Kent Habitat Survey

2012

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Introduction to Kent

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2.1 General Description

The county of Kent lies in the extreme south-east of the British Isles, south of the River Thames and stretches from outer London to the sea. It is bordered in the west and south-west by the counties of Surrey and East Sussex, in the north-west by the London boroughs of Bromley and Bexley, in the east by the Straits of Dover and in the south by the English Channel. In the north-west, it surrounds the Unitary Authority of Medway on three sides. This area is governed by Medway Council and, although entirely autonomous, for the purpose of this report and simplicity, it has not been described separately, unless specifically stated.

The county is 100km across at its widest point and 60 km from north to south, with a total of 160km of coastline. The County covers a total area of 391,823 hectares (ha) with approximately 12,712ha of this being between the high and low water mark.
The population of Kent is estimated to be 1,466,500 with a Medway population of 263,900 (taken from mid-2011 Census results; combined total of 1,730,400). Kent has a population density of around 4.1 people per ha, while for Medway it is around 9.8 people per ha

The main population centres are Dartford and Gravesend in the north-west, the seaside towns of Margate, Broadstairs and Ramsgate in the north-east, the city of Canterbury to the east and around the county town of Maidstone. Other major towns include Tunbridge Wells, Tonbridge and Sevenoaks. Conurbations occur at the ports of Folkestone and Dover, and at Ashford where there is a major rail interchange and high-speed train link. In Medway, the population centres are the towns of Rainham, Gillingham, Chatham, Rochester and Strood.

The County is served by several motorways, with the M20 bisecting it from Swanley to Folkestone, the M2 running across the northern section and the M26/M25 cutting through the western end. There is an extensive rail network, including high speed services linking Kent with London, Surrey and Sussex. An international, high speed rail link connects Kent with both London and the Continent via stations at Ashford and Ebbsfleet.
A wide variety of habitats and species occur in Kent at least partly as a result of the complex geology and landforms of the area. Despite the pressures of urbanisation and agricultural intensification which affect much of the County, Kent is still custodian to more ancient semi-natural woodland than any other county in England. Approximately 30% of Kent lies within the North Downs and High Weald Areas of Outstanding Natural Beauty (AONBs), a further reflection of the high landscape value of much of the County.

2.2 Climate

By British standards the climate of Kent is continental, with warm, dry summers and cold winters. However, more recently, extreme weather events have become more frequent, with periods of very low temperatures, such as the winter of 2010/11, or extreme drought, such as that at the beginning of 2012, which resulted from two winters with below average rainfall. This drought was then followed by the wettest summer on record with 2012 as the second wettest year on record. Although individual years do vary, the county as a whole is relatively dry, with an average annual rainfall of 600 — 850mm. The driest areas are along the north coast where the total may be less than 600mm, with the highest rainfall being associated with the ridges of the High Weald, Greensand and North Downs. In certain areas, water is very scarce, particularly in the summer months, with restrictions and licences to control abstractions from rivers and aquifers becoming increasingly necessary to protect wetlands and waterways such as the River Darent. In parts of Thanet, irrigation of crops is routinely carried out in dry periods, as surface and sub-surface aquifers are inadequate to sustain them. The opposite extreme is to be found in areas of the High Weald, where a combination of relatively high winter rains and impermeable soils increases the need for artificial drainage. At Bedgebury, for example, in an average winter the difference between precipitation and the loss through evapo-transpiration is as high as 330mm.
The coastal areas of Kent are influenced by the maritime climate and rarely experience the hard frosts and extremes of heat and cold which occur inland. The highest shade temperature to be recorded for the county was 38.5°C at Faversham in 2003 and the lowest of -20°C in Canterbury in 1947.

2.3 Geology and Soils

The rock strata exposed in the south-east of England are sedimentary in nature, being formed in the Cretaceous and Tertiary periods, 135 - 40 million years ago. Subsequent folding has resulted in the formation of a domed structure known as the Wealden anticline, the axis of which runs along the Kent - Sussex border. It is here in the south of the county that the oldest rocks are exposed. The outcropping rocks become progressively younger to the north of the county, with successive ridges and valleys where more resistant strata have persisted and the softer material between has eroded.
The oldest rocks occur in the High Weald, in the south-west of the county, which stretches from the Surrey border to Romney Marsh. These are the Hastings Beds, which comprise the Ashdown and Tunbridge Wells Sands and Wadhurst Clay. They give rise to nutrient poor, often poorly drained soils with an acidic tendency. This is one of the few areas of the county with naturally occurring inland rock exposures.
Immediately to the north of the Hastings Beds lies a band of soft clay known as Weald Clay. This has been eroded to form a broad, flat valley, the Low Weald which is 4-8 miles wide and runs from Lympne in the east to the Surrey border at Westerham in the west. Much of the clay here is over 30m thick, and because of the impermeable nature of the heavy stagnogley soils, drainage is poor.
The Greensand Ridge is comprised of rock which is rarely green and seldom sand. It runs, almost unbroken, from Hampshire to Folkestone. The rock can be divided into the Hythe, Sandgate and Folkestone Beds. The Hythe Beds are the source of Kentish Ragstone, a hard bluish-grey limestone used in the construction of many fine buildings. They also weather to produce good soils such as those on the dip slope south of Maidstone, which traditionally was one of the major concentrations of fruit growing in the county. The soils become increasingly sandy and more acidic to the west and these poorer soils retain a higher woodland cover and some heathland, particularly in the Sevenoaks area.
There is a thin belt of Gault Clay to the north of the Greensand Ridge, which runs along a linear valley created by the dip slope of the ridge, and the scarp of the North Downs. This clay is unstable due to the minerals it contains, which expand and contract considerably on wetting and drying, making it unsuitable for building upon. The Gault Clay vale has heavy, poorly drained soils and this has led to the retention of small fields of permanent pasture, with many shaws (wide hedges or narrow woods) and woodlands between them.
The North Downs can be said to be the backbone of Kent being 190m high through much of the county and rising steadily west of the Medway to Westerham Hill, the highest point in Kent at 251m. The Downs rise abruptly from the vale of the Gault Clay and descend gradually northwards to the Thames estuary. The chalk can be divided into 3 groups: The Lower Chalk, which is, strictly speaking, a marl (a lime-rich mudstone) with appreciable amounts of non-calcareous material. This occurs on the foot slopes and is often obscured by hill-wash. The Middle Chalk is purer and whiter, with flints throughout. This is exposed on most of the scarp and crest. The Upper Chalk caps the crest at its highest point and covers most of the dipslope of the Downs. However, much of this is overlain by drift deposits, in particular Clay-with-Flints, giving rise to more acidic and

impermeable soils overlying the free-draining chalk bedrock. True chalk soils are limited to the face and base of the escarpment and the dry valleys of the dipslope.
The Tertiary deposits in the north of the County comprise the Thanet, Woolwich and Oldhaven Beds, and the London Clay which covers large parts of the Isles of Sheppey and Grain and the north of Canterbury district. These deposits give rise to a wide variety of soils from sand and pebbles to clays. The "Brick Earths" are some of the richest soils in Kent and are intensively cultivated. Quite acid soils occur over the Thanet Beds and some areas of the London Clay, for example in the Blean area.
Much of the northern coastal area of the County is influenced by the estuarine conditions there and the solid geology is overlain by alluvial deposits. Here the marshes of the Thames, Swale and Medway estuaries and the Stour Valley have been reclaimed for intensive agricultural production.
In the extreme south-east of the County, shingle beach deposits form the Dungeness peninsular. Romney Marsh, further inland, has been reclaimed from the sea progressively since Roman times, with the inland areas tending to be slightly lower than those on the coast due to a higher rate of deposition on the more recently reclaimed areas, as well as drainage and shrinkage of the land.

2.4 Landform and Natural Character Areas

Natural Character Areas (NCA) are defined by a combination of landscape, geology, biodiversity and cultural and economic activity. The boundaries follow natural lines in the landscape, which means that they can be used in decision-making for the natural environment. These areas describe the wider landscape of the south east and extend beyond Kent into neighbouring counties (Figure 2-1). More in-depth information can be found on the Natural England website (www.naturalengland.org.uk).

2.4.1 Greater Thames Estuary

This NCA extends beyond Kent into Essex (Figure 2-2) and forms the northern most region of Kent. It is low-lying, ranging from just below sea level to a maximum of 81m on the Isle of Sheppey, with an average elevation around 9m above sea level.
The underlying bedrock is mostly London Clay, with superficial deposits of sands, gravels and clays as well as estuarine silts. The soils are largely derived from intertidal alluvial muds producing silty and loamy soils,

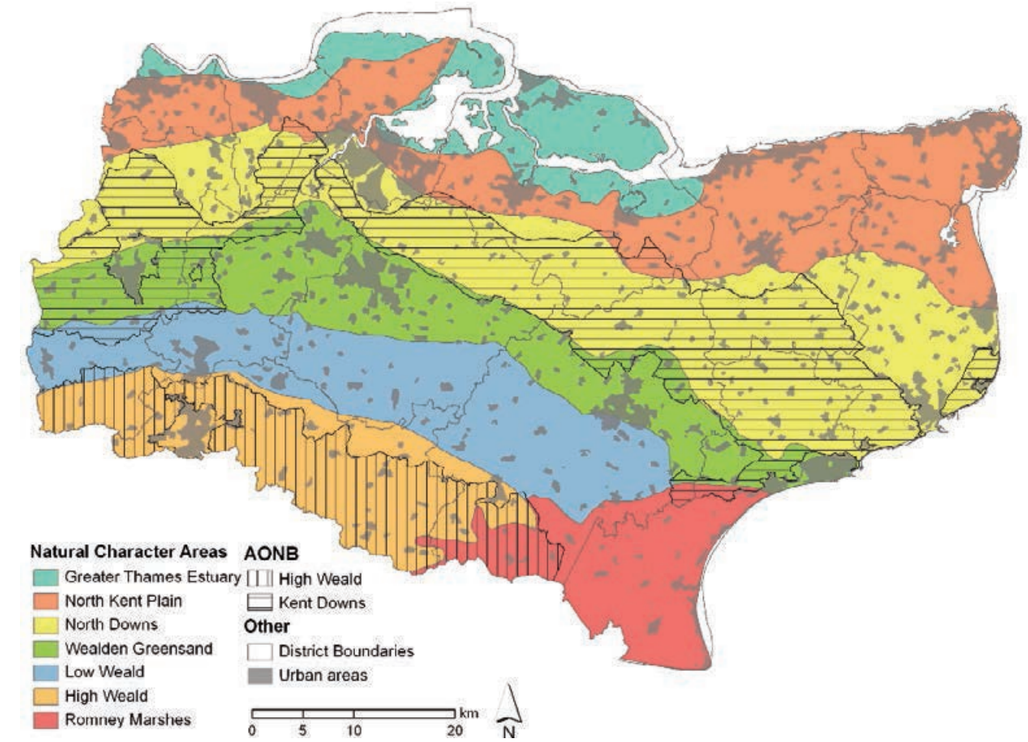

Figure 2.1 Natural Character Areas in Kent

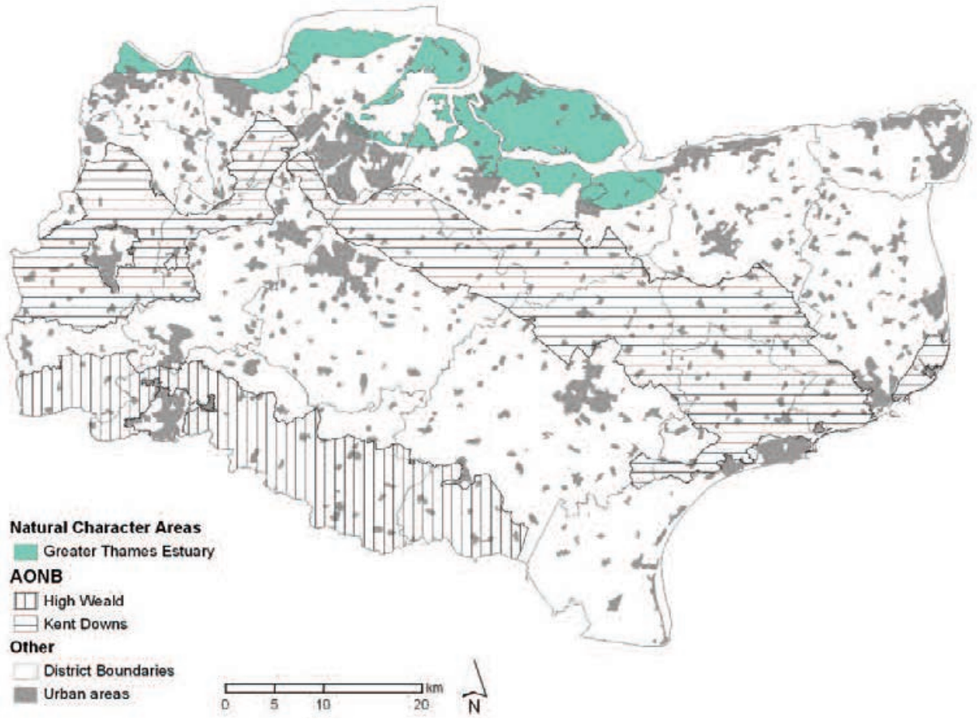

Figure 2.2 Greater Thames Estuary NCA

which have been drained to produce fertile arable land. The area has many marine and estuarine habitats with sea walls, coastal marshlands, and a large intertidal area with a series of estuaries, shallow tidal creeks, mudflats, sandflats and saltmarsh. There are large areas of grazing marsh and the surrounding ditches are often lined with reeds. Ditches form the main field boundaries of larger grazing areas, with only infrequent use of hedgerows. Woodland is uncommon, with small patches being found on higher ground.

2.4.2 North Kent Plain

The North Kent Plain runs between the Greater Thames Estuary NCA to the north and the chalk of the North Downs to the south (Figure 2-3). The landscape is low and undulating, with highly productive, fertile loam soils suitable for arable agriculture. Orchards are found between Sittingbourne and Canterbury.
Several rivers cut through this area; the River Darent and River Medway in the west drain north into the Thames, while the Stour flows east into the English Channel. Significant areas of wetland habitats, including reedbeds, are associated with these rivers.

The area has significant coastal habitats, with chalk cliffs and littoral chalk around the Isle of Thanet, soft cliffs between Herne Bay and Reculver, intertidal sand and mud at Pegwell Bay, saltmarsh, sand dunes (notably at Sandwich Bay), shingle beaches, saline lagoons and maritime grasslands on cliff-tops and sea walls.

Sandy and gravelly soils around Dartford support areas of acid grassland and heathland, while chalk grassland can be found around Dartford, Chatham, Gravesend and Thanet. Chalk acquifers underlie this NCA and there is significant ground water abstraction.
Woodlands are found in occasional blocks, with the extensive areas of ancient woodland occurring in the Blean. This wooded area has heavy, acidic soil that is unsuitable for arable production.
Significant urban centres are to the west with the Medway Towns, Sittingbourne, Faversham and Canterbury to the north, as well as along the coastline of Thanet with Margate, Broadstairs and Ramsgate. Main transport routes traverse the length of the NCA, with the A2, M2 and London to Coast rail links.

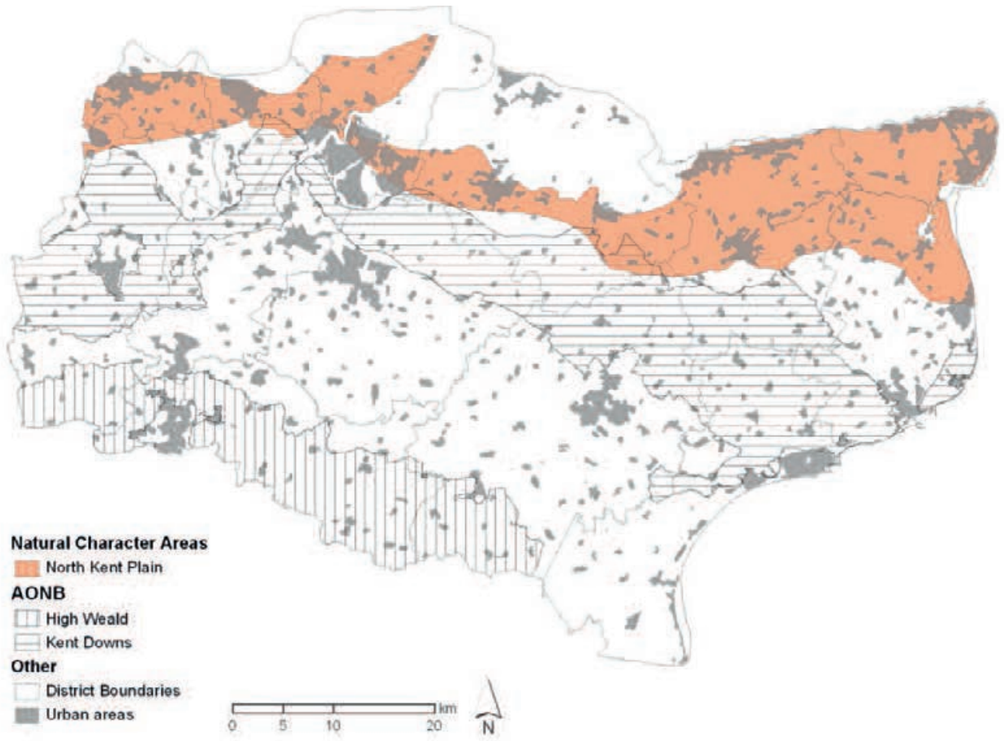

Figure 2.3 North Kent Plain NCA

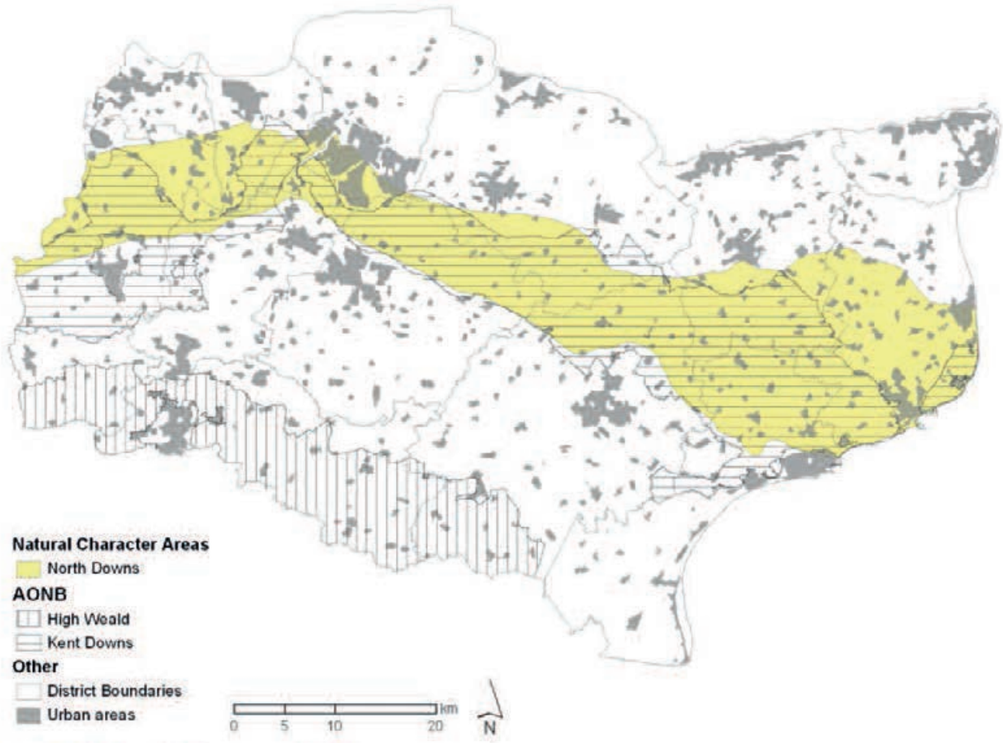

Figure 2.4 North Downs NCA

2.4.3 North Downs

The North Downs is a ridge of chalk running the length of Kent and into south London, Surrey and beyond (Figure 2-4). The ridge has a dramatic scarp slope to the south, with a gentler, wide northern dip slope, which merges into the plateau of the North Kent Plain to the east. The ridge is cut by many dry valleys and some rivers, including the Stour, Medway and Darent, which have formed deep valleys.

Shallow calcareous soils overlie the slopes, but the upper part of the north-facing dip slope has extensive drift deposits of more acidic clay-with-flints. There are also drifts of acidic sandy soils which support acid and heathland habitats.
The NCA has large areas of both native and ancient semi-natural woodlands, with areas of yew woodland on the scarp slopes. The grasslands of the Downs have traditionally been sheep-grazed, although much of the grassland within this area is now improved and has lost its diversity of species. The remaining species-rich, unimproved chalk grassland is found mainly on steeper slopes, where a combination of droughty conditions and difficulty of ploughing or improvement, have enabled ancient grasslands to survive. Maritime grassland and maritime cliff communities are associated with the chalk cliffs around the coast. The south-eastern end of the Downs, particularly the lower dip slope, has fertile, loamy soils used extensively for arable crops and horticulture. The fields throughout the NCA are frequently bounded by hedgerows or wider wooded shaws. Wetland areas are found along stretches of those rivers that cut through the ridge.
Few large urban areas are found in this NCA, with Chatham and Dover being the main large settlements within Kent.

2.4.4 Wealden Greensand

This belt of countryside forms a distinct scarp/dip slope topography throughout much of its length, although it is quite different in character to the North Downs landform to the north (Figure 2-5). There are four geological formations within the Lower Greensand and in landscape terms, the thin belt of Gault Clay, lying immediately to the north, forms a part of this zone. This area of the Gault Clay, with its heavy, poorly drained soils supports small fields of permanent pasture bounded by hedgerows, shaws or oak/ash woodlands. A springline is found at the boundary with the North Downs NCA to the north.
The Greensand Ridge forms a rugged escarpment along much of its southern edge, and rises to 245m at Toys Hill in the west, affording panoramic views both north

and south. The Western parts of the ridge and the area south of the A25 are heavily wooded, whilst to the north the landscape is more open, with larger fields. Wooded commons, known as ‘charts’, are a characteristic feature of this part of Kent.
Further east, the landscape becomes less wooded, with a more open landscape and mixed farming. The soils can be sandy with areas of heath. Where lighter loam soils occur, there are orchards and, now less common, hop fields, although there is increasingly arable farming in this region.

Areas of resistant calcareous sandstone (ragstone) form part of the Greensand escarpment. These outcrops support lime-tolerant plant communities that are not normally found in the generally acidic conditions of the Wealden Greensand.
The sandstone ridge extends to the coast, around Folkestone, where it gives rise to coastal cliff and littoral rock formations uncommon around the coast of Kent.
Within this NCA are some larger urban areas, including Sevenoaks, Maidstone and Ashford. There are numerous transport connections running through this area, including the M20, M26 and part of the M25. Rail links around Ashford follow the vale below the scarp of the North Downs.

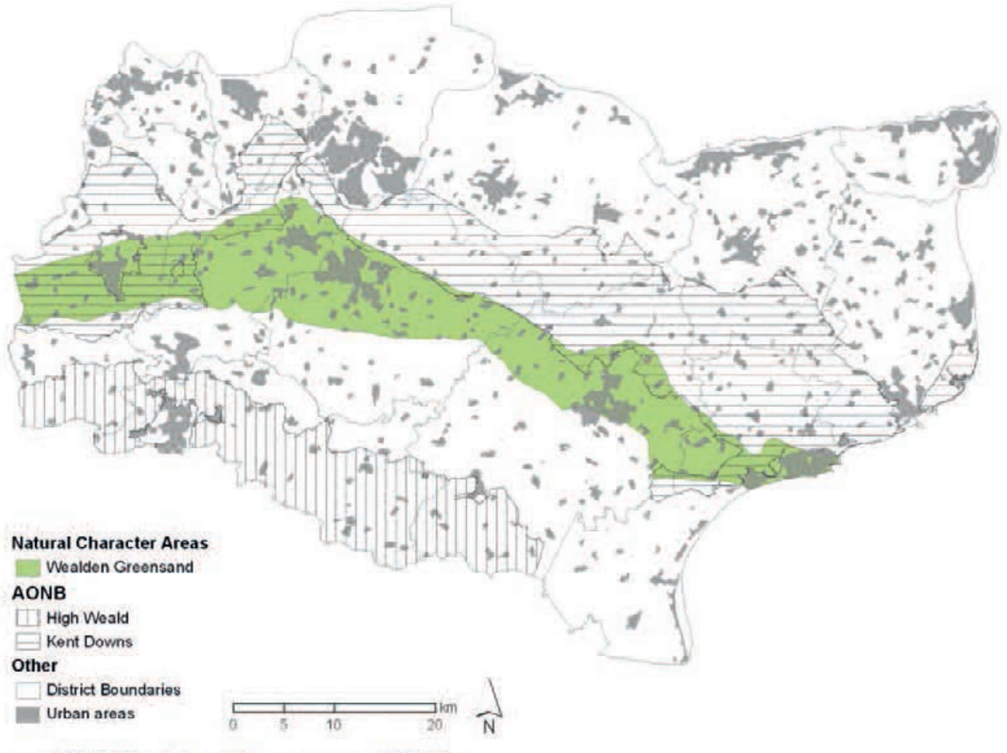

Figure 2.5 Wealden Greensand NCA

2.4.5 Low Weald

The Low Weald rises from under 20m in height in the centre to over 50m in the west and extreme east. The area overlies an outcrop of Weald Clay, which forms a horseshoe around the High Weald and extends into Sussex (Figure 2-6). It is generally flat and featureless, with frequent ponds especially in the central area. Deposits of limestone and sandstone are found locally, and form gentle ridges throughout the area. These higher and better drained areas are commonly the sites of settlements.

The heavy clay soils and naturally high groundwater table in the Low Weald result in poorly drained conditions. Traditionally, the area has a high proportion of pasture, with small, irregular fields bounded by a dense network of hedges and shaws. This pasture grassland lies east and west of a central fruit growing area, bounded by Marden, Yalding, Tonbridge and Hadlow. Here the Weald Clay has been covered by drift deposits from the Medway and Beult rivers, creating excellent soils traditionally used for hops and orchards and resulting in larger, arable fields. The overall impression of the Wealden plain, when viewed from the adjoining scarps, is of an area more heavily wooded than it actually is. This is as a result of the small size of the enclosures and the prevalence of hedgerow trees.
The main urban area in this NCA in Kent is Tonbridge.

2.4.6 High Weald

The High Weald NCA lies at the centre of the Wealden anticline, surrounded by Wealden Clay and Greensand (Figure 2-7). In Kent, the land in the High Weald is often over 100m above sea level and locally can be over 125m, although this rises to 241m in East Sussex. It has a complex geology, with interbedded sands, soft sandstones and clays. The area is characterised by round topped hills and steep-sided valleys known as gills (ghylls), which mark the course of streams, fed by the numerous springs which rise in this area. Outcrops of sandstone are visible in many areas. The soils are sands and slightly acid heavy clays with impeded drainage.

The topography makes working the land difficult and this has resulted in a high proportion of the land being grassland, generally in small pastures with thick hedges or shaws forming boundaries. Woodland persists in the steeper valleys, where the woodland cover is still dense. However, in the valley bottoms, in the central part of the High Weald, the land is agriculturally richer. Here fruit orchards and hop gardens are common and their distinctive character sets this area apart from areas to the west and east.
The main settlement within the Kent part of this NCA is Tunbridge Wells.

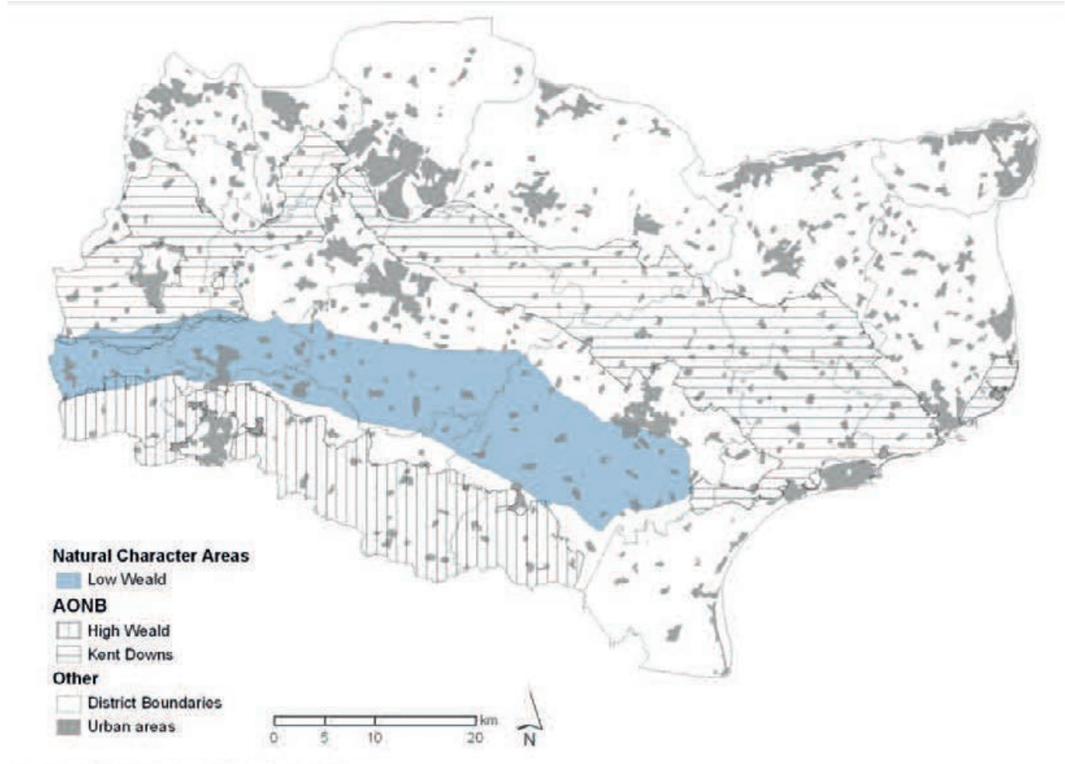

Figure 2.6 Low Weald NCA

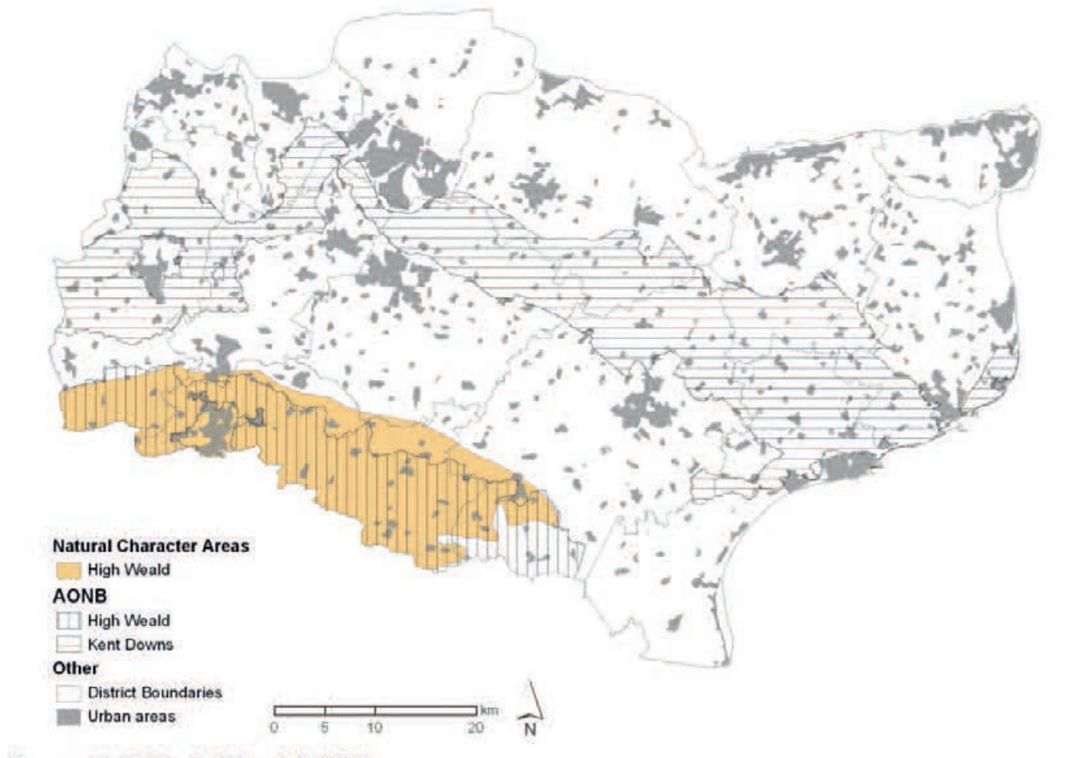

Figure 2.7 High Weald NCA

2.4.7 Romney Marshes

The Romney Marshes NCA is a broad stretch of low lying, flat land ranging from 0.2m below sea level to a high point around 94m above sea level. It is bounded to the north west by the High Weald, and the north by the Low Weald and Wealden Greensand (Figure 2-8).
The NCA is dominated by deposits of coastal sediment, most importantly, the cuspate shingle foreland of Dungeness. Formed by historic storm action, the large shingle promontories slowed the rivers draining from the Weald, enabling sediment deposits to fill up the shallow bay. Subsequently, much of this area was drained for agricultural use.

The soils are mostly loamy and clayey with naturally high ground water levels, although there are areas of sand dune soils which are very dry. The marshes are crossed by a network of drainage ditches, which drain into larger water bodies such as the Royal Military Canal and the Dengemarsh Sewer. Reedbeds are found in many of the ditches and larger water bodies. Traditionally, this area was grazed by sheep but, more recently, there has been widespread improvement and arable conversion. The landscape is open, with low tree cover generally around settlements and on slightly higher ground.
The landscape of Dungeness, with its large stretches of vegetated shingle is unique in the UK and the habitats supported by this environment have great natural heritage interest.
The power station is a dominant feature within the Dungeness landscape. Main settlements are at New Romney and Lydd.

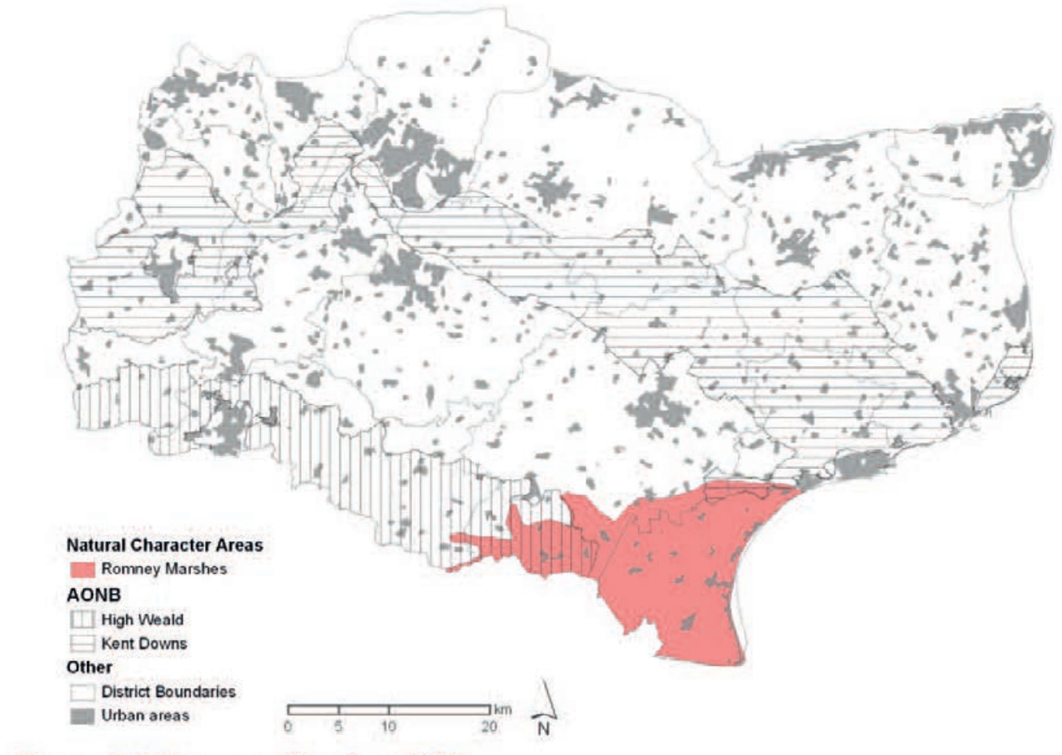

Figure 2.8 Romney Marshes NCA

2.5 Designated Areas

Kent has many areas that are recognised as of international, UK or local importance for the environment and natural heritage. There are landscape scale areas that incorporate a range of features and habitats, as well as individual sites that cover a few connected habitats that are rare and / or may support species of nature conservation importance.

2.5.1 Areas of Outstanding Natural Beauty

Areas of Outstanding Natural Beauty (AONBs) are designated for their natural beauty, which includes wildlife, landscape features and cultural heritage as well as their scenery. They have UK statutory protection equivalent to that of National Parks, with the aim of conserving and enhancing the natural beauty of the landscape (Natural England, 2013).

Kent has two AONBs – the Kent Downs and the High Weald, which are partially co-incident with the North Downs and High Weald NCAs (see Figure 2-1).
The Kent Downs AONB extends from the Surrey border along the chalk ridge to the sea cliffs at Dover. Part of the area extends into the Wealden Greensand around Sevenoaks and into a small area of the Low Weald. At the eastern end, the AONB border projects across the Wealden Greensand into part of Romney Marshes NCA.

Along the North Downs, the characteristic dip and scarp slopes of the chalk ridge are cut with dry valleys. Important areas of unimproved chalk grassland are found on the slopes, with ancient broadleaved and yew woodland forming part of a well-wooded landscape. The Wealden Greensand areas also have significant areas of woodland and support heathland, acid grassland and acidic woodlands. Other landscape elements within this AONB are orchards, hop gardens, arable fields and horticulture. Rivers have formed deep valleys through the chalk ridge. The landscape also has older elements of picturesque settlements and ancient lanes. There are many historic parklands within the AONB area, including Knole at Sevenoaks and Chartwell (N. Johannsen, 2013).

The High Weald AONB is only partly within Kent, with the majority of this designated area being in the neighbouring county of Sussex. It covers much of the High Weald NCA and part of the eastern area of Romney Marshes NCA. As described for the High Weald NCA, this AONB displays a hilly landscape of ridges and deep valleys. It is densely wooded with a high proportion of ancient woodland. Other landscape elements include ancient routeways, small, irregularly shaped fields and dispersed historic settlements with characteristic brick, tile and white weatherboard houses (N. Johannsen, 2013).

2.5.2 Sites of Special Scientific Interest (SSSIs)

SSSIs are sites that contain the best examples of UK's flora, fauna, geographical or physiographical features (JNCC, 2013). They have statutory protection and are managed with the supervision of Natural England. These habitats are of the highest importance for nature conservation. Some of the SSSIs are also designated Special Areas of Conservation, Special Protection Areas or Ramsar sites (see below 2.5.4), which are of international importance for wildlife. These have not been analysed separately within this survey. Kent has 105 SSSIs covering a wide range of habitats across the county.

2.5.3 Local Wildlife Sites

in Kent) are locally designated sites, important for the conservation of wildlife in Kent. The sites meet written criteria showing they are of county importance for the habitats or species they hold, although some sites may also hold features of national or international importance. LWS are non-statutory but are considered when planning decisions are made, when policies exist in Local Plans and Core Strategies. They include both private and public land.
As statutory designated sites cannot ensure that the countryside as a whole is rich in wildlife, LWS fill an important gap not covered by other designations and are vital in building a functional ecological network or Living Landscape. The LWS system in Kent is overseen by Kent Wildlife Trust on behalf of the Kent Biodiversity Partnership. Kent currently has 457 LWS[1] that contain many of the most important habitats in Kent.

2.5.4 Sites of International Importance

Kent has sites that are designated as being of importance for nature conservation, either globally (Ramsar sites) or within Europe (Special Areas of Conservation, SACs; Special Protection Areas, SPAs). The protection and conservation of marine areas, that do not already form part of these designated sites, will not be discussed here.

RAMSAR sites are wetland sites designated under the Convention on Wetlands of International Importance (1971). They form an important waterfowl habitat, but the designation also recognises the ecosystem importance of wetlands, and therefore conserves wetland habitats including fen, marsh and peatland with water habitats that can be fresh water, brackish or salt water, including riparian areas, estuaries and coastal zones (JNCC, 2013). Kent has 5 Ramsar sites, which are also SSSIs.

Special Areas of Conservation are sites designated by the UK under the EC Habitats Directive (1992). They are strictly protected and have been selected to make a significant contribution to conserving habitats and species that are recognised as being in most need of conservation within Europe. The aim is to establish a European network of high-quality sites that will enable the conservation of species listed within the Annexes of this directive (JNCC, 2013). There are 12 SAC sites in Kent.

Special Protection Areas are designated under the EC Birds Directive (1979), to conserve the habitat of rare or vulnerable birds within the UK, and regularly occurring migratory species. There are 6 of these sites in Kent, all of which are SSSIs (KMBRC, 2012).
The SAC and SPA sites in Kent form part of the Natura 2000 European network of nature conservation sites.
The sites described in this section have not been examined in detail within the Habitat Survey and will not be discussed further in this report.

2.6 Kent's Habitats

Kent has a wide variety of habitats, of varying values for nature conservation: from the built environment that has no natural features to habitats where plant communities and/or geological features are of international importance for nature.
This section outlines the different terms used to describe the habitats in Kent, and how they relate to each other.

2.6.1 Natural and Semi-natural Habitats

Natural habitats are considered to be those biological communities that are composed of largely native plant and animal species and have not been modified by human activity. Semi-natural habitats support mainly native species, but are habitats where human-induced changes can be detected or where the habitat is managed by human activity. In Kent, there are only a few limited areas that can be classified as natural habitats, such as some of the marine habitats. For this reason, and to simplify the text, the term semi-natural habitats, to denote both natural and semi-natural habitats, has been used throughout the report.

2.6.2 Broad Habitats

As part of the UK's national strategy to halt biodiversity loss, Biodiversity Action Plans (BAPs) were developed in response to the 1992 United Nations Convention on Biological Diversity (Rio de Janeiro). These aimed to help conserve and aid recovery of the most threatened species and habitats. The 1994 UK Biodiversity Action Plan (UKBAP) was developed to classify all UK natural and semi-natural habitats under threat and in need of action to safeguard their future.

Within this system, the habitats are classed first as broad habitat types. Each of these broad habitat classes covers one or a number of priority habitat types (described below) that have significant nature conservation value.
For the Kent Habitat Survey, the broad habitat definition has been expanded within the IHS classification (described in Section 3). These include areas that have no or few natural features, such as the built environment and roads, or habitats that do not fit within the UKBAP broad habitat definitions, for example arable land, improved grassland and bracken. In some cases, a

UKBAP broad habitat class title has been used but the definition within the Kent Habitat Survey is different, for example, the broad habitat class 'linear features' is used by the UKBAP to describe hedgerows, walls, dry ditches, lines of trees, banks and verges; however, within the survey this broad habitat also includes roads, rail tracks, paths, tracks and verges.
The broad habitat classes have been used within the survey to produce the Kent Habitat Survey map (Appendix 1), and to show the distribution of the main habitat types within the different administrative, designated and natural areas of the county. These are described in the report.

2.6.3 Priority Habitats

UKBAP priority habitats cover a wide range of semi-natural habitat types that are the most threatened in the UK and require conservation action. The Kent Biodiversity Partnership developed the Kent Biodiversity Action Plan, to conserve, enhance and restore biodiversity in Kent, and to contribute to the national UK BAP targets. Within the county, there are 24 UK BAP priority habitats grouped into 19 Habitat Action Plans (HAPs).
Priority habitats can cover a particular habitat type, such as calcareous or acid grasslands, or may refer to a habitat structure or complex of features as found in Wood pasture and parkland or Coastal and floodplain grazing marsh. To qualify as priority habitat, the habitats must conform to UKBAP priority habitat descriptions (Defra, 2011).

Priority habitats are targets for conservation effort and form the basis for Kent Biodiversity Opportunity Areas (BOAs), which show where the greatest gains can be made from habitat enhancement, restoration and recreation to establish large habitat areas and/or networks of wildlife habitats.

Not all Kent priority habitats have been recorded within this survey. Some priority habitats, such as hedgerows and marine habitats below the low mean water mark (sublittoral habitats) were beyond the scope of the survey. Others would require intensive surveys by specialists; for example, ponds are abundant throughout parts of Kent and would be a survey project in their own right. Another priority habitat, Open mosaic habitats on previously developed land, is a complex of habitats on brownfield sites. Where possible, these areas have been recorded as a complex code added to the habitat description within the survey but have not been described further within this report.

[1] This figure is from January 2013. The KHS Survey 2012 data is based on the 455 LWS designated before this date.

2.6.4 Annex 1 Habitats

Habitats of conservation importance have another level of recognition and protection when designated as Annex 1 habitats, as described in the Habitats Directive (1992; Conservation of Habitats and Species Regulations, 2010). These habitats are recognised as being of European importance for nature conservation, and many of these areas are within SACs (see above).

Annex 1 habitats represent very distinct plant communities or landscape features. The definitions for the Annex 1 habitats do not always directly correlate with those of UK BAP Priority habitats. In some cases, the UK BAP will encompass several Annex 1 habitat types: for example, coastal saltmarsh is a single UK BAP priority habitat, but in Kent, there are three Annex 1 classes for this complex habitat – 'Salicornia and other annuals colonising mud and sand', 'Spartina swards (Spartinion maritimae)' and 'Atlantic Salt Meadows (Glauco-Puccinellietalia maritimae)' (see Table 2-1). In other cases, only part of the UK BAP priority habitat will qualify as an Annex 1 habitat; for example, the UK BAP definition for Wet Woodland includes several habitat types, but the Annex 1 habitat is restricted to 'Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)'.

Table 2-1 shows an outline of the relationship between the Broad, UK BAP priority and Annex 1 habitats found in Kent.

There are 24 Annex 1 habitats recorded in the Kent Habitat Survey 2012. However, the survey did not cover marine habitats in detail and other Annex 1 habitats associated with Kent's marine environment are likely to be present.

2.6.5 Semi-improved Grassland Habitats

Traditional methods of grassland management using no or low inputs of nutrients and low-density grazing or hay-cutting, created conditions that allowed varied and often species-rich plant communities to develop. These grasslands are referred to as unimproved grassland and are now very rare in Kent and throughout the UK.

Most other grasslands have been modified in some way through changes in agricultural practices. Addition of nutrients, re-seeding or over-sowing, herbicide treatment and more intensive grazing have been used to 'improve' grasslands and increase their productivity, but these activities have reduced the species-richness and conservation value of the swards.

Improved grasslands are species-poor, with a limited number of grass species that require high levels of soil fertility. Finer grasses are lacking in these swards, and the flowering plant species are restricted to those that tolerate high soil fertility and intensive mowing or grazing.

Where unimproved grassland has only been partially modified, these areas are referred to as semi-improved grassland. There is a wide spectrum of improvement: some areas have fairly impoverished plant communities in comparison to those of unimproved sites, and show strong evidence of improvement, while other grasslands show varying levels of species-richness up to those that more closely resemble unimproved grasslands, being species-rich but having lost some key indicator species. These semi-improved grasslands have conservation value, with the less improved, or more species-rich swards, having the greatest value for nature conservation.

This survey targeted the semi-improved grasslands for field survey in order to map those areas of conservation value that were not UKBAP Priority Habitat. These areas are discussed further in section 5.

Table 2.1 Broad, Priority and Habitats Directive Annex 1 Habitats in Kent

Broad Habitat Type	Priority Habitat Type	Annex 1 Habitats in Kent
Acid Grassland	Lowland Dry Acid Grassland	–
Arable and Horticulture	Arable field margins	–
Boundary and Linear Features	Hedgerows	–
Bracken	–	–
Broadleaved, mixed and yew woodland	Lowland beech and yew woodland	• Asperulo-Fagetum beech forests • Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)4 • Taxus baccata woods of the British Isles
	Lowland mixed deciduous woodland	• Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli • Old acidophilous oak woods with Quercus robur on sandy plains (also part of Lowland mixed deciduous woodland)
	Wet woodland	• Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)
	Wood-pasture and parkland[1]	–
Built-up areas and gardens	–	–
Calcareous grassland	Lowland calcareous grassland	• Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) • Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (important orchid sites)
Dwarf shrub heath	Lowland heathland	• European Dry Heaths • Northern Atlantic wet heaths with Erica tetralix
Fen, marsh and swamp	Lowland fens	• Calcareous fens with Cladium mariscus and species of the Caricion Davallianae[4]
	Purple moor grass and rush pastures	–
	Reedbeds	–
Improved grassland	Coastal and floodplain grazing marsh	–

Broad Habitat Type	Priority Habitat Type	Annex 1 Habitats in Kent
Inland rock	Inland rock outcrop and scree habitats2	–
Littoral rock	Intertidal chalk	–
	Intertidal underboulder communities[4]	–
Littoral sediment	Coastal saltmarsh	• Salicornia and other annuals colonising mud and sand • Spartina swards (Spartinion maritimae) • Atlantic Salt Meadows (Glauco-Puccinellietalia maritimae)
	Intertidal mudflats	• Mudflats and Sandflats not covered by seawater at low tide
	Sheltered muddy gravels	• Mudflats and sandflats not covered by seawater at low tide
	Seagrass beds	–
	Peat and clay exposures with piddocks[4]	–
Neutral grassland	Lowland meadows and pastures	Lowland hay meadows *(Alopecurus pratensis, Sanguisorba officinalisl)*
Traditional orchards	Traditional orchards	–
Rivers and streams	Rivers	–
Standing water and canals	Eutrophic standing waters	–
	Mesotrophic lakes	–
	Ponds[3, 4]	–
	Saline lagoons	• Coastal lagoons
Supralittoral rock Maritime grassland	Maritime cliffs and slope	• Vegetated sea cliffs of the Atlantic and Baltic coasts
Supralittoral sediment	Coastal vegetated shingle	• Annual vegetation of drift lines • Perennial vegetation of stony banks
	Coastal Sand dunes	• Embryonic shifting dunes • Shifting dunes along the shoreline with Ammophila arenaria (‘white dunes’) • Fixed dunes with herbaceous vegetation (‘grey dunes’) • Decalcified dunes • Atlantic decalcified dunes (Calluno-Ulicetea)
	Coastal Sand dunes *(continued)*	• Dunes with Hippophae rhamnoides • Humid dune slacks
Sublittoral rock	Subtidal chalk[4]	• Reefs
	Sabellaria spinulosa reefs[4]	• Reefs
Sublittoral sediment	Subtidal sands and gravels[4]	–
Complex of broad habitats	Open mosaic habitats on previously developed land[5]	–

- [1] Refers to habitat structure with veteran trees, can be grassland or woodland
- [2] UK BAP refers to uplands only
- [3] Only high-quality ponds qualify
- [4] Present but not recorded in this survey
- [5] Present but not discussed within this document