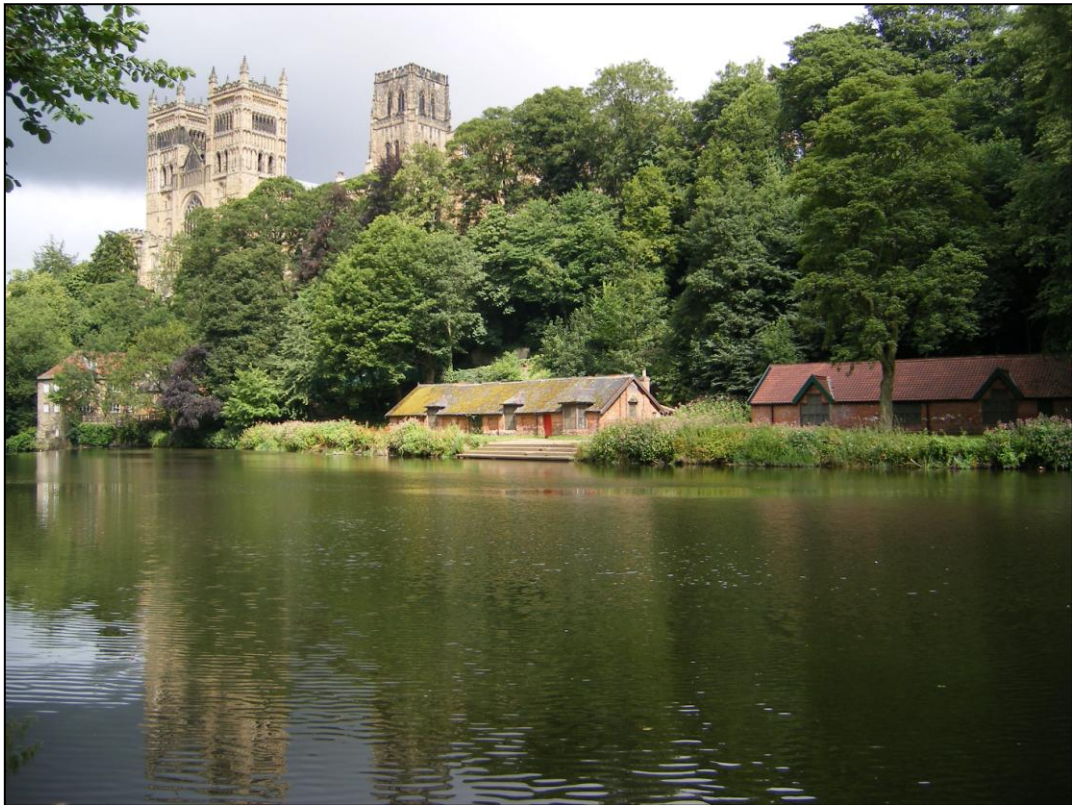**County Durham & Darlington**

Historic Landscape Characterisation

English Heritage Project 3288 Main

Final Report 2013

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Heritage, Landscape & Design

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Front Cover

Durham Cathedral overlooking the River Wear ©Hannah Wiggins

Acknowledgements

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Executive Summary

The County Durham and Darlington Historic Landscape Characterisation (CD&D HLC) is part of a wider programme of Characterisation undertaken throughout England over the past 20 years. It consists of this report alongside a geodatabase of information recording the character of the landscape of CD&D over thousands of years. Using techniques and methods refined through two decades of HLC creation in England, the CD&D HLC attempts to tease apart the palimpsest landscape into its component parts, recording these changes in order to document how the landscape has changed. The results are then used to judge trajectory of change and guide decision-making in the future, in order to manage and retain the character of an area. The HLC is available as a resource for all researches, both private and commercial, and can be used as a framework and springboard for other research projects. It consists of this main report, a secondary report considering all landscape classification types, and a vast ESRI geodatabase of all data. It is available for export as an ESRI files and associated pdf documents, and will be available online with embedded interactive mapping application.

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Abbreviations

Certain abbreviations will be used throughout this text:

AONB	Area of Outstanding Natural Beauty
CD&D	County Durham and Darlington
DCC	Durham County Council
EH	English Heritage
ELC	European Landscape Convention
GIS	Geographical Information System
HER	Historic Environment Record
HLC	Historic Landscape Characterisation
HSC	Historic Seascape Characterisation
LCA	Landscape Character Assessment
MoD	Ministry of Defence
NCA	National Character Areas
NERRF	North East Regional Research Framework
OS	Ordnance Survey
TOID	Topographic Identifier

1. Introduction

1.1. The European Landscape Convention

1.1.1. An international context – an all-encompassing remit

The United Kingdom is a signatory to the European Landscape Convention (ELC) which defines landscape as 'an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.' (Council of Europe, 2000). It is based on the premise that landscape is universal: it occurs everywhere and everyone has an interest in it. The convention's provisions cover all landscapes of whatever quality, whether rural or urban, built or natural. It aims to ensure the proper protection, management and planning of landscapes throughout Europe.

1.2. Historic Landscape Characterisation

1.2.1. A regional context – historic areas

Historic Landscape Characterisation (HLC) projects form part of a national programme supported and developed by English Heritage (EH) carried out at a regional level by local government, chiefly through county council historic environment services. The aim, through a desk-based Geographic Information System (GIS) programme and subsequent analysis, is to achieve an understanding of the historical and cultural origins and development of the current landscape. HLC projects seek to identify material remains at landscape-scale that demonstrate the human activities that formed the landscape as it is seen today. The present day landscape is a matter of human creation and perception, arising from intellectual, emotional and aesthetic concerns. The fabric of the land that helps people to create their idea of landscape is recognised to be the product of thousands of years of human activity, through successive periods of change and modification. Understanding landscape means understanding its dynamism, and the underlying cultural processes and political, social, economic and cultural influences.

1.3. HLC Evolution

The importance of such work has been recognised politically for over twenty years, as evidenced by the government's invitation in its 1990 White Paper 'This Common Inheritance' (Department of Environment, 1990) to consider the desirability of establishing a register of historic landscapes. An English Heritage project was established to explore this concept. The project concluded that a partial and selective register would be an inappropriate way to protect and manage historic landscape character in England, instead a comprehensive programme of HLC, borrowing from, but improving on, landscape assessment techniques was likely to be more accurate and effective. This recommendation was based on the understanding that protection of historic landscape requires not just designation but also good management supported by information and understanding (Aldred & Fairclough, 2003). Creating this understanding is the purpose of HLC, and is in line with the guidance of the European Landscape Convention (Council of Europe, 2000).

Funding levels meant that only a handful of HLC projects could be implemented each year and so coverage of the entire country will have taken around twenty years by the time the whole process was complete. The methodology employed in each county has differed and the overall methodology has understandably evolved and been refined.

There is currently no national level context for historic landscape (comparable with the National Character Areas (NCAs) **Section 2.3** below), although the idea of such a map, produced from the sum of all county HLC maps, has been mooted. However to create such national level areas would require a further generalisation of the data and interpretation to reflect the higher scale. "In simple terms, character is defined by the balance between similarity and contrast, and this balance varies with scale. Landscape character at national level will therefore need to be assessed differently – not merely the sum of all local maps, but something more" (Fairclough, 1999, p. 12).

1.4. County Durham and Darlington HLC

The County Durham and Darlington (CD&D) HLC began in 2005 with the initial project design. The HLC Officer was employed to create a methodology and

commence the HLC in April 2006. The project took the form of four main stages: Stage 1 (familiarisation, pilot areas and refinement), Stage 2 (characterisation and digitisation of CD&D), Stage 3 (analysis and project review) and Stage 4 (report production, archive and dissemination). Stage 1 took 25 weeks (8% of total project), Stage 2 took 273 weeks (89% of total project) and Stages 3 and 4 combined took 9 weeks (3% of total project). The total time taken was 307 weeks (just under 6 years).

The project area encompasses all of CD&D with a total area of approx 243 000 hectares, covering County Durham, including the former districts of Chester-le-Street, Derwentside, Durham, Easington, Sedgefield, Teesdale, and Wear Valley (subsumed into a Unitary Authority in 2009 while the HLC was still in Stage 2) and the Unitary Authority Borough of Darlington. It also encompasses a heritage coastline and part of the North Pennines Area of Outstanding Natural Beauty (AONB). This presents a huge variety in the landscape – from the upland moors of the Pennines to the beaches, cliffs and flood plains of the heritage coast (Figures 1 and 2).
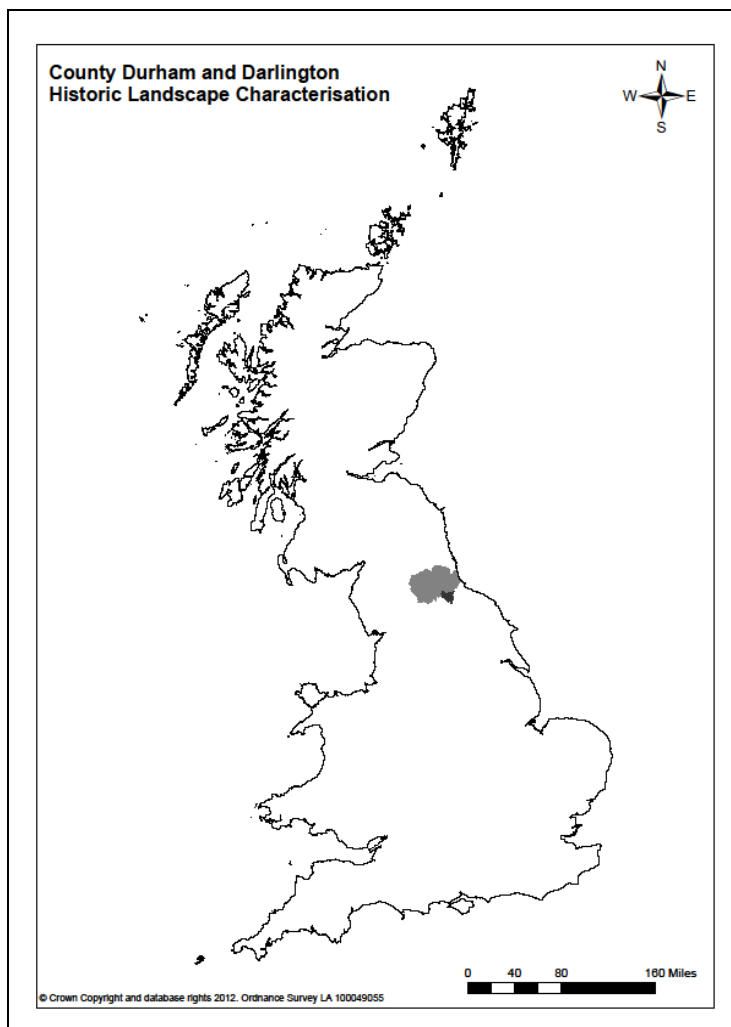
Figure 1: Location of County Durham & Darlington HLC within mainland Britain
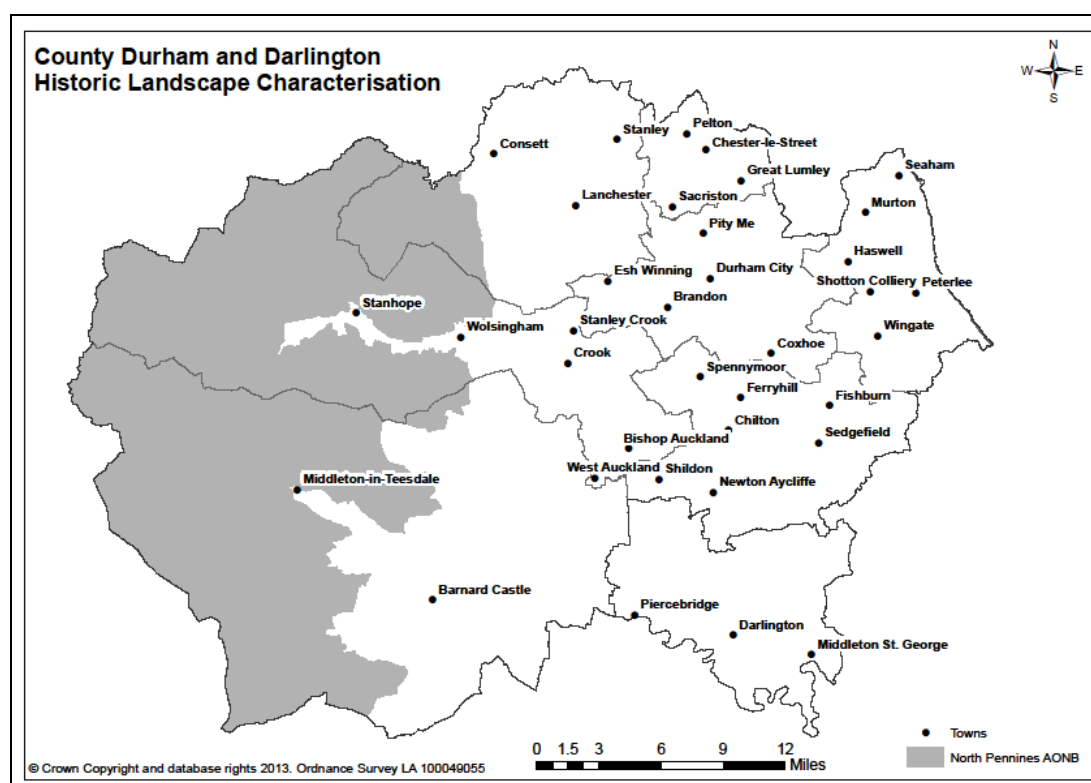
Figure 2: County Durham & Darlington HLC area

The Project Advisory Group for this project consisted of representatives from Natural England (former English Nature and Countryside Agency), Cumbria County Council, Darlington Borough Council, Durham County Council (DCC): Archaeology, DCC: Heritage Coastline, DCC: Landscape, DCC: Policy and Planning, DCC: Sustainability, Defence Estates, DEFRA, Durham University, English Heritage (EH), Forestry Commission, Newcastle University, North Pennine AONB, North Yorkshire County Council HLC, Newcastle City Council, Northumberland County Council (NCC) HLC and Yorkshire Gardens Trust. This group were brought together to discuss the provisional methodology before commencement of Stage 2. The project Steering Group consisted of David Mason (DCC Principal Archaeologist) Graham Fairclough (Head of Characterisation, EH) and Hannah Wiggins (DCC: HLC Project Officer).

This six year project has created a body of spatial data with an underlying database which gives an historic landscape character to the entire area of County Durham and Darlington. This comprehensive geodatabase is in a GIS format and was created from numerous sources, mainly spatial data including historic mapping, modern mapping and aerial photographs. All landscape characters have been classified

using a hierarchical system of broadclass subdivided into two further, more detailed, levels of character. The geodatabase records both the current character types, with both a major and minor character type within that[1], and gives all previous visible (and when possible non-visible) historic characters of the area using the same classification system. The project framework recognises that landscape character is the product of landscape change over many centuries.

This project complies with MoRPHE guidelines as laid out in 'Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide' (English Heritage, 2006) that replaced the MAP2 guidelines as referred to in the earlier document 'HLC: Template Project Design' (Fairclough, HLC: Template Project Design, 2002). It builds on the National HLC method as outlined in the above and in the DCC project design statement, which can be found appended to this document: **Section 8.1: Project Design Statement**. The Revised Method Statement used to underpin the HLC had been produced after completing a pilot HLC area, (Wiggins, 2007), but during the main phase of digitisation, certain problems with the methodology were identified and methods changed as necessary. These problems and changes are discussed in **Section 3: Methodology**.

1.5. HLC Aims

Like all types of characterisation, HLC projects provide broad-brush overviews of complex aspects of the historic environment in order to provide new, wide-ranging information for conservation, management and development decisions. The objective is to promote better understanding and management of the historic landscape resource, to facilitate the management of continued change within it, and to establish an integrated approach to its sustainable management in partnership with other organisations.

As such, HLC projects are designed to be applied to landscape management schemes such as agri-environment schemes, Historic Environment Advisory

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[1] Major and minor character types were previously referred to as 'primary' and 'secondary' character types, which while slightly more accurate in definition, caused problems when discussing primary and secondary characters and first previous, second previous character types etc.

Services, stewardship targets and Woodland Grant Schemes. HLC is also designed to work alongside and help inform Landscape Character Assessments (LCAs) and Strategies. They are also seen as very useful tools within Spatial Planning, helping at not only a strategic level, informing Development Plans and Policy Documents, but also helping to inform the planner on a case-by-case trigger-mapping basis of the context of any development and helping to flag up potential archaeological issues. It is designed to sit alongside, give context to and help inform, the Historic Environment Record (HER) curated by DCC, Heritage Design and Landscape Team. However, HLCs cannot be used as a substitute for the HER, and any development proposals within the planning system in County Durham or Darlington must consult with the archaeological officers at DCC if the site possesses, or is suspected of possessing, archaeological significance.

HLC projects can also be used as an important tool for partnerships such as for Conservation Area Appraisals and Parish Plans. The CD&D HLC should be used to help identify and fill gaps in knowledge such as those recognised in 'The North East Regional Research Framework' (Petts & Gerrard, 2006). For a more in-depth discussion and examples of case studies using the HLC see 'Using Historic Landscape Characterisation' (Clark, Darlington, & Fairclough, 2004).

1.6. Scope of the CD&D HLC Final Report

This final report for the CD&D HLC is designed to be the main document giving much of the information required to understand and use the HLC. A secondary report will be published soon after which is considered to be more of a handbook, listing in detail each classification and discussing rarity and management recommendations. Further information that is more detailed can be found within other publications to which this document refers.

The HLC is neither simply a map, nor a series of maps and it is certainly not a single report. It is a huge resource containing a wealth of information, stored within a powerful spatial database with the facility to search, query and analyse by innumerable means.

There are nearly 12 000 polygons showing current landscape character, with almost 18 000 further entries giving information on previous characters. Over 164 classifications exist into which all data has been attributed. This report cannot hope to identify, describe and map every aspect of the HLC, but instead seeks to demonstrate the ways in which the data can be interrogated and also to explore some of the overriding themes which occur.

The report aims to function, along with the secondary report, as the main resource for the CD&D HLC. **Section 1: Introduction** gives the reader an understanding of the theory behind HLC and how this has been applied to the CD&D HLC. **Section 2: Overview of Project Area,** gives the reader a background to the geological and cultural landscape that makes up County Durham and Darlington. **Section 3: Methodology** describes how the project was undertaken in detail. **Section 4: Typologies**, describes the typology hierarchy, considers those classifications which have not been used for various reasons, and discusses the ten Broadclass characters in detail. **Section 5: Results and Analysis** discusses overarching trends within the data, identifies five main HLC Character Areas. and looks at time depth and time slicing approaches. **Section 6: Further Research/Dissemination** discusses the North East Regional Research Framework (NERRF) and how the HLC can be disseminated further. **Section 7: Bibliography** contains all referenced sources and **Section 8: Appendices** contains all appended information including the Project Design Statement.

2. Overview of Project Area

In order to understand how the landscape has been shaped and changed over millennia through human interaction, it is necessary to understand the underlying geology and soils. This geology shapes the physical attributes of different landscapes, generating conditions suitable for specific flora and fauna which are then exploited or managed by human intervention.

The text for the following section (**2.1: Cultural Heritage**) has relied heavily on the Keys to the Past website period overviews (Durham County Council & Northumberland County Council, 2012).

2.1. Cultural Heritage

2.1.1. The first settlers - Palaeolithic (500 000 – 10 000 BC)

During the last Ice Age, 18,000 years ago, much of Britain was covered in a thick blanket of snow and ice and the north-east of England was an uninhabitable freezing wasteland. However, as the glaciers melted, human settlers began to move into these unoccupied areas. The landscape would have been cold and icy with few trees. Despite this, there was enough food for the herds of reindeer and elk that lived there. The first groups of settlers would have survived mainly by hunting these wild animals and gathering the few edible plants. It took a long while for the first early settlers to make their mark. There are only a few slight archaeological remains belonging to this Palaeolithic period.

2.1.2. Mesolithic (10 000 – 4 000 BC)

Although the Mesolithic inhabitants of CD&D were not farmers, they changed the environment. Environmental surveys have recorded many microscopic fragments of charcoal, which suggests that people were setting fire to areas of forest. This had several purposes, including encouraging new plant growth on which deer and other animals could feed.

Despite the evidence for what people ate and where they lived, very little is known about their inner thoughts. There are no burials in the north-east of England from this period nor are there any religious sites. However, it is clear from other areas of Britain that some of the dead may have been buried in caves. It is thought that these societies believed in spirits related to the animals and land around them, and may have treated natural sites, such as woods, springs and boulders as holy sites.

2.1.3. Neolithic (4 000 – 2 200 BC)

From around 4 000 BC there were slow changes in life in North-East England. As well as hunting and gathering it appears that people began to plant crops and to domesticate animals. It took a long time for these early farming techniques to become the main source of food, and the sea in particular remained a vital source of nourishment. This slow growth of farming led to forests being cleared more permanently to allow animals to graze and crops to be planted.

Little is known about the settlements of the Neolithic period. As in the earlier period, many people may have continued to live in different places during the year, perhaps leading their herds up to higher ground during the summer and coming down from the hills when the cold winter months arrived. It is possible that some later settlements of Bronze Age date may have been built over earlier Neolithic houses. Tools continued to be mainly made of flint and other rocks, though their shape changed, being larger than the small Mesolithic microliths.

Unlike the Mesolithic period, several burial sites survive. These stone mounds, in which they buried their dead, were large in size and some contained complex stone chambers in which the bodies were placed. These were not simply cemeteries, but probably had other religious purposes and seem to have been used to show the power and importance of the group who built them. A number of different types of enclosure seem to have been used as religious sites.

Late Neolithic and Early Bronze Age (3 000 – 2500 BC)

In the late Neolithic and Bronze Age there was a period of change. New types of pottery were introduced which were often used to contain the burnt remains of cremations, which increasingly became an important way of burying the dead. These burials were frequently placed in round barrows of earth or stone. For the first time bronze tools began to be used.

In the late Neolithic and early Bronze Age, farming became increasingly important. The evidence from prehistoric pollen shows that woods were disappearing and that grassland and moorland was increasing, and new crops were introduced. In upland areas, the land also had to be cleared of large stones to allow ploughing. The remains of many of the stone cairns made from the cleared stone can still be seen in the North Pennines. For the first time the boundaries of fields, probably also made from cleared stone, can be seen. These fields often surrounded small settlements made up of groups of round huts. In many upland areas, the circular stone foundations of these huts can still be seen.

These agricultural remains were not the only alteration of the landscape. Carvings were made on rock outcrops, as well as boulders and some smaller, portable stones. These carvings are usually known as cup and ring marks, or petroglyphs. Cup marks

were simple hollows chipped into the rock and were sometimes surrounded by one or more circular ring marks. This type of rock art is thought to be mainly of Neolithic date. Later carvings were sometimes carved in other locations. For example, several are carved on the cover of a stone-lined grave found at Witton Gilbert.

2.1.4. Bronze Age (2 500 – 700 BC)

The large number of earlier religious monuments began to go out of use during the Bronze Age. Rather than placing the dead in elaborate long-barrows, the inhabitants of CD&D usually placed the remains in simpler stone or earth mounds. Although many of these were quite small and not very spectacular, some were very big, and could have been seen from a great distance. Little is known about religious beliefs, but the placement of hoards of objects in special places became more common.

2.1.5. Iron Age (800 BC – AD 43)

Iron tools began to replace bronze tools from around 1000 BC, though they did not become common until about 500 BC. As metal tools became more popular, tools made from worked flint fell out of use. Despite these changes, many other aspects of life remained remarkably similar to earlier times.

People continued to grow crops and farm cattle and sheep; and, near the coast, seafood was an important part of the daily diet. They also still used the same kind of simple circular house. In lowland areas, these would probably have had walls made from wood and wattle and daub, but in the uplands, the walls were made from turf and stone. The remains of many of these stone huts of Bronze Age and Iron Age date can still be seen in many areas of upland Durham.

Although there were few changes in the design of houses, there were some differences in the plan of the settlements. Bronze Age huts were mainly unenclosed, but in the Iron Age, many settlements had earth banks and ditches built round them. Wooden palisades also surrounded many farmsteads. In some areas the enclosures can still be seen, but elsewhere they have been destroyed by later farming and can only be seen during archaeological excavations or as cropmarks.

There are many possible reasons why these defences may have been built. It may have been that society was becoming increasingly violent, and that there was a need

for people to protect themselves. Another possibility is that they were built by people to show others how important they were, and to mark themselves out from their neighbours.

As well as these small settlements, in the late Bronze Age and Iron Age larger sites began to develop. They were often sited on hilltops, and like the smaller villages these were often defended. The earlier settlements only had a single bank or ditch, but the later Iron Age hill forts often had several rows of ramparts.

Burial practices in this period are relatively scarce, Iron Age people disposed of their dead in archaeological invisible ways. There is very little evidence for the cremation and burial of Iron Age people in barrows, however at Bishop Middleham, a cave burial was found, with six individuals buried and pottery that dates from the late Bronze Age and early Iron Age.

Roman writers record that at the end of the Iron Age most of the North-east was ruled by just two tribes. To the north were the Votadini whose land stretched as far north as Edinburgh. South of this was the land of the Brigantes, who probably ruled as far south as the southern edge of the North York Moors. These main tribes were probably made up of groups of smaller tribes, and it is possible that they sometimes came into conflict. However, when the Roman armies arrived in the mid-C1st AD they had to turn their attentions to a more powerful enemy.

2.1.6. The Roman Conquest (AD 43 - 410)

Although the first Roman invasion of Britain was led by Julius Caesar in 55 BC this was only a brief expedition, and the Roman armies swiftly returned to Europe. The second invasion came nearly one hundred years later in AD 43. The Romans quickly conquered much of the south of the England. Although the tribes in the north-east of the country had not been defeated in battle they became allies to the Romans. The main tribe in this area was a group known as the Brigantes. This large tribe probably included many smaller tribes, such as the Tectoverdi and Lopocares. Their lands covered much of Northern England from the Pennines and North Yorkshire to Northumberland and southern Scotland.

Roman Roads

The main road for the Romans in North-East England was Dere Street; this is not the original name of the road, but a later name given by the Anglo-Saxons, which means road to Deira or Yorkshire. Dere Streets runs from York to the Firth of Forth in Scotland and through Durham next to the forts of Piercebridge, Binchester, Lanchester, Ebchester, and beyond into Northumberland and eventually Scotland.

Cade's Road, which runs from Sockburn to Tynemouth, via Chester-le-Street, was another important road as was the route across the North Pennines through the Stainmore Pass. This cross-Pennine road runs roughly along the line of the modern A66 and although it pre-dates the Romans, they defended the route with forts at Bowes, Greta Bridge and on the pass itself.

Roman Towns

Small towns, known as *vici* grew up around many of the forts. Some of them have regular plans and they may have been founded by the army to provide places for soldiers to spend their money and homes for the many camp followers to live. Few *vici* have been excavated - the best understood in Durham and Darlington are at Piercebridge and Binchester.

These places were probably dependant on the Roman forts, and few survived when the Roman garrisons were withdrawn. During their life time these *vici* were centres for trade from all over the Roman Britain and beyond. Apart from the *vici*, there were few other towns in the regions.

The Population

Although the Roman army clearly had a major effect on the landscape of the north-east of England, for many of the inhabitants of the region, little would have changed. The main form of settlement continued to be small groups of roundhouses surrounded by an earth bank or stone wall.

The people who lived in these enclosed settlements were fully reliant on farming for their livelihoods. Some evidence of roman influences, such as coins and pottery, has been found on these sites suggesting that few people bought or sold things at the Roman towns and forts.

It is most likely that crops were grown in the lowland areas, whilst animals were grazed on the higher areas of land. Sometime, small settlements can be seen to sit within a small network of field boundaries, such as Faverdale, Darlington, or East Park, Sedgefield. These fields are often slightly larger than the earlier prehistoric fields.

The type of Romanised farm classified as a villa, once thought to be quite rare in the North East, has been found in increasing numbers in recent years especially in the middle and lower Tees Valley.

The End of Roman Rule

In the final century of Roman rule (c. AD 300 to 410) in Britain, life changed in the north-east of England. Many Roman forts were rebuilt, with old wooden buildings being replaced by stone ones. At first, it was thought that these were lived in by soldiers and their families, because from the third century soldiers were allowed to marry. Previously they had not been allowed to marry until they left the army.

This was increasingly a time of disorder and warfare. The tribes from northern Scotland are known to have raided England heavily in during the decade of AD 360. However, this increase in raiding was not just found in the north-east of England, similar attacks were occurring all over the Roman Empire.

This meant that many soldiers were taken away from Northern England to fight in other wars elsewhere. Some soldiers may have stayed in the North, but as their pay was no longer arriving from Rome they may have deserted the army and settled down to become farmers.

There is evidence for the Roman way of life continuing for some time as people hoped for a return of the legions to protect them from increasing pressure from raiding tribes.

2.1.7. Early Medieval (AD 410 – 1066)

Evidence for continuation of life on Roman forts comes from Binchester, with widespread evidence of C5th occupation followed by the burial of an Anglo Saxon

woman in the mid C6th. It is likely that many other forts continued to be used in a similar way. With the end of Roman rule soldiers who stayed in the North were no longer paid. It is thought they probably turned to farming to support themselves and their families. Some army leaders may have used their military strength to control the areas surrounding their bases.

These Roman forts are not the only evidence for early medieval power centres. Other local leaders may have used the change in power as a chance to increase their own importance. From the north of Hadrian's Wall, tribes started raiding and fighting deep into County Durham. By the C6th the tribe who controlled much of Northumberland, the Gododdin were recorded as fighting with Anglo-Saxon armies as far south as Catterick (North Yorkshire). These native tribes would have quickly shed any Roman influence, and spoke a language similar to Welsh.

Archaeologists and historians often refer to these people as the British. However, despite the growth of these British kingdoms they were soon threatened by a new power, the Anglo-Saxons.

The Anglo-Saxons were a group of tribes which originally came from northern Germany and Denmark, and began to settle in Britain from the mid-C5th. There is much debate about how many settlers came over to England, and it is likely that only a small number reached CD&D. Although in other parts of the country very large Anglo-Saxon cemeteries are known, those in Durham are small. However, it is thought that they heavily influenced the local British population, who quickly acquired many aspects of Anglo-Saxon society such as the way they dressed, the names they used and the language they spoke. This is evidenced through place names such as Ferryhill which, according to Ayto *et al*, is from the Old English word *fergen* meaning 'Wooded Hill' with the tautonym 'hill' added later (Ayto & Crofton, 2005).

Settlements and Buildings

The rulers of these British and Anglo-Saxon kingdoms did not have one capital; instead they probably travelled around, using a number of different palaces such as that at Yeavering, which is believed to have been one of the capitals, where archaeologists have found the remains of a series of great wooden halls, as well as smaller timber buildings. However, not all early medieval settlements included these

types of building. In many upland areas, such as the Cheviots and the North Pennines, it is likely that round houses continued to be used until possibly as late as the C7th.

By the C8th the inhabitants of the uplands appear to have begun to build roughly rectangular buildings. An excellent example of such rectangular structures can be seen at Simy Folds, high up in Teesdale, where the houses are joined with enclosure walls to form courtyards. Although it has been suggested that Simy Folds may have been built by Viking settlers, a late C7th radiocarbon date suggests that it was probably built before Viking settlement began in this area. Stone rectangular buildings were not limited to the uplands.

After the Romans left, the early towns that had begun to form around the forts all declined. New towns only began to develop in the late Anglo-Saxon period. In Durham, excavations at No 64 Saddler Street revealed that settlement at this site was reorganised in the C10th. At Darlington, a number of Anglo-Saxon ditches were recorded during excavations in the Market Place. These appear to have been related to the nearby Anglo-Saxon church of Saint Cuthbert.

Economy and Agriculture

As Roman rule ended in Britain there was a major decline in the patterns of trade across Britain. Coins stopped being used, and the large Roman pottery industries came to a halt. In the north-east of England, most people continued to make a living through farming and agriculture.

Animals would also have been kept and provided a range of goods although, not all animals were domesticated; there is some evidence that some wild animals were hunted including moorland birds, such as Black Grouse and Capercaillie. Fish, such as cod and ling, show that the sea was also an important source of food for the early medieval population. Many of these fish can only be caught far out into the North Sea showing that there must have been an organised fishing industry.

Burial and Religion

It is likely that at the end of the Roman period, many people had converted to Christianity, though many pagan practices probably continued. However, the earliest

Anglo-Saxon settlers were pagan, worshipping the gods of their native Germany and Scandinavia. We know little about their religious practices. The conversion of the population of Anglo-Saxon Northumbria began in the early C7th, though there may have been some small Christian communities surviving from the Roman period.

2.1.8. Medieval (AD 1066 - 1540)

On the eve of the Norman Conquest in AD 1066, the north of England had already seen much recent upheaval. The Normans were not able to control the North-east immediately. William the Conqueror continued trying to control the North and there were many uprisings against his power and authority.

Finally, after many Normans were massacred in AD 1069 the King came North with a powerful army. He defeated his enemies and laid waste to large areas of land in County Durham, burning houses and fields. Even this did not lead to peace straight away, more punishment raids followed a further uprising in AD 1080, but this time the raids were harsh enough to quell further rebellion.

Castles

The Norman kings settled many important families in the North-east in an attempt to increase the security of the region. Norman noble families were given estates across Durham. Many built simple earth castles, known as motte and baileys, on their lands to provide them with some protection against both hostile locals and raids from Scotland. An impressive example of a medieval motte and bailey castle is Bishopton Castle, Darlington.

Many castles were built across County Durham. A castle had been built for the Bishop of Durham as early as AD 1073. Many of these controlled important route ways, such as Bowes, which protected the Stainmore Pass into Cumbria, and Barnard Castle which stood on a major crossing over the Tees, and controlled the mouth of Teesdale.

Although many of these castles were originally motte and baileys, they were soon expanded. Many grew to be extremely large and well-protected strongholds, such as at Raby Castle and Barnard Castle.

Agriculture and settlement

Despite the frequent warfare, for most people life was dominated by living and working on the land. Most land was owned by the powerful noble families or the monasteries. They often controlled large blocks of land made up of several separate estates. These were usually largest in upland areas, such as Weardale and Teesdale, where the land was poorest. Other very large areas of estates included Bedlingtonshire and Norham-Islandshire, which were owned by the Bishops of Durham.

The landowners kept some of their land for their own farms, but most was given to followers to farm in return for their help in times of war and contributions of money and food. Most of the workers on the land would have had a small area of land on which they could grow food for themselves, but they mainly worked on the land held by their lords.

The form of the villages varied widely across the region. In many areas, the Norman raids had destroyed the Anglo-Saxon villages. This meant that completely new settlements were often built. These new villages, usually had two rows of houses arranged either side of a central road. Other villages grew up around a large village green, such as at Gainford. In upland areas these villages were not always so well organised, and may have been nothing more than a scatter of houses and farms.

Surrounding the village would have been two or three large fields, divided up into strips, and shared by the villagers. In general during this period it was oxen which ploughed these fields; leaving large banks and hollows, known as ridge and furrow. The remains of such fields can be seen surrounding Cotherstone village.

In upland areas, fewer crops were grown because of the harsher weather. Instead, cattle and sheep were grazed on the rough moorland. In the summer the animals were taken up to the hilltops and the shepherds lived in small temporary houses, known as shielings. Although most settlements on the hilltops and moor sides would have been shielings, there were also some more permanent villages, such as at Mickleton.

In winter, the animals were brought down to lower-lying land and the valley bottoms. Houses in the uplands had rough stone walls and turf walls and were often divided into two parts. The family would have used half the house, but the other half would have been used as an animal shelter or byre.

Traces of many medieval villages can still be seen. Although most early remains are buried beneath later buildings, many villages shrank in size or disappeared altogether leaving behind the earthwork remains of the buildings. Usually the site of the houses can be seen as simple earth platforms. They are sometimes surrounded by earth banks, which outlined their small gardens. Houses were often arranged along sunken trackways, which lead out to the surrounding fields.

In upland areas, the stone foundations of the buildings can still sometimes be seen. These building remains are sometimes surrounded by simple stone walled enclosures, which like the earth banks in lowland villages surrounded small gardens. Excellent examples of these medieval earthworks can be seen at Thornley.

Churches and Religion

The other common type of stone building was the church. By the end of the medieval period most villages had either a church with a priest or small chapel served by the priest from a nearby village. The earliest Norman churches are not unlike late Anglo-Saxon churches, and were simple structures with plain rounded arches. However, church architecture changed, and the plan and decoration of churches became more complicated.

Many of the medieval churches survived into the post-medieval period, even if the surrounding village shrank leaving them isolated, as at Brignall. However, some churches and small chapels fell out of use and are now in ruins, such as at the Mary Magdalene Chapel in Durham.

As well as parish churches and chapels there were many other religious buildings in the medieval landscape of CD&D. Many abbeys and priories were founded in the years following the Norman Conquest, sometimes on the site of earlier monasteries. Larger abbeys often had smaller priories which were dependant on them. For example, the great abbey at Durham gained control of the nearby priory at Finchale.

Towns and Industry

Although there were no real towns in Durham in the C11th, by the end of the medieval period there were many, both large and small. Local lords would encourage such trade so that they could make money from taxation. This meant that these early towns often grew up close to the strongholds of the leading nobles, such as at Barnard Castle. Other towns developed around important religious sites, such as Durham. The Bishop of Durham granted charters to many towns under his control, including Bishop Auckland and Darlington.

The North-east would be known for its mining and great centres of industry in the post-medieval period, and there were already stirrings of this greatness to come in the medieval period. The Bishops of Durham owned coalmines at Darlington, Ferryhill and Hett. Lead from mines in South Tynedale and Weardale was carried to Newcastle, where it was shipped to the south of England and abroad, to make pipes and for roofing.

The Late Medieval Period

During the C14th, life in CD&D had been badly affected by the Black Death, which reached Durham in AD 1349. The weather became wetter and colder, which made farming in upland areas much harder. Some settlements, such as Ulnaby were completely deserted, and others such as Garmondsway shrank in size.

However, from the C15th there was a revival in farming in the region, some of the villages, which had decreased in size, became larger again. Elsewhere, farming expanded into areas which had previously not been used for growing crops, such as forests and wasteland. The Bishop of Durham's hunting forest in Weardale was increasingly given over to agriculture, and by the early 16th century was no longer used for hunting.

There were also changes in the organization of farming. Instead of farming small strips of land scattered across several large fields, the strips were lumped together into blocks making ploughing and harvesting easier.

By the end of the medieval period, life in the North-east was very different from life in the C11th. Although for most people it was still dominated by farming, there were an

increasing number of towns, and the industries which would dominate the area from the C17th came into being.

As well as the great noble families, the church had become one of the most important landowners, although its power would have disappeared by the end of the C16th. However, these changes were as nothing compared with those that were about to begin in the post-medieval period.

2.1.9. Post Medieval (AD 1540 - 1901)

Introduction

The medieval period is often said to end in AD 1540, when King Henry VIII died, and Elizabeth took the throne. However, in the North-east, many changes overlapped this period. The area had long been notorious for its violence, and was the battlefield over which the kingdoms of England and Scotland fought their ongoing wars. These wars finally came to a bloody end in AD 1513 when the two warring sides fought at Flodden, one of the largest and bloodiest battles to take place on British soil. The Scottish king, James IV, and many of the Scottish lords were killed in the decisive English victory. This massive defeat marked the end of major warfare between the two countries in the North-east, and although there were further battles, relations between the two countries improved in the late C16th.

Border Reivers

Although the kingdoms may have ended the fighting, there was a new form of violence: On-going small-scale warfare between the local family groups similar to the clans of the Scottish Highlands, called 'reiving'.

The violence included blackmail, reiving (stealing animals) and kidnapping. There was also the constant threat of murder which would lead to a series of revenge attacks. Reiving was most common in the upland areas of Northumberland.

The on-going violence led to the growth of a new form of defensive building, the bastle. These were strongly built farmhouses, with thick stone walls. The ground floor was used to house the animals, whilst people lived on the first floor. Although bastles

were most common in the northern areas of Northumberland, some are also known in Durham – such as that at High Coniscliffe.

Reiving finally ended in the late C16th and early C17th, as the English and Scottish authorities began to take action against the lawless families. As society became more peaceful many bastles were turned into normal farmhouses and more windows were added. At the same time, many castles began to fall out of use, as the local lords of Northumberland and Durham began to build large stately homes.

Religion

The great religious changes of the Reformation encouraged Henry VIII to dissolve the monasteries and convents of England. The land and buildings were sold off, and many of the buildings were turned into new houses by members of the nobility.

Most parish churches had been built by the end of the medieval period, though the C19th saw another period of church building. The growth of industry led to a great increase in the population and many settlements that had previously not needed their own parish church, were granted a new church to serve the local people.

The Rise of Industry

The most important change in CD&D during the post-medieval period was the rise of industry. The most important industry was coal mining, which came to dominate life in east Durham. In the early to mid C19th the increasing amount of coal production led the owners of collieries to start experimenting with the best ways to move the coal from the mine to the seaports.

At first simple wagonways were used, but further experiments led to the use of the steam engine to move the coal trucks. These were the first driven railways; the first commercial steam railway to carry passengers ran from Stockton to Darlington. Soon there was an expanding network of railways running throughout the region. However, the rise of the railways was not the only change.

In the C18th and early C19th, there was a great period of road improvement. Many old roads were repaired and made stronger; in other cases, entirely new roads were built. At this time, road construction was not paid for by the government, instead

private companies, or groups of wealthy individuals would provide the money. For example, there was no road running the full length of Upper Teesdale and over to Alston until one was built by the London Lead Company. People using many of these roads would have to pay a small fee or toll- these would be collected at turnpikes, where there would be a gate across the road and a small house for the toll collector.

Many other industries grew up around the coal mines. Much of the coal was turned into coke in coke ovens. This was then used to fuel iron and steel blast furnaces. Although some of the earliest blast furnaces date to the mid-C18th, most were built in the C19th. In the west of Durham there was little coal mining. Instead the slight medieval lead mining industry flourished in the C18th and C19th. Entire villages were built by the large lead companies and the remains of many of the lead mines and the earthworks that surrounded them can still be seen.

Agriculture and Farming

Despite the rapid growth of industry, much of Durham remained agricultural. Farming became much more efficient; the prices of crops rose and gave farmers the money to invest in their farms. They also began to experiment with new crops and breeding better livestock. During this 'Agricultural Revolution', the landowners carried out a great architectural experiment.

Inspired by the ideas of beauty, usefulness and profit, they constructed an enormous range of picturesque or classical buildings on their farms. There was also an increased use of mechanical power; some machines were powered by horse-driven gin gangs, others were powered by steam engines.

The remains of the buildings that housed these engines can still be seen at some farms, even though the machinery itself has been removed. Another move to improve farming was the increasing use of lime to try to improve the quality of the soil. This led to the construction of many limekilns in the region. Although much of the lime was sprayed on fields and used as a fertiliser, it was also used for other purposes, such as making cement for building.

However, not all farming was carried out on the more fertile lowland areas of the region. Much of CD&D is harsh upland moorland. In these areas sheep farming is

more common – the sheep range freely on the moorland hillsides and are only brought down to the valley bottoms during the lambing season.

During the medieval period, the shepherds often lived high in the hills, in temporary summer settlements known as shielings. However, from the C17th these were no longer used; although some developed into permanent farms.

Simple sheepfolds; square or round enclosures in which sheep were gathered before being moved also date from this period, along with smaller pens used during lambing; and a number of sheep washes used to dip the sheep.

In the C19th these upland areas were also increasingly used for shooting wild birds, particularly grouse. Many of the great landowners would hold large organised shooting parties for friends. The shooters would often stand in shooting/grouse butts, simple stone shelters, from which they would fire at the birds which had been driven into the air by beaters.

Rebellion and Invasion

Despite the end of reiving and the wars with Scotland, the North-east remained prepared for violence throughout the post-medieval period. The introduction of guns and the canon meant an end to the old style medieval castles, but new fortifications were built. The greatest threats of invaders arriving by land appeared first in AD 1715 and then again in AD 1745 when the Jacobite rebellions broke out.

Once the AD 1745 rebellion was repressed, there was no further conflict between England and Scotland, instead towards the end of the C18th there was increased worry about possible invasion from across the sea. However, unlike southern England, there were no defences to protect against the threat of attack.

Following the outbreak of the World War I and II there were new coastal defences built, providing larger, more powerful, guns, the remains of one of these exists at Crimdon Dene Mouth (Archaeological Services University of Durham, 1998).

The area was also attacked from the air by German Zeppelins and an early air raid shelter was built at West Hetton Colliery. The threat of attack from air became

increasingly important during World War II and many light anti-aircraft gun emplacements were built, such as that at Elsdon.

2.2. Geodiversity

The diversity of the rocks of County Durham and Darlington, their composition, structure, the fossils and minerals they contain, and the process which have shaped them, and continue to shape them, enable geologists to decipher a history and evolution which can be traced back over 500 million years. Collectively the rocks tell the story of an area that has been a deep tropical ocean, an arid desert coast and an ice bound landscape. These are linked together with a rich industrial heritage that depended on the geological resources.

For further information on the geodiversity of County Durham see (Lawrence, Vye, & Young, 2004), for Darlington see (Tees Valley RIGS Groups, 2011).

2.2.1. Topography

County Durham contains some of the highest ground of the North Pennines: Burnhope Seat attains a height of 764m OD before the county extends eastwards to the North Sea coast. The headwaters of the rivers Derwent, Wear and Tees all lay within this Pennine upland.
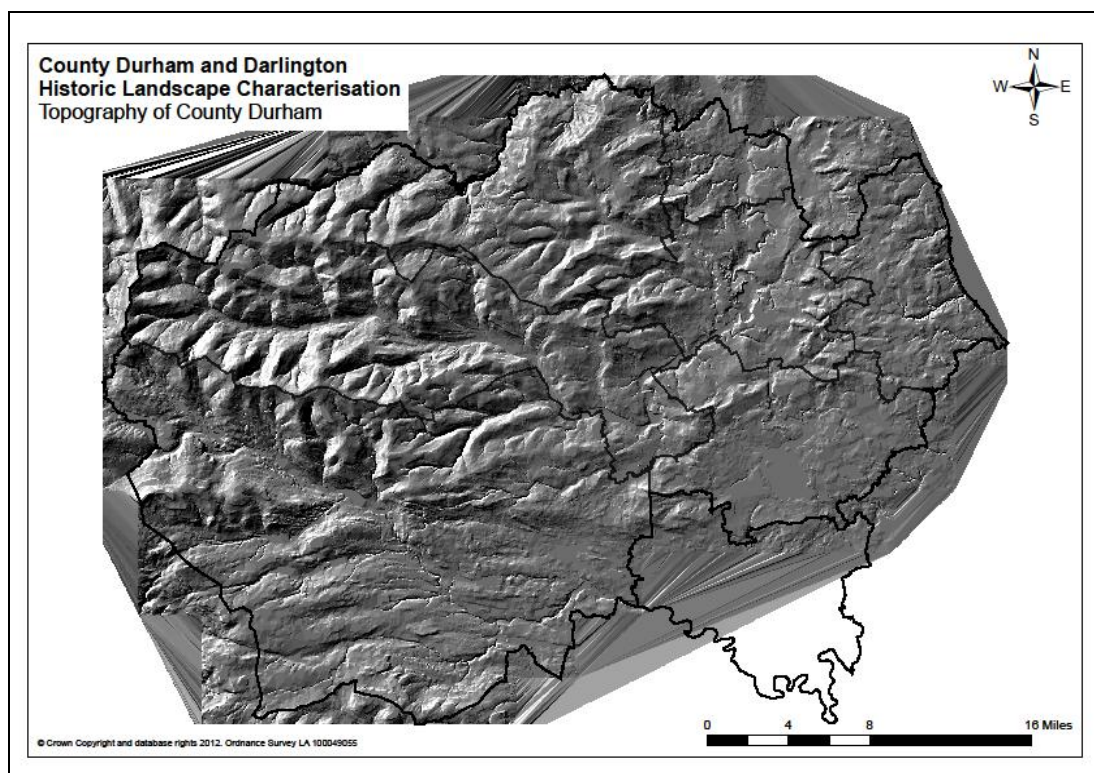
Figure 3: County Durham Topography

The biological, economic and cultural diversity of CD&D closely reflects the underlying geology. The form, pattern and character of the hills, valleys and coastline are influenced by the geological materials of which they are composed and by the interplay of processes that have shaped them over millions of years. Furthermore, soils derive much of their fundamental character from the underlying parent rock, and this relationship is important in understanding the ecological character of an area which in turn directs and constrains land use. The link between geodiversity and biodiversity is indisputable and has a direct consequence on the resulting cultural heritage and thus historic character of an area (Lawrence, Vye, & Young, 2004).

2.2.2. Geological Timescales

The following table (Table 1) gives a basic overview of geological timescales. Those highlighted in green are periods or epochs for which there is physical rock evidence within County Durham or Darlington (both the Triassic and Palaeogene have sparse evidence and so have been coloured light green to differentiate).

Eon	Era	Period	Epoch	Date (million years ago)
Phanerozoic	Cenozoic	Quaternary	Holocene	0,01
			Pleistocene	1,8
		Neogene	Pliocene	5,3
			Miocene	23
		Palaeogene	Oligocene	34
			Eocene	56
			Palaeocene	65
	Mesozoic	Cretaceous		145
		Jurassic		199
		Triassic		251
	Palaeozoic	Permian		299
		Carboniferous		359
		Devonian		416
		Silurian		443
		Ordovician		488
		Cambrian		542
Precambrian	Proterozoic			2500
	Archean			4600

Table 1: Based on the BGS Geological Timechart (Natural Environment Research Council, 2012)

2.2.3. Ordovician period

The rock record for County Durham is incomplete, with no clear evidence preserved in the rocks from either Cambrian Epoch or Precambrian Eon (Figure 4). The oldest rocks known through evidence for County Durham are from the Ordovician period. At this point in time, the area which would become CD&D was part of a totally different landmass which lay south of the Equator forming part of a deep ocean, on the edge of a continental plate. Mud and sand which accumulated in the ocean are preserved as the mudstones and sandstones of the Skiddaw Group. This continental plate was gradually moving northwards towards another continent which included what would become Scotland. The huge stresses in the earth's crust caused by the movement of these continents resulted in volcanic eruptions which created a vast thickness of volcanic rocks which helped form a new mountain chain across what is now northern

England. The emplacement of Weardale Granite, associated with the creation of these mountains also happened at this time.

The Ordovician rocks underlay much of northern England and are seen exposed at foot of Pennine escarpment and in Upper Teesdale. Rocks formed during the Silurian or Devonian periods are not exposed in either County Durham or Darlington and as such, there is no direct evidence of events or conditions during those periods as evidenced through the bedrock (Lawrence, Vye, & Young, 2004).
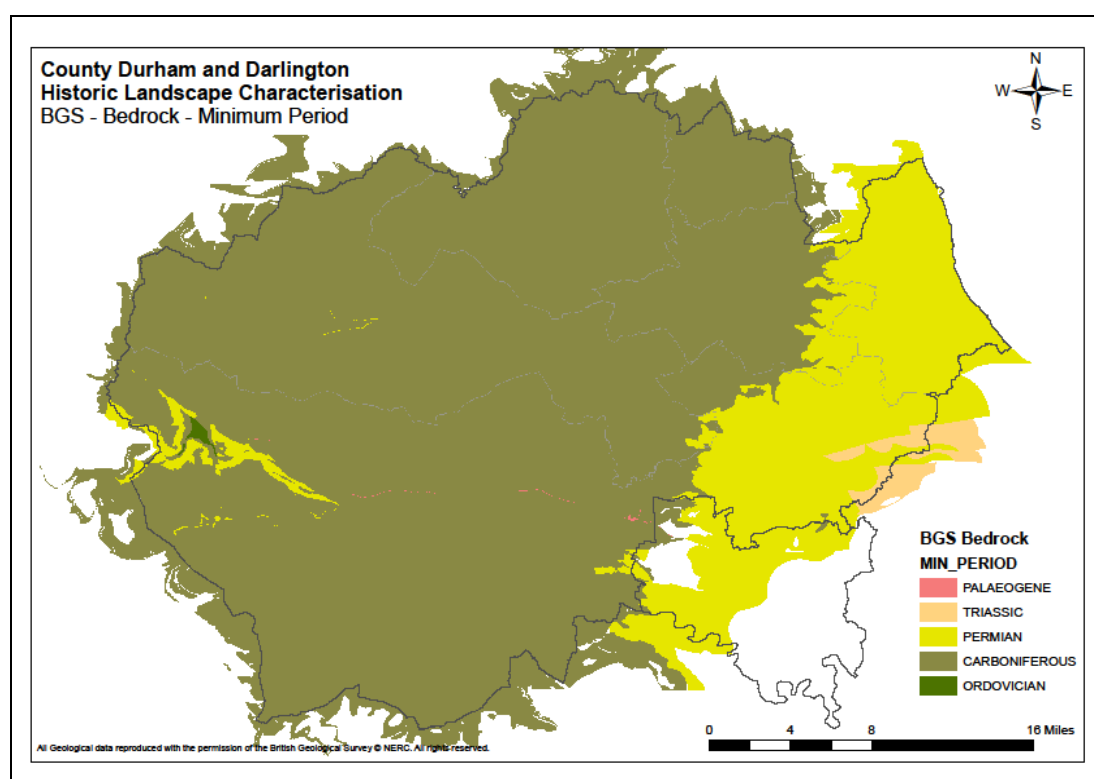
Figure 4: Solid geology of CD&D

2.2.4. Carboniferous period

By the beginning of the Carboniferous Period, the area which was to become CD&D was submerged beneath a tropical sea, in which beds of limestone accumulated. Periodic deposits of sand and mud are preserved today as layers of sandstone and mudstone (Figure 5). Tropical forest cover became more abundant as Carboniferous times progressed – the remains of which are preserved today as the coal seams of the Coal Measures.
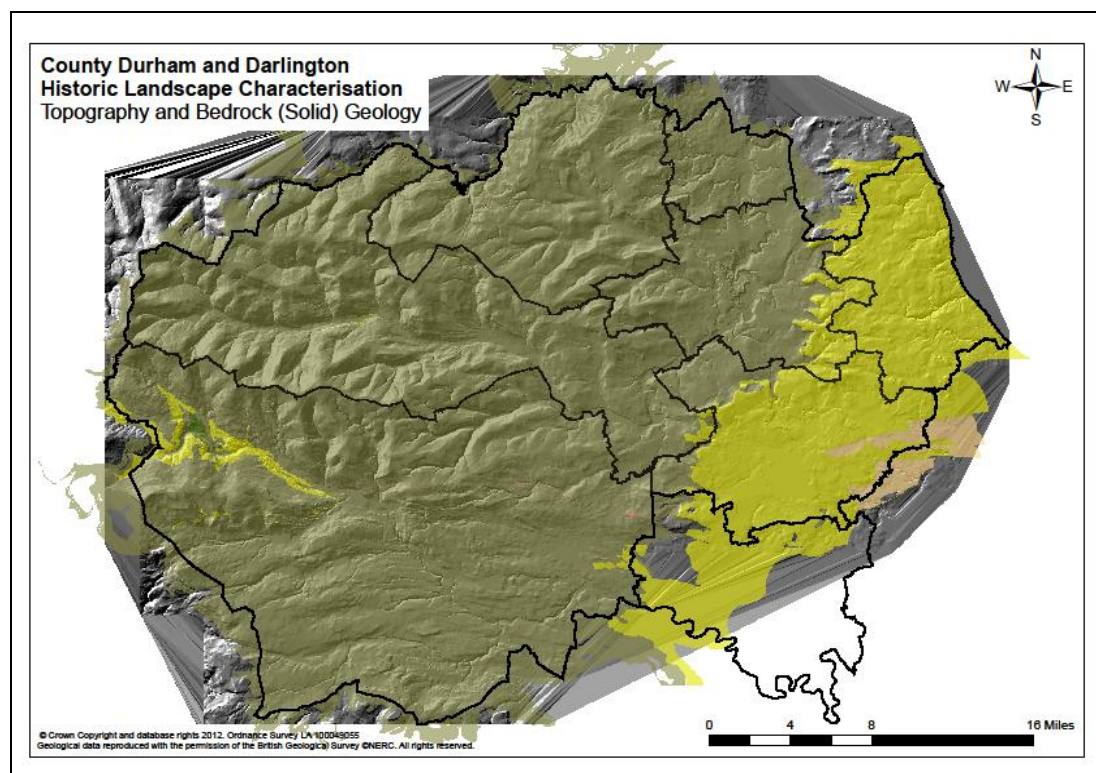
Figure 5: Solid geology of CD&D with topography

The Weardale Granite exercised a strong influence on the nature of Carboniferous rocks of the developing area which would become northern England, particularly in early Carboniferous times. Granite is not as dense as most other rocks in the earth's crust. Therefore, it is rather buoyant, tending to rise relative to the rocks which surround it. Because of this, the 'block' of Ordovician rocks, together with the Weardale Granite, tended to subside more quickly than the surrounding area which was to become the North Pennines. As a result, a much thinner succession of Carboniferous Limestones, mudstones and sandstones accumulated on this 'block' than in the adjoining areas. This area is known as the 'Alston Block' and a similar 'block' comprises the area known as the 'Askrigg Block' of the Yorkshire Pennines. Separating these is the belt of much more rapid Carboniferous subsidence, and thus of much thicker Carboniferous sediments. This is known as the Stainmore Trough. County Durham encompasses much of the Alston Block and parts of the Stainmore Trough.

Towards the close of Carboniferous times, continued stretching of the earth's crust allowed the up-welling of molten rock from deep within the earth. This magma did not

reach the surface, but instead spread out as layers and sheets between the existing Carboniferous rocks. As it cooled and crystallised it formed the dolerite of the suite of rocks known collectively as the 'Whin Sill'. The magma's heat profoundly altered many of the adjacent rocks, turning limestone into marble (known in locally as 'Sugar Limestone', and shales into hornfels, (known locally as 'whetstone'). Not long after the formation of this Whin Sill, mineral rich waters which had been warmed by the heat from the Weardale Granite, began to circulate through cracks and faults in the rocks within the earth's crust. The dissolved minerals crystallised as they cooled, forming the veins and associated deposits of the North Pennine Orefield (Lawrence, Vye, & Young, 2004).

2.2.5. Permian period

During the Permian Period, the area that is today the Northern Pennines probably consisted of mountains, with valleys obstructed by rock debris broken from the rapidly eroding mountains. Vast wind-blown sand dunes formed in a desert, which covered much of the low ground in what is today central and eastern County Durham. Today these are the 'Yellow Sands' seen in quarries in the east of the county. This Permian desert was soon inundated by the rapidly advancing waters of the Zechstein Sea, which covered an area including that of the modern North Sea. The earliest sediments deposited in the Zechstein Sea (within County Durham) comprise the comparatively thin bed of grey bituminous limestone known locally as the 'Marl Slate'.

Overlying the 'Marl Slate' in the Durham area, a succession of limestones collectively termed the Magnesian Limestone was deposited. This succession is made up of a variety of types of limestone, each indicative of rather different depositional conditions. A well-known feature of the Durham Magnesian Limestone is the presence of a very well-preserved fossilized reef composed not of corals as in modern reefs, but mainly of bryozoa and algae, together with a rich marine fauna of bivalves, brachiopods etc. (Lawrence, Vye, & Young, 2004).

2.2.6. Quaternary period – Superficial geology (drift)
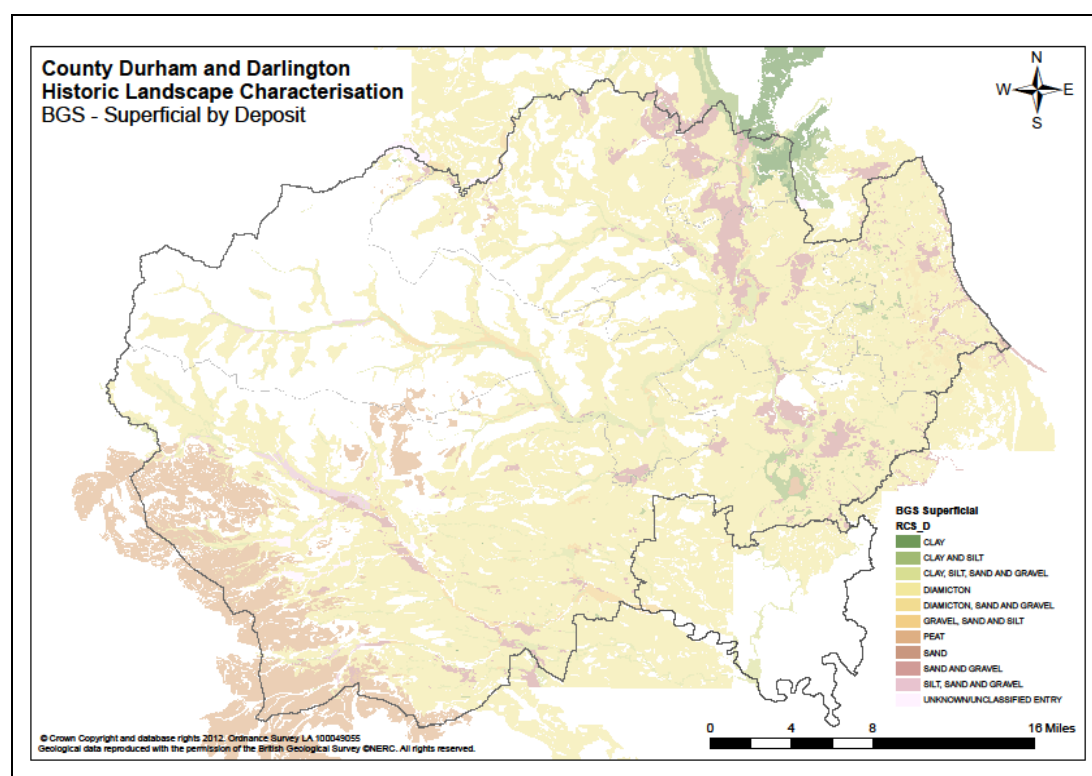
Figure 6: The superficial geology of CD&D

From about the Mesozoic era onwards evidence for the county's geological evolution falls largely silent. The county's rocks were uplifted and tilted gently towards the east at some point, accompanied by some faulting, and that during the Palaeogene Period, narrow dykes of basaltic rock were injected into fractures as remote manifestations of the volcanic activity which was shaping the Hebrides and Northern Ireland at that time. Apart from this there is no tangible evidence of the area's geological history until the deposits left by ice sheets during the glacial period which began here about two million years ago (Figure 6 and Figure 7).
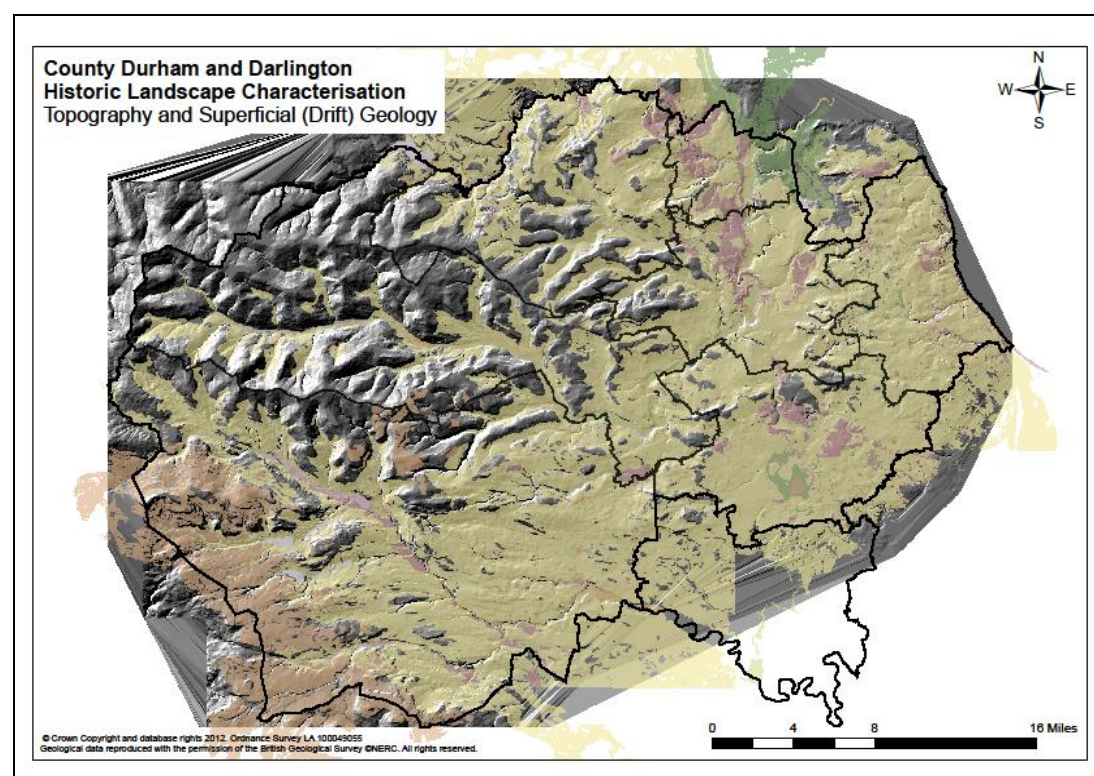
Figure 7: The superficial geology of CD&D with topology

Much of the form of the present day physical landscape is because of this prolonged period of ice cover and subsequent melting. Centuries of human occupation and exploitation of the area's natural resources have further modified the landscape which can be seen today, and which, through continuing human influence, continually evolves (Lawrence, Vye, & Young, 2004).

2.3. National Character Areas

2.3.1. A national context - bio-geographic and geodiverse zones

Landscape character is the recognisable pattern of elements which makes one landscape different from another. Variations in geology and soils, landform, land use and vegetation, field boundaries, settlement patterns and building styles, give rise to different landscapes, each with its own character and unique sense of place (Durham County Council, 2012).

In 2005 the then Countryside Agency, with support from EH, updated the 'Character of England Landscape, Wildlife and Cultural Features Map, which subdivided England into 159 NCAs (previously Joint Character Areas). These NCAs include

broad bio-geographic zones together with broad regional landscapes and they form a national framework for decision making about landscape and biodiversity. (Durham County Council, 2012) and (Natural England, 2012). The NCAs which occur with CD&D are shown in Figure 8.
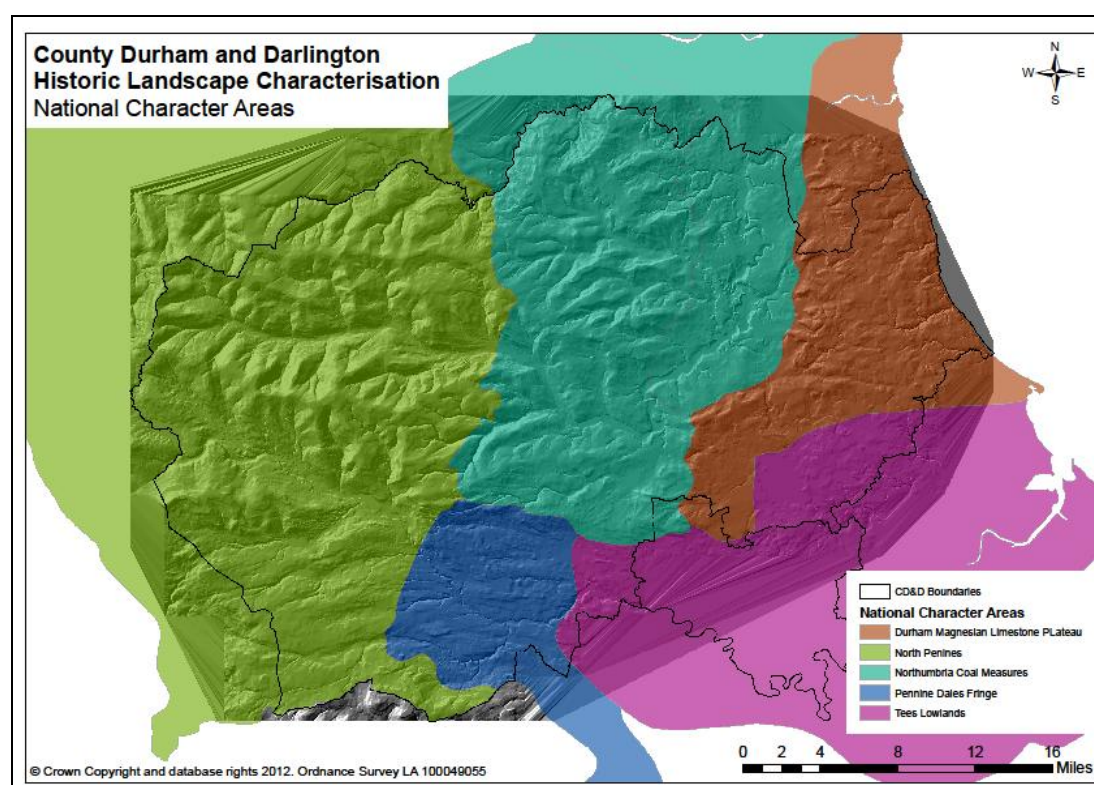
Figure 8: CD&D National Character Areas

2.4. Landscape Character Assessment

2.4.1. A regional context – bio-geographic and geodiverse areas.

As our understanding of landscapes has increased, so has our appreciation of how landscapes change. Our desire to record, influence and manage this change gave rise not only to the programme of HLC but also to a programme of LCAs.

The LCA uses data gathered from the NCAs along with other sources to create a "…tool that is used to help us to understand, and articulate, the character of the landscape. It helps us identify the features that give a locality it's 'sense of place' and pinpoints what makes it different from neighbouring areas." (The Countryside Agency & Scottish Natural Heritage, 2002).

The County Durham LCA is a detailed assessment of the character of the county. It works within the framework of NCAs, identifying variations in landscape character at a sub-regional level and local level. The LCA for County Durham was formerly adopted in 2008 and can be found as an online interactive version at www.durhamlandscape.info (Figure 9).
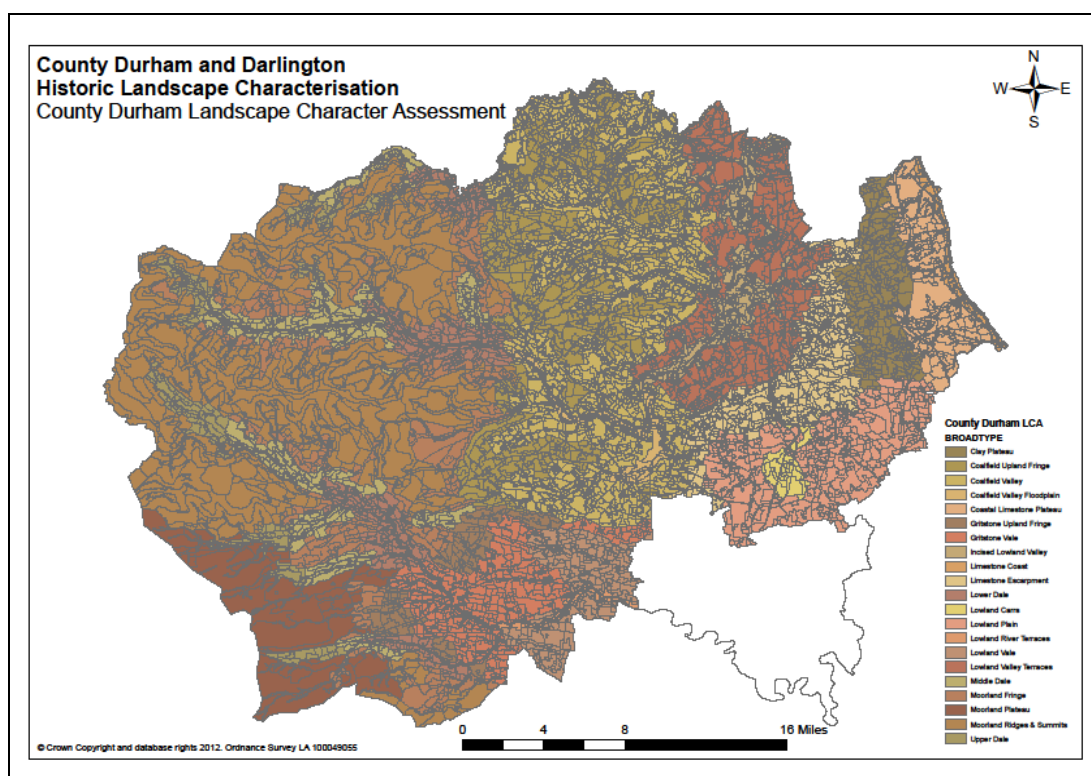
Figure 9: The County Durham Landscape Character Assessment

The County Durham LCA is part of a suite of documents that includes the County Durham Landscape Strategy and County Durham Landscape Guidelines. It is envisaged that the completed HLC will sit alongside this suite of documents to provide evidence on the historic character of the landscape, complementing the current biodiversity and geodiversity of the LCA. A LCA for Darlington has not yet been undertaken.

3. Methodology

The original, and very notional, timeframe for the CD&D HLC was set at 30 months. This was subsequently extended as the methodology to be employed was determined to give a more refined and useful product than originally envisaged. Both the provisional and revised methodologies timetabled the project at 30 months. In fact, it took nearer 72 months all told. The project extension meant that the methodology could be continued throughout giving a consistency, which was essential to the validity of the data.

As the project progressed, it became clear that some parts of the methodology needed to be further defined, while others were impractical to maintain. The following discussion looks at the main points of the revised methodology and puts forward the updated version of this methodology along with comments on future development, although this is discussed in more detail in **Section 5: Results & Analysis**. For an in-depth discussion of the methodology, the reader is directed to the 'CD&D HLC Revised Methodology' (Wiggins, 2007).

3.1. Timescales

It was projected that the CD&D HLC would be completed within 30 months, with the following breakdown taken from the 'Project Design Statement' (**Section 8: Appendices**) (see also Table 2).

- **Stage 1**

  - Familiarisation   1 month

  - Pilot areas   3 months

  - Refinement of project methodology   1 month

- **Stage 2** - Characterisation and mapping of:

  - North Pennines   8 months

  - West Durham Coalfields   4 months

  - Wear Lowlands   1 month

- East Durham Limestone Plateau   2 months

    - Tees Lowlands   2 months

    - Dales Fringe   1 month

- **Stage 3**

    - Whole county analysis and HLC project review   4 months

- **Stage 4**

    - Report, archive and dissemination of CD&D HLC   3 months
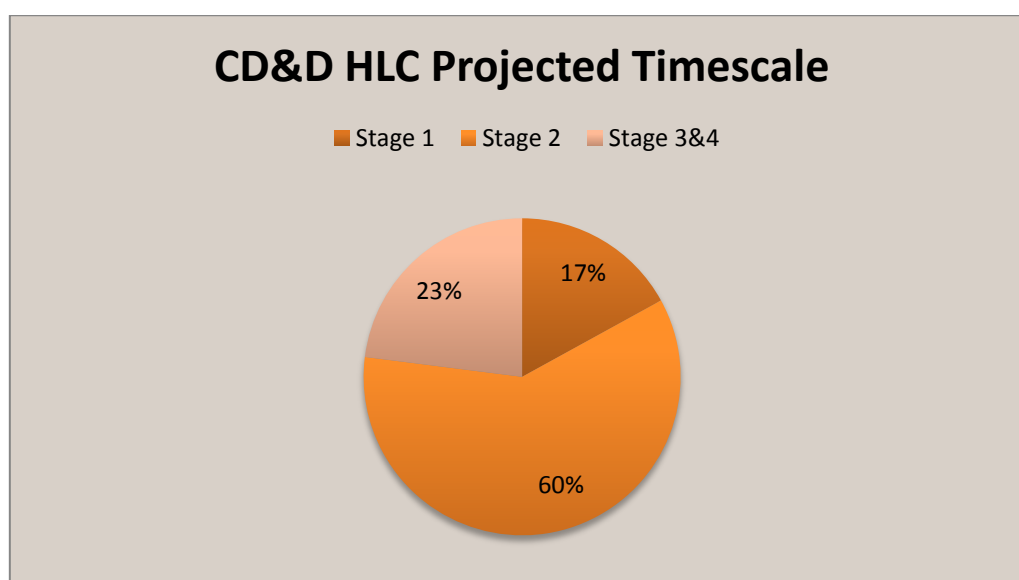
Table 2: CD&D HLC Projected Timescale

In fact the times were as follows:

Stage 1	25 weeks	(6.25 months)
Stage 2	273 weeks	(68.25 months)
Stage 3	4 weeks	(1 month)
Stage 4	5 weeks	(1.25 months)

As can be seen from comparing Table 2 and Table 3, a much greater percentage of time was taken with the digitisation than was initially anticipated. This was because the methodology designed and agreed captured a vast amount of data, more than some of the CD&D's contemporary HLCs.
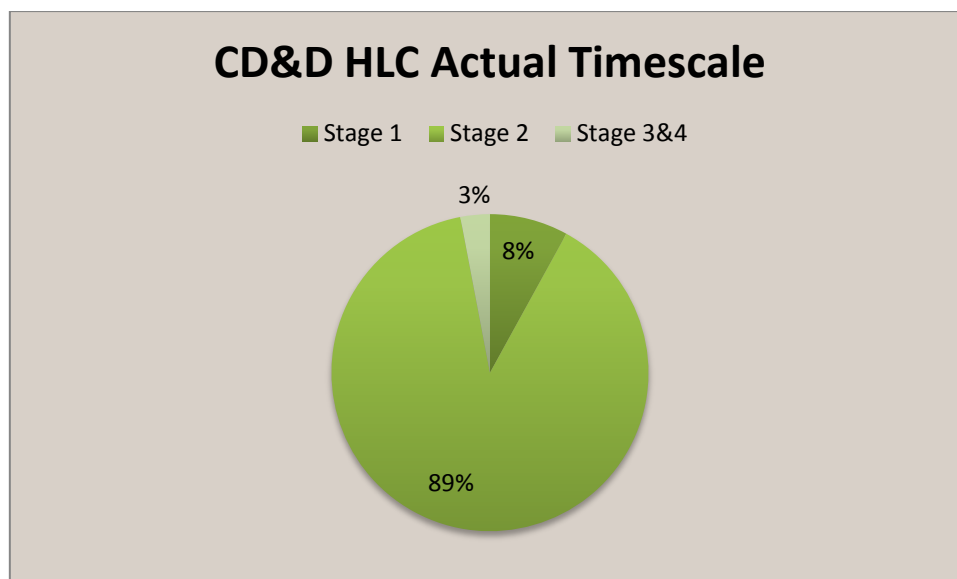
Table 3: CD&D HLC Actual Timescales

The breakdown of Stage 2 was initially based on NCAs, but in practice, it was based on the former District Authority boundaries. The project used OS MasterMap TOIDs (Fairclough, 2002a) as baseline data for the project and the polygons of this layer were merged to create HLC polygons. The whole of County Durham was too cumbersome to be digitally manipulated as a single layer, and so it was broken down into a series of smaller layers. District Authority areas proved to be the most practical way to split the County, both from the size aspect and because the political boundaries of the Districts already reflected the physical boundaries represented by TOIDs of MasterMap. The nominal boundaries of the NCAs follow no specific physical boundary. The HLC was therefore completed by area as follows:

- Chester le Street
- Darlington Borough
- Derwentside
- Durham City
- Easington
- Sedgefield
- Teesdale
- Wear Valley

The CD&D HLC aimed to follow best practice as set out by Aldred *et al* (Aldred & Fairclough, 2003) and as set out in CD&D HLC method statement cited above, the HLC attempted to be transparent in its data collection, but interpretative in its final presentation of the landscape as material culture. The applications of HLCs are wide ranging (Clark, Darlington, & Fairclough, 2004) and this was a major consideration from an early stage in development of the CD&D HLC, to enable a smooth and complete integration of the HLC into other systems already in place.

It still holds true that if the HLC is not integrated into spatial policies; considered within planning and environmental issues; and accessible to a wider public audience, the project will have been a meaningless exercise. It was vital, therefore, to keep the end goals in mind throughout. Now, at the very end of the project, it is crucial that the HLC baton be carried forward by others in the absence of a full time HLC officer and that the HLC be 'housed' within the Heritage or Landscape specialist section of the Council. Currently it is planned that the CD&D HLC will be curated alongside the HER, within the Heritage, Landscape and Design Team in the Planning Service area of Durham County Council.

The following four headings and the associated summary bullet points are taken from the revised methodology (Wiggins, 2007), with further discussion underneath each regarding processes and refinements over the extended period of the project.

3.2. Stage 1

- ***Familiarisation***: Reading of relevant background literature; Research into methodologies of other HLCs; Visits to neighbouring HLC POs; Creation of a list of interested parties for the Project Advisory Group

HLC project designs for the bordering counties of Northumberland, North Yorkshire, and Cumbria were examined, as were project designs from other counties including Lancashire, Hampshire, and Surrey, many of which are available online: Lancashire also had a more detailed methodological statement available online. Background literature on HLC was also consulted during the course of the familiarisation, and visits were made to neighbouring HLCs to get further understanding and background. A Management Steering group of the four key individuals was created (EH Head of

Characterisation, DCC County Archaeology, DCC Senior Landscape Architect and DCC HLC Project Officer).

A wider Project Advisory Group was created and met to discuss the HLC. In retrospect, it is the opinion of the HLC Project Officer that such a group can only be of use to facilitate understanding and awareness of the HLC. Opinions on the functionality and remit of the HLC differed within the group, and while these opinions are valid, given the nature of HLC, many cannot be incorporated as they are counterproductive to the aims of the project.

- *Provisional method statement design*: Involvement of GIS CPO [Corporate Project Officer] from early stage; based CD&D HLC geodatabase on that of NCC HLC; developed database in Access before being handed to CPO for evolution into ArcSDE; geodatabase methodology incorporated the already complete LCA for County Durham; examination of data sources for use and exploitation

The CD&D HLC was designed to work entirely within the ESRI ArcGIS environment, without the need for bespoke applications, or connection between separate GIS and database applications.

There were two main methods of approach to HLC, as was recognised at the time the CD&D HLC was undertaken. The first made a distinction between defining landscape morphology and interpreting the morphology given to a landscape character, and was defined as a *descriptive* way of using the attributes: 'determining HL character by ascribing attributes to polygons without initially assigning interpretations to HL character' (Aldred & Fairclough, 2003, p. 22). In contrast to this method, a *prescriptive* approach attempted 'interpretation as the only means of identifying the criteria' (*ibid*).

The CD&D HLC followed the logical trend towards 'using the best parts from each of the *prescriptive* and *descriptive* [methods]' (Aldred & Fairclough, 2003, p. 22). Embracing this combined approach, the CD&D HLC identified and interpreted each polygon in a single stage. But the transparency of the process was maintained through the structure of the geodatabase and the mechanism of data input.

- ***Sample work***: pilot areas chosen, methodology tested on two specific landscape types; inaugural Project Advisory Group meeting took place at the end of Stage 1

Only two Pilot Areas were completed using the provisional methodology and using an ESRI ArcGIS geodatabase in ArcMap 9.1 (Figures 10 & 11). Furthermore, only digital spatial data was used as source material as the time consideration used in consulting other sources would have seriously compromised the timescale of the project. However, in some instances, such as in Weardale, where valid and useful research has been done and maps have been produced as part of a publication, this information was used to help gain a clearer understanding of the development on the landscape. In these instances, any sources used are clearly referenced within the geodatabase as a source.
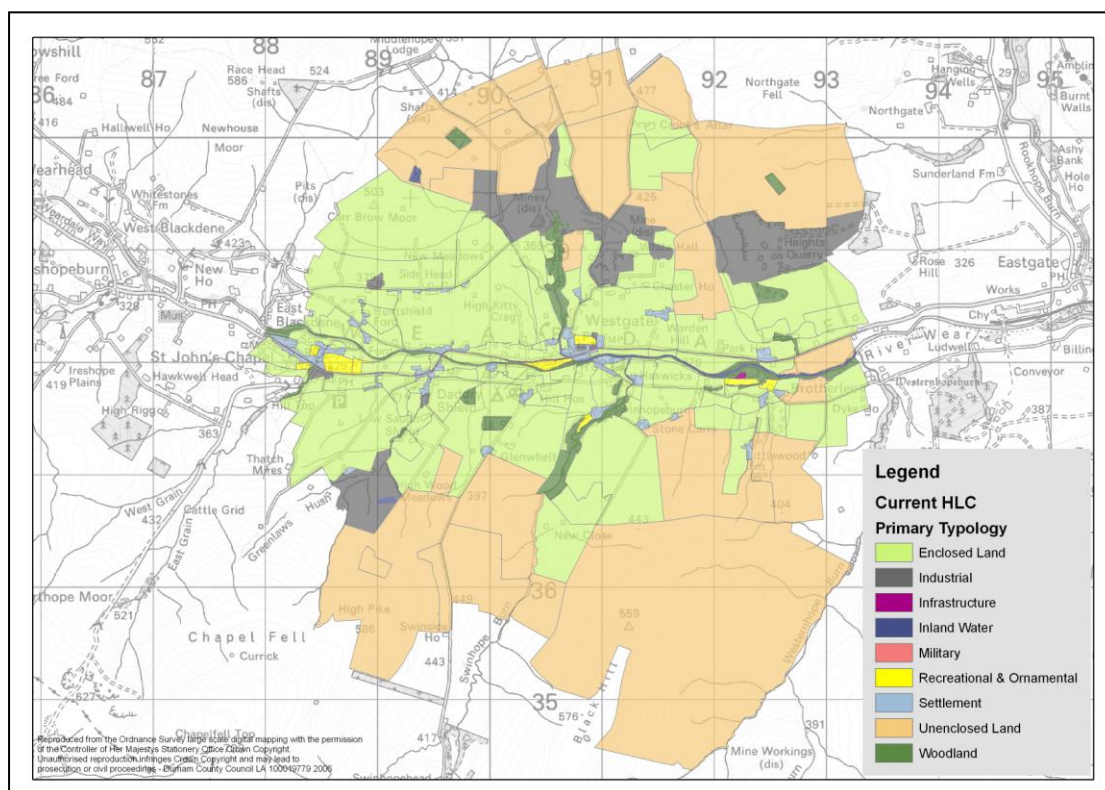
Figure 10: Westgate Pilot Area
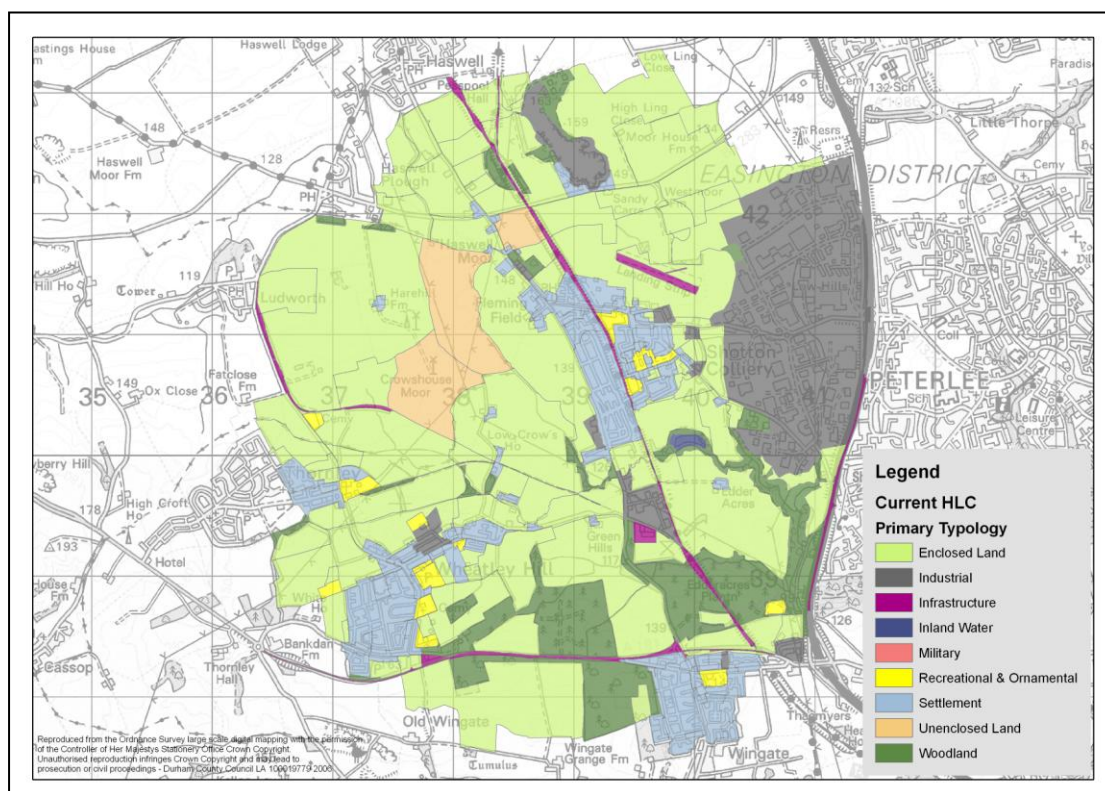
Figure 11: Shotton Colliery Pilot Area

In the revised methodology, the author stated that regular update of the HLC should be undertaken every five to ten years:

> Finally, it should be borne in mind that the HLC is a dynamic process and the data and interpretation should be re-examined within a time frame to be agreed; once every five years is a provisional recommendation. For this reason the methodology must incorporate in its design the ability for this regular updating.

(Wiggins, 2007, p. 16)

In retrospect, it is clear that the HLC for CD&D is a large undertaking, which has taken a considerable amount of time. While regular updating would still be an ideal, it is clearly not a practical solution. It is hoped that updating can occur through input and feedback from HLC users (see **Section 6: Further Research/Dissemination**).

3.3. Stage 2

- ***Characterisation: identification and description***: The systematic identification and interpretation of all morphological features within the entire landscape of County Durham and Darlington Borough using the given attribute data collection structure. This is currently being undertaken

In Stage Two of the CD&D HLC, the landscape was systematically identified and described, through its current character, pulling apart all the different aspects and histories of character and defining each separately. Additionally, previous landscape characters were recorded, even if not necessarily still visible in the landscape. While the intention was to keep compatibility between the HLC projects in bordering counties to a maximum, in reality they will not be 100% compatible given the way the HLC has been undertaken within the individual county.

The two fundamentals of the data are the structure of the attribute table, and the terminology used to describe the data in such a way as to keep entries objective and transparent. The structure has been adapted, with some additions when new landscapes have been characterised and the need for new classifications has become apparent. Furthermore, as will be discussed further in **Section 4: Typologies**, with hindsight it has become clear that some typologies did not really 'work', were duplicated, or needed redefining.

Analysis of each polygon included the study of its assigned attributes including, in the case of enclosures, the morphological characteristics of field boundaries within the polygon; the pattern these boundaries created; and any obvious external boundary characteristic that may have suggested a discreet field system. In practice however it became clear that this approach was impractical and in many cases the summary field contained the phrase 'part of a larger area' in order to reference the viewer to look at larger, contiguous fields which would have the morphological characteristics recorded. It also became clear in the first few hundred records, that entering data for both 'Summary' and 'Description' field was too time-consuming. The 'Description' field was abandoned, and the 'Summary' field only used when there were notes to make, rather than an entry for every single polygon.

Moreover, it was realised early in the project that other fields created within the geodatabase, such as 'Soil Type', 'Drift Geology', 'Solid Geology', 'Parish', 'District', and 'County Character Area', are essentially other datasets that are independently maintained. To record information from these datasets within the HLC would be duplication and would run the risk of the information being outdated as the external datasets were updated. For this reason, it was decided these fields should not be populated but eventually removed from the HLC geodatabase structure.

Finally, the Revised Methodology stated that data held by the County Durham LCA would also be used. However, in practice it became apparent that much of this data was not suitable for incorporation within the HLC. While the datasets are complimentary to each other, designed to be use alongside one another, they contain data created for different purposes, created with different motives and agendas. The LCA was still used as a reference when necessary.

- *Digitisation: sources*: All main sources listed

  o DCC HER, SAM and Listed Buildings data
  o DCC's GIS digital mapping of Common Land Register
  o DCC's GIS digital mapping of Parliamentary Enclosures
  o Geo-referenced GIS-based vertical aerial photographs 2001 and 1940
  o Historic digital raster maps
  o Historic parish boundaries.
  o Natural England's Ancient Woodland Inventory
  o OS 25m contour data
  o OS vector and raster maps
  o Settlement & Waste GIS layer (Helen King née Helen Dunsford)

A complete list of referenced datasets is appended (**Section 8: Appendices**). It became obvious from an early stage that non-digital spatial data, that is to say any data not in the format where it could be loaded onto a GIS map document, has not been referenced due to the time constraints on the project. However, in certain instances, where map layers could be created from other sources quickly and simply, it was felt that it would give a better understanding of landscape character in the area.

While HER point data has not been used directly, it has been referred to in order to gain a full understanding of landscape use. In general, no Listed Buildings, Scheduled Ancient Monuments, or similar information has been incorporated, as this is contradictory to the values of landscape characterisation. Furthermore, this would be a duplication of data which is already more effective stored in the HER. However, in specific instances where Scheduled Ancient Monuments cover large areas of land, and refer more to a landscape characteristic than a specific monument, the boundaries may have been followed, and/or mention may have been made within the text when it was felt that the scheduled area was of a significantly different landscape character to the area surrounding it.

- *Characterisation: attributes*: A list of attribute data to be collected for each polygon is in the process of being created; a discussion on classifications used has been undertaken; a Project Advisory Group meeting to discuss progress and direction will be organised in the final months of Stage 2

It was agreed that the main broad types to be used for the CD&D HLC would be as follows:

1. Coastal
2. Enclosed Land
3. Industrial
4. Infrastructure
5. Inland Water
6. Military
7. Recreational & Ornamental
8. Settlement
9. Unenclosed land
10. Woodland

Comparison of these types against those suggested by English Heritage (Clark, Darlington, & Fairclough, 2004) show a good degree of correlation, with some typologies only slightly differing in name in order to subsume other land character subtypes within the category. No change was felt necessary to a structure that on the whole worked well.

- ***Analysis & Interpretation***: Analysis of morphological attributes; interpretation and ascription to landscape type, using all available data; production of a time-depth model – primary and secondary landscape character providing this depth, with the capability of recording further landscape characters types as necessary: Consideration of the method as a repeatable procedure.

The geodatabase structure allows for entry of both a dominant and a secondary **typology** for each character type. These have been referred to as '*primary*' and '*secondary*' typology in previous reports, but, for the sake of clarity have been replaced by the terms '*major*' and '*minor*'.

In the Figure 12 below, the most prevalent current landscape character type is that of 'Modern Restored Enclosure'. Compare with Figure 13 of the first edition map of the same area, which has an entirely different enclosure pattern. Nevertheless, there are also several clear field drains within the polygon. Thus, the major typology for this area is 'Modern Restored Enclosure', with the minor typology of 'Modern Drainage Scheme'.

This is the current **character** of the area, the enclosure and drains date from the 1970s. Before this, as shown on the 1960s OS map (Figure 14), the area was one of ponds and amalgamated field systems. The map shows earthworks suggesting the ponds are a result of mineral workings in the area, although this is not recorded further on any maps of this area.
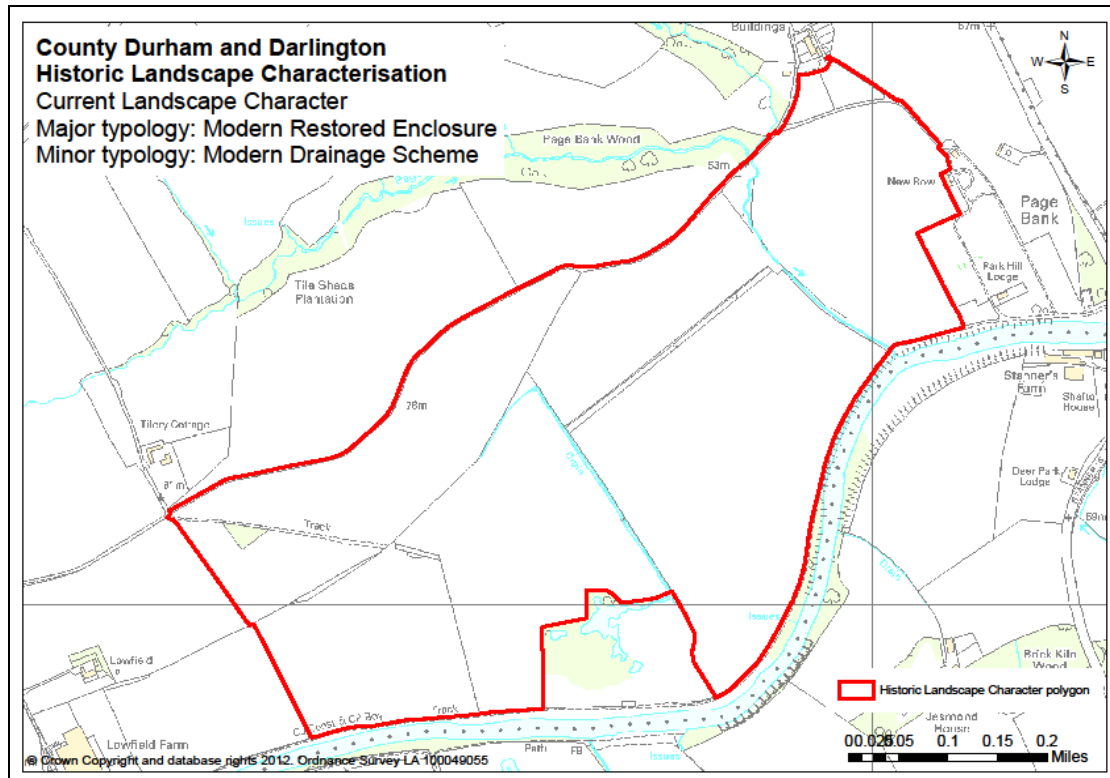
Figure 12: Major and minor typologies
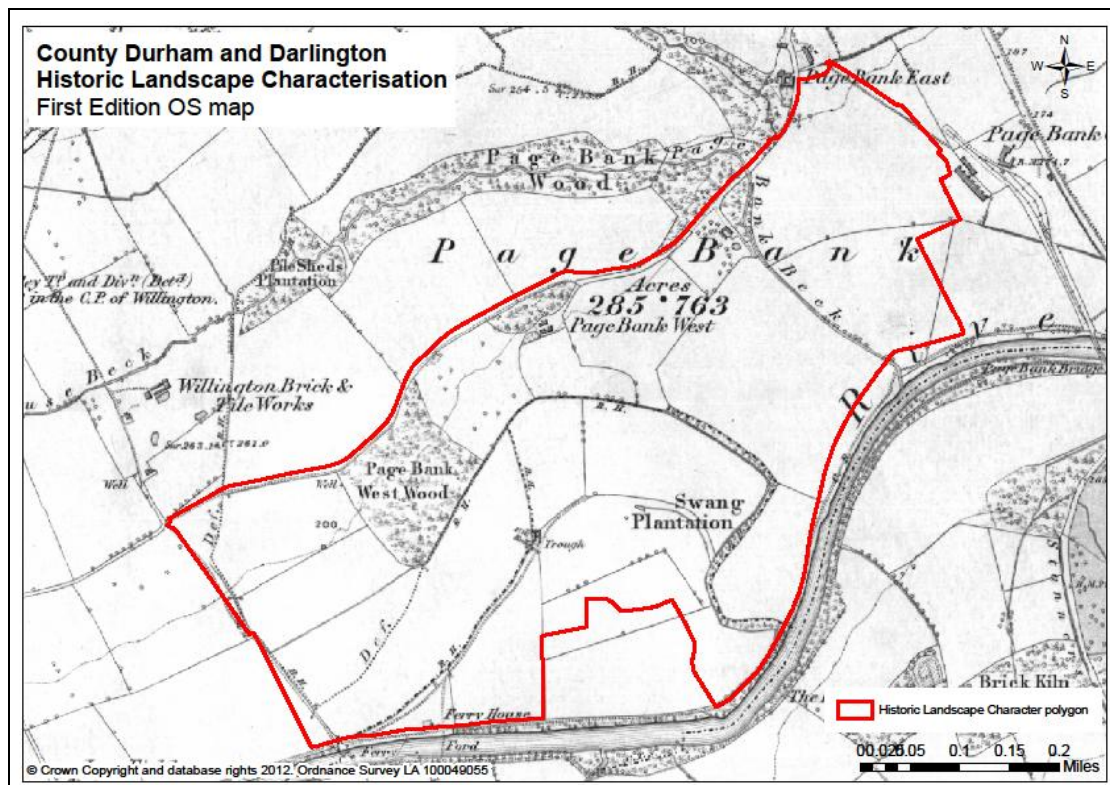
Figure 13: First Edition OS Map

If the current landscape character is thought of as the *Primary* character, then the next previous character can be thought of as the *Secondary* character. Thus, the secondary landscape character has the major typology of 'Abandoned Mineral Workings' (in the 'Inland Water' broadclass) and the minor typology of 'Modern Field Amalgamation'.
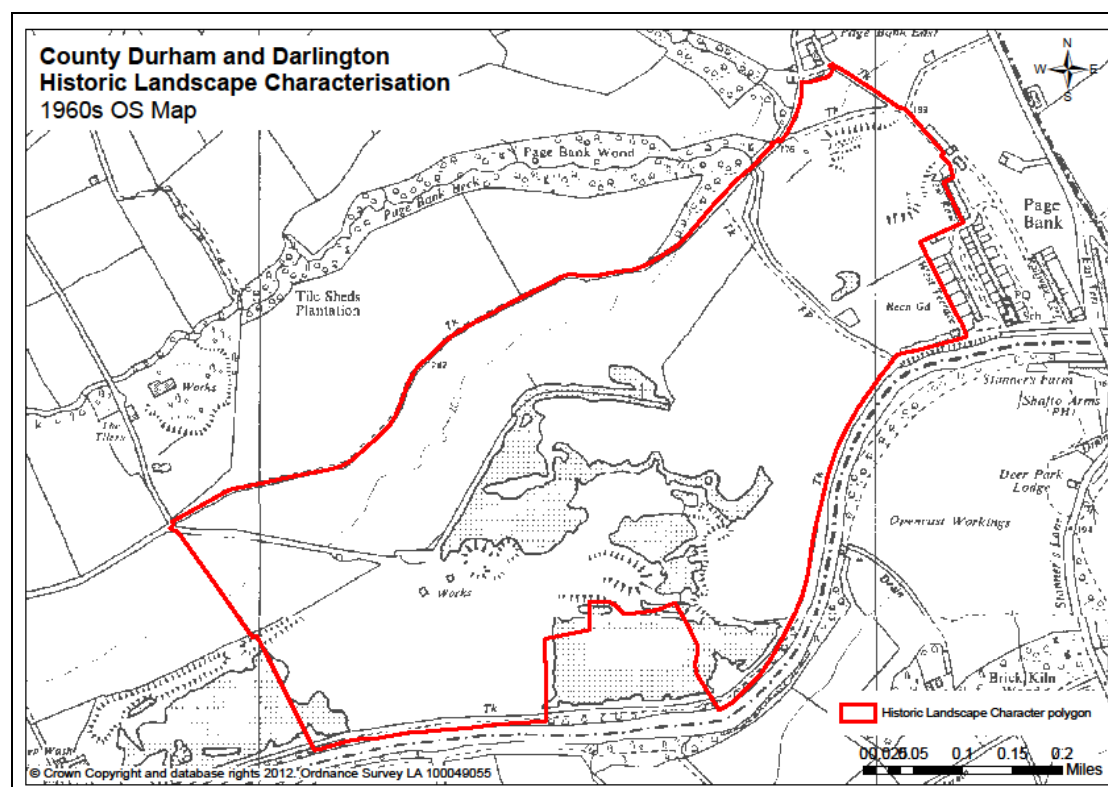
Figure 14: Secondary Character - 1960s OS Map

In this way, an infinite number of previous landscape character types can be recorded, although in reality this is rarely more than two or three historic landscape character types. Table 4 outlines the characters and typologies for this sample area.

Character	Typology	Example
Current Character	Major typology	Modern Restored Enclosure
	Minor typology	Modern Drainage Scheme
Secondary Character (first previous character)	Major typology	Abandoned Mineral Workings (Inland Water)
	Minor typology	Modern Field Amalgamation

Tertiary Character (Second previous character)	Major typology	Post Medieval Fossilised Strips
	Minor typology	None
Tertiary Character (Second previous character)	Major typology	Medieval Townfields
	Minor typology	None

Table 4: Typology on a sample HLC polygon

*An important point regarding the previous landscape characters is that in many cases they are still visible in the landscape. For this reason, previous characters **must** be afforded the same importance as the current landscape character. Separation into current and previous landscape characters is a tool to pull apart the landscape palimpsest. By ignoring previous characters, the rich tapestry and historic character of the area is ignored.*

If data were captured for *specific* and *comparable* points in time, for instance from the 1850's first edition OS map, this would produce *time-slices*; directly comparable results of how landscapes looked in 1850, but missing any subtle changes in landscape character between the captured dates. Time slices do not inform of *when* the landscape changes happened. The CD&D HLC methodology uses a *time-depth* approach, where the capability of recording several past land uses is available but these need not be of a comparable time-periods. Rather, they show the main historic characteristics over time of that particular character area and can show how often a landscape has changed. This gives a more relevant time-depth to each characterised polygon see **Section 5: Results & Analysis**. Useful time slice information can still be collected using the present geodatabase structure (Aldred & Fairclough, 2003).

3.4. Stage 3

- **Synthesis**: Thematic assessment of data; comparison against other data to show gaps or potential modelling; use in stand-alone project for land management strategies and guidelines; Incorporation as spatial data into the DCC Intramap GIS; Consideration of implications of integration into the DCC LCA ; Emphasis that HLC is not a way of assigning landscape *value*.

Once the HLC model was completed, a thematic assessment of this data was undertaken to give a broad overview. Historic Landscape Character Areas, areas with similar character types, were identified and analysed, based on proportions and percentages of landscape types within given to each typology.

3.5. Stage 4

- *Report and GIS:* GIS to be user-friendly and compatible with neighbouring systems and DCC's own Intramap GIS. The report should be an in-depth discussion of the methodology with clear reasoning for decisions made. The report must include discussion of every landscape type used with a sample area and map. A glossary of terms may be considered.

- *Archive:* An archive of all relevant material should be kept and the project reviewed within an agreed timescale, to be confirmed.

- *Dissemination:* Accessible format for all users, both online and as a hard copy. Press releases and possible technical seminar or travelling exhibition should be considered, and inclusion of articles in such publications as the DCC *Countrywide* and DCC's Archaeology Section annual magazine should be made possible.

The HLC was designed to be easily integrated into most GIS environments and can be used in a multitude of ways within such programmes. Post-project seminars have been arranged including a paper at the DCC Archaeology Day in March, a piece in the County Durham Archaeology magazine, several in-house seminars for County Council staff and some external seminars will also be considered. Finally, an archive (mainly digital) will be handed over to be stored within DCC's Archaeology Section. The HLC Officer has remained within the Council, albeit within a different role, but this means that the HLC will benefit from continuity and communication between the HER Officer and former HLC Officer.

4. Typologies

This section considers the structure of the typology used to characterise CD&D. The typologies have a hierarchical structure consisting of *Broadclass*, *Categories* and *Classifications*. Ten main broadclasses are split into 34 categories, which themselves are divided into 162 classifications. The following pages explain and list the content of each hierarchy, discuss when and why terms given to some typologies were changed during the course of the HLC, and name those classifications which, ultimately, were not used. Finally, a discussion on each broadclass within CD&D concludes this section. A quick reference handbook will be produced as a secondary report, designed to be used in direct consultation with the digital HLC model. This secondary report will consider all classifications in detail, with maps, key features, statistics and management recommendations.

4.1. Broadclasses

Broadclasses are intended as a way of comparing across counties. Categories and classifications will differ throughout England as landscapes change; landscape classifications for the Cambridge Fens will be very different to that of the Peak District. However, given the HLC programme is countrywide, it is useful to have a point of reference, across all HLC projects. For this reason, English Heritage has a list of 11 broadclass (Broad Types) they suggest are used as a baseline. Table 5 below compares these against the CD&D HLC Broadclasses:

English Heritage Broad Types	CD&D HLC Broadclasses
n/a	Coastal
Enclosed Land	Enclosed Land
Industrial Land	Industrial
Communications	Infrastructure
Military	Military
Orchards	n/a
Water and valley floor	n/a
Ornamental and Recreational	Ornamental and Recreational

Settlements	Settlement
Unenclosed or unimproved land	Unenclosed Land
Water Bodies	Inland Water
Woodland	Woodland

Table 5: EH Broad Types compared to CD&D HLC Broadclass

This English Heritage list was used as a beginning for the broadclass types for CD&D HLC and as can be seen, there is very good correlation between the two broadclasses. The Historic Landscape Components, as set out by Rippon (Rippon, 2004) were also used as a guide for creating the CD&D broadclass types. Furthermore, there is also a good correlation between CD&D HLC and Northumberland HLC (Northumberland County Council, 2008) and North Yorkshire HLC (North Yorkshire County Council, 2010) (see Table 6 below).

CD&D HLC	Northumberland HLC	N. Yorks HLC[2]
Coastal	Coast	Coastal
Enclosed Land	Fieldscapes	Enclosed Land
Industrial	Industry	Commercial Extractive Industrial
Infrastructure	Communications	Communications
Inland Water	Water	Water
Military	Military	Military
Ornamental and Recreational	Ornamental, Parkland and Recreation	Designed Landscape Recreational
Settlement	Settlement	Institutional Settlement
Unenclosed Land	Rough Land	Unenclosed Land
Woodland	Woodland	Woodland

Table 6: CD&D, North'ld and N. Yorks HLC Broadclasses compared

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[2] North Yorkshire has 15 Broadclasses, which fit into the 10 Broadclasses of both the CD&D and Northumberland HLC. A '}' designates where several North Yorkshire broadclasses fit within one CD&D/Northumberland broadclass.

This is important for studies which cross the administrative boundaries which have no bearing on landscape character. Having simple and comparable HLC broadclass types provides flexibility in the model, allowing for a range of analysis at a regional and even national level.

4.2. Categories

Categories are a way of grouping classifications. It is not envisaged that this level of the hierarchy is used for analysis particularly, although there is no reason why it should not, if it is felt it would help illuminate historic landscape character further. In fact, 'Enclosed Land' categories have been used to illustrate the spread of enclosure from different time-periods for interim reports. There are 34 categories as shown in Table 7 below:

Code	Broadclass	Category
100	Coastal	
110		Coastal | Cliffs and coastal slopes
120		Coastal | Foreshore
200	Enclosed land	
210		Enclosed land | Enclosed farmland (medieval)
220		Enclosed land | Enclosed farmland (post-medieval)
230		Enclosed land | Enclosed land (modern)
240		Enclosed land | Horticulture
250		Enclosed land | Cleared woodland
300	Industrial	
310		Industrial | Manufacturing
320		Industrial | Mineral working (abandoned)
330		Industrial | Mineral working (active)
340		Industrial | Mineral working (dormant)
350		Industrial | Retail
400	Infrastructure	
410		Infrastructure | Aviation
420		Infrastructure | Docks and harbours

440		Infrastructure | Roads
450		Infrastructure | Waste
460		Infrastructure | Water treatment
500	Inland water	
510		Inland water | Water body
520		Inland water | Watercourse
600	Military	
610		Military | Defence
620		Military | Infrastructure
630		Military | Residential
700	Recreational and ornamental	
710		Recreational and ornamental | Parks & gardens
720		Recreational and ornamental | Recreational
730		Recreational and ornamental | Ritual
800	Settlement	
810		Settlement | Institutions and their grounds
820		Settlement | Rural
830		Settlement | Towns and larger villages
900	Unenclosed land	
910		Unenclosed land | Heath
920		Unenclosed land | Moor
1000	Woodland	
1010		Woodland | Coppice
1020		Woodland | High forest
1030		Woodland | Woodpasture & scrub

Table 7: Broadclasses and Categories

In the Revised Method Statement (Wiggins, 2007), the Broadclass 'Unenclosed Land' (900) had two categories: 'Lowland Heath' (910) and 'Upland Moor' (920). Rackham gives the following definitions of heath and moor:

> Heaths are in the dry part of the country, are subject to periodic
> droughts, and have mineral soils. Moors are in high-rainfall areas and

have more or less peat covering the soil. Heaths are clearly the product of human activities and need to be managed as heathland; if neglected they turn into woodland. Moorland is not so evidently an artefact and is more stable.

(Rackham, 2000, p. 282f)

Furthermore, Rackham suggests that while there is a distinction between moor and heath, there is much debate on exactly where the line is drawn between the two: According to scholars, 'upland heath' is the preferred term, instead of moor. Nevertheless, Rackham uses the term *heaths* to describe the Lowland England, as opposed to the *moors* of the Highland Zone (Rackham, 2000).

Consequently, the HLC categories of 'Lowland Heath' (910) and 'Upland Moor' (920) have been amended to 'Heath' (910) and 'Moor' (920) to avoid confusion. Heights above and below 250m OD are already recorded separately with the HLC. Following Rackham's example, most of the areas in CD&D are classified as moorland, as it appears at over 250m OD.

Rackham gives an entire chapter to heathland, with an in-depth description of its characteristics. However, the HLC PO is no ecologist/biologist and it would not be possible to identify heathland without more evidence and/or site visits. Instead, the County Durham LCA has identified areas of heathland within the county and this has been used as a guide to identify areas of heathland with the HLC (Durham County Council, 2012).

4.3.   Classifications

There were 154 classifications listed in the Revised Methodology. Some of these have been modified, after it became clear through usage, that a better term could be used to define them. Some were added as further classifications became necessary, others deleted as the landscape characters do not exist in practice, and some were just simply not used.

4.3.1. Modified classifications

431   Infrastructure | Railways | Dismantled railway:

This was formerly 'abandoned railways' but soon after starting it became clear that 'dismantled railways' was a better and more recognised term.

514   Inland water | Water body | Man-made lake/pond:

This was formerly ornamental lake, but man-made covers many more character types necessary, and is a better antonym to 'natural' than the term 'Ornamental'

732   Recreational and ornamental | Ritual | Places of Worship:

This was formerly 'Church/churchyard', but it was recognised that other types of religious house should also fall under this classification. With its broader meaning, the few monasteries captured under '**733: Recreational and ornamental | Ritual | Monastery**' were moved back under 732, and 733 has been deleted (see below).

911   Unenclosed land | Heath | Common

This was formerly 'Lowland heath (Common)'. As part of the shift in category from 'Lowland Heath' (910) and 'Upland Moor' (920) to simply 'Heath' (910) and 'Moor' (920), the phrase 'Lowland heath' was taken out of this classification as repetition and for the reasons given in **Section 4.2** above.

912   Unenclosed land | Heath | Open

This was formerly 'Lowland heath (other)'. As part of the shift in category from 'Lowland Heath' (910) and 'Upland Moor' (920) to simply 'Heath' (910) and 'Moor' (920), the phrase 'Lowland heath' was taken out of this classification as repetition and for the reasons given in **Section 4.2** above. Furthermore, the phrase 'open' was substituted for 'other' as it was felt there was a need for an 'open' classification.

913   Unenclosed land | Heath | Reverted heathland

This was formerly 'Lowland heath (stinted pasture)'. As part of the shift in category from 'Lowland Heath' (910) and 'Upland Moor' (920) to simply 'Heath' (910) and 'Moor' (920), the phrase 'Lowland heath' was taken out of this classification as repetition and for the reasons given in **Section 4.2** above. Furthermore, classification was changed from stinted heathland (which is not easily defined from aerial photographs and maps alone) and changed to 'Reverted heathland' which was a new classification in need of a number.

921   Unenclosed land | Moor | Divided common

This was formerly 'Divided upland common'. As part of the shift in category from 'Lowland Heath' (910) and 'Upland Moor' (920) to simply 'Heath' (910) and 'Moor' (920), the word 'upland' was taken out of this classification for the reasons given in **Section 4.2** above.

922   Unenclosed land | Moor | Divided moor

This was formerly 'Divided upland moor'. As part of the shift in category from 'Lowland Heath' (910) and 'Upland Moor' (920) to simply 'Heath' (910) and 'Moor' (920), the word 'upland' was taken out of this classification as repetition and for the reasons given in **Section 4.2** above.

923   Unenclosed land | Moor | Open common

This was formerly 'Open upland common'. As part of the shift in category from 'Lowland Heath' (910) and 'Upland Moor' (920) to simply 'Heath' (910) and 'Moor' (920), the word 'upland' was taken out of this classification as repetition and for the reasons given in **Section 4.2** above.

924   Unenclosed land | Moor | Open moor

This was formerly 'Open upland moor'. As part of the shift in category from 'Lowland Heath' (910) and 'Upland Moor' (920) to simply 'Heath' (910) and 'Moor' (920), the word 'upland' was taken out of this classification as repetition and for the reasons given **in Section 4.2** above.

925   Unenclosed land | Moor | Outlying moor

This was formerly 'Outlying upland moor'. As part of the shift in category from 'Lowland Heath' (910) and 'Upland Moor' (920) to simply 'Heath' (910) and 'Moor' (920), the word 'upland' was taken out of this classification as repetition and for the reasons given in **Section 4.2** above.

4.3.2. New classifications:

218   Enclosed land | Enclosed farmland (medieval) | Medieval pastures

A need was recognised for this classification as some medieval enclosure, especially around water bodies, did not fit in to other classifications.

255   Enclosed land | Cleared woodland | Modern plantation

It became obvious that modern plantation from the earlier part of the century has been felled since, leaving former plantation boundaries.

313   Industrial | Manufacturing | Mills

After a few months it became clear that a new category for mills was necessary as mills do not fit comfortably within 'Settlement' or other 'Industrial' classifications.

353   Industrial | Retail | Commercial centre

In many medium-sized towns and cities, the modern commercial centre had no suitable classification until this was created.

434   Infrastructure | Railways | Related structures

Stations, works, and sidings are all parts of the railway but it was felt that having a separate classification would be of more benefit to future interrogation of the HLC.

634   Military | Residential | Abandoned army camp

While there is only one example of this (and that is a minor typology of a previous landscape character) it was still felt that this classification should be created for that instance rather than 'shoehorning' it into a different classification.

827   Settlement | Rural | Model farm

Again, there are only a handful of examples of model farms (currently identified) within Durham and Darlington. Nevertheless, it was felt important that they were distinguished as a separate classification, especially if further examples come to light in the future.

927   Unenclosed land | Moor | Outlying common

It became clear that areas of outlying common, as well as outlying moor were present within CD&D, and so a classification was created to reflect this.

4.3.3. Deleted classifications:

236   Enclosed land | Enclosed land (modern) | Rough grazing

Rough grazing is more of a land use than a land character.

237   Enclosed land | Enclosed land (modern) | Rough grassland

Rough grassland is more of a land use than a land character.

516   Inland water | Water body | Restored mineral working

Restored Mineral workings will be classified according to how they have been restored, *from* mineral workings, so this classification is invalid

733   Recreational and ornamental | Ritual | Monastery

See '4.3.1 Modified Classifications', under '732: Recreational and ornamental | Ritual | Places of Worship' for explanation.

833   Settlement | Towns and larger villages | 1856-1865 settlement (Ep1)

Classification '832: Settlement | Towns and larger villages | Pre 1856 settlement (pre Ep1)' is for all settlement show on the first edition OS map. Classification '841: Settlement | Towns and larger villages | 1866-1899 settlement (Ep2)' is for everything which has appeared after the first edition OS map, and by the second edition OS map. Therefore the classification '833: Settlement | Towns and larger villages | 1856-1865 settlement (Ep1)' is illogical.

1012   Woodland | Coppice | Short rotation coppice

It is not possible to tell short rotation coppice from 'normal' coppice simply from maps and aerial photographs.

1026   Woodland | High forest | Wood pasture

Wood pasture should not have been within the category 'High Forest'. This was an oversight.

4.3.4. Unused classifications

217   Enclosed land | Enclosed farmland (medieval) | Medieval stripfields (not townfields)

This classification is hard to distinguish from 'townfields', without further research, so all examples were placed in 'townfields' to avoid ambiguity.

332   Industrial | Mineral working (active) | Colliery

No active collieries remain in County Durham or Darlington any longer. The last colliery to close in County Durham was Seaham Vane Tempest on 4th June 1993 (The Durham Mining Museum, 2013).

341   Industrial | Mineral working (dormant) | Clay pit

No examples were identified.

342   Industrial | Mineral working (dormant) | Colliery

No examples were identified.

345   Industrial | Mineral working (dormant) | Opencast coal/brickshale workings

No examples were identified.

346   Industrial | Mineral working (dormant) | Spoil heaps

No examples were identified.

349   Industrial | Mineral working (dormant) | Iron workings

No examples were identified.

914   Unenclosed land | Heath | Divided heathland

No examples were identified.

4.4.   100   Coastal

Plate 1: Seaham Coastline ©Hannah Wiggins

Percentage of County	0.1
Number of Polygons	14
Area in Hectares	327

Key Features:

- Shallow bays, sandy beaches, dunes and magnesian limestone cliffs
- Limekilns and quarries
- Selected monuments represent coal mining past
- Colliery towns and villages
- WWI and WWII defensive structures and shelters

Description:

The County Durham coastline has played an important role in the history of the economy and history of the North-East (Darlington, of course, is without a coastline).

The 18 kilometres of shallow bays and headlands of yellow magnesian limestone cliffs which run from Sunderland to Hartlepool form the 'Durham Heritage Coast', a status awarded for the restoration of the area from its industrial past to one of the finest coastlines in England (DCC, 2011). Furthermore, the Durham Heritage Coast won 'The UK Landscape Award', and went on to represent the UK in the 'Landscape Award of the Council of Europe', in Strasbourg 2011 (Landscape Institute, 2010).

The significance and character of this area has been highlighted through the Historic Seascape Characterisation (HSC) project, a project which considers how cultural processes shaped the present landscape in both coastal and marine areas. The Hartlepool to Tyneside HSC focuses on the coastal area of Durham from a marine perspective, thus complementing the work of the CD&D HLC. (Seazone, 2009).

The Durham coastline was also part of the area which underwent a Rapid Coastal Zone Assessment in 2009-2010. Part of the EH National Mapping Programme, the aim of the project was to identify heritage assets along the coast line (from Whitby to the Anglo-Scottish border). The project assessed the level of threat the heritage assets faced at that time, with a view to proposing strategies for future management (Archaeological Research Services Ltd, 2008) (Archaeological Research Services Ltd, 2010) (Archaeological Research Services Ltd, 2010).

The coastal landscape is a complex semi-natural landscape, which contains evidence of human activity, although much is transitory and small scale, particularly through the prehistoric period. There is little evidence of character from the earlier prehistoric periods in the HLC coastal landscape, (which characterises the landscape as far as Mean Low Tide), as Palaeolithic, Mesolithic and Neolithic periods are all represented through mainly flint evidence which, as a portable antiquity, has little influence on the landscape at this level. Similarly, while some Bronze Age burials and Iron Age defended settlements occur in this coastal area, they do not survive well enough, nor are they of a scale great enough to influence the character of the landscape. Romano-British, Early Medieval and Medieval periods similarly are represented through sites known about within the HLC coastal zone but none of them lending themselves to the character of the landscape particularly.

It is in the post medieval and modern times that the landscape character that we now see really begins to emerge. There are numerous limekilns within the coastal strip. Often situated near quarries, the lime produced was subsequently used to improve agricultural land, and on this coastal strip there is evidence of such improvement and reclamation in several places. The C17th enclosure act brought about reorganisation of farm lands, amalgamating smaller farmsteads into larger farming units. Modern technological improvements, specifically archetypal farming machinery, has meant the removal of many earlier field boundaries, to both accommodate and capitalise on the use of such equipment.

There was an increase in exportation of goods from Durham during the C17th and C18th, and the rise of the East Durham coal field in the first half of the C19th was to have the biggest impact on Durham's coastal area. The depth of the coal seams and the new mining techniques developed led to large tracts of land being covered by the coal mines and their spoil heaps, including Durham's beaches. The immediate effect of the coal mines are the spoil heaps and mines themselves, but a secondary effect is the rapid expansion of settlement around the collieries - the most dramatic example of this is the planned harbour and town of Seaham, built especially to cater for the coal industry. The harbour increased maritime traffic in the area which resulted in frequent shipwrecks, which in turn led to more coastguard stations along the coastline. Similarly, many parts of the rail network and associated stations are a direct result of the coal industry in this area (Archaeological Services University of Durham, 1998).

Through the work of the Durham Heritage Coast, much of the character of Durham's coastline is now that of sandy beaches and dunes again, with small areas of WWI and WWII defences. The remains of the coal mining industry are now reduced to a select few monuments in recognition of the former character and purpose of the coastline.

Naturally, the coast was a vulnerable target during both World Wars and as a result, it still has the remains of many defensive structures built in response to the threat of invasion. These include a series of 12 surviving pillboxes, a set of WWI trenches at Hive Point, and tank traps. Many of these defensive characters are classed as secondary characteristics within the CD&D HLC.

4.5. 200 Enclosed Land

Plate 2: Ridge & Furrow at Brignall ©DCC

Percentage of County   52.0

Number of Polygons   4108

Area in Hectares   126371

Key Features:

- Improved enclosure

- Medieval town field enclosure

- Parliamentary Enclosure and private agreement enclosure

- Modern fieldscapes and restored enclosure

- Hedgerow, field tree and dry stone wall boundaries

- Related land forms/ earthworks i.e. lynchets and ridge and furrow

Description:

Enclosed Land is not only the physical act of bounding an area, but can, in the case of the enclosure movement, also be the removal of communal rights and conversion to 'severalty': sole ownership and access to a piece of land. Land can be open

(unfenced), but still be held severalty, and similarly land can be enclosed (fenced off), but still be legally 'common' land with commoning rights attached. Similarly, enclosure awards are legal documents which record such ownership and distribution. Often the term 'Inclosure' is used to differentiate between the physical act of enclosure and the legal definition of private land (Muir, 2004). The enclosure movement is a huge research topic in itself that can only be touched upon within this report. Further discussion of such land will appear in the following secondary report which contains discussion on all HLC classifications (Kain, Chapman, & Oliver, 2004) (The National Archives, 2009). For the purpose of this report alone, the term 'enclosure' is taken to mean 'fenced off' land rather than any rights of severalty on the land.

For all the modern urban development and industrial expansion within CD&D, fields and fieldscapes are still a familiar sight across the whole region. From the upland enclosure in the west of the county, through the medieval townfields of the green villages to the open modern fieldscapes of reclaimed collieries, the fieldscapes are so commonplace that they are often taken for granted by the observer and are rarely actually 'viewed'.

With over half of the county classified under the 'Enclosed Land' broadclass, these field patterns give much of CD&D its character and diversity. Many different local variations of boundary type occur, from the stone-walled enclosure of the uplands and the ruler straight hawthorn hedges of parliamentary enclosure. Most enclosed land is also 'improved' in as much as it has been cleared and limed in order to improve its productivity.

In addition to the field patterns, are the associated land forms resulting from the agricultural practices over the centuries. Lynchets (cultivation terraces) appear across several periods of history through contour-ploughing land over a long time. Ridge and furrow earthworks appear both as medieval and post-medieval phenomenon, caused from the marks of the ploughshare turning the soil over, again a result of ploughing over a long period. Medieval ridge and furrow is distinguished by 'headlands' caused by the need for space for the oxen-team to turn. This became an unnecessary feature once single- or two- horse ploughing was introduced in the post-medieval period, removing the need for a large turning area, as horses can turn

in a much smaller area. In some cases, the internal earthworks of earlier field systems have been superimposed by later patterns. (Rackham, The History of the Countryside, 2000) (Taylor, Fields in the English Landscape, 1975).

Materials used to form the boundary of the fields; the hawthorn of parliamentary enclosure; the species rich, thick hedges often indicating a boundary of antiquity and the dry stone walls, each expressing its own character through the construction and design of the walling.

The hedgerow was a living managed resource: If left to its own device it would become tall and leggy with gaps where livestock could easily force a way through. Instead, hedges were *laid* or *plashed* to produce a thick and impenetrable wall of vegetation. While they are primarily seen as a stock barrier, they were managed as a resourced in their own right. Often they included field trees, grouped within the hedgerow rather than scattered across the farmland. These trees may have been managed as *standards* but many were *pollarded* to provide fodder for livestock. The hedgerows shrubs themselves were often coppiced and sometimes cut in late summer to provide fodder for livestock. Furthermore, the nuts and fruits produced by hedgerow shrubs could also be harvested for animal fodder or for human consumption. (Barnes & Williamson, 2006). The hedge was almost as important as the space it contained[3]. Through time, the importance of the hedgerow for coppiced wood, animal fodder and food has lessened and managed hedgerows are becoming scare, with many either grubbed out, or harshly cut by an industrial hedge trimmer.

It is the size and shape of individual fields, the size and shape of the field patterns, the type and nature of the field boundary, the presence of any related land forms, and the fact that many of these have been built up gradually over thousands of years that gives each area its own unique character and forms the backbone of the countryside of CD&D.

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[3] Without even touching on the importance of hedgerow for flora and fauna alike.

4.6. 300   Industrial

Plate 3: Middlehope Mine entrance ©Dean Allison[4]

Percentage of County	2.7
Number of Polygons	521
Area in Hectares	6501

Key Features:

- Upstanding remains of lead processing activities
- Levels, adits and hushes
- Spoil heaps
- Bell pits
- Charcoal pits associated with early furnaces
- Lime kilns
- Open quarries, and smaller quarried out areas.
- Focused centres of lighter industry

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Description:

Coal and Coke

Coal was a very rich mineral resource in CD&D. The coalfields covered north, east and central Durham extending from the natural boundaries of the River Tyne and the North Sea, to Consett and Bishop Auckland in the west. The southern boundary ran diagonally from Bishop Auckland across to the east coast, to just north of Hartlepool.

Coal was mined in substantial quantities even in medieval times and the Industrial Revolution led to a huge expansion in the exploitation of the coal measures as colliery owners were able to reach deeper and more productive seams. From the latter half of the C18th the principal landowners of the county had amassed immense wealth from their colliery holdings.

By the C19th, the growth of the mining industry had transformed the landscape and increased the population of the county. Colliery villages sprang up everywhere and migrant workers from all over the UK swelled the workforce. The industry had a profound effect on trade unionism, public health and housing, and increasing mine safety.

Coal production peaked in 1913 and, by 1923, there were 170,000 miners working in County Durham. The industry declined in CD&D after the Second World War and many pits closed in the 1950s and 1960s. The last colliery in the Durham coalfield, Vane Tempest Colliery, closed in 1994 (The Durham Mining Museum, 2013) (Durham County Council, 2012).

The Lead Industry

The main uses for lead are within buildings works; for pipe work, roofs, guttering and leaded windows. Lead is also a basic ingredient in glass, pottery and paint, but nowadays it is used primarily in the chemical industry for example in lead-acid batteries used in the motor industry.

There is currently no firm evidence for mining within CD&D in the Bronze and Iron Age, but it is still believed this mining took place. Bollihope Common has evidence of

lead mining from as early as AD 880-1030 and dating of other early smelting sites in the region may eventually lead to a more accurate view of the extent of lead working in the medieval period in Durham.

Technical limitations of early mining and smelting techniques restricted the production from these mines to relatively small sites producing small tonnage. It was the production of silver, separated from the ore by the refining processes, which was of particular interest and which could make the difference between a mine being viable and being abandoned.

While Teesdale and Derwentdale experienced considerable lead mining activity, Weardale enjoyed the most activity over the longest period. Mineral right were held by the Bishop of Durham, who owned much of the land and while great areas of land were preserved for hunting parks, lead mining was undertaken in limited amounts under the bishop's control. In AD 1406 Bishop Langley opened out most of the Parks for settlement and agriculture in order to maximise return on the estate. As demand and price for lead increased, however, the production in the area did not keep pace. Deeper mining became a necessary, but expensive investment. By the 1660s, Weardale had over 110 mines on the fells and ore production was ten times that of the medieval period.

Britain was the leading lead producer in the world during the C18th and C19th with a national production peaked between AD 1867 and AD 1871, but cheap imports led to rapid collapse of the long established industry. By the turn of the C20th, the market for lead had quadrupled but UK production had fallen by three quarters to just 6% of world production. The Durham Dales played a central role in this industry, with the upper valleys of Derwent, Wear and Tees all part of the North Pennines lead-mining region. The Durham Dales, with adjoining East and West Allendale's of Northumberland, and Alston Moor in Cumbria, formed one of the foremost lead mining areas in the country.

During the C18th and C19th, farming and mining were the two activities which supported the economy in CD&D, with the fortunes of the population reflecting the fortunes of the economy. As the lead industry boomed, so did the population; as it

crashed, the widespread depopulation of the area resulted in the ruined remains of a once thriving industry, scattered in some of the most remote areas CD&D.

While the lead mining industry was dying during the early years of the C20th, the demand for minerals found in the mine veins, such as Barytes, Witherite and Fluorspar meant the mines were reopened to harvest the previously discarded minerals and to mine fluorspar veins previously ignored. The fluorspar industry kept mining alive in West Durham until just before the C21st, with the last mine shutting as recently as 1999. Fluorspar production in the North Pennines had totalled two million tonnes in this time. (Guy & Atkinson, 2008).

Iron and Steel

The iron and steel industry in the area is perhaps the least understood of the principal industries in Durham. There seem to be surprising few specific studies on the iron and steel industry of the area even though it had a significant effect on the landscape of the area. Spennymoor, Tow Law and Consett are three of the major settlements founded because of the industry. Given the amount of raw material used in the production of coke for the furnaces, many collieries in the area were expanded and many developed directly into iron companies. In fact, in the short period of extraction of iron ore in the Dales, tonne for tonne, iron extraction far exceeded that of lead extraction even over the entire history of lead mining.

The demand for fluorspar and limestone to supply the iron furnaces replied on a comprehensive rail network to transport the iron and steel to the region's ship-building, railway and engineering industries. The influence of iron and steel production in the area on the landscape and economy were just as massive as that of the coal industry. Today little remains of this once vast industry; the massive works at Consett now razed, but a small C18th example for a steel furnace still survives at Derwentcote in Derwentside; the last remaining example of that period within Britain (Guy & Atkinson, 2008).

Quarrying

Many of the older buildings of CD&D owe their distinctiveness to the building stone available in the area. Quarries both large and small can be found all over the county providing building materials for residential use such as houses, industrial building

such as engines houses, and civil engineering structures such as bridges. Other uses include millstones, as flux in iron furnaces, grindstones for metal trade and edge runners for crushing materials (Palmer, Nevell, & Sissons, 2012, p. 123).

One of the oldest quarrying trades is that of lime production, where only broken up limestone was required, and usually burnt on the same site as where it was quarried, and, in later periods, located close to coal supplies. The earliest kilns known, from the Roman period, were fired by wood, and most contracts for medieval stone buildings included provisions for creating limekilns for the lime used in lime mortar.

By C16th lime was also recognised as 'improver' – a good 'manure' for creating a better quality soil in areas of poor soil and lower crop production, and by the late C18th the Enclosure movement saw the enclosure and improvement of many areas of upland with poor soil quality. It was common at this time for many smaller kilns to be built and owned by farmers, and used, often on an annual basis, to improve the soils. In some areas it is common for there to be twenty or more kilns just in one township, and in upland areas there could be several hundred scattered over the valley sides. These kilns were part of a larger landscape complex; of quarries, limekilns, coalpits, and wagonways (Raistrick, 1973).

Towards the end of the C19th, there developed a greater demand for lime in agriculture, industry, and chemicals, with the introduction of large capacity and large-scale kilns, designed for continuous burning for several years, and set up alongside similarly huge quarries (*ibid*).

Other Industries

There were many other, smaller industries active within the landscapes of CD&D, which would have included the likes of besom-making, bleachworks, shoe-makers, candle-makers, cheese-making, cooperage, corn-milling, hat-making, paper manufacture, peat-cutting, pigment and paintmills, porcelain and potworks, rope-making, tanners and leatherworks, and thatching to name but a few. Rarely is anything meaningful written about these trades, as the main industries of the area take precedence, and these smaller industries, some of which will have been cottage industries, have not left such great impact on the historic character of the landscape (Bunting, 2006).

4.7. 400 Infrastructure

Plate 4: Tanfield Lea Heritage Railway ©Clare Henderson

Percentage of County	1.1%
Number of Polygons	392
Area in Hectares	2710

Key Features:

- Roads
- Railways
- Airstrips
- Docks and Harbours
- Water Treatment sites

Description:

Communication networks such as roads and railways form an important element of the historic landscape of CD&D, but while the history of such communications is a

subject of much interest to many, the ability to pin down and date these networks is a different matter.

A green lane linking two medieval villages together may be medieval, but if there are also prehistoric remains nearby, the route may also have been used in earlier periods. And if that same green lane has been metalled in later centuries, perhaps with a cobbled surface, for horse and carriage, it could instead be considered to date from the C19th. Furthermore, importance may vary across the ages; a track between two prehistoric villages might become part of a major road between towns in the Roman period only to decline to a farm lane during the early medieval period. This may then develop as a national trade route in the C14th but become an overgrown footpath by the present day (Taylor, Roads and Tracks of Britain, 1979).

Transport, while often treated as a wholly separate area of study is integral and essential to the development of industry. From the transportation of materials for processing, to the haulage of the finished product to the market, no matter what the scale of the activity, the quality, duration and cost of this transport is a major factor in the viability and location of any industrial process (Guy & Atkinson, 2008). The heavy industries of coal, lead and iron ore in CD&D have demanded a transport infrastructure on a similarly large scale, however as the industries have declined so has the infrastructure that supported them, but not without leaving significant remains on the landscape. Not surprisingly, as a communication network these remains have often been reused. Turnpike roads have become national highways; old railways have become the line on which modern roads are built; railway track beds have become national footpaths or bridleways, metalled and maintained; and in some cases, even the rivers have, in places, been canalised.

With the exception of an abortive attempt by George Dixon to construct a canal on Cockfield Fell in the AD 1769, the canal era had little effect in the North-East. Instead, the area bypassed this aqueous technology and witnessed the start of the modern railway era, beginning with the construction of the Hetton Railway in AD 1822 by George Stephenson, closely followed by his more famous Stockton to Darlington Railway in AD 1825. This was followed by thousands of miles of railway, much of which was re-laid wooden wagonways, establishing mineral lines, passenger lines (Durham County Local History Society, 1992).

The nature of communication networks is that of creating links between specific places. To characterise the myriad lines of communications throughout CD&D would be to split the county into unnecessary and unmanageably small units, many of which would have the same character, divided only because of a railway or road running between the two. Instead, a metaphorical line has been drawn, and in general, only those railways still visible in some way, or those major roads (A-roads and Trunk roads) have been characterised individually. Modern b-class and c-class roads have been subsumed within other character areas, as have smaller areas of railway, especially if they are no longer visible in the landscape. In these cases, where possible the minor typology has been used to record the presence of such a feature.

4.8.   500   Inland Water

Figure 15: Mill House and weir at Durham ©Hannah Wiggins

Percentage of County	1.0
Number of Polygons	190
Area in Hectares	2317

Key Features:

- Natural ponds, lakes and rivers
- Man made ponds, reservoirs, mill races and stells
- Ornamental lakes, moats
- Wetland Carrs

Description:

There are a number of areas characterised by the presence of major water features, including the reservoirs of Balderhead, Burnhope, Cow Green, Derwent, Grassholme, Hury, Selset, Tunstall, and Waskerley. These man-made water bodies

have had a major impact on the landscape, not only in terms of the physical change but also of the social change. In some instances, this change includes the evacuation and flooding of former settlements to make way for the new reservoir, and the creation of complex social relationships between the navvy settlements centred on the reservoir, and the settlements that the reservoirs were designed to supply (North Yorkshire County Council, 2010). Along with these reservoirs are the natural rivers and streams in the region. Within CD&D, the eight major rivers are; Browney, Derwent, Gaunless, Greta, Lune, Skerne, Tees, and Wear, of which some, including the Skerne, have been canalised in places during the recent past.

Lakes and ponds in the landscape can either be natural features, created perhaps by glacial action, kettleholes, sinkholes or landslips or man-made features. Man-made ponds can have origins in former or current quarrying or mineral workings (such as bell pits) or in clay pits, sawpits, charcoal pits (the latter two examples are often found in woodland or former woodland) or even as a result of peat cutting (the Norfolk Broads are a good example of this). The remains of village ponds (often part of the village green), moats (associated with medieval moated houses), and medieval fish ponds can also still survive as areas of ponding to this day, even if the origin is now somewhat obscured (Rackham, 2000).

The sinuous ponds of post-medieval ornamental landscapes, usually created from dammed streams, not only served as fish ponds, but also produced ice during cold winter months. Thus, a surviving ice house in a former ornamental landscape often implies that a pond existed in the near vicinity; even if the associated dam has long been breached and the stream is now just a trickle.

Mill-races (or mill-leats) are short lengths of canal running parallel to rivers at a lesser gradient, to gain a difference in height in order to drive the water mill. Mill races, directly associated with the mills themselves, are found alongside many rivers, often with a newer mill superseding an older mill location. However, like many inland water features, if the races are not managed or if the water does not flow with enough speed, the feature can quickly silt up (Rackham, The History of the Countryside, 2000).

Dams and weirs are used, as mentioned above, for engineering purposes, such as to create a faster flow of water to drive a mill wheel. Fish weirs were also common in the medieval period and consisted of a fish trap across part of a river, usually at a place where there was an island, the weir and trap then positioned between the island and one bank.

On ornamental lakes particularly, duck decoys were used in the catching of ducks for the table of the wealthy. In this instance a lake would have an arm of water (called a 'pipe') tapering to a dead end. This would be roofed with netted hoops and surround by reeds with peep holes. The ducks would be lured down the river by a dog (often bred to look like a fox) and into the funnelled pipe to the netted dead end. A restored example of such a decoy can be found at Hardwick Park (Heaton, 2001).

Finally the Carrs of Bradbury, Preston and Morden have all, at one time or another, had higher water levels than now, (as also suggested by the places names of Great Isle and Little Isle), but have since been systematically reclaimed through an ingenious system of drainage channels. Until then these badly drained and flood-prone Carrs were 'no go' areas, reserved for outlaws, the unwanted and, when Britain contained them, wolves (Muir, 2004). The term Carr is thought to refer to a wood of Alder and certainly, Alder are known to colonise in areas of Carr (Rackham, 2001).

4.9.   600   Military

Plate 5: Barnard Castle ©David Dixon[5]

Percentage of County	1.2
Number of Polygons	40
Area in Hectares	2890

Key Features:

- o   Defensive structures
- o   Military accommodation
- o   Training areas
- o   Detention centres
- o   Firing ranges

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Description:

Within the scope of this HLC, the characterisation of 'military' refers mainly to function rather than land ownership, indeed much of the land owned by the Ministry of Defence (MoD) will in fact be classified as field system or similar.

The areas under discussion here tend to be military accommodation, detention or training centres. Many of the sites will have a multi use, i.e. both accommodation and training, or else somewhere like the firing ranges may have a major typology of firing range and a minor typology of moorland, or vice versa. In this instance it can be argued that the major typology should be moorland, as aerial photographs do not show difference between moorland and firing range, however, if one were to look at a map one the demarcation would be visible.

Roman forts, permanent places of occupation, are strategically well-placed; on a flat spur above a river, or controlling approaches to an important river pass for example. Defensive ditches and stone walls ramparts with a sloping bank of earth on the inside are common for such places, and the easily recognisable 'shortened playing card' shape is typical of most Roman forts. The *via principalis*, *via praetoria* and *via decumana* provided the four main routes into and out of the fort, and these roads would exit directly onto one of the main roman roads in the Northeast such as Dere Street and Cade's Road (depending of course on the location of the fort).

Roman marching camps, conversely, were not designed for permanent occupation but were constructed for a single night's duration and consisted of only a ditch and timber palisade. The marching camp at Stainmore Pass consists of massive defences, with 6m wide ramparts, (perhaps in this case on such as scale as the ditch was left partly undug due to the underlying bedrock). However, camps on this larger scale are often built as accommodation while a unit constructed the main fort. In this case, the camps are sometimes called 'Labour camps'. At the other end of the scale are the tiny practice camps constructed simply as training in ditch digging and rampart construction (Wilson, 1980).

Given the residential aspect of the castle, an argument exists for classification under **800: Settlement** rather than **600: Military**, however given the military strategy

behind the placement and creation of the medieval castle, the decision has been made to classify castle as a whole under **600: Military** for the purposes of this HLC.

Durham has over twenty castles, although some of these survive only as earthworks, including the Norman motte and bailey castle remains at Bishopton. Many were a result of the Norman invasion, lands given to Norman overlords who built such defensive structures, for occupation as well as to defend themselves against the hostility of the occupied peoples (Allen Brown, 1985). Constant Scottish raiding through the centuries meant that these defences were necessary and were maintained until the unification of Scotland and England under James I England (James VI of Scotland) in AD 1603, after which the castle became more a symbol of wealth and power rather than a defensive stronghold (Adey, Harvey, & Haselgrove, 1990).

In the C20th, practice trenches in the uplands, pill boxes along the coast and in areas of high visibility, and air-raid shelters in built-up areas make up some of the structures which give a visible reminder of our recent past and two World Wars. Training camps and prisoner of war camps have often remained MoD owned land and have become detention centres or prisons. In other cases, once the camps were closed, the land was sold off and has instead become industrial units, some, until quite recently, still occasionally retaining the original 1940s prefabricated buildings.

4.10. 700 Recreational & Ornamental

Plate 6: Hardwick Park: Temple of Minerva and line of Ha-ha ©Clare Henderson

Percentage of County	2.8%
Number of Polygons	807
Area in Hectares	6741

Key Features:

- Designed landscapes, including associated plantations and water features
- Designed open space for recreation, sports fields, country parks etc.
- Village greens
- Places of worship and related grounds.
- Ritual landscapes

Description:

The ritual landscapes of prehistoric cairnfield cemeteries or petroglyphs are unique and deserve recognition within the confines of the HLC. Few other prehistoric

features exist on a landscape scale, except ancient field systems, which find a natural home under **200: Enclosed Land**. Thus, there was no obvious category or broadclass for the landscapes of cairnfields and petroglyphs, and after much discussion, the classification was placed within **700 Recreational and Ornamental**. However, Everson and Williamson also consider prehistoric sacred landscapes under the heading 'Gardens and designed landscapes' in their publication *The Archaeology of Landscape* (Everson & Williamson, 1998), and furthermore, Bradley discusses the use of petroglyphs as a way to trace important social networks through the artwork, as symbolic messages shared between monuments, artefacts and natural places (Bradley, 1997).

Medieval gardens are usually thought to be associated with monastic institutions, manor houses or castles. Few clear remains of such gardens can be identified at the resolution that the CD&D HLC must use, although some of the fish ponds, which hint at such former landscapes, still survive in a recognisable format (Taylor, The Archaeology of Gardens, 1983).

The tradition of the deer park dates back a very long time, indeed Columella, writing in the C1st BC notes the essential features; that of emparking existing woodland within wooden pales to keep deer, with a supply of water and food (Rackham, The History of the Countryside, 2000). It seems deer parks in Britain are derived from the Norman interest in deer husbandry and indeed, it is the C12th when the number of parks in Britain starts to multiply, thought also to be connected to the introduction of fallow deer, which are easier to keep in confined spaces than our native species.

Very few visible remains of these parks exist, other than the actual park pale; tall paling, a dense hedge or a stone wall set on an earthen bank, often with a ditch on one side, thus bounding the deer park and preventing the deer from escaping (Rackham, The History of the Countryside, 2000) (Muir, Landscape Encyclopaedia, 2004). Hunting lodges, for accommodation in hunting season near to the parks are still visible in a few cases as earthworks, as are some hunting towers which existed with the park. Forest and Chases were the legal terms used when the deer park was owned by the King or Lord-marchers, and in these cases, the park no longer came under the jurisdiction of common law (Langton & Jones, 2007).

The formal, ornamental and often geometric pleasure gardens belonging to the houses of courtiers of the mid C16th, similar to that still seen at Bowes Museum, The Gardens reacted to changing fashions and attitudes. These gardens were created at a time when many new plant species were being identified and introduced in the country. As such having these plants within a garden was a statement of status, importance and wealth, with the more intricate and complex garden designs, most recent plant discoveries and latest fashionable designs from the continent giving the higher social status. As Taylor notes "On the whole the richer and the more important the owner, the larger and more sophisticated the garden" (Taylor, 1983, p. 41).

With the naturalised designed landscapes that prevailed in the C18th and C19th came ideas of the 'picturesque'. Such designed landscapes and the aesthetic qualities and philosophies behind them giving rise to viewing platforms for presenting the best views, meandering drives which only provided a view of a specific feature (usually the house) at the most impressive point, and innovative inventions such as the ha-ha, to unobtrusively prevent livestock from spoiling a 'pastoral' scene by getting too close the main house. Grassland also provided better opportunities for 'gentlemanly pastimes' such as riding, walking and shooting (Everson & Williamson, 1998).

The social aspect of this landscape change was that of class distinction – a tangible symbol of the landed elite. It also segregated, spatially and visibly the landowner, or squire, from the village community. Furthermore, by clearing away all signs of farming facilities from around the main house (home farms were often situated some distance from the main house) the owner signalled his superiority over neighbouring farmers and simultaneously confirmed his status as a landowner. Thus, he set himself apart from the middle classes who may have formal gardens and large houses, but still did not own the acreage needed to create the designed landscape and sweeping panoramas produced by people such as Lancelot 'Capability' Brown (Everson & Williamson, 1998).

Village green are areas of common land often within the centre of a village. Whilst village greens still have a legal definition today and many of these have been captured within the HLC, many village green, which may no longer be registered as such, are also included as these are the greens belonging to medieval villages.

The common land of a village green was used for grazing, overnight accommodation for animals being driven to market, and those with ponds could provide grazing for the smaller village livestock such as geese and goats. Some greens were large enough to house the market, and some were the site of the parish church. They were an important and focal point of village life (Muir, Landscape Encyclopaedia, 2004).

4.11. 800   Settlement

Plate 7: Gainford Hall ©Uncredited[6]

Percentage of County	7.1%
Number of Polygons	3935
Area in Hectares	17273

Key Features:

- Housing estates
- Villages
- Dispersed settlement over 0.5ha
- Manor houses/County houses
- Colleges, schools and nurseries
- Prisons, reform centres and other public complexes

Description:

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The broadclass 'Settlement' covers a wide range of classifications from the single manor house to the tightly packed terraced housing of miner villages. From the conurbations of Peterlee and Darlington, to the city of Durham, to the market towns of Crook and Barnard Castle down to the villages of Cotherstone, Cold Hesledon, Edmundbyers or Middleton Saint George. It encompasses the farmsteads and dispersed settlements of the dales and the new towns and small nucleated villages associated with the collieries.

Roberts *et al* chronicled the patterns of rural settlement in C19th England and used this information to divide the country into three broad provinces; 'Central Province', 'Northern and Western Province', and 'South-eastern Province'. The area of the CD&D HLC is contained mainly within 'Central Province', but with areas of upland within 'Northern and Western Province'. In addition, these three provinces are sub divided into further into 27 sub provinces, of which CD&D HLC contains three; 'Humber-Tees (CHUTE)', 'Wear and Tweed (CWRTD)' and 'Northern Pennines (WPENN)' (Roberts & Wrathmell, 2000).

Much of the settlement in CD&D is rural with the dominant characteristic of a large open space within the interior of the settlement. These 'green villages' as termed by Roberts can be hamlets, villages or market towns. Most often, these villages have a distinct plan, although the actual blueprint of this plan varies considerably even just across CD&D. Roberts has done a huge amount of research to give a grammar and typology to these plans (Roberts B. K., 2008).

The basic elements of a village are the farmsteads, which often started life as long-houses, where cattle and humans shared one long building with a single entrance but separate quarters. Hamlets and dispersed settlements are usually made up of several farmsteads, but lack some of the other elements which create a 'village' (Roberts B. K., 2008).

Thus the village, as defined by Roberts, contained farmsteads and cottage with associated tofts (the enclosure around the farmstead or cottage), and in many cases a higher status farm and house associated with the lord of the manor. The village church would also be prevalent and at the heart of the village, not as might be assumed because the village grew up around the church, but more, as Roberts

writes 'because of the complex system of powers, privileges, rights and duties associated with it' ((Roberts B. K., 1982, p. 8).

It is thought that many of the settlements in CD&D started as such villages, and indeed many are thought to have been in existence pre-1066, as is often evidenced by the place names (Thorpe, 1951). Some began life as simple summer *shielings* – temporary settlements used during the summer months when stock was taken into the uplands for the summer grazing. These shielings became permanent settlements over time and developed into villages (Muir, Landscape Encyclopaedia, 2004).

The size of settlements has waxed and waned over the centuries due to social and economic pressures, such as poor harvests, soil exhaustion and pestilence (Rowley, 1978). While the difference between town and village is mainly a legal one, with early towns possessing distinctive tenurial, jurisdictional and trading rights, some such towns may have begun life as such, planned and built as a new town, where others have developed from modest beginnings (Roberts B. K., 2008).

These villages and towns are often still visible on the first edition OS map in a form recognisable as a medieval village and often, a green village, with perhaps some accretive settlement around the edges. However, after several economic factors, including two world wars and a booming mining industry, many of the villages became almost unrecognisable to trained eye, with development, re-development and demolition contributing to this change. While some villages such as Cotherstone retain much of the original character as a green village (as well as the surrounding field systems in this case), others such as Sadberge retain some of the original character but with considerable modern development throughout.

With the development of an agricultural industry, the farm and the village have become divorced from one another and the nature of the village has changed as mobility has lead to centralised services and the closure of more local branch services, such as post offices, schools and even parish churches. Villages have grown up into suburbs for commuters, with private and council estates grafted onto the side of former villages creating towns, which then are in need of a bypass to cope with the traffic which has then itself become the focus of new development. With

each development comes a new set of provisions and priorities for the C20th and now the C21st resident (Rowley, 1978).

However not all towns and villages have their origin as medieval villages of one type or another. Indeed Peterlee, with its famous Apollo Pavilion structure, was built under the New Towns Act of 1946, to house coal miners and their families directly after the Second World War. Unique among new towns, Peterlee was built at the behest of the people through political representatives, and perhaps at the expense of neighbouring colliery villages (Durham County Council, 2013).

Other villages such as Easington Colliery and Shotton Colliery as the names imply were settlements created to house miners who came to work the collieries. While built much earlier than Peterlee, these villages or towns, were designed with all the provisions considered necessary for a community to thrive, with schools, a church, recreation ground, Inns, Workmen's Halls and Miners Institutes, police stations and so forth.

4.12. 900   Unenclosed Land

Plate 8: Moorland above the Upper Derwent Valley ©Clare Henderson

Percentage of County	25.0%
Number of Polygons	340
Area in Hectares	60665

Key Features:

- Open and divided areas of moorland
- Unimproved land or in some cases, reverted improved land
- Peat grips
- Grouse Butts
- Heather management through controlled burning
- Some heathland

Description:

There are huge areas of the Durham landscape which can be described as unenclosed land, the vast majority of which occurs within the boundary of the North Pennines AONB.

Whilst the designation AONB suggests that this area of unenclosed land is of natural origin, in fact most of it has been shaped in one way or another by human interaction over the millennia since the Holocene. Much of this area is moorland, and in some, small areas, heathland. To used Rackham's concise differentiation between heath and moor:

> Heath are in dry parts of the country, are subject to periodic droughts, and have mineral soils. Moors are in high-rainfall areas and have more or less peat covering the soil. Heaths are clearly the product of human activities and need to be managed as heathland; if neglected they turn into woodland. Moorland is no so evidently an artefact and is more stable.
>
> (Rackham, 2000, pp. 282-283)

As is discussed further below (Section 4.13 – 1000: Woodland), at the end of the last ice age, as the glaciers retreated, trees now considered species native to the British Isle re-colonised the landscape. Very few areas other than those at over 500m OD were without tree cover, according to pollen analysis (Roberts, 1989).

By the Neolithic, domestication of both plants and animals was occurring, but the resulting agriculture had little impact on the landscape, with forest clearance localised and temporary. Forest fallow agriculture did create a mosaic of secondary woodland in various stages of regeneration, but forest cover was still generally maintained. By the Bronze Age, cultivation was much more intense, with large amounts of upland pastoral farming. However, an increasingly hostile climate and deteriorating soil and vegetation resources, made the upland population retreat to the lower ground. The environmental changes which prompted this retreat were permanent and damaging, and due partly, and not for the last time, to human misuse of a fragile environment (Roberts, 1989) (Rackham, 2000).

The clearance of the wildwood and abandonment of the agricultural upland zone in the Bronze Age, allowed for the spread of shade intolerant plants such as heather,

cotton grass and bog myrtle; species which are still now abundant in moorland areas. The change in climate and higher rainfall, which causes blanket peat, also causes leaching of minerals from the soil, leaving an inhospitable environment not easily colonised by trees (Rackham, 2000).

Thus while the creation of the present day moorland is not a direct human action it is, nevertheless down to human activity:

'Landscapes were not transformed by human agency alone, however. The natural environment responded dynamically to human influence, sometimes metamorphosing in a way quite different from that intended by the initial human actions... Furthermore, nature was itself actively changing independent of human action. Natural agencies such as fire, disease, sea-level change and soil maturation all continued to operate.

(Roberts, 1989, p. 122)

Common land or 'waste' land of the medieval period, are areas where there are common rights for grazing and other resources available to the local population. The term is not coterminous with areas of open land or indeed upland, as evidenced by village greens or town commons which both have similar commoning rights (Bowden, 2010). Nevertheless, much of the common land in the north-east was upland common pasture, with all other common rights also exercised within this upland area. This would include the rights of *agistment* (summer grazing), *turbary* (peat digging), *piscary* (fishing), *auceptary* (fowling), *estovers* (the right to take wood for fuel and house repair), and *pannage* (the right to graze pigs) to name but a few (Jones, 2010) (Muir, Landscape Encyclopaedia, 2004). Such 'management' of the upland moor no doubt also contributed it retaining its character, ecology and habitat.

However with the introduction of the parliamentary enclosure and the removal of vast tracts of land from common rights and into severalty, came the carefully controlled landscapes, without public access, exclusive to the groups who could pursue the sport of grouse shooting during a limited season. Hey argues that it was this severalty which in fact helped maintain and preserve many relict landscapes which may otherwise have been threatened by plantation or conversion of these uplands to pasture or meadow (Hey, 2007). Nonetheless, it is still the case that in taking away

commoning rights, not only was there a huge social impact on the surrounding population who now had very limited resources for food and fuel (although the process of allotment helped ease that burden), but also a change in how the upland moor was managed. Specifically the areas for grouse shooting which now underwent periodic heather-burning were no longer harvested for all the other previous common rights (Hey, 2007) (Whyte, 2010).

Finally, over the decades of the C20th, the peat land of the North Pennines, including that within County Durham, was drained through a series of peat grips, in an attempt to make it more agriculturally productive. As a consequence of this drainage, whole areas of peatland have dried up and shrunk back, causing further erosion and the release of carbon dioxide back into the atmosphere, with negative effects on habitats and wildlife. In recent years, these grips have been systematically blocked in an attempt to halt this erosion, prevent the release of further carbon, and help restore some of the habitats (The Environment Agency, 2013).

4.13. 1000   Woodland

Plate 9: Bridleway in Hamsterley Forest ©Trevor Littlewood[7]

Percentage of County	7.2%
Number of Polygons	1579
Area in Hectares	17563

Key Features:

- Plantation forest
- Woodland
- Wood pasture

Description:

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Before the last ice age, Britain was covered with natural forests known collectively as *wildwood*;. As the ice of the last ice age advanced, trees were forced southwards. On the continent, the major European mountain ranges run east-west and some species were prevented from retreating further south at their preferred altitudes and, as a result, were probably wiped out. As the ice retreated at the end of the ice age, about 11 000 years ago, the trees were able to re-colonise where the ice had been and move gradually northward again. However as the land mass that became the British Isles was cut off from the rest of continental Europe by the melt-water of the ice caps, so only species which had reached Britain by that time, about 6 000 years ago, took a place as native flora of Britain (Press & Hoskins, 1993). Native trees (and shrubs) include ash, maple, hazel, limes, elm, birches, alder, willow, oak, and aspen (Rackham, 2000).

The wildwoods of prehistory have passed away through felling, clearing, burning and woodland management throughout prehistory. Now, none of this wildwood coverage survives other than through pollen analysis. (Rackham, 2001). But trees play a large part in the British cultural landscape, and have been managed and used for millennia. To use Rackham's definitions of woodland type:

Woodland

Woods are land on which trees have arisen naturally. They are managed by the art of *woodmanship* to yield successive crops of produce in a perpetual succession. When cut down the trees replace themselves by natural regrowth

Wood-pasture

This land-use involves grazing animals as well as tress. There is a conflict, in that the shade of the trees spoils the pasture and the livestock eat the regrowth of the trees. Various techniques have existed for reconciling the two uses.

Plantation

Here the trees are not natural vegetation; somebody has planted them. Plantations are usually of just one or two species, often conifers or other exotic trees, and do not maintain themselves. They usually die when felled and are replaced by a new plantation. This is the practices of *forestry* as understood in Great Britain and Ireland.

Non-woodland

The tradition of trees in hedgerow and field.

Orchards

Trees of gardens and streets

(Rackham, 2000, pp. 64-65)

Rackham goes on to explain that while plantations are relatively new phenomena, the other five traditions date as far back as the early medieval period (*ibid*).

It is worth pointing out at this conjuncture that the term *Forest* with a capital 'F', and mainly with regard to medieval or post-medieval Forest, does not necessarily mean woodland in the modern understanding of the term, but land within which the King or lord-marcher had a right to keep and hunt deer and boar. Special laws applied to these areas which were outside the jurisdiction of common law. Forest, (also known as Chases) is essentially a legal term used to denote this ownership and right. Forest in this sense is included within the classification for' Deer park', which itself falls under the Broadclass of 'Recreational and Ornamental' (Langton & Jones, 2007).

5. Results & Analysis

5.1. Creation of HLC Character Areas

The HLC project divides landscape into discreet areas of classification. However, at times it is useful to evaluate HLCs at a regional or even national level. At this scale, the level 'classifications' become too fine-grained and cumbersome to give concise information. The ten overarching broadclass types go some way to addressing this issue and, as mentioned above (**Section 4: Typologies**) such was the logic behind using broadclass types comparable to those used in the North Yorkshire and Northumberland. However, the grain at which broadclass types are shown is still rather fine when trying to generalise about character in CD&D (Figure 16). For this reason, larger HLC Character Areas were created using spatial analysis within ESRI GIS to identify larger but unique combinations of landscape types. A very similar exercise has been undertaken in Northumberland to good effect (Northumberland County Council, 2008).
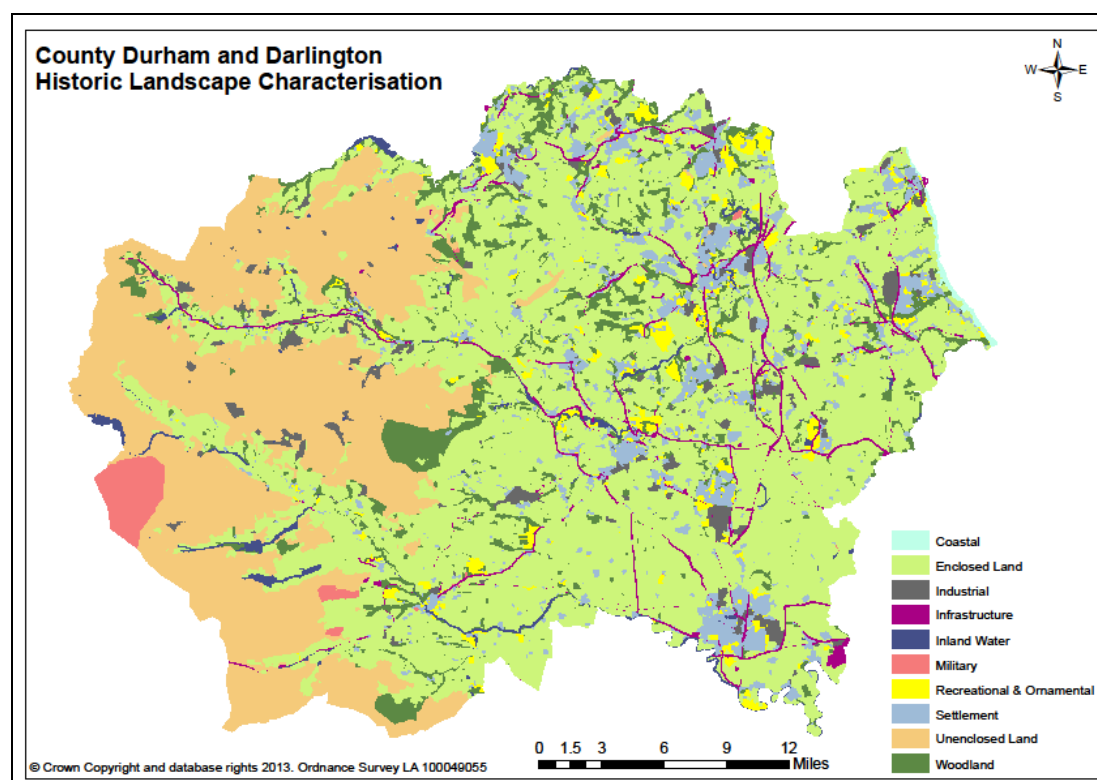

Figure 16: CD&D HLC Broadclasses

Like all databases, spatial or otherwise, there are many ways to query the data, dependent entirely on what questions are asked and what data is required. The CD&D HLC can be analysed in many different ways, and is not a single map, but numerous maps, dependant on how and what questions are posed and what information is shown. The following explains the process and result of creating HLC Character Areas.

5.1.1. Methodology

When mapping broader patterns using tools in ESRI's ArcMap with Spatial Analyst extension, it was first necessary to convert the CD&D HLC into a raster[8] file format. The resolution of cell size chosen for this conversion was at 200 meters (Figure 17).

NCC had created both a 500m and 1000m cell size resolution raster image, and decided upon the 1000m cell resolution 'because this reduced the number of subsequent steps needed to clean the data' (Northumberland County Council, 2008, p. 145). However for the area of CD&D (almost half that of NCC) it was felt that both these resolutions were too coarse to begin with, and lost necessary detail in identifying distinct character areas (see Figure 18 and Figure 19).

In order to generalise all of the CD&D HLC into only a handful of large Character Areas, the focus had to remain wide, to avoid getting caught up in fine details of the HLC. For this reason, the HLC was rendered by only the ten main Broadclass typologies, in order to keep the focus at a suitable level.

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[8] A raster file consists a grid of cells (or pixels) consisting of rows and columns where every cell contains a value. Raster files include digital aerial photographs, imagery from satellites, digital pictures, or scanned maps. Popular raster file types include jpg, tiff, bmp, png and gif. For further information on file formats see www.wikipedia.org/wiki/Image_file_formats
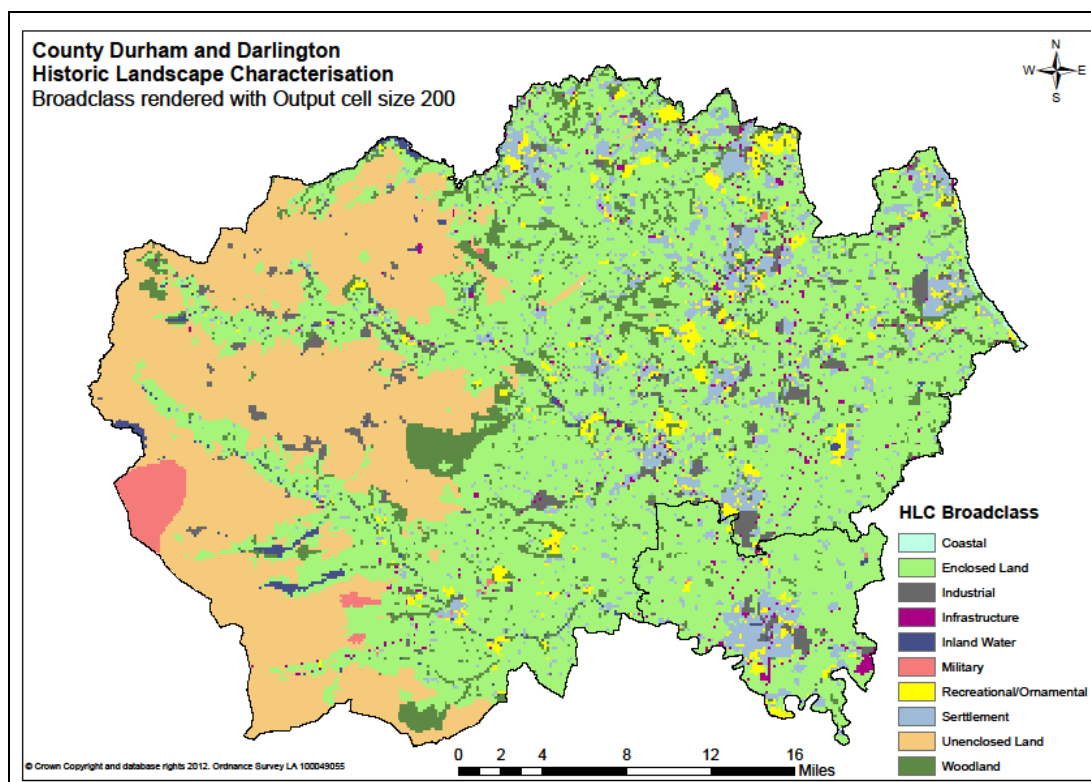
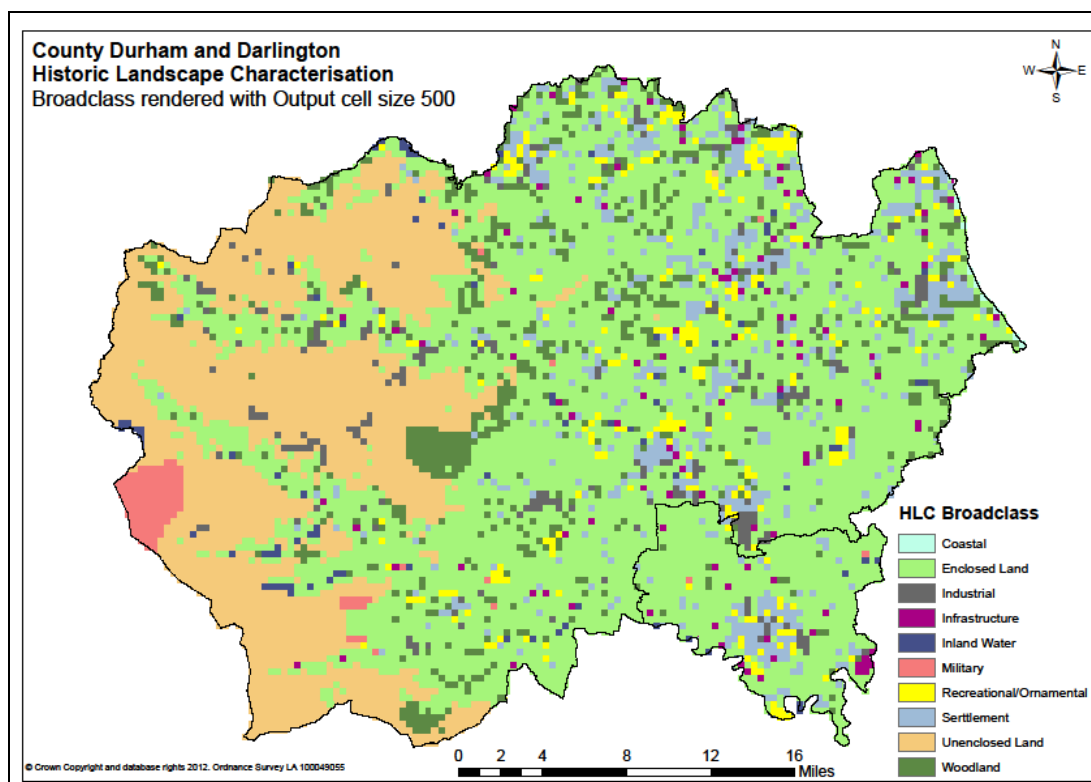**Figure 17: HLC raster image rendered with cell size 200**

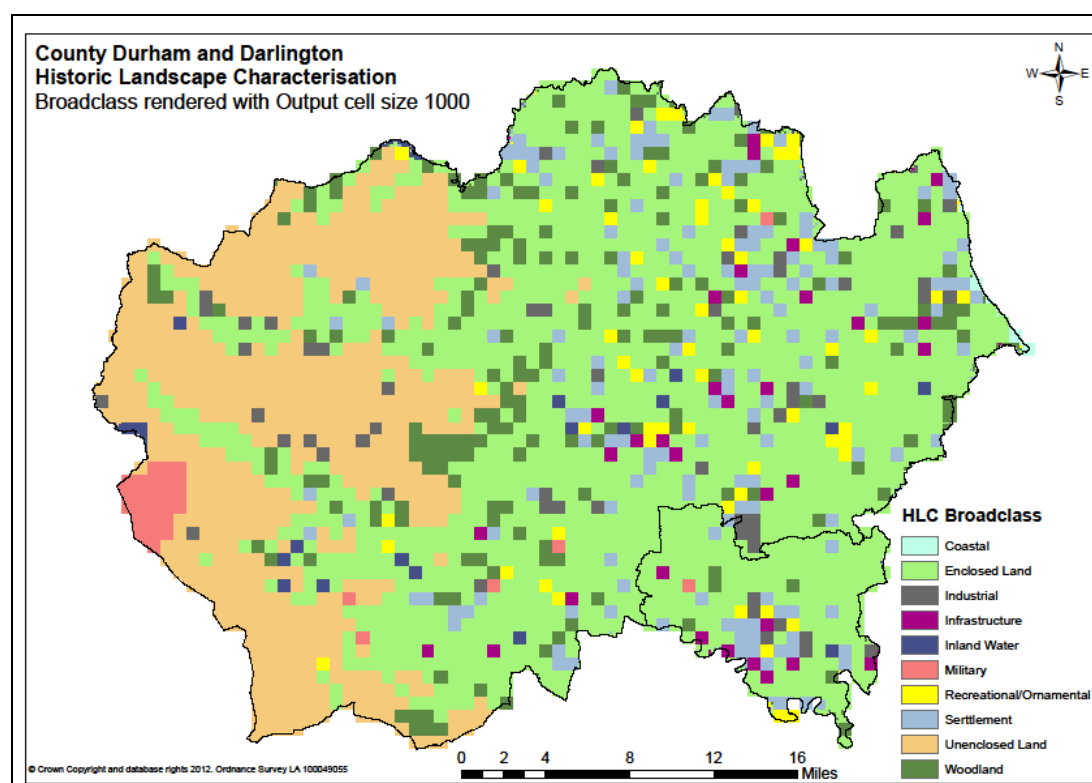**Figure 18: HLC raster image cell size 500**

Figure 19: HLC raster image cell size 1000

Generalising the data this way and subsequently through further analysis using the *MajorityFilter*[9] tool in ArcMap, can potentially lead to misleading results, however. It is the judgement of the analyser to decide at what resolution to begin, how often to use, and what tools to use, on a raster image. Starting at a certain cell size and using the *BoundaryClean*[10] tool followed directly by the *MajorityFilter* tool for example, can result in an image which seems to emphasize specific character types over others which one may not feel is giving the 'correct' feel of what is actually represented (see **Section 8.3: Appendix 3: GIS tools**).

While there is no hard and fast rule on how to proceed, it was decided to keep the image analysis to a minimum and consult with colleagues as to representation of character areas. After some trial and error, the final character areas were based on six consecutive *MajorityFilter* runs on the 200m cell size raster image (see Figure 20 below and also **Section 8.3.2: MajorityFilter tool**). Five main character area types were identified (Figure 21).and are named as follows (Figure 22).

---

[9] www.webhelp.esri.com/arcgisdesktop/9.3/index.cfm?TopicName=majority_filter

[10] www.webhelp.esri.com/arcgisdesktop/9.3/index.cfm?TopicName=Boundary_Clean

- Central Durham Scatter

- Central/South Durham Enclosure

- South/West Conurbations

- Valley/Upland Fringe

- West Durham Uplands

The actual polygons were created using heads-up digitizing[11], creating a new shapefile of the general outlines as shown in Figure 21. It is important to note the implication of this is such that the HLC Character Area polygons bear no digital boundary relationship with the original HLC polygons.
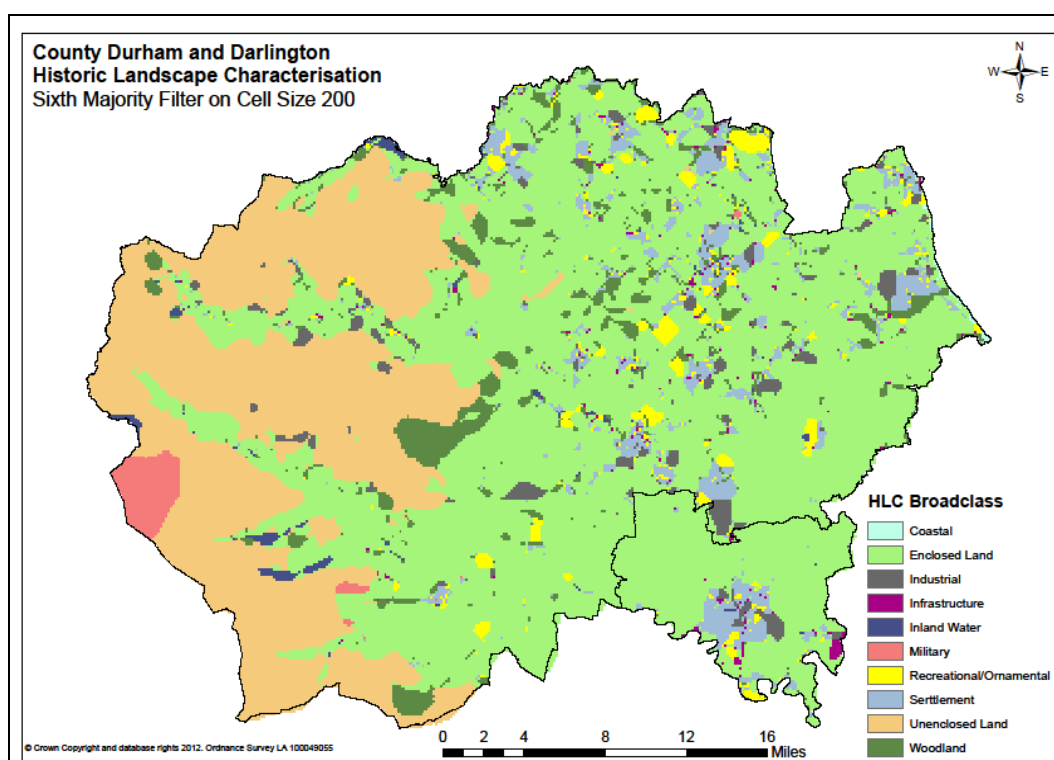

Figure 20: Sixth and final *MajorityFilter* on HLC raster image

---

[11] ESRI definition of heads-up digitization is: 'Manual digitization by tracing a mouse over features displayed on a computer monitor, used as a method of vectorizing raster data' (ESRI, 2013)
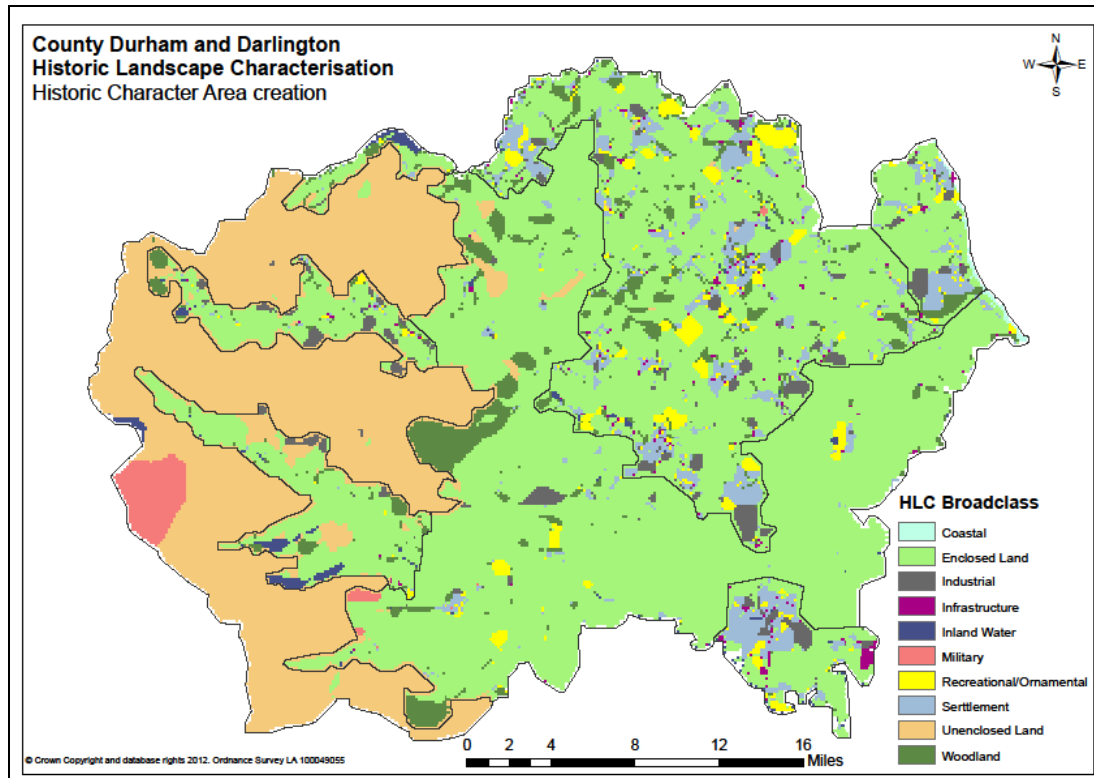
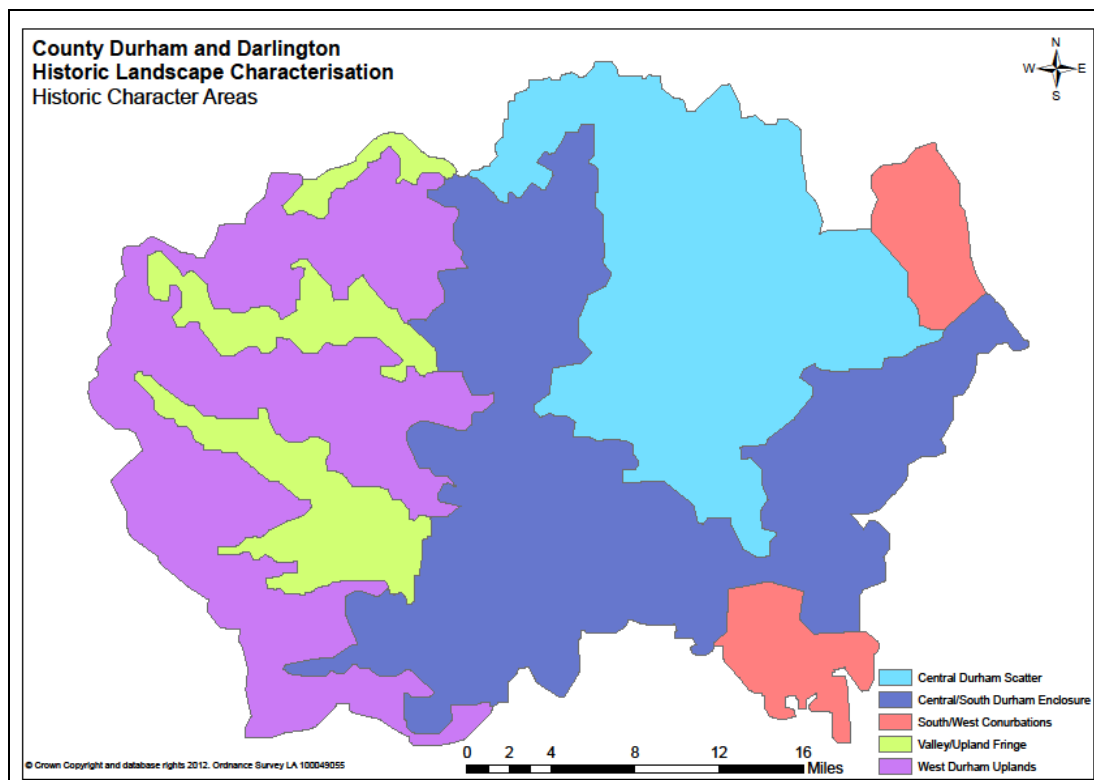**Figure 21: Identification of CD&D HLC Character Areas**

Figure 22: CD&D HLC finalised Character Areas

5.2. Analysis of HLC Character Areas

As noted, the HLC Character Areas do not respect the original HLC polygon boundaries, but have instead been created from a rasterized version of the data. For this reason, the following analysis cannot be compared directly with the figures and percentages as generated in **Section 4: Typology**. While there will, of course, be a consensus, some figures may not match exactly if one were to try to correlate the two sets of figures.

Table 8 below compares the broadclass areas of each HLC Character Area as a reference. Following this are sections discussing each character area in turn, its key features, a description and chart of broadclass distribution.

	Central Durham Scatter	Central/South Durham Enc	South/West Conurbations	Valley/Upland Fringe	West Durham Uplands
Coastal	0	0	1	0	0
Enclosed	64	66	56	27	8
Industrial	3	1	6	2	2
Infrastructure	6	1	4	0	0
Inland Water	1	1	1	2	1
Military	0	0	0	0	4
Rec & Orn	4	1	6	1	0
Settlement	12	4	21	1	0
Unenclosed	0	18	0	63	80
Woodland	9	8	5	4	5

Table 8: Comparison of Character Area types by broadclass percentage
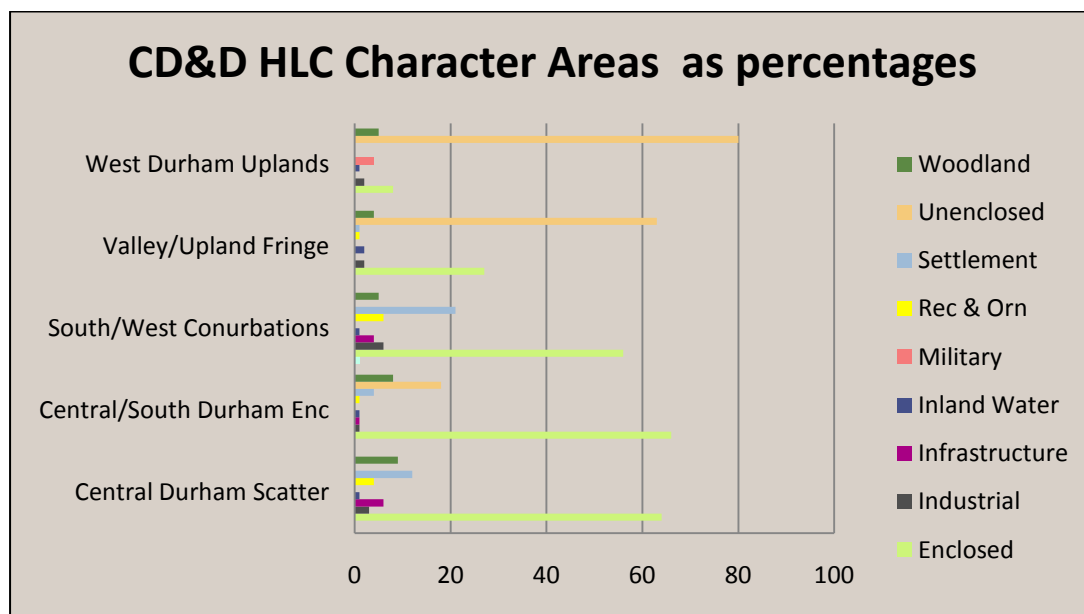
Figure 23: Comparison of HLC Character Area percentages by chart
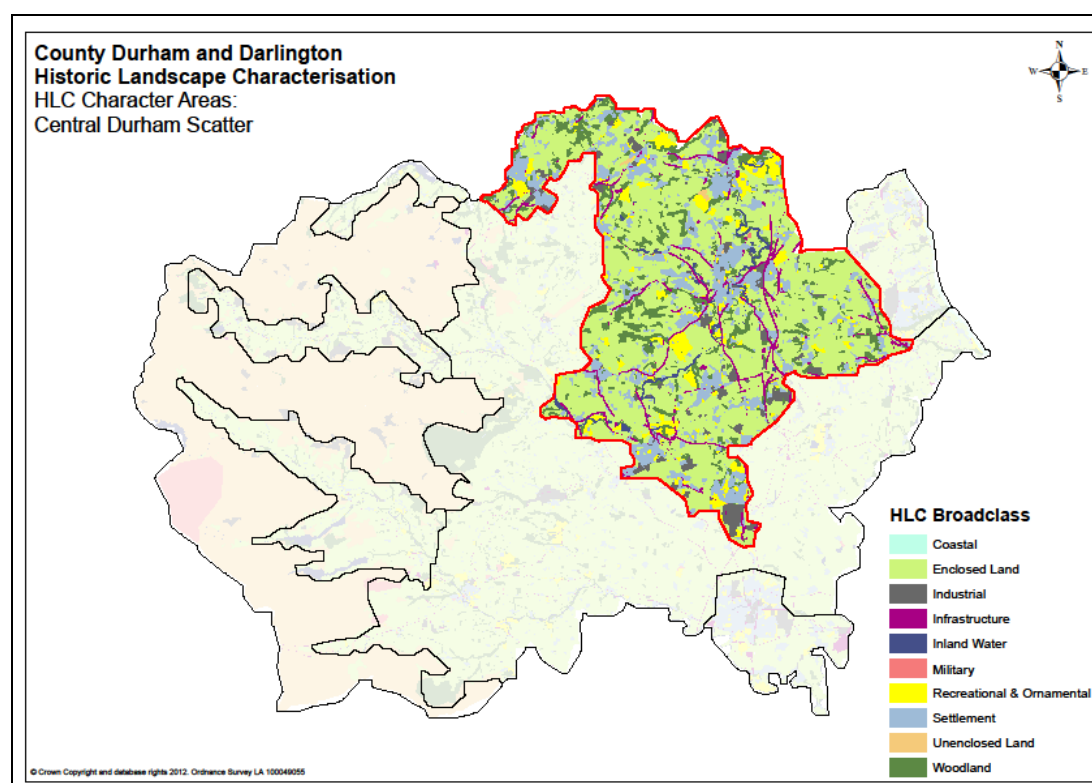
5.2.1. Central Durham Scatter

Figure 24: CD&D HLC Character Areas: Central Durham Scatter

Key features

- Scattered mixture of Settlement, Recreational & Ornamental, Industrial and Woodland on a back drop of Enclosed Land
- No one broadclass type (except the underlying Enclosed Land) taking precedence over the other
- No pattern of relationship between different broadclass types
- Both large and small areas of broadclass type prevalent in this character area

Description

This area is seen as an area of Enclosed Land, with pockets of Settlement, Recreational & Ornamental, Industrial, or Woodland within this Enclosed Land 'backdrop'. While the pockets of other broadclass types appear both as large areas and small pockets, there is no clear relationship at this level between them: Recreational & Ornamental is often positioned on the edge of Settlement, as would be expected, but this is not always the case. With the exception of Settlement (of

which there is clearly more), there seems to be a vaguely equal distribution of each broadclass type (by area).
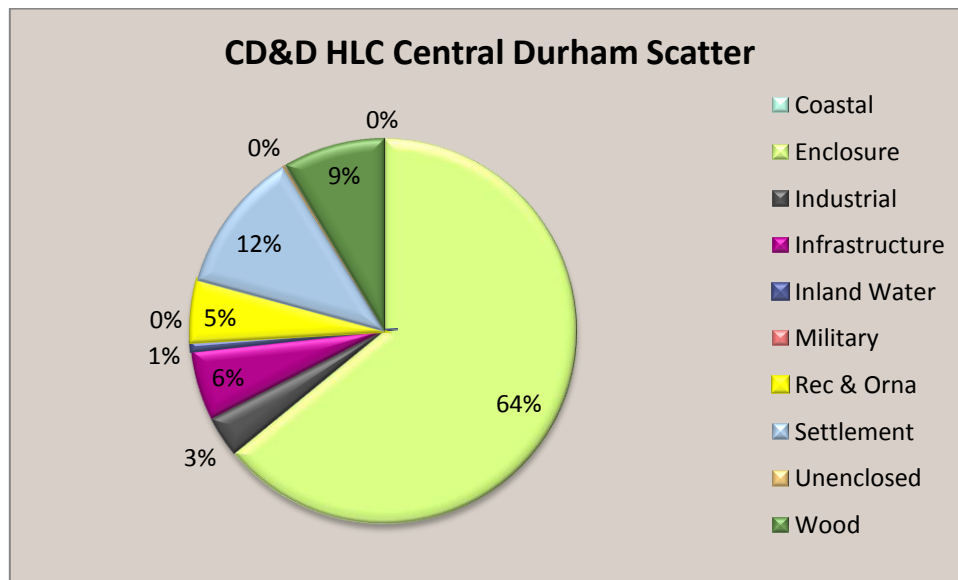
Broadclass Distribution

Table 9: Central Durham Scatter broadclass area distribution
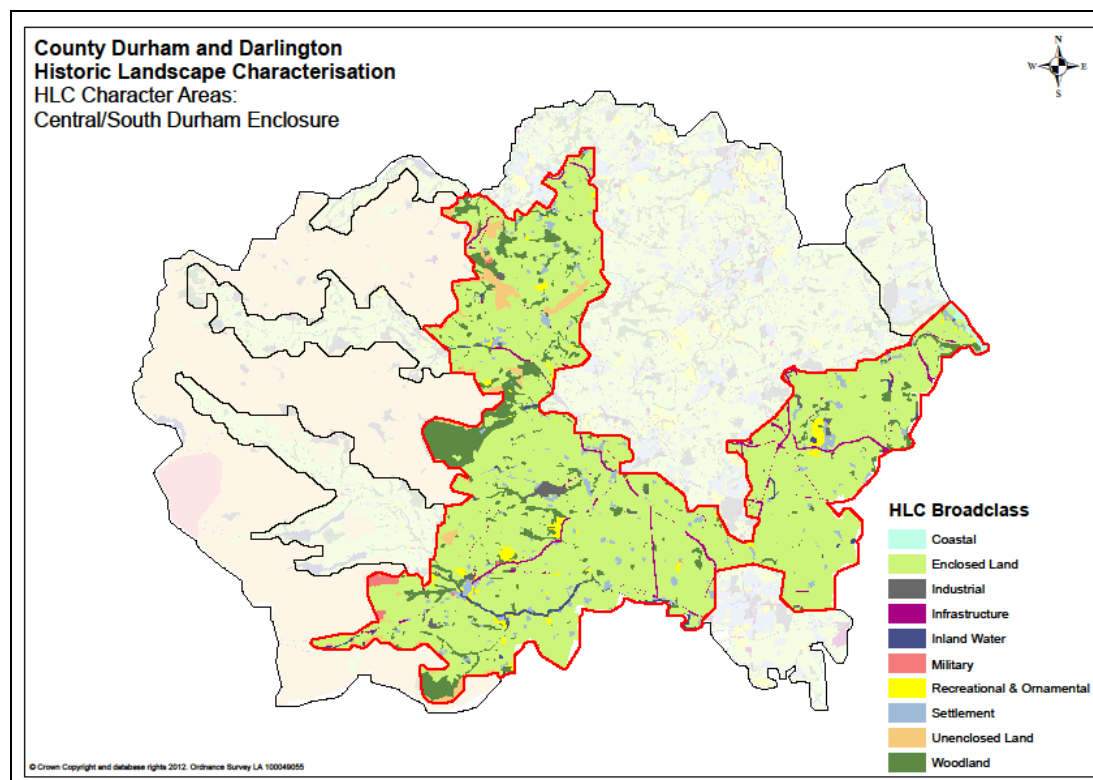
5.2.2. Central/South Durham Enclosure

Figure 25: CD&D HLC Character Areas: Central/South Durham Enclosure

Key Features

- Enclosed Land is the principal broadclass type in this character area
- Woodland, Recreational & Ornamental, Settlement, Industrial and some outlying areas of Unenclosed Land exist in specific pockets within this character area.

Description

This area has a comparable amount of Enclosed Land as 'Central Durham Scatter' Character Area. However, unlike 'Central Durham Scatter', the two other dominant broadclass types are Woodland and Unenclosed land. Areas of other broadclass types exist mainly as specific areas rather than scattered and discreet pockets, giving the impression that there are more examples of these broadclasses than is the case. As the Enclosed Land is less broken up, and other broadclasses are less scattered, it gives the impression of being a larger percentage of Enclosed Land than that of the 'Central Durham Scatter' Character Area.

Broadclass Distribution

CD&D HLC Central/South Durham Enclosure

- Coastal
- Enclosure
- Industrial
- Infrastructure
- Inland Water
- Military
- Rec & Orna
- Settlement
- Unenclosed
- Wood

0%
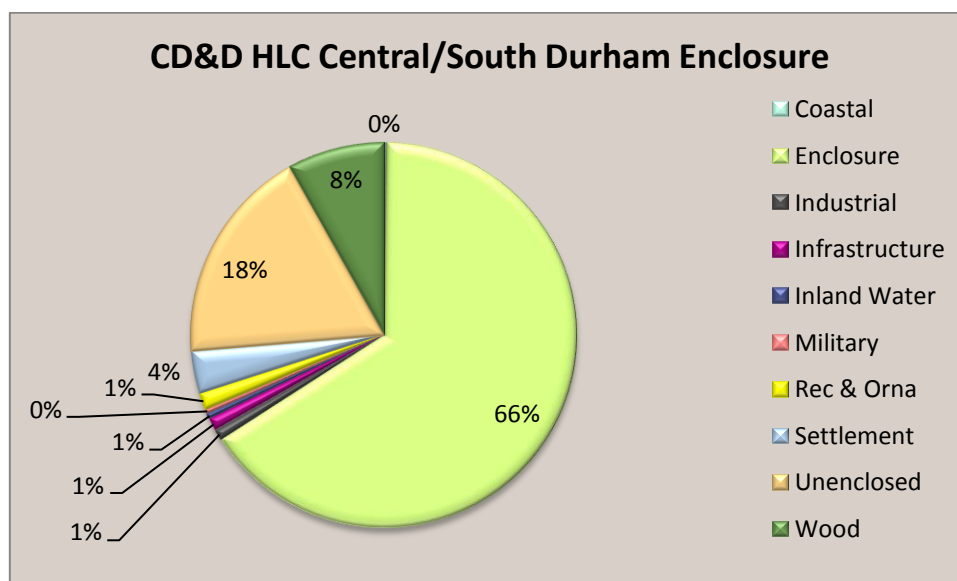8%
18%
4%
1%
0%
1%
1%
1%
66%

Table 10: Central/South Durham Scatter broadclass distribution
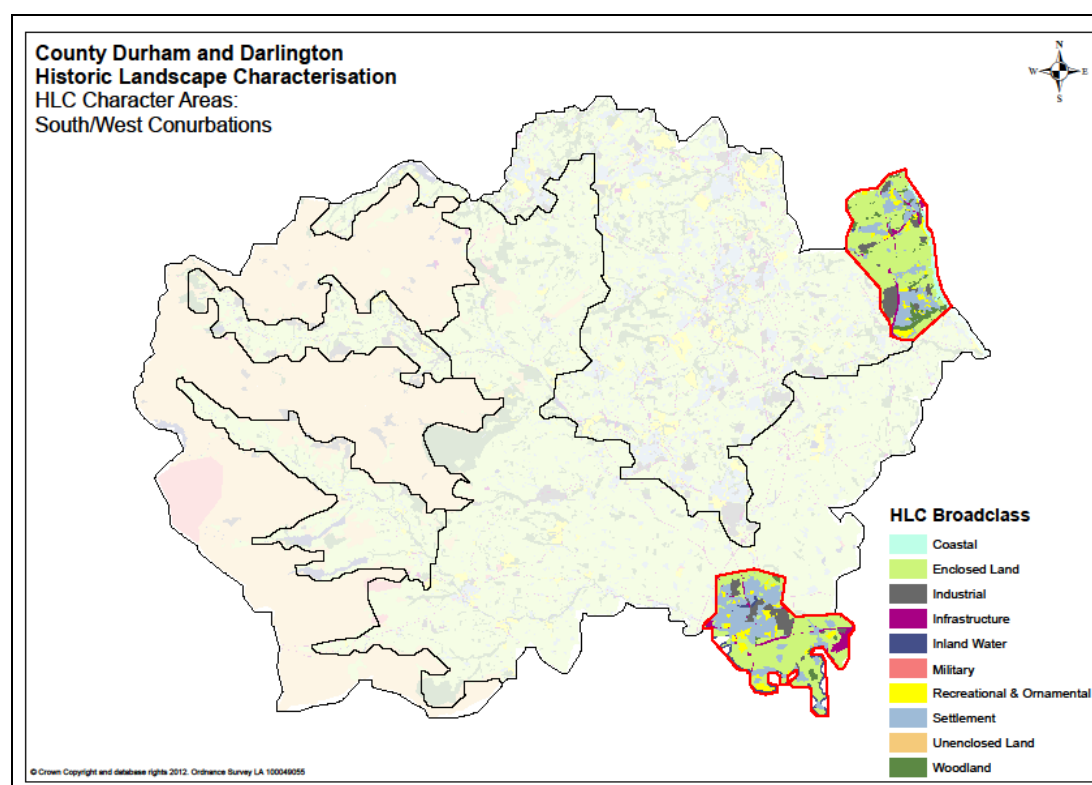
5.2.3. South/West Conurbations

Figure 26: CD&D HLC Character Areas: South/West Conurbations

Key Features

- Areas of continuous urban development
- Industrial and Recreational facilities on the outskirts of the conurbations
- Large sea and air ports representing international connections

Description

This area contains the two major areas of conurbation as shown through spatial analysis. Typically, this consists of large areas of settlement, with substantial and focused areas of industry on the outskirts of these settlements. Large areas of recreation, also near the outskirts exist, although some recreational areas stand alone from major settlement. These conurbations areas both have very important infrastructure associated; the Peterlee/Eastington/Seaham conurbation contains Durham's main seaport at Seaham, and the Darlington conurbation area includes Durham Tees Valley Airport. The links between conurbation, communication networks, and industry are shown clearly through the distribution and percentage of broadclass types within this character area.

Broadclass Distribution

CD&D HLC South/West Conurbations
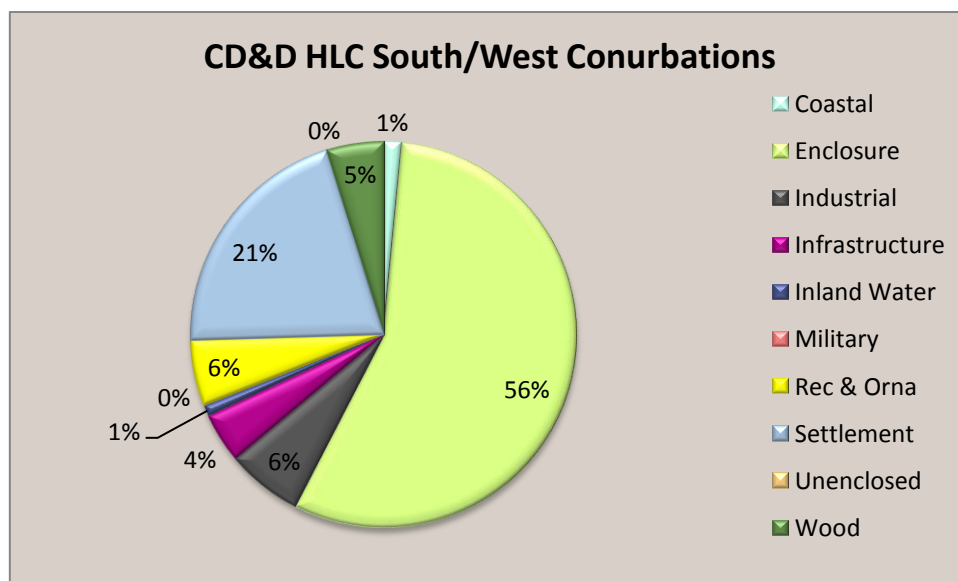
Table 11: South/West Conurbations broadclass distribution

5.2.4. Valley/Upland Fringe
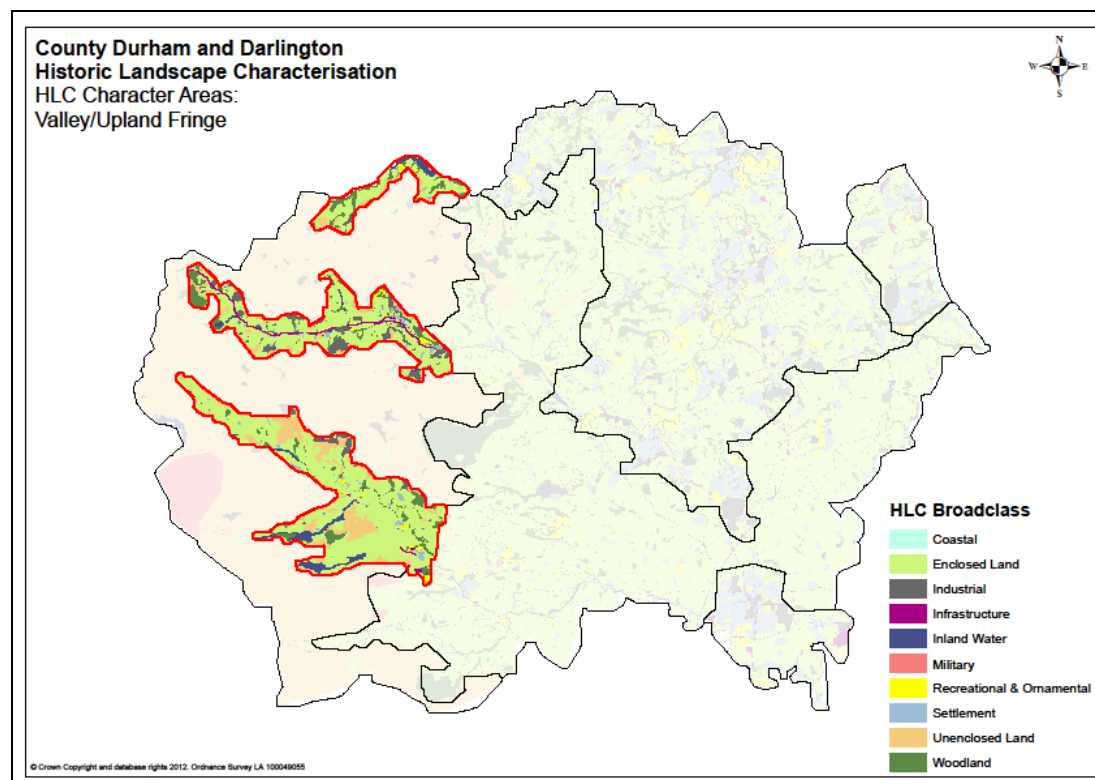
Figure 27: CD&D HLC Character Areas: Valley/Upland Fringe

Key Features

- Enclosed land on valley sides
- Unenclosed land on the fringe and encroaching down valley sides
- Several large reservoirs with the area
- Areas of industry on the fringe between the upland and enclosed land
- Block plantation and smaller meandering woodlands
- Valley bottom settlement and recreation, following course of river

Description

This area is deceptive as it seems that there is more Enclosed Land than Unenclosed Land, however the statistics (below) show that there is over twice as much Unenclosed Land, most of which is on the edges of this character area, extending down the valley sides in an uneven manner. Some areas of Unenclosed Land are almost surrounded by Enclosed Land. As expected, Settlement and Recreation follow the course of the river, with large areas of Industrial and block

plantations sited on border between the Enclosed Land and upland. Wooded gills follow the meander of streams to meet river on valley bottom. Most of the major upland reservoirs are located within this area of upland fringe.

Broadclass Distribution
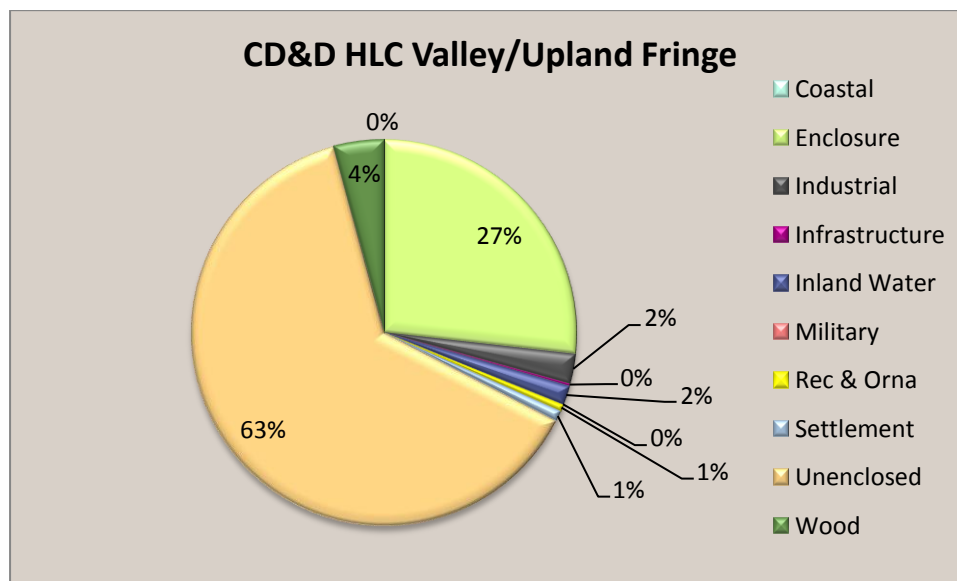
Table 12:Valley/Upland Fringe broadclass distribution

5.2.5. West Durham Uplands
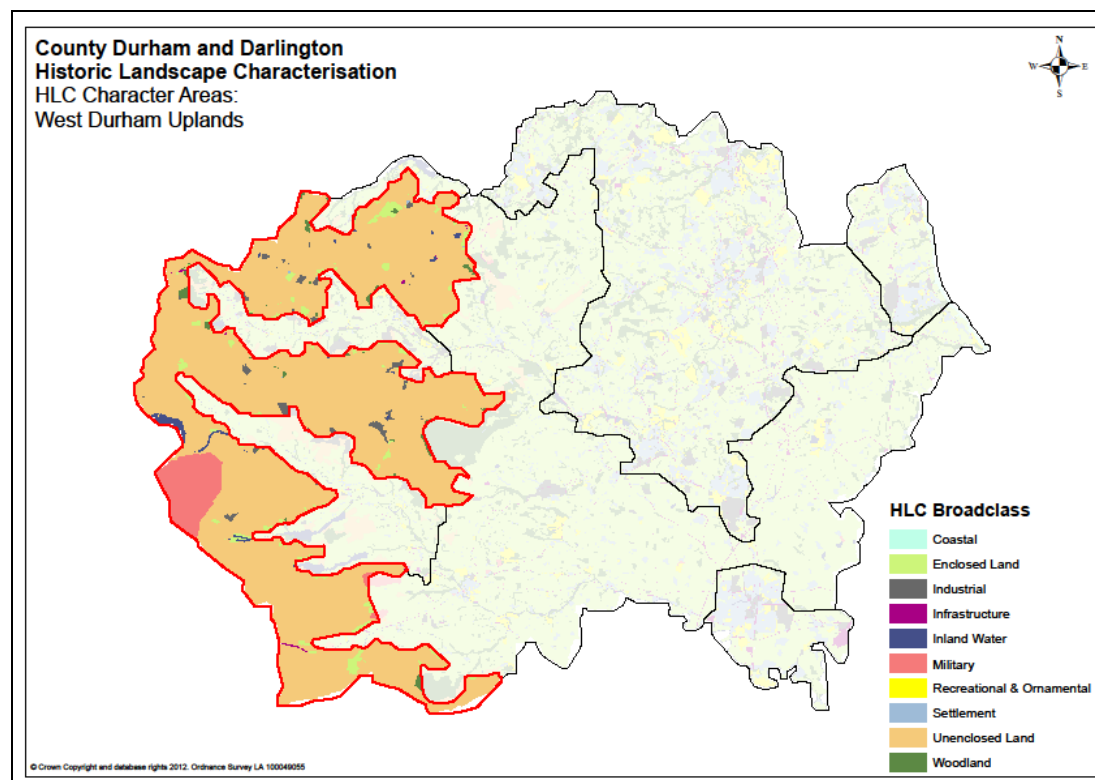
Figure 28: CD&D HLC Character Areas: West Durham Uplands

Key Features

- Unenclosed moorland
- Heather management
- Some reservoirs
- Military firing range
- Small areas of industry

Description

A large area of Unenclosed Land, mainly unimproved land, with peat grips, which have been re-blocked in recent years. There are many areas of heather management for grouse shooting. A large portion in the south is also a military firing range. There is little woodland at this altitude, and few reservoirs. There is a small amount of Industrial, and some discreet parcels of Enclosed Land and improved land.

Broadclass distribution

CD&D HLC West Durham Uplands

- Coastal
- Enclosure
- Industrial
- Infrastructure
- Inland Water
- Military
- Rec & Orna
- Settlement
- Unenclosed
- Wood
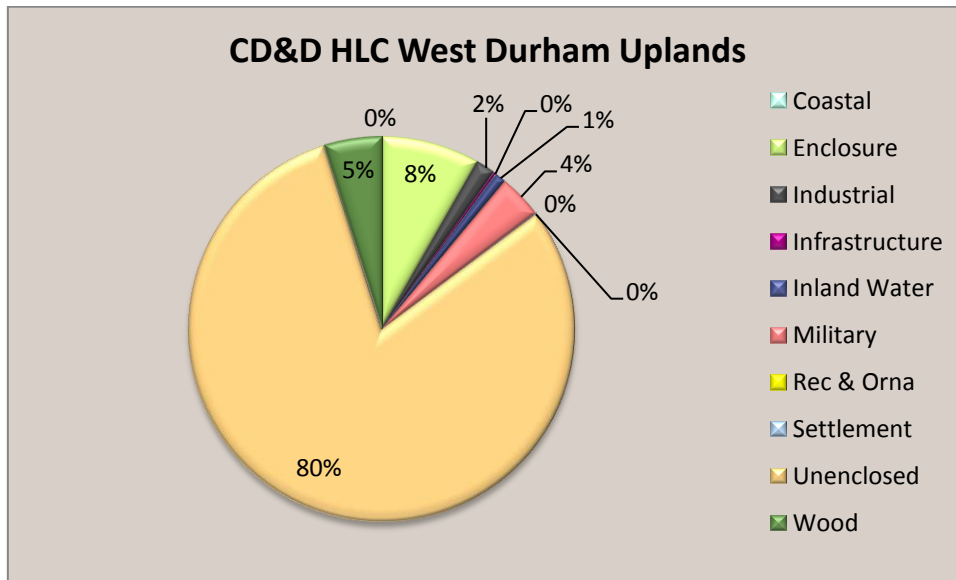
Table 13: West Durham Uplands broadclass distribution

5.3. Time Depth

The CD&D HLC has been designed to give optimum information about landscapes. Information on secondary or tertiary characters is not based on time slices, where all secondary characters would be from the same period, possibly the same source, and all tertiary character similar. Rather, the period of a secondary character of one polygon maybe entirely different to the period of a secondary character in an adjacent polygon within the CD&D HLC.

The CD&D HLC had access throughout the project to a series of at least nine different OS maps, stretching from the first edition OS map to present day, with several surveyed at decade intervals. This made it easier to trace the change in landscape character within shorter time intervals. Rather than recording the landscape every decade, even if there was no change, with time-depth, a secondary or tertiary character was only created when the landscape character changed as shown on the map.
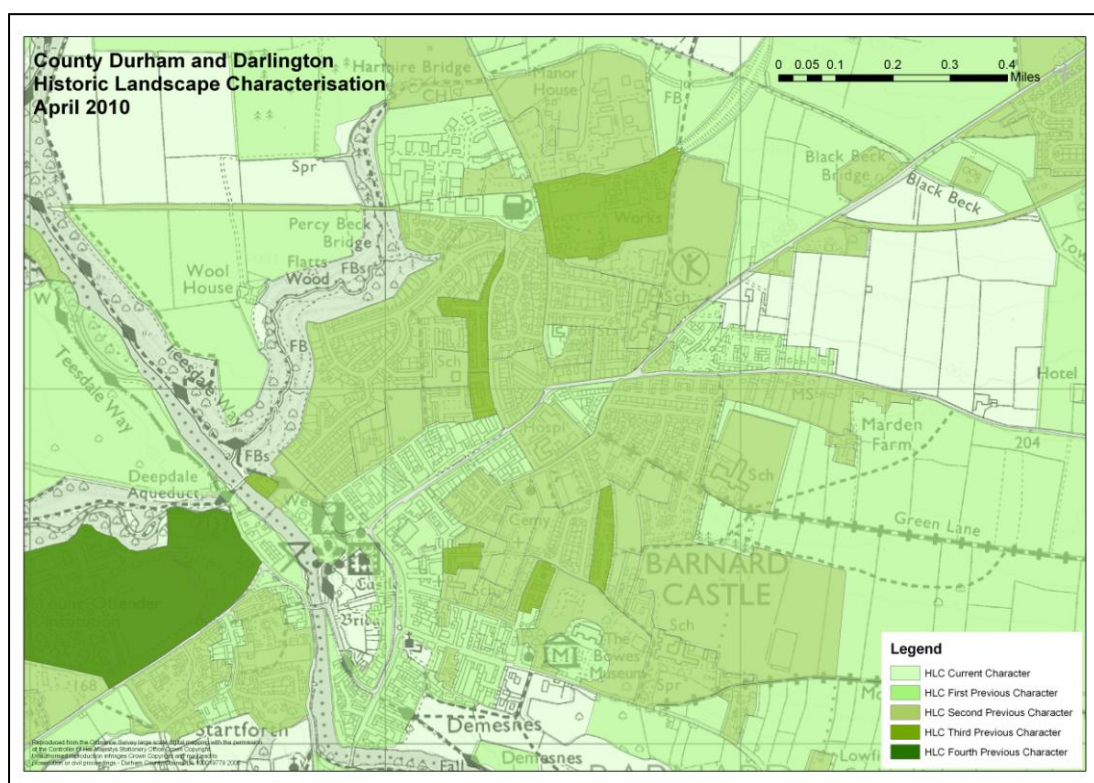
Figure 29: Time depth in Barnard Castle

By overlaying all the previous character maps on top of each other with grading shading, the intensity of use of a particular landscape becomes clearly visible (Figure 29). Time depth can show how often a landscape has changed over time.

In contrast, time slices literally show landscape character at a specific period in time, specific periods and times must be predefined in order to be able to gather the information. The CD&D allows for both forms of analysis.
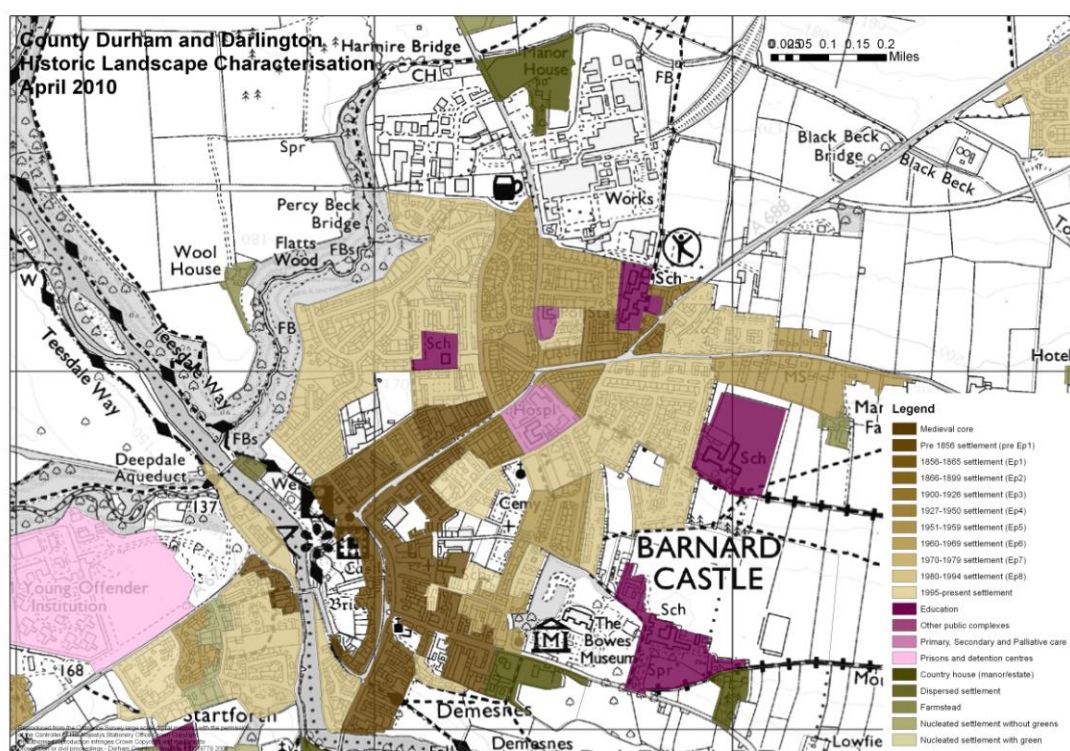
Figure 30: Time slices in Barnard Castle

Figure 30 shows different types of settlement within specific colour ranges. Thus, education, hospitals, and detention centres are rendered in pink shades. Green shading represents settlement that is more rural; farms, small nucleated settlements and hamlets. The shades of brown represent settlement from the medieval period (dark brown) right through to modern day settlement (light tan). Using this colouring shows the darker, older settlement as it grew around the loop of the river, with modern housing estates grafted onto the peripheries of the main town.

6. Further Research/Dissemination

6.1. Shared Visions: NERRF

Shared Visions: The North-East Regional Research Framework for the Historic Environment, (Petts & Gerrard, 2006) is a tripartite document, consisting of a Research Assessment which is an overview of the current state of knowledge for all periods of our cultural past, in addition to recent scientific and environmental research. The second part, the Research Agenda, then advances a series of key research questions that should be addressed by those working with the profession. Finally, the Research Strategy puts forward a range of practical suggestions for the implementation of that agenda.

In this way, the Framework explores and prioritises key themes and presents a strategy in which to mobilise further research.

While the CD&D HLC was still in a very early phase of planning when *Shared Visions* was published, it was still very much in the minds of the authors as a further tool to assist research. The HLC is mentioned in several places within the Research Agenda, and the following lists the context of the HLC as mentioned in *Shared Visions*, with a response of how the HLC has achieved the requirement.

6.1.1. 20th century research agenda: Key Research Priorities: MOviii. Housing

Strategic

Basic work should characterise variations in 20th-century housing in terms of use of space, road network and public space. This might be incorporated directly into the Historic Landscape Characterisation projects or related schemes such as Change and creation.

(Petts & Gerrard, 2006, p. 196)

The HLC has used the DCC epoch mapping which has an OS black and white raster map for nearly every decade from the beginning of the C20th. A decision was taken at the start of the project to record town settlement through mapping by decade as

this was the most straight-forward method. Given that changes in housing types/layouts reflect changes in the social and economic prosperity of an area, the character of a settlement is likely to change with the decades (see Figures 31 to 33 below).
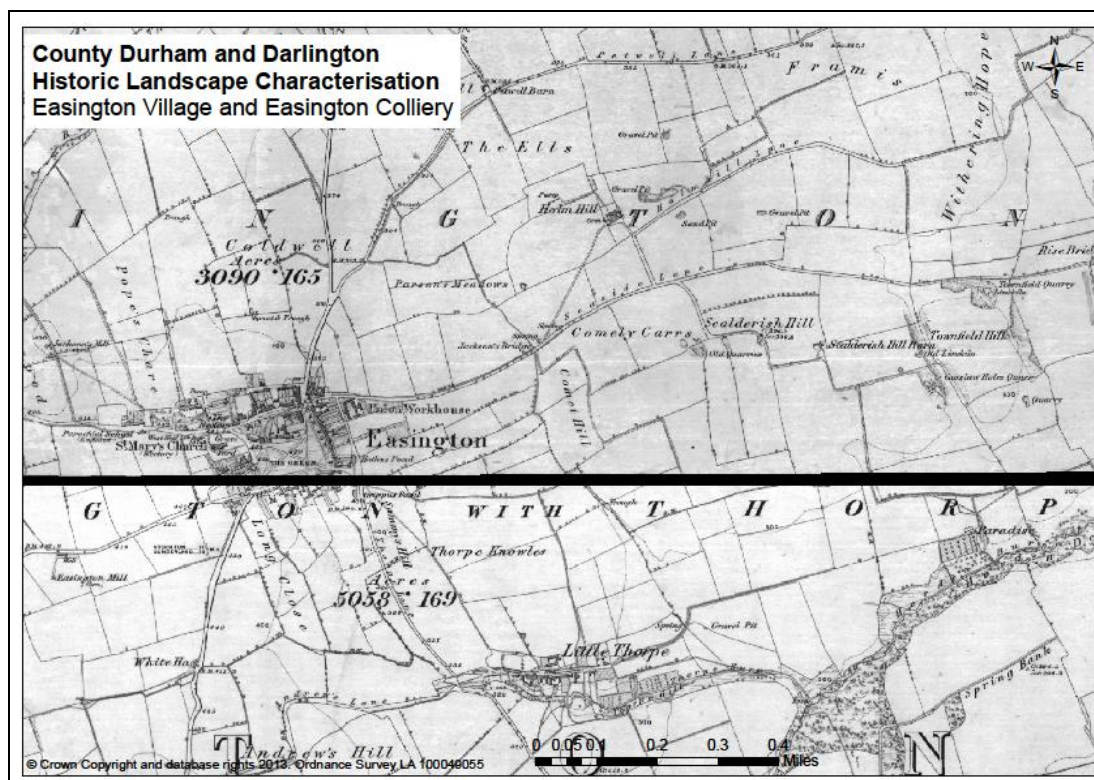

Figure 31: Easington Village *c*1860
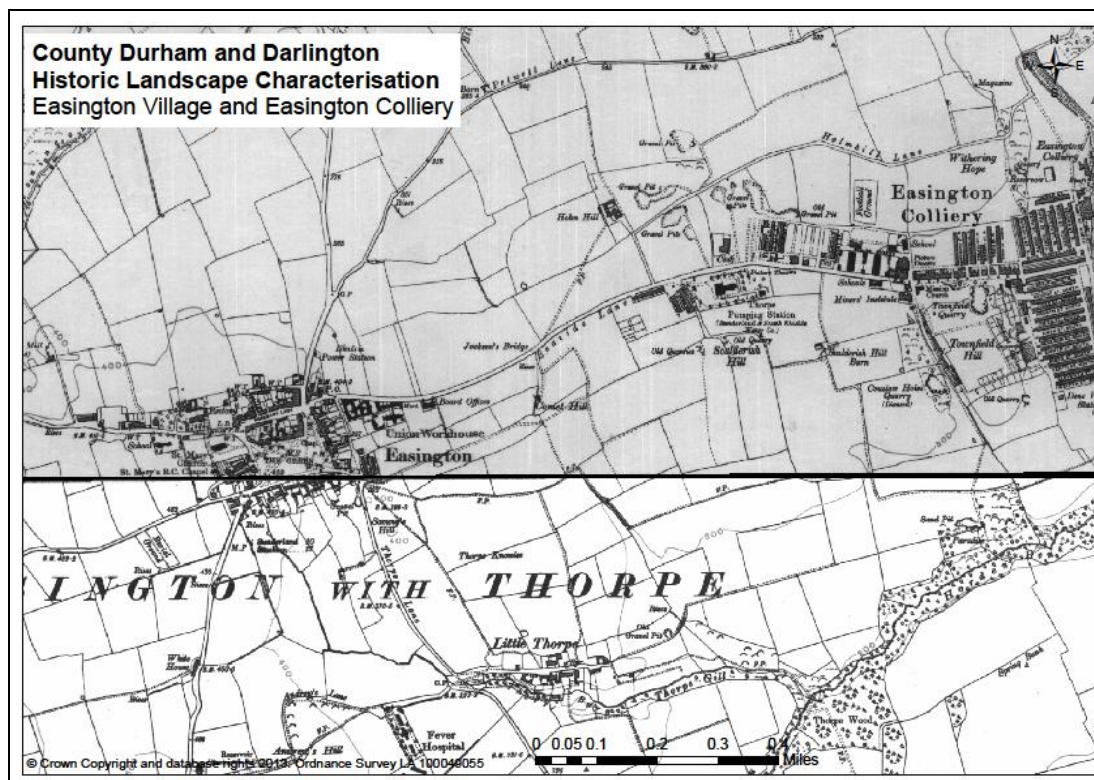
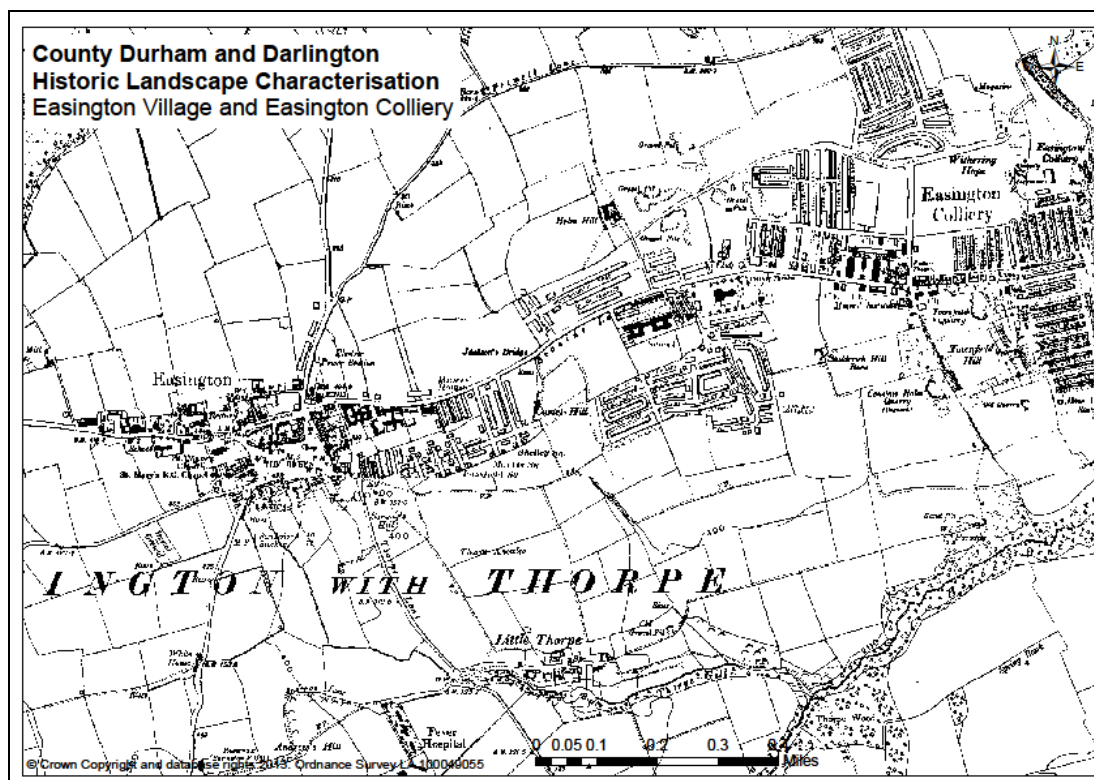**Figure 32: Easington Village and Colliery *c*1923**

Figure 33: Easington Village and Colliery *c*1930s/1940s

The HLC can identify all settlement for a specific mapping decade, can identify those areas where there has been redevelopment/regeneration (for instance where current character is 1990s housing, and a former character is 1950s housing). It can also identify housing which has been classed as terraced, or cul-de-sac, or any of the other classifications as described in **Section 3: Methodology**.

6.1.2. Settlement and Urbanism: Defining Settlements: SU5

> Historic Landscape Characterisation ...has real potential for teasing out variation at a micro-regional level, but for true regional comparisons to be drawn there must be broad consistency in methodology. The Northumberland Landscape Characterisation project is already underway and other projects in the region must liaise and consult closely.
>
> (Petts & Gerrard, 2006, p. 206)

The CD&D HLC consulted closely with both North Yorkshire and Northumberland's HLC officers to make sure that the structure and methodology allowed for cross-border comparison and analysis. It is hoped that future work can create a region-wide set of data based on the broadclasses of relevant HLCs. Analysis of this data to produce regional 'Character Areas' (**Section 5: Results & Analysis**) is hoped to be of similar worth as Natural England's NCAs, discussed in **Section 2.3: National Character Areas**.

6.1.3. Settlement and Urbanism: Defining Settlements: SU6

> Although current consensus suggest that HLC work uses First Edition 6 inch OS maps as the base from which to work (Rippon 2004, 144), in areas which have seen extensive industrial activity it may be appropriate to use later maps or create a series of regression maps covering the late 19th and 20th centuries, probably at 25-year intervals.
>
> (Petts & Gerrard, 2006, p. 206)

Because the CD&D HLC works on change of character rather than on time intervals (time 'slices'), all change within an area, as far as it is recorded on the OS maps, will be documented through the different historic characters recorded. This means that if over three decades of mapping, between for instance, 1950 and 1980, where there has been change from a working colliery, to abandonment and 1960's redevelop into

settlement, through to late 1980's housing regeneration, all these phases would be recorded through current, and then successive historic characters. This method gives more information and the potential for much more powerful analysis.

6.1.4. Settlement and Urbanism: Towns: chronological changes: SU13

> Our understanding of the spatial development of the region's towns must be improved. Whilst the existing extensive urban surveys offer an initial base point for this work, more detailed work should draw on methodological techniques developed for Historic Landscape Characterisation, but be tailored to tackle the complexities and rate of change in urban contexts and ensure that they cover the 20th century. These urban mapping projects should take advantage of GIS technology.
>
> (Petts & Gerrard, 2006, p. 207)

Whilst the HLC has tried to record a level of detail over and above some other HLCs, it is by no means enough to map the complexities and rate of change as noted by Petts. However, by analysing the HLC in the Black Country, Paul Quigley in his second HLC report *Recycled Landscape* (Quigley, 2012) has produced some extremely interesting results on the change in settlement over 250 years in the Black Country. As one would expect, areas of the Black Country have had a similar history of use as parts of CD&D, particularly the coal fields. This comparison should not be overlooked when considering chronological change. It is recommended that Quigley's work be considered alongside relevant extensive urban surveys and the CD&D HLC when any researching chronological change in towns within CD&D.

6.2. HER enhancement projects

Use of the HLC is by no means restricted to those places where it is referenced in the NERRF. Indeed the HLC has numerous uses when it comes to enhancing the HER. For instance, the HLC can be analysed against existing HER records to see if certain types of HER sites are more prevalent in specific types of landscape character. Clearly, mining related sites are going to be more prevalent in areas characterised by mining, however less obvious patterns may become apparent because of this analysis. This data can then be used as a springboard for future research to identify further, similar sites within that landscape character type.

Similar analysis could be used to determine if the apparent presence of sites in one landscape type over another is 'real' or represents a 'hole' in HER data. If it seems real, the HLC and other similar spatial layers can be used to help explain this phenomenon.

Further and more specific areas of research where it is felt the HLC could be a powerful tool are discussed below. Some of the below projects would be suited to student or volunteer projects with supervision from the DCC Archaeology Section.

6.2.1. Research into pre-medieval fields systems:

A desk-based assessment should be undertaken, using HER and HLC data, alongside other pertinent sources to create a resource of sites known. Using knowledge of the fields systems in other areas, a strategy can be defined to identify potential new sites. This may involve carrying out site visits/rapid surveys and in some instances, more detailed topographic survey. A report should be produced, including archive quality plans/photographs to feed back into HER and/or HLC. The aim, ultimately, would be to identify what makes these field systems unique and recognisable.

6.2.2. Model Farms

There are only five farms identified and three farms located (although four listed) in County Durham, according to the English Heritage Thematic Survey from 1997 (Martin, Lake, & Hawkins, 1997). The HLC could be used as a spring board for further research on this subject, to identify further possible model farms, or to research into the character of the surrounding farming landscape associated with these model farms.

6.2.3. Secular Buildings

Secular and especially farm building are not well represented by studies, and we are constantly losing good examples of such buildings through barn conversions and demolitions. The HLC can be used to help identify farm settlements in order to consider which may be suitable for further study. This work would help redress the balance of knowledge in this area and feed into the HER and HLC to help inform the planning process and help us identify which buildings, or types of buildings should be

considered rare and/or important. English Heritage's *Farmsteads Toolkit North East Summary* part of the Farmsteads Toolkit project can be used as a base for this project (English Heritage, 2013).

6.2.4. Hedgerow Project

Hedgerows protected under the Hedgerow Regulations and historic hedgerows in general terms are an under-assessed and under-considered feature within many archaeology and heritage assessments. This is, in part, due to a lack of recorded information within HERs to prompt consideration, as well as poor practice on behalf of those undertaking assessments. Hedgerows often end up falling between the gaps of archaeology, ecology and landscape assessments.

The use the HLC, alongside further analysis, such as identification of pre-1850 township and parish boundaries still extant; cross referencing hedgerows within/adjacent to archaeological HER records; linking HLC data of anticipated pre-Enclosure fields with documentation from record offices; cross referencing the 2006 Durham Hedgerow Survey and any later ecological assessments with the historic data; and linking all this with Landscape Character Assessments, would create a wealth of knowledge and a vast database, and GIS layer of the state of historic hedgerows in CD&D (Kirsten Holland *pers comm*).

6.2.5. The Rise and fall of the Mining Community

The cinemas, music halls, theatres, recreation grounds, aged miners' homes and working men's' clubs should be considered as the landscape of a mining community. As a smaller landscape project, the social aspect of a mining community has not be captured or studied within CD&D. A study of a former mining community such as Quarrington Hill would give great insight into an aspect of social history now mainly forgotten.

6.2.6. Wetland project

Bradley, Morden and Preston Carrs are all areas of reclaimed wetland. Reclaimed, so it seems, through post-medieval drainage schemes. But has this area been reclaimed before earlier in history? How has the history of this wetland landscape developed from the earliest periods, through the medieval wetland to post-medieval drainage and management? Star Carr, the well-known Mesolithic site in North

Yorkshire has revealed much over the years of research excavation – it is likely that these Carrs have a similar story to tell, and should not be overlooked (Vale of Pickering Research Trust, 2013). Very little, past the post-medieval drainage schemes and place name evidence of the area, could be discerned as part of the HLC project, but is there is certainly more history to this area than represented currently by the HLC.

6.2.7. Potential Primitive Methodist Commune

A curious landscape exists at Lumley Thicks, near Chester-le-Street (NZ30205027), with a curious layout of buildings and terraced housing. It has associated allotments to the southeast, probable ponds directly south and a Primitive Methodist Chapel as labelled on the first edition OS map to the north-west. The buildings suggest a substantial country house or similar, but the lack of OS labelling suggests that this may not be the case (or if it once was, by the first edition OS map it was no longer). Very little evidence gives away the history of this small settlement, which is visible on the first edition OS map and still exists as private residential properties today (see Figure 34).

Nevertheless, the location of a Primitive Methodist Chapel within the confines of the settlement area suggests this *may* have been a Primitive Methodist Commune. Further detailed research would need to be undertaken, firstly to find out more about such communes, of the structure and layout to understand if the map evidence is consistent with such, and secondly to find out if such a commune existed at Lumley Thicks. Presently the suggestion of such a commune is pure conjecture as the author is not familiar with such settlements. It may be that Lumley Thicks is simply a country house with a private chapel. But it is an intriguing landscape that would benefit from further research.
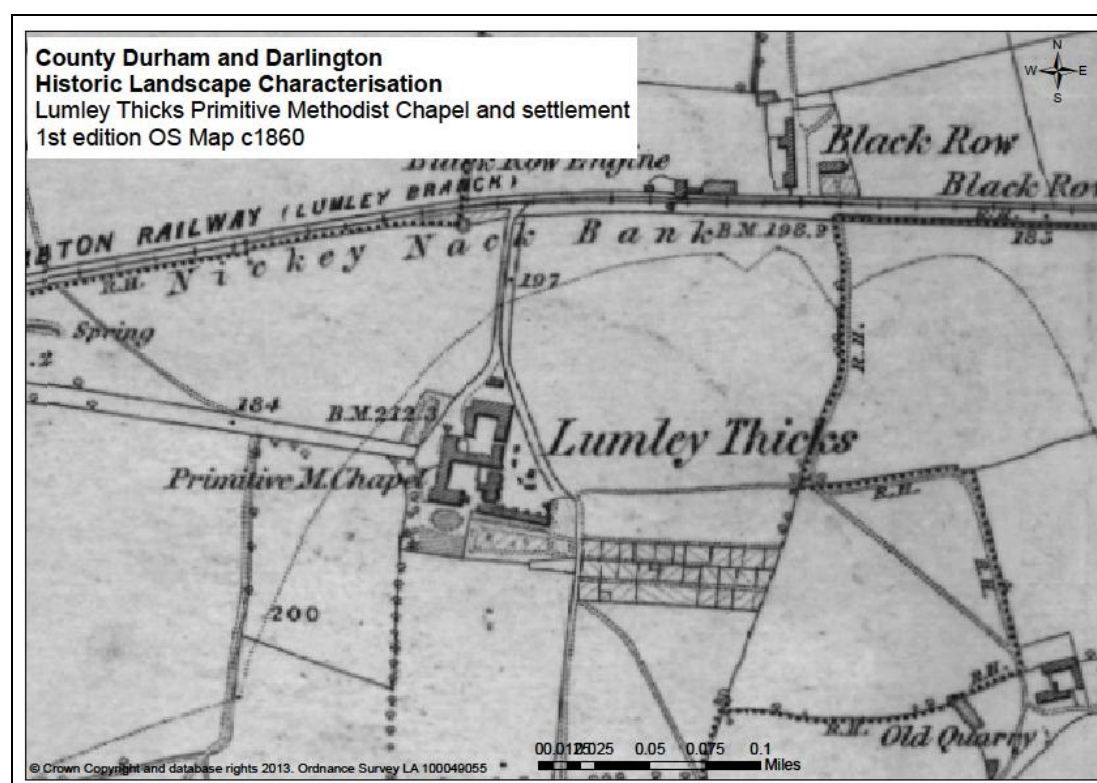
Figure 34: Lumley Thicks, near Chester-le-Street

6.2.8. Landscape by networks

The CD&D HLC focused on characterising discreet areas of landscape. As noted under **Section 400: Infrastructure**, to record or classify every type of communication within HLC would have lead to many polygons being split into in order to record the linear feature that is a communication network. This would have led to an unmanageable quantity of polygons. For this reason, only main communication networks were recorded. However, infrastructure, as the name implies underpins all other aspects of society and as such a better understanding of the various networks and the ability to compare that data with the HER and the HLC would be extremely useful.

Consequently, a very worthwhile project would be to record all wagonways, railways, roads and so forth. Although, as mentioned above in **Section 400: Infrastructure**, as one type of communication can often morph over time into another, the methodology used and the required product would need to be carefully considered before the work is undertaken.

6.2.9. The Influence of War on the landscape

War has made a huge impact on the landscape. Both World Wars of the C20th and the decades of the Cold War have changed the British landscape irrevocably. From the growth in industrial areas, giving rise to increased production and thus creating a demand for better infrastructure, to the change in agriculture, turning over of former civic parks and private gardens to allotment, all of this changed the character of the landscape in a way which allowed for no reversal. This topic would benefit greatly from a detailed study, and the CD&D HLC would make a good framework for such research.

6.3. Current uses of CD&D HLC

Even while the final report is being written, the HLC itself in its digital, ESRI geodatabase format, is being used in numerous ways. After the successful pilot of creating trigger-mapping in Darlington, the CD&D HLC has also contributed to the trigger-mapping layer for County Durham (Nick Boldrini *pers comm*).

The HLC is used on a daily basis as a layer within the GIS mapping systems used by the DCC Archaeology section for Development Management consultations. It is also used when the team are consulting for statutory undertakers and other utility consultations, as well as for Environmental Stewardship schemes consultations such as Farm Environment Plans.

The HLC is offered as a layer for consultation when any contractor or private researcher visits the HER at County Hall. Remote HER enquiries are beginning to request HLC data and data is being sent out as a file geodatabase as part of the HER consultation process. This is all very encouraging and shows that the small amount of promotion undertaken whilst the HLC was ongoing has been worthwhile and that a greater push will hopefully generate further interest and ensure the continued use of this valuable asset.

In the future, it is hoped that the CD&D HLC can be used within the four main areas of HLC applications as recognised in Clark *et al* (Clark, Darlington, & Fairclough, 2004) and as discussed in **Section 1.5: HLC Aims** above.

6.4. Dissemination of info

The HLC is not designed to sit on a shelf as a series of printed maps. Nor is it designed to exist simply as a final report, used as a paperweight on someone's desk. It is first, and foremost, a *digital model* within ESRI's ArcMap GIS application. A geodatabase of spatial data with over 12 000 polygons, each with a major and minor typology, an array of associated attributes, and in many cases at least one previous landscape character, also with a major and minor typology and associated attributes. As a geodatabase, this data is designed to be queried. It is designed so that it can answer many questions, such as '*show only dispersed settlement from the post-medieval period*' or '*show only abandoned collieries from the modern period that have a legibility of 'complete' or 'significant'*. Such queries can pull data from any character, current or previous and in this way, the HLC can provide a huge wealth of information.

It is hoped that this final report, along with the secondary report which will follow soon after and which will consider the individual classifications, will be used as a handbook alongside the digital model of the HLC.

The HLC is currently available via the Archaeology Section of DCC as part of an HER search. It is available to colleagues and other professionals as well as members of the public.

A prioritisation project has been submitted to the ICT section within DCC to consider making the HLC available via a website and it is envisaged that it will become part of the Durham Landscape website at www.durhamlandscape.info. Current discussions are focusing on the ability of the webpage to have an integral GIS mapping application which would mean the HLC could be spatially interrogated and compared with other GIS layers including the LCA.

A formal launch of the HLC will coincide with the DCC Archaeology Sections annual County Durham Archaeology Day where a talk will be given about the HLC and what it can offer for the researcher or individual. Furthermore, an article will appear in the annual magazine.

A PowerPoint presentation will be made available for colleagues and professionals and some talks and meetings will be held to discuss how it can be used by professionals.

It is hoped that the HLC can be introduced to schools, through means as yet unclear: it may be via the website presence once it is available or it may be through a PowerPoint presentation, or through general outreach undertaken DCC Archaeology Section staff.

In a fortuitous move, the HLC Officer will be remaining within DCC for a few more years at least. While she is no longer within the archaeology section, she is still in close contact, and this gives a great amount of continuity to the project and support to the archaeology team who are expected to maintain and disseminate the HLC.

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8. Appendices

8.1. Appendix 1: Project Design Statement

Proposal for an
Historic Landscape Characterisation for
County Durham and Darlington

Culture & Leisure Dept and Environment Dept, Durham County Council

Project Design
This Project Design is based on earlier examples for HLC exercises in Cheshire, Cumbria, and North Yorkshire along with the HLC Template Project Design supplied by English Heritage.It has been prepared by David Mason with the assistance of Deborah Anderson and Lee White (DCC Archaeology) and Ged Lawson (DCC Landscape & Environment).

1.   Executive Summary

County-wide Historic Landscape Characterisation (HLC) projects form part of a national programme supported and developed by English Heritage but carried out by local government, chiefly county council historic environment services within Sites and Monuments Records. They aim, through a desk-based programme of Geographic Information System (GIS) and analysis, to achieve an archaeologist's understanding of the historical and cultural origins and development of the current landscape. They seek to identify material remains at landscape-scale that demonstrate the human activities that formed the landscape as it is seen today.

Like all types of characterisation, HLC projects provide broad-brush overviews of complex aspects of the historic environment in order to provide new, wide-ranging information for conservation, management and development decisions. Their

objective is to promote better understanding and management of the historic landscape resource, to facilitate the management of continued change within it, and to establish an integrated approach to its sustainable management in partnership with other organisations

HLC is a GIS-based technique. Its information is structured by the identification and grouping of archaeological, historic and other environmental attributes attached to land parcels (i.e. 'HLC polygons' within GIS). This method, unlike conventional landscape assessment, allows the creation of many different classifications of historic landscape types, each of distinct and recognisable common character, to meet many different uses and applications. The distribution of landscape types can be mapped using GIS supported by written descriptions of the landscape types and the historical processes that they represent. HLC forms a permanent and renewable database that may be utilised to provide information for a variety of planning, conservation and management-led initiatives and strategies.

HLC polygons are based on groups of modern land parcels, and recording a range of attributes for each of them in a spatial database (such as ArcSDE) linked to the GIS. The attributes recorded reflect the specific historic landscape features that characterise each polygon (e.g. aspects of field pattern, origin/age of woodland, presence of abandoned industrial activity).

These attributes are then interrogated to classify the individual polygons into a range of Historic Landscape Character Types. The HLC classification is concerned primarily with visible, extant, historic landscape character.

This Project Design describes the HLC project that is proposed for County Durham and the area of Darlington Borough Council.

2. Background

a. The project area

The area to be covered by the proposed project consists of County Durham, as created by the boundary revisions in 1974, along with the Borough of Darlington. County Durham covers an area of some 2,232 sq. km, with a population of 486,000 (2000 census). The county is made up of Durham City Council 186 sq km) and six

District Councils – Chester-le-Street(67 sq km), Derwentside(270 sq km), Easington(145 sq km), Sedgefield(217 sq km), Teesdale (840 sq km) and Wear Valley(504 sq km) . A substantial part of the west of the county lies within the North Pennines Area of Outstanding Natural Beauty, which also extends into Cumbria and Northumberland

LOCATION

KEY
County Durham
Chester-le-Street
Derwentside
Durham City
Easington
Sedgefield
Teesdale
Wear Valley
Borough of Darlington
North Pennines AONB
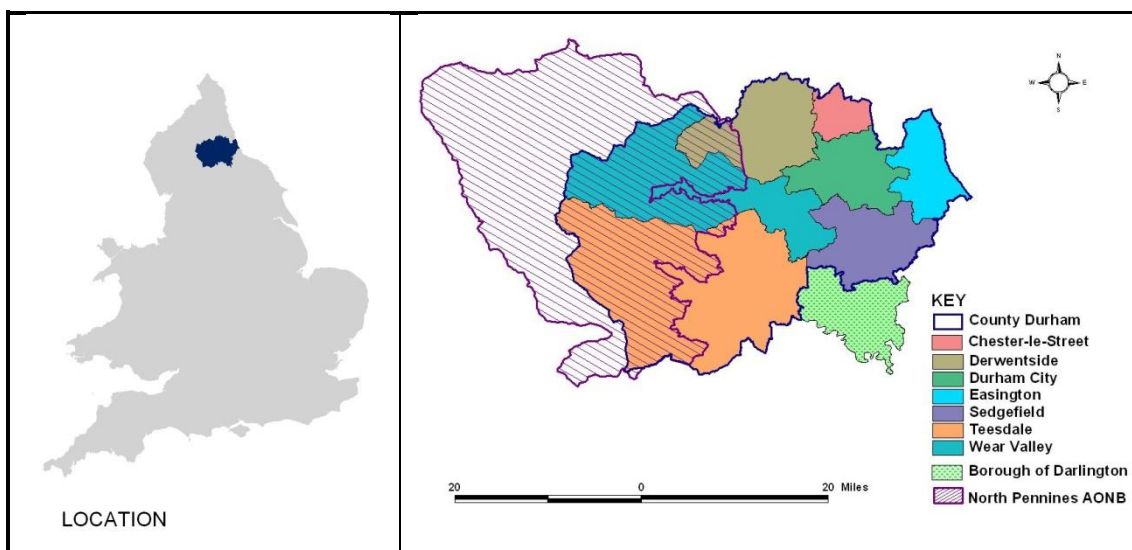
To the south-east, the Borough of Darlington (197 sq km) historically formed part of the county, moving to a unitary status in 1997. Bearing in mind the good working relationships between Darlington Borough Council and Durham County Council, and the fact that DCC provide archaeological services and SMR management to DBC under a service level agreement, it has been agreed that Darlington will form part of the Durham project.

b   County Durham's Landscape

County Durham's landscape has a significant post-industrial component but is otherwise predominantly rural, with arable and mixed farmland in the east giving way to pastoral farmland and moorland in the west. Urban development in the county is concentrated in the central and eastern coalfields, with woodland cover in the upland fringes and river valleys. In terms of topography, the west of the county is characterised by high dissected ridges separated by broad dales, spreading out from the summit ridge of the North Pennines. To the south, the broad plateau of Stainmore falls to the broad vale of the Tees, and the lower uplands of the Pennines fall eastward to the lowlands of the Wear Valley and Tees Plain, forming a rolling landform of sequential ridges and valleys. To the east of the county, the Magnesian

Limestone escarpment falls towards the coast, where it is incised by steep denes, and on the coastal strip, alternating sandy bays and rocky headlands are backed by low cliffs and sand dunes in places.

The geology of the county consists of gently folded Carboniferous rocks dipping towards the east, where they are overlain by younger Permian rocks. The sandstones, mudstones and limestones of the carboniferous Limestone series outcrop in the west in the upper dales, and are overlain by the Millstone Grits that form the upland fells, whilst a series of striking outcrops and waterfalls are formed by igneous intrusions such as the Whin Sill dolerite. In the north of the county, Lower and Middle Coal Measures overlie the millstone Grits which fall to the east dipping under the Permian Limestone. Here, soft and thinly bedded strata of coal, sandstone and mudstone have been eroded to form gently sloping valleys with steeper bluffs here and there marking thicker beds of harder sandstones. In the east the Magnesian Limestone itself forms a low plateau of dolomitic limestone. Drift geology consists in the main of glacial drift, largely boulder clay, with some glacial sands and gravels, morainic drift and lacustrine clays; alluvial and river terrace sands and gravels in major river corridors and peat deposits on the upland fells. Substantial areas of the coalfield have been mined using the opencast method, and subsequently reclaimed.

The older settlement distribution in the Study Area was essentially dispersed but was been influenced by the spread of medieval villages and by post-medieval industrial development based on around coal mining, lead working and other heavy industries. The major population centres are Darlington and Durham City (respective populations 65,000 and 81,000), whilst Chester-le-Street, the largest of the other towns has a population of 54,300. Other urban centres include Bishop Auckland, Chester-le-Street and Barnard Castle.

The Countryside Agency's Countryside Character programme (map please) identified six character areas within the area of study:

- The Durham Coalfield Pennine Fringe
- The Durham Magnesian Limestone Plateau
- The North Pennines
- The Pennine-Dales Fringe

- The Tees Lowlands
- The Tyne & Wear Lowlands

In addition, English Nature identified five Natural Areas in the county:-

- North Pennines
- Durham Magnesian Limestone Plateau
- Northumbria Coal Measures
- Tees Lowlands
- Tyne-Tees Coast.

Much of the western third of the county lies in the North Pennines Area of Outstanding Natural Beauty which also recently became the first area in Britain to acquire European Geopark status. Within it there are a number of Environmentally Sensitive Areas (ESAs) and Sites of Special Scientific Interest (SSSIs). In the east, sections of the coast are designated as Heritage Coast (HC). There are also a number of designated Areas of High Landscape Value (AHLVs) within the county along with relic historic parklands some of which (such as Hardwick, Raby and Windlestone) are included on English Heritage's *Register of Parks and gardens of Special Historic Interest*.

c.   Previous landscape and characterisation work

Account has been taken of progress with other HLC projects in the Northern regions, and the Durham methodology will be compatible with.the ongoing Cumbria/Lake District project, the recently-started Cleveland/North Yorkshire and Northumberland projects. All project managers are in discussion to ensure cross-border compatibility.

Within Co Durham, DCC's Landscape Section carried out a county-wide landscape character assessment in 2002-3 (CDLCA). The assessment worked within the framework of Countryside Character Areas and Natural Areas, to identify further variations in landscape character at a more detailed level. The assessment maps variations in character at a range of different scales – County Character Areas (closely related to Countryside Character Areas) at a regional scale; Broad Landscape types and Broad Character Areas at a sub-regional scale, and Local

Landscape Types and Subtypes at a local scale. The assessment was based on an integrated GIS database which divided the county into around 7000 polygons and involved a degree of analysis of historical factors, such as the period of origin of field systems and the presence of relic features. This analysis influenced typology at all levels and particularly local types and subtypes. The results of the assessment are published as a consultation draft on the DCC website (www.durham/gov.uk/landscape) which has an online GIS facility. The assessment formed the basis for The County Durham Landscape Strategy which is also published as a consultation draft on the website. The full GIS database used in the landscape character assessment is available for use in the HLC (see below).

An Urban Archaeological Database was completed for Durham City in the early 1990s, but an Extensive Urban Survey remains to be carried out. The UAD formed one of the earliest pilots for that national programme and is currently neither fully accessible nor IT-enabled. On the other hand, the County Durham SMR, which includes records for Darlington Borough, was the first HER in England to be made available over the web, and a split-screen GIS-linked version has recently been launched under the name Keys to the Past, using technology developed in-house.

Recent and current archaeological surveys producing information which can be used to make the proposed HLC study include the EH Settlement Atlas, MPP work in Teesdale, the Weardale Pilot Historic Settlement Survey, and the Darlington Deserted Medieval Village survey.

- NMP work and state of progress
- Major (i.e. extensive) landscape archaeology surveys
- Any Lifescapes or related ecological work

d   Rationale for the HLC programme

The proposed HLC project forms part of a national programme designed to improve understanding of the historic dimension of the landscape in order to help manage change in the whole archaeological and historic environment resource. It operates at landscape scale rather than monument or site level, and forms part of the move towards integrated and sustainable policies across the country and more locally. The

present day landscape is a matter of human creation and perception, arising from intellectual, emotional and aesthetic concerns. The fabric of the land that helps people to create their idea of landscape is recognised to be the product of thousands of years of human activity, through successive periods of change and modification. Understanding landscape means understanding its dynamism, and the underlying cultural processes and political, social, economic and cultural influences.

Archaeologists and landscape managers have for a long time appreciated the need to study archaeological sites in terms of their wider setting, rather than in isolation. There is a long and successful tradition of "landscape archaeology", the study of remains of past periods at landscape scale, notably in upland areas and high earthwork survival. Landscape ecology has also made major contributions (eg Rackham) and in parallel, there is an even older tradition of research on landscape, notably Hoskins). New national contexts for understanding historic landscape at large scale are also starting to appear (notably the EH Settlement Atlas, Roberts and Wrathmell 2000)

Landscape character assessment of the type already carried out in Durham has become well-established and has assumed much credibility. Its value lies in its recognition of the importance of integrating archaeological approaches to landscape with landscape assessment, rather than following previous examples and subsequently "bolting on" an historical aspect. It is clear that further integration can be achieved through Historic Landscape Characterisation, which focuses on the archaeological perspective, and provides a more detailed historical overview.

The importance of such work has been recognised politically for over a decade, as evidenced by the government's invitation in its 1991 White Paper 'This Common Inheritance' to consider the desirability of establishing a register of historic landscapes. An English Heritage project (later published as Yesterday's World, Tomorrow's Landscape, Fairclough et al 1999) was established to explore this concept. The project concluded that whilst a partial and selective register would be an inappropriate way to protect and manage historic landscape character in England, instead a comprehensive programme of HLC, borrowing from but improving on landscape assessment techniques was likely to be more accurate and effective. This recommendation was based on the understanding that protection of historic

landscape requires not just designation but also good management supported by information and understanding. Creating this understanding is the purpose of HLC, and is also in line with the guidance of the new (2000) European Landscape Convention

Appropriate methodologies have been defined and refined since the pioneering work in Cornwall in 1993-4 (Herring 1998), and increasing use of GIS and web-delivery are resulting in increasingly more sophisticated projects being put forward. Because of this, HLC ideas have started to become been embedded into the planning process through PPG15 and PPG7, and most recently in A Force for our Future. More locally, new policies such as the County Durham Waste Local Plan and the North Pennines AONB Management Plan contain statements alluding to forthcoming HLC work and its importance in sustainable land management.

The most recent approaches in HLC methodology have moved from a classification-led method to an attribute-based system, in which the interpretations and observations ('attributes') that were employed in early HLC projects to allocate land to pre-defined types are instead attached to GIS map polygons. This leaves classification to later GIS analysis so that decisions are more transparent and defensible. This process can produce not just one but many different classifications (and other analytical outputs) depending on need and context. Modern HLC therefore uses GIS not simply as a data-holding and display mechanism, but as an analytical tool, to use recorded landscape attributes to create a range of interpretations.

Notwithstanding the growing sophistication of GIS, HLC is a relatively generalised characterisation of historic attributes designed to serve as a resource management tool, to manage change to the historic and archaeological dimensions of the living landscape. It cannot be a stand-alone tool for this, nor is it a replacement for other established datasets such as SMR/HERs, building records or other landscape assessments. It does however fill a large *lacuna* in the available range of conservation mechanisms, and can be used alongside these other systems to move closer to fully integrated methods. The primary aim of county-wide HLC projects is a consistent overall approach that is as transparent as possible, inclusive, repeatable, and above all comprehensive (i.e. no characterless areas). This broad framework enables subsequent and more detailed assessment to be conducted as and when

required and practical. It also offers the maximum benefit in terms of spatial planning, development control, landscape strategies, and archaeological resource management, allowing HLC to be multi-functional in relation to all areas and methods. Importantly, it also emphasises the interpretative and subjective character of 'landscape', thus preventing HLC from becoming merely another form of environmental database.

More recently, the Countryside Agency (with Scottish Natural Heritage) have published an updated version of their early 1990s landscape assessment guidance (2002), which accepts, as HLC does, that the characterisation of landscape should be should be a separate and prior task to its evaluation, protection or prioritisation. The general purpose of landscape assessment has been defined (Countryside Commission 1993) as assisting local authorities, the private sector, land-use and conservation agencies to understand how and why landscapes are important, appreciate landscape issues, accommodate new development within the landscape and inform and guide inevitable landscape change.

The 2002 version of the Countryside Agency's guidance describes HLC as 'a practical and robust method for defining and mapping historic landscape at the county scale'. It recognises that understanding the time-depth of the landscape requires expert analysis and the specialist perspectives of archaeologists, and that GIS-based HLC provides greater understanding of landscape character than landscape character assessment alone. Historic Landscape Characterisation should 'inform' – and if possible precede – the process of Landscape Character Assessment. Where this is not possible, however, it is relatively easy to enrich LCA descriptions in the light of later HLC work. As noted above, the County Durham Landscape Character Assessment involved a degree of analysis of historical factors which influenced both its typology and descriptive elements. It is anticipated that there will be a strong and iterative relationship between the HLC and the CDLCA, with the latter informing the HLC which in turn will assist in future refinements of the CDLCA.

e   The County Durham and Darlington HLC Project

Durham County Council and Darlington Borough Council wish to undertake an Historic Landscape Characterisation study in order to improve knowledge understanding of the nature, range and quality of its historic landscape so that policies and strategies for its future management are formulated on a fully informed basis. More particularly, both authorities will use the results of the HLC study to further their stated aims to:

- maintain and enhance the character and diversity of the landscape.

- make development and land management more sustainable by helping to ensure that they respect the character of the landscape and contribute towards wider environmental objectives.

- support and complement other environmental strategies to help promote co-ordinated action on the environment.

The completed HLC will also be used to inform the North-East Regional Spatial Strategy in the future and the emerging Local Development Frameworks (LDFs). The relationship between the HLC and LDFs is currently being discussed with local planning authorities, and in particular the potential for the HLC to be used in producing a Supplementary Planning Document (SPD) on Cultural Heritage. The results of the HLC will be used to inform future revisions of the CDLCA, the County Durham Landscape Strategy and the North Pennines AONB Management Plan. It is also felt that the undertaking of the HLC will further encourage and facilitate close working both between county and district councils and other management agencies and between the environment and archaeology sections of the county council.

The County Durham HLC will be undertaken using the same methodology as employed in HLCs being undertaken in neighbouring counties which will thus aid the preparation of any regional overviews in the future.

3. AIMS AND OBJECTIVES

3.1 Overall Aim

The basic aim of the project is the rapid creation, for the whole of the project area, of a GIS-based, accessible and revisable characterisation (both by description and definition) of the project area's historic landscape. The HLC will be integrated with the SMR and will be compiled using information and understanding of the archaeological and historical attributes of the present day landscape. The HLC will be broad and generalised in approach, not detailed and site-specific.

The HLC will be a characterisation of the current landscape of the project area in terms of its historic and archaeological dimensions, and of the mainly extant evidence for the human processes that formed it. It will be compiled in a way that makes it capable of contributing to emerging national and future regional HLC and to wider county council agenda, of amplifying and enriching overall landscape assessment in County Durham and Darlington, and enhancing, contextualising and illuminating the existing SMR. In short, it will be designed to support and improve the sustainable management of the archaeological heritage resource and of continuing change within it.

3.2   Project Objectives

1. The production of a GIS-based HLC by characterising the landscape in historic terms. It will define GIS polygons encompassing areas of land which have similar historic character, and collect attribute data for each polygon that relates to a range of aspects such as detailed field patterns and morphology, historic land-use, landscape change and reclaimed land.

2. To use the structured attributes assigned to each HLC polygon to define and describe Historic Landscape Character based on aspects of present land-use, land management and settlement patterns which reflect differing historical processes in their formation.

3. To collect and create a set of sources and defined 'data sets', to support the HLC characterisation stages, to be transparent, and to facilitate future amendments and revisions.

4. To analyse and interpret HLC to produce preliminary synthesis, for example both thematic and in terms of character areas, parishes or topographic units, and to inform countryside management, spatial planning and outreach, research and evaluation programmes.

5. To assess the potential for further development and its uses, and for the definition of future HL, landscape management, and other archaeological resource and research strategies.

6. To identify mechanisms by which the HLC can be updated and revised and, if possible, incorporate other viewpoints e.g. public perception.

7. To disseminate the results of the project via both professional literature and popular publications as well as other media. To ensure that the information is readily available to landscape managers, planners and all those with an interest in landscape management.

8. To produce an archive, a report summarising the project and its results, and practical recommendations regarding methods for addition, amendment, revision and enhancement.

Broader Objectives

- Improving and promoting understanding and appreciation of the historic character of the landscape of the project area by a variety of owners, users and stakeholders.

- Establishing the completed HLC's principal application as a resource management instrument. Creating an accessible corpus of data and interpretation will enable high quality, well-informed and sustainable resource management and conservation at a landscape level.

- Updating and expanding the HLC so that it continues to reflect current landscape character enabling it in future to be compared with the benchmark of the original HLC.

- Addressing the importance of areas of historic interest, significance and evidential potential as well as individual sites. Promoting a broader view of the fabric of the landscape beyond traditional perceptions of archaeological study and understanding.

- Assisting the building of partnerships with other agencies and disciplines.

- As an instrument of integration, encouraging close partnership-working with allied environmental and conservation agencies, especially regards agri-environmental and rural diversification schemes.

- Enhancing awareness of local distinctiveness and identity among communities. Employing the HLC to acknowledge people's perception of their local landscape.

4.   METHOD STATEMENT

Introduction

The methodology to be employed is modelled closely on that recommended in English Heritage's *Historic Landscape Characterisation: Template Project Design* (December 2002). The general approach is to work from a broad to a detailed level ensuring that an overview of the whole study area is created within the life of the project. This will provide a context and framework for further refinement of the characterisation in those areas where for some reason more detailed work is considered desirable at a future date.

The HLC method comprises four main stages of work:-

Stage 1 – Familiarisation, Refinement of Project Methodology and Sample Tests.
Stage 2 – Characterisation: Mapping Character and Digitisation.
Stage 3 – Review and Analysis of HLC.
Stage 4 – Report, Archive and Dissemination.

4.1   Stage 1: Familiarisation, Refinement of Project Methodology and Sample Tests.

In the Familiarisation sub-stage the project officer will acquaint her/himself with the project area, the key partners and data sources, explain the methodology and objectives of HLC, critically review existing landscape assessments, and undergo any necessary training in GIS use. During this sub-stage it will also be important to consult with active or recently completed projects in the same region to maximise compatibility. It might also be possible to borrow details of items such as data structures and attributes.

Refinement of project methodology will include examination of potential data and information sources with regard to their content, geographical cover and how they might be exploited with regard to the HLC. A GIS system (working in ArcGIS using ESRI's ARCSDE on SQLServer as a spatial database) will be developed during this substage together with procedures for incorporating existing data and the analysis and input of new data. In particular the merits of, and mechanisms for, directly incorporating data at the outset from datasets such as the County Durham Landscape Assessment database, English Nature's Ancient Woodland Inventory and DCC's Common Land Register will be explored. The design of the database will be carried out with support from DCC's GIS team.

Sample work will be designed to test the provisional project method along with its GIS database structure on sample portions of the project area. Three or four sample areas will be selected for testing, chosen so as to encompass the diversity of the project area's historic landscape character and to ensure that the proposed method is appropriate for all contexts within it. Each area will cover an area between 5 and 10 sq. km in size. Provision will be made for the draft project methodology to be modified should the results require it. Any such changes or refinements will be incorporated into the written Method Statement which will be produced as a manual for Stage 2. This will be updated during the project as methods are evaluated and refined or revised as might be required by adding new attributes or accessing new data sources. A fully evolved Method Statement will be the starting point for the final Project Report in Stage 4.

4.2   Stage 2: Characterisation: Mapping Character and Digitisation.

In this stage the updated methodology agreed at the end of Stage 1 will be applied to the whole of the study area, particularly by defining and characterising GIS polygons and then ascribing attributes to each polygon, within a related database, that describe its present-day HLC, previous and (where known) earlier Historic Landscape character. The methodology for doing this will reflect the conclusions of the national HLC Method Review (2002) and is summarised below.

The definition and mapping of HLC polygons, the assigning of attributes and their subsequent analysis to produce classifications of types, will be essentially a desk-based exercise, using maps and vertical aerial photographs. It may also, depending on the findings of Stage 1, involve the direct integration of data from existing data sets. It is anticipated that OS Master Map polygons will be used as the basis of the spatial framework.

It is not anticipated that a significant amount of fieldwork, other than some verification work during Stage 1, will be required owing to the geographical scale of the project, and because, as a technique, it does not lend itself to the recognition of broad patterns of landscape character.

Sources

For defining polygons and capturing data the HLC will rely principally upon:

- current OS digital vector Master Map and raster (1:10,000, 1:25,000) maps
- historic digital raster maps (8 epochs of OS maps from 1st 1856/65 to present day)

- geo-referenced GIS-based vertical aerial photographs (1940, 2001)

- other digital data sources (see appendix), the most significant likely to be the County Durham Landscape Character Assessment database, the Ancient Woodland Inventory and DCC's Parliamentary Enclosures, Mineral Workings, Parish and Township boundaries, and Common Land Register databases.

Archaeological expertise, morphological interpretation, and landscape history

will be employed to interpret the above source material to create an archaeological understanding of the physical phenomena they depict. Much knowledge, expertise and understanding resides in the minds of staff in the county council's archaeology and environment sections. The HLC project affords an opportunity to capture some of this knowledge reservoir and place it in a structured context.

Supporting evidence will be gleaned from other data sets such as habitat surveys, other historical maps, extensive the SMR, and documentary evidence.

4.3   Stage 3: Analysis, Interpretation and Synthesis.

The historic attributes of the present-day landscape defined in Stage 2 against polygons will be used to define Historic Landscape Types, create thematic assessments, and determine areas of similar historic character. The Types will arise logically from the attributes given to polygons rather than being artificial and imposed. Very probably, a number of layers of classification will emerge from this exercise varying from the broad and general to the complex and detailed.

Exercises will then be performed to assess and understand emerging patterns and trends within the data, especially in terms of time slices, time depth, and landscape change. These will involve the layering onto the character mapping of data from secondary sources such as previous archaeological surveys and SMR data to provide further information illuminate further information on landscape change and development. The potential of HLC to explain patterning in the SMR and to illuminate the character of SMR data (gaps, predictive modelling) will also be explored.

The potential uses of the HLC in influencing decisions about land management and development will be explored, both with regard to potential 'stand-alone' products of the HLC (such as management guidelines) and its integration with existing landscape characterisations, strategies, management plans, designations, and development frameworks. This work is likely to be highly contextual and will depend upon the exact 'state of play' of such documents in Durham and Darlington at this stage of the project.

The implications of the findings of the HLC for other landscape characterisations, landscape strategies and designations will be explored and the need for

improvements or modifications identified. In particular it is anticipated that the findings of the HLC will need to be incorporated into County Durham Landscape Character Assessment, in respect of both spatial and descriptive elements of its characterisation, and the Landscape Strategy in respect of its detailed objectives and spatial strategies. This work is in itself beyond the scope of the present project. It is intended rather that it would be carried out as part of the periodic review of those documents although the extent and nature of the work required to make documents compatible and complementary will be identified as part of this stage of the HLC. A similar process will be undertaken for Countryside Character Areas and reported to the Countryside Agency.

The need for specific 'stand-alone' documents such as a cultural heritage SPD or management guidelines for specific historic landscape types or character areas will be explored through consultation with local authority policy and development control planners and specialist teams (Archaeology, Design and Conservation, Landscape) and with agencies such as DEFRA, English Heritage and English Nature. As part of this process, access to the HLC database (through in-house GIS, internet, intranet or extranet GIS) and its integration with the existing procedures of potential users (DC planners, DEFRA Stewardship Advisors etc) will be explored, and the need for staff training identified.

The potential and need for further stages of more detailed historic environment assessment will be identified. The HLC will provide baseline data from which other projects might arise, concentrating on specific historic, archaeological or landscape topics as elements of a research agenda for the historic landscape. The HLC should help clarify issues such as the rarity of certain landscape types, their vulnerability, and the nature and strength of threats to them e.g. from encroachment by inappropriate land-use regimes nearby, and this will assist in prioritising areas for future work.

The potential and need for further dissemination and interpretation of the HLC and the historic environment generally will be explored, and particularly in relation to the publication of the HLC on the DCC website.

4.4   Stage 4: Report, Archive and Dissemination (publication, applications and updating).

The principal products of the project will be a GIS database, an archive of the raw survey data, and a written report.

GIS

Durham County Council is a licensed operator of ArcGis which is used both in specific applications by technical staff in various departments and in intranet and internet (IntraMap) GIS facilities open to all DCC employees and the wider public respectively. The HLC database will be made available in all of these applications.

It is anticipated that the full GIS database will be available to specialist users, with somewhat simpler versions (or simpler views) of the data on the intranet and internet mapping facilities. For example, the landscape database is now available on-line, but viewing is restricted to certain attribute fields (typology, strategy) for the sake of simplicity and clarity. At this stage it is anticipated that a bespoke interface for the HLC would be created, modelled on the landscape interface (http://www.durham.gov.uk/landscape/usp.nsf/pws/gis+-+online+mapping) in which a number of map layers (effectively views) of the HLC would be available along with other relevant data (designations such as SAMs, Conservation Areas, Listed Buildings, Historic Parks & Gardens etc). The interface would also feature a split-screen viewing of historical maps and be linked to and from Keys to the Past (SMR) website. It is also anticipated that elements of the HLC report will be published on the website along with some explanatory information about the typology and the use and interpretation of the GIS which will also be linked with it. It is anticipated that DCC will host the HLC website and internet GIS which will be linked to the Darlington and DCC websites.

Discussions will be held with other user groups about their precise needs and outputs and data format will be tailored accordingly. For example the full GIS database, or simplified versions, may be required by some (district councils, government agencies, NGOs) for use on their own internal GIS systems and will be made available to them on CD.

Archive

A project archive will be prepared which will include:

- copies of the project design and method statements
- data tables with explanations
- text and mapped information produced and/or copied as part of the project
- copies of all reports produced as part of the project
- copies of all correspondence
- a copy of the whole HLC retained as a benchmark for future comparison and study of trends on landscape change – the HLC itself to be updated periodically.

The archive will be quantified and ordered in line with English Heritage guidelines and then deposited with Durham County Council.

Report

A written and illustrated report will be produced, both hard copy and on CD.

Five copies will be sent to English Heritage. Others will be disseminated to other bodies in the area including North Pennines AONB, District Councils, Durham City Council, Darlington Borough Council, and other appropriate institutions.

The report will be structured along the following lines:

Introduction
    Background to the project
    Summary of previous work
Aims and objectives
Methodology
Non-technical summary of results
Characterisation
    Including written description of morphological and interpretative 'landscape types'
Discussion of Results

Including summary of assessment stage of project

Provisional conclusions; a new perspective on the landscape

Critical Review of the Methodology

Including recommendations for improved methodology

Recommendations for Further Work

Including identifying potential for further analysis and fieldwork

Management Guidelines for Dealing with the Historic Landscape

Identifying archaeological management guidelines to assist in the preparation of future management strategies for HLC types and/or areas

The report will feature a number of hard copy GIS-generated maps for such purposes as illustrating initial conclusions, demonstrating the capacity of the HLC beyond the initial study, and presenting a selection of views which might alter people's perception of the area's landscape.

A number of poster-sized maps with simplified detail will be produced for publicity purposes; to draw attention to the project, to illustrate the historic character of the landscape, and to stimulate future interest and support.

Updating

The regular updating of the HLC will become a routine feature of the management of the county's SMR as will periodic benchmark-archiving.

The intervals at which the latter occurs will be determined on the basis of the rate of landscape change and perhaps tied to OS Mastermap updating. Provision will be made for incorporating into the polygon matrix external views of landscape experts and the general public.

Wider Dissemination of Results

The project report will be published by Durham County Council and Darlington Borough Council. An outline of the project and a summary of the report will be published on the DCC website together with downloads (pdf) and links to the internet GIS. Subject to further discussions, it is anticipated that the website will be hosted by DCC but will be designed to operate as a stand-alone Durham and Darlington HLC Website and linked with both authorities' websites. Press releases will be sent out to

local media on the launch of the report and a more detailed summary of the project published in DCC's in-house Countywide magazine which is delivered to every home in the county. The results will also be disseminated via lectures, briefings and presentations.

5. Resources and Programming

5.1 Personnel

The project will be undertaken over a 30 month periord by a single dedicated project officer (PO) appointed to the Archaeology Section of the Culture and Leisure Department of Durham County Council. The PO will be managed by the County Archaeologist for County Durham (David Mason) and (s)he will receive support from the other members of the Archaeology Service Deborah Anderson and Lee White. Other contributing DCC personnel will be Ged Lawson (Environment & Resources), and David Harris (Customer Services, SMR technical support).

IT Provision

The hardware requirements for the project will be a Dell GX280 PC with Pentium 4, 2.8 Gig processor, minimum 1 Gb RAM and 40MB hard disk.
The Council operates a multi-user licence with software suppliers ESRI and the software for the project (ArcGIS/ArcSDE) will be provided under those existing arrangements.

Monitoring and stakeholder involvement

A *Management Steering Group* will be established which will meet at the commencement of the project and at agreed milestone points thereafter to ensure work progresses in accordance with the project timetable and budget.

Its members will include:-

David Mason	DCC County Archaeologist
Tba	DCC HLC Project Officer
Graham Fairclough	EH Characterisation Team

Additionally, a *Project Steering Group* will be established. Its constituency will be broader than that of the *Management Steering Group* but will consist of all members of the latter as well as other interested parties. This will provide a wider basis for consultation and additional expertise for comment at each stage. It is proposed that the PSG meet or as key stages are met in the project to discuss the results and hopefully to provide support and constructive criticism. The PSG will be formed initially by invitation, a list being suggested by the MSG and the primary funding partner (English Heritage), though the PSG after it has convened for the first time may choose to invite additional interested parties to attend as is appropriate.

Initial members might include representatives from:

- Regional Universities
- EH both Regional and National
- NE Coast AONB
- N Pennine AONB
- Adjacent local authorities
- Other agencies e.g. DEFRA, Environment Agency.
- Other DCC departments

These meetings might occur at the following key stages of the project.

- After completion of Stage 1 (once method finalised)

- Towards the end of Stage 2 (as final data collection is completed)

- During Stage 4 (to discuss the final result)

Additional meetings are not precluded by this schedule should the PSG feel they are necessary.

6.   Copyright

Copyright will be retained jointly by Durham County Council and English Heritage. DCC will licence partners and others to use the information where this does not conflict with other copyrights (e.g. OS). All material copied from other sources will be fully acknowledged and relevant copyright conditions observed.

<u>Health and Safety</u>

Health and Safety both within DCC and DBC offices and during any field reconnaissance is covered by DCC and DBC Health and Safety policies.

6   Provisional Timetable

Stage 1	Months
Familiarisation	1
Sample areas	3
Modifying method statement	1

Stage 2

• West Durham Coalfield	5
• Wear Lowlands	2.5
• Tees Lowlands	2.5
• East Durham Limestone Plateau	3
• Dales Fringe	2.0
• North Pennines	3.0

Stage 3

Whole county analysis and project review	4

Stage 4

Report, archive etc	3

TOTAL PROJECT DURATION – 30 MONTHS

8.2. Appendix 2: Methodology

8.2.1. List of GIS map sources

- British Geological Survey Solid and Drift Geology (1:50000 scale)
- County Durham Landscape Character Assessment database
- DCC HER, SAM and Listed Buildings data
- DCC's GIS digital mapping of Common Land Register
- DCC's GIS digital mapping of mineral workings
- DCC's GIS digital mapping of Parish and Township boundaries
- DCC's GIS digital mapping of Parliamentary Enclosures
- DCC's GIS digital mapping of the old county boundary
- Geo-referenced GIS-based vertical aerial photographs 2001 and 1940
- GIS shapefile created from 'Weardale: Clearing the Forests' (Bowes, 1990)
- Historic digital raster maps
- Historic parish boundaries.
- Natural England's Ancient Woodland Inventory
- Natural England's Countryside Character Map
- OS 25m contour data
- OS Integrated Transport Network (ITN) data
- OS vector and raster maps
- Settlement & Waste GIS layer (Helen King née Helen Dunsford)

8.3. Appendix 3: GIS tools

8.3.1. BoundaryClean tool

While NCC used the *BoundaryClean* tool, with some effect, for the CD&D HLC it was found to give result which were not representative, as shown in the following two sets of examples.

Figure 35 shows the effect of the *BoundaryClean* tool used on the original HLC raster 200m cell size image. Note how it emphasises the amount of woodland, especially in the central northern areas. Similar, Figure 36 shows the effect of the *BoundaryClean* tool used on the sixth *MajorityFilter* HLC raster 200m image, which while not so obvious, still shows some emphasis of character types over others.
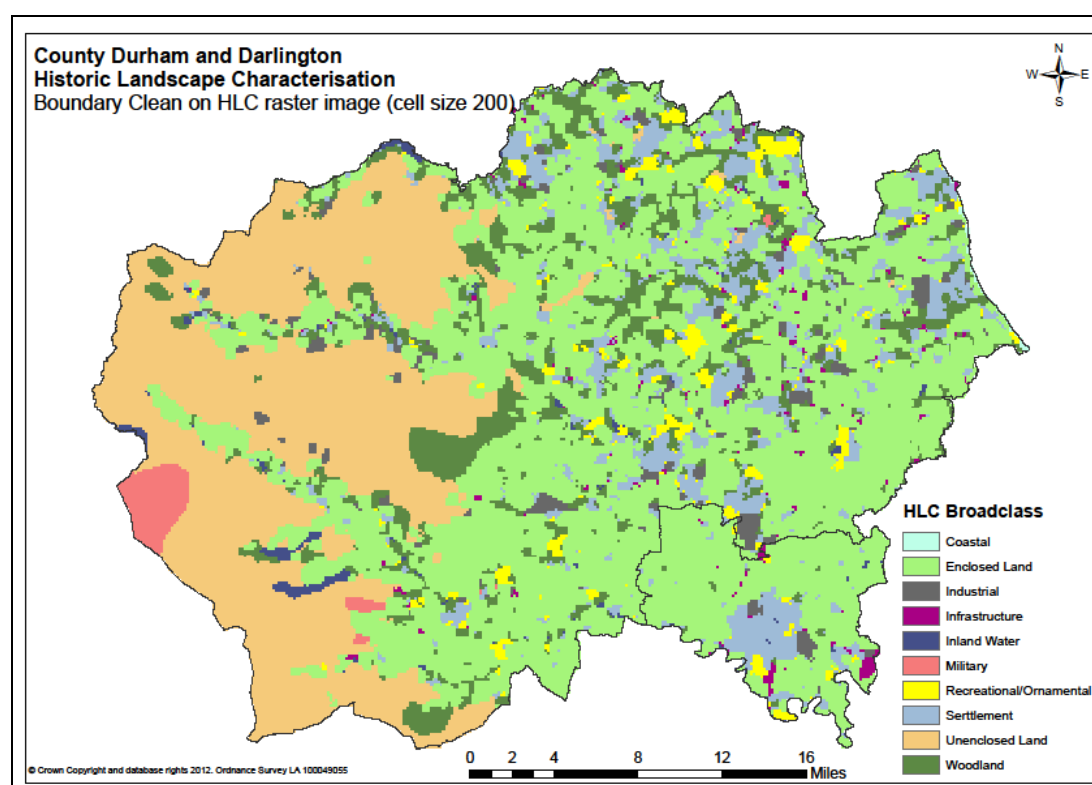
Figure 35: *BoundaryClean* tool used on the original HLC raster 200m image
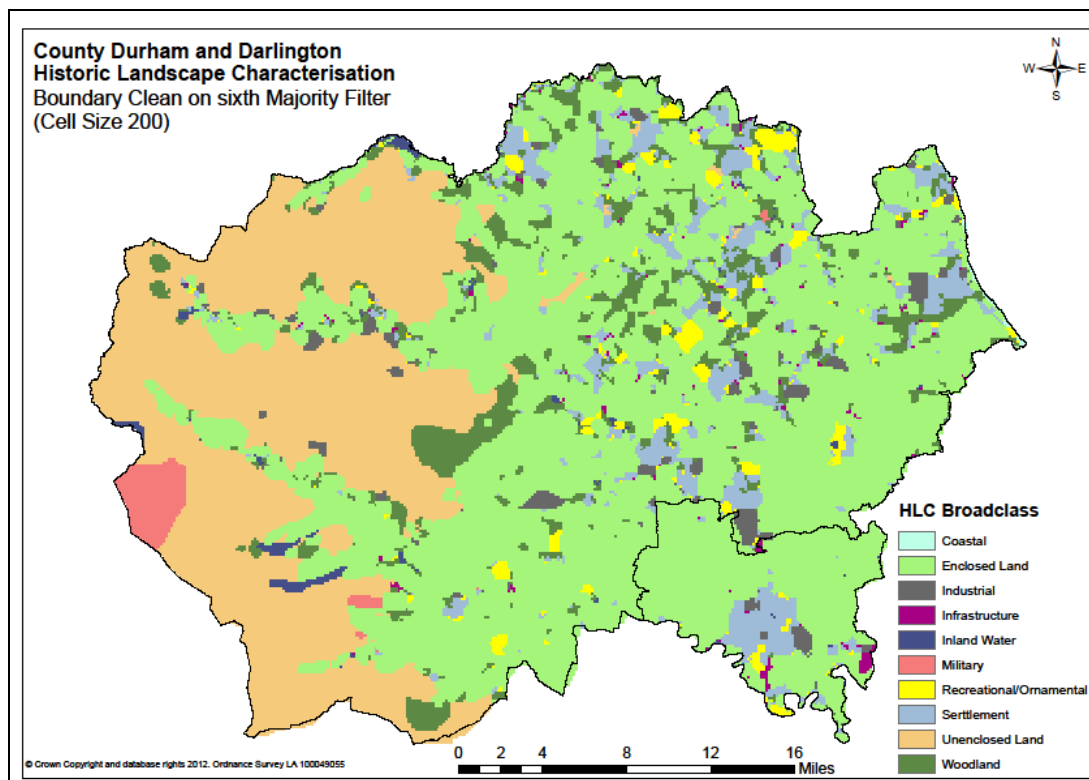
Figure 36:*BoundaryClean* tool used on the sixth *MajorityFilter* HLC raster 200m

8.3.2. MajorityFilter tool

The ArcMap *MajorityFilter* tool, part of the Spatial Analyst extension was used six consecutive times on the raster image of the CD&D, itself produced at a cell size of 200m.

The following nine figures (Figures 37 to 45) show the process as it slowly generalised the original raster image, 'cleaning' the data until it was felt that representative character areas were emerging. These were discussed in detail with colleagues before final boundaries were drawn.

As with all boundaries imposed on landscapes, the lines are not hard and fast, but, as in the words of Liz Williams are '...rather fuzzy transition zones leading from one character area to another' (Northumberland County Council, 2008, p. 137).
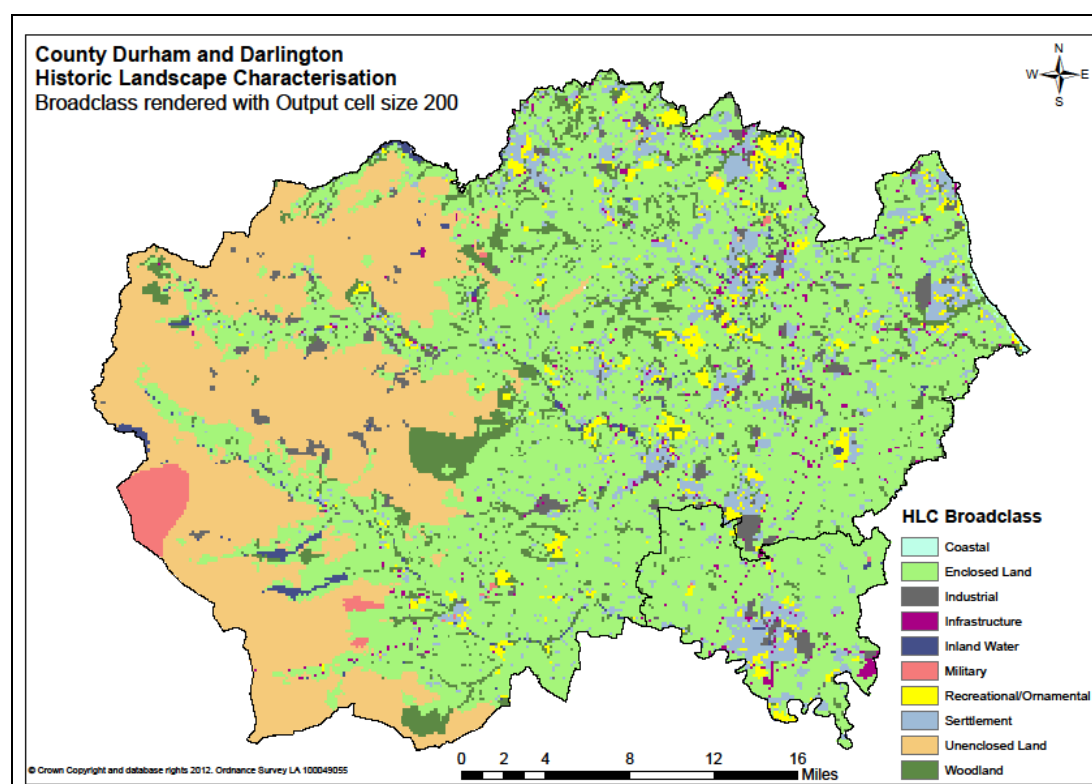
Figure 37: HLC raster image at cell size 200 metres
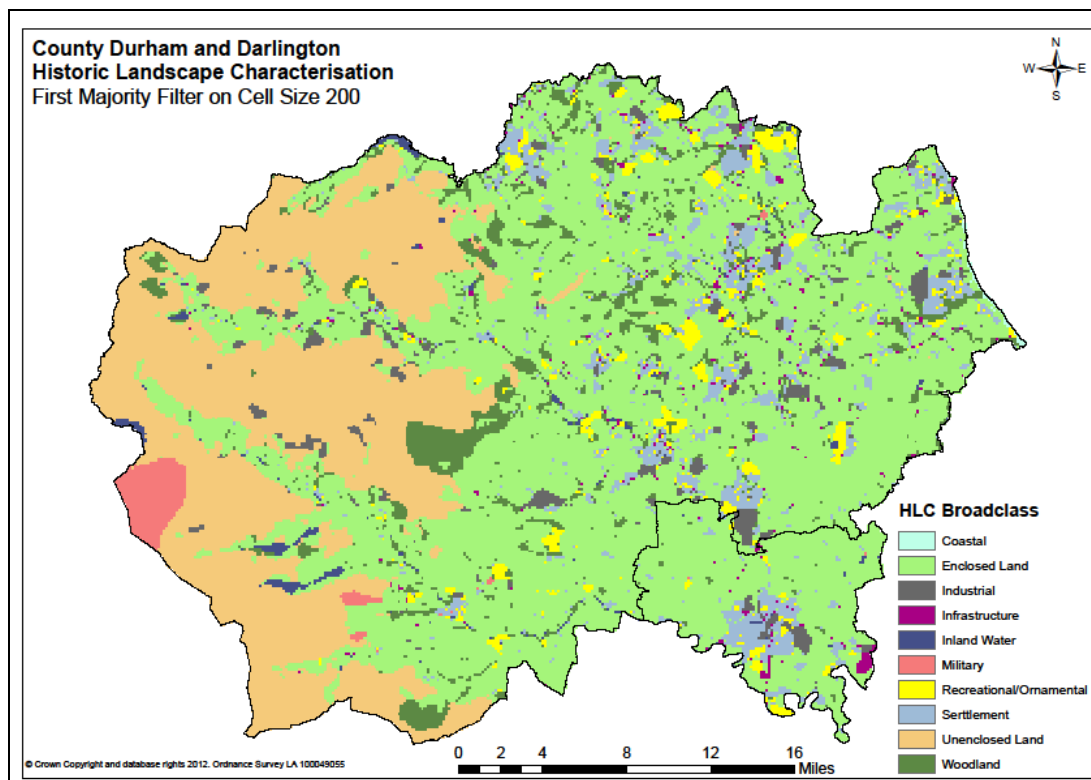
Figure 38: First *MajorityFilter* run on HLC raster 200m
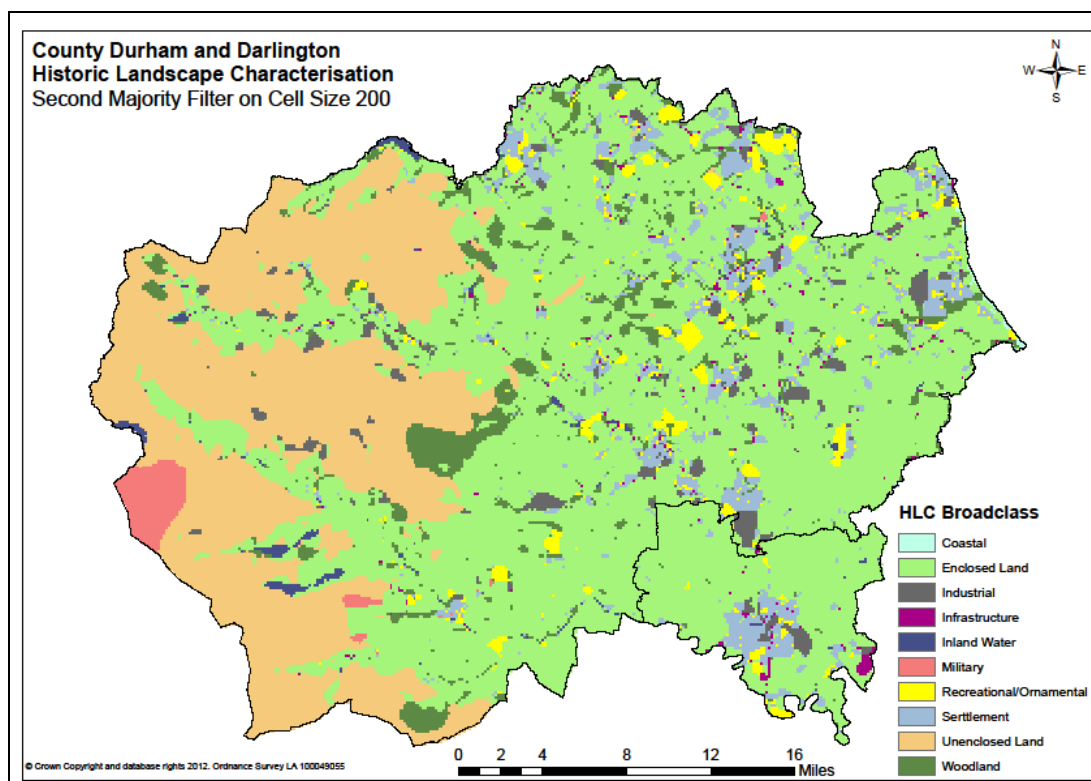
Figure 39: Second *MajorityFilter* run on HLC raster 200m
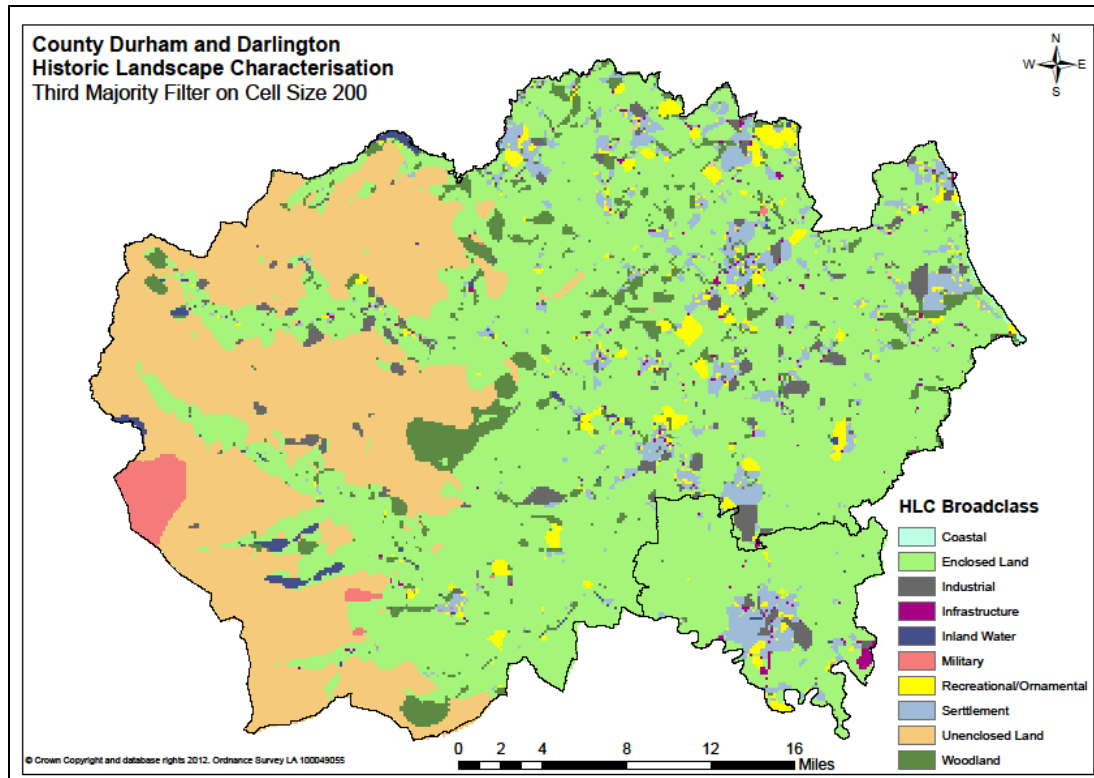
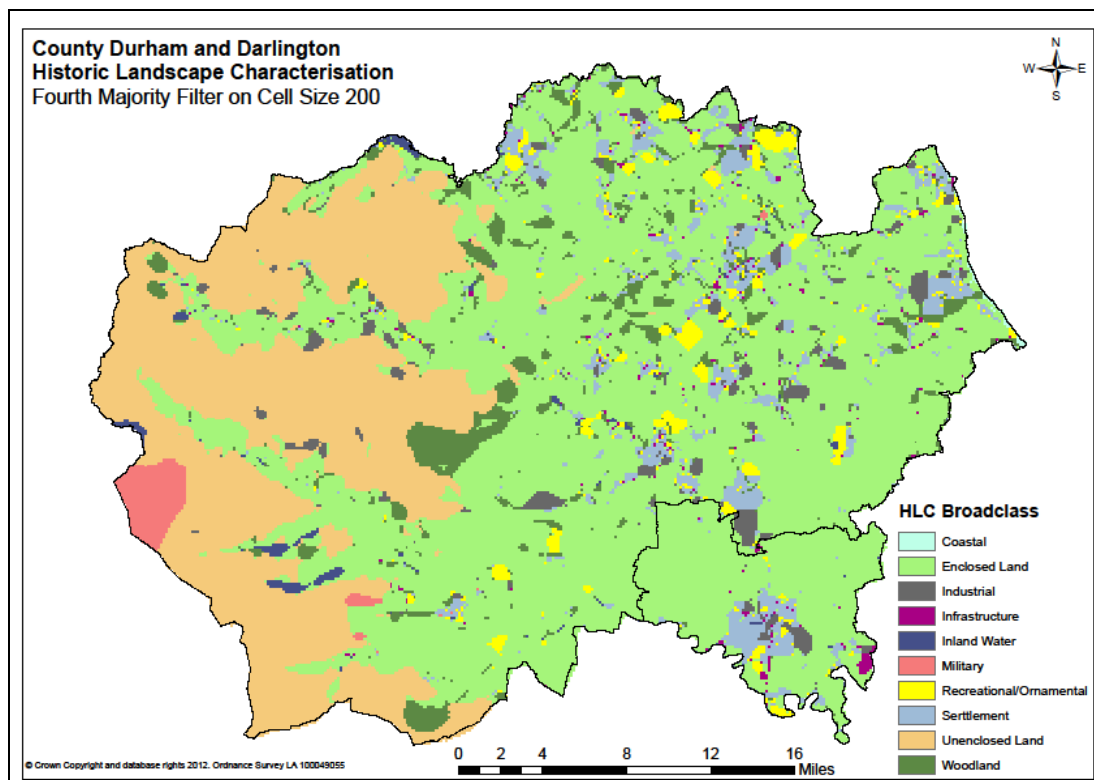**Figure 40: Third *MajorityFilter* run on HLC raster 200m**

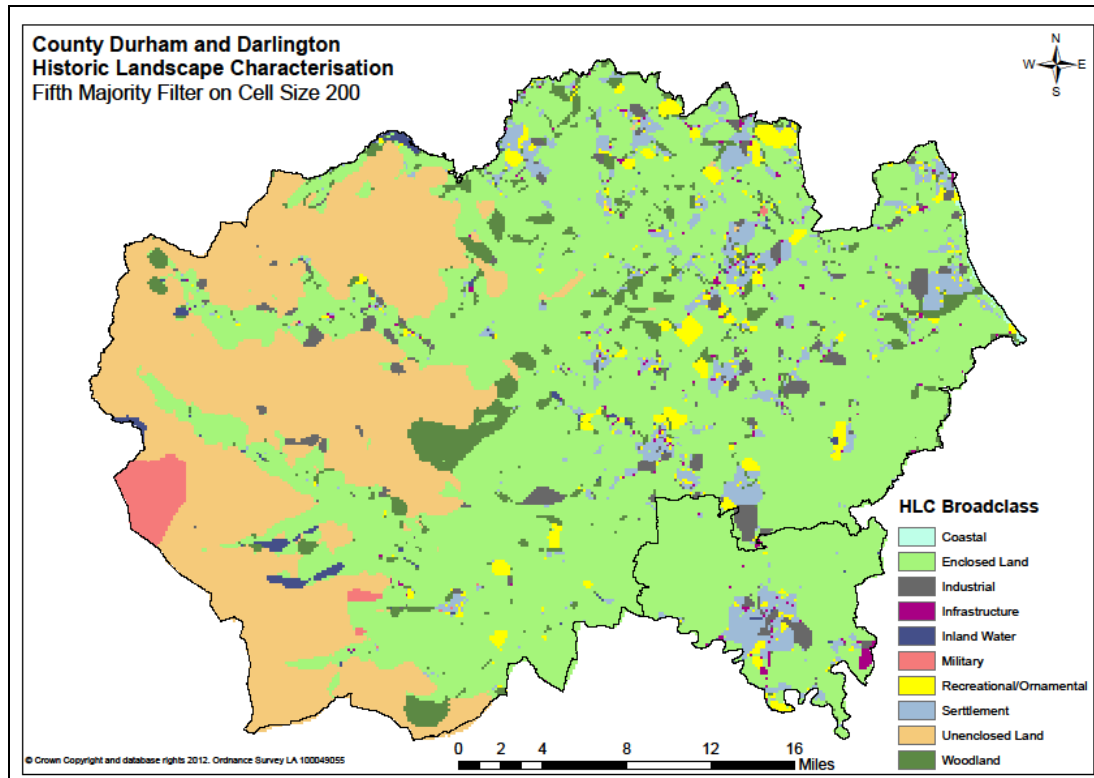**Figure 41: Fourth *MajorityFilter* run on HLC raster 200m**

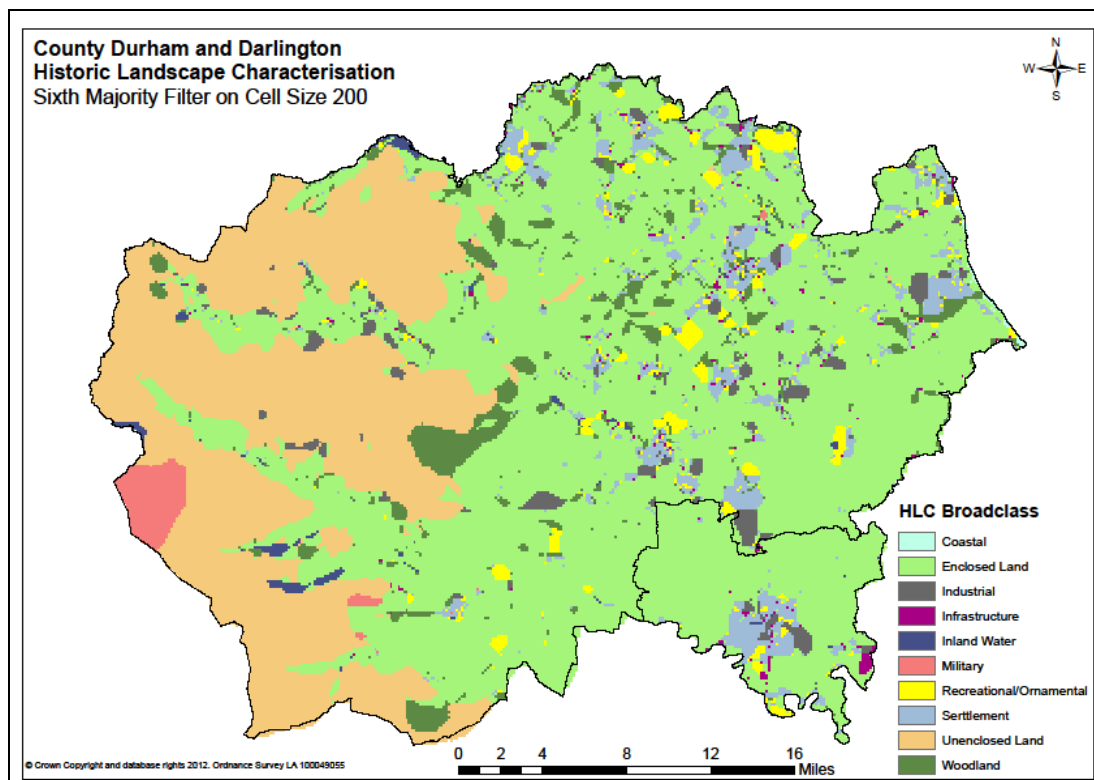**Figure 42: Fifth *MajorityFilter* run on HLC raster 200m**

Figure 43: Sixth *MajorityFilter* run on HLC raster 200m
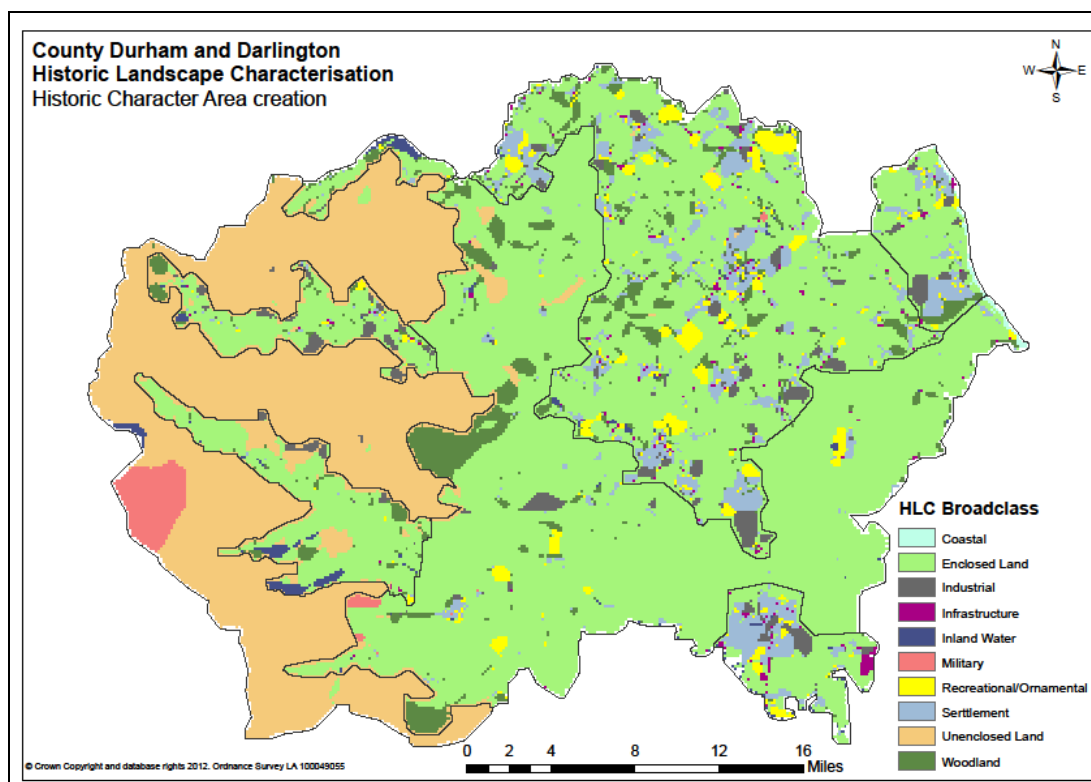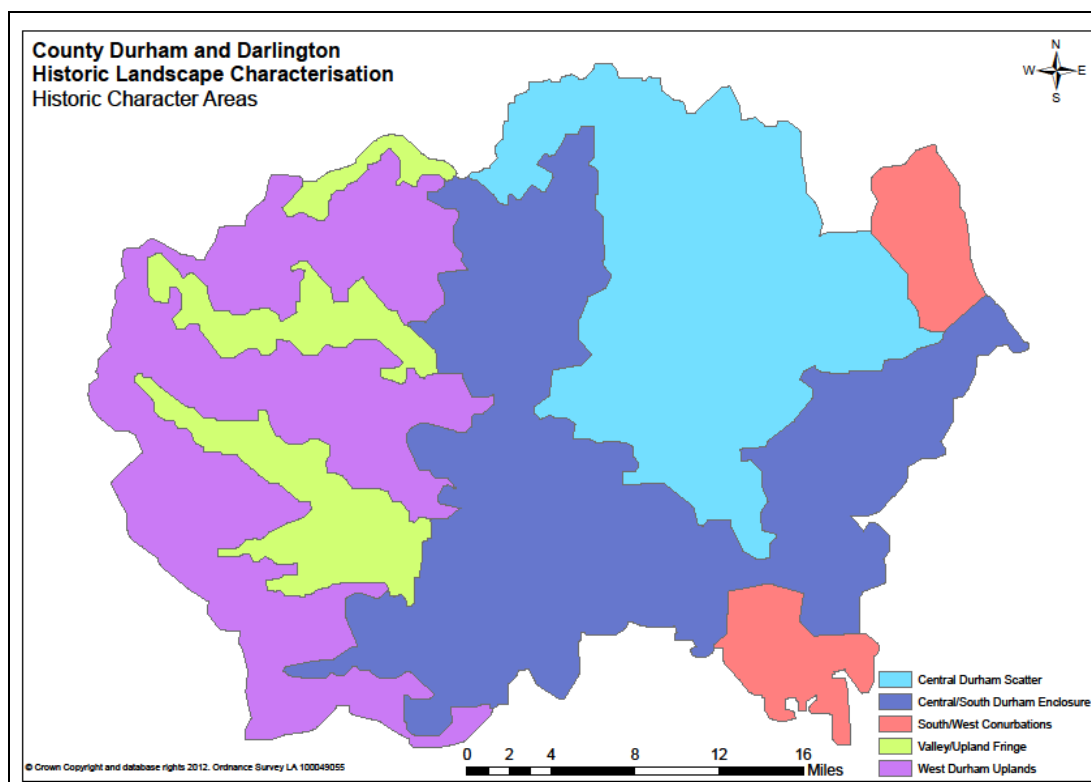
Figure 44: Historic Character Area Creation

Figure 45: Finalised Historic Character Areas