Part Two

THE MID SUSSEX LANDSCAPE

THE MID SUSSEX LANDSCAPE

THE PHYSICAL LANDSCAPE

Introduction

2.1 The landscape of Mid Sussex has evolved as a result of interaction between the physical structure of the landscape and the vegetation and land uses that cover it. To understand what makes the District landscape distinctive, it is necessary to identify the key physical and historical influences that have shaped the landscape over time.

2.2 Mid Sussex District (33,403 hectares) is relatively long and narrow, stretching from its boundary with Surrey in the north to the boundaries of Adur District and Brighton and Hove City in the south. It is the easternmost West Sussex District, bounded to the east by East Sussex and Lewes District and to the west and north-west respectively by Horsham District and Crawley Borough.

Geology, landform and soils

2.3 The structure and relief of the landscape is fundamentally influenced by the underlying rocks. Geology and the process of weathering, erosion and deposition influence the shape and form of the landscape and its drainage and soils. In turn, these influence patterns of vegetation and land use.

2.4 The District crosses the main geological divisions of the South Downs and the Weald and, as noted earlier, contains three national Character Areas (South Downs, Low Weald and High Weald). The topography of the District is shown on *Map 2.1*.

2.5 The area of the District includes the complete sequence of Wealden basin rock strata occuring in West Sussex and most of the rock members, the youngest in the south, the oldest in the north. Unconsolidated deposits from the recent Quaternary era ("drift") include small deposits of clay-with-flints on the downs. More substantial deposits of *head* (structureless deposit consisting of unweathered flint within a matrix of chalk mud and disintegrated chalk resulting from soil movement and flow) lie in the downland valleys and form extensive outwash from the downs along the lines of streams crossing the downland footslopes. There are also significant river terrace deposits. The simplified geology of the District showing drift and the underlying rock strata is shown on *Map* 2.2.

2.6 The pattern of the countryside of the District is a direct consequence of its geological history. Geology matters in the Mid Sussex landscape because it reveals clearly the evolution of the strong and striking landforms with which we are so familiar today. Running across the district in (mainly) parallel bands, the various landforms are reflected closely in the boundaries of the ten Landscape Character Areas. The local geology therefore explains why the assessment of individual areas is structured in the way it is and supplies the logic for singling out certain areas for individual treatment. The relationship between the principal land areas, the underlying geology and the landform is illustrated in *Table 2.1*.

The formation of the Wealden landscape

2.7 From about 144 million years ago central Europe including the South of England was a flooded basin. Sea levels then were some 350+ metres higher than today and temperatures also 20+ degrees higher. A semi-tropical lagoon stretched from the Pennine Hills to central Germany. This warm, still lagoon was home to millions of minute marine creatures protected by delicate calcareous shells. As they died,

their shells were deposited on the lagoon floor. The deposition of many millions of shells over many millions of years formed a chalk bed some 400 metres thick in places. This process defined the *Cretaceous* (chalk) period - the only period of chalk formation in earth history. It was also the time when flowering plants (*angiosperms*) evolved. The period ended abruptly, obliterating the dinosaurs together with many other life forms. Theories about how this abrupt ending came about continue to be the subject of debate, including the possibility of a massive meteor hit.

Table 2.1: ***LANDSCAPE AREAS, GEOLOGY AND LANDFORM IN MID SUSSEX***

Landscape Area	*Geological strata*	*landform*
South Downs	South Downs chalk (Upper and Middle Chalk and Lower Chalk and the thin, harder band of Melbourn Rock between the two).	High chalk downland. Steep, north-facing scarp and dip slope dipping south. Lower Chalk forms a flatter area at the base of the scarp that merges with the scarp footslopes.
Scarp footslopes	Lower Chalk, then a thin band of Upper Greensand and beyond it a vale of Gault Clay.	Lowland clay vale.
Scarp footslopes	Sandstones and sands of the Lower Greensand including the Hythe Beds, the Folkestone (sandy) Beds and a small area of Fuller's Earth near Poynings (the Sandgate Beds and Atherfield Clay are absent).	Lowland. Low sandstone ridges separating the Gault Clay vale from the Low Weald proper.
Low Weald	Weald Clay containing members of Paludina Limestone (can occur locally as marble), Horsham stone (flaggy sandstone), ironstone, sand and Marker Clay.	Lowland. Alternating low ridges and clay vales.
High Weald	Hastings Beds comprising sandstones, sand and clay of the Tunbridge Wells Sand (including the Ardingly sandstone member), the Grinstead Clay (including the Cuckfield Stone member) and the Wadhurst Clay.	Hilly land. Plateaux, ridges and valleys, deeply dissected with narrow, steep-sided valleys.

2.8 Following this period and pre-dating the mountain-building event leading to the creation of the Alps, the great chalk basin was uplifted bodily into a dome (called an *anticline*). This sloped away to the north and south at a gentle angle today revealed by the dipping slopes of the North and South Downs. Since then the whole centre of the dome has been eroded away, most of the chalk (soluble in water)

being stripped out, revealing the older clays and sandstones beneath, also heavily eroded. The whole structure today can be thought of as a long pie from which the domed pastry covering (chalk) has been removed, revealing the layers of meat and veg (clays and sandstones) underneath, the (chalk) crust remaining on the edges.

2.9 The resultant assembly of landforms is what we know today as the downs and Weald. The form of the downs has been modified further by the side-effects of glaciation. Although the downland was not shaped by glaciers, the porous chalk was frozen solid and became rock-like. The glacial melt waters poured over this impervious chalk 'rock' and sculpted and eroded it further into the valley and coombe shapes we know today, the hallmarks of ancient, dry river systems characteristic of chalk. *Figure 2.1*. depicts a simplified cross-section of the geological floor of the District.

Drainage pattern

2.10 The upper reaches of the River Adur drain most of the District. In the Low Weald portion, the leisurely Adur streams form a series of often parallel, shallow valleys running mainly from east to west. In the High Weald, the streams have excavated deep, wooded valleys known as *gills* or *ghylls*. The upper reaches of The River Ouse drain much of the High Weald. However, to the north and north-west, the District is home to the headwaters of three major Wealden rivers, the Eden, Medway and Mole.

Soils

2.11 Just as the underlying geology has influenced landform, so it has the range of soils in the District. The soil types have in turn influenced significantly the distinctive patterns of vegetation, land cover and land use in each geologically-defined band.

2.12 The most extensive soils are the heavy, poorly drained *stagnogleys* (seasonally waterlogged clay soils) that have developed over the Gault and Weald Clays. They are difficult to cultivate and traditionally favoured grass, woodland and scrub. However, improved drainage techniques have allowed the significant extension of arable farmland onto these soils. Freer draining brown earths occur in the High Weald on the Tunbridge Wells Sand parent material, and further south, on the sandstones of the Lower Greensand ridge.

2.13 *Rendzinas* (thin soils developed over calcium-rich rock such as chalk) are typical of the South Downs, often no more than 300mm in depth, containing abundant fragments of chalk and flint. Apart from on the scarp they are extensively ploughed for cereals. Along the scarp footslopes, brown calcareous (chalky) earths much used for cereals have developed on hillwash (head) overlying the Lower Chalk and Upper Greensand.

Ecological character

2.14 The Mid Sussex landscape contains significant and varied areas of remaining semi-natural habitat that make a vital contribution to its distinctive character. The presence and distribution of these habitats is strongly influenced by geology and landform. They include varied woodland types, hedgerows, chalk, neutral and dry acid grassland and meadowland, lowland heathland, standing fresh waters, marsh, arable field margins and a variety of urban habitats. The principal habitats in the District are shown on *Map 2.3*.

2.15 Most of the District is in agricultural use, mainly arable land and improved grassland. Survivals of species-rich meadows are rare and isolated. However, the woodland cover in the High Weald is nationally and regionally significant. Within the High Weald in Mid Sussex there is a rich variety of woodland types and habitats including nationally rare sandrock plant communities in the gill woodlands. Also of

national and regional importance are the remnants of species rich unimproved chalk grassland on the steeper slopes of the downs, principally along the scarp. Lowland heathland was once much more common throughout the High Weald and the Wealden Greensand but in Mid Sussex survives only in pockets today. Areas of freshwater marsh and species-rich wet woodland and water margins are also scarce and isolated.

2.16 Studies of habitat and land use change in West Sussex since 1971 indicate clearly the continuing – and possibly accelerating – loss of semi-natural habitats of all types in the District. Some habitats that once strongly shaped or influenced the character of parts of the District have all but disappeared.

2.17 The Sussex Biodiversity Partnership has produced a series of *Habitat Action Plans (HAPs)* and *Species Action Plans (SAPs)*, many of which are relevant to habitats important in Mid Sussex District. These plans are mentioned below in association with a commentary on the key habitats in the District. See also ***Appendix 3*** regarding biodiversity action planning in Sussex and actions proposed by the District Council in its Landscape and Biodiversity Strategy.

Woodland

2.18 Woodland is a major component of the landscape of the District, particularly in the High Weald. Over 30% of the High Weald AONB area is wooded, with over 90% of ancient woodlands having survived since the late 19th Century. Hardwood coppice has dominared forestry in the area since the medieval period and at least 11% of the woodland today is in active coppice, although this is only about one fifth of the area under coppice in 1947. Much unmanaged coppice has not been grubbed up but has become overgrown although fortunately it is recoverable. Just over 25% of the High Wealden woodland is broadleaved and 14% comprises coniferous plantation, today associated with large commercial woodland blocks. Woodland cover is far thinner in the Low Wealden part of the District. However, in association with a dense hedgerow network, the woodland that does exist creates in places a well-wooded effect out of all proportion to the actual density of woodland cover. Woodland is largely absent from the downland landscape. For a brief description of the historic woodland landscape see *paras 2.52-4* below. Woodland types present in Mid Sussex are described briefly below.

Lowland beech woods

2.19 Stands of planted and semi-natural beech woodland span a variety of distinctive vegetation types, reflecting differences in soil and topographical conditions. In Mid suusex, these occur in the Wealden area often in association with other woodland types. These woods have been managed historically as coppice and coppice with standards (woodland regularly cut – 'coppiced' - for timber with specimen trees left standing).

Broadleaved woods

2.20 This category covers a very broad range of woodland types ranging from ash-maple stands on the downs to the mixed oak-hazel-hornbeam woods in the Weald. The heathier oak-birch woods are relatively absent from the small areas of the Lower Greensand in the District but occur in places on the sandier, heathier parts of the High Weald. Most ancient woods in this category have a history of management as coppice with standards

2.21 Principal sub-types of broadleaved woods in Mid Sussex include:

- *Oak-hornbeam woods* characteristic of the South East and found in damp. clayey soils. They often have a rich flora of spring-flowering herbs. This is the

classic woodland type of the Wealden clays although there is much structural variation within these communities.

- *Gill woodlands* are found in steep, narrow stream valleys and highly characteristic of much of the High Weald terrain in the District. They have a damp, humid microclimate with a lower frost incidence than surrounding woodland. These communities are particularly important, containing a warm, moist microclimate that allows plants to flourish that are more typically restricted to the west of the country. Some of the plants, notably ferns, bryophytes (mosses and liverworts) and lichens, are part of a western 'Atlantic' plant community that was once far more widespread in distribution. Some of the sandrock communities associated with the gill woodlands are nationally rare.
- *Chestnut coppice* is present in the District in the High Weald (it is not abundant on the Lower Greensand, as in other parts of the County). It is one of the few woodland types still occasionally under active coppice management.
- *Wet woodland* occurs on poorly drained or seasonally wet soils, usually with alder, birch and willow as the predominant trees. The type is scattered on river floodplains but today is more typically found in the higher catchments of river systems (in Mid Sussex, the upper Adur streams and parts of the middle Ouse Valley and in some gill woodlands in the High Weald). The stands are often small, forming linear strips on alluvial soils alongside streams. Once far more common, the wet woodland species black poplar is now probably the rarest tree in Sussex.
- *Planted conifer woods* are widespread in the High Wealden part of the District, notably in Worth forests although there are substantial mixed coniferous and broadleaved plantings in the Low Weald. Plantings are often on a large commercial scale, species typically including Scots pine, Corsican pine, Norway spruce, western hemlock, Douglas fir and western red cedar.
- *Pasture woodland* (or *wood pasture* - grazed by livestock) comprises areas of grazed woodland with heathland, now relatively rare in the High Weald part of the District but once very common and locally dominant in many areas.

Woodland distribution

2.22 The broad distribution pattern of woodland types is as follows:

- Woodland is generally absent on the *Eastern Downs* in Mid Sussex although those woodlands (non-ancient) that do exist have local importance as landscape and biodiversity features, particularly along the foot of the downland scarp and in some of the broader coombes. Ash is a locally-dominant species and hawthorn-dominated scrub is locally common on the grassland swards.
- The *High Weald* woodland in Mid Sussex is generally typical of the broadleaved, ancient and other woodlands of the Forest Ridge, although the plateaux of the Worth forests contain extensive areas of coniferous planting and wood pasture remnants. For centuries the High Weald woods were used to make charcoal to fire the furnaces of the Wealden iron industry. To maintain productivity in the long-term, the woods were carefully managed to keep the raw materials flowing. The predominant woodland type is oak-hornbeam. However, chestnut coppice is now more common and many unmanaged woods have reverted – or have been converted – to high forest. The deep gill woodland communities are generally confined to the High Weald with fewer gills of outstanding ecological interest on the High Weald fringes.

- The *Low Weald* woodland cover in Mid Sussex is not as dense as in other parts of the Low Weald, for instance, in the west of the County. Nevertheless, as noted above, parts of the area present a well-wooded appearance. Woodland types generally consist of oak-hazel woods with some hornbeam supporting fine displays of spring-flowering plants. Gill woodlands are virtually absent in the relatively narrow stretch of the Low Weald in Mid Sussex, although common in some Low Wealden areas elsewhere.
- The *Wealden Greensand* in Mid Sussex is restricted to a narrow band between the ridge line at Hurstpierpoint and the downland scarp. Woodland is locally abundant on the Gault Clay, including ancient woodland. However, woodland cover on the remaining Lower Greensand rocks is scanty in comparison with the more extensive Greensand country in the west of the County. The Folkestone Sand deposits are narrow and generally under cultivation whilst the Lower Greensand areas have been cleared for agriculture or have been built upon. In a narrow band by the South Downs, the downwashes of head and alluvium have created conditions favouring lime-loving trees such as maple and plants such as dog's mercury.

2.23 The Sussex Biodiversity Partnership *Woodland Habitat Action Plan* (September 2000) contains ambitious objectives and targets for woodland restoration and planting to 2010 and, in some cases, beyond.

Hedgerows

2.24 The ecological attributes of hedgerows have much in common with woodland-edge habitats and scrub/underscrub communities. In Sussex, hedgerows are frequently associated with ditches and banks and may include standard trees, historically grown as a source of wood and timber and to provide shelter for domestic animals. Most of the Wealden hedgerows - including *shaws* (narrow belts of woodland remaining when fields have been cut from woodlands) – are likely to date from the tome of medieval *assarts* (fields derived from the general, unplanned clearance of woodlands and unenclosed commons by individuals). In Mid Sussex, as elsewhere in the Weald, there are relatively few hedgrows stemming from the formal enclosure of fields. The Weald appears to have a significant proportion of species-rich/ancient hedgerows, revealed by the frequency of indicator species such as field maple, spindle and hazel. However, the data is not yet available to assess with any degree of accuracy the number, length and type of hedgerows in Sussex and its Districts.

2.25 The Sussex Biodiversity Partnership *Hedgerows Habitat Action Plan* (June 2004) *inter alia* places high priority on identifying the current extent of ancient and/or species-rich hedges (see *para 2.131* below concerning *Further research*) and encouraging the favourable management of hedgerows and hedgerow trees. This includes supporting the local authorities in their execution of the *Hedgerow Regulations 1997* (protection of hedgerows deemed to be of importance).

Chalk grassland

2.26 The loss of unimproved chalk grassland on the downs in West Sussex has been dramatic. A study by F. Rose (1983) for the period 1813 and 1981 revealed a 90% loss, down from over 16,300 hectares to about 1400 hectares (less than 1% of the total county area). The resource is now greatly fragmented and confined mainly to the scarp, an important concentration lying in Mid Sussex around the Devil's Dyke and Wolstonbury Hill.

2.27 Nevertheless, great efforts have been made in recent years to halt and reverse this trend. The designation of the South Downs as an Environmentally Sensitive Area in 1987 brought back neglected areas of chalk grassland into sympathetic managementalso supported the maintenance of chalk grassland. In addition, nearly 6,000 hectares of arable land has reverted back to grassland under the scheme

(significantly so on the Mid Sussex downland) with about 10% sown with a chalk grassland seed mix. However, reversion back to species-rich chalk grassland is a slow process and results are variable depending on the seed mixture, topography, aspect, proximity to seed sources, soil type and depth, and historical land-use. It is to be hoped that the new Agri-Environmental (Environmental Stewardship) Schemes provide a positive opportunity for landowners and managers to increase significantly the area of species-rich downland grassland. The Sussex Biodiversity Partnership *Chalk Grassland Habitat Action Plan* (April 2000) contains ambitious objectives and targets for chalk grassland restoration to 2010.

Neutral and acid grassland

2.28 *Unimproved neutral grassland* is a feature of lowland mineral soils which are neither very wet nor very dry and neither very acid nor very alkaline. Of greatest interest, though increasingly rare, are old, species-rich meadow and pasture grasslands. *Dry acid grasslands* overlie sandstone and surface sand and gravel deposits and include specialised species and assemblages not found in neutral grasslands. Although prevalent in the uplands of Britain, acid grassland is rather uncommon in the lowlands where it occurs mainly on nutrient-poor dry, sandy soils. Both types are scarce in the South East although Sussex is a stronghold for unimproved neutral grassland. Accurate data on the extent of these grassland types is limited and, in the case of dry acid grassland, further complicated by its dispersal amongst heathland.

2.29 The occurrence in Mid Sussex of unimproved neutral grassland is very limited, with few examples left of species-rich meadows, all known examples of which are included in notified and identified wildlife sites. Recorded dry acid grasslands in the District – and indeed in Sussex – are also few in number and randomly scattered where suitable soils are present. They tend to occur in association with heathland on the sandstones of the High Weald.

2.30 The Sussex Biodiversity Partnership *Neutral and Acid Grassland Action Plan* (July 2000) outlines a series of initiatives concerned with grassland conservation. The Plan aims to identify the full extent and quality of existing grassland sites and seek to prevent further loss and fragmentation.

Lowland heathland

2.31 A further study by F.Rose (1992) of lowland heathlands in West Sussex for the same period (1813-1981) revealed a similar level of loss as that for chalk grassland (90%), from 7,500 hectares to 671 hectares, resulting in a pattern of small, isolated sites. Most of the 1813 heathland was on the Wealden Greensand in the west of the County, with relatively little recorded even then in the High Weald (although the survey did not include St Leonard's Forest). This loss is due to the cessation of heathland grazing and management and subsequent invasion by scrub and trees. More recent estimates suggest that some 594 hectares of lowland heathland remain in 18 or so scattered fragments in the western High Weald, in the general area of St Leonard's, Tilgate and Worth Forests (in Horsham and Mid Sussex Districts and on the fringes of Crawley Borough).

2.32 The potential to expand and enhance heathland is Sussex is considerable, with the possible creation of up to 5,000 hectares according to the Sussex Wildlife Trust in its *Vision for the Wildlife of Sussex* (1996). This could be achieved through a variety of mechanisms including Environmental Stewardship. The Sussex Biodiversity Partnership *Lowland Heathland Habitat Action Plan* (July 1998) contains similarly ambitious objectives and targets for lowland heathland restoration to 2010.

Standing fresh waters

2.33 Standing fresh waters include ponds from one metre square up to large lakes. The smaller water bodies (less than 1 hectare) include millponds, dewponds, field

ponds and ponds in gardens and urban parks. Larger areas of standing water include reservoirs, canals, flooded gravel pits, fishing lakes and hammerponds. These waters are nutrient-rich (eutrophic) and support quite different ecosystems to the much smaller ponds, sustaining large populations of fish and waterfowl. Water-fringe habitats including banksides are an integral part of these habitats. Apart from their nature conservation value, the ponds and waters of Mid Sussex contribute greatly to the character of the landscape, in some cases constituting a highly characteristic aspect, as in the case of the High Weald hammerponds.

2.34 The first systematic survey of ponds in Sussex is now underway with the creation of the *Sussex Ponds Inventory* at the Sussex Biodiversity Records Centre. Smaller ponds are very important features of the Sussex landscape, no more so than in Mid Sussex, which has a large number and wide variety of smaller ponds, notably mill ponds, Low Wealden field ponds and downland dew ponds. The District also contains Ardingly Reservoir and adjoins Weir Wood Reservoir. Numerous small and medium-sided hammerponds are a highly characteristic feature of the High Weald, as are strings of ornamental and fishponds, strikingly so in the Birchgrove valley north of Horsted Keynes. Pond Lye and Slaugham Pond are also noteworthy water bodies.

2.35 The Sussex Biodiversity Partnership *Standing Fresh Waters Habitat Action Plan* (September 2001) outlines a wide variety of partnerships interested in pond conservation and lists many initiatives. The Plan aims for the maintenance and improvement of the conservation interest of standing open waters and seeks statutory water quality objectives where appropriate.

Arable land

2.36 Arable land includes all of the farmed area under the plough as well as the field margin, with the margin as the priority habitat. There is a great deal of anecdotal evidence to suggest that in general, the habitat has suffered a severe decline in terms of its associated biodiversity. Arable weeds are now restricted to a few locations, usually in the less well-cultivated margins of downland fields. Farmland bird populations are lower now than 20 years ago. The skylark, which has suffered major reductions in much of Britain, is still present on the downs in reasonable numbers, but the stone curlew became locally extinct in the 1980s.

2.37 In Mid Sussex, arable farmland no longer dominates the downland: grassland cover has increased significantly in the area in recent years. The generally large farm holdings are mixed, with sheep, cattle and occasional dairy herds. In contrast, High Weald farm holdings are generally less than 100 acres. Sheep and beef are widespread with dairy and arable still significant but localised. However, the number of holdings managed as commercial farms continures to decline significantly throughout the area. In the Low weald, farm holding sizes average about 250 acres. Mixed livestock and arable farms are common, with significant cattle and sheep numbers.

2.38 Actions relating to biodiversity and arable land are contained in the Sussex Biodiversity Partnership *Arable Land Habitat Action Plan* (April 2002) and will depend for much of their success on the outcome of Agri-Environmental (Environmental Stewardship) Schemes.

Urban habitats

2.39 Biodiversity in urban areas includes a complex mosaic of semi-natural and artificial habitat types including woodland and green spaces. The origin, type and extent of urban green space vary greatly between settlements. However, such land represents a significant resource as a refuge for wildlife and for increasing the contact between people and their natural environment. Types of habitat include original habitats remaining after development; remnants of agricultural land near or within urban areas; intensively managed parks, gardens, allotments, churchyards and cemeteries; informal open spaces and derelict land; and road verges. As well as

having a nature conservation value, such land can contribute greatly to landscape and townscape character.

2.40 The urban areas of Mid Sussex contain all of the above land types. Haywards Heath has a rich series of treescapes and associated habitats developed over the sandy soils of the High Weald, with three nature reserves and areas of ancient woodland within the built-up area as well as two important cemetery grassland sites. At Burgess Hill, the *Bedelands Local Nature Reserve* contains the rare remains of old hay meadows.

2.41 The Sussex Biodiversity Partnership *Urban Habitat Action Plan* (October 2001) subtitled *People and Wildlife* aims to safeguard and enhance the biodiversity found in urban areas and to realise social and health benefits associated with the public understanding of – and contact with – nature in towns.

Other habitats

2.42 Other biodiversity action plans directly relevant to Mid Sussex include the *Mineral Sites Habitat Action Plan* (March 2004) and *Species Action Plans* including that for *Black Poplar* (June 2005) – see *para 2.21* on wet woodlands. A plan for freshwater marsh – which is a limited and diminishing habitat in the District – has yet to be prepared.

Notified and identified wildlife sites

2.43 Mid Sussex contains 13 areas notified as *Sites of Special Scientific Interest (SSSIs*) and 49 areas identified by the local authorities as *Sites of Nature Conservation Importance (SNCIs)*. Comprising 1,100 hectares and covering 3.3% of the District area, these sites represent important remnants of a once much more extensive network of habitats covering large areas of the District. *Table 2.2* sets out the number and percentage of SNCIs by Landscape Character Area (including urban areas). TheThe SSSIs include:

- *Chalk grassland:* three substantial sites, two of which extend westwards and eastwards beyond the District boundary. They contain a long, discontinuous band of unimproved species-rich grassland, woodland and scrub running along the chalk scarp between Truleigh Hill in Horsham District and Lewes in East Sussex. The third site includes chalk grassland and woodland at Wolstonbury Hill.
- *High Weald woodland and gills:* at Cow Wood and Harry's Wood (Handcross); the extensive gills at Wakehurst and Chiddingly Woods; and gill woodlands in Worth Forest.
- *High Weald geological sites:* important exposures of the Hastings Beds at Freshfield Lane, Mills Rocks (Ashurst Wood), Philpots and Hook Quarries (West Hoathly), Sharpthorne (West Hoathly), Scaynes Hill, Turners Hill and rock outcrops at Stone Hill Rocks near East Grinstead.

The SNCIs contain a variety of habitats including:

- Ancient woodland in the High Weald, on ridges, farmland, in gills, and on valley sides.
- Habitats associated with exposures of sandstone (sandrock communities).
- Heathland, including wooded and scrub heath.
- Chalk grassland.
- Wet and dry species-rich meadowland, wet woodland and marsh.
- Ardingly Reservoir and lakes, ponds and pond margins including the fishponds at Birchgrove.
- Species-rich grassland in urban cemeteries.

Table 2.2: ***SITES OF NATURE CONSERVATION IMPORTANCE IN MID SUSSEX***

Landscape Character Area (LCA)	*SNCI hectares*	*LCA hectares*	*SNCI 5 of LCA*
Devil's Dyke and Clayton Downs	57	1,498	3.8
Fulking to Clayton Scarp	8	412	1.9
Hurstpierpoint Scarp Footslopes	17	2,899	0.6
Hickstead Low Weald	91	4,336	2.1
Upper Adur Valley	0	268	0
High Weald	452	11,408	4.0
High Weald Plateau	64	1,458	4.4
Worth Forest	102	2,090	4.9
Ouse Valley	112	3,635	3.1
High Weald Fringes	196	5,401	3.6
TOTALS	**1099**	**33,405**	

2.44 The District Council manages the *Bedelands Local Nature Reserve* (Burgess Hill) and nature reserves at *Ashplats Wood* (East Grinstead), *Blunts Wood and Paiges Meadow* (Haywards Heath), *Eastern Road* (Lindfield) and *Scrase Meadow* (Haywards Heath). West Sussex County Council manages the *Worth Way* for its recreational and wildlife value. Southern Water manages the *Loder Valley Nature Reserve* at Ardingly Reservoir.

The historic landscape

Character of the historic landscape

2.45 As noted in *para 1.21*above, the Mid Sussex landscape characterisation draws on material derived from the *Sussex Historic Landscape Characterisation (HLC)* Project. The paragraphs below contain a summary of an initial analysis of the HLC data for Mid Sussex.

Broad historic landscape character

2.46 The historic landscape of Mid Sussex is essentially rural in character, dominated by fields and interspersed with small woods and settlements of farms and hamlets. Today, large tracts of forests and woods occur in the north-west where re-planting in the Worth forests (and in the adjoining St Leonard's Forest in Horsham District) has taken place. Un-enclosed and unimproved land survives as species-rich downland remnants on the chalk escarpment of the South Downs. A few pockets of heathland and common land survive in the High Weald, notably around Copthorne.

Fieldscapes

2.47 There is a clear distinction in the type of fields in the northern and southern parts of the District, with a transitional zone in the middle, in the Low Weald. This pattern of field types is strongly linked to the underlying bands of differing rock strata crossing the District. In the southern part, many fields on the chalk downs, in the Gault Clay vale and the Lower Greensand ridges have resulted mainly from *formal enclosure*. Further north, on the Weald Clay, these formal fields become increasingly intermixed with fields resulting from *informal enclosure*. Where the Weald Clay gives way to the sandstones of the Hastings Beds in the High Weald, the informal fields are in turn intermixed with *assart fields.*

Definition of terms used in the Sussex HLC regarding the historic landscape

formal enclosure: enclosure which is planned, that is, laid out in a regular pattern. This was brought about either by an Act of Parliament (the Enclosure Acts) – and usually used to enclose former heath, common, greens or open fields - or by the actions of private landowners, in particular as the reorganisation of former field systems. This category also includes consolidated strip fields, where medieval open fields were enclosed, preserving the pattern of furlongs or strips.

informal enclosure: enclosure not formally planned.

assart fields: fields derived from the general, unplanned clearance of woodlands and unenclosed commons as a result of actions by individuals.

cohesive assarts: assart fields grouped around a farmstead.

aggregate assarts: groups of irregular assart fields derived from the general, unplanned clearance of woodlands.

co-axial fields: a ladder-pattern group of fields which have often very long, sinuous roughly north-south boundaries sub-divided by short, straight, or slightly sinuous boundaries.

wood pasture: woodland grazed by livestock.

2.48 The visual impact of this distribution is not so apparent in the *pattern* of the fields. For the most part, the southern part of the District comprises regularly shaped fields. These fields extend north into the High Weald and there become far more intermixed with regular, *cohesive assarts* which form the most common field pattern. These are regularly shaped fields but with sinuous woody or hedge boundaries. The more irregularly shaped fields characteristic of *aggregate assarts* occur sporadically amongst the more regular field patterns. These fields are often associated with pockets of ancient semi-natural woodland or mark where such woods once existed. Pockets of fields with no clear pattern occur in the Low Weald but more typically in the High Weald where there has been extensive boundary removal and field reorganisation. These are often the result of boundary removal associated with single, large farm holdings.

2.49 Informally-enclosed fields tend to have a regular or semi-regular pattern (except where modern field amalgamation has taken place) and are distributed across the District. The only irregularly shaped informally enclosed fields are meadows that lie in the shallow valleys of rivers and streams. Isolated enclosures occur in the Worth forests.

2.50 The formally enclosed fields are dominated by planned private enclosure mostly confined to the chalk hills and the Gault Clay vale. However they do extend into the Low Weald with some consolidated strip fields and remnants of *co-axial fields*. Formally-enclosed fields occur sporadically across the High Weald resulting from the formal enclosure of commons and woodland or where some form of field re-organisation has taken place, notably in the Worth forests.

2.51 The fields on the downs are divided by fences, which give way to hedges at the foot of the scarpthat extend into the Low Weald. Shaws tend to occur most frequently in the High Weald but with hedges to the north-west, in the forests.

Woodlands

2.52 Woodland is a dominant landscape feature in the High Weald with large plantation blocks in the Worth forests. The greatest concentration of woodland lies

here (including ancient sites, many of them associated with High Weald farmsteads for traditional timber conservation purposes), in a fragmented and dispersed pattern. The High Weald woodlands are predominately assart woods with gill woodlands intermixed and associated with them. The Low Weald has the least amount of woodland cover, with no large ancient woodland blocks left on the Weald Clay and the Lower Greensand ridge (although the incidence of small remnants is suspected to be significant). Notable however is the distinctive concentration of woodlands within the Gault Clay vale comprising much replanted ancient semi-natural woodland dominated by a mix of coniferous and deciduous trees (mixed woodland).

2.53 Mixed plantation woodland is mostly confined to the Worth forests. The remaining plantations are small and in the northern part of the District often lie next to or on ancient woodland sites. Other types of woodlands including shaws and regenerated and non-ancient gill woodlands occur across the District with the largest amount of regenerated woodland on the downs. There are isolated pockets of modern *wood pasture*.

2.54 Most woodlands are irregular in shape with sinuous boundaries, sinuous woods for the most part lying in the gills. Regularly shaped woods are more frequently plantations or regenerated woodland reflecting the former, regular field pattern on which they stand.

Settlement

2.55 East Grinstead, Lindfield and Cuckfield were medieval market towns, the former greatly expanded in 19th Century era of the railways. Burgess Hill and Haywards Heath are comparatively recent towns, both also having developed rapidly in the railway era, with much modern expansion, some of it very recent. The expanded villages in the south (Hassocks, Hurstpierpoint and Keymer) on the Greensand ridge line are also the result of accessibility to the railway, being for the most part modern commuting settlements. Expanded village settlements also occur in the High Weald, at Copthorne and Crawley Down in the busy Crawley-East Grinstead corridor, close to Crawley New Town adjoining the District to the north-west. Ribbon and plotland development are also characteristic in the corridor. Some other villages in the District have experienced modest suburban expansion including Ashurst Wood and Balcombe in the High Weald. The towns and villages of the District expanded onto former heaths, commons and farmland.

2.56 Outside of the main towns and villages, settlement is typically dispersed, notably sparse on the Downs, in the Worth forests and in parts of the High Weald. The most distinctive historic settlement pattern in the District is in the south, comprising the spring-line villages and hamlets at the foot of the downland scarp (Edburton, Fulking, Poynings and Clayton). In the modern era, there has been a gradual increase in development throughout the District associated with the dispersed farmsteads and other sites and there are many examples of early ribbon development.

2.57 *Transhumance* (seasonal movements of stock) was a vital part of the ancient agricultural system of the Weald under which its exponents sought to make every use possible of the resources of the Wealden land. The practice of this method – and the configuration of parish boundaries to cover many different kinds of land - may help to explain the dispersed settlement pattern. Over the last millennium, the timber and other resources of the Weald were managed carefully, which in itself tended to lead towards a typically thin and dispersed settlement pattern.

2.58 Moreover, the long, narrow *parishes*, (pre-1894 boundaries) particularly to the south, stretched from the chalk downs onto the varied geological beds of the Greensand country (Edburton, Poynings and Newtimber) and further, into the Low Weald (Hurstpierpoint, Clayton and Keymer). This highly characteristic pattern (chalk to Weald Clay) continues in adjacent parishes in East Sussex (Ditchling, Westmeston, Streat, Plumpton, East Chiltington and St John Without at Lewes). This pattern of

parish development tended to restrict Low Wealden village development, since all of the hamlets in these narrow parishes were advantageously founded as spring-line villages hard under the downs or as villages on the Greensand ridge.

2.59 Accordingly, with some exceptions, the historic settlement pattern is marked by an absence of agricultural villages surrounded by communally farmed open fields. Instead, there is a dispersed settlement pattern of numerous farmsteads within discrete or enclosed small-scale holdings. By the 14th Century, nucleated villages had emerged, some on ridge tops, often in response to trade (Turners Hill was an important village on the 1770 Turnpike Road from London to Brighton), and are the principal settlements in the area today. The dominance of the nucleated villages increased from the 19th Century onwards as new development was concentrated in them. Sometimes, development has resulted from local industries such as clay winning and quarrying. Since the turn of the Century, and particularly after the Second World War, all of the villages have been expanded to some degree by suburban development.

2.60 The historic settlement pattern of the Low Weald has virtually no nucleated villages, and none of any size, being more a mix of scattered large and small farmsteads and hamlets strung out along lanes ('streets' and 'greens'). Much settlement is confined to the lower ridges, above the heavier clay vales.

2.61 As noted below in the section on *Forces for Change*, the universally high level of modern private mobility has created an unprecedented opportunity for urban-based living in the countryside. A major consequence of this is the gradual suburbanisation of the rural landscape resulting from the conversion of former agricultural dwellings, buildings and land holdings to residential and other uses. This transformation of rural life has brought about significant changes in the visual character of the 'traditional' countryside. These aspects are referred to further in the descriptions and evaluations of the Landscape Character Areas and in the *Land Management Guidelines.*

Archaeological remains and Wealden iron

2.62 The District contains a wealth of archaeological monuments, sites and finds, including 41 Scheduled Ancient Monuments (SAMs) representing the most important sites nationally. Most of these sites are on the downs, representing successive stages of prehistoric, Bronze Age, Iron Age, Roman, Saxon and medieval settlement in a rich array of features. These comprise settlement, boundary, defensive and burial features including barrows (including Bronze Age round barrows), bowl barrows, earthworks, cross ridge dykes, hillforts, a Saxon cemetery, a motte and bailey castle site at Edburton and the Deserted Medieval Village (DMV) at Perching.

2.63 Roman remains include the line of the London to Brighton Roman Road crossing the District from north to south and the Sussex Greensand Way crossing from west to east, across the scarp footslopes, the two roads intersecting at Hassocks. In this vicinity, there are various sites associated with the Roman occupation including terrace ways and branches from the main routeway onto the downs; the villa site at Danny; the cemetery at Hassocks; and evidence of Roman and Romano-British farmstead settlement.

2.64 There are far fewer ancient sites in the Low and High Weald than on the downs, although the Iron Age hillfort at Philpots Camp near West Hoathly is an important example of a Wealden hillfort. The remaining monuments, all in the High Weald, are mainly moated manor and farmhouse sites and, at Warren Furnace, the remains of a Wealden iron industry site.

2.65 During two distinct historical periods, the Weald of Kent and Sussex was the major iron-producing region in Britain. Ironmaking was a major industrial activity before and during the Roman occupation and the Middle Ages. The densely wooded area had the natural resources of iron ore and the wood needed for fuel.

The prehistoric and Roman iron industry managed the woodland, even accounting for the introduction of some tree species such as sweet chestnut. The second major period began in the last decade of the 15th Century when the blast furnace was introduced and by the end if the 16th Century the Weald was pre-eminent among the iron-producing regions of Britain. However, with the advent of the coke-fired blast furnace in 1709, the fate of the industry was sealed and the Wealden ironmasters withdrew.

2.66 It is hard to believe today that the industry was so important in the Weald, given that so little evidence of its passing exists. However, a closer look at the modern landscape of the Weald reveals a legacy of slag heaps, hammer and furnace ponds, some furnace remains and roads associated with the industry. In association with the iron industry pond sites are those of the numerous mills that were once common throughout the country. The Wealden iron and mill site remains in the High Weald in Mid Sussex contribute to the historical richness of the landscape and remain in places a distinctive feature of it.

Designed landscapes

2.67 Government Planning Policy Note 15 (*PPS1*) entitled *Planning and the Historic Environment* (1994) states that no additional statutory controls folllow from the inclusion of a site in the *Register of Parks and Gardens of Special Historic Interest*. However, local planning authorities should protect registered parks and gardens in preparing development plans and in determining planning applications. The effect of proposed development on a registered park or garden or its setting is a material consideration in the determination of a planning application. Planning and highway authorities should also safeguard registered parks or gardens when themselves planning new developments or road schemes (see ***Appendix 2*** for the relevant Mid Sussex District Local Plan policy).

2.68 English Heritage maintains the *Register of Parks and Gardens of Special Historic Interest* in England. It is under periodic review with the aim of extending its coverage of parks and gardens deserving protection. The Register contains approximately 1700 sites nationally, under three gradings:

Grade I of exceptional historic interest (10%)
Grade II* of great historic interest (30%)
Grade II special historic interest (60%).

Mid Sussex District has a rich legacy of 9 registered parks and gardens, all within the High Weald:

Grade II (6)* (*Borde Hill, Brockhurst, Gravetye Manor, High Beeches, Nymans* and *Wakehurst Place*).

Grade II (3) (*Heaselands, Slaugham Place* and *Stonehurst*).

These sites account for nearly 30% of the West Sussex total, indicating the high concentrationof registered parks and gardens in the District compared with the rest of the County.

2.69 Many locally important sites falling outside the registration process have a very high importance locally and deserve recognition in their own right. Examples of these in Mid Sussex include Danny at Hurstpierpoint and Cuckfield Park. In addition to the 9 registered parks and gardens, Mid Sussex contains a further 67 sites of greatly varied size recorded by the local authorities, making 76 in all. These cover narly 5.6% of the District Area (about 1,865 hectares) and in number account for 28% of all parkscapes in West Sussex. They are distributed throughout the Landscape Character Areas (ranked by number) as follows:

High Weald	*29*
High Weald Fringes	*25*
Hickstead Low Weald	*6*
Ouse Valley	*5*
Worth Forest	*4*
High Weald Plateau	*3*
Hurstpierpoint Scarp Footslopes	*3*
Upper Adur Valley	*1*
Devil's Dyke and Clayton Downs	*0*
Fulking to Clayton Scarp	*0*
TOTAL	***76***

The high concentration of over 50 sites in the High Weald and the High Weald Fringes is notable, where parkscapes contribute greatly to the unique character of these landscapes. The sites are shown on *Map 2.4*.

2.70 Relict parkscapes (including possible former medieval deer parks) are also coming to light as a result of the HLC Project. The landscapes of the parks, both informal and formal (and with a mix of the two), are largely the result of post-medieval gentrification. Only *Danny* and *Slaugham Place and Park* have a medieval date. Large landscaped gardens of more recent times, often with exotic shrubs and trees, are also frequent, especially in the High Weald. The Weald became a favourite area for the extension in the Victorian and Edwardian eras of 'London into Sussex', characterised by widespread, often lavish, house development, the hilly woodland settings highly prized in this, the first 'Commuter Belt'. Brief details of historic parkscapes are contained in the sections covering each Landscape Character Area

Industry and horticulture

2.71 Areas of modern industry are largely associated with the principal towns. However, Mid Sussex has a history of extractive industries, principally chalk quarrying and brick making on the clayland, with associated older and modern industrial development and housing. Orchards tend to occur in the north with a concentration of nurseries on the Lower Greensand.

Unenclosed and unimproved land

2.72 As noted above, the greatest concentration of unimproved and unenclosed land comprises downland chalk grassland on the downland scarp. A few pieces of common land with heathland and other unimproved habitat remnant survive at Scaynes Hill and at Copthorne. *Bedelands Farm Local Nature Reserve* contains a significant area of unimproved meadowland.

The historic landscape over time

Historic landscapes of medieval origin or earlier

2.73 There are evidently relatively few visual historic landscape types of early medieval or prehistoric origin in the District, although detailed research would be needed to reveal the true extent of these remnants. Some areas are obvious and well known such as the Devil's Dyke hillfort, chalk grassland on the crest of the Downs, and groups of co-axial fields in the Low Weald. However, other features of no less importance are to be found virtually everywhere. Such features include the extensive system of tracks and greenways throughout the District, which are essentially medieval in origin. Many of the numerous boundary banks are late Saxon or medieval in origin (see *para 2.130* on *Research topics* and *paras 2.78-80* below).

2.74 Landscapes with an unbroken continuity to the present (medieval and onwards) tend to occur in the High Weald where there are some discontinuous swathes of assart fields and ancient woodlands interspersed with large and small farmsteads. These include the area around Scaynes Hill, to the north west of Burgess

Hill, and in the stretch of land between Haywards Heath and East Grinstead. East Grinstead retains its medieval urban core.

Historic landscapes of post-medieval origin

2.75 Post-medieval landscapes date from the periods 1500-1599 (early) and 1600-1799 (late). The landscape at the foot of the Downs on the Gault Clay and Lower Greensand apparently dates from these periods, characterised by privately planned enclosure. Small tracts of similar fields occur in the north of the District with formal enclosure from woods, commons and possibly the re-organisation of assart fields. Various designed landscapes across the District date from this period as well as numerous small and large farmsteads. In the north, relict Wealden iron hammerponds date from this period.

Landscapes of the early modern period

2.76 The District contains continuous tracts of landscapes that are essentially 19th Century in date. These have resulted from the enclosure and ploughing of former open sheep walks on the downland and from the enclosure and afforestation of the wood pasture and commons of Worth Forest. Changes elsewhere, including the gentrification of the landscape through large and small parklands, have fragmented older landscapes throughout the District. Many woodland plantations and regenerated woods date from this period as do the beginnings of significant suburban development on the edges of historic settlements.

Landscapes of the modern period

2.77 This period covers the early 20th Century up to the end of the Second World War and the late 20th Century up to 2000. Taking the District as a whole, the single largest modern landscape type is late suburban development around the main towns, with considerable areas of this type dating from earlier in the Century. Other changes have resulted from the expansion and modernisation of farm holdings. Loss of character takes many forms, including:

- Breaking up and gentrification of some farm holdings.
- Field amalgamation and enlargement.
- Expansion of farmsteads.
- Suburban expansion of towns, villages and hamlets.
- Increased levels of other isolated countryside developments of various kinds.
- Infrastructure developments.
- Hedgerow, tree and woodland removal and new plantations.
- Loss of orchards.
- Golf course development.
- Sub-division of fields into paddocks for horse grazing.

Boundary loss

2.78 Boundaries and the structures associated with them (walls, banks, hedges, ditches, trackways and markers) are a fundamental component of landscape, especially from an historic viewpoint. As noted in *para 2.72 above,* in Mid Sussex, many have survived from prehistoric, Saxon and medieval times, particularly ancient greenways and boundary banks. Boundary loss – whether of ancient boundaries or more recent ones – is therefore a key indicator of historic landscape character change. In Mid Sussex there are few tracts of land where there has been no boundary loss. These areas are fragmented and dispersed throughout the western part of the High Weald. The downs do not have a history of boundary loss but this masks the modern fencing of sheep walks for intensive arable production. Boundaries have been lost most from informal fields of a regular shape where hedges have been removed. Assart fields have lost the least, possibly because of the hilly topography and the relative difficulty in removing wooded strips.

2.79 In many cases, boundary loss has been so great (between 50 and 100%) that the original pattern of fields cannot be seen on the ground. Such areas are discrete and obvious, confirming the adoption by one or two landowners of an intensive farming, for instance, north of Scaynes Hill and north west of Burgess Hill as well as in various areas in the northern part of the High Weald.

2.80 Boundary gain for the most part indicates the subdivision of fields into paddocks by fences usually associated with horse stabling and grazing and field re-organisation, notably at and around the Hickstead Showground. There are rare instances of new hedges being planted.

FORCES FOR CHANGE IN THE LANDSCAPE

Introduction

2.81 The landscape, ecological and historic character of Mid Sussex District is dynamic, constantly changing in response to human activity and natural processes. Historically, far reaching changes in agriculture, the socio-economic structure of local communities, and economic and industrial growth have all had significant impacts. As the foregoing analysis suggests, the pace of change today is far greater than ever before. Development and other environmental changes are having increasingly visible, cumulative and far reaching effects on landscape character. These include increasing demands for road transoprt, new infrastructure and high rates of residential and commercial development. The landscape is also undergoing significant change from new patterns of agricultural land use in response to changing climatic and market conditions. Unless change is creatively managed, we may lose unnecessarily those characteristics of the landscape we cherish whilst missing opportunities to create new landscapes. The paragraphs below identify the key forces for change in the landscape, both globally and locally.

Climate change

2.82 Climate change is a global issue, but has far-reaching-local effects. Taking account of the specific potential affects of climate change on landscape character within Mid Sussex is therefore of the greatest importamce.

2.83 The evidence that significant climate change is occurring globally is now compelling enough to stimulate international debate and action. There is broad scientific consensus that the climate is changing; that human activities are accelerating these changes; and that further changes are unavoidable for the next half century.

2.84 The Report of the UK Climate Impacts Programme (UKCIP) (2002) contains a set of future climate change scenarios based on work undertaken by the Hadley Centre and University of East Anglia. The predictive models used all point to unavoidable changes. However, as with all such models, there is always a degree of uncertainty. Whilst there will be change, how it will manifest itself in future is by no means clear today and, in the longer term, the uncertainty is that much greater. The most likely impact in the decades ahead is a general warming with changes in precipitation and weather patterns. However, most models show a weakening in the Gulf Stream during the twenty-first century which could bring about a cooling of average temperatures. We must therefore respond positively to the challenges posed by this uncertainty and provide a clear but flexible Strategy.

2.85 Consequently, international efforts are being made to reduce the threat of climate change through large-scale limits on emissions. This has direct implications for our use of energy. It seems inevitable that we will come to rely more and more on

renewable energy in many and varied forms, all of which will have an impact on the landscape, some particularly so.

2.86 Climate change could have all manner of affects on the environment and landscape of the District including the ways in which land is developed and used. This change will create problems and opportunities, and it is our reaction to that change which will be important. It will be necessary to take an adaptive view from now on, possibly including 'climate proof' decisions.

2.87 Should they occur, the impacts of climate change on the landscape character of Mid Sussex are likely to be complex and interrelated, varying over space and time but gaining ground within decades. The more obvious likely impacts are summarised below.

Temperature, rainfall and storms

2.88 Changes in temperatures and rainfall patterns will affect biodiversity, including potential loss within decades of some species or habitats (for instance, beech, wet heath, and certain chalk grassland species) with corresponding possible gains for others. This would bring about changes in the composition of hedgerows and beech stands and boundaries in areas such as the Worth forests, and impede efforts to restore heathland and chalk grassland respectively in the Wealden areas of the District and on the downs.

2.89 An increasing frequency of winter gales is likely to lead to greater storm damage to woodlands. This is of particular importance in the High Wealden part of the District, where dense and varied tree cover is a defining aspect of the landscape.

2.90 Also likely to increase would be the flooding and waterlogging of the heavier, less well-drained clays of the Low Weald and the heavy Gault Clay vales during the winter and the incidence of hot, dry spells leading to subsidence, and soil desiccation and increased risk of wind erosion.

Rising sea levels

2.91 Although Mid Sussex is not a coastal district, it contains the headwaters of tidal rivers such as the Adur and Ouse. A rising sea level leading to increasing flooding and inundation of the coast would be likely to affect greatly the regime of these rivers and create the possibility of inland flooding unless new river defences were constructed - which in themselves could have significant landscape affects. Possible contamination of fresh water through salt water innundation would also be more likely to occur.

Changes in croppping patterns

2.92 An increasing replacement of traditional arable crops by drought-tolerant species could bring about profound changes in the appearance and experience of the landscape and the pattern of wildlife within it. Again, such changes have significant potential consequences for Mid Sussex, since the dominant land use in the District is agriculture. In a few places, crops such as sunflowers and maize are already being planted. Large-scale changes such as these could transform the general appearance of the landscape, exposed as it is to long views from the north and south. Not least would be a change near and far in the colour and textures of the landscape and local visibility changes depending on the height of new crops. The increasing effects of pests and diseases could be deleterious to landscape quality, with potential unforseen environmental consequences of using new kinds of pesticides.

2.93 Changes in energy requirements could also be expected to bring about large-scale landscape change through the production of crops to supply biomass fuel (see *Renewable Energy* and *paras 2.100-02* on *Woodland Management* below).

Changes in groundwater levels

2.94 Drier summers will lead to reduction in groundwater levels and the drying out of ponds and watercourses (again, with impacts on wildlife). This could result in less water being available to dilute pollutants, thereby reducing water quality. Much of the District is drained by the headwaters of the Rivers Adur and Ouse, the valley landscapes of which depend on a wet environment based on numerous water meadows and feeder streams, the latter especially in the High Weald. Should groundwater regimes become drier, the characteristic appearance and wildlife of the valleys in particular could change significantly. Increasing levels of development anticipated in the Crawley-Gatwick sub-Region would tend to exacerbate problems associated with run-off and pollutants and contribute to the increase in demand for water. The District already contains one reservoir and adjoins another. Changes in water management and pressures to create new reservoirs (including an increasing requirement for irrigation reservoirs to store winter rainfall) would have significant landscape affects.

Other affects of temperature change

2.95 Other effects of temperature change might include:

- Warmer summers, encouraging greater recreation and tourism, thereby exacerbating existing problems such as traffic congestion and erosion.
- Damage to archaeological sites through soil desiccation and changing farming practices. This could have a highly deleterious affect on the integrity of historic landscapes in the District, particularly on the South Downs. Within historic parks and gardens (of which the District has a particularly rich legacy) the maintenance of specimen plants and fine grass swards may not be viable under new climatic conditions.
- Increasing driving rain and solar radiation leading to the decay of the fabric of buildings and the shortening of building life-expectancies.

Renewable energy

2.96 Under a regime of global warming, energy supply would come to rely more and more on alternatives to fossil fuels including biomass energy. Decreased temperatures at certain times of year would also be likely to result from global warming, with an associated absolute increase in energy demand. Current *Regional Planning Guidance for the South East (PPG9)* envisages that by 2026 at least 14% of regional electricity generation capacity will be provided from renewable sources.

2.97 As our reliance on renewable energy sources increases, the production of these is likely to have a profound impact on the character of the landscape. Current technologies include wind farms and the use of photo-voltaic cells capturing solar energy, from domestic applications to larger-scale schemes including potential industrial applications. The number of combined heat and power plants (CHP) is also likely to increase, fuelled either directly by existing potential sources of biomass, such as wood and straw, or by oils and gases derived from existing and new types of crop. The securing of renewable energy sources has potentially momentous consequences for the Mid Sussex landscape, some highly positive, some more problematic:

- Pressures for windfarms are likely to grow, and in Mid Sussex, the higher ground likely to be favoured is wholly within the two Areas of Outstanding Natural Beauty. In such a situation, there may well be conflict between energy needs and the requirement in AONBs to protect natural beauty and distinctive character. These pressures have yet to materialise, but may be expected to do so.

- The greatest and most readily-available renewable energy resource in Mid Sussex is wood biomass. The technology to utilise this is likely to become commonplace, with potentially great benefits for the sustainable management of woodland resources, for the local economy and for the renewal of the chatracter of the woodland landscape, given the historical contribution of the Wealden woodland coppices to charcoal production (see *paras 2.100-02* on *Woodland Management* below).
- The majority of CHP and heat-generating installations will be small-scale in nature, and could be considered to be less obtrusive within the landscape and appropriate in many rural locations. Nevetheless, such developments would need to be considered carefully and be well-sited.

Agriculture, land management and biodiversity

Agriculture

2.98 Whilst the effects of post-1945 agricultural changes on landscape character are well understood, the effects of future changes are harder to envisage. Change will result from increasing, globally-based competition; continuing reform of the Common Agricultural Policy (CAP); and the proposals in the Government *Strategy for Sustainable Farming and Food*, including the proposed Agri-Environmental (Countryside Stewardship) Scheme. These changes are likely to present fresh challenges with regard to landscape character including significant opportunities for landscape restoration and enhancement (see also ***Appendix 3*** *paras A.15-22*). Taking into account the implications of climate change, the more obvious likely impacts of changes in agriculture and land management are summarised below.

- There is potential for further increases in large arable farm units, leading to a greater homogenisation of the landscape, the reduction of already depleted biodiversity, and potential demand for more centralised, large scale buildings such as grain storage and produce packaging facilities. Areas of single, enlarged arable farm units are already evident in various places throughout the District.
- The current poor agricultural economy and increasing competition is making it more difficult for some farmers to make a living from dairy and beef livestock farming, causing land abandonment and subsequent scrub expansion. This is already evident in many parts of the District, particularly in the High Weald, and has recently become more common in the Low Weald.
- The decline in traditional land management practices is continuing. Agricultural land improvement can lead to the loss of habitats such as herb-rich grasslands, wet grasslands and degradation of field boundaries.
- Changes in agricultural practice include part-time "hobby" farming with related farm and estate fragmentation, loss of traditional farm boundaries, and decline in traditional farm management. This is particularly evident in Mid Sussex.
- Further pressures are continuing for new uses of marginal land (including in the rural urban fringe) such as smallholdings, leisure uses and expansion of horse paddocks.
- Potential adverse effects on biodiversity of genetically modified herbicide-tolerant and insect-resistant crops may have consequences for the landscape.
- Soil erosion is continuing as the consequence of ploughing on steep slopes, particularly on downland, in places creating a *white* landscape where fragments of the underlying chalk have been brought to the surface. Happily, there is far less evidence of this in Mid Sussex than hitherto.

- Damage to visible archaeological features from ploughing continues, particularly on the downland.
- Unless rigorously controlled, some rural diversification developments may damage the historic and architectural character of farmsteads and settlements.
- The impact of modern agricultural buildings on the landscape is continuing (for instance, there has been a notable increase in the District landscape in recent years of on-farm grain feed silos).
- As already mentioned, the introduction of biomass crops has significant potential consequences for the agricultural landscapes of the District.

2.99 Many of these changes appear to be negative. More positive changes are likely to include:

- The scope in the new Agri-Environmental Schemes for landscape and habitat renewal.
- As mentioned above, the revitalisation of woodlands through wood biomass fuel production.
- Future development of local environmentally friendly and organic produce, building on the opportunities presented by the England Rural Development Programme (ERDP), thereby helping to stem the loss of biodiversity on farmland.

Woodland management

2.100 The South East Region is the most wooded in the country, with almost 275,000 hectares covering around 15% of the land area (the area of woodland having actually increased in recent years). The South East Region Forestry and Woodlands Framework *Seeing the Wood for the Trees* (2004) (see ***Appendix 1*** *para A1.13*) highlights how trees, woodlands and forestry can contribute greatly towards sustainable development and quality of life through the realisation of the economic, environmental and social benefits that woodland management and tree planting can provide.

2.101 Woodland and tree cover in West Sussex is higher than the regional average, covering 18.9% of the County land area. This percentage has been maintained since the 1970s. Most of this cover, a significant proportion of which is ancient, is concentrated in the Wealden areas. Mid Sussex overall is therefore a densely-wooded district by West Sussex standards by virtue of the inclusion within it of the western High Weald. However, despite woodlands providing many social and environmental benefits for the inhabitants of the District, the management of a substantial proportion of them is inadequate or neglected. The key forces for change related to woodland in Mid Sussex and the implications of these for landscape character include:

- Decline in coppice woodland management and lack of natural regeneration.
- Isolation and fragmentation of ancient woodland (and the introduction in the past of conifers into ancient woodlands) in the High Weald and in the Gault Clay vales.
- Low proportions of broadleaved trees in some ageing coniferous plantations, and erosion of distinctive broadleaved woodland types throughout the District.

2.102 Positive future directions for woodland change and management include:

- Detailed survey of the ancient woodlands of Mid Sussex (starts October 2005).
- Encouragement of sustainable woodland management through the development of new markets for woodland products, including wood biomass fuel, supported by woodland management grants and Agri-Environmental Schemes.

- Initiatives such as the West Weald Woods Landscape Partnership, which aims to reduce the isolation and fragmentation of woodlands by creating a mosaic of woods, open glades, heath and meadow, linked by strips of woodland and other green corridors. This patchwork will create a matrix of habitats in a landscape that will be invaluable for wildlife and people alike. Such integrated management will bridge the gap between the history of the area and the current landscape.
- Introduction by the Forestry Authority and other woodland owners of broadleaved woodland elements into coniferous plantations, particularly in the Worth forests.
- Continued protection of rare and in some cases nationally-important woodland habitats, for instance, wet woodlands and sandrock communities in the deep High Wealdgills and the recreation of largely lost habitats such as floodplain woodland (Sussex Floodplain Woodland Concept Study) in and adjoining the District.
- The continued promotion of woodland for quiet recreational pursuits which respect woodland habitats and draw on the experience of being in woodland.

Management of wildlife habitats

2.103 As in other areas of the County, records show that the extent and variety of wildlife habitats in Mid Sussex has been in steady decline over the last thirty years. Species-rich chalk grassland and meadows, heathlands and wetlands are now rare and precious habitats in the District. All of these need protection and active management if their character and biodiversity are to be maintained. Whilst the rate of loss from direct damage now appears to be lessening, the management of the remaining habitats will require effort and resources (see ***Appendix 3*** *paras A3.47-50* for details on Biodiversity Action Planning).

Built development

2.104 The relationship of development with landscape and townscape character is of great importance in Mid Sussex. The District and the areas around it have experienced major sub-regional growth since the Second World War, with the development of the new town at Crawley, the growth of Gatwick Airport, the outward growth of major settlements and new development in most villages. The District today contains three substantial modern towns, the expanded medieval market settlements of Cuckfield and Lindfield, and expanded villages at Hurstpierpoint, Keymer and Hassocks. Despite restraints on new development, development in the countryside has increased, centred on housing infill, famstead expansion, and infrastructure and commercial development.

2.105 The populations of the principal settlements in Mis Sussex District (2001 *Census*) are as follows:

Burgess Hill	28,803	
East Grinstead	23,942	
Haywards Heath and Lindfield		22,800
Crawley Down and Turners Hill		7,152
Hassocks	6,821	
Hurstpierpoint and Sayers Common	6,264	
Copthorne and Worth	4,580	
Cuckfield	3,266	

Strategic gaps

2.106 The local authorities have long recognised pressures for development in the land between principal settlements and have designated this land as *strategic gaps*

in successive reviews of the County Structure Plan and Borough and District local plans. The policy seeks to maintain and enhance the separate identity and character of such settlements in the District. Development that would undermine this objective or lead to the actual or perceived coalescence of the settlements should not be permitted. The strategic gaps in Mid Sussex District are:

Burgess Hill and Hurstpierpoint/Keymer/Hassocks
Burgess Hill and Haywards Heath
Hatwards Heath and Cuckfield
Haywards Heath/Lindfield and Scaynes Hill
Craeley and East Grinstead
Crawley and Pease Pottage
East Grinstead and Ashurst Wood.

The strategic gaps are mentioned as necessary in the sections on each Landscape Character Area. The District Local Plan also defines *Local Gaps* between smaller settlements.

Future development in Mid Sussex

2.107 As elsewhere in the Country, proposed levels of new housing development in West Sussex represent a significant pressure for change. Continued coastal urban development on the downland fringe, and recent major expansions around Burgess Hill, Crawley and Haywards Heath have had significant impacts on local landscape character. In Mid Sussex, likely development levels to 2026 will pose an important challenge in accommodating housing development without eroding character and local distinctiveness.

2.108 For the purposes of regional planning, many parts of the South East have been defined as sub-regions, mainly where growth is anticipated. The greater part of Mid Sussex District (from a point just south of Burgess Hill northwards) lies in the Gatwick sub-Region, the extreme southern part in the Coastal sub-Region. The inclusion of much of the District in the Gatwick sub-Region (and lying as it does across the Brighton to Crawley corridor) emphasises the close relationship between future development and economic growth in Mid Sussex with that in the Crawley-Gatwick area.

2.109 In the Gatwick area, the aim is to manage economic pressures by supporting the right type of economic growth; making the best use of the labour force of the area; and improving skills to match wider job opportunities. On the Sussex Coast the aim is to promote sustainable economic regeneration and provide high-quality employment sites supported by much-needed infrastructure and improved woirkforce skills.

2.110 Under Part Two of the draft *South East Plan*, the South East England Regional Assembly has put forward for consultation (September 23- 4 November 2005) a set of housing numbers for the Borough and District areas for the period to 2026 and proposals covering employment and infrastructure needs. The proposals are summarised in the Public Consultation leaflet *Housing, Jobs and Infrastructure in West Sussex* (September 2005) prepared by the County Council.

2.111 An allocation of 3,400 or 3,800 houses is suggested for Mid Sussex in addition to the assessment of the existing supplyof dwellings. This includes an allowance of about 500 for further housing in the form of small-scale gradual growth which is likely to continue to come forward as additions to existing settlements. This would leave a need to find additional land for 2900 or 3300 dwellings. The Assembly considers that these figures reflect the need to support the economy of the Gatwick area and make up a building backlog (for further material on the *South East Plan* see ***Appendix 1*** *paras A1.14-18*). For details of the regional economic context see the *Regional Economic Strategy for South East England 2002-2012* (2001) published by the South East England Regional Assembly (SEERA). *An Economic Strategy for West Sussex*

County Council (2004) contains an action strategy (pp21-4) for the north east sector of the County which seeks to address the distinctive set of challengesfaced by the rapidly developing economy centred on Gatwick Airport and Crawley.

Development and landscape and townscape character

2.112 In the past, much development has resulted in:

- Expansion of suburban character and infill development in rural areas, which may be at odds with traditional settlement patterns and rural character.
- Development of standardised designs on the fringes of existing settlements, which compromise local distinctiveness, setting and landscape character.
- The introduction of a diverse variety of inappropriate building materials and styles without reference to styles of traditional rural siting and design.
- Expansion of industrial, leisure and retail developments on the edges of the main towns with potential to erode rural character.

The location, density and design of the new development to come will therefore affect the landscape character of the District. It will be the job of the District Local Development Framework to ensure that the location and siting of development reflect the character of the landscape and townscape in which it is set and be *good enough to approve* by way of well-designed buildings at varying densities which fit in sympathetically with the differing character of localities. The District Council is preparing a Supplementary Planning Document on *Sustainable Construction* which explains how sustainable construction techniques can be employed in new developments to improve the environmental and social impacts of new buildings. For further details on relevant policies in the District Local Plan, see ***Appendix 2.***

Infrastructure including water resources

2.113 The key forces for change related to infrastructure and implications for landscape character include:

- Pressure for new roads and the growth in levels of traffic on existing roads, leading to impacts on the tranquillity of the countryside and rural settlements.
- Fragmentation of habitats and historic landscape patterns as a result of linear infrastructure developments. The homogenising influence of road design on local landscape character.
- Additional pylons, overhead transmission lines and telecommunication masts intruding on important views leading to an erosion of tranquillity and sense of remoteness.
- More widespread lighting impacts resulting in loss of clearly visible night skies.
- Visual impact of structures for the management of flood risk and new water supply and waste water infrastructure.
- Maintaining an adequate quality and supply of water and disposing efficiently of waste water and run-off.

2.114 Road infrastructure in Mid Sussex has developed greatly in recent decades, particularly along the Crawley-Brighton axis, including the development of the modern A23 Trunk Road, and the M23 Motorway along the District boundary with Crawley Borough. Many other roads (including new and proposed relief roads) have been improved to cope with increasing volumes of traffic, notably along the Crawley-East Grinstead corridor. Many rural roads are now requiring road safety improvements to cope with increased traffic flows. This level of road growth and

usage has had widespread affects on the appearance and tranquillity of the countryside throughout the District.

2.115 The importance of water as a resource and its efficient conservation, supply and disposal, are self-evident and of primary importance in the District. Supply and water quality must noit be compromised by development demands. In managing water supply, it will continue to be important to protect existing sources, reduce leakage, manage demand sensibly, and examine carefully storage and transfer possibilities. Policies at regional and local level will continue to seek to safguard water supply and quality in the light of proposed new development (see ***Appendix 1*** paras *A1.9-11* concerning the actions of the Environment Agency with regard to river catchment management planning).

Minerals and waste sites and facilities

2.116 Mineral extraction has a long history in Mid Sussex, stretching back over 1,000 years in the case of iron extraction in the Weald. In modern times, activity has centred on brick- and tile-making in the Low Weald, with a few, larger clay pits (for example, at Burgess Hill) and many smaller ones, now mostly closed, although local brick- and tile-making continues, contributing important supply of locally-distinctive materials. Chalk extraction was never carried out in large-scale quarries in the District, mainly confined to many, smaller pits and delvings. Stone quarrying (Wealden stone in the High Weald and Horsham Stone and, very locally, Lower Greensand in the Low Weald) has all but ceased. Policies for minerals and waste sites and facilities in the District are respectively contained in the *West Sussex Minerals Local Plan* (2003) and the *West Sussex Waste Local Plan 2001-2016* (Revised Deposit Draft, 2004) prepared by the County Council.

2.117 The key forces for change related to mineral extraction, waste disposal and restoration, and implications for landscape character include:

- Impacts of extractive workings during operation and following restoration, including impacts on historic landscape patterns.
- Visual and noise impacts of heavy traffic associated with mineral workings and landfill sites leading to erosion of tranquillity.
- Increasing adverse visual impact from fly tipping.
- Re-creation of new landscapes as part of restoration schemes.

Both local plans emphasise the benefits to be gained by the greater local re-cycling of building and other materials (recycled building materials are often the only source of older materials including local stone).

Recreation and tourism

2.118 The varied and sometimes dramatic landscape of Mid Sussex is one of the outstanding assets of the District, containing substantial areas of the nationally important landscapes of the High Weald and South Downs Areas of Outstanding Natural Beauty. The District contains an excellent system of public rights of way amd longer distance routes allowing walking, cycling and horse-riding.

2.119 The is a wealth of highly accessible visitor attractions in Mid Sussex. These are listed in the current District Council *Mid Sussex Guide* and *Explore Mid Sussex: Places to Discover in the High Weald to South Downs*; in the County Tourist Guide *Places to Visit in West Sussex* (2005); and in other publications. These last include various walking and cycling guides, pub walk books and brochures, the *Sussex Gardens 2005* (National Garden Schemes gardens open for charity) and the *Sussex Gardens and*

Specialist Nurseries guides; and guides to Sussex Churches published by the Churches Conservation Trust and the County Council.

2.120 Principal attractions include parks and gardens open to the public (notably at Borde Hill and Wakehurst Place), historic houses, golf courses, farm trails, nature reserves, sailing facilities at at Ardingly Reservoir, the Bluebell Steam Railway, and the principal and popular viewpoints on the South Downs at Devil's Dyke and at Jack and Jill Windmills.

2.121 However, recreational activity can bring pressures of its own. In Mid Sussex, the key forces for change related to recreation and tourism, and implications for landscape character, include:

- Increased use of country roads and lanes by motorists visiting attractions, pubs or just enjoying the countryside.
- Potential impacts on landscape and wildlife of large formal recreational developments such as golf courses with associated facilities.
- Potential effects of horse riding and associated facilities on landscape character including over-grazed paddocks, the introduction of post-and-rail fencing and horse jumps, and decline in the management of hedgerows.
- Visitor pressure at Devil's Dyke.
- Increasing development of new forms of recreation such as four-wheel driving, paint-balling and mountain-biking.
- Pressure for noisy sports such as motor scrambling and radio-controlled cars and planes.

Small-scale incremental change

2.122 The universally high level of modern private mobility has created an unprecedented opportunity for urban-based living in the countryside underpinned by an expensive and buoyant property market. A major consequence of this is the gradual suburbanisation of the rural landscape resulting from the conversion of former agricultural dwellings and buildings to residential and other uses. This transformation of rural life has brought about significant changes in the visual character of the 'traditional' countryside. Notable changes include the sub-division of adjacent fields and orchards around farmsteads into fenced paddocks, with menages, stables, swimming pools and tennis courts. Other aspects include house extensions and re-building; outside lighting; elaborate entrance gateways and fencing; the widespread use of exotic tree and shrub species, including Cypress hedges and windbreaks; high levels of garden and verge maintenance; and a recent and increasing tendency to paint over brick and stonework.

2.123 It is anticipated that pressures for development will persist, as will the suburbanising trends mentioned above. Traffic levels will continue to rise. Together with increasing recreational demands, these numerous changes are likely to have a cumulative effect, eroding further the perceived rural, secluded and tranquil nature of many parts of the area.

2.124 Many small and often subtle shifts in the type, colour and texture of materials and new patterns of vegetation are contributing to slow changes in the essential character of the landscapes of West Sussex. Local identity, ecological diversity, historic features and a sense of remoteness in the countryside can all too easily be eroded as a result of many, relatively minor changes, resulting in progressive and cumulative urbanisation.

2.125 The key forces for change related to small-scale incremental changes and implications for landscape character include:

- Small-scale road improvements including widening, straightening and the addition of road markings and signage.
- Erosion by increased traffic of the banks of rural lanes.
- Increases in the number of cars parking in villages.
- Introduction of suburban styles and materials into the countryside as a result of property improvements.
- Introduction of non-native species, for instance, cypresses and the escaping into the countryside of exotic garden species.
- Loss and deterioration of locally distinctive and historic features such as walls, fencing, paving, gates, timber signposts, milestones, windmills, orchards, fords, and dewponds.

Mechanisms for implementation

2.126 Details of the actions to conserve landscape character which the District Council and its partners intend to take, and the activities of other agencies closely involved with landscape conservation in Mid Sussex are listed in ***Appendix 3***.

Monitoring, targets and indicators

2.127 The District Landscape and Biodiversity Strategy contains various plans concerning landscape and biodiversity actions but no sets of landscape targets and indicators (biodiversity targets and indicators stem from the biodiversity action planning process). The Assessment and the Strategy together provide a basis for devising targets and indicators with which to measure the success of the action plans. Under its *Countryside Quality Counts* initiative, the Countryside Agency is seeking to monitor landscape change within the national Character Areas. This should provide a sound basis for monitoring work at a more local level.

Further research

2.128 The Assessment is a snapshot of the Mid Sussex landscape: the description and evaluation of landscape in it will not stand indefinitely. As the stakeholders were keen to point out (see ***Appendix 4***), the Assessment must be forward-looking and be capable of being up-dated regularly. There will be continuing change in the District landscape. It will therefore be of the utmost importance to review and up-date the Assessment both in the light of change and as the result of fresh knowledge. Further research will need to be identified and carried out at appropriate geographical levels. This section mentions two areas of research and it is anticipated that further research topics will be mooted.

Ancient woodland

2.129 The District Council in partnership with the High Weald AONB Unit is about to begin a survey of ancient woodlands in the District (see ***Appendix 3*** *paras A3.37-8*). Only woodlands over two hectares in size are recorded in the ancient woodland inventories currently available and this has long been considered a serious omission. The new survey will cover all ancient woodland, allowing, *inter alia,* a more refinded approach to landscape characterisation.

Historic landscape boundaries

2.130 As noted in the discussion of the historic landscape boundaries and the structures associated with them (walls, banks, hedges, ditches, trackways and markers) are a fundamental component of landscape, especially from an historic viewpoint. The extensive system of tracks and greenways throughout the District, are essentially medieval in origin and many of the numerous boundary banks are late originated in Saxon or medieval times. Boundary loss – whether of ancient boundaries or more recent ones – is therefore a key indicator of historic landscape character change. The District Council and its partners will review existing sources of knowledge on this topic and consider the possibility of further research.

Hedgerows

2.131 The Sussex Biodiversity Partnership *Hedgerows Habitat Action Plan* (June 2004) places high priority on identifying the current extent of ancient and/or species-rich hedges. The *Sussex Hedgerow Inventory Project* seeks to meet this need, based on a standard survey method. In addition, there is a formal exchange of information through regular and structured meetings of the Sussex Hedgerow Habitat Action Plan Working Group and the West Sussex County Council Trees, Woodlands and Hedgerows Advisory Group (see *paras 2.24-5* above).