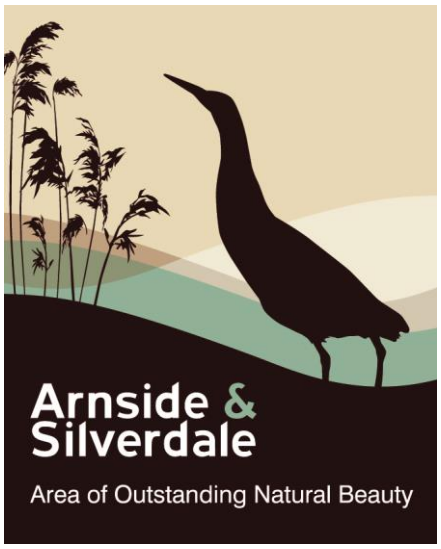

What is special about Arnside & Silverdale Area of Outstanding Natural Beauty?

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1. Introduction

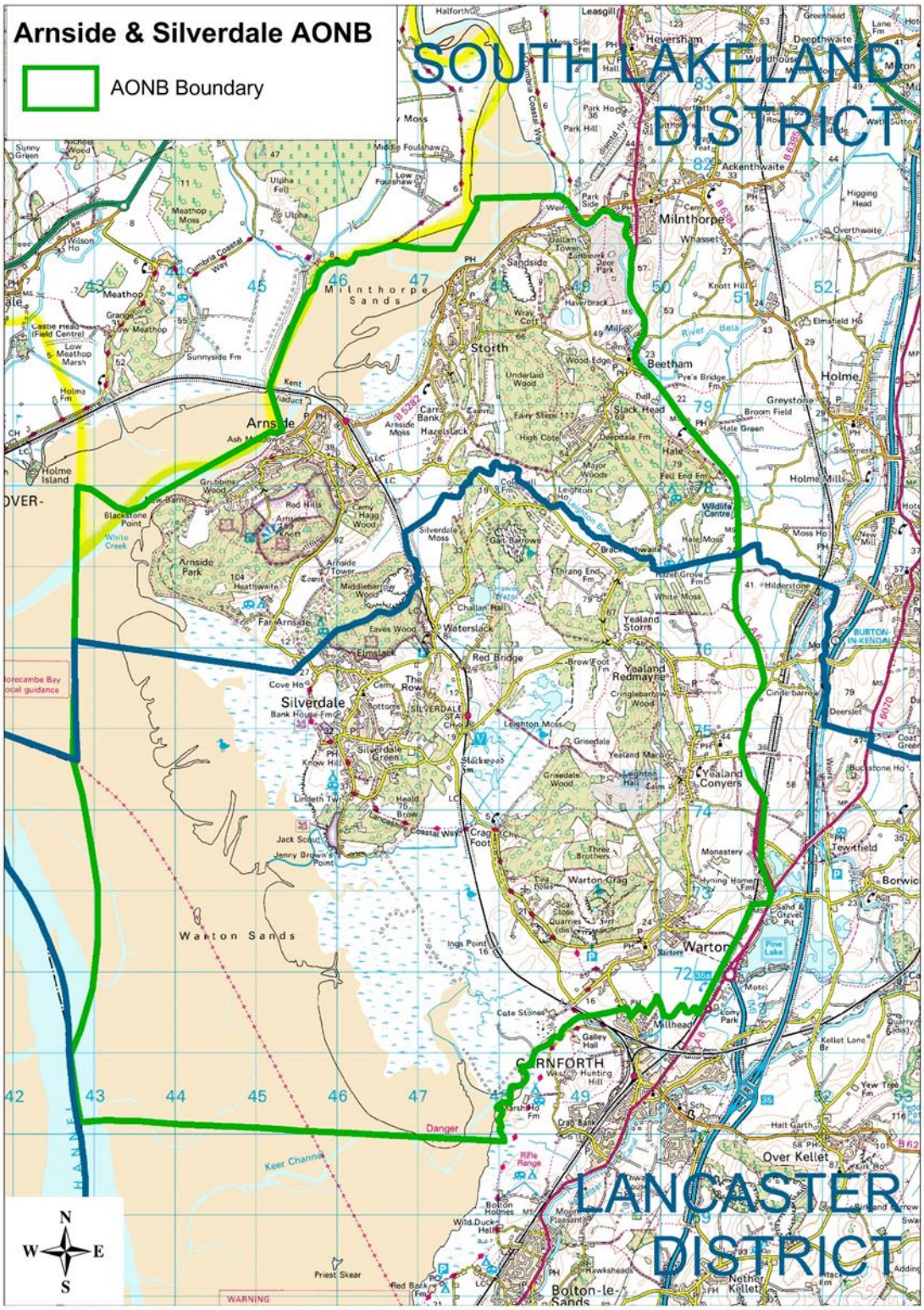
Arnside & Silverdale Area of Outstanding Natural Beauty (AONB) is a unique landscape of national importance and was designated in 1972. It covers an area of approximately 75km^2 within south Cumbria and north Lancashire and is characterised by a diverse mosaic of low limestone hills, limestone pavements, woodlands, mosses, pastures and intertidal sand and mudflats along with distinctive settlements and heritage features. The AONB lies within the political boundaries of Cumbria and Lancashire County Councils and South Lakeland District and Lancaster City Councils.

AONBs are particularly special landscapes whose distinctive character and natural beauty are so outstanding that it is in the nation's interest to safeguard them. The primary purpose of AONB designation is to conserve and enhance the natural beauty of the area[1]. In pursuing the primary purpose, account should be taken of the needs of agriculture, forestry and other rural industries and of the economic and social needs of local communities.

The natural beauty of an AONB landscape is partly due to nature and partly the product of many centuries of human modification. It encompasses natural and human factors such as geology, landforms, climate, soil, plants, animals, communities, settlements, historic features, people and perceptions.

The special qualities of Arnside & Silverdale AONB define and describe this natural beauty and are what makes the area unique and particularly distinctive. Together, the special qualities make the area nationally important and give it a strong 'sense of place'. This document accompanies the AONB Management Plan; it firstly summarises the special qualities and then describes them in further detail.

[1] National Parks and Access to the Countryside Act 1949 and confirmed by Section 82 of the Countryside and Rights of Way Act 2000



2. Summary of Arnside & Silverdale AONB's Special Qualities[2]

- *Outstanding landscape and spectacular views* - a highly diverse mosaic of limestone hills, woodlands, wetlands, pastures and coast, with spectacular views and an impressive setting
- *Unique limestone geology* – rare and distinctive Carboniferous limestone geology with extensive areas of limestone pavement, low coastal cliffs, extensive folding and faulting and notable fossil assemblages
- *Morecambe Bay – a stunning seascape* – the largest intertidal area in the UK with extensive intertidal flats and saltmarshes supporting thousands of breeding waders and wildfowl
- *Rare and precious habitats* – an outstanding number and mix of priority habitats within a small area creating a mosaic that is home to an amazing diversity of wildlife
- *Internationally and nationally important species* – an amazing diversity of species many of which are uncommon in a national or international context
- *Rich sense of history* – archaeological, built and cultural heritage reflecting thousands of years of human occupation creating 'time-depth' within the landscape
- *Distinctive settlement character* – the design, detailing and use of local limestone in buildings, and historic layout of settlements contribute to the area's rural landscape character
- *Strong community and culture* – vibrant rural communities strongly identified with the AONB and local landscape
- *Opportunities to enjoy the countryside* – the network of narrow lanes and paths offers wonderful opportunities to enjoy quiet recreation such as walking, cycling and wildlife watching
- *Sense of tranquillity, space and place* – inspiration, spiritual refreshment, unpolluted air, peace and quiet and unique character
- *A highly designated area* – a large number of local, national and international designations for biological, geological and historical interest

[2] Public consultation was carried out in 2012 to compile and confirm the list of special qualities above. This document is based on the Arnside/Silverdale AONB Special Qualities, a report for Arnside/Silverdale AONB Unit, Graeme Skelcher, April 2013

3. Outstanding landscape and spectacular views

Arnside & Silverdale area was designated as an Area of Outstanding Natural Beauty because of its unique and highly valued landscape. Within a relatively small area there is a diverse and intricate mosaic of low limestone hills, woodlands, wetlands and mosses, pastures, limestone pavements, coastal cliffs and intertidal flats.

The scenic qualities of the area are determined by the interactions of geology, landform, vegetation and climate as well as cultural and social features such as land use, settlement and enclosure. Thousands of years of interaction between human activity and nature have shaped its character creating a living 'patchwork' of contrasting habitats criss-crossed by limestone field boundaries and hedgerows and interspersed with distinctive buildings and settlements.

Spectacular views over Morecambe Bay and towards the Lake District to the west and north, and towards the Yorkshire Dales and the Forest of Bowland to the east and south, give the area an impressive setting.

The small-scale yet complex nature of the landforms gives an intimate feeling within the valleys and woodlands which contrasts with the open nature and expansive views from higher ground and along the coast.

View north from Arnside Knott © Adam Donaldson

3.1 Landscape character

The character of the AONB landscape has been classified and described at various levels. On a national scale, the AONB is largely classified as part of the Morecambe Bay Limestones National Character Area (NCA 20)[3] (which also covers land to the east of the AONB, including Hutton Roof and Farleton Knott, and much of the south Cumbria coast).

At the county scale, the Cumbria Landscape Character Guidance[4] and the Lancashire Landscape Character Assessment[5] both identify two basic landscape types, named *Estuary and Marsh* and *Wooded Hills and Pavement* in Cumbria and *Open Coastal Marsh* and *Wooded Limestone Hills and Pavements* in Lancashire.

The Arnside & Silverdale AONB Landscape and Seascape Character Assessment (AONB Partnership/LUC, 2015) is a more detailed local level assessment which describes the key elements and qualities that make up the landscape and seascape character of the AONB and classifies its distinctive character types and areas. The six landscape character types are:

- Intertidal Flats
- Saltmarshes and Lagoons
- Lowland Moss
- Coastal Limestone Pasture
- Inland Pasture and Parkland
- Wooded Limestone Hills and Pavements.

Three landscape character types forming part of the setting of the AONB are also defined:

- Drumlin Farmland
- Low Coastal Drumlins
- Lowland Valley and Coastal Margins

3.2 Spectacular views

There are iconic and panoramic views from many locations in the area. The spectacular views over Morecambe Bay and towards the Lake District to the west and north, and towards the Yorkshire Dales and the Forest of Bowland to the east and south give the area an impressive setting. 360° views from high points of Arnside Knott and Warton Crag give a unique perspective over the surrounding landscape.

[3] National character Area Profile: 20. Morecambe Bay Limestones, Natural England, 2015
[4] Cumbria Landscape Character Guidance and Toolkit, Cumbria county Council, 2011
[5] A Landscape Strategy for Lancashire, Landscape Character Assessment, Lancashire County Council, 2000

The views can change dramatically depending on the season, time of day, weather and the state of the tide. The vast intertidal expanse of Morecambe Bay changes daily with the tide, from open sea to vast expanses of shimmering sands and winding channels. Sunsets are often spectacular.

Viewpoints such as Warton Crag, the Giants Seat at Jack Scout, the Pepperpot at Eaves Wood and the toposcope on Arnside Knott are visitor destinations with panoramic views. Perhaps the most celebrated view in the AONB is looking north from Arnside Knott up the Kent Estuary towards the Lake District and over the Arnside Viaduct.

The impressive views have influenced the positioning of historic properties and were integral to the design of many historic gardens and landscapes such as at Greywalls (now Ridgeway Park), Silverdale and Ashmeadow House, Arnside.

The views are all the more spectacular due to the way they contrast with the intimate feel of the valleys, meadows and woodlands.

3.3 A limestone landscape

The AONB is a distinctive lowland limestone landscape comprising low limestone hills and woodlands and undulating unimproved grasslands and pastures over the underlying and frequently outcropping limestone rock, as well as areas of sparsely-vegetated limestone pavement, scree and cliff.

The prominent limestone hills of Warton Crag in the south and Arnside Knott in the north, the extensive limestone pavements at Gait Barrows National Nature Reserve and Marble Quarry and the limestone cliffs and outcrops at Jack Scout and Far Arnside coast are particularly distinctive features within this limestone karst landscape.

Limestone is also prominent in the cultural features of the landscape, where local stone has been used to mark field boundaries with drystone walls and to build houses, notably in settlements which date back more than 200 years such as along Warton Main Street. Limekilns and quarries demonstrate how the rock has been exploited for industrial purposes over many years.

3.4 Grasslands

The grasslands of the AONB form a distinctive pastoral landscape, a patchwork of fields enclosed by drystone walls and hedgerows managed with grazing animals, dotted with notable and veteran field

trees and interspersed with woodlands and other habitats. Pastures within the villages are integral to the rural settlement character of the AONB villages, in particular Arnside, Silverdale and Storth. Views over farmland from all settlements contribute to the area's rural character.

Unimproved grasslands rich in wildlife are a special feature of the area and are especially rich in limestone-loving plant species such as Common Bird's-foot Trefoil, Wild Thyme, Rockrose and orchids and support a proliferation of butterflies and other invertebrates. The presence of numerous anthills formed by colonies of Yellow Meadow Ants forms a distinctive landscape. Conservation grazing with traditional breeds of cattle helps to maintain these traditional species-rich grassland on many sites, such as at The Lots, Silverdale and Redhills Pasture and Dobshall Meadow, Arnside. In some locations such as at Dallam Park and opposite the Woodlands Hotel, Silverdale, parkland has been developed with large veteran trees and grazing animals including a deer herd at Dallam.

3.5 Wetlands and mosses

Wetlands and mosses typically cover the flat, low-lying areas between the limestone hills. Leighton Moss is managed as a nature reserve by the RSPB and contains open pools, fen and the North West England's largest area of reedbed, home to an assemblage of distinctive wetland wildlife, notably Bittern, Marsh Harrier and Bearded Tit. New reedbed and fen has been created at Silverdale Moss and Barrow Scout Fields. Drained areas of Hale Moss, White Moss and Arnside Moss form strip fields used for agriculture with some wet carr woodland. There is a large area of coastal floodplain grazing marsh south of Warton village. Hawes Water is the only marl lake in Lancashire and one of only a small number in the north of England. The water is highly calcareous but low in other nutrients which provides good conditions for aquatic plants such as Yellow and White Water Lilies rooted in the marl sediment.

3.6 Woodlands and trees

Woodland is a key component of the AONB landscape, covering a third of the AONB and with large areas of ancient semi-natural woodland and 45 plantations on ancient woodland sites. Woodlands have developed over both the limestone hills and the more neutral and acidic soils of the valleys in between, as well as covering areas that are difficult to manage such as steeper valley sides and limestone pavement. The woodlands are predominated by Ash, but it is the Yew and coppiced Hazel that makes the woodlands locally special and important. Many such woodlands grow on top of extensive limestone pavements and these woodlands have developed a unique and almost mystical character. Traditionally most of the area's woodland would have been managed through coppicing for firewood, charcoal, gates/fencing, furniture and crafts. A Coppice Cooperative operates

successfully in the area today continuing this traditional management. While active woodland is now significantly increasing, just over a quarter of woodland remains undermanaged.

While a considerable range of different tree and shrub species can be found in the AONB's woods, by far the most ubiquitous is the Ash tree. With its open pinnate leaves, typically amongst the later species to unfurl, Ash allows plenty of light through its canopy to enable often spectacular displays of woodland herbs in the spring; including carpets of bluebells, wood anemone and wild garlic at sites such as Warton Crag, Hyning Scout Wood, Eaves Wood and Arnside Knott. Also of note are the many evergreen Yew trees, often forming large stands with dark, dense canopies over moss-covered limestone pavement, such as those at Cringlebarrow Wood, Yealand Allotment, Marble Quarry and Gait Barrows. Distinctive stunted ‘bonsai’ trees occur on the limestone pavement where water drains so efficiently that drought conditions are created, leaving nutrients in short supply causing some trees here to only grow a few millimetres a year. Seasonal changes such as the colour of autumn leaves or vivid spring green of emerging foliage contribute much to the perceptions of the landscape throughout the year.

Numerous field and boundary trees and small copses add height and variety to the landscape of the open grasslands and pastures. Veteran and other notable trees such as mature Walnut and Oak are present in many locations.

3.7 Wildlife spectacles

There are occasions when wildlife provides a startling visual spectacle which contributes to a dramatic living landscape. Huge murmurations of Starling gather above Leighton and Silverdale Mosses on winter afternoons, prior to roosting overnight in the reeds. Thousands of birds twist and turn, forming vast, rippling patterns in the sky. Similarly, large flocks of wading birds often provide spectacular displays as they gather together at high tide roosts at Arnside, Jenny Brown's Point and Warton Marshes. The abundance of butterflies and other insects in flower-rich meadows on a sunny summer's day, accompanied by a proliferation of bird song, adds a strong sense of life to the landscape.

4. Unique limestone geology

The distinctive Carboniferous limestone geology underpins the landscape of the AONB, unifying its character and creating the conditions that have allowed the wide diversity of habitats to develop. The limestone landscape of the AONB is particularly unusual and therefore nationally important because it was both formed at low altitude and shows significant evidence of glacial and post-glacial processes. A distinctive 'karst' landscape has formed through the dissolution of the soluble limestone rock.

Limestone pavement at Gait Barrows © Arnside & Silverdale AONB Partnership

4.1 Geological background

The Carboniferous limestone bedrock of the AONB was deposited approximately 330 Million years ago, over some 10 - 15 million years, at a time when the region was located near the equator and formed a shallow marine basin. This ancient tropical sea had ideal conditions for the deposition of marine sediments in layers which eventually became compressed to form the limestone rock.

The different depths of this ancient tropical sea, coupled with varying sea levels (due to alterations in the volume of water in the oceans or as a result of changes to land elevation/in the height of the land) account for the different characteristics of the limestone beds found in the AONB and elsewhere around Morecambe Bay. There were also extended periods where newly formed limestones were raised above sea level and erosion and dissolution began along with soil formation

and vegetation growth. These rocks are exposed now as palaeokarst[6] formations for example at Red Wall in Trowbarrow Quarry.

Around 280 Million years ago, during a period of mountain building caused by continental collisions, the Carboniferous rocks were uplifted and folded into a broad dome. This dome was then eroded, exposing the higher fells of the Lake District and leaving a ring of limestone around a mountainous core. The southern part of the ring, which includes the AONB, was extensively folded and faulted and the exposed rock was subsequently eroded by ice and dissolved by rainwater over time, creating the landforms we see today.

4.2 Limestone formations

Three main limestone formations underlie the AONB, which exhibit different characteristics[7] – the 'Dalton Beds' are the oldest, followed by the 'Park Limestone' and the younger 'Urswick Limestone'. In addition, the overlying and more recently formed 'Gleaston Formation' is also exposed in a few places.

There are also recurrent beds of mudstones and shales, formed when ancient rivers and deltas deposited fluvial sediments on the marine shelf. The most extensive and significant is the Woodbine Shale that outcrops in a number of locations around the AONB.

4.3 Landforms

The different limestone formations and their tectonic movements have created a wide variety of landforms which have eroded and dissolved to form karst landscape features. Strong faulting and folding has split the local area into a series of steep sided limestone blocks, such as Arnside Knott, that are separated by low-lying basins.

A rare landform known as the 'Silverdale Disturbance[8]' is a linear zone of disrupted rock strata with significant folding and faulting, stretching for several miles across the AONB. This has created a remarkable trench-like feature between two small limestone cliffs that is known locally as 'The Trough'. The Trough outcrops dramatically both near Trowbarrow Quarry, Silverdale, and at Throughs Lane, Storth. The deep cut of the Trough is due to the presence of the Woodbine Shale, which is sandwiched within the Lower Urswick Limestone. This softer mudrock has been eroded

[6] "paleokarst" is a general term for ancient karst features that have been fossilised or preserved
[7] The Dinantian Limestones of the Far Arnside and Silverdale shoreline. Mike Balderstone and Mike Dewey, Westmorland Geological Society Proceedings No.31 (2003)
[8] Brenchley PJ & Rawson PF (eds) 2006 *The Geology of England and Wales* (2nd edn), The Geological Society, London (p135)

more rapidly than its enclosing walls of hard limestone, resulting in a gorge-like feature some 8m wide.

4.4 Mineralisation

Some areas of the limestone bedrock have been subjected to intensive modification and mineralisation through deposition, for example at Red Rake and Guard Hill. Of particular importance is the introduction of haematite iron ore which probably occurred about 200 million years ago. The mineralisation, associated with hydrothermal fluids, often corresponds with faulting and results in the distinct red discoloration of the rock over considerable areas.

4.5 Fossil assemblages

A number of sites have good exposures of fossil assemblages; notably the exposures of the Dalton Beds along the shoreline at Arnside and in the Park Limestone around Jack Scout, where the outcrop changes to Urswick Limestone. Trowbarrow Quarry is a geological Site of Special Scientific Interest and is important for fossil preservation particularly a rich microfossil assemblage. This site is also regarded as one of the most important shelf limestone localities in northern England.

The fossil coral beds of Far Arnside are of particular interest and a new fossil coral species was identified here in 2001. This site is an important and rare local geological exposure and has been designated as a Local Geological Site. Here the Lower Carboniferous limestones are clearly seen. A smooth bed of Dalton Limestone was exposed in 2000 when the salt marsh was eroded by the River Kent channel. This flat rock surface is called a 'marine peneplaned hard-ground'; it was eroded by coarse calcareous sands shortly after the sediment became solid rock. This scouring action cross-sectioned the bedrock and has produced a near polished surface that now displays many perfectly preserved fossil corals. This exposure provides a unique opportunity to examine perfectly cross-sectioned rugose (wrinkled) corals.[9]

4.6 Glaciation

About 2 million years ago the Earth's climate cooled, allowing the development of glaciers and ice sheets which, at their maximum covered most of mainland Britain. These cold episodes were called Glacials and were separated by warmer Interglacials. The upstanding Carboniferous limestone blocks were scoured by ice which swept away overlying soils, and preferentially eroded weaker beds of limestone.

[9] http://www.cumbriarigs.co.uk/?download=far_arnside_flier.pdf

Exposed on the surface, the limestone has been weathered during the warmer climatic periods by moderately acidic water. This solutional erosion of the limestone has produced a range of characteristic features collectively known as karst (or paleokarst) landforms, such as dolines, polje and limestone pavements.

The majority of the ice that scoured the landscape of the AONB was from the Lake District and is believed to have been over 1,500 metres thick and powerfully erosive, leading to the formation of heavily scoured extensive outcrops of smoothed limestone, some of which have been moulded by the ice into gently undulating topography.

4.7 Post glacial environment

As the climate warmed, layers of debris left by glaciers or deposited by winds formed soils on which plants started to grow. Limestone pavements were formed by the gradual dissolving of the limestone by mildly acidic water seeping through the vegetation cover.

An important feature of the AONB is the variation of soil types, with both acid and alkaline soils being present in close association. Acidic loess soils, derived from the extensive outwash sediments that developed at the end of the ice age in Morecambe Bay, accumulated as wind-blown deposits in hollows and depressions in the limestone. Study of loess deposits on Warton Crag suggests that the ice last retreated from the landscape of the AONB around 19,000 years ago[10].

Peat mosses also formed in the area following glacial retreat, where waterlogged raised mires developed over significant areas of low-lying ground.

Other indications of general changes in the post-glacial environment include the blocks of cemented scree on Arnside Knott, while the main tufa deposits in Woodwell, Silverdale are considered to be visible evidence of the post-glacial climatic maximum.

4.8 Limestone pavement

Distinctive areas of limestone pavement have developed throughout the AONB, many of which show evidence of glacial erosion. The pavements, often wooded, but sometimes open with only a scatter of vegetation, are broken into blocks (known as clints) by deep solution-widened fissures (called grikes) etched into the surface along bedding planes, mineral veins and joints. The intricate form of the pavements allows a variety of microclimates to develop and the grikes commonly contain a wide

[10] New constraints on the age of the last ice-sheet glaciation of NW England, Telfer M.W. et al. Journal of Quaternary Science 24, 2009.

range of plant species; particularly ferns, such as the nationally scarce Rigid Buckler Fern, and stunted trees which struggle to grow in the almost non-existent soils.

Limestone pavement can be found throughout much of the AONB, largely protected by Limestone Pavement Orders, with particularly fine examples at Marble Quarry, Gait Barrows National Nature Reserve, Thrang End, Yealand Hall Allotment, Eaves Wood and Warton Crag.

4.9 Dolines

Solution hollows form in limestone where removal of rock results in the formation of an underground chamber, which then partially collapses, forming a funnel-like hollow at the ground surface. These hollows are known as dolines**.** Where several dolines form adjacent to one another and have coalesced into one large depression the term uvala is used to describe them. Within the AONB, many dolines have been identified and their characteristic form recognised. Within Cringlebarrow Wood the formation of an uvala has resulted in the development of Deepdale Pond, a deep depression surrounded by high cliff walls of limestone, best appreciated in winter when the trees are bare.

4.10 Limestone cliffs

Low cliffs fringe the coast between Arnside and Silverdale and generally occur where the Carboniferous Limestone is more massively bedded, especially near Jack Scout. In addition to these natural cliffs, usually associated with faulting, excavated cliff-like rock faces are found at a number of locations in the AONB, created by past and current quarrying activities.

High cliffs exist at the disused quarries at Trowbarrow, Warton Crag, Jenny Brown's Point and Middlebarrow and the still active quarry at Sandside, while smaller scale features can be found at numerous other minor quarries and stone workings scattered around the AONB. The quarry faces at Trowbarrow are particularly striking as they are formed by rock bedding planes – the east quarry face being the underside of the bedding, which display extensive fossil assemblages in some cases.

4.11 Springs and ponds

The permeable nature of the underlying rock means that higher ground in the AONB has no surface drainage pattern. However this does give rise to a considerable number of springs in the area, many of which were used by local people to provide water for domestic use, washing pools, hemp ponds and watering places for livestock, prior to mains water being widely available. Some of these springs have had stone walled holding pools built to help maintain a constant supply of water, such as at

Woodwell in Silverdale. Ephemeral water bodies such as turloughs (winter seasonal lakes) and dew ponds are also evident in the area.

Some ponds occur associated with dolines, for example at Deepdale and Bank Well, or low lying peat mosses such as at Hale Moss Pond. Hawes Water is a more extensive water body formed by glacial action with the ice over-deepening a depression in the bedrock as it advanced. Hawes Water is one of only two water bodies remaining in Lancashire that have a natural origin and is one of very few lakes with marl margins in England.

4.12 Cave systems

Weathering of the limestone within the AONB has resulted in the development of two unusual and distinctive types of cave system. Sea caves occur along the limestone cliffs at a former sea level. Although these are mostly dry and fossilised, they illustrate an unusual type of cave development, considered unique in Northern England, in which caves were eroded as roughly circular passages by water under pressure.

At Hale Moss, a system of caves has developed in the steep cliff-like limestone bluffs, which once formed the margin of the Hale Moss polje lake, and provide Britain's only examples of this feature. There is also a scattering of caves formed by solution of limestone by sub-surface drainage water.

4.13 Glacial erratics

The many prominent erratic boulders are also of interest. The numerous large limestone erratics may be of relatively local provenance or could have been transported south from outcrops near the source of the Shap granite erratics, which are also found in the AONB. Other erratics are found composed of Silurian siltstones / flagstones and Borrowdale volcanic material and are widely scattered across the AONB, indicating an outflow of ice into the area from the Lake District in the north. Many smaller erratics are wedged in the grikes of limestone pavements or have been built into drystone walls which are common in the area.

4.14 Screes

Stratified and cemented screes characterise the steep faces of some of the upland blocks. These developed where the underlying rock is intensively fractured Park Limestone. Much affected by frost, the limestone broke down into highly shattered small rock fragments, leading to scree formation on the steep slopes. These screes formed in the post glacial period as all earlier loose scree material would have been swept up by the erosive force of the ice sheet.

5. Morecambe Bay - a stunning seascape

Morecambe Bay is the largest intertidal area in the UK where five estuaries meet in a horseshoe-shaped bay of spectacular scale and grandeur. Coastal saltmarsh and intertidal flats partly lie within the AONB but also extend westwards over a huge area of mud and sand. The combination of the panoramic backdrop of the Bay – a kaleidoscope of water and light; sea and sky; sound, texture and colour - bordered by coastal cliffs, coves and saltmarshes, produces often stunning coastal views. The coast is dominated by open skies that create an ever-changing backdrop to the scene: clear blue skies; swift-blown clouds on a windy day; blackening clouds before a storm; shafts of light shining through a gap in the cloud cover; or vivid sunsets which fill the sky and reflect on the shallow waters of the mudflats. Shining sandbanks, mudflats and constantly changing channels are alive with the evocative calls of Curlew and flocks of waders and wildfowl keeping time with the ebb and flow of the tide.

On the east and north of the Bay, the intertidal flats are bordered by extensive areas of salt marsh, only covered by the highest tides.

Sunset over Morecambe Bay © Jon Sparks

5.1 Wildlife

Morecambe Bay is an internationally important wildlife site, with abundant bird life and varied marine habitats. Morecambe Bay is one of the most important sites in Britain for its wader populations, and in particular the Oystercatcher[11]. Morecambe Bay is significant at an international level as a wetland being a Ramsar Site[12] with 37,404 hectares designated.

As well as being a food resource for many thousands of wading birds, the rich cockle beds are well known and have been fished by locals for centuries. Morecambe Bay is also noted for its shrimp fisheries.

The Bay exerts a moderating maritime influence over the climate of the AONB, producing mild conditions that allow some southern species to survive beyond their normal range which, coupled with some northern species which find a niche at the southern reaches of their range, results in a great diversity of species. Therefore the Bay, merely by its presence, contributes much to the wildlife diversity of the area.

5.2 Fast-flowing tides and quicksands

The Bay is famous for its fast-flowing tides, said to move as fast as a galloping horse. The speed of the advancing tide gives rise to a tidal bore which is most noticeable at Arnside.

Coupled with the fast-rising tides, quicksands make the Bay a potentially very dangerous place and many tragedies have occurred over the years. The sands at one time formed the most direct route to the Furness area, with traffic crossing the Bay until the Furness Railway line was connected to the rest of the country with the construction of the viaduct at Arnside in 1857.

The dangers of the route across the sands are the reason that there has been an official royally-appointed Guide to the sands since 1536. The traditional role carries no salary, but includes a rent free residence known as "Guides Cottage", near Grange. Today the Queen's Guide leads Cross-Bay walks, usually to raise money for charity.

[11] http://www.rspb.org.uk/reserves/guide/m/morecambebay/star_species.aspx

[12] Included in the List of Wetlands of International Importance as defined by the Ramsar Convention, 1971

5.3 Maritime heritage

In Roman times Milnthorpe had a wharf for cargo and Sandside was a busy port until the mid-19th Century. Building of traditional Morecambe Bay nobby fishing boats took place at Crossfields Boat Yard in Arnside for generations. Pleasure boats sailed regularly to Silverdale and Arnside from Morecambe in the 19th Century.

6. Rare and precious habitats

An outstanding number and mix of priority habitats create a mosaic which is home to an amazing diversity of wildlife. The variety and importance of the wildlife in relation to the small size of the area is a unique quality of this AONB. Historically, the limestone geology was gradually overlain by acid, neutral and alkali soils of varying character. This unusual and varied range of soil conditions together with the area's geographical position, varying climatic influences and different kinds of human management has enabled the different habitat types to develop.

Unimproved limestone grassland with anthills © Arnside & Silverdale AONB Partnership

6.1 Priority habitats

The AONB contains almost half of England's 56 priority habitats, listed in Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006[13]. These habitats are considered to be of principal importance in England either because: they are habitats which are internationally important; or they are natural and semi-natural habitats at risk such as those with a high rate of decline or which are rare; or they are habitats which are important for key species.

[13] A Review of Section 41 (BAP) Habitats in the Arnside & Silverdale AONB, G Skelcher, February 2014

Priority habitats which can be found within the AONB are: traditional orchards; hedgerows; coastal saltmarsh; intertidal mudflats; maritime cliff and slopes; oligotrophic and dystrophic lakes; ponds; rivers; lowland calcareous grassland; lowland meadows; purple moor-grass and rush pastures; lowland heath; inland rock outcrop and scree; limestone pavement; estuarine rocky habitats, coastal and floodplain grazing marsh; lowland fen; reedbed; lowland mixed deciduous woodland; upland mixed ashwood; wet woodland; and wood pasture and parkland.

Of particular significance amongst these habitats within the AONB, for their extent and biodiversity value, are:

- **upland mixed ashwoods**, which are the fern- and moss-rich ash woodlands typically found over limestone outcrops and pavement at sites such as Warton Crag, Underlaid Wood, Cringlebarrow Wood, Gait Barrows National Nature Reserve, Yealand Hall Allotment and Eaves Wood;
- **lowland calcareous grassland**, usually dominated by blue moor grass *Sesleria caerulea* with a wide range of characteristic herb species which cover the thin soils over limestone in unimproved areas, such as can be found at Warton Crag, Jack Scout, Arnside Knott and around the Silverdale golf course;
- **lowland heath**, which is unusual within a limestone setting but found in mosaic with limestone grassland here due to the windblown deposits of loess which have created pockets of more acidic soils, notably at Arnside Knott, Warton Crag and Yealand Hall Allotment;
- **oligotrophic and dystrophic lakes**, as occurs at Hawes Water where the marl lake is recognised as being of international importance and one of only a few natural marl lakes in North West England;
- **lowland fen** and, especially, **reedbeds**, which are found at Leighton Moss, Hawes Water, Barrow Scout and Silverdale Moss, with Leighton Moss containing the most extensive area of reedbed in North West England;
- **inland rock outcrop and scree** which are widespread throughout the AONB, but particularly notable at Warton Crag and Arnside Knott;
- **limestone pavement**, which occurs widely throughout the AONB in both open (with just scattered vegetation) and wooded forms, with particularly fine examples at Gait Barrows National Nature Reserve (long regarded as the most botanically rich limestone pavement in England, Ward & Evans 1976), Marble Quarry, Yealand Allotment and Middlebarrow;
- **maritime cliff and slopes**, which, around Morecambe Bay, support rare ledge and limestone grassland communities such as can be found at Jack Scout;
- **coastal saltmarsh**, which is extremely important to roosting and nesting waders and waterfowl and other seabirds - notably at Warton Marsh (which stretches between Jenny Brown's Point and Carnforth) and Hazelslack Marsh at Arnside, though most of the Silverdale

marsh has been lost locally in recent decades due to the changing direction of channels in the Bay; and

- **intertidal mudflats** which stretch across Morecambe Bay (the largest continuous area of intertidal sand and mudflats in UK), supporting a huge invertebrate biomass and associated numbers and diversity of birds which feed on this (with Morecambe Bay being amongst the top three sites in England for waterfowl numbers, Marsh & Roberts 2012).

6.2 Locally important habitats

Other habitats also occur which have not been identified nationally as priority habitats but which are important locally. An example is the stands of bracken, where a spring herb layer more typical of open woodland, including violets, bluebells and wood anemone, has developed beneath the bracken litter (layers of decaying fronds from the previous years' bracken growth). These bracken stands, as found for example at Warton Crag, Arnside Knott, Heathwaite and Gait Barrows, are vital for the populations of fritillary butterflies which lay their eggs on the violets (their larval foodplant) and rely on the bracken litter to maintain an appropriate micro-climate for development of their eggs.

The AONB provides an example of a landscape that has an ecological network with relatively good habitat connectivity, which should be conserved. Buffer zones, stepping stones and corridors of natural habitat exist throughout the landscape linking together the nature reserves and other exceptional sites. Designated Local Wildlife Sites, which cover 20% of the terrestrial AONB, and the many small undesignated sites, from species-rich roadside verges and corners of unimproved grassland to small woodland copses and pastures or hedgerows running through settlements, are all an essential part of this robust ecological network.

7. Internationally and nationally important species

The AONB is home to an outstanding diversity of plants, animals and fungi, many of which are uncommon in a national or international context but thrive within the unique mosaic of habitats described above. The density of rare and protected species found within this small area is of particular note.

The huge diversity of species found here is due to the wide variety of habitats which exist in such close proximity, but is also due to the geographic location of the area. The Gulf Stream provides a very mild climate, with extreme weather conditions being rare events, while the area also lies in an overlap zone for many species which have a generally northern or southern distribution in the UK. For example, amongst the butterflies, the northern species Scotch Argus and Northern Brown Argus are found here at the southern edge of their UK range while populations of the High Brown Fritillary and Duke of Burgundy occur at or near their northern UK limits.

The numbers and diversity of butterflies are particularly impressive with 34 species occurring here. Well over half the UK's flowering plant species have been recorded along with many notable breeding birds and internationally significant numbers of waders on high tide roosts and feeding on long distance migrations along the coast each autumn.

High Brown Fritillary © Elliott Staley

7.1 Priority species

Over 170 species included on the list of priority species (Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006) are known to occur regularly within the AONB either resident or as regular visitors[14].

7.2 Rare or notable species

At least 29 nationally rare (i.e. recorded in 15 or fewer hectads or 10 x 10 km squares) and 48 nationally scarce (recorded in 16 - 100 hectads) invertebrates (including 1 nationally rare and 4 nationally scarce butterflies) have been recorded at sites within the AONB, along with 24 nationally rare fungi (with Gait Barrows National Nature Reserve (NNR) alone having had a total of over 1,600 species of fungi recorded) and 3 nationally rare and 20 nationally scarce species of vascular plant. There are also at least 19 species of breeding birds listed on the Red List (globally threatened or suffering severe population decline in the UK) and at least 40 species on the Amber list (species of conservation concern in Europe or uncommon/declining populations in the UK) which have been recorded in the AONB in recent years. Nationally and sometimes internationally significant numbers of several bird species are regularly present at Leighton Moss or on the coastal marshes.

7.3 Invertebrates

The numbers and diversity of butterflies within the AONB are particularly impressive. 34 species can be found in most years, out of about 52 regularly occurring UK species, with high numbers of many of these species recorded annually in the unimproved grasslands and scattered scrub at places like Arnside Knott, Heathwaite, Gait Barrows NNR and Warton Crag. These include the nationally rare High Brown Fritillary, which lays its eggs on the violets beneath bracken stands and in coppiced woodland, for which the AONB is now a UK stronghold, as well as the nationally scarce Pearl-bordered Fritillary, Duke of Burgundy, White-letter Hairstreak and Northern Brown Argus, and one of only two English populations of Scotch Argus.

The list of notable invertebrates in the AONB also includes the narrow-mouthed snail *Vertigo angustior*, which in the UK is known only from a few widely scattered localities. This is a tiny species, less than 2 mm in size, which is typically found in marshy ground and is often restricted to a narrow zone around wetlands, only a few metres wide, due to its specific microhabitat requirements. At Gait Barrows, however, it occurs in some local abundance in depressions within the limestone pavement (Killeen 1997).

[14] Notable and Characteristic Species in the Arnside & Silverdale AONB, G Skelcher, February 2016

For a limestone area the AONB contains a relatively good number of water features such as ponds, meres, mosses and dykes creating the right conditions for damsel and dragonflies, with at least 18 species regularly found here.

While the natural history of the AONB has been generally very well studied by researchers and amateur naturalists alike, the depth of biodiversity within the AONB is particularly well illustrated by a recent invertebrate survey of Warton Crag which found two species of sawfly which had never previously been recorded in England and a species of mite which had never previously been recorded in the UK (Knight 2012). It is highly likely that similar studies at other sites in the AONB (or, indeed, perhaps further effort at Warton Crag) would find other such notable invertebrates.

7.4 Plants

Well over half of the UK flowering plant species have been recorded in the AONB. This list includes 15 species of British native orchids, including the Lady's-slipper Orchid at one of its last two known UK locations prior to recent conservation reintroductions. Other notable species include the Lancaster Whitebeam which is only found around Morecambe Bay, usually on the sea cliffs and limestone pavements, and another UK endemic, the Purple Ramping Fumitory which is restricted to the west of Britain and the east of Ireland, typically growing in arable margins but also found, as in the AONB, on disturbed ground along road and path margins and in gardens (Skelcher 2005).

Perhaps one of the most important plant species in the AONB is the Blue Moor Grass, which is scarce in the UK as a whole but dominates the unimproved grasslands on the thin limestone soils. This species commonly grows in the AONB with a range of nationally scarce associates including Spring Sandwort, Dark Red Helleborine, rare Spring Sedge and Spring Cinquefoil. These species can also often be found scattered over open limestone pavement alongside other nationally scarce species; Rigid Buckler-fern, Limestone Fern and Angular Solomon's Seal.

7.5 Birds

The list of notable breeding birds for the AONB includes several reedbed specialists which are found at Leighton Moss such as Bittern, Marsh Harrier and Bearded Tit. Others, such as Marsh Tit are found throughout the limestone and wet woodlands, with the AONB being a stronghold for this Red List species.

In winter, Leighton Moss supports a significant proportion of the UK's Shoveler population, while the coastal marshes and sandflats support significant numbers of Shelduck, Curlew, Redshank, Black-tailed Godwit and Oystercatcher (Horner, Miller & Mower 2011; Marsh & Roberts 2012).

Internationally significant numbers of Oystercatcher can be found at high tide roosts on the coast each autumn and the intertidal flats are an important feeding station for long distance migrant wading birds such as Black-tailed Godwit, Knot and Dunlin.

7.6 Mammals

Leighton Moss also provides a home for some of the more notable mammals found in the AONB; providing a base for the resident Otter population and Reed Canary-grass habitat for Harvest Mice. Quicksand Pool is also the most recent location within the AONB where the rapidly declining Water Vole has been recorded. Red Deer are frequently found in the area.

8. Rich sense of history

The archaeological, built and cultural heritage of the area is integral to its character and quality, creating 'time-depth' within the landscape. Past settlement and use of the land and its natural resources have created the landscape we see today and have left a legacy of fascinating features which tell the story of the area over many thousands of years. The Historic Landscape Characterisations of Lancashire[15] and Cumbria[16] have identified and described a range of historic landscape types within the AONB. There are 10 Scheduled Monuments, 114 Listed Buildings and 655 entries on the Historic Environment Record.

Local Heritage Lists are currently being developed by the local authorities within the AONB, which will identify features of local historic or architectural interest and which also make a positive contribution to the unique historic character of the area.

Waterslack limekiln © Arnside & Silverdale AONB Partnership

[15] The Historic Landscape Characterisation of Lancashire, J Ede with J Darlington, published by Lancashire County Council, 2002

[16] A Guide to using the Cumbria Historic Landscape Characterisation Database for Cumbria's Planning Authorities, Cumbria County Council, July 2009

8.1 Prehistory

The earliest evidence of human occupation comes from the edges of the mosses, where people lived and exploited the rich resources of the wetlands and the upland areas around them during the Mesolithic period (8,000 – 4,000 BC). The earliest farmers appeared in the area during the Neolithic period (4,000 – 2,500 BC), beginning the large-scale clearance of the area's woodlands by a combination of deliberate clearance and livestock grazing to prevent regeneration.

During the Bronze Age (2,500 - 700 BC) and Iron Age (700 BC – 43 AD) the occupants of the area developed burial and ritual sites, in the shape of burial cairns, barrows and standing stones. Warton Crag was used as the site of a hill top enclosure with the stone walls still visible today within the woodland. Cave sites have revealed exceptional prehistoric remains that have been well-preserved in the limestone environment.

8.2 The Middle Ages

In 2011 a large Viking hoard, known as the Silverdale Hoard was found in the AONB. It is a collection of over 200 pieces of silver jewellery and coins which dates back to 900AD, a time of intense conflict between the Anglo-Saxons and Danish settlers of Northern England. It is particularly significant because of the presence of a coin stamped with the name of a previously unknown Viking king.

Warton village is listed in the Domesday Book in 1086 along with its church and Rectory, which are of international note. The Rectory built in 1267, served as both a residence and court house and although now a ruin, is cared for by English Heritage, it attracts many visitors. It is possible that the oldest part of St Michael's Church in Beetham dates from the Anglo-saxon era; the south aisle was added in about 1200 and the chancel was extended in the 13th century.

Arnside Tower, Hazelslack Tower and Beetham Hall are iconic historic features within the AONB. Arnside Tower is a rare free-standing tower house, probably built in the 15th century. Hazelslack Tower is interpreted as a pele tower or the former solar block to a now demolished hall from the late 14th century. Beetham Hall is a fortified manor house dating from the 14th century.

During the Middle Ages the settlement pattern over much of the area was probably dispersed, with farms and hamlets dotted among old enclosures, some possibly dating from prehistory. Changes to land tenure probably led to the establishment of some nucleated villages with communal, open fields, laid out in strips on the fertile eastern fringes of the area. Significant areas of the AONB are classed as Ancient Enclosure. This is characterised by an irregular enclosure pattern with sinuous or

wavy-edged field boundaries and winding lanes or tracks connecting a dispersed settlement pattern of isolated farmsteads and small villages and hamlets. Fields are irregularly shaped and often small. Anciently enclosed land in general has been farmed for hundreds, if not thousands, of years. Although most of these areas are farmed as pasture today, it is likely that many of the enclosures were at one time used for arable cultivation and the enclosure of open strips from medieval open fields can be recognised by long, narrow fields with an aratral curve, where the boundaries are a very shallow 'S' shape. The historic settlement pattern of Hale, Yealand Redmayne and Yealand Conyers reflects these origins. At Warton a planned medieval borough was established in the 13th century and the strip-like layout of the burgage plots in the area of the medieval settlement can still be seen in the modern field system.

From the 16th to 18th century much of the AONB's woodland was utilised as a fuel source and to produce other woodland products. Coppicing and pollarding wood for charcoal production was carried out to supply fuel for the local iron industry and sites can be found where charcoal pits were constructed by coppice workers.

8.3 The 18th and 19th Centuries

The 19th century Acts of Enclosure probably resulted in the remaining open areas or 'wastes' of the AONB being taken into private ownership by piecemeal local agreements between about 1600 and 1850. Fields enclosed at this time tend to be medium in size (4-16 hectares) with a significant proportion of small enclosures, often irregular in shape.

On Hawes Water, Silverdale Moss, Hale Moss and White Moss, long thin straight-sided fields relate to the later drainage and exploitation of the mosses for turf/peat cutting for fuel.

Enclosures were not restricted to dry land. Reclamation and enclosure of salt marsh has left a small number of regular enclosures on the coastal fringe of the AONB. In 1881 Mannex & Co. reported that 6,000 acres of sand flats were then *"in the course of reclamation"*. This almost certainly involved the use of slag from the Carnforth Iron Works to construct a sea wall or embankment. The remains of this failed attempt at enclosure can still be seen on Warton Sands today.

Field barns, ponds, wells, traditional boundary walls, hedgerows, water troughs, bee boles, deer leaps, milk stands, and historic pathways (such as the Coffin Route) are distinctive cultural and agricultural heritage features in the historic landscape.

8.4 Arrival of the railway

The construction of the railway had a considerable impact on both the landscape and communities of the AONB. With the arrival of the railway in 1857 there was a surge in both residential and industrial development, as the area was suddenly made easily accessible to the urban centres of Lancashire and beyond. Arnside had been a hamlet prior to the railway and quickly developed as a Victorian resort from the 1860s onwards. Many of the large houses and villas in Silverdale and Arnside were built by industrial entrepreneurs from the cities of North West England, investing their fortunes in grand houses away from the noise, murk and smoke of the Lancashire mill towns.

Industries in the area, in particular quarrying, benefited from the improved transport opportunities the railway provided. The building of a railway through the area was originally proposed in 1837 by George Stephenson, who sought to promote a coastal railway to Scotland, but it wasn't until 1857 that the Arnside Viaduct across the Kent estuary was completed, which provided the final connection of the Furness Line to the London & North Western Railway at Carnforth. The line through Sandside and Hincaster was added as an extra link to the main line in 1876, largely to facilitate the transit of coal and iron ore trains from Durham to Barrow.

8.5 Orchards

Orchards have been a feature of the landscape for hundreds of years; records from the early 1600s refer to the presence of orchards in Haverbrack and Beetham. Commercial fruit growing expanded when the railway provided improved access to markets in towns and cities and extensive orchards are shown across the area on early maps from the 1850s onwards.

There are now more than 90 orchards in the AONB which grow a wide variety of apple, plum, damson and pear varieties[17]. Numerous traditional varieties have been identified here with some unique to the AONB. There are at least 10 heritage apple varieties which have not been positively identified.

8.6 Historic industrial landscapes

There are a number of significant features in the landscape associated with past industrial activity, particularly quarrying activities. While the remains of quarries and their associated trackways, kilns and other features are perhaps the most obvious reminders of the industrial past, there were also other noteworthy industrial activities that have left their mark on the AONB.

[17] Orchards of the Arnside & Silverdale AONB, 2007

8.6.1 Limestone Extraction and Lime Working

Carboniferous limestone has long been quarried to provide building stone for the construction of cottages and farmsteads, and for agricultural walling. Numerous small abandoned quarries can be found within the AONB landscape; some were once worked by individual farmers, while others were communally owned by parishes providing for local needs. Locally quarried limestone was also used for mortar, lime-wash and as a soil conditioner after firing in lime kilns. There are 36 known lime kiln sites in the AONB, most of which are substantial limestone-built structures and form significant landscape and industrial heritage features. These probably fell into disrepair through lack of maintenance when it became cheaper to buy mass-produced lime products, but several of the most notable or accessible kilns were restored or consolidated during the Limestone Heritage Project between 2001 and 2007.

Numerous small abandoned quarries can be found which were worked by individual farmers or local communities, while other quarries developed into large-scale extraction industries, producing thousands of tons of rock annually, and are highly visible reminders of past industrial activity. Larger quarries at Sandside, Warton Crag, Trowbarrow, Middlebarrow, Jenny Brown's Point, Scout Crag and Cotestones were operated commercially. Only Sandside quarry remains active. The process of mixing limestone with bitumen to create Tarmacadam, used to surface Blackpool Promenade in 1904, was pioneered at Trowbarrow Quarry.

8.6.2 Mines and metal working

The remains of various types of metalliferous mines can still be seen, mainly within the southern half of the AONB. The chimney at Jenny Brown's Point is believed to have belonged to a failed copper enterprise although further research is ongoing. Shallow iron workings are found at the Cove in Silverdale and on the top of Cringlebarrow in Yealand Redmayne. The Backbarrow Company constructed a large iron furnace at Leighton Beck in 1713 and evidence suggests extensive use of water from Leighton Beck with canalisation of its course evident in places, and draining of the mosslands around Hale, to supply water to the iron-making process. Just outside the AONB boundary, Carnforth was a major iron-working centre and the slag banks on the southern edge of Warton Saltmarsh are a remnant of this heavy industry. Intensive coppicing and charcoal production in the area's woodlands were associated with the metal working industry.

8.6.3 Other industries

The chimney structure at Crag Foot was part of the engine house for the pumps which drained Leighton Moss up to the period of the First World War. At one time, this rich peat valley was an important arable and cereal cropping area, known locally as the Golden Acres. Names such as

Saltcotes in Arnside point to a history of salt collection and storage but further research is needed to identify the full extent of remaining associated features. Arnside was known as a centre for boat building; Crossfields family operated the boat yard there producing traditional nobby boats for shrimping and fishing in the Bay.

8.7 Historic Designed Landscapes

The AONB contains an interesting and attractive heritage of noteworthy buildings and designed landscapes that have a significant influence on the character of the area. Wealth that flowed from 18th and 19th century industry was channelled into the building of substantial new houses within the AONB, each surrounded by designed gardens and a wider area of parkland and tree planting, with copses, small woodlands and individual trees. Leighton Hall, Dallam Tower, Yealand Manor and the Hyning are good examples of properties that make a positive contribution to the character of the landscape in this way.

The country house and park of Dallam Tower dominate the landscape between Milnthorpe and Beetham and the registered parkland at Dallam Park is nationally important. Large villa properties set in landscaped grounds are distinctive features of both Arnside and Silverdale. Greywalls (now known as Ridgeway Park) and Hazelwood Hall, both associated with renowned garden designer Thomas H Mawson, and Ashmeadow House are good examples.

Research was undertaken in 2013 to provide an up to date and detailed study of the undesignated historic designed landscapes of the AONB[18]. 28 sites were surveyed and assessed, including individual and groups of houses. Of these sites, 11 were found to be of exceptional interest and quality including six that may be considered to be of national or international significance (Ashton House, Bleasdale School, Hazelwood Hall, The Hyning, Leighton Hall and Ridgeway Park), 9 sites (including 40 properties due to group value) were assessed as being particularly important and of regional and local significance and 7 sites are of local special interest (where the specific identifiable qualities and features warrant every effort to protect them). The quality of the gardens and designed landscapes is exceptional in this relatively small area.

8.8 Historic cultural associations

The area has a long association with the Quaker movement and forms part of '1652 Country', the area of northern England across which founder, George Fox, travelled and gathered many of the first

[18] Arnside and Silverdale AONB Historic Designed Landscape Research Report, Ed Bennis and Ruth Thurnhill, 2013

Quakers. George Fox preached at Yealand and Arnside; the Meeting House at Yealand Conyers was built in 1692 and is still in regular use.

Interestingly, Warton has links to the founding of the USA, in that the Washington family has ancestral links to the village dating back to around 1300. George Washington, first President of the United States was seven generations later than his ancestor, Lawrence Washington who settled in Warton in 1300. Warton Church flies the Stars and Stripes every 4th July, using a flag that had flown above the Capitol building in Washington DC, donated by a United States Senator at the end of World War II[19].

[19] http://en.wikipedia.org/wiki/Warton,_Lancaster

9. Distinctive settlement character

While there is evidence of occupation within the AONB dating back some 12,000 years, it is the stone buildings and settlements created during the last 800 years which contribute so strongly to the character and quality of the landscape today. This contribution lies not only in the strong vernacular traditions of the area but also in the settings of many of the buildings and the character of individual villages and hamlets.

View of Silverdale © Art-image

9.1 Vernacular style

Much of the vernacular building style dates back to Medieval times when some of the earliest stone buildings were built. Arnside Tower, Hazelslack Tower and Beetham Hall along with Warton Rectory, churches and older farmsteads represent some of the earliest buildings surviving within the AONB. They have a vernacular style that includes distinctive features such as the presence of date stones, small 'fire windows' and hood mouldings constructed over windows. Together with the 'slobbered masonry' used to weatherproof limestone rubble-wall buildings, these features demonstrate a strong local tradition that continued to be used by later generations, developing a local style of building that remains a key characteristic of the AONB.

Stone buildings utilising the local limestone are common across the AONB and make a major contribution to maintaining the special character of the local vernacular. There are 114 Listed Buildings in the AONB.

9.2 Settlement character

The distinctive settlement character and built environment of the villages within the AONB makes an important contribution to its overall character. The design, construction, materials and detailing of individual buildings, the form, layout and pattern of villages and hamlets and the settings of many of the buildings are key elements of settlement character. Limestone underpins the natural beauty and the use of local limestone in buildings and settlements across the AONB makes a major contribution to its special character.

Certain aspects of settlement character derive from their history, such as village layouts and the shapes of individual plots. The dispersed nature of Silverdale village, the linear pattern of the Yealands, the historic core of Beetham and the medieval layout of the centre of Warton, following old burgage plots, are examples. The density of housing, spacing of buildings and visual permeability are also important elements of settlement character. New development should respect and be in keeping with historic settlement character.

Open green spaces within settlements are an important aspect of settlement character. They can contribute to the setting and appreciation of important buildings and have historical significance in themselves, either as part of historic settlement pattern and form or as an archaeological resource. They can also allow public views in to or out from within the settlement and can provide a recreational resource for the local community. Open spaces add distinctiveness to the character and interest of settlements and the quality of life of their inhabitants and are a key part of the rural character of the AONB's villages.

Three built environment Conservation Areas in the AONB cover parts of Beetham, Warton and the Yealands.

9.2.1 Arnside

Arnside is a stone-built village situated along the Kent Estuary with a rising topography towards Arnside Knott. The area rapidly evolved as a seaside settlement in the mid-to-late 19th century. Buildings are concentrated in a sinuous route along the promenade, predominantly facing out towards the sublime views of Milnthorpe Sands and Arnside Viaduct. Buildings become more detached and interspersed further inland.

Due to the steep topography leading up to Arnside Knott, the village has a distinctively staggered appearance of roofs and chimney stacks which punctuate the skyline. Small pastures backing onto woodland have survived along the southern edge of Arnside and in the vicinity of Black Dyke and Redhills. These provide an attractive transition between the built development and the open countryside.

Throughout the village there is a sense of unity in the built form with a similar height, design and materials: buildings are two or three storeys, utilise Victorian revival detailing and are primarily constructed in limestone, some with sandstone dressing, and a blue-grey slate roof.

Along the promenade, there is a mixture of residential and commercial buildings. To the north of the promenade, buildings have traditional timber shopfronts, some with glazed canopies that face immediately onto the main street. To the southern end of the promenade, residential buildings are three-storey terraces with pitched gabled projections, some half timbering, revival detailing and enclosed by a stone boundary wall.

Whilst buildings are relatively clustered together throughout Arnside, the detached nature of some buildings on steeper topography emphasises the surrounding views of the estuary and Meathop Fell.

9.2.2 Beetham and Hale

Beetham village has medieval origins but the majority of buildings date from the late 18th to late 19th century. Beetham is a nucleated settlement, with a historic core and buildings arranged in a very linear form along Church Street and Stanley Street. Some larger manor houses and industrial buildings, such as Beetham Hall and Heron Corn Mill, are situated in more isolated locations to the north and south. The majority of the village (excluding the more modern buildings of the Billerud-Korsnäs factory) and a significant part of its surrounds, including parts of Slackhead, is covered by a Conservation Area.

Within the core of the village there are a variety of building types, heights and architectural styles, however the overriding impression of Beetham is a compact limestone built village. There is a mixture of cottages and barns of vernacular construction that face immediately onto a cobbled forecourt amongst the polite architecture of grander houses and St Michael's church, which are set back from the street and enclosed by a stone boundary wall.

Along the two main streets, buildings are predominantly two-storey with the exception of the three-storey Jacobethan revival Wheatsheaf Inn, a distinctive focal point at the juncture of two roads. Along Stanley Street there is a break in the development offering views of limestone outcrops.

Hale has a distinctive, historic character, retaining a medieval linear form with a characteristic 'main street'.

9.2.3 Silverdale

Silverdale is a dispersed rural settlement in coastal limestone pasture with views of Morecambe Bay. Historically, the Silverdale area was characterised by dispersed and isolated farmsteads often associated with springs and wells but, as a result of the mid-19th century railway development, houses and cottages developed in a more concentrated area along Cove Road, Emesgate Lane and Stankelt Road.

Buildings are varied in design and there is a mixture of farmhouses, barns, small cottages, public buildings and larger manor houses. Many of the Victorian and Edwardian buildings are designed in architectural revival styles, such as the Arts and Crafts and Art Nouveau traditions. These buildings are relatively secluded and enclosed by boundary walls with large gardens. In comparison, older and vernacular buildings have a greater presence by facing onto or sitting otherwise adjacent main highways.

Within the village, there is a juxtaposition of small two-storey cottages against the grander scale of larger houses and public buildings. Although there is a variety of building types and styles, these are harmoniously linked to the surrounding natural landscape through their traditional construction techniques, whether vernacular or revival, and materials.

Much of the village is fringed by small to medium sized pastures, which are enclosed by a characteristic pattern of limestone walls. Pockets of development are interspersed with woodlands and pastureland that form attractive open spaces and pastures follow a pattern of ancient enclosures in some areas. These open areas form a very important part of Silverdale's character.

9.2.4 Storth and Sandside

Storth and Sandside are two settlements which converge along the south side of the River Kent estuary. The two areas have a relatively scattered plan form, but generally follow the main artery – Storth Road – running north to south. Perpendicular to this road is the dismantled railway line which dramatically cuts through the limestone.

Storth, has a clustered, more finely-grained core of late-18th to late-19th century buildings situated around a small village green and war memorial. These buildings have a vernacular character, constructed in limestone, some rendered, with pitched slate roofs. Many of the buildings are terraced and face immediately onto the main road.

Following Storth Road south of this, the built form is predominantly 20th century housing, mainly bungalows and on individual, relatively large plots, with some late 19th-century buildings running adjacent the main road. Some late 18th and 19th-century two-storey cottages are dotted amongst the more modern houses.

Sandside is similar in the sense that there are older properties mixed within areas of 20th century housing, although differs in that there are significant areas of the settlement that are in business use including car sales, offices, storage and a quarry.

9.2.5 Warton

The village of Warton lies under the limestone outcrop of Warton Crag, which creates a dramatic backdrop to the area. The historic settlement of the village is focused primarily along one street which curves downhill, with some development north and south of this street. This most historic part of Warton is covered by a Conservation Area.

Warton has a distinctively fine grain due to the retention of its medieval burgage plot formation; compacted buildings face onto the highway with a narrow plot running from the main street, some with integral passageways to allow access to the rear. The area's historic importance is further evident in the remains of a late 13th-century rectory east of St Oswald's church.

Many houses and cottages date from the post-medieval period, constructed in a vernacular style of slate pitched roofs and rubble limestone or rendered walls. The village is also populated with some vernacular barns and public houses. More sophisticated architectural detailing is used in some mid to late 19th-century buildings, such as dressed limestone, bay windows and cornicing.

The main street has a deliberate linear village form and constricted layout, however the houses and cottages are relatively low rise at two-storey and the surrounding rural landscape can still be appreciated as part of its context.

9.2.6 The Yealands

Yealand Conyers and Yealand Redmayne are two stone-built villages that run along the east side of a limestone ridge. Yealand Conyers is located to the south on a steep incline that dips down to Yealand Redmayne and the hamlet of Yealand Storrs further north. Both settlements are characteristically nucleated and linear, but the relative openness along Flat Lane creates a distinction between the settlement boundaries. Within the Yealands, there is a mixture of building uses including houses, workers' cottages, churches, a Quaker meeting house, public house and school. These are either sited to face immediately onto the main road or set back, often behind a low stone wall. Traditional elongated barn buildings are also characteristic in the Yealands. These tend to run perpendicular to the highway. The overriding impression of the buildings of Yealands is of their traditional and vernacular construction – of two storeys, a mix of limestone rubble and rendered walls with pitched slate roofs.

Yealand Conyers has a much more dispersed arrangement of buildings; plots are intermittently small clusters of buildings, open spaces and fields. Scenic views of the surrounding landscape and distant fells are accentuated in Yealand Conyers due to this irregular formation and steep topography. The grain of Yealand Redmayne is comparatively finer, but due to the openness of fields immediately behind the village it still retains a rural 'sense of place'.

10. Strong community and culture

Vibrant communities exist within each of the villages and there is also a shared identity with parishes coming together as part of the AONB, strongly connected to the landscape. Working the land is the foundation of the rural economy; the long-standing cultures of low-intensity pasture management and woodland coppice management have created much of the distinctive landscape character we see today and the area remains very much a living working landscape.

Coppice worker © Arnside & Silverdale AONB Partnership

10.1 An economy linked to the landscape

Farming and forestry make a major contribution to the landscape. Landowners and farming and forestry tenants actively maintain the natural beauty and distinctiveness of the area. The interdependent relationship between land management, natural beauty, community and the economy is clear.

Just over 70% of the terrestrial area of the AONB was registered as agricultural land in 2010[20] with the majority of this being pasture for livestock grazing, predominantly beef and dairy cattle and sheep. Uptake of agri-environmental schemes is high.

[20] Defra Agricultural Census, 2010

Rural skills such as hedge laying, drystone walling, coppice management and maintenance of traditional orchards are vital for maintaining the traditional landscape and habitats of the area and regular training sessions and competitions are held with the involvement of local organisations.

Tourism is a key component of the local economy; around 14%[21] of businesses are involved in tourism business activity and tourism accounts for nearly a fifth of total employment within the area. The Morecambe Bay Visitor Survey, conducted in 2013 found the most popular reasons for people to visit the area were for its beautiful scenery and its peace and tranquillity.

Working to conserve and enhance the exceptionally high quality environment of the AONB helps create the conditions for sustainable economic growth and prosperity both locally and across the wider region and creates tangible connections between businesses, communities and nature.

10.2 Community involvement in AONB designation and management

In the late 1960s and early 1970s, the six parishes of the AONB played a key role in securing the designation of the area as an AONB, working collectively to seek funding and influence the Government through the Countryside Commission and the two County Councils involved in the designation process – Lancashire and Westmorland (pre 1974 local authority re-organisation). By coming together and working toward the designation of the area, the six parishes helped establish the AONB as a distinct location with an identity in its own right.

Local people raised money to buy and protect sites such as Trowbarrow Quarry, Arnside Knott and Dobshall Wood resulting in strong community ownership of the land.

The Landscape Trust is a charity which supports the objectives of the AONB formed in 1986. With over 1000 members, an active events programme and the production of a regular journal, the charity continues to go from strength to strength.

10.3 Involvement and volunteering

There are many opportunities within the AONB for people to get involved, learn about and actively participate in the conservation of the area. There are numerous local groups and societies that provide activities based on, and which support interest in, the AONB, such as natural history, local

[21] Protected Landscape Monitoring, Source: IDBR, 2009, Local Units

history, ornithology, sustainability and walking groups and societies. There is high community awareness of the area's unique qualities and of its designation as an Area of Outstanding Natural Beauty.

A strong culture of volunteering is reflected in the many thousands of hours that residents contribute to looking after the area by working with local organisations. Habitat and land management at many sites is undertaken by volunteers.

10.4 Cultural associations

The Victorian novelist Elizabeth Gaskell (1810–1865) regularly holidayed in Silverdale in the 1840s and 1850s. The Gaskell Memorial Hall in Silverdale is named after her and it is believed that some of her work was written in Lindeth Tower shortly after it was built. The English poet Gordon Bottomley (1874–1948) also lived in Silverdale in later life. The Yorkshire born English novelist Willie Riley (1866-1961) moved to Silverdale in 1919 and named his house *Windyridge*, the title of his first novel.

Today, many artists and craftspeople choose to live and work in the area, attracted by its scenic beauty, wildlife and quality of light. The Silverdale and Arnside Arts Trail runs every summer involving over 80 local artists and makers.

The railway line links two of the AONB's communities together (Arnside and Silverdale) and the area to the communities beyond the boundary. Just to the south, Carnforth Station is world famous for its cinematic association with the David Lean film "Brief Encounter" made in 1945, which now attracts cultural tourists from all over the world to the area. The Furness line provides an important rapid transport link to Manchester and Barrow, which reinforces economic and social connections to both neighbouring areas around Morecambe Bay.

10.5 Learning opportunities

In the last few decades, the AONB has also become a locus for scientific investigation and education, due to its outstanding wildlife and geology including the wide range of important habitats and species which are present in such a relatively small area and the ease of access enabling experiments and observations to be easily made. Examples of research projects carried out in the last few decades include investigation of requirements for notable local species such as the High Brown Fritillary in the bracken fields and coppices of Warton Crag, Bittern and Bearded Tit in the reedbeds of Leighton Moss, reintroduction of the Lady's-slipper Orchid to Gait Barrows NNR and other local sites and changes in saltmarsh distribution.

The RSPB employ teachers to work with schools and other groups at Leighton Moss, while the AONB Partnership, National Trust, Lancashire Wildlife Trust and Natural England all run training and educational events within the AONB. Several local schools operate Forest Schools.

10.6 Crossing the Bay

A unique cultural feature associated with the AONB and the wider Bay is the public byway across the Morecambe Bay sands, which extends from Hest Bank, south of Carnforth, over the Warton Sands and Kent Channel to Kents Bank near Grange-over-Sands. This is an extremely hazardous route that was used for centuries by coaches, carts, packhorses and pedestrians as a short cut to avoid the long roads around the head of the Bay and remained a major transport route until the completion of the railway in 1857.

The inherent dangers of rapidly changing quick-sands, river channels that moved around, the speed of the incoming tides and the importance of the route meant an official guide was necessary to aid safe passage. The Guide was first appointed by the Duchy of Lancaster in 1548 to guide traffic across the Bay. The current official 'Queens Guide to the Sands' still regularly guides groups on foot (and occasionally by other means of transport) across the sands today, though this is now done for recreation or charity fundraising rather than out of any necessity, with Arnside and Silverdale both commonly used as starting points for these walks. Attempting to cross the sands without local expert help is extremely dangerous. Arnside Coastguard in conjunction with South Lakeland District Council sounds a siren to warn of the incoming tide and carries out numerous rescues each year.

11. Opportunities to enjoy the countryside

The AONB is outstanding in the extent and quality of access available, providing wonderful opportunities to enjoy quiet recreation such as walking, cycling, wildlife watching and horse riding. The network of narrow lanes and minor highways is one of the delights of the AONB and, along with an intricate web of public rights of way, access land and other paths, provides many opportunities for people to come into close contact with the area's wildlife, geology and history, providing inspiring learning opportunities and engaging visitors with the landscape.

Walkers on Warton Crag © Arnside & Silverdale AONB Partnership

11.1 Walking and cycling

Typically the lanes are relatively narrow and undulating, having an intimate character; particularly where they pass through woodland where high tree canopies enclose the route and limit opportunities for views. Species-rich grassy verges provide wildlife corridors adjacent to the lanes. These are commonly lined by limestone walls in the southern parts of the AONB, while thick hedgerows are more prevalent in the northern part.

The lanes are linked by a comprehensive network of well-signed footpaths that provide good facilities for walkers throughout the area. Many paths are a result of early enclosure and the requirements of people to move between farms and villages, on to common resources such as

springs and wells, salt marsh grazing and woodlands, and to travel to places of employment such as quarries and mines. Improvements to the network have been made in recent times through various initiatives, creating a number of permissive routes and improving surfaces and gateways to improve countryside access for the less able.

In all the AONB has 181 footpaths and 23 bridleways, covering a total length of 110 km, and two byways open to all traffic. There is also a further network of permissive paths covering 17 km. Existing access to the coast enables visitors to experience the strong contrast between the landscape and the seascape and this will be enhanced by the future development of the England Coast Path.

The National Cycle Network (NCN) Route 6, runs through the area, between Warton, Yealand Conyers and Milnthorpe. Parts of the Lancashire and Cumbria Cycleways also run through the AONB along with the recently opened Morecambe Bay Cycle Way, Route 700, which takes the routes closest to the coast.

There is an area of open access land at Redhills Pasture and also open access to much of the National Trust owned land at Arnside Knott, Heathwaite, Eaves Wood, Jack Scout and Heald Brow; to the Lancaster City Council owned land at Trowbarrow and Warton Crag; to the AONB Landscape Trust land at Coldwell Parrock, Coldwell Meadow and Teddy Heights; and to the RSPB owned land at Warton Crag and Challan Hall Allotments.

There are numerous walking guides to the area including downloadable walks, heritage trails and geotrails. Easy access routes have also been created for those who require stile free routes. A Tramper (off-road mobility scooter) is hosted at Leighton Moss to enable people with limited mobility to access the reserve.

11.2 Access to the AONB

The excellent access afforded within the AONB is further enhanced by the relative ease of travel to the AONB from urban centres. There are train stations at Carnforth, Silverdale and Arnside which connect to Lancaster, Preston, Manchester and Leeds. Access to and from the M6 motorway is provided at junction 35, Carnforth, at the southern edge of the AONB. There are some bus services serving the villages within the AONB, which link to services at Carnforth, Lancaster and Kendal.

11.3 Other recreational opportunities

The area is well known for its recreational climbing and bouldering opportunities. Trowbarrow Quarry has many climbs, varying in difficulty. David Bowie songs have been the inspiration for naming some of the most famous climbs, including Jean Jeanie (VS 4c) and Aladdinsane (ES E1 5a). In all there are 151 routes and bouldering problems available in the old Quarry[22]. Trowbarrow Quarry has several walls each of which offers something different for both newcomers and experienced rock climbers. The site is especially popular later in the day as the main wall gets afternoon and evening sunshine.

The renowned Arnside tidal bore attracts sea kayakers who surf the incoming tide to the viaduct, there to be challenged by the 'stoppers' – standing waves of great force created by the narrow channel under the widest span of the viaduct. The estuary around Arnside is popular for fishing on the incoming tide, particularly at Sandside, and also for sailing, windsurfing and kitesurfing when the tide and winds are right.

Attractions, such as Leighton Hall, RSPB Leighton Moss Reserve, Wildlife Oasis and Heron Corn Mill draw people to the AONB and enhance the visitor experience.

[22] http://www.ukclimbing.com/logbook/crag.php?id=467

12. Sense of tranquillity, space and place

The AONB is a place for inspiration, spiritual refreshment, dark skies at night and clear, unpolluted air. People come here to relax, unwind and recharge their batteries, to get close to nature, breathe in the fresh sea air and absorb exhilarating wide open views. Tranquillity and a sense of space are easy to find both in the intimate inland landscape and on the hills and open coast.

Enjoying the view © Art-image

A strong sense of tranquillity arises from the peacefulness and calm which can easily be found throughout the AONB. The intimate scale of the inland landscape means that numbers of visitors are easily absorbed and people can enjoy the landscape without any great awareness of others, while recreation activities within the AONB are primarily quiet and non-intrusive, such as walking, bird-watching, cycling and horse-riding; causing little or no disturbance. Even in the busiest parts of the AONB, such as the seaside village of Arnside and the Leighton Moss RSPB Reserve, there is a lack of commercialisation which gives a very traditional and relaxed feel.

While tranquillity is, in many ways, a subjective quality, attempts have been made to quantify the elements which make a place feel tranquil. Research commissioned by the Campaign to Protect Rural England and others (Jackson *et al.* 2008) found that the most important elements for people in describing tranquil places were: *Seeing a natural landscape*; *hearing birdsong*; *hearing peace and quiet*; *seeing natural looking woodland*; *seeing the stars at night*; *seeing streams*; *seeing the sea*;

hearing natural sounds; *hearing wildlife*; and *hearing running water*. All of these elements can readily be found in the AONB.

A map of tranquillity in North West England (CPRE 2006) shows that the coastal zone of the AONB from Far Arnside, through Silverdale, to the southern end of Warton Marsh, is particularly tranquil, while nowhere within the AONB is subject to high levels of disturbance.

The area's distinctive character and unique combination of scenery, history, abundance of wildlife, peace and quiet, and culture make the AONB unique. For many, this very particular sense of place is the primary motivation to visit and creates a strong connection with and love for this landscape.

The area offers good stargazing opportunities due to the dark skies resulting from limited light pollution. On rare occasions the Northern Lights are visible.

13. A highly designated area

A measure of how important the area is for its biological, geological and historical interest is provided by the number and extent of designated sites which lie within the AONB. 49% of the AONB area is designated under European directive for its habitat, species or bird interest. A total of 54% of land within the AONB is covered by national Site of Special Scientific Interest (SSSI) designation while a further 12% of land area has been identified as being of local wildlife value by Lancashire and Cumbria County Councils. 10 Scheduled Monuments, 114 Listed Buildings, 1 Registered Park and Garden, and 3 Conservation Areas have also been identified for their historic value.

13.1 Natural Environment Designations

13.1.1 Sites of Special Scientific Interest

There are 19 Sites of Special Scientific Interest (SSSI) which lie either completely or partially within the boundary of the AONB. Together, these cover a total area of 4028ha; 898ha of which is terrestrial and 3130ha is estuarine.

This represents 54% of the total area of the 75 km^2 AONB; 20.5% of the terrestrial AONB (4370ha) and 100% of the AONB's intertidal zone. 15 of these SSSI are designated purely for their biological interest, 2 just for their geological interest and a further 2 for both biological and geological interest. The biological SSSIs are at *Arnside Knott* (167.94 ha), *Coldwell Farm Pasture* (0.82 ha), *Cringlebarrow and Deepdale* (50.16 ha), *Eaves Wood* (52.23 ha), *Far Arnside* (2.09 ha), *Jack Scout* (6.74 ha), *Leighton Moss* (131.62 ha), *Marble Quarry and Hale Fell* (43.09 ha), *Middlebarrow* (18.12 ha), *Morecambe Bay* (3130.07 ha), *Silverdale Golf Course* (0.60 ha), *Thrang End and Yealand Hall Allottment* (51.48 ha), *Thrang Wood* (4.77 ha), *Underlaid Wood* (106.59 ha) and *Warton Crag* (72.70 ha). SSSI with both biological and geological interest are at *Gait Barrows* (69.75 ha) and *Hawes Water* (89.39 ha). SSSI with only geological interest are at *Hale Moss Caves* (22.38 ha) and *Trowbarrow* (7.46 ha).

13.1.2 European Designations

In addition, there are 6 European designations which lie either completely or partially within the AONB boundary: 2 Special Areas of Conservation (SAC) designated under the EC Habitats and Species Directive, 2 Special Protection Area (SPA) designated under the EC Birds Directive and 2 Ramsar wetland sites. These sites overlap considerably but cover a single combined area of 3670 ha which represents 49% of the total area of the AONB; 100% of the intertidal AONB and 12% of the terrestrial AONB. The SAC are: *Morecambe Bay Pavements* (which include most of the

Cringlebarrow and Deepdale, Marble Quarry and Hale Fell, Middlebarrow, Thrang End and Yealand Hall Allotment, Underlaid Wood and Gait Barrows SSSI), which covers a total 2609.69 ha, of which 411.02 ha is within the AONB; and *Morecambe Bay*, covering a total 61506.22 ha, of which 3130.07 is within the AONB. The SPA/Ramsar sites are: *Leighton Moss* which covers a total 128.61 ha entirely within the AONB; and *Morecambe Bay*, covering a total 37404.6 ha, of which 3130.07 is within the AONB.

13.1.3 National and Local Nature Reserves

121 ha at Gait Barrows and Hawes Water have been declared a National Nature Reserve (NNR), while there are also three Local Nature Reserves (LNR) at Trowbarrow Quarry, Warton Crag and Warton Crag Quarry, covering a combined total of 41.04ha.

13.1.4 Local Wildlife Sites

Local Wildlife Sites are identified as *Biological Heritage Sites* (BHS) in Lancashire and *County Wildlife sites* (CWS) in Cumbria. These sites do not have a statutory designation but are protected through the planning system. There are 64 Local Wildlife Sites within the AONB covering 887.3 ha. These comprise 44 BHS in Lancashire covering 606.76ha and 20 CWS in Cumbria covering 280.5 ha.

13.1.5 Local Geological Sites

Geological sites which are of regional importance are designated as *Local Geological Sites* (LGS - previously known as RIGS or Regionally Important Geological and Geomorphological Sites). There are 7 LGS in the AONB; 4 in Lancashire (at 7 locations) and 3 in Cumbria (at 5 locations), covering a total area of 428.83 ha (9.8% of the terrestrial AONB).

13.1.6 Limestone Pavement Orders

There are 16 Limestone Pavement Orders within the AONB covering 15.9% of its area. Large portions of these sites are also designated SSSI and 5 form part of the *Morecambe Bay Pavements* SAC. These sites are recognised as being among the best examples of lowland limestone pavement in the world.

13.1.7 Ancient Woodland

One-third of the AONB is covered in woodland, 623 ha of which is considered to be Ancient Woodland within 45 different sites.

13.2 Historic Environment Designations

The Historic Environment Record (HER) holds information on known archaeological and historical sites: finds, historic landscapes, buildings and other aspects of the historic environment, plus information on past research and investigations. The HER is regularly updated with information on new sites and finds and additional details about existing sites with information provided from a range

of sources. Currently there are 655 Historic Environment Records in the AONB, including 10 Scheduled Monuments, 114 Listed Buildings, 1 Registered Park and Garden, and 3 Conservation Areas.

13.2.1 Scheduled Monuments

The Scheduled monuments within the AONB are: *Arnside Tower* (also a Grade II* listed building); *Beetham Hall (curtain wall and uninhabited portion)* (Grade II* listed); *Hazelslack Tower* (Grade II listed); *Ringwork in Dallam Park 380m south east of Dallam Tower*; *Dog Holes Cave, Warton Crag*; *Badger Hole, Barrow Scout, Warton*; *Warton Crag Hillfort*; *Round cairn on Summerhouse Hill, Yealand Conyers*; *Old Rectory, Warton* (Grade I listed); and *Stone circle on Summerhouse Hill, Yealand Conyers*.

13.2.2 Listed Buildings

There are 114 Listed Buildings in the AONB, 6 are Grade I, 10 are Grade II* and 98 are Grade II. In addition to those identified in 13.2.1, other Grade I and Grade II* listed buildings within the AONB are: *Dallam Tower*; *Orangery attached to south of Stables to north of Dallam Tower*; *Statue approximately 5m south of Orangery to Dallam Tower*; *Church of St Michael, Beetham*; *St Oswalds Vicarage, Main Street, Warton* (all Grade I); *Beetham Hall and attached outbuildings*; *Ashton House, Beetham*; *Heron Corn Mill and attached Mill Race, Beetham*; *Leighton Hall, Yealand Conyers*; *Quaker Meeting House* (formerly listed as Friends Meeting House); *Slackwood Farm, Slackwood Lane, Silverdale*; *Church of St. John,*
Emesgate Lane, Silverdale; and *The Castle, 15 Silverdale Road, Yealand Redmayne* (all Grade II*). *Dallam Tower* is the AONB's only registered Historic Park and Garden.

13.2.3 Conservation Areas

There are three built environment Conservation Areas in the AONB, within the villages of Beetham, Warton and the Yealands, which consequently benefit from greater protection from development.