1.1 Introduction

1.1.1 Our distinctive landscape heritage is an irreplaceable asset that has been bequeathed to us by earlier generations. All of the landscapes of the Study Area should, in line with the recommendations of the European Landscape Convention, be managed, planned and protected to retain their distinctive qualities and values.

1.1.2 North Yorkshire has been blessed with such comparatively extensive areas of nationally designated landscapes and, over many years, the County Council, the National Park Authorities and the AONBs have made significant commitments to successfully retain the special qualities of these internationally valued areas. However, by comparison, those distinctive, attractive and varied landscapes of the rest of the County have tended to be somewhat overshadowed and their significances less widely appreciated until more recently.

1.1.3 A better understanding of landscapes provided by Landscape Character Assessment – their diversity, character and distinctiveness, their evolution, sensitivity to change and their management needs – is essential to help in working towards the goal of achieving distinctive and sustainable landscapes and is essential to effective spatial planning.

1.1.4 The landscapes of the Study Area also encompass many distinctive aesthetic and perceptual (experiential) characteristics which contribute to local distinctiveness and sense of place. These include non-visible elements, such as sense of tranquillity and wildness, exposure to the elements and visible elements such as dark night skies and changing light patterns. Large parts of the Study Area, particularly in the uplands of the North York Moors and Yorkshire Moors and Dales display a distinctively strong sense of tranquillity and associated dark night skies, whilst changing skies and light patterns are particularly dramatic within the coastal edge landscapes in the east. These distinctive perceptual qualities contribute to recognisable sense of place and are often irreplaceable if lost.

1.1.5 The pace and scale of landscape changes will continue in the future. A key challenge is to understand, manage and direct future positive change in the landscape in ways that conserve and enhance its essential characteristics and valued attributes, whilst enabling sensitively designed development to be accommodated and to meet social and economic needs.

1.1.6 The conservation and maintenance of landscape distinctiveness, supports the emergence of the concept of green infrastructure, which puts an increasing emphasis on the multifunctionality of landscapes. There is a need for the re-balancing of decision making in
managing landscape change to ensure appropriate emphasis is placed on supporting natural processes and the well-being of land and landscapes, including ecosystem services and benefits which are integral to the health and quality of life for communities and land and landscapes. This supports the need to work towards a long term goal of creating more harmoniously planned landscapes that support more locally sustainable communities in the future.

1.1.7 Whilst broad vistas of upland landscapes and the expansive panoramas gained from such upland vantage points are often regarded as the most iconic aspect of the landscapes of the Study Area, it is the distinctive and varied character of the settlements that reflect the harmonious inter-relationship of man and landscape in earlier generations and centuries that are equally valued by residents and visitors to the area. Whist individual buildings and specific areas of settlements have often been defined for special protection and conservation, development pressures have tended to adversely impact on the overall character and distinctiveness of settlements and their inter-relationships with their landscape setting. It is important to reassess and redefine the distinctive qualities and characteristics of settlements and their sense of place; and their relationship to landscape setting in order to develop a sound basis upon which to make decisions on managing change and thus to retain, protect and restore the distinctiveness of settlements in the future.

1.1.8 An increasingly recognised and fundamental aspect of the process of managing landscape change and retaining distinctiveness in settlements is the attention now being given to the protection and expansion of the open space network and of the green infrastructure pattern both within settlements and linking settlements out into the wider countryside. This will support the development of more sustainable and healthy settlement and provide residents and visitors with attractive opportunities for relaxation, exercise and exploration.

1.1.9 Distinctiveness is reflective of the layers of time and stages in the development ‘written’ in the landscape. The landscapes of the Study Area provide a window into earlier relationships between man and landscape and of the earliest post glacial vegetation patterns. It is, therefore, important to understand and appreciate earlier landscapes in decision making on managing landscape change.

1.1.10 It is also important to retain the distinctiveness of landscapes, as represented by their unique landscape character as a key factor in maintaining the economy of the Study Area and contributing to the well-being of communities.
The European Landscape Convention\(^1\) is fundamental for the promotion of landscape protection, management and planning. It stresses the need for analysis of the forces and pressures transforming the key characteristics of landscapes and defines landscape planning, protection and management as key purposes of the Convention:

- **Landscape planning** – ‘Strong, forward-looking action to enhance, restore or create landscapes’;
- **Landscape protection** – ‘Actions to conserve and maintain the significant or characteristic features of a landscape, justified by its heritage value, derived from its natural configuration and/or from human activity’;
- **Landscape management** – ‘action, from a perspective of sustainable development, to ensure the regular upkeep of a landscape, so as to guide and harmonise changes which are brought about by social, economic and environmental processes’.

The European Landscape Convention also supports the approach to understanding and to the emphasis placed on character in guiding managing change which has been adopted in the subsequent Section 5.0 of this Study.

In line with the key purposes of the European Landscape Convention, this section sets out a series of proposed ‘high level’ overarching landscape management principles for informing decision-making in relation to landscape change. In line with the Brief, principles have been developed for the following four key drivers of landscape change:

- Agriculture and Land Management;
- Development and Infrastructure;
- Climate Change;
- Mineral extraction.

**1.2 Agriculture and Land Management**

1.2.1 The following section examines the key forces for change related to agriculture and land management within the Study Area, and identifies suggested ‘high-level’ landscape management principles.

Agriculture

1.2.2 The Study Area has a diverse rural landscape which supports a range of agricultural activities from livestock and dairy farming to cereal and vegetable production. Farming

\(^1\) http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm
plays an important role in creating a ‘sense of place’ in all, but the urban landscapes within the Study Area.

1.2.3 In the years since the major reforms of the Common Agricultural Policy (CAP) in 2000, farmers have found the receipts from rural development subsidies more important than those from production-related subsidies. As subsidy payments are increasingly decoupled from agricultural production, the incentive to produce specific commodities is likely to decrease. This is considered likely to have two key effects. Firstly, land uses are likely to diversify, and secondly, production will be more strongly influenced by market demand and therefore types of land use will fluctuate as the relative demand for various commodities changes.

1.2.4 In more recent reforms, agri-environment schemes (AES) have been introduced to reward farmers for agricultural production methods compatible with the protection and enhancement of the environment. There are projected gains for landscape and biodiversity, which can offer indirect benefits to the farming community. These schemes can assist and encourage agriculture to face the competitive challenges of the growing and diversifying rural markets. 80% of land in the Yorkshire Dales is managed under AES and funding has been used to repair dry-stone walls and traditional agricultural buildings; and manage hay meadows and moorland.

1.2.5 A large proportion of the Study Area (particularly within the North York Moors and Yorkshire Dales National Parks) is managed as upland farmlands, predominantly supporting breeding sheep and suckler cows. These areas are classified as Less Favoured Areas (LFA) in terms of agricultural land quality. Payments from agri-environment schemes (such as the Upland Entry Level Stewardship Scheme) have become increasingly important to upland farmers and make a moderate or significant contribution to the income of 88% of farms in both the Yorkshire Dales and North York Moors. These include the Entry Level Scheme (ELS) and its organic equivalent (OELS), and the Higher Level Scheme (HLS).

1.2.6 A network of hedgerows at field boundaries is a key component of the landscape pattern within the Study Area (particularly within the Farmed Lowland and Valley Landscapes). The key threats to hedgerows are therefore neglect and over management. Hedges have, in many cases lost their function as stock proof barriers and are now uneconomic to maintain. There is a general imbalance in the age structure of hedgerow trees within the Study Area, with a large proportion of mature trees. Natural ageing processes, together with water stress in summer and the effects of pathogens will cause many of these trees to become stag headed or die within the foreseeable future. There are incentives for positive hedgerow management as part of many of the Environmental Stewardship schemes.
1.2.7 There has been a dramatic loss of species rich meadows since 1930 with conversion to arable, cultivation and reseeding, use of fertiliser and herbicide, and changes to traditional management activities such as hay making. Fragmentation of habitats is also an issue. Valuable habitats within North Yorkshire include Lowland Meadows, Upland Hay Meadows, Floodplain Grazing Marsh, and Arable Field Margins. Upland hay meadows in particular are a distinctive characteristic within the Study Area. There is potential to restore and enhance these habitats through Environmental Stewardship Scheme (ESS) agreements with land owners.

1.2.8 The Study Area retains a relatively large number of traditional barns which have not yet been converted. Converted farm buildings may provide an ideal location for rural businesses to act as a catalyst for local training and employment and they represent a means for preserving historic structures which are important local landscape features. However, the trend may lead to negative landscape impacts in sensitive, remote and often prominent rural locations and also to the loss of key features related to architecturally or historically important barns. Barn conversions also place considerable pressure on dwindling populations of barn owls and various species of bats. Ornamental garden plants, garden fences, driveways, car parking and power lines all contribute to the suburbanised character that often accompanies this sort of development. There is also a trend to increasingly make use of poly-tunnels for growing fruit and vegetables. This has a visual impact on the landscape.

1.2.9 Within the Study Area, greater numbers of farmers are leaving the industry, and with an increase in the number of people visiting the area, there are an increasing number of farmhouses and associated buildings being sold and converted into housing, often for holiday homes. The domestication of buildings can have a considerable impact on the character of the landscape, especially in remoter locations.

1.2.10 As a result of the Renewables Obligation (which is designed to incentivise the generation of electricity from eligible renewable sources in the United Kingdom) there is likely to be an increase in demand for renewable energy crops, such as flax and hemp, biomass or woodfuel. The scale and form of these crops has potential impacts (both positive and negative) on the landscape character of the Study Area. There is a need to assess the desirability of certain typologies of biocrop where this might conflict with wider transitional efforts of reducing global warming (for example competition between different strains and global food production and forest protection). There is also likely to be a continued transition towards organic production, both of livestock and crops (for example organic beef and vegetables).
Moorland

1.2.11 The landscape character of moorland within the Study Area relies largely on traditional management practices including extensive sheep grazing; and controlled burning and cutting to create a suitable habitat for grouse. In the Yorkshire Dales, much of the moorland is under agri-environment schemes, however the main management technique is a grazing regime which reduces the number of stock in winter, whilst keeping some cattle grazing in places. Burning and cutting are generally associated with management for grouse and rotations are agreed through agri-environment schemes.

1.2.12 Wet acidic grassland provides an important habitat for invertebrates, particularly the small pearl-bordered fritillary, and wading birds. The Study Area also contains some areas of high floristic diversity. Reduced grazing would alter these habitats favouring the development of dwarf-shrub heath, however, this would also require rabbit proofing. Drainage or agricultural intensification would also be likely to have a negative effect on the ecology of these habitats.

1.2.13 Upland heathland and blanket bog are priority UKBAP habitats which make a defining contribution to the character of upland areas in North Yorkshire. They are particularly valuable ecologically for their population of nesting birds and much of the area is designated as SSSIs or SACs. The large deposits of peat are also an important carbon sink. This habitat requires appropriate levels of grazing and cutting to maintain vegetation structure. There is often pressure from grouse moor managers to carry out burning, which can result in damage to peat soils. Maintaining hill flocks may become increasingly uneconomic in the future. Development of clough and gill woodland may also be desirable to stabilize the soil. Woodland planting is also desirable, to increase the rate of infiltration of rain water, reduce sediment run off and capture carbon. Natural England (NE) and the Farming and Wildlife Advisory Group (FWAG) are working to identify drainage grips which should be blocked to raise the water table. Actions to restore peat bogs are required to reduce sedimentation (improve water quality) and reduce flooding. Projects such as the ‘Peat Partnership’ are already beginning to tackle this issue.

1.2.14 Overgrazing of moorland and uncontrolled moorland fires have in some areas caused degradation to habitats (particularly blanket peat bog) and an increase in rough grass moorland. Past farming and forestry activities have resulted in the drainage of upland areas causing a loss of peat hags and wet flushes, damage to archaeological features and increased surface water run-off. Recreational activity has caused extensive erosion to some footpaths and summits. Active management is required to re-establish vegetation on bare ground.
1.2.15 Within the Study Area, traditional coppicing activities in woodland have generally ceased causing increased shade and the loss of native ground flora. The spread of Rhododendrons within woodland is also threatening native species. There is a general imbalance in the age structure of woodlands with a large proportion of semi-mature/mature trees. Natural ageing processes, increased water stress in summer and the effects of pathogens threaten these trees. Sheltering of stock within woodland, together with increased numbers of roe deer, rabbits and grey squirrels, has led to an absence of saplings to regenerate woodland in some areas. Woods can become isolated where habitat linkages between them are broken, preventing the dispersal of species.

1.2.16 There has been a steady decline in the planting of coniferous woodland over the past 20 years with no new planting in 2009. A modest amount of new broadleaf woodland continues to be planted. Restocking rates of broadleaf and coniferous woodland have remained relatively constant. Softwood deliveries have increased steadily since 1985, the majority of the wood being used in saw-mills, while hardwood deliveries have fallen steadily over the same period. There is a good supply of softwood in extant woodlands, however the price of wood products is very low and the Forestry Commission is researching ways in which value can be added to forest products. Woodland management and new planting should be supported and encouraged.

1.2.17 In general there is a move towards low input forestry systems which meet a number of social, environmental and economic objectives. Woods will be managed to promote recreation, bio-diversity, health and learning. The contribution woodlands make to the visual quality of the landscape is also acknowledged by the Forestry Commission. The new emphasis on extensive management, and continuous felling rather than clear felling, will help to create less disruptive forest patterns. Mixed woodlands are also being promoted to improve biodiversity. Coniferous forests provide good habitat for certain bird species and can increase the diversity of woodland habitats. The Forestry Commission also propose to diversify some existing coniferous woodlands.

1.2.18 A demand for wood may re-emerge as it is a sustainable building material and a carbon-neutral energy source. Wood may in the future be used for co-firing at existing coal fired power stations, at new biomass power plants, in combined heat and power systems or in wood burning stoves. This may create an incentive to manage existing woodlands or to plant new woodland, providing opportunities to maintain or enhance landscapes with a wooded character.
Woodlands may be used positively to manage soil and water resources. Forest Research has undertaken a mapping exercise in Yorkshire to identify suitable areas of floodplain for woodland planting to deliver benefits for flood risk and water quality. Woodland can help to increase surface water infiltration and also reduce flooding. At Bishop Wood, near Selby, partnership work led by Forestry Commission will lead to the restoration of wet woodland and the creation of ponds, intended to reduce flood risk. The Forestry plan for the region envisages an increase in woodland and more intensive management of existing woodland to produce carbon-neutral fuel and building material.

## Overarching guiding principles for managing agricultural and land management change

### 1.2.20 Strategic programmes, plans, policies and proposals should:

- Contribute to the protection and enhancement of the historic dimension of the present agricultural landscape, including particular historic assets and their setting;
- Encourage the adoption of less intensive farming practices and promote the regeneration of existing hedgerows to enhance key landscape linkages;
- Encourage measures to conserve hay meadows, semi-natural grasslands and species-rich grass verges and encourage the creation of diverse arable field margins;
- Contribute to the positive management of moorland though a carefully controlled burning/cutting regime to maintain and improve the mosaics of moorland habitats, including heather, wet bogs with cotton grass, sphagnum, bilberry and cowberry;
- Encourage the application of a grazing management regimes that promote more favourable conditions of upland semi-natural vegetation;
- Promote the blocking of moorland grips to encourage the re-wetting of blanket bog and the sustainable management of heath to restore areas of erosion and retain key habitats;
- Encourage the restoration of associated areas of degraded blanket bog and peat;
- Ensure that new woodland is planned and created in line with Regional Forestry Frameworks;
- Promote the use of native species and planting stock of local origin for the creation of new woodlands;
- Encourage the sensitive restructuring of existing commercial/plantation woodlands (for example the introduction of broadleaved woodland edges) to help decrease the visual impact;
- Promote habitat networks;
- Restore and strengthen the functions of landscapes as ecosystems.

### 1.3 Development and Infrastructure

#### 1.3.1 The following section examines the key forces for change related to development and infrastructure within the Study Area, and identifies suggested ‘high-level’ landscape management principles.

#### 1.3.2 Buildings make a valuable contribution to the scale and identity of landscapes within the Study Area. Today, the distinctive character of the area’s buildings and settlements is a product of local vernacular circumstances, however the landscape is constantly changing and there is likely to be pressure from several different types of development, other than just
buildings within the future. The key potential future forces for change relating to development within the Study Area include:

Tall vertical developments including wind farms or telecommunications masts, which can be visually intrusive and impact upon the landscape character of the area;
Increasing traffic pressures on minor rural road corridors associated with increased visitor numbers, potentially resulting in increased signage or road improvements;
Noise and movement of passenger and freight traffic associated with the city of York and principal towns, which may result in pressure for road widening, impacting on overall sense of tranquility;
Small-scale cumulative development (e.g. building extensions, residential boundary treatment, roadside concrete curbing and signage) resulting in erosion of integrity and quality;
Suburbanisation of rural buildings, such as the conversion of farm buildings and the introduction of diversification activities such as equine (horsiculture);
Introduction of new overhead transmission lines;
New housing developments at the edges of York, towns or villages;
Suburbanisation of the landscape around villages and towns, as a result of small-scale extensions to existing urban areas.

1.3.3 The Yorkshire Dales National Park Authority, through their ‘draft housing development plan’, seek to achieve suitable forms of development which meet the housing need without compromising the special characteristics of the National Park. As a result of the Department of Communities and Local Government proposals to develop a series of ‘eco-towns’ (new towns which are exemplar green developments of a minimum of 5000 homes, designed to meet the highest standards of sustainability, including low and zero carbon technologies and good public transport) funding has been allocated for several sites within the Leeds City Region. Sites are currently being considered within Selby District. If not designed sensitively, these developments could introduce incongruous elements into the local landscape, which are potentially discordant with local landscape character. Environmental mitigation should be encouraged to offset the landscape effects of urban edge development.

1.3.4 The use of standardised solutions in highway design in terms of minimum curves, visibility, safety barriers and signage have eroded the rural character of many roads which are characterised by hedges, ditches, verges and trees. New roads can introduce a source of noise and disturbance into the surrounding landscape. If present trends in car use continue congestion will become an increasing problem especially in and around towns and cities. This may result in the overall sense of remoteness and tranquillity being lost in rural areas. Measures to avoid this should be encouraged.

1.3.5 Leisure and Tourism is an important industry in North Yorkshire. In 2009 there were 24.6 million visits to North Yorkshire generating a total spend of £1,644 million. Of these 19.6 million were day visits. UK residents made 4.7 million visits and there were 0.4m visitors from overseas. Over recent years there has been a small increase in both the number of trips and the total spend. There are approximately 43,800 tourist related jobs primarily in catering, retailing, accommodation and attractions and entertainment. It is important to
maintain the character and quality of the landscape, as it plays an important role in attracting tourists to the area.

1.3.6 Tourism can generate large volumes of traffic within rural landscapes such as the National Parks and AONBs. 76% of visitors travelled to the region by car, placing considerable pressure of rural road and parking infrastructure. Large volumes of traffic can lead to the tranquil, rural character (for which people visit the area) being eroded by vehicle noise, congestion and parking problems within villages and at popular visitor locations. There can also be a problem with tourists choosing not to use car-parks. New infrastructure such as car-parks, signing, road improvements and new buildings, could result in gradual suburbanisation, loss of tranquillity and the introduction of standardised elements into distinctive landscapes. Large numbers of walkers or cyclists on popular routes can cause loss of vegetation cover and erosion of paths and summit areas. Illegal use of motorbikes on green lanes, footpaths and bridleways can cause significant noise, damage to footpaths and disturbance to other users and local residents.

**Overarching guiding principles for managing development and infrastructure**

1.3.7 Strategic programmes, plans, policies and proposals should:

- Encourage careful siting of new housing (including ‘eco-towns’) and economic development, in keeping with existing landscape patterns and characteristics, to reduce landscape and visual impacts;
- Promote the development of design guidance for new housing and economic development which links character with design, promotes high quality development that respects character, and offer positive opportunities for community engagement in design issues;
- Promote the principle that new development should respect existing landscape features such as trees, hedgerows or traditional stone walls which are important to landscape character and should be retained;
- Encourage the design of new housing and economic development to respect the distinctive landscape settings of settlements, including key approaches to the settlement, inward and outward views, woodland, trees, river corridors and open spaces;
- Encourage the retention of species-rich roadside verges as key landscape features and important wildlife habitats;
- Promote design of new highways infrastructure which avoids and minimises the potentially adverse landscape and visual impacts of new road schemes through careful route selection and engineering design, retention of mature landscape features, on- and off-site planting and sensitive lighting design to limit light pollution and retain dark skies (particularly within the Yorkshire Dales and North York Moors);
- Promote the designation of quiet lanes or access only routes where motorised traffic is discouraged;
- Encourage new minor road improvements that respect existing character and features and avoid the introduction of new features such as boundary treatments that are alien to existing character;
- Encourage assessments to determine whether or not landscapes can accommodate any or additional wind farm development (examining the sensitivity of its character, its key features and qualities);
- Promote the design of potential new commercial scale wind energy developments that are compatible with character of the local landscape and the wider area in which they are visible;
Encourage sensitive site selection and design in the planting of energy crops in keeping with the scale of the local landscape;
Encourage sensitive location of overhead transmission lines and telecommunications masts, avoiding sensitive skylines;
Promote the production of complementary Green Infrastructure Strategies as an integral part of development strategies, plans and proposals;
Encourage the use of Section 106 agreements to deliver essential Green Infrastructure, landscape enhancement and landscape integration proposals;
Encourage providers to share telecommunications masts to help minimise new mast construction and avoid sensitive skylines;
Encourage the use of local building materials and styles when restoring traditional vernacular buildings and in new build developments.

1.4 Climate Change

1.4.1 The following section examines the key forces for change related to climate change within the Study Area, and identifies suggested ‘high-level’ landscape management principles.

1.4.2 Climate change is increasingly acknowledged as a key driver of future landscape change. Defra’s UK Climate Projections Study has predicted the type of climate changes that might be expected over the coming century. These predictions include:

- All areas in the UK are likely to get warmer, and the warming is greater in the summer than in winter;
- There is likely to be little change in the amount of precipitation (rain, hail, snow etc.) that falls annually, but it is likely that more of it will fall in the winter, with drier summers for much of the UK;
- Sea levels will rise, but this will be greater in the south of the UK than the north, although the Humberhead Levels could be threatened within the Study Area.

1.4.3 The UK Climate Projection Group (UKCP09) has made the following predictions about the climate of the region in 2050 under a medium emissions scenario:

- winter mean temperature is likely to increase by 1.1C to 3.4C
- summer mean temperature is likely to increase by 1.1C to 3.9C
- winter mean precipitation is likely to increase by 1% to 24%
- summer mean precipitation is likely to decrease by 1% to 36%

1.4.4 On the moors and fells within the Sandstone, Limestone, Gritstone, Siltstone and Sandstone Primary Landscape Units, winter storms and increased incidences of heavy rainfall could wash nutrients from soils. Important peat soils could dry out and begin to release carbon into the atmosphere and there is also a risk of increased incidences of peat and bracken fires. The erosion of gullies from moorland grips as a result of freak rainfall or flash flooding is also a potential issue.

http://ukcp09.defra.gov.uk
1.4.5 From a biodiversity perspective, natural habitats and species may be put under severe pressure from changes in temperatures. The impacts of climate change on peat bogs within the Study Area are also a particular concern. If peat bogs dry out, they could potentially release thousands of years’ worth of stored carbon into the atmosphere. The erosion of vegetation cover from blanket bog can reduce its water retention capacity and increase the risk of downstream flood peaks. In this context, the implementation of the Water Framework Directive is likely to have a significant influence on land use and water resource policy in the Study Area in the medium to long term. This may assist in the preservation of blanket peat bog areas and increase the extent and quality of wetland habitats through more integrated and ecosystem-led approaches to catchment management.

1.4.6 Increasing frequency of storm events and heavy rainfall are likely to cause continuing problems of flooding within North Yorkshire. Flooding events can often cause damage to, and loss of, historic bridges and buildings. Flooding therefore poses a major risk to the historic character of riverside settlements such as York. In order to protect settlements it may be necessary to adapt buildings, create wash-lands to store river water within the floodplain, or undertake woodland planting or water impoundment measures upstream. Restoring degraded peat bogs could also help to alleviate flood risk as the bog acts as a store for water.

1.4.7 There is concern about future trends in water availability in the Humber River Basin District. The current reliance on unsustainable groundwater abstraction means that agricultural practices will need to change. There is also a need to use water more efficiently and this should be reflected in the design of new buildings and their surroundings. Water Sensitive Urban Design (WSUD) will be crucial within new development and measures can be taken to retrofit buildings and settlements. Increasing pressure on water resources, depleted aquifers and a hotter, drier climate will make low-flow events in rivers more likely, and this will have a negative effect on river habitats. The Humberhead Levels Partnership is proposing to create and restore 167ha of wetland habitat in the Humberhead Levels. The eventual target is to restore or create 2320ha of wetland including reedbeds, grazing marsh, ponds and wet grassland. Well located wetlands provide flood water storage and improved water quality, sequester carbon, and have ecological and social value.

1.4.8 Rising sea levels will create the need either for improved coastal defences or managed retreat. Shoreline Management Plans (SMPs) aim to provide the basis for sustainable coastal defence policies over the next fifty years and to set the framework for the future management of risks along the coastline. In some areas, in particular at Robin Hoods Bay, but also in the case of individual properties elsewhere along the coast, there may be loss in the long term. The defence line within Scarborough is likely to become increasingly difficult to maintain. Actions undertaken to protect vulnerable flood areas need to protect the beach
which forms a natural defence. New defensive measures may also be needed to protect Filey. To the south of Filey, natural retreat is proposed.

1.4.9 As a response to climate change, there is a strong emphasis on moving towards generating energy from renewable as opposed to finite sources. Renewable energy can include a number of forms, from wind technology (single turbines and wind farms) to biomass, solar and hydro-electric technologies, all of which are likely to have impacts on the landscape if not sensitively designed and sited. It is important to ensure that renewable energy development does not detract from the special qualities of the landscape. The scale and form of wind farms should be compatible with the character of the local landscape and that of the wider area in which they are visible. Care should also be taken to ensure that the cumulative impact of wind farms in any one locality is not excessive. Overhead power lines and other wires can also have an intrusive impact on the landscape, particularly within those landscapes with high visual sensitivity.

1.4.10 North Yorkshire Sustainable Energy Study\(^3\), undertaken for a partnership of Local Authorities in North Yorkshire, sets out planning guidance to encourage the appropriate development of sustainable energy within the County.

**Overarching guiding principles for managing projected impact of climate change**

1.4.11 Strategic programmes, plans, policies and proposals should:

- Encourage sensitive site selection including avoidance of sensitive skylines and important views;
- Encourage sensitive design of renewable energy technologies such as wind turbines, biomass plants and energy crops;
- Encourage habitat linkage within agricultural landscapes to increase robustness to climate change;
- Encourage the use of Sustainable Urban Drainage Systems (SUDS) within the design of new housing and economic development both within and outside flood risk areas;
- Encourage the retention of a range of ecological habitats and species to encourage the local spread of species if a habitat becomes inhospitable as a result of climate change;
- Encourage the maintenance and creation of a series of ecological networks, with buffer zones around high quality habitats;
- Encourage the natural development of rivers and coasts to increase the potential for species and habitats to adapt naturally to these changes;
- Encourage the implementation of a multi-functional network of greenspaces and links (Green Infrastructure).

1.5 **Mineral Extraction**

\(^3\) Delivering Sustainable Energy in North Yorkshire: Recommended Planning Guidance, 2005
1.5.1 The following section examines the key forces for change related to mineral extraction within the Study Area, and identifies suggested ‘high-level’ landscape management principles.

1.5.2 Mineral extraction has a long history in North Yorkshire. It has been suggested that the Romans were interested in occupying Yorkshire in order to exploit the mineral wealth of the region, especially the Pennine Moors. However mining activities probably began long before Roman occupation. The disruptive nature of mining activities to the landscape can be seen in many of the upland areas in North Yorkshire where spoil heaps and heavily eroded water gullies are remnant landscape features.

1.5.3 There are a number of active quarries within North Yorkshire providing a range of products including sand and gravel aggregates and limestone. The Yorkshire Dales National Park contains several quarries, located mainly in the limestone regions and producing crushed rock aggregate for use in the construction industry. There are also active quarries producing building and roofing stone at Hill Top, near Keld and at East Witton.

1.5.4 Use of vernacular building materials, particularly stone, is considered important in maintaining and strengthening the character of settlements within the Study Area. Many of these vernacular materials are imported from China and India and the Yorkshire Dales National Park Authority has shown an interest in the development of local quarries which could provide a source of building stone. The effects of each individual proposal on the environment should be assessed and cumulative effects should also be considered.

1.5.5 Extensions to quarries or development of new quarries will result in changes to landform, land use and vegetation cover. Quarries may be prominent within views depending on location and topography. Recent quarrying activity can create artificial landforms and the colour contrast of exposed rock can increase the visual prominence of the quarry. Banks or planting intended to screen quarries may introduce new and discordant features into the landscape, particularly where local species or boundary features are not used. Quarries may cause an increased amount of large vehicles in rural areas detracting from the tranquility of the area and increasing pressure on the road system. Road improvement schemes associated with quarries might introduce standardised road design, including safety barriers, embankments and cuttings, fencing, and signing, which are poorly integrated with their rural setting.

1.5.6 There is considerable scope for mitigating the landscape and visual impacts of quarrying and suitable proposals should be submitted as part of planning applications. Blasting can be used to restore more natural landforms and vegetation cover can be easily re-established. Limestone quarries in particular can become valuable habitats while lowland gravel extractions have become important wetland sites.
Overarching guiding principles for managing mineral extraction

1.5.7 Strategic programmes, plans, policies and proposals should:

- Promote the design of any new mineral development in sympathy with existing landscape character or earlier stages of landscape evolution;
- Encourage the enhancement of landscapes and habitats through the creative restoration of mineral workings to restore or enhance landscape character. Particular care should be taken to encourage the creation of post mineral extraction landscapes that have an affinity with their existing landscape setting or earlier stages of landscape evolution;
- Contribute to the protection of features of mining and quarrying heritage (such as old quarries) which may offer opportunities to understand and enjoy aspects of the Study Area's rich geology, history and building materials;
- Encourage the preparation of a mitigation strategy that embraces a landscape scale approach and conserves and enhances the distinctiveness and well-being of the surrounding landscape and supports the development of a green infrastructure approach.

1.5.8 North Yorkshire County Council will, during 2011, carry out a Study which will assess environmental character and significance for areas of surface mineral resource potential, covering historic environment, biodiversity and landscape issues, to inform the preparation of the North Yorkshire Minerals and Waste Development Framework.