2 THE NORTHUMBERLAND LANDSCAPE

2.1 Introduction

Northumberland is the most northerly county in England and is bordered in the north and north-west by Scotland, Cumbria to the west and south-west, and Durham, Gateshead, North Tyneside and the City of Newcastle to the south. The entire eastern side of the county faces the North Sea. The modern county was created in the 1970s and replaced the historic county which included what is now Newcastle and North Tyneside; today it is the sixth largest county in England.

2.2 Landscape Character

The former Countryside Commission (now part of Natural England) published *The Character of England Map* in 1996. In a joint project with English Heritage it combined Natural Areas (English Nature) and Countryside Character Areas (Countryside Commission) into a map of 159 Joint Character Areas (JCAs) for the whole of England. The map provides a picture of the differences in landscape character at a national scale with each area accompanied by descriptions showing the influences which determine the character of the landscape. The JCAs are a widely recognised national, spatial framework, of which Historic Landscape Characterisation forms one element. Northumberland includes eleven of these areas either in whole or in part:

1. North Northumberland Coastal Plain
2. Northumberland Sandstone Hills
3. Cheviot Fringe
4. Cheviots
5. Border Moors and Forests
10. North Pennines
11. Tyne Gap and Hadrian's Wall
12. Mid Northumberland
13. South East Northumberland Coastal Plain
14. Tyne and Wear Lowlands
16. Durham Coalfield Pennine Fringe

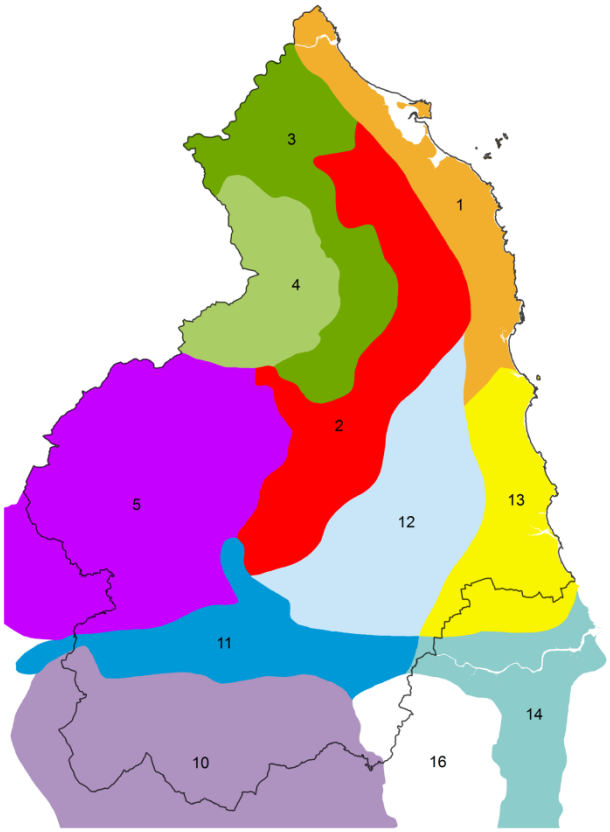

Figure 2: Joint Character Areas in Northumberland, showing Northumberland county boundary (black)

More detailed landscape character assessments have been carried out in the North Pennines (1991), Berwick (1992), the Pennine Dales Environmentally Sensitive Areas (1994), the Tweed Estuary and the coast between Amble and Cresswell (1994), the Northumberland Coast AONB (1996) and adjoining area (2007), and Tynedale and the Northumberland National Park (2007).

2.3 Geology

Northumberland is a county of strong physical contrasts, from the uplands of the Cheviots and Pennines, to the sandy bays and rocky headlands of the North Sea coast. Despite this variety, the underlying geology of Northumberland is relatively simple and was formed over three main geological periods: Devonian, Carboniferous and Quaternary.

The oldest rocks are those which make the Cheviot Hills and dominate the landscape in the north of the National Park. The hills are the remains of a Devonian volcano which erupted 380 million years ago, spreading lava over an area which today measures 600 square kilometres. Further igneous activity followed when a mass of granite broke through the lava revealing itself as crags in the highest parts of the Cheviots, eg Great and Little Standrop, near Linhope.

Away from the Cheviots, sedimentary rocks of the Carboniferous era dominate the geology of the rest of the county. Formed 345-280 million years ago, they include: the Limestone Series of sandstones, mudstones and limestones which outcrop in the north and north-east of the county; the Millstone Grit Series of limestones, shales and sandstones, and Millstone Grit in the south-west and central-east; the Coal Measures of southern Northumberland; and the Whin Sill which runs across the county. These strata generally dip away from the Cheviots, towards the coast.

Over the last two million years, in the Quaternary period, a thick layer of sediment (drift geology) has been deposited by the action of glaciers advancing and retreating across Northumberland. Most are tills (boulder clay), although there are small areas of sand and gravels generally focused around existing rivers and also small patches of clay deposited in glacial lakes (Natural England 2008).

The county's solid and drift geology have directly influenced its history. From the industrial exploitation of coal, stone, sand and gravels, to the development of soils and vegetation which determine its farming regime. The geology is also visible through the raw materials used to build the county's towns, villages and farms.

2.4 Soils

Soils develop through the actions of various factors, but the two most important are climate and type of parent material. Rainfall affects the movement of soluble compounds and fine particles, and parent material is the weathered bedrock or drift. Northumberland's soils can be summarised according to their upland or lowland situation. In the uplands, high rainfall means soils are leached, acidic and deficient of nutrients (podzolic soils), or waterlogged for much of the time (stagnohumic gley (or peaty) soils). In the lowlands, with lower rainfall, the soils are less leached and therefore less acidic and nutrient poor (brown soils) or just seasonally waterlogged (stagnogley soils) (Lunn 2004, 75-6).

In the uplands, waterlogged peaty soils are found widely in North Tynedale, Redesdale and the North Pennines, and extensively around Kielder Forest. The podzolic soils develop on the Fell Sandstones and other sandstones, as well on the andesites and granite of the Cheviots. The infertility of upland soils means they support mainly moorland vegetation, or conifer forest, but there are local patches of other soil types, which have developed on limestone and the Whin Sill.

The most widespread soils in the lowlands are the stagnogley soils which lie over boulder clay. These heavily-textured clay soils have poor natural drainage but with artificial drainage can make fertile farmland. The brown soils lie on better-drained glacial till or glacial and alluvial sands and gravels and are found in situations such as the floors of the main river

valleys. These lighter soils are extensive in the Tyne valley and far north of the county, with small patches in the areas of boulder clay (Lake and Edwards 2006, 12-13).

2.5 Topography

Northumberland can be divided into two broad topographic zones – the upland west and lowland east. Within these zones smaller, distinct areas exist with their own characteristics of settlement, vegetation, economy and land use, which have arisen in response to the geology, soils, relief and climate.

The county's uplands run from the Cheviots in the north to the North Pennines in the south. The highest point in the county is The Cheviot, with a summit 815m above sea level. However, the uplands do not form a continuous belt of high land, broached as they are by a number of valleys such as Redesdale, Coquetdale and the North and South Tyne. They are further interrupted by the Tyne Gap which separates the Pennines from the Cheviots. An outlying ridge of high land also runs parallel to the higher western ground, between it and the coast, running from Kyloe southwards, before turning inland at the River Coquet. Each of these three areas has different characteristics. The Cheviots are rounded hills with steep smooth slopes largely covered with rough grassland. The Pennines form a vast plateau of smooth moorland, much covered by blanket bog or heather and punctuated by dales on the northern edge. The mainly sandstone ridges are either afforested or moorland.

In the lowlands several areas stand out, including the Tweed lowland between Berwick and Cornhill where an extensive landscape of drumlins has been improved and transformed by 18th and 19th century agricultural developments; this area remains deeply rural. Elsewhere, the coastal plain has distinct northern and southern parts, separated by the River Coquet. The north is narrow, set between the North Sea and the fell sandstone ridges, with a gently undulating surface. The southern part broadens out, taking in the south-east coalfield and gently rising land to the west. Northumberland's coalfield is relatively flat except for the steep valleys of the lower reaches of the Wansbeck and Blyth, which cut across the lowlands from west to east. This area is the most industrialised and urbanised part of Northumberland.

Finally, the coastline is another, separate topographic area, with sandy bays, extensive mudflats, rocky outcrops, and dune systems.

2.6 Physiography

A separate physiographic model of the county has been produced for the HLC project, by Northamptonshire Archaeology. The result is a map which defines areas in terms of their geology (solid, drift and soils) and topography (gradient, altitude and aspect). On this basis Northumberland can be divided into five basic types of terrain: coastal areas, river valleys, flat plains, raised ground, and higher upper ground. In turn, these can be subdivided using geology and contour height to produce 37 distinct physiographic areas.

The basic terrain types demonstrate that Northumberland is dominated by three main groups: Upper Ground (26%) which is land above 300m with steep gradients, Lower Ground (23%) between 100m and 300m with steep slopes, and Plains (37%) where land is below 100m and has a generally flat aspect. Of the remaining types, River Valleys (12%) form an important and extensive network running from the high ground to the coast, and Coastal Areas (1%) accommodate the coastline itself. The widespread presence of glacial till created some problems in defining boundaries between some physiographic areas and although sharp lines have been drawn, these edges should be viewed as broad areas of change. The key indicators for each of these terrain types are summarised below (table 1) and the Methodology is Appendix 5.

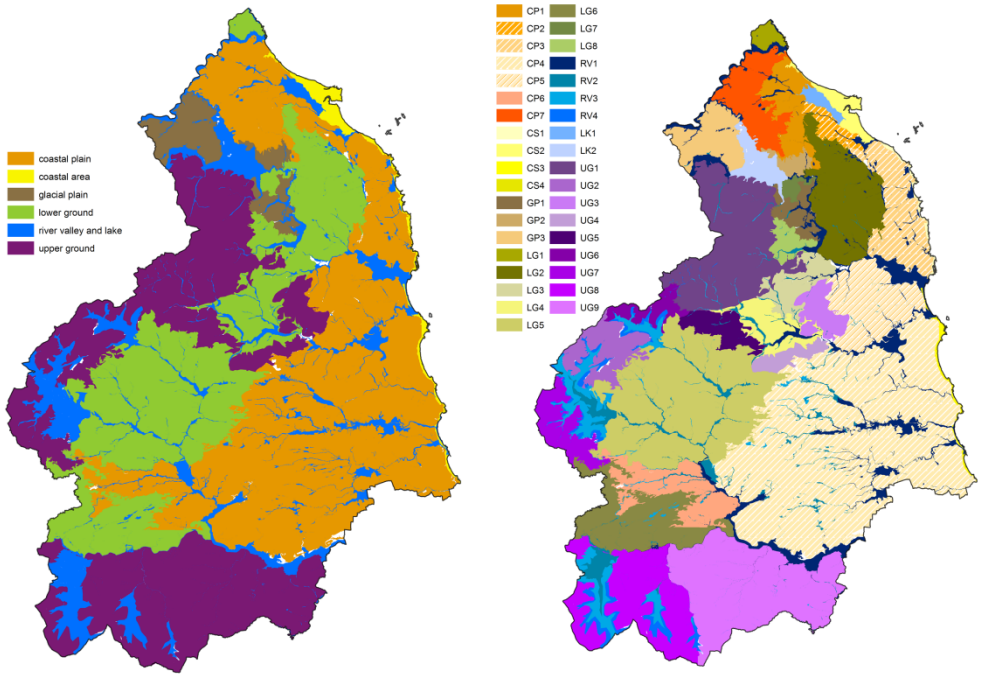

Figure 3: Physiographic map of Northumberland. LEFT: basic terrain types. RIGHT: detailed physiographic areas (CP = coastal plain, CS = coastal areas, GP = glacial plain, LG = lower ground, UG = upper ground, RV = river valleys).

	Gradient*	Geology	Altitude
Upper Ground	>4	Various	>300m
Lower Ground	3-6	Various	100 - 300m
Plains	Steepness <=3	Boulder Clay or glacial gravels	<100m
River Valleys	n/a	Alluvium or terrace gravels	n/a
Coastal Areas	<3	Beach deposits	<25m

* gradient was measured on a scale of 1 (flat) -15 (steep), see Appendix 5 for details

Table 1: Key criteria used to determine physiographic terrain types

The basic physiographic types have been used with the broad level HLC types to identify patterns and trends in their distribution and are discussed under the entry level HLC categories below.

2.7 Perceptions of Cultural Landscape

> *...landscape characterisation is a matter of interpretation more than of record, and of perception more than of hard facts. 'Landscape' is an idea, not a thing. It is this, along with the human actions that changed the shape and appearance of the land, which makes today's European landscape cultural: because we perceive it, indeed define it, in our heads and hearts, and this is inevitably a cultural act. Even untouched natural wilderness, for example, becomes cultural if we have seen it through spiritual or artistic perception. As an idea, as an intellectual or cultural construct, landscape is created by our minds and emotions* (Clark, Darlington & Fairclough 2003, 3).

HLC considers the landscape from a historic and functional viewpoint, describing the way people use the land today and how evidence of the past is still contained within it. This is based entirely on map and aerial photographic information and as such does not take account of the perceptions of landscape or sense of place that people feel when in the town or countryside. Although such viewpoints lie outside the scope of this project, it is interesting to take a brief look at the human response to landscape. One way of doing this is to look at the way artists, writers and musicians have reacted to the landscape in their work.

Northumberland's early guide books, of the 17th and 18th centuries, were illustrated with ancient ruins, mansions and panoramas of towns, but gave little flavour of the county's wider landscape. Appreciation of the landscape grew in the 18th century, in the Age of Enlightenment, and artists sought the picturesque, romantic and sublime. The artist J M W Turner first toured the north of England in 1797 and was inspired by the castles at Norham, Dunstanburgh and Prudhoe which became iconic images of his work (Greg 2006, 228). In the 19th century, as patronage of the arts shifted to the new industrialists, and new art institutions promoted local artists, the subject matter changed as well, taking in the landscapes of industry.

The strong folk music tradition in Northumberland has its roots in the ballads of the Border Reivers written in the medieval and early post-medieval periods. Their survival owes much to poet Sir Walter Scott (1771-1832), who was an avid collector of this tradition. Northumberland can also boast its own musical instrument – the Northumbrian Pipes, which produce a light, lilting and melodic sound which has been used by musicians like Kathryn Tickell to capture the sense of space, wide skies and history of the county.

The county has also inspired writers. In particular the North Pennines are associated with W H Auden. Artists in other media, such as the landscape garden movement of the 18th century, have also found inspiration in Northumberland. Perhaps the most famous was the Northumbrian Lancelot 'Capability' Brown, from Kirkharle, who created gardens at Alnwick (1760) and Wallington (1765) for his patrons the Duke of Northumberland and Sir Walter Blackett. The Northumberland landscape continues to be an inspiration to artists, craftspeople and musicians in the 21st century.

2.8 Archaeological and historical development in Northumberland

2.8.1 Palaeolithic (c.500,000 – 10,000BC)

During the last Ice Age, 18,000 years ago, much of Britain was covered in a thick blanket of snow and ice. The North East of England was an uninhabitable freezing wasteland, with little vegetation and few trees. But, as glaciers melted and the ice retreated, people began to move into these unoccupied areas. They lived by hunting wild animals such as reindeer and elk, and by gathering the few edible plants which flourished. These Upper Palaeolithic hunters left few traces behind and to date the only evidence of their presence in Northumberland is a flint tool from Eltringham, near Prudhoe.

2.8.2 Mesolithic (c.10,000 – 4000BC)

As the climate continued to improve causing the ice sheets to retreat, Britain became separated from the Continent by rising sea levels. In the thousand years following the retreat of the ice woodland established itself across much of the county and became an important resource for its hunter-gather population. Known as Mesolithic people, these nomadic peoples can be distinguished from their Palaeolithic ancestors by changes in the technology and form of their stone tools. In this period environmental surveys show the presence of many microscopic fragments of charcoal, which have been interpreted as an indication that Mesolithic people were setting fire to areas of forest, probably to aid their hunting by encouraging new plant growth on which deer and other animals could feed. Timber was also being used for building shelters or huts, such as the one discovered at Howick on the Northumberland coast. Most of the Mesolithic evidence recovered in the county takes the form of small flint tools, or microliths, that are distinctive to the period, and the sites where they were worked; these have been found in many parts of Northumberland, but most especially along the coast.

2.8.3 Neolithic (c.4000 – 2200BC)

From around 4000BC there were slow changes to life across much of Britain. Although the hunter-gatherer lifestyle seems to have continued, there is also evidence of a more settled way life that suggests a move towards a society based around agrarianism. Farmers started to domesticate animals and soon moved on to planting crops. But this transition to farming from hunting was a slow process and, until the first crude farming techniques could supply the main source of food, the sea in particular remained a vital source of nourishment.

Environmental studies show that the slow growth of farming was accompanied by an increase in forest clearance, to allow space for animals to graze and crops to be planted. Unfortunately we know little about the settlements of the Neolithic period as few sites have been recognised within the county, with the exception of evidence of possible huts found at Belsay. People may have continued to move between different environments according to the season, perhaps leading their herds up to higher ground during the summer and coming down from the hills when the cold winter months arrived – a system of farming called transhumance that is thought to have continued throughout prehistory and into the medieval and post-medieval periods. One reason why Neolithic settlement remains in Northumberland may be so rare is that some, later, settlements of Bronze Age date appear to have been built over earlier Neolithic houses.

The most widespread remains of this period are the range of flint and stone tools which were used for cutting down trees, killing prey, preparing hides and meat, as well as for making other tools. Some objects may have had a spiritual significance and may have been deliberately buried as offerings. The importance of such objects is just one indication of the increasing time spent by Neolithic society on ritual activity and which is represented by a range of monuments: from burials in chambered stone mounds and the mysterious cup and ring marked rocks, to the ceremonial landscape of the Milfield Basin.

2.8.4 Bronze Age (c.2500 – 700BC)

The transitions of the late Neolithic and Bronze Age came in a period of sudden change. Evidence from pollen analysis shows that woodlands were disappearing and grassland and moorland was on the increase as farming became the predominant way of life. Much of the evidence for settlement and farming at this time comes from the Cheviots and North Pennines where the remains survive as upstanding earthworks: their fields are evident as stone-free areas amongst hundreds of clearance cairns and their settlements often survive nearby as groups of hut circles. This period is defined by the advent of metal working technologies used for the production of tools, weapons and jewellery. But while metalwork remains are comparatively rare, the archaeological record also includes new pottery types and evidence of new burial rites using pots to bury cremated remains, often in cists. These were then covered with burial mounds and hundreds of burial cairns and numerous cemeteries are known in Northumberland.

2.8.5 Iron Age (c.800BC – AD43)

Around 1000BC iron began to replace bronze as the material used to make tools and weapons, although the use of iron did not become common until about 500BC. The Bronze Age way of life is believed to have continued relatively unchanged into the Iron Age: farming cattle and sheep, raising crops, and using the natural resources of the coast. However, settlements began to change from being in open groups of hut circles to ones surrounded by banks, ditches or wooden palisades. At the same time the average sizes of settlements increased suggesting changes in social organisation.

In Northumberland these larger settlements are often sited on hill tops and defended by banks and ditches; and over 100 such sites are known in the county, the largest being at Yeavering Bell. The exact reasons for this shift in settlement are not known, but it may have been a response to external threat, or a show of strength by tribal chiefs, or due to the pressure of population growth combined with a deteriorating climate that put pressure on the resources people needed to live. Whatever the cause it suggests an increasing territorialism. Roman writers tell that the Northumberland area was controlled by a tribe they called the Brigantes and perhaps the Votadini, although the line dividing their territories is unknown. In a reversal of our understanding of the Neolithic and the Bronze Age one of the greatest gaps in

our knowledge of Iron Age people is where and how they dealt with their dead with only a few pieces of burnt bone having been found on one Iron Age site in Northumberland: at Alnham.

2.8.6 Roman (AD43 – 410)

The Romans invaded the south coast of Britain in AD43 and proceeded to conquer much of England over the next 30 years. They used not only force to achieve this but also established alliances with local tribes. In Northumberland, the Brigantes were initially friendly allies of Rome, but civil war within the local population led the Roman governor of Britain to establish direct rule over the North of England in the early AD70s. By AD81 Agricola had advanced the Roman northern frontier into Scotland, only to withdraw it south again by AD84 to a line between the rivers Tyne and Solway. This frontier was established along the line of the road later called the Stanegate, where a series of forts were built, including Corbridge and Vindolanda.

This frontier was later consolidated when Hadrian's Wall was built in the AD120s, spanning the country from Wallsend (Tyne and Wear) to Bowness on Solway (Cumbria). Even then this frontier was not stationary and, to the north of the Wall, the remains of a series of marching camps and roads record the progress into and retreat from Scotland, of Roman armies some 20 years later. The remains of 30 Roman forts and over 70 temporary camps survive in the county, from Chew Green on the Scottish border, to Whitley Castle in the North Pennines. These are linked by a series of roads, the line of some of which are still in use today, eg the Dere Street (A68) and the Stanegate.

For many of Northumberland's native people the Roman invasion and occupation may have had little impact on their way of life, especially as much of the county lay north of the Hadrianic frontier and was only inside the Roman Empire sporadically and for short periods of time. Yet Roman rule stimulated the local economy, the population increased and more land was brought into cultivation with the consequent clearance of natural woodland. Archaeological evidence has revealed over 300 native farmsteads and small settlements in the county – many in the area north of the Wall. Some of these settlements are similar in form to the earlier Iron Age farmsteads, sitting in networks of small fields, such as at Coldberry Hill, near Wooler. Other settlements, called vici, grew up around the Roman forts such as Carvoran, Halton Chesters, Vindolanda and Housesteads. Few of these towns would survive the Roman garrisons' withdrawal, but at Corbridge the town expanded over part of the fort.

The Romans brought with them a new belief system, including new gods and goddesses and built temples, such as the Mithraeum at Carrawburgh; but the natives continued to worship their own deities and shrines to some of them survive, for example that of Cocidius at Yardhope. Few burials of the native Britons have been found, but the Romans practised cremation and some of their cemeteries and memorials survive outside the Roman forts at High Rochester and Petty Knowes, Halton Chesters, Carvoran and Chesters. On a different scale was a large building that stood at Shorden Brae, near Corbridge, which may have been the tomb of an important Roman officer.

The final century of Roman rule in Britain was an increasingly unstable period. The Picts from northern Scotland raided England in the AD360s while similar attacks by other tribes took place across the European northern frontier of the Empire. Many forts were rebuilt and timber buildings replaced with more substantial stone ones. Eventually soldiers were taken away from their posts on Hadrian's Wall to fight in other parts of the Empire and the few that stayed, without any pay, may have deserted and settled down to become farmers.

2.8.7 Early Medieval (AD 410 – 1066)

The exact details of the end of Roman rule in Britain remain obscure and although the pattern of trade declined and coinage went out of use, people continued to make a living from farming. There is evidence that people continued to live in the Roman forts along Hadrian's Wall and they were perhaps taken over by local warlords, for example Brigomaglos's gravestone at Vindolanda. Environmental evidence shows that the area of Hadrian's Wall itself was abandoned allowing woodland to regenerate, but this may not have applied everywhere. Elsewhere environment evidence shows that the landscape remained at least

partly open through to the seventh and eighth centuries AD when renewed periods of forest clearance are recorded.

After the Roman withdrawal the local British tribes of Northumberland were threatened by a new power, the Anglo-Saxons, who originally came from northern Germany and Denmark and settled in Britain from the mid-fifth century. Their influence spread quickly through the country and new and powerful kingdoms were formed which seem to have replaced the small local powers. Bernicia (north Durham, Northumberland and south-east Scotland) was one of the most important Saxon kingdoms. This was united with the kingdom of Deira to the south in AD600 to create the kingdom of Northumbria, which at its height stretched from the Forth to the Humber. Northumbria had palaces at Bamburgh, Yeavering and Milfield. Other settlements have been recorded in the north of the county at New Bewick, Thirlings, Milfield and Green Shiel on Holy Island, where the ruined stone buildings of a farmstead stand in the dunes.

By the late sixth century AD the population also began to convert to Christianity. By the mid-seventh to mid-eighth centuries, known as the 'Golden Age of Northumbria', monasteries were founded at Lindisfarne and Hexham and great works of art, such as the Lindisfarne Gospels, were being created.

In the late eighth century the Vikings raided the east coast and sacked the monastery at Lindisfarne, but there is generally little evidence of the Vikings in the county. Northumbria was subsumed into the greater English kingdom in the mid-tenth century.

2.8.8 Medieval (1066 – 1540)

After the Norman Conquest, Northumberland found itself again on the frontline, this time of the disputed border between England and Scotland. The Norman kings settled many important families in the North East to try and increase security in the region. These feudal barons were given estates in return for defending the Border against the Scots and by the mid-14th century the most powerful of these was the Percy Earl of Northumberland whose descendants (the Dukes of Northumberland) are still one of the largest landowners in the County today. Sixteen motte and bailey castles are known in the county, with a chain built along Tynedale and Redesdale, and others at Alnwick, Mitford, Morpeth and Wark. Many of these earthen castles were later altered into stone-built strongholds of which and there are 38 in the county, from Norham and Berwick in the north to Prudhoe in the south.

Although the medieval period is generally characterised as a period of unrest and warfare, there were periods of relative peace. From the mid-12th century several monasteries were established, for example Blanchland, Hexham, Lindisfarne and Newminster, near Morpeth, which acquired extensive grazing lands in the Cheviots, right up to the Scottish border. Population was also on the increase and settlement expanded high up some valleys. A number of royal hunting forests were created in the uplands, for example at Rothbury, Knarsdale, Cheviot, Kidland and Chatton, as well as smaller deer parks, for example Hulne Park, Alnwick and Warkworth.

Many of the county's villages and towns have their origins in this period, and in much of Northumberland nucleated settlements are common; the exception are the western uplands where seasonal settlements like shielings and sheep and cattle stations (bercaries and vaccaries) are much more normal. Settlements such as Alnwick, Morpeth, Hexham and Berwick began to grow, boosted by the trade from markets and fairs. Surrounding these and smaller settlements, were fields that were ploughed in strips creating a pattern of ridge and furrow that still survives under pasture in many parts of the county, eg Edlingham and Matfen.

At the end of the 13th century war with Scotland broke out and lasted on and off for more than three centuries, not coming to an end until the Battle of Flodden in 1513. The 14th century also saw deterioration of the climate and the arrival of the Black Death, which wiped out large numbers of the population (up to 25%). These factors, together with the threat from Scotland fuelled a general retreat of settlement and farming from the hills and led to the total desertion of some villages. However, farming revived in the 15th century and previously deserted

villages were rebuilt while fields expanded into areas which had not previously been used for growing crops.

Defences were strengthened at castles and a new type of stone building, the tower house, emerged in many Northumberland villages. The tower house was often part of the lord's residence, either standing separately or part of the main hall, but in some places they were also provided for the local priest, eg at Corbridge, Elsdon and Ponteland. The only other stone building in most villages was likely to be the church. Many industries that were to become of great importance to the Northumberland economy have their origins at this time, such as lead mining in South Tynedale and coal mining at Wylam.

2.8.9 Post-Medieval (1540-1899)

Although the Battle of Flodden (1513) and gradually improving relations in the late 16th century eventually brought an end to warfare between England and Scotland, another form of violence came from the local families or clans of North Tynedale, Redesdale and on the Scottish side of the border in Liddesdale. Known as 'moss troopers', their raids and revenge tactics included blackmail, kidnapping and reiving (stealing livestock). The moss troopers, or border reivers', heyday was in the 16th century and was only reluctantly given up in the 17th century after the Union of the Crowns (1603). The threat of these raids gave rise to another new building type, the bastle – a defensible building with very thick stone walls and accommodation for animals on the ground floor and people on the first. Nearly 300 bastles have been recorded so far in Northumberland, giving a good indication of the danger people faced.

Elsewhere, the medieval town walls in Berwick were replaced by new fortifications in the 16th century. Northumberland again faced occupation by Scottish troops in the 17th century Civil War and also came under threat during the Jacobite rebellions of 1715 and 1745. This led to the first modern army barracks being built in the region in 1717 in Berwick, then the most important military outpost north of London and south of Edinburgh.

With more peaceable times of the mid and late 18th centuries, landowners looked to develop their homes into more luxurious country houses opening up previously defensive buildings or abandoning them altogether to build new mansions, around which they sought to create landscaped parks. Over 100 country houses were built in the county by its traditional landowners along with over 50 landscaped parks. Later examples were built by those who had made their fortunes in commerce and industry on Tyneside, such as Lord Armstrong's Cragside at Rothbury.

The creation of these new 'great-estates' was accompanied by changes to the organisation of farming as some landowners reorganised open fields by evicting tenants, enclosing fields and converting arable land to intensive pasture. A good example of this were the 'improvements' made by the Delavals on their Hartley and Seaton Delaval estates in the late 16th century. The process of enclosure by agreement accelerated rapidly during the 17th and early 18th century seeing the old systems of cultivation and landholding removed in a very short period of time (Butlin 1973, 136). Farming was transformed in the later 18th century, particularly in Glendale and the coastal plain, as large areas of ground were enclosed by hedges and 'alternate husbandry' was adopted to increase productivity. Plantations were established on poorer land and new farmsteads were built (Grundy *et al* 1992, 84). Upland areas also saw transformation in the 18th and 19th centuries when huge areas were enclosed by Acts of Parliament. Sheep farming dominated the upland farming economy although the practice of transhumance and the use of summer shielings had by this time died out and permanent farms were developed instead. In the 19th century some parts of the uplands were further re-developed as grouse moor and this practice continues to the present time.

The post-medieval period, and especially the 19th century, also witnessed the development and growth of industries, and the North East is especially linked with coal mining. Pits were sunk across the county, from Ford in the north to Wylam in the south, with the main concentration growing up in the county's south-east. More than 300 coal mining sites are known in the county and over 70 lead mining sites. Other industries flourished for short periods, such as the iron works at Ridsdale and Bellingham. Communication routes were slow

to improve and it was not until the 18th and 19th centuries that some new roads were built and others were repaired and made stronger. The railway network developed from the early 19th century carrying both goods and passengers.

The population of Northumberland increased in the 18th and 19th centuries, doubling from around 100,000 in 1801 to nearly 200,000 by 1891 (*A Vision of Britain Through Time*). This is reflected in the nature of the county's towns and villages although they remain largely pre-industrial in character. The demand for clean water from Tyneside meant that water companies created reservoirs in the higher reaches of rivers like Whittle Dean, Hallington and Catcleugh. Northumberland was created as an administrative county in 1889 following the abolition of the ancient county by the Local Government Act of 1888.

2.8.10 Modern (1900 – present)

The industrial economy of south-east Northumberland reached its 'golden-age' in the early 20th century and the suburbs of the county's towns began to grow, as did villages within easy commuting distance of Tyneside. The economy was still dominated by the coal industry, the output of which peaked just before the First World War; in 1914 there were over 130 collieries in Northumberland. However, during the war pits lost many of their lucrative export markets and the industry began its long decline. The last deep pit (Ellington) closed in 2005 with deep mining being replaced in the later 20th and 21st centuries by vast open-cast extraction techniques. But although high-tech industries have replaced traditional employment in these areas, Northumberland remains a predominantly agricultural county.

Many of the records of this period in the HER are connected with the First and Second World Wars. More than 280 pillboxes and over 120 other defensive structures have been identified as well as some 40 war memorials. The county is also now home to one of the Ministry of Defence's training areas at Otterburn.

The modern county of Northumberland was created in 1974 when Administrative Counties were abolished by the Local Government Act of 1972 and new Metropolitan and Non Metropolitan Counties came into existence. In 2009 Northumberland will again be reformed, this time as a unitary authority.