2. Evolution of Mid Devon Landscape

Geological setting

The geological history of Mid Devon is characterised by alternating periods of marine incursion and mountain building. During the Carboniferous period (359 to 299 million years ago), the area lay in a marine basin off a supercontinent (Pangaea), which included Britain and North America. Tropical erosion of this land mass generated large quantities of sediment, which were transported by rivers into the marine basin and deposited on the sea bed, forming thick layers of sandstones, shales and mudstones. Towards the end of the Carboniferous period, a mountain building event, known as the Variscan Orogeny, occurred and heat generated by the associated volcanic activity turned the shales into slates. Figure 2.1, shows that over half of Mid Devon is underlain by sandstones and slates of the Carboniferous period.

The Variscan Orogeny also resulted in the uplift of Devon above sea level, exposing the land to a sub-tropical climate. This climate, which prevailed throughout the Permian (299 to 251 million years ago) and Triassic (251 to 200 million years ago) periods, led to the creation of thick deposits of wind blown material, and coarse breccias and sandstones laid down by impermanent rivers towards the east and south of the District. Marine incursion occurred once again during the Cretaceous period (146 to 66 million years ago), depositing sands and clays along the easternmost boundary of Mid Devon and completing the composition of the solid geology of the District.

The geology to the east of the district forms part of the only extensive outcrop of Upper Greensand in the region. The flat plateaus are dominated by hard chert bands, made up of clay with flints, of Upper Greensand with some remnants of chalk. The cretaceous rocks rest over eroded Jurassic and Triassic beds, with an outcrop of Rhaetian beds. Upper Greensand is often devoid of calcareous material but the sands yield fossils of marine bivalves and gastropods (snails) preserved in silica (Strategic Flood Risk Assessment for Mid Devon, 2009).
Topography
key
244 metres (800 feet)
122 metres (400 feet)
0 metres

Figure 2.2: Location Plan
Drainage and Topography

During the last ice age (c. 18 000 years ago), the ice sheet is not thought to have moved southwards into Devon beyond the cliffs of Bideford Bay, and the present day landscape has gradually been created by river erosion during the last two million years (Devon County Council, 2005). The vast majority of Mid Devon is located within the catchment of the River Exe, which flows from north to south through the centre of the District. The westernmost part of the District drains to the River Taw, which flows north-westwards to Bideford Bay.

North of Tiverton, the steeply rolling landscape is dissected by the incised tributaries of the River Exe. The steep sides of these narrow valleys are covered extensively by woodland, predominantly oak but replaced by conifer plantations in some areas. Incised river valleys also occur in the more gently undulating Taw catchment. The broader floodplains of the Exe, Taw, Culm, Creedy and Yeo are used predominantly for permanent pasture but some large-scale buildings have also been located here (e.g. a textile factory, school and college at Tiverton; paper and feed mills at Thorverton, Cullompton and Uffculme). Towards the south of the District, these rivers flow through the Mid Devon Farming Belt, which is characterised by a gently rolling landscape. In the east of the District, the Cretaceous deposits (a porous layer of greensand sandwiched between impervious clay with cherts) have caused springs and areas of impeded drainage. The Culm and its tributaries have eroded the landscape to create steep slopes rising to a plateau. The southernmost tip of the District comprises steeply sloping land with extensive areas of woodland and plantations with springs emerging to drain into the Yeo (Creedy) catchment. (Strategic Flood Risk Assessment for Mid Devon, 2009).
Figure 2.3: Ancient Woodland

Historic Landscape Characterisation

key

- Ancient semi-natural woodland (ASNW)
- Plantations on ancient woodland sites (PAWS)
- Scheduled ancient monuments

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Historic landscape

The landscape of Mid Devon has been created by thousands of years of human activity that includes the clearance of the landscape of forests for farming, the impact of farming itself, creation of field systems, farmsteads and settlements, as well as the building of defensive sites and the establishment of industrial activities, all of which are influenced by and reflective of the district’s topography and geology.

Some of the earliest man-made landscape features, prehistoric forts, can still be seen in the modern landscape, for example at Cadbury, Huntsham and Castle Close east of Stoodleigh, where the outline of these forts has been incorporated and ‘fossilised’ in the later field system. A prehistoric field system has been identified by geophysical survey at Raddon Top in Stockleigh Pomeroy, but no above ground evidence is visible.

Fourteen hill slope enclosures, dating from the Iron Age have been identified on the Blackdown Hills, and prehistoric remains, from about 100 BC, have been found in Hemyock. Evidence of Roman forts have been identified, through aerial photography, to the north of Tiverton, west of Cullompton, Bury Barton - near Lapford - and at Cudmore Farm east of Bampton. In total 52 historic features are listed as scheduled monuments within the Mid Devon district.

The long and varied history of farming in Mid Devon was influenced by the conquering and encroachment by the Saxons onto Celtic Lands in the 7th Century, particularly the fertile areas of red soil. The less fertile Culm Measures tend to have been cultivated later when good farm land became more scarce, and was used mainly for sheep grazing.

The land enclosed on the plateaux of the Blackdown Hills contains evidence of an iron-extraction industry that was active between the Roman and medieval periods, earthworks of which can still be seen at North Hill near Blackborough. On the valley sides evidence can still be seen of the large, linear, spoil heaps that are derived from the excavation of the whetstone mines into the hillside.

The medieval period resulted in a lasting legacy of small, irregular fields enclosed by Devon hedgebanks, with traces of ridge and furrow indicating areas of past cultivation. The survival of narrow medieval fields that have developed from the later enclosure of earlier open strip fields can also be seen in parts of the District, such as to the east of Culmstock. The removal of hedges for the creation of larger fields in which modern agricultural machinery can easily operate has led to the loss of many medieval field systems in the District. Where earlier field boundaries have been removed these are often still visible as cropmarks or slight earthworks on the line of former banks.

The historic layers of land-use development in Mid Devon are overlain and interwoven, sometimes reinforcing, sometimes obliterating what was there before. Today there is the danger that these layers may be obliterated through development, large-scale forestry or rapidly changing agricultural practices.
Conservation

A number of locations within Mid Devon are protected by conservation designations (figure 2.4. Environmental Designations). The Blackdown Hills Area of Outstanding Natural Beauty was designated in 1991 to conserve its unique geology, ancient landscape features and diverse wildlife habitats. It covers a total area of 370 km², of which around one-fifth is located in Mid Devon. There are also 12 Sites of Special Scientific Interest and three Local Nature Reserves (Charwell Wetlands, Bradninch; Palmerston Park Woods, Tiverton; and Great Western Canal Country Park, Tiverton), two nature reserves managed by Devon Wildlife Trust Ashculm Turbar, Clayhidon; and Lickham Common, Hemyock; plus a number of non-statutory designations including County Wildlife Sites, County Geological Sites and over 8 km² of Ancient Woodland.

The cultural heritage of Mid Devon is also protected. Fifty locations within towns and villages have been designated as Conservation Areas under the Planning Act 1990, in view of their special architectural or historic interest. This designation gives Mid Devon District Council greater control over demolition, minor developments and the protection of trees. There are also 49 Scheduled Ancient Monuments (e.g. Hemyock Castle and Bampton Castle) and 2,572 listed buildings, some of which are also Scheduled Monuments. (Strategic Flood Risk Assessment for Mid Devon, 2009).
Agricultural Land Classification

Grade 1 and 2 - excellent/very good quality agricultural land
This is prosperous agricultural land with no or minor limitations to its agricultural use. A wide range of agricultural and horticultural crops can usually be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables with generally high yields.

This highly fertile land occurs mostly within the area of Red Devon Sandstone (as shown on the Geology Plan 2.1, p12, illustrated in orange as Permian Basal Breccias, sandstones and mudstones). This area, often referred to as the Red Devon Sandstone Belt or Mid Devon Farming Belt, is concentrated within the centre of the district surrounding Tiverton, the Culm Valley area to the east and to the south surrounding Crediton. The soil is characterised by the rusty red colour of the Red Sandstone, is fertile, well drained and easily ploughed. It is the main area of farming wealth within the district and is a mixture of arable and grazing land. The agricultural prosperity of the Red Devon Sandstone Belt is reflected in the number of Grade 2 listed farmsteads which are found within the Exe Valley and Crediton area.

Grade 3 - Good to moderate quality agricultural land
This good to moderate quality agricultural land forms the majority of the district and is located within the extensive Culm Measures north and northwest of the district and is also found within the Upper Greensand layers within the Blackdown Hills to the east of the district. This land is capable of consistently producing moderate to high yields of a narrow range of crops, principally arable crops, cereals and grass.

The soil found within the Culm Measures north of the district is generally a characteristic yellow ochre which is probably a heavy clay loam and is described as slowly permeable, seasonally waterlogged clayey, fine loamy or fine silty soil. It is poor for farming with poor draining qualities, in contrast to the areas of red sandstone soils. The poor infertile quality of the soil has resulted in the creation of unimproved flower rich grassland and has historically been used for grazing with little arable farming.

The composition of the Upper Greensand, underlying much of the plateau within the Blackdown Hills area is covered by a superficial deposit of clay-with-flints and chert. Dark-topped, organic, peaty soils are found on the plateau which give an indication of the former extent of heathland vegetation.

Grade 4 – Poor quality agricultural land
This is land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. It is mostly found on the steep valley slopes, concentrated to the south of the district which abounds Dartmoor, within the Exe Valley and valley slopes of the Culm Measures. It also occurs on the steep scarp slopes of the Blackdown Hills.

Grade 5 - Very poor quality agricultural land
Only occurring in one small area to the north of the district, this land has very severe limitations which restrict use to permanent pasture or rough grazing.