



LANDSCAPE CHARACTER ASSESSMENT

LOTHIANS LANDSCAPE EVOLUTION AND INFLUENCES



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Pentland Hills Regional Park – Green Cleugh – Loganlea Reservoir © NatureScot

The Five Sisters Shale Bings in winter, West Lothian.© Lorne Gill/NatureScot

Pentland Hills Regional Park © NatureScot

Fidra, East Lothian © NatureScot

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

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

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

The information has been updated with input from the relevant Local Authorities. The historic and cultural aspects have been reviewed and updated by Historic Environment Scotland. Gaps in information have been filled where possible.

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

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

The content of this document was drawn from the background chapter information in “NatureScot Review 91 – The Lothians landscape character assessment 1998, *Ash Consulting Group*”.

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

1. INTRODUCTION



Area covered by this report.

Lothian is a region of the Scottish Lowlands, lying between the southern shore of the Firth of Forth and the Southern Uplands, and stretching from the North Calder Water in the west to the North Sea mouth of Dunglass Burn in the east. The view from the summit of Arthur's Seat in Edinburgh's Holyrood Park provides a panorama that encompasses the principal defining features of this region. It illustrates the unity of character of the landscape, which has long been recognised as a distinct geographic and landscape region.

The southern edge of the region is formed by a rim of moorland extending from Cockburnspath, along the Lammermuir Hills escarpment to the Moorfoot Hills. In the foreground, the abrupt edge of the Pentland Hills abuts the southern edge of the city, providing a barrier that separates the eastern and western sections of the lowland agricultural plain. The Forth estuary forms the northern boundary, bordered by a diverse coastal margin. Within the low-lying coastal areas rise several prominent hill ranges, such as the Bathgate Hills in West Lothian, and the Garleton Hills and North Berwick Law in East Lothian.

The underlying geology is relatively simple, consisting of Carboniferous sedimentary rocks, interrupted by small igneous outcrops and larger hill masses within the lowlands; and older Silurian and Ordovician rocks within the Southern Uplands. The diversity evident within this landscape reflects the influence of various physical and cultural factors on this geological framework. The fertile lowlands, coastal situation and good communications encouraged early settlement and there has been a long history of human activity within the Lothians, which is evident from the great diversity of cultural artefacts.

Today the Lothians include the council areas of the City of Edinburgh (excluded from the landscape assessment), East, Midlothian and West Lothian. Population estimates for the

region are 834,600, with the City of Edinburgh accounting for 57% of this figure. The region saw a higher than average increase in population in the ten years 2001-2011 (7.2% compared to 4.6% nationally), with East and West Lothian recording highest increases. This reflects a pattern of settlement expansion within the agricultural hinterland of Edinburgh, which continues today. It is generally a busy region, with commuter traffic on the network of minor roads introducing a sense of movement deep into the rural landscape. The more undeveloped parts of the uplands and the coast provide a sense of relative tranquillity.



Conifer planting and wind farm Pentland Hills. ©Lorne Gill/NatureScot

Agriculture is the predominant land use, with arable farmland on the fertile soils of the lowland plains and improved pasture along the foothills of the Lammermuir Hills and to the west of Livingston. Since the mid-20th Century agricultural intensification, field amalgamation and loss of hedgerows has resulted in arable landscapes that are simpler and more open. Within lowland areas, woodland cover is generally fragmented, mostly restricted to areas unsuited to agriculture, such as steep gullies or riparian strips, although there have been some small native broadleaved woodlands planted recently on agricultural land and in community woodlands around settlements. Conifer plantations of any size are mostly restricted to the south-western part of the region. The largest area of semi-natural habitat is within the uplands and consists of heather moorland, peatland and unimproved grassland.

Seven distinct landscape types can be distinguished within the region:

- **The Uplands.** Characterised by their altitude of 300 to over 500 m and their distinctive land cover of heather moorland, peatland and rough grassland. They include the

undulating plateaux of the Lammermuir and Moorfoot Hills and the more individual ridges and summits of the Pentland Hills. The uplands provide an impressive backdrop and characteristic setting to the region and are also very important for recreation.

- **Upland Fringes.** A transitional landscape along the northern margins of the upland areas. These are differentiated from the uplands by their more productive range of land cover types. In the east, a mix of improved grassland and some arable land predominates, while in the west conifer woodland is more characteristic.

- **Lowland River Valleys.** Distinguished mainly by their distinctive landform, which provides interest and variety within the lowland plains. They include the incised headwaters of the River Tyne, and the gorge-like valleys of the North and South Esk, Avon and Almond. Their steep slopes carry a relatively high proportion of the broadleaved woodland cover.

- **Lowland Hills and Ridges.** Occur within the lowland plains and river valleys, forming highly distinctive landforms, such as Traprain Law, that contrast strongly with their surroundings. This contrast is a result of underlying factors including the igneous rock type, less fertile soils and wetter local climate.

- **Lowland Plateaux.** Occur within the west of the region, where the lowland plains rise gently to merge with an area of undulating landform. They are characterised by a relatively wetter and more exposed climate, heavier soils and a land cover pattern dominated by grassland types.

- **Lowland Plains.** A broad swathe of gently rolling, fertile, predominantly arable farmland. They form the heart of the region, which is divided into eastern and western parts by the Pentland Hills and the urban extent of Edinburgh. The ploughed earth, fresh green of young crops, vibrant yellow of oil seed rape and warm colours of ripe cereals provide a strong sense of seasonal change within the farmed landscape.

- **Coastal Margins.** Form the northern boundary of the region along the Firth of Forth, eastwards towards the North Sea. The landform is generally flat or gently undulating, although there are some prominent isolated igneous outcrops, such as North Berwick Law, raised beaches and extensive salt marsh and dune systems. Land cover is dominated by arable farmland, interrupted by continuous urban development between Cramond in the west and Longniddry in the east, and punctuated by castles such as Tantallon and mansionhouses such as Hopetoun House.

2. PHYSICAL INFLUENCES

Geology

Three main geographical sub-divisions are recognised in describing the geology of Scotland; the Highlands, the Midland Valley and the Southern Uplands. The Midland Valley has the structure of an ancient rift valley in which the strata between the Highland Boundary and Southern Uplands faults have subsided relative to those on either side. The Lothians mostly fall within this valley, although the south-eastern margin straddles the line of the Southern Upland Fault. Here, the harder metamorphosed greywackes and shales of the Lammermuir and Moorfoot Hills, which lie within the Southern Uplands, meet the younger and relatively soft, gently dipping sediments of the Midland Valley lowlands.

The rounded hills of the Southern Uplands were formed during the Caledonian orogeny or mountain building era, about 495-435 million years ago, when sea-floor sediments laid down during the Silurian and Ordovician periods were strongly folded and compressed. Weathering and erosion of the Southern Uplands occurred in the early Devonian period, around 410 million years ago, depositing sediments northwards over the Midland Valley in alluvial fans at the foot of the hills and across the lowlands in braided river systems. The finer floodplain silts were mostly carried away, but the coarser sediment was deposited, forming sandstone and conglomerate rocks. These sedimentary processes were accompanied by volcanic activity, as andesitic and basaltic lavas erupted to become interbedded with the sediments and combined with the older Ordovician and Silurian sandstones and mudstones to form the core of the Pentland Hills.

There was a further period of uplift, folding, faulting and erosion in the late Devonian period (around 360 million years ago), when red sandstones and siltstones were laid down on relatively flat lowlands. These rocks crop out on the north-west side of the Pentland Hills where they overstep the Lower Devonian and Silurian sediments and lavas.

During the humid Carboniferous period (360 to 280 million years ago) an extensive delta formed over the Midland Valley, in which large quantities of mud and sand were deposited, close to sea level. Periodic inundation by the sea allowed deposition of sediments that later formed limestones and mudstones. A dense tropical rainforest clothed this plain, which decayed to form thick layers of peat and ultimately the coal seams of the Lothians coalfields. Ironstones, limestones and oil shales also formed, providing some of the raw materials for the industrialisation of the 19th and early 20th Centuries. Volcanic activity occurred periodically throughout the Carboniferous and the Permian periods (280 to 245 million years ago) and igneous outcrops form common features throughout the Central Lowlands, particularly in areas where Carboniferous strata are at the surface. Prominent examples include volcanic plugs, such as North Berwick Law and the Bass Rock; the laccolithic intrusions of Black Hill in the Pentland Hills and Traprain Law; and lava flows such as the Garleton Hills and Bathgate Hills.



Berwick Law, East Lothian. ©George Logan/NatureScot

Between the Permian and the Quaternary periods (245 to 2.4 million years ago) continental drift gradually carried Scotland northwards from equatorial to temperate latitudes. Around two million years ago, Scotland began to experience a cooler, wetter climate, leading to the glaciations of the Quaternary era. Ice sheets developed across higher and wetter ground, eventually covering the country, alternately melting in warmer periods and reforming as the climate became colder. River valleys in the Southern Uplands were deepened and widened and eroded rock was deposited as undulating sheets of till, or boulder clay, in lowland areas. Soft weathered materials covering the Southern Uplands were swept away by the ice sheets, but the effects on the landform were less dramatic than in the Highlands. Glacial erosion altered the main drainage system, causing many rivers to reverse their flows.

The ice sheets across Scotland receded between 16,000 and 10,000 years ago. As the ice melted, sea-levels rose, flooding the Forth Valley to about 16 m above its current level. In the Forth estuary the rising water deposited tidal clays and silts, which cover the floodplain today. Extensive deltas and terraces were formed where retreating ice slowed, leaving deposits of marine sediments. With the melting of the ice the land rose relative to the sea, so that by 11,000 years ago sea levels were below those of today. These fluctuations created a series of raised beaches, visible today along the shores of the Firth of Forth and the North Sea Coast.

Within East Lothian these marine deposits are up to 100 metres thick and raised wave-cut platforms form important coastal features in the Dunbar area.

Topography and Hydrology

The landform of the Lothians includes relatively flat coastal fringes, gently undulating lowlands and some steep upland scenery within the Pentland Hills and Southern Uplands.

The escarpment along the line of the Southern Upland Fault marks the junction of the lowlands with the Southern Uplands. The Southern Uplands include the distinctive dissected plateaux of the northern fringes of the Lammermuir Hills in the south-east, ranging from 300 to 550 metres, and the slightly higher Moorfoot Hills in the south. The typical Southern Upland scenery of rounded hills and smooth slopes reflects the properties of the underlying folded sedimentary rocks. Extending south-westwards from the outskirts of Edinburgh, the Pentland Hills form a high, narrow ridge rising steeply to a series of isolated summits, the highest of which is Scald Law (579m). Near Edinburgh the Pentland Hills are mainly composed of volcanic rocks which give the hills sharp summits, whereas the underlying Old Red sandstones and conglomerates create smoother, more rounded hills further south-west.



Pentland Hills from Calton Hill, Edinburgh. ©George Logan/NatureScot

The Carboniferous sedimentary rocks which cover the majority of the lowlands have generally been eroded to give a gently undulating surface, which has been further smoothed by a thick blanket of glacial till. The movement of ice was predominantly in an east-north-east direction and has formed characteristically aligned ridges and depressions, which are particularly evident in the East Lothian lowland plains. Kames, kettle holes and eskers are present in an almost continuous belt along the foot of the Lammermuir and Pentland escarpments. Their sands and gravels represent an important economic resource that has resulted in historically profitable quarries such as Hailes, Hermand, Dalmeny, and Binny Quarries. Craigeleith Quarry, originally just outside Edinburgh, provided the stone that helped to build much of the capital's New Town in the late 18th and early 19th Centuries. East Kirkton Quarry, near Bathgate, in the Carboniferous limestones, has yielded the earliest fossils of terrestrial four-footed animals in the world. The wide variety of building stone available is evident from the locally distinctive vernacular and other stone buildings of the Lothians, constructed from a range of deep pink and red sandstones, orange ironstones, pale cream limestones and sandstones and dark whinstone.

The most striking landforms within the lowlands are formed by igneous intrusions and extrusions, which contrast strongly with the surrounding agricultural plain, contributing to a strong sense of place. The Bathgate Hills form a distinctive rugged skyline, reaching 315m at the summit of Cairnpapple Hill. In East Lothian the uneven rugged slopes of the Garleton Hills and the distinctive cliffs and domed summit of Traprain Law are widely visible. Along the coast the steep crags of North Berwick Law and Bass Rock rise abruptly from the farmland of the coastal plain. Traprain Law and North Berwick Law in East Lothian and Binny Craig in West Lothian are striking examples of 'crag-and-tail' erosional features, created by the passage of the ice-sheet over the hard volcanic rock.

The erosive action of the ice sheet also influenced the drainage pattern and present day watercourses were almost entirely excavated by glacial meltwaters. Incised river channels are a characteristic feature: the North Esk in Midlothian and upper parts of the River Tyne near East Linton are good examples. The North Esk follows a glacial meltwater channel that is up to 60 metres deep for over 20 km. The major river valleys of the Tyne, Esk, Almond and Avon provide unifying features, linking diverse landscape types from the uplands to the coast. Many smaller rivers and burns drain the coastal margins into the Firth of Forth.

The River Tyne forms the main watercourse in East Lothian. It rises as the Tyne Water in the Moorfoot Hills near Tynehead in Midlothian and continues north-eastwards, fed by tributaries including the Gifford Water and Humbie Water. It becomes the River Tyne to the east of Pencaitland and flows into the North Sea at Tyne Mouth near Tynningham. The Whittingham Water flows from the fringes of the Lammermuir Hills northwards along a deeply cleft valley. East of Stenton it forms the Biel Water, following a shallow floodplain north-eastwards towards Belhaven Bay.

The North and South Esk are the main rivers of Midlothian. The North Esk rises in the Pentland Hills, north of Carlops and flows north-east towards Dalkeith through some deeply incised

gorges, cut into the sedimentary strata. The South Esk originates in the Moorfoot Hills on the southern border of Midlothian, flowing north towards Dalkeith, where it converges with the South Esk. From the confluence at Dalkeith the River Esk meanders north-eastwards to the Firth of Forth at Musselburgh. The Water of Leith rises in the Pentland Hills, flowing to Leith, where it enters the Firth of Forth. It is relatively modified, due to the amount of built development along its banks.

West of the Pentland Hills, the main river valleys also run in a north-easterly direction along valleys with some narrow, steeply-defined sections. The River Almond originates in the Cant Hills near Shotts and, fed by many tributaries, becomes a mature river, meandering through West Lothian to the Firth of Forth at Cramond. Further to the west, the Midhope Burn flows north-eastwards to Abercorn. The River Avon originates near Upperton in Falkirk and flows through the Avon Gorge. South of Linlithgow it forms the boundary between Falkirk and West Lothian. It broadens before it joins the Firth of Forth just east of Grangemouth.



Linlithgow Loch, West Lothian ©Niall Corbet/NatureScot

There are a few open water bodies in the Lothians, Linlithgow Loch is the largest, and is a kettle hole left when a large mass of ice, trapped in glacial deposits, melted. Several artificial freshwater bodies lie within the upland hills along the southern periphery of the Lothians. Both Cobbinshaw Reservoir and Gladhouse Reservoir support important breeding and wintering bird colonies and Cobbinshaw Reservoir contains areas of raised bog and scrub.

Soils

The soils of the Lothians consist of a complex pattern of different associations (groups of soil types that tend to occur together), generally aligned north-east to south-west, influenced by the underlying parent material. Climate, topography and geomorphological history have interacted with the parent material to produce a wide variety of soil types within each association. The major glaciations covered much of the Lothians with glacial till of varying thickness, the deepest covers the Midland Valley lowlands.

The folded Silurian and Ordovician greywackes of the Moorfoot Hills and south-western parts of the Lammermuir Hills mostly give rise to soils of the Ettrick Association. These are derived from drifts of bedrock material eroded by glacial action and consist mainly of thin layers of poor podzol, brown forest, gley and peaty soils in the hills, with brown forest soils and non-calcareous gleys on the lower foothills. Peat is present over much of the highest ground and in wetter basins and valleys at lower elevations. The north-eastern part of the Lammermuir Hills and the adjacent lowland fringes to the north are underlain by Devonian conglomerates, from which the overlying drifts are derived. These soils are mainly brown forest varieties with podzols occurring at higher elevations. The northern fringes of the Moorfoot Hills are mainly covered with soils of the Tynehead Association, which are derived from drifts eroded from the underlying Carboniferous sandstones and Ordovician greywackes.

The complex combination of lavas and folded Old Red Sandstone sediments underlying the Pentland Hills is reflected in the intricate arrangement of different soil associations. On higher ground the Bemersyde, Mountboy and Hobkirk Associations comprise a thin covering of podzols, brown forest soils, rankers and peats, characterised by heather moorland and rough hill grassland. The lower hill fringes in the north are covered by the Sorn/Humbie/Biel Association which is derived from a combination of Carboniferous and Old Red Sandstone sediments and lavas which form the parent material for gley and brown forest soils and peat. This soil association also occurs in East Lothian in a broad band running south-westwards from near Dunbar parallel to the Southern Upland Fault.

The most widespread of the soil associations, covering the majority of West Lothian and much of Midlothian, is the Rowanhill/Giffnock/Winton Association, which is derived from drifts of material eroded from the underlying Carboniferous sandstones, shales and limestones. On the higher ground of the southern and western fringes of West Lothian, soils are predominantly poor gley and brown forest varieties with peat. On the lower ground to the west of Edinburgh, along the Firth of Forth and in a broad belt stretching from the foot of the Moorfoot Hills across Midlothian and East Lothian to Haddington, the soils are mainly fertile brown forest varieties, supporting much of the region's arable production.

Along the northern and eastern coastal fringes the majority of soils are derived from raised beach deposits. These productive brown forest and gley soils, which belong to the Dreghorn Association, cover an almost continuous narrow band along the coastline between Edinburgh and Aberlady, where they divert eastwards inland towards the Tyne Estuary.

The calcareous raised beach soils of the Fraserburgh Association are derived from shelly sands and occur on terraces and sand dunes around Gullane, Tyne Mouth and Dunbar. Brown forest and gley soils, derived from estuarine and lacustrine raised beach silts and clays, are found along the valley of Peffer Burn.

Along the valleys of the North Esk, South Esk, Tyne and Almond, which formed the main glacial outwash channels during the ice age, soils are predominantly brown forest, gley, podzol and alluvial types of the Darvel Association, derived from fluvioglacial sands and gravels. Brown forest soils of the Yarrow/Fleet Association, also derived from fluvioglacial deposits, occur along other former glacial meltwater channel valleys on the fringes of the Southern Uplands. Fluvioglacial deposits provide the parent material for brown forest soils and gleys of the Eckford/Innerwick Association, which occurs along the fertile coastal lowlands around Dunbar, where the meltwaters washed down to the coast from the Lammermuir Hills and further inland in the foothills around Garvald.

Igneous rocks, formed by volcanic activity during the Permian and Carboniferous periods, provide the parent material for the slightly stony, mainly brown forest soils of the Dalkeith/Kirktonmoor Association. The most extensive area of this occurs in the Bathgate Hills.

Climate

The Lothians have a temperate maritime climate with typically warm summers and cool to cold winters. Precipitation is amongst the lowest in Scotland. Rain tends to fall fairly evenly throughout the year, though October is usually the wettest month and April the driest.

Mean annual temperatures across the region vary according to the combined effects of proximity to the coast, topography and, to a lesser extent, urban development. Within Edinburgh, mean annual minimum temperatures range from 5.9°C minimum to 12.7°C maximum at the Royal Botanic Garden. Temperatures along the coast at Dunbar are similar (6.2°C min/12.5°C max), while Penicuik in Midlothian (188 m AOD) is appreciably colder (4.2°C min/11.8°C max). January is the coldest month, with mean daily minimum temperatures of 1.4°C in Edinburgh, 1.9°C in Dunbar, 0°C in Penicuik and 0.7° in Livingston. Due to the effect of sea warming, the coast has notably fewer days of air frost. Dunbar has only 29.2 days a year. This increase with distance from the sea as well as altitude, so Edinburgh has 46.0 while Penicuik has 72.7 days of air frost a year. Snowfall follows a similar pattern. July is the warmest month, with mean daily maximum temperatures of 19.1°C in Edinburgh, 18.8°C in Dunbar and Penicuik and 17.1° in Livingston.

East Lothian enjoys the most sunshine of the region. Annual hours of sunshine are typically 1451 in Dunbar compared to 1427 in Edinburgh. Sunshine hours decrease further inland, to the west and with altitude. Livingston has an average of 1329 hours per year. At 118 m, Penicuik has only 1195 hours a year. Rainfall follows a similar pattern; much of the Lothians receives less than 900mm annually; lying in the rain shadow of the Southern Uplands. This effect is most pronounced along the East Lothian coast where Dunbar receives only 604 mm of precipitation, equating to around 115 days of rainfall a year. This increases to 704mm (124

days) rainfall a year in Edinburgh, 978mm (153 days) in Livingston and 980mm (155 days) a year in Penicuik.

Land Cover

The total land area of Lothian Region is approximately 1730 km². Over half of this area is agricultural land. The Lothians have been described as the ‘Garden of Scotland’ and the fertile soils of the lowland plains have allowed highly productive farming throughout the lowland areas of East Lothian, Midlothian and the eastern half of West Lothian. Arable crops are widespread, including wheat, barley, oil seed rape and potatoes. Intensification of agriculture has brought larger field sizes at the expense of field margins, hedgerows and copses and an overall reduction in the diversity of the farmed landscape. Low, thin hedgerows and scattered hedgerow trees, fence lines and shelterbelts now delineate the pattern of generally large fields. The lowlands, especially East Lothian, have a long history of market gardening. Some of these areas have inevitably given way to intensive arable production, but the region still produces significant amounts of brassicas and leeks.

Improved grassland is confined mainly to the heavier soils and more elevated terrain within the western half of West Lothian and the lower fringes of the Lammermuir, Moorfoot and Pentland Hills. Sheep are more numerous than cattle, particularly in the upland fringe areas. Stone dykes tend to be more evident in areas of irregular topography, where stone was more readily available.



West Lothian farmland ©NatureScot

Rough grassland, intermingled with heather moorland and peatland, occupies a relatively small proportion of the overall area of the region, mostly restricted to the Pentland, Lammermuir and Moorfoot Hills. Grazing pressures and afforestation have resulted in the disturbance and modification of large areas of heather moorland and blanket bog, so that few ecologically significant areas remain, but include those at Craigengar Hill in the Pentland Hills; Fala Flow and Dundreich Plateau in the Moorfoot Hills; and Lammer Law.

Extensive drainage operations and some afforestation have reduced the area of lowland peatland, which is now relatively rare, mostly confined to the wetter, western part of the region. The largest areas are at Auchencorth Moss in Midlothian; and Blawhorn Moss, Cobbinshaw Moss, Tailend Moss and Lochcote Marsh in West Lothian.

Woodland areas occupy less than 10% of the region, with a slightly greater proportion of conifer than broadleaved or mixed woodland. Copses, shelterbelts and small-scale woodlands are common features throughout the farmed landscape. Here, cultivation has often taken place up to the edge of riverbanks, thereby restricting areas of woodland (as well as scrub and unimproved grassland) to steeper, less accessible stretches of valley, such as Roslin Glen and Bilton Burn. The area has a large number of woodlands listed in the Ancient Woodland Inventory, although in West Lothian many of these are under threat from development.

Conifer woodland is concentrated mainly on the poorer peaty northwest fringes of the Pentland Hills. Elsewhere it occurs along with broadleaved woodlands in scattered shelterbelts and plantations throughout the farmed lowlands and upland fringes.

Broadleaved and mixed woodlands are mostly found in lowland areas along the river valleys of East and Mid Lothian, where they are often associated with designed landscapes, such as Tynningham, Whittingham and Yester within the valleys of the Tyne, Whittingham and Gifford Water respectively; and Penicuik House and Dalkeith House on the River North Esk. In West Lothian, broadleaved and mixed woodlands are less widespread and the largest areas are associated with estates along the Firth of Forth, such as Dalmeny and Hopetoun; and with Dundas Castle to the north of Kirkliston. In the west of the region, the system of shelterbelts, dating from the 18th and 19th Centuries, provides a strong spatial structure within the landscape.

The Lothians are bounded by coastline to the north, as the enclosed estuary of the Firth of Forth gradually merges eastwards into the North Sea. Much is of significant ecological value and there are extensive sand dunes and dune grassland at Aberlady Bay, Barns Ness and between Gullane and Broad Sands; rocky shorelines at Dunbar and North Berwick; and mudflats and saltmarshes at Tynningham, Blackness Bay and between Gosford Bay and Port Seton.



Tynningham Saltmarsh ©Stephen Longster/NatureScot

The region has a high proportion of urban and rural development and built development remains a key pressure, especially adjacent to settlements and along the road network. The City of Edinburgh accounts for much of this. Elsewhere the greatest concentrations of development are in West Lothian around Livingston and Bathgate and to the south of Edinburgh in Midlothian. In addition, Shawfair and Bush Estate are planned as major new settlements in Midlothian. In East Lothian, new development is largely concentrated within the outskirts of larger settlements, such as Tranent, Haddington, North Berwick and Dunbar.

3. HUMAN INFLUENCES

The Lothians have long been a key geographical area, with extensive fertile lowlands that were good for farming and well situated for communication by land and sea. They are rich with evidence of human activity and settlement.

Mesolithic (8000-4000BC)

The Mesolithic is the period between the end of the last Ice Age and the introduction of farming. It was a time of great environmental change when hunter-gatherer communities colonised Scotland. These people hunted wild animals, fished, gathered plants and shellfish for food, and sourced all the materials for tools, clothes and shelter from their surroundings. They would have had a deep knowledge and understanding of the landscape as they moved on a seasonal basis to exploit the changing resources within their territories.

Because of their reliance on natural and organic materials, remains relating to Mesolithic activity are rare and difficult to find; scatters of debris from flint and stone working activities are often the only traces and are found widely across the region but Lothian is notable for the discovery of two Mesolithic house sites, one at East Barns near Dunbar and one at Echline by South Queensferry. Both follow the same pattern of a sunken floor defining a sub circular area roughly six metres by seven metres with a circle of post holes around the perimeter. The buildings show evidence of several phases of rebuilding and have associated pits and other more ephemeral structures. Large quantities of stone knapping debris and roasted hazelnut shells were found at both sites; the nut shells provided dates from around 8400-8000BC.

The Neolithic Period and the early Bronze Age (c. 4000-2500 BC)

The Neolithic (New Stone Age) marks the introduction of farming around 6000-5,500 years ago. The origins and spread of Scotland's first farmers are hotly disputed, but farming appears to arrive as a "package" with domesticated animals and plants, new forms of stone tools, pottery and monumental construction projects. Evidence for settlement and agriculture is rare for this period but the early farmers also erected massive monuments such as cursuses, timber halls, henges, and stone and timber circles. Cursus monuments are long parallel-sided enclosures defined by ditches or timber rows, often located in comparatively flat areas in river valleys. Examples from Lothian follow this pattern running close to the River Esk at Westfield and the River Tyne at East Linton. The Lothians have no definite examples of the early massive burial monuments associated with the first farmers but a chambered cairn at Deepsykehead just over the administrative border in the Scottish Borders overlooks the headwaters of the River Almond which runs through the Lothians.

Between 2500 and 2000 BCE, bronze artefacts start to appear in Britain. They are accompanied by a new form of pottery known as beakers and new ostentatious burial rites for individuals featuring intact bodies with grave goods placed either in large round burial cairns or barrows, such as the cairns on the summits of several of the Pentland Hills. Stone-lined "cist" graves and cairns were often built within, or close to, existing Neolithic monuments such as the cairn within the henge at Cairnpapple Hill, or the massive cairn, Huly Hill, within the extensive ritual complex at Newbridge just west of Edinburgh. Recent DNA analysis indicates

that the individuals buried in this way are genetically distinct from the Neolithic farming community, hinting at an influx of new migrants with significant power and influence.

Later Bronze Age and Iron Age (700BC-AD100)

Around 1500BC there is a shift in the archaeological record; the massive monument building and ritual activity of the preceding centuries are replaced by settlement construction and agricultural activity.

The Lothians lack extensive evidence for the unenclosed hut circle settlements characteristic of the later Bronze Age in other parts of Scotland but have the possibly greatest concentration of other later prehistoric settlement types in Scotland. Many of these settlements are defined by massive defensive structures; ramparts, palisades, enclosures and ditches. The earliest examples of this defensive architecture are palisaded enclosures; farmsteads surrounded by a single massive timber palisade wall. Most of these are known from the cropmark record from arable lowland areas, but there are at least two upstanding examples in the Pentland Hills showing they were not just a lowland phenomenon.

Settlement defences become more elaborate over time and by the middle of the first millennium BC many are defined by huge ramparts and ditches enclosing large timber or stone houses and structures. These are found across the region and although they are generically described as “hillforts” many are found on lowland sites of little or no defensive value. Some sites do appear to have a more strategic element to their locations. East Lothian has many such settlements which occupy strategic points along rivers, while the Lammermuir Hills have a chain of hillforts on their lower northern slopes controlling routeways between the lowlands and the hills.

Standing over these settlements are a few hillforts in exceptional locations. Exploiting the geology of the region, large forts on Dumbiedykes Hill, Castle Hill, Arthur’s Seat, Traprain Law and North Berwick Law. Several of these sites have less elaborate ramparts than their lowland equivalents and less evidence for continued habitation. It seems likely that most of these sites functioned more as regional power centres than day-to-day settlements.

Towards the end of the first millennium BC, substantial defences fall out of fashion and unenclosed sites become more prevalent. It should be noted however, that some excavated hillforts such as the massive complex at Broxburn show cycles of defence construction and dismantling, alternating enclosed and unenclosed settlement on the same site for centuries. Unenclosed settlements had always been part of the settlement pattern in Lothian’s later prehistory.

While settlement evidence dominates the later prehistoric record, Lothian has one exceptional example of ritual activity from that period; a chariot burial at Newbridge, within the earlier prehistoric ritual complex. This form of burial is unique in Scotland and exceptionally rare in Britain; other chariot burials are known from Yorkshire and a single Welsh example. They indicate cultural contacts with France, but also show that the local landscape and route infrastructure was capable of allowing the use of wheeled transport.



Traprain Law, East Lothian. ©Lorne Gill/NatureScot

The Roman Period (c.AD70s-AD390)

There were several phases of Roman occupation in the Lothians. The first Roman expeditionary force penetrated in the later part of the 1st Century AD under the instruction of the Flavian Emperors. The Roman author Tacitus informs us that his father-in-law, the Roman governor and general of the province of Britannia, Gnaeus Julius Agricola, embarked on a series of campaigns to conquer the north. Whilst archaeology paints a more complex picture, the first phases of Roman military activity date to the later part of the 1st Century AD, particularly the well excavated and dated fort of Elginhaugh near Dalkeith. Much of the Lothians is believed to have been home to an Iron Age tribe known as the Votadini. One of their major centres was the hill fort of Dunpender, situated on Traprain Law. Excavation of the hillfort in the early 20th Century indicates that Traprain Law was a major power centre in the Roman Iron Age period. Its importance increased after the 1st Century AD, as many of the finds from the site date to this period and the structural evidence indicates that it was densely occupied. This importance continued till late Roman Period when an exceptional hoard of late Roman silver was buried at the site. While Traprain Law seems to have increased in importance during the Roman period, other sites in the area, such as Broxmouth hillfort near Dunbar, were abandoned by the early 2nd Century AD.

The Roman occupation of the Lothians focussed on central communication routes, building roads, forts, fortlets and camps. Two routes are known into the Lothians from the south, the first from York northwards via the Tweed (Dere Street) coming through Newstead and onto

the Forth, the other from Carlisle to the upper Clyde along the south-western edge of the Pentland Hills.

Alongside the known campaigns of the later 1st Century AD, the Romans returned to the area in the Antonine period (AD140s onwards), constructing the Antonine Wall between Forth and Clyde which was held for a generation. Other campaigns are recorded in the literature but difficult to detect archaeologically, except for the campaigns of the Emperor Septimius Severus and his sons in the early 3rd Century. Remains from these periods of invasion include the Roman fort at Inveresk which was accompanied by a civil settlement with extensive cropmarkings indicating the scale of use of the surrounding landscape. It is likely that evidence of Roman occupation in parts of the Lothians was obliterated by subsequent cultivation. Some evidence does survive, however, including the remnants of the fort at Cramond, and the grassy ramparts of the Roman fortlet at Castle Greg near West Calder. Stretches of temporary camps are also visible as earthworks and cropmarkings recorded from the air.

The Early Historic Period (AD400-AD1200)

By the early medieval period, references to this region no longer mentioned the *Votadini*, which had become or been replaced by the Kingdom of the Gododdin (the name *Guotodin* an Old Welsh word potentially has its origins in the tribal name that Romans recorded in latin as *Votadini*), a Brythonic kingdom and part of the *Yr Hen Ogledd*, or the Old North. Traprain Law still had some prominence in the early medieval period, as it features in the legend Saint Teneu and Kentigern (Saint Mungo). During this period Din Eidyn (Edinburgh), became the main power centre of the Gododdin. Din Eidyn was the location of the extended feast recorded in the epic Welsh poem *Y Gododdin*, which goes on to describe the defeat of the battle of Catraeth, fought in circa 600 AD. During the 7th Century, Lothian increasingly came under the influence and then control of the Anglian kingdom of Bernicia, the northern part of the later kingdom of Northumbria. Din Eiydn fell to Bernica and most of the Lothians was incorporated into their kingdom. Evidence of Northumbrian settlement is scarce but does survive in place names such as Athelstaneford, Tyningham, Auldham and the Chesters at Drem. While the timber hall at Doon Hill was originally thought to be Anglian, recent work has shown that the site dates to Neolithic period. Excavations at Castle Park in Dunbar uncovered an extensive Anglian settlement, and metal work discovered in a field at Kilspindie in Aberlady indicate that there was a high-status Anglian site in the vicinity. There is also evidence for early Christian churches at Aberlady and Auldham with its extensive burial ground dating to the early medieval period. The early medieval stone of Cat Stane, marked the location of an early medieval long cist cemetery. Evidence of a *grübenhaus*, or weaving workshop, suggests the presence of an Anglian settlement at Ratho.

The Medieval Period and early Modern Period (AD1200-AD1700)

East Lothian is home to some of the most productive agricultural land in Scotland. Early Medieval land routes crossed the lower hill slopes or the coastal strip in preference to the wooded areas and swamps that occupied the flatter, low-lying ground at the time. Communications were, however, relatively easy and for much of the period this led to the

Lothians being vulnerable to attack and invasion, becoming in effect part of the wider frontier zone of the Borders.

Areas under Scottish or English control in the 14th and 16th Centuries can be identified by the presence of the larger forts and castles. The distribution of tower-houses, 'peles' and 'bastel-houses' (partly fortified houses, usually with a vaulted ground floor), on the other hand, reflects the pressures of daily life in key areas straddling important through routes close to the national border. The majority of tower-houses built at this time are sited below the 150m contour and are a good indicator of the upper limit of cultivation and habitation.

Tower-houses and castles are common. Dating from the 12th to 17th Centuries, the building style of these vernacular buildings occasionally exhibits European influences. Dirleton and Tantallon are both baronial castles of the 13th and 14th centuries. Between the 14th and 17th Centuries fortified tower-houses, such as the massive Borthwick and Crichton Castles, were more common. The royal palace of Linlithgow was constructed in the 16th and 17th Centuries on the site of a medieval defensive fort. Its well preserved stone quadrangle is picturesquely situated on a promontory overlooking the loch.



Linlithgow Palace. ©Lorne Gill/NatureScot

Medieval times saw the erosion of much of the remaining native forest cover as clearance continued for agriculture, particularly around the monasteries and other landowning estates. In the Lammermuir Hills, settlements and fields at higher altitudes were progressively abandoned from the 14th – 18th Centuries as the climate became cooler and wetter during the

period known as the ‘Little Ice Age’. The remains of these settlements show up clearly on the ground and from aerial photographs. Traces of ridge and furrow ploughing can also be found. Climatic deterioration was not the only factor contributing to agricultural change. Population decline because of the Black Death and the impact of repeated English invasions were also significant factors.

Prior to the 18th Century, settlement was mostly in the form of scattered ‘farm touns’, with farmers generally holding joint tenancies. These consisted of groups of dwellings and farm buildings, surrounded by agricultural fields which were farmed using a ‘run-rig’ system. The land was divided into an area of cultivable ‘in-bye’ land and a larger area of pasture and rough grazing. The in-bye was divided into strips – ‘rigs’ - which were periodically reassigned among the tenants of the township so that no individual had continuous use of the best land. The in-bye and common grazings were often separated by a ‘head dyke’. These can still be traced in the form of stone walls or worn turf dykes. Changes in population levels, food prices, living standards and farming technology resulted in constant repositioning of the head dyke. Trees and hedges were still rare, partly due to the fear of encouraging birds which might damage the crops. Crop yields were very poor by modern standards, largely because the soil was stony, often poorly drained and cropped to exhaustion. Cultivation was by wooden plough drawn by oxen. Four men were needed to guide the operation and despite this, the soil was barely scratched. The short-term leases held by the farmers gave them no reason to improve their land and dwellings, which were built of dry stone and thatched with turf.

The first real towns or burghs were established in the 12th Century. The burghs heralded the beginning of overseas trade and exchange of goods, initially with France, the Low Countries and the Baltic. The typical Scottish burgh was most prosperous in the 16th and 17th Centuries. Wool, coal, hides and salted fish were common exports, and wine, spices, timber, clay roofing pantiles and iron were imported. Burghs such as Haddington, Linlithgow and Dalkeith served the regular needs of their local hinterlands and, by the early 18th Century, the numbers of these settlements increased dramatically, to cope with the expanding trade from the south. Market places were built in the form of a square or a wide street in towns such as Linlithgow. Tollbooths were commonly positioned overlooking the market place; together with mercat crosses these symbolised a town’s status as a burgh.

The Scottish burghs kept a tight hold of their trading monopolies up until the late 17th Century. They were so numerous that the development of rural communities was restricted during this period. There are some nucleated settlements in the area however, which appear to date from medieval times. In West Lothian industrial development has obscured much of the pattern of village settlement. Around Edinburgh, former villages such as Corstorphine and Duddingston have been absorbed by suburban expansion, although they still retain some of their original identity. The pattern of villages is best seen in East Lothian and Stenton and Garvald are good examples. In Scotland, villages in the English sense - a small settlement with church, inn, shops, smithy and possibly manor house - are almost wholly confined to the Lothians, due to the influence of Anglian settlement from the south.

English visitors in the 16th and 17th Centuries commented on the lack of woodland throughout the Lothians. They also noted the absence of enclosed fields, the low standards of housing and the poverty of the inhabitants. Thomas Kirke, writing in 1679 described the landscape as "being but one large waste surrounded with the sea". Other visitors mentioned the fertility of the arable Lothians but criticised the backwardness of farming techniques.

Descriptions by Scottish topographers were inclined to be as patriotic as English accounts were derogatory, emphasising to an improbable degree the fertility of the countryside and the abundance of produce. Accounts by Scottish writers tend to be catalogues of the seats of the gentry within each district and of the parks or policies that surrounded them. This emphasises the extent to which landowners dominated Scottish society and how their castles and mansions dominated the landscape. The areas around landowners' seats stood out like islands of improved, enclosed and wooded land in open, bare, countryside which had few field boundaries and little woodland. Their distinctive appearance continues to influence the character of the present-day landscape.

Perceptions of pre-improvement farming (pre 1760) have been heavily coloured by the writing of the 18th Century agricultural improvers who condemned it as archaic, inefficient and unchanging. It is worth remembering however, that they were propagandists who had every incentive to present an unfavourable contrast between old and new styles of farming.

The 18th and 19th Centuries

It was during these two centuries that the Lothians underwent extensive social and economic changes. The main contributory factors to these changes were agricultural improvements, industrialisation and expansion of communications. Agricultural improvements in the form of enclosure started as early as 1700. The 'Improvers' were landowners and farmers who introduced new ideas and equipment in order to improve the agricultural situation. They began to drain, enclose and lime the land and introduce the rotation of crops. They persuaded the tenants to take up these new ideas by building them solid stone cottages and granting longer leases. Trees, hedges and narrow shelterbelts were planted as windbreaks and new equipment introduced, such as the iron- swing plough. Often these changes met with resistance from the tenants who might, for example, uproot some newly-planted trees and hedgerows when the laird departed.

Notable early improvers were the East Lothian landowners Lord Belhaven at Biel, whose book *The Countryman's Rudiments* (1699) influenced new farming practice and development, and John Cockburn of Ormiston who founded 'The Society of Improvers of Knowledge of Agriculture' in 1723. He was the first in Scotland to abolish the old system of run-rig, enclosing his land into more productive fields, surrounded by a ditch and hedge with trees along the banks. He introduced crop rotation, established maltings, a brewery and a distillery, rebuilt Ormiston village and laid out a bleachfield. In 1736, he started the Ormiston Society, which brought together owners and tenants to discuss the merits of different aspects of improvement. Improvement became fashionable and the agricultural landscapes of the Lothians today reflect the extent to which his innovations were so widely adopted by his neighbours.

Grain production was increased by the application of lime, which also made it possible to cultivate marginal land. The Lothians had workable limestones to the east, west and south of Edinburgh and south of Dunbar and many of the stone-built vertical draw-kilns survive today, such as that at Burdiehouse, in south-east Edinburgh.

One consequence of these changes was a reduction in the labour required to work the land. The improvers built villages for the surplus labour force to live in, many working as traders or craftsmen. The villages also provided markets for farm produce and homes for workers on the landowners' estate. Ormiston served as a model for other villages, such as Athelstaneford and Gifford, which were founded or rebuilt in the 18th Century. Dalmeny and Tynninghame are fine examples of estate villages. Other leading improvers were George Rennie at Phantassie, Andrew Fletcher of Saltoun and the Earl and Countess of Haddington.

Architect designed model or home farms, such as Keith Marischal Steading, East Lothian (1801), featured strongly, as much the product of fashion as of practicality. Mostly in Classical, Gothic or Baronial style these continued to be built during the intensive High Farming period of the mid to late 19th Century and remain to this day the most architecturally formal of farm buildings.

Many of the improvement farm steadings of the late 18th Century and 19th Century comprised a courtyard grouping of buildings, with showpiece front range. The range of buildings including barn with relatively high walls and narrow air slit openings; circular or polygonal horse mills for powering threshing machines, or, as steam power developed in the 19th Century, larger engine houses identified by their prominent tall brick chimney stacks; cart shed and granary range; byre, dairy and cattle sheds, grieves house, and stables. On some larger estate farms, the stables formed part of a separate courtyard which also contained coach houses, harness and tack rooms, and grooms' quarters. The showpiece front range of a home farm usually featured a grand central entrance pend to a sheltered courtyard, surmounted by a clock tower, belfry, spire or doocot

Many surviving steadings are listed due to their special architectural and historic interest as good examples of agricultural improvement farms. Though many have become redundant in recent years due to farm amalgamation, increasing mechanisation, and need for new build centres of modern farming operations, they are increasingly being converted to residential or other new use, and continue to be a strong visual feature of the landscape, notably across East Lothian. Examples of conversions include Lawhead Steading on Tynninghame Estate, Ballencrief Steading, Aberlady and Thurston Home Farm, Innerwick

Semi-detached and terraced farm cottages, often built with pantile roofs, were also common and still remain a distinctive feature in the landscape of East Lothian and Midlothian. Rectangular lecturn, beehive or cylindrical 'Doocots' are also a common feature of the Lothians landscape. Many were built during this period although some date from the late 16th

Century, such as the lime-harled lectern doocot (1583) at Athelstaneford, restored in the late 1990s as the national Scottish Flag Heritage Centre.

The agricultural improvements created a more settled society with increased prosperity. From the early 17th Century there was a move from tower-house to country house as defence became less of an important issue for landowners. Large country mansions were built by rich landowners and successful merchants and, later, industrialists and manufacturers. Classical mansions of the 18th Century are common and Hopetoun House, designed by William Adam (1689–1748), is perhaps the grandest of these. William's son Robert Adam (1728–1792) designed several houses in the Lothians, including Seton, Yester, Gosford and Newliston in the late 18th Century.

Designed landscapes were laid out in a formal style from 1600-1750, such as Pinkie House, but in the late 18th Century most of the larger estates, such as Hopetoun, Tynningham and Yester, were remodelled in the more fashionable informal style. The *Inventory of Gardens and Designed Landscapes in Scotland* describes 59 sites of national significance in the region, one of the highest concentrations in Scotland. These designed landscapes are predominantly a legacy of the period of agricultural improvement and the growth of estates in the 18th and 19th Centuries, reflecting both the commercial and agricultural prosperity of the area and its favourable soils and climate. Many wealthy merchants escaping the grime of the city, and wealthy landowners, who needed access to Scotland's seat of power, built their country estates close to the city. As a consequence, a major part of the Edinburgh Greenbelt is taken up by these country houses, their designed landscapes and tenanted farms.

The mixed or broadleaved woodland belts surrounding these designed landscapes are often very prominent in the Lothian landscape, although parkland and mature parkland trees, boundary walls and architectural features such as the houses, lodge houses, gates and bridges, also contribute to the landscape character. In some cases external 'borrowed' landscape features are incorporated within the landscape design, for example, the use by William Adam of North Berwick Law as the terminal point of a vista from Hopetoun House.

Some remnants of the rural industries of the 17th and 18th Centuries can still be seen, such as Preston Mill in East Lothian. By the 1760s linen manufacture became a major industry in Scotland and some bleachfields, used for laying out cloth, survive today, for example in Gifford. Coal mining had been an important industry in the Lothians during the 18th Century, though not a new one, with a history of it extending centuries back in places like Prestonpans and Tranent. From the mid-19th Century, extensive deep mining, firstly of ironstone, then of coal and shale, as well as foundries, brickworks and railways brought about significant landscape changes, interrupting water courses, degrading farmland and dotting parts of the region with spoil heaps. The range of industries was vast and massive amounts of coal were needed to provide steam power for factories, as well as railways and ships.



Preston Mill, East Lothian. ©Lorne Gill/NatureScot

The present day landscape is strongly influenced by built features from the 18th and 19th Centuries, such as brick chimneys, railway viaducts, docks and massive stone built factories. Evidence of the mining industry is disappearing, but some features survive, such as the distinctive brick-built terraced dwellings at Newton Grange. James Young and others pioneered the world's commercial oil industry in West Lothian in the 1850s and production continued until the 1950s. Many of the distinctive reddish-orange 'bings' have been removed, but some survive; the most prominent are the Five Sisters near West Calder, and Faucheldean and Greendykes bings near Broxburn. These often remain hugely significant to local communities.

Coinciding with this industrial growth, Edinburgh became a thriving administrative and financial centre. The heavy industries brought employment for many and the population almost trebled as people moved from the countryside, where labour demand had been reduced as a result of the agricultural improvements. In the 30 years after 1850, housing development associated with the oil industry, brickworks, coal mines and iron mines began to overwhelm the older settlement patterns.

From the 18th Century onwards, engineering techniques allowed roads, canals and railways to overcome natural obstacles and the communications network expanded in response to industrial and economic requirements. The Edinburgh and Glasgow Union Canals were built in the early 19th century, to provide Edinburgh with cheaper building materials and coal. The life of the canals was cut short in 1842 by the construction of the railway network. Viaducts from this period remain as prominent features in the landscape, for example at Newbridge and

Linlithgow. The Forth Rail Bridge, a UNESCO World Heritage Site, is the most spectacular of the railway structures. The railways had a wide impact on Scottish towns. They created new population centres, encouraged tourism and coastal towns such as North Berwick and Gullane developed as holiday resorts.



Canal, Linlithgow, West Lothian. ©Lorne Gill/NatureScot

Considerable expansion of the fisheries and sea-borne trade required the extension of piers and harbours to cope with developing trade. Harbours were originally used for fishing and trade across the North Sea and later to ship coal from the Fife and Lothian coalfields. Up until the 18th Century, small fishing craft sailed from nearly every harbour along the east coast. Heavy sediment deposition in the Firth, particularly on the south side, proved fatal to the fishing industry during the 18th and 19th Centuries. Small ports that could not afford expansion lost their harbour trade.

20th Century onwards

At the outbreak of the First World War, many thousands were employed in shale, coal and the other heavy industries, particularly in West Lothian. The early 20th Century saw the dominance of UK manufacturing come to an end as the United States became the world's leading industrial nation. Since then, the service industry has provided much of the employment in the Lothians. The recession of the early 1980s arguably did not affect the region as badly as other parts of Scotland, due to this dependency on the service sector. Since then, service industries, such as banking, insurance and finance have grown, whereas primary manufacturing and construction sectors have all experienced decline. Lothian has little mechanical engineering

or manufacturing, but is well represented in some of the faster growing industries such as electronic engineering, paper printing and publishing. Increased mechanisation has continued to reduce the need for farm workers, although market gardening is still important, with some growers taking advantage of national distribution networks.

The decline in primary employment has been due in no small part to the contraction of the coal industry. The sites of some former collieries, for example in Dalkeith and Loanhead, are now industrial estates and others are being developed for housing. Tourism remains an important part of the Lothians economy, visitors attracted by the history, scenery and heritage. Golf is a major recreational land use and there are 52 golf courses in the region; 14 of these, including Muirfield, are coastal links in East Lothian, which is promoted as ‘Scotland’s Golf Coast’. Many coastal settlements are now popular tourist resorts and the old ports of Dunbar and North Berwick are good examples.

The coast is increasingly important as a centre for water sports such as diving, sea kayaking and wind surfing and there is sailing, canoeing and windsurfing on some of the larger reservoirs, such as Whiteadder. Cycling is also popular along the coastal trail in East Lothian, Go East Lothian, which offers panoramic views across the Forth estuary including the distinctive profile of Edinburgh’s Old Town from Longniddry Beach. The Lothians also provide extensive opportunities for informal recreation, such as walking and bird-watching. The John Muir Way, Scotland’s newest long distance route, opened in 2015 and connects Dunbar, John Muir’s birthplace, with Helensburgh, 215 km to the west. The region contains eight Country Parks as well as the Pentland Hills Regional Park, which provides an exceptional recreational amenity close to the city.

Shipping remains an important industry. The Forth Ports Authority owns and operates commercial ports on the Firth of Forth and has been the agent of considerable regeneration and spin-off growth. Hound Point, off Dalmeny is the largest export terminal for North Sea oil in Scotland. Crude oil from the Forties pipeline undergoes treatment at Grangemouth before being pumped to a tank farm at Dalmeny and then to the Hound Point terminal to be loaded onto tankers

With the closure of many branch rail lines in the 1960s, many redundant rural lines now form linear landscape features, often identifiable by their naturally-regenerated scrub woodland. They are of nature conservation, landscape and visual value and are also important as recreational routes for walking and cycling.

One of the most dramatic post-war landscape impacts has been due to the growth of the road system, particularly of trunk routes, which often follow prehistoric and Roman routeways, and motorways. The strategic position of the Lothians, at the junction of coastal and east-west routes, constitutes a nodal point on the national road network, resulting in major landscape impacts over broad corridors of lowland landscape. The Edinburgh by-pass, constructed in sections between 1980 and 1989 is now one of the busiest trunk roads in Scotland. Other major transport initiatives include the Borders Railway, which runs from Edinburgh to

Tweedbank and was reopened in 2015, and the Forth Replacement crossing, the Queensferry Crossing, which was opened in August 2017 including upgraded connecting road networks on both sides of the Firth of Forth.

The industrial revolution left a legacy of inadequate housing and thousands of council houses were built in the Lothians in the 20th Century. The identity of many villages was lost through settlement expansion, especially in Midlothian and around Edinburgh. Whereas traditional towns and villages had mostly been built of local stone, modern housing developments in Lothian were often very uniform, reducing the distinctiveness of older settlements.

The 20th Century saw the decline of the large rural mansion houses as architects such as Robert Lorimer promoted a fashion for the smaller villa. Their influence is especially evident from the numerous early 20th Century villas built along the East Lothian coast, which had been made more accessible by the railways.

Livingston is the only 20th Century new town in the Lothians, established in the 1960s, in part to ease overcrowding in Glasgow. It was conceived as a centre for workers in light industry, but in more recent years has become a dormitory settlement for Edinburgh. In 2001 the town had a population of 50,826, which by 2011 had increased to 56,269. Its scale, appearance and layout contrast dramatically with traditional West Lothian communities. The plan incorporates a robust landscape structure, based on a strong framework of woodland planting, which reinforces features such as stream valleys and former field boundaries and shelterbelts.

Housing development has tended to extend along key transport routes around Edinburgh, along the Firth, west towards Glasgow and outwards from the city to meet the by-pass. Several out-of-town commercial centres have developed at junctions, notably at Straiton in Midlothian. Shawfair new town is to be built on the site of the former Monktonhall colliery to the south-east of Edinburgh. This 180 hectare ‘south-east wedge’ site lies wholly within Midlothian and will include housing, commercial and business development that will extend to the by-pass. Shawfair railway station lies on the Borders Railway and will connect the new town with Edinburgh.

In recent years, development of onshore wind farms in the uplands and especially the Lammermuir Hills has brought about a noticeable change in the landscape character of these areas and is particularly apparent from lowland areas on both sides of the Firth of Forth.

Transmission pylons and 20th Century industrial structures are often very prominent in the landscape of the flat coastal plain. Torness nuclear power station began generating in 1988. It lies to the east of Dunbar cement works, which began operation in 1963. Both structures are highly visible, especially at night when lit, although Torness was painted sky blue under the direction of the Royal Fine Art Commission for Scotland to reduce its visual impact. The coal-fired Cockenzie power station began operation in 1967 and was decommissioned in 2013. The main structures have been removed, but its legacy remains in the form of Levenhall Links, a 134 hectare site reclaimed from the sea by building a sea wall and pumping pulverised fuel

ash from the power station into a number of ash lagoons. The site has been partially restored and shallow pools for wading birds have been created.



Torness nuclear power station ©NatureScot

4. CULTURAL INFLUENCES

A review of the work of artists, travellers, poets and writers who have painted or written about the region can help to identify areas of particular interest and also how perceptions of the landscape have changed over time.

The coastal situation of the Lothians and good communications by both land and sea encouraged strong trading links with Europe. By the 18th Century, Edinburgh was at the centre of the Scottish Enlightenment and became known as 'the Athens of the North'. Artists, travellers, poets and writers were attracted by the strong intellectual life of the capital and many individuals from the Lothians took part in the 'grand tour' to Europe. The rich exchange of ideas that followed influenced all aspects of culture, but it is perhaps the effect upon architecture, designed landscapes and agricultural improvements that are most evident in the landscape of the Lothians today.

One of the key figures of this period was Sir John Clerk of Penicuik (1676–1755), who travelled widely, going on the 'grand tour' to Italy in the 1690s to see the ruins of the classical world. In the 1720s he designed Mavisbank House with William Adam. He used the natural landform of the North Esk valley to create parks and gardens in the 'picturesque' style. He built Penicuik House in 1761, which became a great meeting point for figures of the Scottish Enlightenment and was patron to many artists, writers and architects, including the poet Allan Ramsay(1686–1758), who spent much of his later years at Penicuik House.

Many writers have found inspiration in the landscape and ancient strongholds of the Lothians. Allan Ramsay laid the foundations of a reawakening of interest in older Scottish literature, as well as leading the trend for pastoral poetry that had its roots in ancient Rome. In 1725 he was inspired to write his play *The Gentle Shepherd*, an appreciation of the virtues of country life, in the Lothians.

Sir Walter Scott (1771–1832) lived at Lasswade from 1798 to 1804, where he was visited by many literary figures, including William Wordsworth. He established a world-wide reputation and writings such as *Heart of Midlothian* and *Bride of Lammermoor* encouraged tourism to the Lothians in the 19th Century in search of the 'picturesque'. Similarly, Dan Brown's 2003 *The Da Vinci Code* draw many to the mysterious associations of Rosslyn Chapel.

Nigel Tranter (1909–2000) was probably the most prolific Scottish author after Scott. He spent much of his life in Aberlady and is said to have begun the day with a walk across the wooden bridge at Aberlady Bay which he called 'The Footbridge to Enchantment'.

The varied landscape of the Lothians has long been a source of inspiration for painters, particularly East Lothian, where the light is crisp and dependable. In the 1880s, John Pettie, Charles Martin Hardie and Arthur Melville set up the East Linton School popularising the area amongst painters. Hardie's friend Robert Noble (1857–1917) settled in East Linton during 1887 and over the next thirty years became a central figure of the group of artists working out

of East Linton. With a growing reputation in London, Noble encouraged artists from all parts of the UK to come and paint the landscapes of East Lothian. It was said of the banks of the River Tyne at this time that “one had to stroll with caution for fear of tripping over easels or painting kits”.

William McTaggart (1835–1910) was interested in nature and our relationship with it. He adopted the Impressionist practice of working *en-plein air*, painting landscapes and seascapes in Midlothian and East Lothian. Many of his later works depict the Moorfoot Hills which could be seen from his house near Lasswade, where he lived after 1889. He is regarded as one of the great interpreters of the Scottish landscape.

Patrick William Adam (1852–1929) studied under William McTaggart and painted various subjects, including landscapes, from his studio in North Berwick. In 1912 he became a founder member of the Society of Eight, a group of friends that included William McTaggart and Sir William Gillies.

Sir William Gillies (1898–1973), was born in Haddington and became one of Scotland’s greatest 20th Century painters, working mainly in still-life and landscape, depicting East Lothian, Fife and the Borders. Sir William MacTaggart (1903–1981), grandson of William McTaggart, was known for his landscapes of East Lothian, France, Norway and elsewhere. Born in Loanhead he went to Edinburgh College of Art, where he befriended William Gillies.

John Houston (1930–2008) painted landscapes in the expressionist style. He counted William Gillies among his tutors and was famously fond of the Bass Rock as a subject. John Bellany (1942–2013) was born in Port Seton and studied painting under Sir William Gillies, amongst others. Although travelling widely, the fishing communities of the east of Scotland, including those of East Lothian, continued to influence his work.