environment schemes and forestry management plans.³

Database Structure

A table showing the fields used, the attribute codes and their meanings is given in Appendix 1. The following is a brief description of the database fields used to record the landscape attributes of each polygon.

Morphology: the categories were based on a short exercise which looked at recurring types of field and boundary shapes, and mapping a small pilot area. Three basic enclosure shapes were defined: rectangular or sub-rectangular, elongated and irregular. Each of these were sub-divided into enclosures with different boundary types: wavy-edged, curving and parallel, regular, and ruler-straight. This made a total of 15 possible combinations though three,

for discrete field parcels, were not used. A category of unenclosed land was also included. Full details, with illustrative examples, can be found in Appendix 2. As well as mapping field and boundary shapes in some detail, the morphology field was used to categorise other types of land-use.

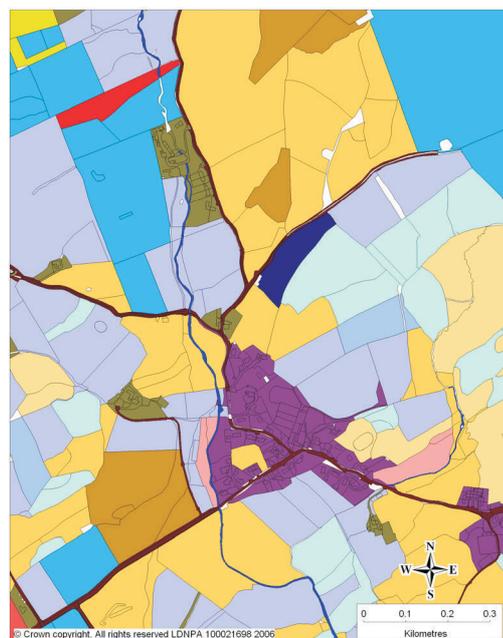


Figure 3: Polygons mapped by morphology, with settlement in purple at the centre, roads in brown and rivers in dark blue. Fields are coloured according to shape

Other land use types included settlement, recreational land, industry, communications, water and military land. Settlement was divided simply into nucleated settlements (i.e. hamlets, villages, towns) and dispersed settlement (i.e. individual farm, houses, churches). Recreational morphological types were used for undeveloped land in non-agricultural use, and included parks, gardens and cemeteries, as well as caravan and camping grounds. Industry was divided by type, as this could usually be distinguished on modern maps, and covered extractive industries, manufacturing, wind farms and reservoirs. Military sites had their own category. Communications included roads, railways and canals.

Surface type: the categories were derived from the Ordnance Survey

³ Forestry Commission, www.forestry.gov.uk

base maps, and were thus limited in their range. Areas of woodland, moorland, scrub and marsh, for example, were noted from OS symbols or areas of colour on the modern maps. Improved lowland was generally ascribed to those areas which had no such marking. The topographical layer of MasterMap also provided some information on surface types. Further data was obtained from the Phase 1 Habitat map. This enabled differences in fell, moorland and improved lowlands to be distinguished, but not finer detail such as heather moorland, or areas rough grazing. Woods could be divided into coniferous, deciduous, mixed or scrub. More detail could be distinguished for areas of coast and marsh, for example lowland moss, mudflats, sand/shingle, dunes or saltmarsh. Natural water bodies were divided simply into lakes or tarns, and rivers.

Date: this provides earliest known date for the predominant historic character of any particular landscape feature. This was limited by the available map evidence. The earliest category was pre-1770, and related to features which pre-dated planned enclosures.

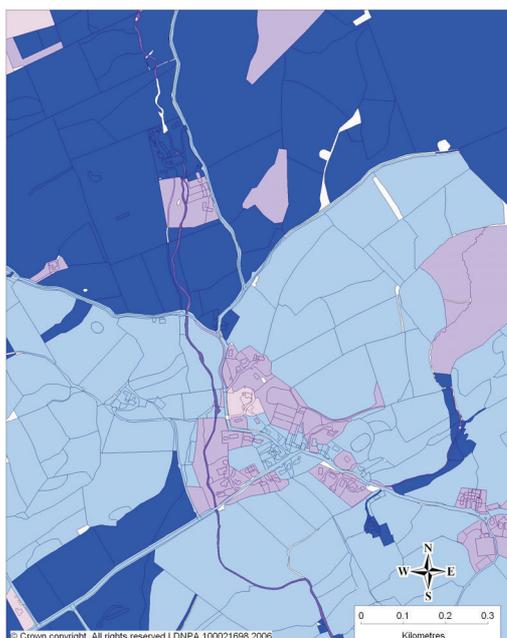


Figure 4: Polygons mapped by date, with light blue for pre-19th century, dark blue for early 19th century, and lilac for modern features

In some cases, such as settlements and their associated field systems, this could be checked against the late eighteenth century county maps. The Ordnance Survey 1st edition maps were the main reference point (taken to be around 1864).

OS 1st edition morphology: used the same criteria as the main Morphology field, but recording the morphology as shown on the Ordnance Survey 1st edition map, if it differed from the modern map.

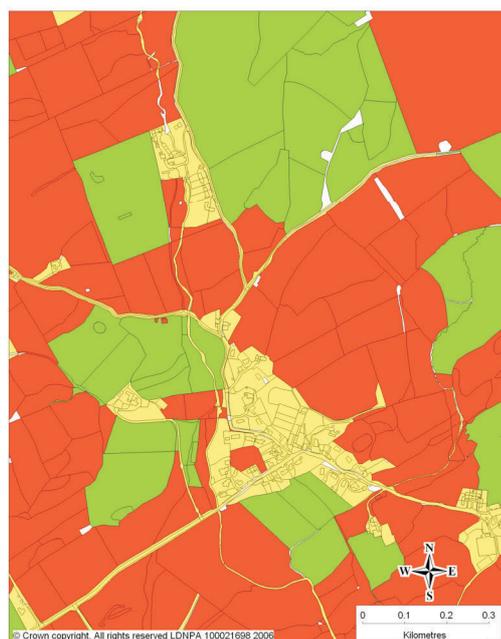


Figure 5: Polygons mapped by boundary change. Red shows little or no change and green significant change

OS 1st edition surface type: used the same criteria as the main Surface type field, but recording the surface type as shown on the Ordnance Survey 1st edition map, if it differed from the modern map. For the most part, this was used to record areas of change in woodland, or the planned enclosure of lowland moss and moorland.

Boundary change: indicates the degree of boundary change or loss in fields between the Ordnance Survey 1st edition maps and the modern maps. It ranged from no, or little, change, to new field pattern established. There was also a 'not

applicable' category for unenclosed land and for non-agricultural land.

Interpretation: a range of categories were devised for agricultural and unenclosed farm land. Other types of features, such as coastal land, infrastructure, settlement and industry, were categorised mainly through the Morphology and Date fields. For agricultural land, four interpretation fields were created, based on the Lancashire HLC fields for recording enclosed land. The Cumbria HLC categories differed from Lancashire's, and they were used to interpret more than just enclosed fields. This allowed some time depth and change of use to be recorded. The drawback with this system, however, was the multiplicity of variables in the use of the interpretation fields, which presented some complications in interrogating the database at a later stage of the project. For example, an area woodland might be interpreted as plantation in interpretation field 1, and as planned enclosure in interpretation field 2. The surrounding, unwooded



Figure 6: Polygons mapped by interpretation. Settlement and roads are shown in yellow, orange for ancient closes, woodland in green, planned enclosure light blue. Darker blue shows former commonfield

enclosures, however, would be interpreted as planned enclosure in interpretation field 1. A search of the database for areas of planned enclosure in only the first field would, therefore not pick up all areas of planned enclosure. In some cases, several land use changes could be detected through the available map evidence, requiring more complex searches. A more detailed discussion of the interpretation categories is contained in the section on characterisation methodology, below.

Confidence: the confidence field was used to indicate the certainty of the information recorded for each landscape feature. The default value was 'probable', but also included options for 'certain' and 'unsure'.

Comments: a free text field which allowed comments to be made on particular features. In practice, this was coded to numbered remarks held in an Excel spreadsheet, as certain comments featured more than once. For example small orchards were too small to be mapped and were generally recorded as part of settlement, but the comments field allowed their presence to be noted, particularly in South Lakeland where they are a well-known feature of the farming landscape.

Entered by: the initials of the recorder.

Date entered: the date at which each record was completed.

Characterisation Methodology

Following completion of the mapping for the Lake District National Park, the database was analysed, and those features which shared distinct attributes were grouped into broad landscape types. These landscape types form the basis of the following report, and they are described in detail in each of the ensuing chapters. The landscape types are based on the morphology field, plus interpretation, although much simplified. The majority of the interpretation categories, 27 out of a total of 32,

related to agricultural land, and these were grouped into three main landscape types: anciently enclosed land, planned enclosure and unenclosed land.

The most diverse landscape type was anciently enclosed land, which comprised a number of different interpretation types. These included some minor categories, such as 'ring-fenced farm', 'demesne land', 'outfields', 'turbary plots' and 'cow pastures'. In many cases, these were additional interpretation categories which had been added as the project progressed, and where more detailed land uses could be recognised. These new classifications were incorporated into the database as they emerged, and where necessary, this involved correcting small amounts of earlier work. Nearly all of the new interpretative categories reflected unusual land uses, relating to process rather than physical form, that covered relatively small areas of landscape, and thus they have been subsumed into the more general ancient enclosure landscape types. The main landscape types of ancient enclosure comprise discrete ancient farms, former open fields and intakes. Some distinctive and significant relict land use types, such as monastic precincts and granges, deer parks and vaccaries, were traceable through existing boundaries and from place-name evidence, although they all also come under the more general ancient enclosure landscape types. These have been described separately.

Planned enclosure related largely to late-eighteenth and nineteenth century enclosures. The interpretation fields distinguished between parliamentary enclosure, privately planned enclosure and planned enclosure of unknown type. The identification of planned enclosure relied partly on physical field shapes, and on information taken from the work of Ian Whyte.⁴

Unenclosed land included both upland fell and moorland, as well as unenclosed mosses and non-agricultural coastal land. These were recorded as either 'wastes and commons', or were given the default value of 'none' where land was not in agricultural use.

Non-agricultural land was also grouped into landscape types, as defined by the morphology field and each has been dealt with separately in the ensuing report. They comprised woodland, water, settlement, recreation, communications and industry. Woodland has been divided into two types: ancient woodland and plantation. Water forms a single landscape type, though reservoirs are distinguished from natural water bodies. Settlement is simply into nucleated and dispersed types. Recreation comprises both private ornamental parks and public parks, public cemeteries, as well as camping and caravan parks. Communications comprised roads, railways and canals, both in use and disused. Roads were grouped by date and type, distinguishing between traditional routes, turnpike roads and modern roads. Industry, including military sites, was dominated by extractive industries, as these have left the greatest physical impact on the landscape. The important role of other industries, such as woodland crafts and coppice woods, however, is acknowledged.

Each landscape type has been mapped separately for the Lake District National Park. They have also been mapped in relation to each other, and areas have been defined where patterns of particular landscape types could be distinguished. These are discussed separately in Chapter 12, Character Areas.

⁴ Whyte 2003