



LANDSCAPE CHARACTER ASSESSMENT REVIEW

CAITHNESS AND SUTHERLAND LANDSCAPE EVOLUTION AND INFLUENCES



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Title page photographs, clockwise from top left

The seacliffs at Clo Mor, Cape Wrath near Durness ©Lorne Gill/NatureScot

Lazy beds and heather with a view towards Suilven, Stac Pollaidh, Cul Mor, Cul Beag and Ben Mor Coigach from Achnahaird Bay. ©Lorne Gill/NatureScot

View south over Ledmore wood and the inner Dornoch Firth. ©Jenny Rees/NatureScot.

Bog pools at The Flows NNR, Forsinard, Caithness. ©Lorne Gill/NatureScot

This document provides information on how the landscape of the local authority area has evolved. It complements the Landscape Character Type descriptions of the 2019 dataset.

The original character assessment reports, part of a series of 30, mostly for a local authority area, included a “Background Chapter” on the formation of the landscape. These documents have been revised because feedback said they are useful, despite the fact that other sources of information are now readily available on the internet, unlike in the 1990’s when the first versions were produced.

The content of the chapters varied considerably between the reports, and it has been restructured into a more standard format: Introduction, Physical Influences and Human Influences for all areas; and Cultural Influences sections for the majority. Some content variation still remains as the documents have been revised rather than rewritten,

The information has been updated with input from the relevant Local Authorities. The historic and cultural aspects have been reviewed and updated by Historic Environment Scotland. Gaps in information have been filled where possible. Some reports have been combined where original LCA area coverage was very small.

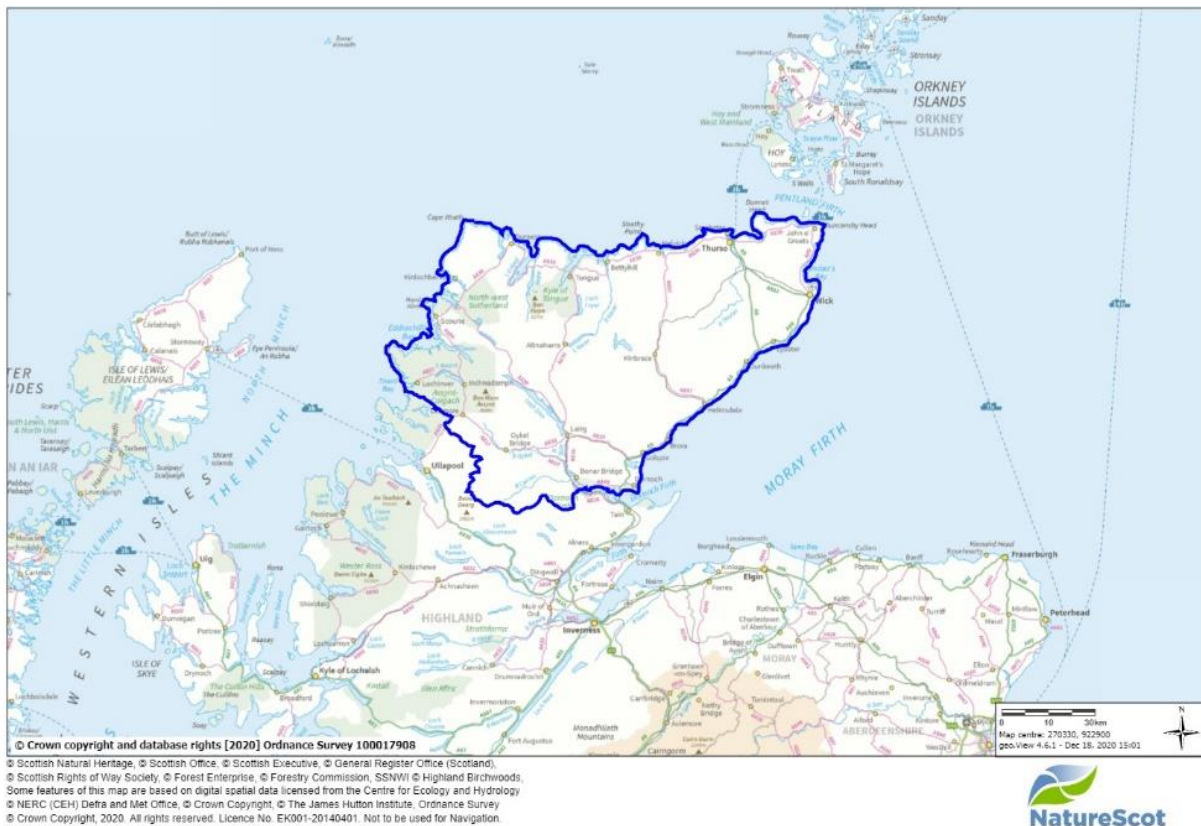
The new documents include photographs. They do not include the maps or sketches from the original LCAs, but these are still available from the [NatureScot website](#). Additional information can be obtained from the websites of;

- [British Geological Survey](#) www.bgs.ac.uk
- [Historic Environment Scotland](#) (Historic Land use Assessment, Gardens and Designed Landscapes, historic features and their designations, etc). www.historicenvironment.scot/
- NatureScot website especially [Landforms and Geology](#) (more specifically the “Landscape Fashioned by Geology” series) and [About Scotland’s Landscapes](#) soils; wild land; landscape character; designations etc.) www.nature.scot.
- The relevant local authority, which will have information on landscape policies, etc.

The content of this document was drawn from the background chapter information in “NatureScot Review 103 – Caithness and Sutherland Landscape Character Assessment 1998, *Caroline Stanton*.”

If you have any comments, please email LCA_REVIEW@nature.scot

1. INTRODUCTION



The area covered by this report

Caithness and Sutherland are regions lying in the extreme north of the Scottish mainland, within The Highland Council area, which cover a vast area. They extend along the northern coast of Cape Wrath to John O’Groats, down to the Dornoch Firth in the east and Lochinver in the west. This northerly situation strongly affects the distinct character of the area, most obviously through its culture and the unique climate and light conditions.

Caithness and Sutherland is a large geographical area stretching from east to west across the north of the Highland Council area. Caithness refers to the top easterly corner and Sutherland wraps around it, containing a small part of the east coast south of Caithness, including the towns of Helmsdale and Dornoch. Sutherland contains the Dornoch Firth and Loch Fleet, deep sea lochs. The remote northwest point, Cape Wrath is one of the most remote places in mainland Britain.

The landscapes of Caithness and Sutherland have been defined by both physical and human influences. The underlying geology and topography of the region has been most intensely changed by the scouring of the vast ice sheets during the glacial period. Humans moved in as the glaciers retreated and continued the modification of the landscape with agriculture, quarrying and building.

Together, Caithness and Sutherland form an apparently simple landscape made up of different landscapes which gradually blend together over great distances, with wide open spaces and

vast skies. There are strongly marked contrasts between inland and coastal areas, that of the north, west and eastern parts, the variation between the scales of the landscapes, and whether they are inhabited or remote lands. These physical contrasts between the large areas of blanket peat throughout the regions, where human habitation has rarely been feasible, and the areas more suitable for agriculture around the straths, glens and coasts, have been influential on human activity throughout these landscapes. Where landmarks do exist, such as the mountains of Ben Hope and Ben More Assynt, their impact is invariably significant, despite their scale, ranging from that of a loch, to a large estate house, settlement or the vast towering mass of the isolated mountains

This large area has an extremely low population density which is concentrated primarily at the coast and in major glens and straths. Settlement has been concentrated along the coasts and straths since the earliest interaction of humans with these landscapes. This creates a strong sense of remoteness throughout much of the area, especially the interior and north-west.

The largest towns are Thurso (population of 7850) and Wick (6798). In 2014 the population was just over 39,700, but projections are suggesting a population decline of between 14% and 21% over the next 20 to 30 years.

The 'Caith' element of Caithness comes from the name of a Pictish tribe known as the Cat or Catt people, or Catti. The '-ness' element comes from Old Norse and means "headland". The Norse called the area Katanes ("headland of the Catt people"), and over time this became Caithness. The Gaelic name for Caithness, Gallaibh, means "among the strangers" (the Norse). The Catti are represented in the Gaelic name for eastern Sutherland, Cataibh, and the old Gaelic name for Shetland, Innse Chat.

2. PHYSICAL INFLUENCES

Geology and Landform

At its broadest level, the Caithness and Sutherland landform seems fairly simple – distinctive features separated by large areas of open ground which enables the relative differences between landforms to be clearly seen and compared. Within the large tracts of open land, several prominent isolated hills and mountains rise up in contrast to the fairly flat surroundings. These hills and mountains act as landmarks, as their profiles tend to be distinctive and individual. They have acted as landmarks since the earliest human interaction with the region as demonstrated by the number of cairns and standing stones which are built either on or in reference to these natural landmarks.

In the west, the Assynt mountains dominate the skyline. These are formed by outcrops of Torridonian sandstone with caps of Cambrian quartzite ascending high above a platform of older Lewisian gneiss. The gentle inclination of strata, and many joints and faults within the bedrock, have formed some impressive buttresses, vertical faces and ridges, often making the mountain profiles vary in appearance quite considerably from one side to another. The denudation of relict mountains of has formed memorable silhouettes such as that of Suilven and Arkle. Both sandstone, these stand prouder than their unexceptional height due to the surrounding undulating cnoc and lochan landscape, formed on Lewisian gneiss, which they tower above.



Canisp, Suilven and Cul Mor from near Lochinver ©Lorne Gill/NatureScot

The simple, wide expanse of the Sutherland and West Caithness interior mainly corresponds to a fairly even eroded and weathered surface of Moine schists. Within the interior of Sutherland, a number of distinctive peaks with smooth convex curves rise out of the moorland. These also represent the outcrop of harder rocks, such as pelitic schists or syenite, and include the ‘Queen of the Scottish Mountains’ - Ben Loyal.

A few hills also appear as dominant foci in Caithness, typically comprising outcrops of harder conglomerates within part of a basin of Old Red Sandstone. Although these hills, such as Morvern, Ben Freiceadain and Ben Dorrey, are much lower than their western counterparts, they also act as landmarks, standing out all the more for being within such open landscapes. Outcrops of Cambrian limestone along the thrust fault at Durness and Inchnadamph have given rise to cave systems and identifiable limestone vegetation.

The wide expanse of the Caithness and Sutherland landscape is occasionally divided by straths typically containing wide, meandering rivers following along the path of softer or eroded rocks. These straths have provided suitable landscapes for agriculture and human occupation throughout the history of human interaction in the region.

The local character of the Caithness and Sutherland coast is typically determined by the nature of both the land and sea, influenced by the age, hardness and dip of the rock, and the vigour and nature of sea currents. Some of these characteristics are more obvious than others, for example cross currents are indicated by long-shore drift leading to the accumulation of sand up against obstructions, and rock bedding planes are displayed upon exposed cliff faces.

Many different features influence the character of the coast. These range from enormous, towering cliffs to wide, sandy bays and raised beach platforms, and from extensive dunes and links, to rocky, interlocking coasts with a scattering of islands. This diverse nature of the physical landscape is reflected in the differing uses that people have made of the coast over time, from sheltering in caves, to building settlements close to the natural resources of the sea, and building harbours to fish and trade from.

The character of the land/sea edge differs between the west, north and eastern coasts. The land and sea tend to be closely interlocked on the west, on account of the undulating character of the landform; this creates a multitude of different spaces of varying scale, from exposed promontories which extend out into the open sea, to long, steep-sided loch shores and semi-enclosed, sheltered bays.

The northern coast of Caithness and Sutherland, in contrast to the west, tends to be noted for its high cliffs which tower above rough seas. The sea cliffs reach to tremendous heights, including the highest on the British mainland, reaching 920 feet near Cape Wrath. Beaches are often located within the inlets, where a strath or glen intercepts the coastal cliff edge. The beaches occur at regular intervals, interspersed with headlands. Caves along this coast, such as Smoo Cave near Durness, have provided evidence of human occupation from the Mesolithic period onwards, demonstrating human presence along this coastline at a very early period.

The eastern coast of Sutherland tends to be associated with long stretches of sand, dunes, links and raised beaches and there are several natural harbours. There is a level shelf which runs along much of Sutherland's eastern edge, created by a coastal plain of Mesozoic sedimentary rocks, separated from the neighbouring hills by a marked fault line. This platform also extends into many of the raised beaches which formed as a result of land rebounding from the weight of glaciers following the Ice Age.



Am Buachaille, Cape Wrath © Sue Scott/NatureScot

To the south, Sutherland is bounded by the Dornoch Firth, the most northerly of the series of firths which penetrate the east Scottish coast. This contains a narrow stretch of sea which is sandwiched between opposite land masses - its tidal flats are particularly favoured by wading birds.

Climate and weather

The west of Sutherland is subject to a series of Atlantic depressions, the uplifting of moist air over the landform causing high levels of relief rainfall. The west is also subject to the moderating influence of the North Atlantic Drift travelling up the coast, and these wet and mild conditions are partly responsible for the extensive coverage of blanket bog in these parts, dominated by a cover of wet, spongy *Sphagnum* mosses. Along the length of Sutherland's east coast there is a fairly dry and sheltered climate which has made areas along this coast attractive for settlement throughout history. The beaches within Caithness and Sutherland tend to be backed by cliffs, creating sun traps and a sheltered and warm microclimate.

Daylight hours are limited in winter, whilst there is almost continual light in the north at the summer solstice. Winter brings bitterly cold temperatures and frequent covers of snow.

Future Climate change

It is likely that anthropological climate change will have a significant effect across this area. Summers will probably become drier, which may exacerbate moorland fires in the area. This has been an increasing issue in recent years. There is also likely to be an increase in storms which could increase surface erosion due to heavy rainfall events. Lower lying coast settlements may be at risk from coastal flooding with an increase in storm surges as well as sea level rise.

As peat, which is extensive in the area, is largely made up of the remains of plants which are themselves made of carbon, it locks up large stores of carbon for thousands of years. This carbon would otherwise be released to the atmosphere and contribute to global warming. Disturbance of the peat surface, for example through drainage, burning or erosion, allows the peat to break down and carbon dioxide, a greenhouse gas, is given off to the atmosphere. Restoration of damaged peatland reduces carbon dioxide emissions. Good land management and activities such as drain blocking may be valuable in buffering them against the potential reduction in extent.

Soils

The Flow Country (derived from 'flowes', the Scots word for wet peat bog, itself derived from 'floi', Old Norse for wet or marshy) represents a complex ecosystem. It stretches over a significant part of Caithness and Sutherland and is part of the largest expanse of blanket bog in Europe, covering about 200,000 hectares of north-west Scotland. The area is covered with a deep mantle of peat containing, in its preserved pollen grains and other plant remains, a record of its development and controlling environment, beginning several thousand years ago. The surface is mostly a spongy, living layer of Sphagnum bog-moss which continually builds its level higher by upward growth but is in many places thrown into strange and distinctive patterns by swarms of small peaty pools.

Blanket bog forms in cool wet climates. Constant precipitation with low evaporation tends to leach porous terrain such as glacial till, leading to the production of an iron pan. This podsolisation further helps to waterlog the base-deficient leached soil and create conditions in which Sphagnum can begin to carpet the ground. The Sphagnum and relatively few other plant species that thrive in this habitat do not rot away after they die; rather, they build up and eventually form deep layers of peat. This area has bogs that have been forming over 10,000 years, since the last glaciers, and the peat is 10m thick in some areas. The boggy nature of this area of the region has limited much human interaction here as it has always been too wet for agricultural use. The peat has been utilized as the main source of fuel for settlements in the surrounding area in the past by hand-cutting blocks of peat. It was later also used for forestry but is now highly valued for the high amounts of carbon stored within and their impact on flood management.

Farming soils in straths such as Strath Halladale, Kildonan and Naver are not of high quality but areas of well-drained, sandy soil, and glacial till supporting forestry and small scale farming. On the east coast of Caithness and Sutherland there is more mixed agriculture, including some cereal farming, and forestry in coastal locations. The differing soil types and fertility of the landscapes in Caithness and Sutherland have contributed to the ways humans have interacted and modified the landscape over time. Areas of higher land with blanket peat, both in the flow country and outside the straths, are not suitable for cultivation and have therefore been used for hunting and grazing, the lower areas in the straths are more easily improved for cultivation. Continuous fertilisation by humans as part of agricultural practices over numerous generations has further improved those areas suitable for cultivation leading to the familiar patterns of improved land seen today along the course of straths and around the east coast. The varying soil types across the region combined with varying ease of access to resources and social history has also contributed to differences in land-use.



Bog pools at The Flows NNR, Forsinard © Lorne Gill/NatureScot

Hydrology

Caithness has fewer, smaller lochs than Sutherland. There are a great number of larger lochs, some mainly peaty but some with firmer, stony or sandy margins, and many streams of varying size and character drain the moorlands.

Inland lochs such as Loch Shin, Loch Hope and Loch Assynt are deep ribbon lochs dating from the last glacial period. Fjords, or sea lochs, such as Loch Eriboll and Loch a'Chairn Bhain were formed similarly before being flooded by rising sea levels.

In Caithness rivers flow north, such as the Rivers Naver, Strathy and Thurso; or south east such as the River Helmsdale and Dunbeath Water. Many of these are smaller rivers and some, like the Oykel, are Special Areas of Conservation due to their high water quality supporting salmon and fresh water pearl mussels. The majority of the rivers are immature as sea level rise has flooded the lower flood plains. They are often subject to spates in response to heavy rain. Thurso is noted as being at risk of flooding, especially when coupled with high tides or storm surges. The Dornoch Firth is an estuarine flooded river valley, the upper reaches containing salt marshes.

On the west of the rivers flow west and north, with the watershed being convoluted. The larger rivers all follow glacial valleys which have been continued to be eroded.

Water is an important feature of the landscapes of Caithness and Sutherland and it has influenced, and continues to influence, the physical form of the land. This influence is both by the natural action of water on the physical features of the landscape by erosion and flooding but also by human action.



The River Helmsdale in the Strath of Kildonan © Lorne Gill/NatureScot

The presence of prehistoric monuments such as cairns and stone settings in areas close to lochs, such as at Achavanich, suggests these features were important to the people who lived near to them. Humans have been making use of, and altering, natural water courses from the earliest times. These alterations include drainage to create useful agricultural land, irrigation, and to provide power, as demonstrated by the numerous mills present in Caithness and Sutherland. Early mill types such as the horizontal Click Mill at Clashnessie in Assynt have had a distinctive and significant influence on the landscape. Their impact on the landscape through the diversion of streams and the low mill buildings themselves can still be appreciated. Click Mills can make use of a low head and lesser volume of water due to their horizontal water wheels and are therefore particularly well suited to the topography of the open low landscapes of Caithness and Sutherland. They demonstrate human ingenuity in making use of the abundant natural resources and the spread of cultural influences in the region given their Norse origins.

3. HUMAN INFLUENCES

Caithness and Sutherland's landscapes have been shaped and influenced by the generations of people who have lived there in the past, and present-day inhabitants continue to mould the landscape. There is a huge variety of sites across both regions reflecting differences in geography, land-use and social history.

The peripheral location of Caithness and Sutherland on the very northern edge of mainland UK is challenging for human subsistence. This has demanded and resulted in an extremely determined and resourceful population both in the past, and in the present.

Evidence of past populations within Caithness and Sutherland appear throughout the region, although features are probably most obvious and accessible within the agricultural lands of Caithness and the wide straths of Sutherland.

The Caithness hills are frequently crowned with historic or pre-historic features, which adds to their distinctive quality and conveys a great sense of the past within the present. The straths have a distant history of occupation, and past peoples have left behind a range of features from burial cairns and brochs, to large estate and croft houses. The east coast has a long tradition of inhabitation, resulting many historic features, ranging from Neolithic cairns, to Iron Age brochs and medieval castles; these create dominant focal points and landmarks throughout the landscape.

The number of archaeological sites known today probably represents only a fraction of the sites which once existed, and many more remain yet to be discovered by further exploration. While some areas of both regions have been studied in some detail, such as the surveys undertaken at Dunbeath Strath in the 1980s and the survey of Assynt more recently, large areas of both regions still have much to be explored to thoroughly understand the human influence on the landscapes.

History

Palaeolithic and Mesolithic (2.5 million years ago – 4,000BC)

There is still a level of uncertainty about when people were first present on the land mass now known as Scotland. It is possible that inhabitation occurred in the Early Palaeolithic but any evidence for this is unlikely to have survived the major climatic events and geomorphological processes of the end of the Ice Age, the Last Glacial Maximum when Scotland was submerged beneath ice sheets. Based on evidence from elsewhere in Scotland it is possible that people were living in Caithness and Sutherland around 10,000 years ago: however, any evidence is likely to be very ephemeral and would be difficult to identify even if it survives. There are no known Palaeolithic sites with human occupation in the regions.

As with Palaeolithic sites, evidence for human occupation in the Mesolithic period is likely to have very low visibility. This was a period of humans living as nomadic hunter gatherers, migrating seasonally and likely using existing caves and rock-shelters or building only temporary shelters. Evidence of such temporary shelters is difficult to identify and most evidence of Mesolithic activity is found through the waste material they left behind, such as scatters of lithics or midden material. A small number of sites dating to the Mesolithic have

been found in both Caithness and Sutherland. At Smoo Cave, Durness, deposits on the floor of the cave show that at least three phases of human occupation took place, but the lowest levels of the midden may well date to the Mesolithic and would make this the furthest north that Mesolithic finds have been on the mainland. At Oliclett, near Loch of Yarrows in Caithness, a lithic scatter was revealed during forestry ploughing; over 12,000 lithic artefacts, mostly of flint and quartzite were recovered and the artefacts suggest that this was a flint knapping site. Other lithic scatters have been found at Knockdee and Pullyhour near Halkirk in Caithness and at Baile Mhargaithe, near Bettyhill in Sutherland. Recent works to upgrade the A9 at Berriedale Braes in Caithness included archaeological excavations which identified a possible seasonal camp dating to the Mesolithic. Along with evidence of small shelters and fires, more than 10,000 flint artefacts were recovered. These sites demonstrate that during the Mesolithic period, people were moving through the landscapes of Caithness and Sutherland utilising the natural resources around them.

Neolithic (4,000-2,500BC)

The Neolithic period is typically characterised as the period when the beginnings of agriculture are introduced to Scotland with potentially more permanent settlement taking place. This new way of living spread slowly from Europe along with new types of stone tools, pottery and domesticated animals and crops. The temperatures were slightly warmer than today and favourable for agriculture. The great expanses of blanket bog in the Flow Country were already well advanced by this point and unsuitable for cultivation or grazing, it is likely therefore that such activities were located in the more favourable areas around the east coast and along the straths and glens. It is possible that Neolithic people were not completely sedentary but semi-nomadic, exploiting both natural and domesticated resources with a mix of farming and hunting, moving around the landscape exploiting different resources at different times of the year.

Evidence of settlement in this period is sparse in Caithness and Sutherland, there are no known domestic dwelling sites. There is evidence of human activity within the caves at Creag nan Uamh, near Inchnadamph, in Assynt dating to this period but no evidence of Neolithic domestic structures.

Funerary cairns are the most numerous and representative site dating to the Neolithic in Caithness and Sutherland; both round and long cairns are found throughout the landscape of both regions. Both round cairns and long cairns of this period are chambered tombs, containing chambers entered through a low passage into which multiple burials were placed. Many of the long cairns have been formed by incorporating one or more earlier round cairns within the body of the long cairn, and complicated horns and forecourts demonstrate a complexity of architecture. The cairns may demonstrate an element of competitive aggrandisement between groups of people, but certainly they demonstrate a period where people have the capacity to modify the landscape rather than simply using the land for survival.



Inchnadamph, Sutherland ©Nature/Scot



Camster Cairns near Watten, Caithness. ©Lorne Gill/NatureScot

Neolithic cairns in the regions are often found in groups/concentrations, for example there are several long cairns and round cairns in the area around Loch of Yarrows, the long cairn and round cairn known as the Grey Cairns of Camster, the group of round and long cairns around Sordale and Stemster Hills and the group of long and round cairns at Cnoc Freiceadean near Dounreay in Caithness. In Sutherland similar groupings of long and round cairns can be found in the Strath of Kildonan, Strathnaver, along the River Shin and at Dornoch Firth. These impressive funerary monuments are often found in prominent positions but in close proximity to and visible from areas of good agricultural land where settlement is likely to have been located. They also show a tendency to be located with reference to the water features of the regions, along the rivers and near to lochs as at Loch of Yarrows, acknowledging or perhaps enhancing the importance of these features in the landscape.

Bronze Age (2,500 – 800BC)

During the Bronze Age the climate changed from a likely pattern of long warm summers and short intense winters to a pattern of cooler summers and longer wetter winters. The majority of Scotland sees a spread of managed pasture and arable at the expense of woodland followed by a gradual retreat in the face of expanding acidification and peat cover. Blanket peat began to form in upland areas and cultivation for arable farming was only possible in lower lying areas with higher areas being used for grazing and hunting.

There is considerably more evidence for domestic settlement in both Caithness and Sutherland during this period. Hut circles are the most prevalent domestic site type, found widely across Scotland in this period. In Sutherland hut circles often occur in larger groups of a dozen or more. The standard form of hut circle is circular or oval with an internal diameter of between 5-12 metres and a single entrance aligned to the south or east. No evidence of defence by enclosure from either wild animals or aggressive neighbours has been identified around hut circle sites. Clusters of hut circles, such as those in Sutherland, may represent a more sedentary long-term settlement within the landscape by groups or they may show episodic occupation, with groups returning to the same area repeatedly over time. The associated field systems of the Bronze Age are often untidy and haphazard, sometimes recognisable by the clearance cairns adjacent to them and showing as improved areas of grassland. An important study of Bronze Age settlement was carried out at Lairg in Sutherland and combined archaeological fieldwork with soil profiling and other scientific methods of investigation. The project found evidence of intensive use of the site, of houses built on farmland, being flattened and returned to farmland and then reclaimed as a house site before being ploughed over again, along with field edge and clearance cairns, both simple and complex burial sites, and burnt mounds. The pollen and soil evidence suggested that while evidence for settlement on the site ended by 1000BC, the land was still being intensively farmed until around 500-1000AD when blanket bog took over.

Both Caithness and Sutherland have very high concentrations of burnt mounds. These sites consist of mounds of heat shattered stones and charcoal, typically crescent-shaped with an adjacent hearth and trough. Burnt mounds are always found in close proximity to water and it is assumed that the stones were used to heat water – the stones are typically shattered from the heat and the crescent shape of the mound is formed by the up-cast of the used stones. There is still much debate as to what the overall purpose of burnt mounds was, perhaps for

cooking or saunas; however, they provide ample evidence of Bronze Age people using the natural resources of this landscape.

Funerary cairns continued to be built into the Bronze Age, however the style and form of the cairns changed significantly. Rather than multiple burials within large chambered cairns, the practice of individual burials, often with grave goods, within stone boxes known as cists became prevalent. Round cairns were then sometimes raised over the cist burial without passages or chambers. These cairns are sometimes located close to earlier funerary monuments such as the cairn in Dunbeath Strath in close proximity to a Neolithic long cairn and round cairn.

An unusual type of monument which seems to be specific to Caithness and Sutherland in Scotland are the Stone Rows. These unusual monuments consist of a number of small stones set upright in the ground in rows. Good examples can be found at the Hill o' Many Stanes at Mid Clyth near Camster where there are about 200 stones in at least 22 rows and Garrywhin near Loch Watenan in Caithness and at Kinbrace and Loch Rimsdale in Sutherland. It is not clear what the function of these sites was, however some people consider that they may have had an astronomical purpose. A further unusual stone setting can be found at Achavanich, near Loch Stemster in Caithness where a u-shaped stone setting can be found, aligned roughly north-north-west/south-south-east and with its open end to the south-south-east.

Iron Age (800BC – 400AD)

This period is characterised by more building in stone as brochs and wags (see next paragraph) become prevalent in the Caithness and Sutherland landscapes. There are large numbers of brochs, large double walled stone towers, which often had surrounding settlements and external fortifications. The exact functions of these stone towers are not understood, they may have been defensive; however what is clear is that they were located to be highly visible in the landscape and to have extensive views from the sites themselves. They are an impressive display of power, given their size and the time and effort it would have taken to construct them, and they probably demonstrate control of an area. Brochs often have intervisibility with one another, especially in the open landscapes of Caithness and these visual relationships may reflect early land divisions and social organisation. Good examples of brochs with upstanding remains where both their monumental physical presence can be experienced and their relationships with the landscape include the brochs at Dunbeath and Achvarasdal in Caithness and Clachtoll and Carn Liath near Golspie in Sutherland. Many more appear as large grassed over mounds and were the focus for folk belief from at least the Norse period onwards.

Wags are another form of stone-built dwelling, which seem to be peculiar to this region of Scotland. They are sub-rectangular in form and have some similarities to brochs given the nature of their stone built structures. The best example of the type is the Wag of Forse, near Latheron, which has a complex occupation history, starting as a dun which was succeeded and partially destroyed by a series of wags. The close relationship to brochs is evident here from the galleried walls and staircase in one of the brochs.

Other defensive types of site are also more common in the Iron Age, including duns and hillforts such as the forts on Ben Freiceadean and at Garrywhin in Caithness and Ben Giam

Beg the highest hillfort in Scotland and Duchary Rock fort, Strath Brora in Sutherland. These sites are also located on highly visible points in the landscape and have long distance views from the sites. As with the brochs, it seems likely that they were located to dominate and control the surrounding landscapes.

While it may be that these sites demonstrate an increased pressure on land during this period, it is also possible that this shift in construction is a result of social changes and more formalised land divisions and organisation. They are not necessarily indicative of increased aggression between groups of people, but they do demonstrate a shift in the way people were interacting with the landscape.

Picts (c300 – 900AD)

Debate surrounds the dating for the commencement of a 'Pictish period' and the origins of the Picts in the later Iron Age. The Picts are, however, accepted to be the indigenous Iron Age tribes given a new name, derived from the Roman descriptions of them as Picti (painted people).

The most archaeologically visible aspect of Pictish culture is the carved symbol stone. Several good examples of carved Pictish stones have been found in Caithness and Sutherland although most are not now in their original locations. Pictish cross slabs were found at Skinnet Chapel near Halkirk and at Reay parish church in Caithness. Pictish carved stones with ornate rectangles, crescent and V-rod, and mirror and flower symbols were found at Clynekirkton and Craigton (although the latter may be an antiquarian replica rather than Pictish) and a further stone with a triple disc and Pictish beast was found at St Ninian's Chapel, Navidale in Sutherland. These three symbol stones can all now be found in the collection at Dunrobin Castle.

Little is known of Pictish religion, rituals, or burials, which appear to be within long and short cists.

Norse

The influence of the Norse on Caithness and Sutherland was extensive and persists to today. The Norse were seafarers and farmers - they invaded and they settled. From a Norwegian perspective, the lands of Caithness and Sutherland would have been temptingly close to their base at Orkney. Both areas were suitable for their economy of mixed farming and exploitation of maritime resources.

They stayed in the regions and took control, be it forcibly or with consent, and they brought their language. The origins of many current place names are derived from Old Norse and either describe the location or indicate the status and size of the settlement. The easily recognised elements "ster", "wick", "dale", mean farm or small settlement, bay and valley respectively.

It appears that Norse settlers arrived in the regions in around the 10th Century and stayed for around 300 years. Thurso was an important Norse port, whose name derives from the Old Norse for Thor's River and would have been an ideal trading port between the mainland, Orkney and Norway. Wick was also an important Norse settlement and it is thought that the Castle of Old Wick may have been built in around 1160 by Harald Maddadson, Earl of Caithness and Orkney. If so, this would make the castle one of the earliest and best preserved

castles in Scotland. It would coincide with the construction of Cubbie Row Castle on Wyre in Orkney which was built in 1145 by Kolbein Hruga who was of Norse origin.

A Norse settlement site was investigated at Freswick Bay in the 1930s and 40s and again in the late 1970s and early 80s. Erosion caused by sand extraction in the 1930s revealed middens prompting Alexander Curle to undertake an excavation which identified the remains of one or possibly two substantial Norse houses, followed by two successive Norse complexes of less substantial construction. Childe's excavations confirmed this sequence and revealed earlier Iron Age occupation at the site. Work in the 1970s and 80s focused on the middens and revealed that the occupant's economy was largely based on fishing (cod, ling and saithe) as well as farming cattle and sheep, crops including barley and oats and catching seabirds from the nearby cliffs and their eggs. Simple hand-made pottery was recovered along with steatite vessels and combs which may have been imported from Scandinavia. The site here appears to date from the 11th Century onwards. There is a possibility that Freswick may be linked with "Thrasvick" of the early 13th Century Orkneyinga Saga.

However, the majority of our physical evidence for the Norse occupation comes from artefacts and burial sites. At Balnakeil in Sutherland a Norse grave of a single individual was found with grave goods including a possible spear, sword and scabbard, bronze and iron objects, an antler comb and 14 gaming pieces. At Reay in Caithness around five Norse burials have been discovered and Norse runic inscriptions were discovered on two stones at St Peter's Church, Thurso with references to Ingulf and Gunnhildr.

Medieval (1,000-1,600AD)

The later medieval period from about 1200 to 1550AD was dominated by the attempts of the kings of Scotland to establish their power over the Highlands and consequent conflicts with the Earldom of Orkney in Caithness and Sutherland, as well as the Lordship of the Isles in the west. In an attempt to divide and rule, chief was set against chief, and the insecurity of the period encouraged the growth of the clan system, which saw land being offered to local people in return for allegiance to the clan chief.

The most obvious surviving features in the landscape of Caithness and Sutherland from this time include the proliferation of castles which were built by feuding clan chiefs and by Anglo-Norman lords such as the De Morays in Sutherland and the St. Clairs (Sinclairs) in Caithness who were given lands in the region to try and combat the strength of the clan chiefs. Some of the best examples of castles from this period include Girnigoe and Sinclair near Wick and Forse castle in Caithness, and Ardvreck and Borge castles in Sutherland.

Less obvious are the settlements of the ordinary people during this period. Little is known about medieval rural settlement, however, field surveys carried out in Caithness and Sutherland in the 1970s identified three types of settlements in the regions. These comprised surviving remains of numerous shielings near streams in large mounds of debris suggesting long periods of use; individual farmsteads characterised by compartmentalised long-houses, some with bow-shaped walls perhaps indicating Norse influence, associated with smaller rectangular houses; and small rectilinear and sub-rectilinear houses concentrated in large numbers and associated with large enclosures (the latter found only in south Sutherland at Dalchork). These settlements demonstrate that people were still living and using the same areas of the landscape and utilising the same natural resources as in previous periods.

Farming the fertile lowland areas in the straths and along the coasts, and grazing and hunting in the less fertile, peat and heather covered upland moorlands. It seems likely that many of the deserted villages of the 18th and 19th Centuries are located over earlier sites.

The runrig land tenure system was developed through the middle ages and was exploited under later clan systems. In this system land was divided into townships comprising an area of cultivatable “in-bye” land and larger area of pasture and rough grazing. The in-bye was divided into strips/rigs which were periodically reassigned among the tenants of the township so that no individual had continuous use of the best land. The majority of townships were rented by a “tacksman” and sublet to the actual farming tenants, with some tacksmen having leases on several townships. The tacksmen were often related to his landlord and might represent a cadet branch of the family of the clan chief. The settlements identified in the field surveys of the 1970s demonstrate the surviving remains of this system within the landscape. The annual movement of cattle into the uplands and moorlands, along with most of the community, in the summer months was an essential part of this system.

From around 1600 this system gradually began to break down, and ended with the Battle of Culloden in 1746, after which the clans were disarmed and the land from rebel estates forfeited. As Clan chiefs had no further need for local people to fight on their behalf, they began to develop a relationship more akin to that of landlord and tenant, requiring the payment of rent. As much of the land within Caithness and Sutherland could only support marginal subsistence, a demand for rent was often the last straw. Food resources were also very scarce at this time, due to repeated crop failures and the demands of an expanding population. The cumulative effect of this was famine, most notably between 1780-1782 and 1802-1804.

The immense poverty forced large numbers of people to move away to the coastal lands and to other countries. Although this migration was encouraged by some landlords, others attempted to keep people on their land by providing imported grain and offering estate work such, as tree planting and dyke building. Landlords sought to retain a strong and ready workforce in case new economic opportunities arose. However, these attempts mainly failed.

19th Century

The arrival of many immigrants in coastal areas coincided with advances in fishing around the turn of the 19th Century, especially in the herring industry, often enabling these areas to accommodate the influx of incomers without too much strain. This period saw the rapid expansion of many harbours, particularly Pulteneytown in Wick. Until 1902 Pulteneytown was a separate area to Wick; the town was commissioned by Sir William Pulteney in the early 19th Century who commissioned Thomas Telford to design and supervise the creation of a major new herring fishing town and harbour at the estuary of the river Wick. To a lesser extent, Helmsdale, Dunbeath and Lochinver were also expanded.

The agricultural downturn continued through the beginning of the 19th Century, the landscape declining in both management and production. This meant that the ‘agricultural improvers’ who arrived in Caithness and East Sutherland at this time were typically welcomed, as they were seen to offer a way of escape. These people brought grand ideas of ‘progress’, citing contemporary economic theories which were frequently derived from the newly formed Highland and Agricultural Society. The application of these methods ended the traditional

runrig farming system and promoted the enclosure of fields and the introduction of rotational systems.



Lybster harbour, Caithness. ©Lorne Gill

This frequently required movement of the scattered rural population into new holdings, many of which were concentrated, creating villages and significant changes in a landscape which had stayed the same for generations. At this time people were encouraged to leave their crofts on the promise of a more prosperous and less vulnerable source of income within these settlements, particularly in the processing industries and mill. Although these pledges were sometimes aimed at moving people off the agricultural lands, they were also sometimes founded on good intentions to provide better living conditions for the rural population, who had been repeatedly subject to poverty at the hands of a severe and unpredictable climate. This was the case at Spinningdale, where a cotton mill and a new village were constructed by George Dempster, the owner of the Skibo estate, who championed provision of employment and poverty relief rather than clearance and sheep farming. Dempster recognised the hardships that ordinary people faced and froze rents until the cotton mill manufacturing could take off and people placed in their new homes in the village from surrounding areas. Ultimately the experiment failed as the mill did not make a profit; it was gutted by fire in 1806 and not rebuilt, it is now a scheduled monument.

The Cheviot breed of sheep was introduced to the region in 1806, annulling any good intentions by agricultural improvers towards the rural population. It had an immediate success and resulted in the expansion of extensive sheep farming (a rise from 5,000 sheep in 1808, to 240,000 in 1874 within Sutherland). This involved further systematic eviction of tenants to make way for sheep - most notably from the inland glens and straths. During 1813 and 1814, what is known as 'The Sutherland Clearances' took place throughout Strathnaver and

Kildonan, the evidence of which can still be seen today, with an abundance of abandoned and ruined settlements and fields. The Sutherland Estate (consisting of about two thirds of the county) had the largest scale clearances that occurred in the Highlands, much of this being carried out in 1812, 1814 and 1819-20. In this last period (the largest of the three listed) 1,068 families were evicted, representing an estimated 5,400 people. This population was provided with resettlement in coastal areas, with employment available in fishing or other industries.

Bettyhill at the north end of Strathnaver is one such resettlement village. The original village in this area was at Farr which is now a crofting settlement. During the clearances, between 1811 and 1821, hundreds of people were cleared from the strath and the village at Bettyhill was built to accommodate some of those cleared people. The village was intended as a fishing port to take advantage of the salmon in the River Naver. The category 'B' listed fishing station at the village is a reminder of this period.

Pulteneytown at Wick, mentioned above, was another new fishing port constructed at this time to take advantage of both the boom in herring and the newly displaced people. The modern village at Helmsdale was another village planned in 1814 to resettle communities from the surrounding straths, with the aim of creating a community who could live from fishing and farming. The abandoned village of Badbea near Berriedale, demonstrates the poor land that families evicted from their homes during the Clearances were expected to live on, squeezed between the sheep folds and the steep cliffs. However, many instead moved to farms in Caithness or left Scotland to emigrate to Canada, the US or Australia.

It was the villages produced by this policy that formed the last Gaelic speaking communities to be found on the east coast of Scotland, as discovered by Nancy Dorian in the early 1960s, and there are still some native speakers of the East Sutherland dialect of Gaelic in this area.

People continued to move. Despite the 19th Century herring boom, the expected long term expansion of local fishing never really materialised. Although there was some relief provided by the upsurge of industries such as Caithness flagstone and the wool boom between 1860 and 1880, the region's population continued to suffer from repeated crop failures, an expanding population, and the insufficiency of small, assigned, coastal crofts such as Badbea.

The large fortunes made by the sheep farms were not invested back into the land, and as a consequence the quality of grazing declined so that sheep numbers had to be reduced. This process was helped by large losses of stock during a series of severe winters, especially that of 1879-1880, and finally the collapse of agricultural prices at this time, particularly affecting wool. Most of the sheep grazers who had come to exploit the Caithness and Sutherland lands, now returned to the southern lowlands, leaving vast tracts of degraded grassland behind. Major landowners were affected - there were few people left willing to rent their land, and yet this had substantially reduced in value as a result of overgrazing. Crofting unrest was also rife during the 1880s, agitated by rent strikes and the 'Crofters War'.

The 'Clearances' did not really ease up until the Crofters' Holding Act of 1886, when crofters earned security of tenure. However, this did not apply to lost lands and, as in many parts of the Highlands, Caithness and Sutherland contains a multitude of abandoned croft houses, enclosures, ridge and furrow marks and old drainage channels testament to this period of time.

The sporting boom which began during the 1880s was greatly welcomed by most landlords - seen as an alternative to the difficulties of agriculture and crofting tenure. Many landlords

began to exploit river fishing, and extending deer forests and grazing into the old sheep walks. It is possible that this finally marked the end of agricultural activity and presence of people within the vast inland tracts of Caithness and Sutherland.



Lazy beds and heather with a view towards Suilven, Stac Pollaidh, Cul Mor, Cul Beag and Ben Mor Coigach from Achnahaird Bay. © Lorne Gill/NatureScot

Agriculture, as the main activity and employer in Caithness and Sutherland, has continued to decline throughout the 20th Century (from 33% to 8.3% between 1931 and 1981 in Caithness). This gap in employment was mainly filled by the growth of service industries, initially stimulated by greater demands for social provision at the beginning of the century. The concentration of the population along or near to the coast, mainly in the east, has generally been reinforced by the growth of these industries, as these tend to rely on the main access routes which run along this edge.

The north of Scotland was an area of strategic importance during the World Wars and this is represented in the landscape by a variety of structures relating to the wars, including pillboxes, coastal defences such as tank traps and occasional anti-aircraft batteries. The most visible evidence of the wartime impact on the landscape of the region are probably the sites of the Chain Home radar station network, the early warning radar stations built by the RAF to detect and track radar. It was part of the first early warning radar network in the world. Buildings relating to the network can still be seen at Tannach, and Hill of Ulbster, where 17 buildings relating to the network remain.

Railways

The Sutherland and Caithness Railway completed the railway line from Helmsdale to Wick and Thurso in 1874. This opened up the eastern part of Caithness and Sutherland with a route

to Inverness and beyond to the rest of Britain. The 1960's saw a number of smaller stations close along this line but many remain open. Initially the Dornoch Bridge was meant to allow the railway to travel across the firth as well, reducing the travel time considerably. However this failed to gain funding and the train journey is now significantly longer than by road.

According to oral tradition the first road builders in the area were Cromwell's soldiers who built the arched bridge at John O'Groats. In 1669, an act of parliament required all tenants and cotters to give six days labour on the roads to make them suitable for the horse and cart which improved many roads. Bridges are the most tangible remains of these, being built by skilled masons and in stone, whereas many roads were built with turf. Some of these are still visible in the landscape, but often replaced nearby with modern structures.

In the 18th and 19th Centuries investment into roads required a more professional approach. Telford and other road engineers produced the skeleton of the roads still used today.

Electricity and Forestry in the 20th Century

Although large scale economic change was delayed in the early years of this century by the two world wars, employment in Caithness and Sutherland gradually shifted towards a number of large capital projects, including power generation and forestry.

By 1947 there were plans for a hydroelectric distribution scheme throughout Sutherland, with Lairg and Invershin power stations, which are category 'B' listed, going into production in 1959. The Lairg dam is a good example of an integrated dam and power station and of the design synthesis between modernist and vernacular themes as developed by the North of Scotland Hydro Electric Board (NoSHEB). A high-quality design was considered important as the site is located opposite the village of Lairg and makes a significant contribution to the immediate landscape of the village and surrounding area. These were joined by smaller schemes such as Maldie, West Merkland and Loch Poll and micro run of river schemes on smaller rivers.

The demand for wood from the two world wars meant that plantations of quick growing conifers were planted across Britain to replace the woodlands cut down during those conflicts. The massive scale of coniferous tree planting in Sutherland took off around 1950, with the late Duke of Westminster launching a 1,215 hectare scheme at Loch More. Through projects of this sort approximately eight million trees had been planted in the region by the beginning of 1965. These were planted with consideration of timber production foremost and less concern for their impact on the landscape and local biodiversity. A number of these plantations were planted on peat.

The largest capital investment in Caithness was undoubtedly the development of Britain's first fast breeder nuclear power reactor at Dounreay, started in 1955. This required a large workforce (known locally as the 'atomics'), filled by both incomers and locals. The latter often left their rural properties, keen to move into the new houses built for the Dounreay employees; these were mainly constructed in Thurso, and trebled the size of the town in the process.

The late 20th Century saw a further change in direction. Dounreay is now being gradually decommissioned and commercial investment forestry was reduced by changes in tax incentives, markets and environmental concerns (although like hydroelectricity, it continues to support a small work force). Agricultural development was directed through the Common Agricultural Policy, and the fishing industry continued to decline as a result of dwindling fish

stocks. In the early 21st Century, wind energy and aquaculture began to grow, as did tourism and expansion of settlements (See land-use sections below).

Land cover

The wide expanse of the Sutherland and West Caithness interior consists of vast expanses of peatland which form the largest area of blanket bog in Europe. In Caithness this peatland makes up a significant majority of the land cover. The north east peninsula and coastline is grassland, much used for rough and improved grazing. There are areas of grassland reaching up into the straths, with woodland, both cultivated and natural. The wet and mild climatic conditions are partly responsible for this extensive coverage of blanket bog which is dominated by a cover of wet, spongy Sphagnum mosses.

Small patches of native broadleaved woodland occur in many of the straths, typically representing the remnants of a once much more extensive coverage. Where these woodlands remain, they provide local shelter and create a diversity of habitat which ranges from areas of towering, columnar trunks around estate buildings, to birch woodlands with lush mossy undercover. The Dornoch Firth, and inland along Loch Shin, has higher amounts of tree coverage and good examples of oakwoods (as at Ledmore and Kincardine) and pinewoods, (such as those at Migdale) found above the firth. Pine woods mixed with birch, rowan and willow can be found at Lairg, Gunns Wood and Ferry Wood.



Native birch woodland growing on the islands in Loch Beannach, Little Assynt estate ©Lorne Gill/NatureScot

Broadleaved woodland stretches along some parts of the west Sutherland coast, extending like fingers into a number of narrow, inland glens. The woodlands seem fused to their rough, sloped and rocky ground surface, and walking through these woodlands, one is typically faced by a screen of bent and gnarled tree trunks and branches. These coastal woodlands tend to

be particularly valued within Caithness and Sutherland for the sense of security and shelter they provide within an otherwise open and exposed region.

Caithness is known for its treeless landscapes and evidence gathered from the peat inland suggests much of this area has been limited in tree cover for at least 4000 years. To the west of the area wet heath moorland is more commonly found. Several planted conifer forests extend through parts of Caithness and Sutherland.

Montane and alpine habitats are more limited than further south in the Highlands and are mainly found to the north-west in Sutherland. Mountains such as Arkle, Foinaven and Ben Hope are exposed and have little vegetation.

Along the length of Sutherland's east coast, there is good agricultural land. The eastern coast of Sutherland includes long stretches of sand, dunes and links, and to the south are the tidal flats of the Dornoch Firth.

Land use

The main types of land use in Sutherland since the middle of the 20th Century have been agriculture, hydroelectricity, forestry, infrastructure construction, tourism and, latterly, wind energy. All of these activities have created long term change to the landscape.

Agriculture, as the main activity and employer in Caithness and Sutherland, declined throughout the 20th Century (from 33% to 8.3% between 1931 and 1981 in Caithness). This gap in employment has mainly been filled by the growth of service industries, initially stimulated by greater demands for social provision at the beginning of the century. The concentration of the population along or near to the coast has generally been reinforced by the growth of these industries, as these tend to be strongly tied to the main access routes which run along this edge.

Agriculture

Away from the more fertile land in the east of Caithness, the majority of the agricultural land in the area is given over to rough grazing with improved in-bye ground being restricted to parts of the coast and the straths. Very little land is under crops, with sheep dominating and only limited cattle numbers.

Crofting tenure predominates in the north and west co-existing with large sporting estates. Recent years have seen a reduction in the number of active crofters, with a few crofters running a large number of holdings in some areas.

Traditionally oats and barley were grown in the area and water mills, such as that at Golspie, bear witness to this local industry. Potatoes were also grown extensively in more fertile areas and the area was hit by potato blight in the 19th Century. Limited cereal and potato crops are still grown in the eastern areas.

The flood plains in some of the larger Straths, like Strath Oykel have extensive areas of grassland, and natural alder wood. These have been traditionally used for stock grazing and haymaking.

Tourism and recreation

The long beaches and links which run along many stretches of the east coast of Sutherland, and in a few places in Caithness, have been a particular focus for recreation during the last two centuries, as in many parts of east Scotland.



Coul Links ©Alexander MacDonald/NatureScot

They are especially valued for their golf courses and long open sandy beaches. This tradition of tourism, once mainly concentrated within a number of large hotels and guest houses, has tended to gradually shift towards the more dispersed caravan park, camp site and bed and breakfast provision of today, the scattered location and services for which impose their own distinct character along the length of the east coast.

The coastal settlements attract large numbers of visitors to the region during summer, often acting as a base from which to explore the surrounding remoter landscape.

The long distance route the 'North Coast 500' has been promoted since 2015 to encourage visitors to the north coast of the Highlands and it has significantly increased tourist numbers to the area. This has been welcomed by the economy but there are concerns about overcrowding at key visitor attractions and on the smaller roads, some of which are still single track in many places. It also increases the single night stays and transient visitors who may not contribute as heavily to local economies as longer staying visitors, whilst still requiring the infrastructure of roads, waste disposal and public toilets.

Smaller numbers of visitors visit the area to access the natural features, long distance hiking into wild land areas and sea kayaking and sailing along the coast, especially the west coast.

The cultural heritage of the region is also a draw for tourists. Projects such as The Yarrow Heritage Trail, The Dunbeath Trail and museum, and The Caithness Broch Project aim to promote and enhance the cultural heritage attractions of the regions.

Forestry

Contrary to their broadleaf counterparts, planted conifer forests typically form dense stands which have marked vertical edges, and a shape, colour and line which is often geometric. From a distance, large plantations may appear to merge into the sweeping horizons of the open moorland, especially where trees are thinned during restructuring so that the underlying character of the landscape is revealed.

In the 20th Century large areas of peat bog was drained for forestry. The resulting plantations dried out the peat and changed the habitats, leading to soil erosion, and were not profitable. Since the 1990's publically owned forestry and NGO's have been involved in restoring the peat bogs after the trees are removed. The RSPB owned Forsinard National Nature Reserve is one of the largest schemes at the present.

Roads and Transport

As mentioned earlier the road system of this area is essential to the long term demographic stability. There is a considerable pressure on resources to maintain the smaller road systems joining the remote rural communities, and pressures from lorries, construction vehicles and tourist traffic can have a heavy impact on these roads, many of which have stretches that are still single track. There are also risks to the roads from storm damage, flash flooding from burns and landslips, all of which can lead to very lengthy diversions whilst being cleared.

The upgrading of bridges to accommodate modern traffic has had a significant impact on the roads through many settlements. Modern bridges like the one at Latheronwheel have moved the road and are more utilitarian than the single arched bridges they replaced but are important to the connectivity of the area. The main road in the area is the A9 to Thurso but the A99 and the A882 also connect Wick airport and Thurso.

The ferries to Orkney, and on to Shetland, sail from Thurso and John O'Groats. The modern car ferries are large and the infrastructure they require creates more impact than the smaller harbours. The view back from the ferries along the coast gives a better view of the geology and landform of this section of coast, especially Dunnet Head.

The railway still runs through this area and it is a particularly good way of experiencing the Dornoch Firth and Loch Fleet, it is however much longer than the road to reach the north coast, due to the Dornoch Bridge reducing the road journey. The track runs very close to the coast in many points and there are concerns about the impact of sea level rise in the future.

Wind energy generation – on shore and offshore facilities

The large open landscape and high average wind speeds mean that Caithness and Sutherland is, in theory, suitable for wind energy generation. The constraints of access and natural heritage designation has limited approval for these schemes in the west of the area with the furthest west being at Creag Riabhach. There have been concerns about the siting of these schemes on peat, as the construction process could damage the fragile bogs and the turbines

could prove a hazard in areas recognized for their bird life. There have also been concerns raised about the impact of large schemes on an otherwise flatter and subtle landscape. Consequently many of the schemes are concentrated along the east of the area, creating regular features in the landscape which are visible from great distances.



Windfarm, forestry and blanket bog near Strathy in Sutherland. ©Lorne Gill/NatureScot

The open nature of the landscapes, and the excellent preservation of large numbers of historic environment sites which strongly relate to the open landscape and often have key relationships between one another mean that large scale wind turbines, can also have significant adverse impacts on the historic environment. Careful siting and design of any proposed future wind developments is vital to avoid these impacts. There are a number of off shore schemes approved and under construction in the Moray Firth and the Pentland Firth. The Beatrice test turbines have been a feature for many years, now being joined by many more to create a significant feature visible off the east coast, whose lighting is clearly visible in clear conditions from nearby coastal settlements at night. Four new schemes have been approved in the Moray Firth, which will produce an array much larger than any on the ground locally, and the height of the turbines means that it will be visible from most of the east coast and higher areas inland.

Hydro-electric generation

As mentioned earlier the Shin scheme is the most northerly of the large hydroelectric schemes undertaken during the early to mid-20th Century. It contains three power stations at Cassley, Shin and Lairg. It is much smaller than the schemes further south in the Highlands but still has a capacity of 31.4MW. Loch Shin is dammed by Lairg Dam which produces recognizable drawdown zones as well as the dam infrastructure and increased the water level by about

11m. As in many places, this change in the lochs has been largely accepted and is not perceived as at odds with its moorland setting.

Since the early ambitions of hydroelectricity in Scotland there have been fewer large schemes however small schemes, often run of river, can be found on many burns and rivers in Caithness and Sutherland. Many of these are micro schemes, under 100kW which serve smaller settlements and individual properties. Although the impact is smaller they still have obvious infrastructure associated with them, including buildings, generating equipment and tracks which can erode the natural qualities of the landscape if not carefully considered. It is unlikely that many large hydroelectric schemes will be undertaken in this area in the near future. Small and micro schemes are likely to continue.

Utilities – powerlines and pylons

Linked with the development of renewable schemes and provision of mains electricity to most of the settlements in this area are power lines and larger pylons, as well as a number of electricity transfer stations. These tend to follow the path of the main straths and roads in the area which increases the number of people they impact on but means that the wilder areas remain free of modern human artefacts. Water treatment works, such as those at Loch Calder also have an impact, with buildings and pipes. However, these tend to be closer to the larger settlements.

Fishing

Traditionally, many of the coastal settlements used fishing as an important part of their income. The settlements populated by those moved from the land during the Clearances were expected to fish as well as farm, and this small scale fishing and kelp harvest continues throughout the coastal edges of the region. In the 19th and 20th Centuries there was a move towards bigger vessels meaning that some of the smaller harbours became obsolete. Larger harbours, such as Thurso, Scrabster and Lybster, still operate and the Pentland Firth and North Sea are the main fishing grounds used. In recent years, as some species have declined, the industry has been under pressure. Smaller boats fishing coastal waters and catching shellfish and crustaceans still operate from smaller harbours.

Field fishing is a thriving industry on loch and rivers and recreational sea fishing provides an income through boat hire and guides.

Aquaculture

Aquaculture for salmon and trout has been operational, especially along the west coast, for some years and the cages, platforms and onshore buildings are not an uncommon sight in sea lochs. There are concerns about the suitability of these farms in certain areas due to risks to wild populations of fish. With sea fishing become more unpredictable, and population decline occurring in a number of species, it is unlikely that the demand for farmed fish will decline in the future.

Mineral Extraction

Caithness Flagstone, produced at Spittal and Halkirk, is a popular building material due to its durability. In the 19th Century there were 11 quarries across Caithness, this market has contracted but is still a significant employer in the area. Traditional Caithness Flagstone walls

can still be seen in some areas instead of fences, although their use has declined in the modern era.

Peat Extraction

Traditionally harvested as a fuel, peat is still commercially extracted in the region, for example at Causeymire in Caithness. Peat is used predominately in gardening functions, although there is still a limited market for peat fuel in Scotland. Modern techniques include the use of machines which can produce deeper and straighter cuts in the peat hags and over a much wider area than traditional methods, which often culminated with the turf being returned to the top, reducing runoff and erosion.

As the importance of peat bogs to flood management and climate change becomes more widely understood it can be hoped that the demand for peat products will fall and alternatives used on a commercial scale.

Small-scale, traditionally harvested peat for local use as fuel still occurs, although this is less likely to cause widespread damage to the bogs.

Rural Estates

Much of the open ground in the peatlands is managed for sport, with a significant proportion being in the ownership of a small number of large estates. Deer management is undertaken by individual landowners and co-ordination is provided by Deer Management Groups. There were dramatic rises in deer numbers but some estates have made significant efforts to reverse these trends. The traditional deer range was reduced with the widespread afforestation and efforts to reintroduce native species.

The erection of fences to prevent deer movement onto agricultural and crofting ground and woodland can lead to harsh lines of vegetation change noticeable at a distance. This has happened to the east of Broubster, along Strath Naver and around Strath Halladale.

Grouse management occurs in the drier moorland areas in the east but is restricted in extent. In recent years it has been hampered by reductions in grouse numbers. These may be due to a range of factors including loss of heather ground, land use changes and changes in burning practice.

Many land managers are concerned about loss of heather cover across the area as heather provides feeding for both deer and grouse. The causes of this are not known but contributory factors can be inappropriate grazing and trampling levels by deer and sheep. In recent years weather patterns have meant that muirburn has been limited by drier weather and a number of moorland fires have caused damage across the highlands with 2019 being significant in this area.

Settlement

Caithness and Sutherland region is very large. It reaches to the north edge of mainland UK, and contains a relatively small population, which is concentrated in certain areas. The character of the coast is influenced by human activity and land use, as it tends to form the focus for habitation and movement in Caithness and Sutherland.

Many long-standing settlements within the mouths of the straths near the coast are still inhabited. However, few people now live within the upper reaches of these areas, having suffered the worst of 'The Clearances' of the 19th Century.

Along the length of Sutherland's east coast there is a fairly dense population compared to the rest of the region: favoured for its fairly dry and sheltered climate, relative ease of access, good agricultural land and the location of several natural harbours. Most settlements are concentrated upon the level coastal shelf which runs along much of this eastern edge, creating dominant focal points and landmarks.

The concentration of the population along or near to the coast has generally been reinforced by the growth of 20th Century industries, as these tend to be strongly tied to the main access routes which run along this edge.

Traditionally, housing has been of stone construction. One-and-a-half storey style is the most common. Within smaller settlements these are generally of modest size but in Dornoch, Lochinver and other larger settlements these are often three storey. Most originated in the 18th and 19th Centuries when these settlements grew more quickly, although Dornoch has evidence of older buildings. Rendered and painted exteriors are also common. The fishing villages of the east and north coasts tend to be concentrated within the river valleys. The newer planned settlements, such as nineteenth century Lybster and Latheron Wheel, were designed as grids or linear street patterns above the river and harbours and can feel exposed compared to the older fishing villages, such as Dunbeath, nestled into the steep sided valleys. On the West coast of Caithness and Sutherland smaller settlements tend also to be focused on bays and river mouths. However, they tend to have a dispersed crofting pattern with cultivated land associated with stone one-and-a-half storey houses.

New housing either on the edge of settlements or within the countryside tends to be of timber framed construction and new kit houses are common. These are cost efficient and easy to import into the area. Whilst some modern, rural houses have been designed sympathetically with the countryside, many new houses are not sympathetic in both siting and design, bearing no relationship to their surroundings. New housing schemes on the edges of larger settlements, including Dornoch, Wick and Thurso, do not follow local vernacular and are more easily identifiable by the decade of their design than their location.

4. CULTURAL INFLUENCES

Place names in Caithness and Sutherland

Place names can give an indication of the history and appearance of the landscape. Caithness and Sutherlands place names show its complex history and include names of Gaelic, Norse, Scots and Pictish origin, some of the mixed together, making their meaning and origins obscure. The Pictish tribes originally in the area had been joined by Gaelic settlers by the time Norse settlers arrived.

The Norse name for the Pentland Firth was Petlandsfjodr or 'Pictland Firth', suggesting that their initial encounters were predominantly with these tribes. Settlements such as Pittentrail also show Pictish origin with "pit" indicating a settlement. The Oykel likely gets its name from a Pictish word for 'high territory', much like the Ochil Hills in Perthshire. "Dun" indicates a Pictish, or earlier, fort such as Dunbeath. The Nabaros, River Naver, was recorded by Ptolemy in 120AD so is probably Pictish as well.

Caithness comes from the Norse word for the 'promontory of the Cat People', 'Katanes'. Sutherland comes from Suorland or Southland, likely only referring to the eastern part of the area. The Gaelic name for Sutherland was Cataibh or 'among the Cats' referring to the same tribe as the Norse settlers.

Norse names are usually highly descriptive and often centred on the coastal features of the area. Wick, Vik, means 'bay'; Stroma, Straum-ey, 'the isle of the current', representing its position in the strong tidal flows of the Pentland Firth. The original name of Castle Sinclair Girnigoe, north of Wick, is 'Girnigoe' which in Norse probably means "green geo" geo indicating an inlet. Brims Ness on the north coast west of Thurso is a well know surfing destination and the original Norse indeed means "surf point". Other place names indicating Norse origin include '-bster' or '-orster', such as Lybster, which indicates a farm although often the origin may have been clouded by time and the changes in language. '-bo' or -bol also indicate a steading or cattle, such as Skibo and Embo.

Scots speaking immigrants arrived in Thurso and Wick from the 14th Century onwards, giving a new depth of place names along the coast and replacing Norn, the Scandinavian dialect spoken here as well as in Orkney and Shetland. In other areas Norn was replaced by Gaelic. The term Flow Country comes from the Scots for bog. Ironically the English word for bog comes from Gaelic and is still found at Bog na Gaoithe, "bog of the wind". Burn is derived from the Scots, Allt, which is also commonly used meaning stream in Gaelic. The Gaelicised -side from -setter- that names such as Linside (Flaxfarm) are a mixture of both Norse and Gaelic, Sandside is likely a mix of Norse, Scots and Gaelic.

Gaelic names in the area seem to have formed over a longer period of time than the Norse which all predate the 13th Century. The descriptive words for different shapes of mountains, such as 'meal' for a rounded mountain, 'craig' for a more jagged one, 'ben' for a pointed and higher one, 'cnoc' meaning hill and the derivative of the 'cnoc' or a small hill or mound, leading to the cnocan and lochan description of mounds and small lochs. All are common throughout Sutherland. 'Mor' and 'Beag', large and small are also common in these names.

Adjectives such as colours, 'buidhe' (yellow), 'liath' (grey), or 'breac' (speckled), are used within the descriptions of what would be important landmarks for the area. Names prefixed with 'ach' indicate fields such as Achiniver, "the field and the mouth of the river" and on occasion are prefixed to a Norse name such as Achin which means "the fields". Other descriptive names include the dilapidated broch to the north of Loch Shurrey, named Tota an Drannain, 'the ruin of the whistling wind'.

Wildlife like Cormorants are featured in place names like the Rubha na Sgarbh in the Dornoch Firth. Loch a' Ghiubhais, 'loch of the pine', near Lairg indicates that Scots Pine was found there and similarly Loch a' Chaoruinn, 'the loch of the rowan'. Deer are recorded through Creag nam Fiadh, Cnoc Damh (stags) and Coire nam Mhag (fawns).

Art & literature

Caithness is referred to heavily in the Norse Sagas of the Orkneyinga, but probably the earliest mention of Caithness in British literature is as a throwaway reference to the Thane of Caithness in *Macbeth* by William Shakespeare. 'Kidnapped' (1886) by Robert Louis Stevenson uses the wildness of Cape Wrath as a backdrop to the story.

20th Century writers such as Neil (Miller) Gunn wrote about the culture and landscape of this area. Gunn was born in Dunbeath in 1891 (died 1973). He returned to the north-east to live as an adult. He only spoke English, reflecting the rapid decline of the Scots and Gaelic in the area throughout his life, but he used the rhythm and syntax of Gaelic to give the sense of people he wrote about. Gunn became an Excise Officer in the Highlands and eventually became a full time writer, of both journalism and novels such as 'The Grey Coast' (1926) about the North Highlands. His writings were often quite bleak works about the decline of Highland culture, although later works such as 'Highland River' (1937) and 'The Silver Darlings' (1941), about the fate of people moved by the Highland Clearances and the herring industry, are more positive.

The poet David Morrison (1941-2012) also made his home in Caithness, working as County Librarian. Not only did he write his own poetry but he also edited reviews and anthologies of other work, in both English and Gaelic.

Norman MacCaig (1910-1996) wrote the poem 'A Man in Assynt' describing the landscape and his relationship with it, referring again to this in his poem 'Assynt and Edinburgh'. 'Consider the Lilies' by Iain Smith Crichton (1969) writes about the Highland Clearances from the perspective of an elderly widow also touching on the attachment of people to place.

As in other parts of Scotland oral story telling was prolific until the 20th Century but the decline of spoken Gaelic meant that many of these tales were lost.

Music

Folk Music in Caithness and Sutherland was predominantly oral tradition until the 20th Century. James Hogg published English translations of Gaelic folksongs in his books 'Jacobite Relics' published in the early 1800's, the words and music for these he gathered in the North West Highlands and many refer to places along this coast. The song writer Sandy Macfarlane wrote and performed in the 1920's to 1940's. Although his career was in the USA, he was from Embo

and wrote ‘Granny’s Hielan’ Hame’ referring to this. The name is now used as by the caravan and campsite at Embo.

Natural Heritage Designations

National Scenic Areas

There are four National Scenic Areas within the Caithness and Sutherland: Assynt and Coigach; North-West Sutherland; Kyle of Tongue; and Dornoch Firth.

Geoparks

The Geopark is a globally recognized designation, a single, unified geographical areas where sites and landscapes of international geological significance are managed with a holistic concept of protection, education and sustainable development. Geoparks are designated by UNESCO. The North West Highlands Geopark begins at The Summer Isles in Wester Ross, and the area takes in around 2000 km² of mountain, peatland, beach, forest and coastline across west Sutherland and on to the north coast. The eastern boundary of the Geopark extends beyond the settlement of Durness and Loch Eriboll to follow the Moine Thrust Zone.

Protected habitats and species

The largest protected habitat in this area is the Blanket Bogs in the interior, Forsinard Flows National Natural Reserve (NNR), which covers close to 15,400 hectares and covers part of the Flow Country. It is managed by RSPB to restore blanket peat bog that has been damaged by forestry plantations.

Loch Fleet NNR south of Golspie is a coastal reserve, it includes a tidal basin, coastal habitats such as sand and mud flats and salt marsh, and a native Scots pine forest. As well as the plant diversity found here, this is also a home for birds and seals.

Knockan Crag NNR is designated for its outstanding geodiversity.

The East Caithness Cliffs Marine Protected Area (MPA) was designated to protect the feeding grounds for black guillemots who nest in the cliffs, and Noss Head MPA to protect black mouth mussels and breeding beds.

Much of the Caithness and Sutherland Peatlands are recognized Ramsar sites (wetlands of international importance) for breeding and overwintering birds.

Wild Land

A large proportion of Caithness and Sutherland is covered by Wild Land Areas, identified by Scottish Natural Heritage in 2014. Although these are not a designation, they show how limited obvious human impact has been in this area. Causeymire – Knockfin Flows and East Halladale Flows, separated by the A897, are a good example of the open peat bog landscape. Further west in the area north of Ullapool, Wild Land Areas are split mainly by roads, covering most of the land from Cape Wrath to Tongue and Lairg. These areas are more mountainous with cnocan and lochan and peat bog, and few modern human artefacts.