

EAST MIDLANDS REGIONAL LANDSCAPE CHARACTER ASSESSMENT

East Midlands Regional Landscape Character Assessment
Incorporating the Peak District National Park and Lincolnshire Wolds AONB
Shaping the Region's Future Landscape





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This document will support the work of the East Midlands Landscape Partnership. It was produced for Natural England's East Midlands Region with the support of the Project Steering Group and stakeholders by:

L D A DESIGN

^A Worton Rectory Park,
Oxford OX29 4SX
^T +44 (0)1865 887 050
^T +44 (0)1865 887 055

^W www.lda-design.co.uk ■

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LDA Design Consulting LLP, Registered No: OC307725
17 Minster Precincts, Peterborough PE1 1XX



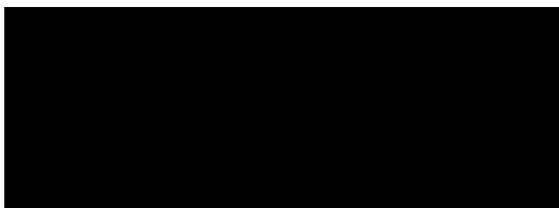
FOREWORD

It is small wonder that the British virtually invented the science and nomenclature of geology, because there can be no other nation so small in size with such wide diversity of rocks, and, founded on those rocks, such wide diversity of landscape character types.

The East Midlands exhibit a rich rollercoaster of those characters from the gritstone moorland grandeur of the Peak District in the North-West, with its centrally exposed limestone plateau deeply incised by beautiful river valleys to expose fossils from a shallow equatorial sea, through the coalfields, southern magnesian limestone escarpments, Sherwood Forest, on to the Lincolnshire Edge and the rolling chalk landscapes of the Lincolnshire Wolds, down to fenlands and the Lincolnshire Coastal Marshes to reach the North Sea. In the Charnwood Forest in Leicestershire are some of the oldest rocks in England. There are remnants of ancient royal hunting forests at Sherwood and Rockingham and, in contrast, some of England's youngest woodlands planted, in part, across reclaimed coalfield landscapes in the National Forest. There are broad river valleys and floodplains associated with the Nene, Welland and the Trent, with in some cases land lying lower than, or barely higher than, the sea and rich peatlands sequestering carbon in these uncertain times.

Cities there may be, so too towns and growth areas, but the East Midlands remains at heart rural in character. This is heartland 'village' England, a place of champion landscapes, where heavily nucleated villages, huddled round their churches, gave way to open fields worked in common in strips before the harsh enclosures of rapidly expanding landed estates. Once the stronghold of the medieval sheep and wool industries, much of the East Midlands is now a vast arable agricultural machine, struggling to maintain its biodiversity and to reclaim wetlands. From this rural backdrop there burst forth the leather and textile industries, the coal industry, sand, gravel and limestone extraction, and the world's first factories in the Lower Derwent, now a World Heritage Site. Each is etched onto our landscapes.

I cannot commend enough the monumental achievement of the East Midlands Landscape Partnership to produce, using the latest techniques, a full Landscape Character Assessment for the whole region. This provides all of us with the authentic spatial framework within which we can plan initiatives and encourage regional and local decision-makers to ground their work and policy-making. There can now be no excuse for saying we were not aware of these or those landscape considerations. I encourage all of us and those we influence to cherish these varied landscapes, to plan within their grain, to use landscape as an integrating and place-shaping framework for planning services at different levels, and to recognise that, while change is a characteristic of landscape, we also should pass on to our successors the landscape legibility of our past.



Natural England Board Member

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EXECUTIVE SUMMARY



INTRODUCTION

In 2009 the East Midlands Landscape Partnership, following recommendations made in a scoping study, commissioned the East Midlands Regional Landscape Character Assessment (EMRLCA). This is a new tier in the landscape character assessment hierarchy in England and the first regional assessment to not only provide a comprehensive and detailed examination of the region's landscape but to also include a seascape characterisation that identifies seascape character types. This report presents a comprehensive analysis of the character of the East Midlands landscape and draws together information about the natural, historic and built environment to facilitate the protection, management and planning of the East Midlands Region.

The EMRLCA has been produced in consultation with stakeholders drawn from a wide range of statutory agencies, local authorities and other regional bodies and benefited from the input and guidance of a great number of committed individuals, as well as a full public consultation.

LANDSCAPE CHARACTER ASSESSMENT PROCESS AT THE REGIONAL LEVEL

Landscape Character Assessment is the process by which areas of distinctive character are classified, mapped and described. The aim is to raise awareness of the landscape's diversity, local distinctiveness and sense of place, particularly in areas where landscape character is less well understood or appreciated, or under pressure for change, for example from settlement growth, new development or physical changes.

An important feature of the character assessment process is that, consistent with best practice guidance, it is objective and no judgment is made about the value or quality of landscape. In line with the European Landscape Convention, the EMRLCA recognises that all of the landscape matters and makes no distinction between areas of high scenic value and degraded landscape.

In this strategic regional level assessment, 'Regional Landscape Character Types (RLCTs)' are identified. These are generic in nature in that they may occur in different localities throughout the region. However, wherever they occur, they share broadly similar combinations of geology, topography, drainage patterns, vegetation, historic and current land uses and settlement patterns.

THE CHARACTER ASSESSMENT HIERARCHY

The regional level of assessment is a new tier in the assessment hierarchy in England and designed to add a regional layer to the 159 National Character Areas identified by Natural England¹ and provide a strategic context and framework for more detailed landscape assessments at the county, district and local scales that nest within the larger scale assessments.

¹ National Character Areas were mapped and described in the late 1990's, prior to the development of the National Landscape Typology.

PRINCIPAL AIM AND APPLICATION

The principal aim of the EMRLCA is to put in place a consistent and robust landscape evidence base at a regional level that provides a common platform for future strategic, region wide landscape management. It will also ensure that holistic landscape considerations that extend beyond administrative boundaries inform and enable greater integration with and between other environmental themes and projects.

As well as establishing landscape as a spatial framework for decision making at the regional scale, it is intended that the EMRLCA will be taken forward into strategic spatial planning processes to ensure that the environmental baseline for the region informs the regional evidence base and subsequent policy framework.

The RLCTs provide a spatial framework for greater integration with other regional themes and issues such as identifying opportunities for habitat creation, woodland creation and management, informing green infrastructure strategies, the location of development, including renewable energy installations and identifying the role of landscape in the delivery of ecosystem services.

THE EMRLCA

The East Midlands region has a rich and diverse landscape as a result of the complex interplay of a wide range of physical and cultural influences and forces that have shaped and moulded the landscape.

Following a review of existing landscape and historic landscape character assessment across the region, the report examines the physical and cultural influences in order to provide a comprehensive assessment of the foundations of the East Midlands landscape.

The EMRLCA identifies 31 Regional Landscape Character Types (RLCTs), five of which cover the distinctive East Midlands seascape. The report presents non-technical descriptions of each RLCT as well as a review of the Forces for Change that are currently acting to change the landscape. In addition, the implications of these changes and suggested mechanisms to counter adverse impacts and promote positive change are also considered, under 'Shaping the Future Landscape'. The report, and accompanying photographs and GIS based Figures, provides an overview of the region's diverse landscape, to enthuse and inform anyone with an interest in the landscape and to inform strategic initiatives and decision making which may have an impact on the character and identity of the region.

AN EVIDENCE BASE FOR REGIONAL LEVEL DECISION MAKING

The assessment has been designed to provide a strategic region-wide evidence base to help decision making on issues that will have implications for the landscape and wider environment. It acts as a signpost to more detailed Landscape Character Assessments, Historic Landscape Characterisations and other useful information sources, and provides a regional framework for future assessments which will inform planning policy or decisions about the location and design of future development.

By having in place a strong understanding of the character of the East Midlands Region, along with guidelines specifically designed to enhance the landscape for the benefit of all, positive decisions can be made with more certainty and confidence than ever before. The information contained in the EMRLCA will enable the East Midlands Region to direct positive change that will strengthen the sense of pride in, respect for, and appreciation of, the region's diverse landscapes.

SECTION I

INTRODUCTION TO THE EAST MIDLANDS REGIONAL LANDSCAPE CHARACTER ASSESSMENT



1.1 INTRODUCTION

Extending across approximately 16,400 km², the Study Area for the East Midlands Regional Landscape Character Assessment (EMRLCA), illustrated on Figure 1, covers the Government Office Region of the East Midlands. It includes the administrative counties of Derbyshire, Leicestershire, Lincolnshire, Northamptonshire, Nottinghamshire and Rutland, 30 district and borough authorities and the unitary authorities of Derby, Leicester and Nottingham.

The full geographic coverage of the Peak District National Park and Lincolnshire Wolds Area of Outstanding Natural Beauty (AONB) have also been included within the Study Area, to ensure that the findings of the EMRLCA can be adopted and applied across the full extent of these designated areas. As a consequence, relevant parts of an additional ten district and unitary authorities are included in the Study Area, all of which lie within neighbouring Government Office Regions. The Study Area also includes areas of foreshore and open sea extending 15km from the shoreline.

The Study Area, noted for its agricultural productivity, recreational value, cultural associations and heritage, geodiversity and biodiversity assets, contains a diverse landscape resource. In very simple terms, the East Midlands Region marks the transition from the open sea, coastal salt marshes and low lying drained fenland farmlands of Lincolnshire to the upland moorland landscape of the Peak District. Between these two extremes lie a wide variety of Landscape Character Types, including limestone and chalk hills, ancient forested hills, productive rolling farmlands interspersed with rural villages, remote lowland heaths and areas noted for their rich mining heritage.

The EMRLCA provides an up-to-date description of the region's landscape character and describes the various forces that have created the landscape we see today. It goes on to review the forces that continue to change the landscape and suggests ways to secure positive landscape change in the future. The EMRLCA recognises that all landscapes matter, and in so doing, ensures that the broad measures set out in the European Landscape Convention (ELC) are recognised and available to be taken forward through the integration of landscape issues into decision making at all levels from national to local, and across a wide range of sectors, policies and strategies. The task of protecting, managing and planning the landscape is fundamental to ELC objectives, and needs to be applied in decisions and their delivery across the whole spectrum of society from government and its agencies, and local authorities, to the private sector and civil society in general. The range of decision making and opportunities for the EMRLCA to contribute to this process is set out in more detail in Section 1.3.

1.2 THE NEED FOR A REGIONAL LANDSCAPE CHARACTER ASSESSMENT

In Spring 2008, Natural England commissioned a review of the current situation with regard to how landscape issues were considered in the East Midlands. The study, published in December 2008², made several recommendations on how various bodies might take forward the regional landscape agenda, to ensure that landscape considerations are embedded in emerging regional structures.

A key recommendation was the need to revisit the regional landscape evidence base. The review acknowledged that whilst a significant number of landscape character assessments and historic landscape characterisations have been undertaken or are emerging, there was considerable variation in their aims, the methods adopted and the scale of assessment. As a consequence, it identified the need to develop a link between local coverage and national scale landscape character assessments. This strategic overview would have a range of uses and applications, but most significantly, would provide a solid basis on which to develop comprehensive region wide landscape studies and facilitate the gathering and analysis of landscape information across the region. It would also enable a more efficient flow of information between national, regional and local levels, provide a new strategic spatial framework for considering strategic themes and issues which could result in the delivery of combined environmental outcomes and a comprehensive approach to landscape **planning, protection** and **management** across the region.



Low lying coastal landscape, Lincolnshire (© J Watson)



Upland moorland landscape, Derbyshire (© Derbyshire County Council)

1.3 AIMS AND OBJECTIVES OF THE EMRLCA

Building on the recommendations of the East Midlands Regional Landscape Scoping Study, Natural England, with others, commissioned a project to carry out the first region wide landscape character assessment that also includes seascape characterisation, to be completed in England.

The EMRLCA will complement a range of studies and assessments undertaken in the region to help understand the environment of the East Midlands, and help realise the significant potential that the landscape has in contributing to the region's economy and the health and well being of its residents.

In brief, the aims of the EMRLCA are to:

- Implement the objectives of the European Landscape Convention (ELC), providing strategic guidelines for landscape protection, planning and management. These are defined by the ELC as:
 - **Protection** - action to conserve and maintain the significant or characteristic features of a landscape
 - **Management** - action from a perspective of sustainable development to ensure the regular upkeep of a landscape to guide and harmonise changes which are brought about by social, economic and environmental processes; and
 - **Planning** - strong forward-looking action to enhance, restore or create landscape
 - Inform and underpin the regional spatial planning policy framework.
 - Integrate with other regional strategies and initiatives.
 - Help guide sustainable development decisions.
 - Guide the production of Green Infrastructure Strategies.
 - Inform environmental capacity studies that describe the ability of the environment to perform natural functions and accommodate the impact of human processes.
 - Inform ecosystem services studies that assess the interaction of organisms, habitats, the natural environment and the supporting services they provide.
 - Bring about greater integration with other key environmental themes such as geodiversity, biodiversity and historic landscape; and
 - Promote the qualities and diversity of the region's landscape.
- Critical to the success of the EMRLCA in meeting its aims will be its robustness and transparency. This is demonstrated through:
- The methodology that is adopted, and its ability to demonstrate adherence to best practice guidance;
 - The breadth and accuracy of the data contributing to the baseline evidence base, including national scale datasets and assessments e.g. the National Character Area Assessment (NCA), National Landscape Typology (NLCT) and local landscape character assessments at county and district scale;
 - The methods adopted for interrogating spatial and other data sources;
 - The interpretation of existing landscape character, historic landscape character and seascape assessments, and the means by which these existing assessments have been incorporated into the EMRLCA;
 - The conclusions that are drawn from consultations, baseline research and fieldwork;
 - Communication of complex ideas and issues through the consistent use of accessible language, graphics, plans, maps and illustrative and interactive web based material; and
 - The flexibility of the output to adapt and undergo regular reviews and updates.

1.4 CONTRIBUTING TO A BIGGER VISION

The EMRLCA is one of a number of assessments in the East Midlands that will promote a greater understanding of the natural, historic and built environment and also act as a stimulus for more sustainable modes of living, energy generation, food procurement, industry, use and management of natural resources, manufacture and commerce.

Government agencies, local planning authorities, voluntary organisations, private sector bodies and local communities should seek to use the findings of this and other assessments to meet the European Landscape Convention's aspiration for a landscape that:

- Is beautiful, rich and productive;
- Provides a basis for entrepreneurial business and sustainable communities; and
- Contributes to a positive regional identity and sense of pride and place.

1.5 APPROACH AND METHODOLOGY

1.5.1 LANDSCAPE CHARACTER ASSESSMENT METHODOLOGY

The approach adopted in the EMRLCA complements the National Countryside Character Approach developed by the former Countryside Agency (now Natural England). In particular, the assessment is based on the methodology set out in the 'Landscape Character Assessment Guidance for England and Scotland'³.

The main tasks in developing the EMRLCA comprised:

- Review of the various Landscape Character Assessments, within and immediately surrounding the East Midlands Region, including the National Countryside Character Assessment and National Landscape Typology. A schedule of existing landscape assessments used in the EMRLCA is presented in Appendix 1. National Countryside Character Areas and Types are illustrated on Figure 2. The distribution of county and district scale landscape character assessments is presented in Figure 3.
- Review of other landscape assessments, including Historic Landscape Characterisations, Historic Seascape Assessments and Biodiversity Character Assessments that exist within and surrounding the East Midlands Region. A schedule of existing assessments used in the EMRLCA is presented in Appendix 1. The distribution of Historic Landscape Characterisations is also presented on Figure 3 in addition the county and district landscape character assessments.
- Review of National Landscape and Coastal designations and World Heritage Sites. These are shown on Figure 4.
- Familiarisation with the Study Area through reconnaissance, information gathering, GIS interrogation and overlay mapping at 1:50,000 scale. A list of the core datasets used is attached as Appendix 2 and illustrated in a range of baseline figures (Figures 5-16).
- Background research into the physical and cultural attributes of the landscape and forces for change.
- Site survey including completion of field survey forms for Landscape Character Types and preparation of a digital photographic record. Field survey forms were completed on a lap-top computer and fed directly into a geo-referenced Access Database. A copy of materials used during field work is presented in Appendix 3.

- Development of project methodology, based on established best practice guidance. The project flow diagram is presented in Appendix 4. Appendix 5 presents a flow diagram of the landscape character assessment process.
- Stakeholder workshop to engage key statutory and non statutory agencies in the assessment process and to obtain views on forces for change and appropriate landscape strategies. A list of workshop delegates is presented in Appendix 6.

1.5.2 INTEGRATION OF SEASCAPE CHARACTER ASSESSMENT BEST PRACTICE GUIDANCE

In recognition that a large extent of the eastern boundary of the East Midlands Region lies along the coast and that the open sea plays an important role in defining local identity, offshore areas have been included within the Study Area. By including seascapes, the EMRLCA accords with the European Landscape Convention (ELC) that includes marine areas within its definition of landscape.

In establishing the approach to assessing seascape character, reference is made to best practice guidance on Seascape Assessment (Countryside Council for Wales, 2001)⁴ and Historic Seascape Characterisation (HSC) methods. However, it has been necessary to adapt these established methods to ensure a consistent, region wide, approach to identifying Landscape Character Types across both land and sea.

To establish the seaward extent of the Study Area, reference was made to best practice guidance on Seascape Assessment⁵. Guidance recommends that it is necessary to identify different Study Areas dependent on the scale of the assessment being undertaken. For the identification of regional seascape units, the guidance suggests that areas of sea should be assessed up to 15km offshore. The EMRLCA has followed this guidance and defined the outer limits of the Study Area by establishing a 15km buffer from the coastline of the East Midlands Region.

In defining and describing seascape character, the Guide to Best Practice in Seascape Assessment defines seascape as including:

- Views from land to sea.
- Views from sea to land.
- Views along the coastline.
- The effect on landscape of the conjunction of sea and land.

Guidance on the Assessment of the Impact of Offshore Wind Farms⁶ takes a similar approach and defines seascape as:

“the coastal landscape and adjoining areas of open water, including views from land to sea, from sea to land and along the coastline”.

The guidance therefore recognises seascape as a discrete area within which there is shared intervisibility between land and sea and that every seascape has three components:

- an area of sea (seaward component);
- a length of coastline (coastline component); and
- an area of land (landward component).

It goes on to state that “Landscape starts at the coastline and includes all areas inland”.

It is judged that the parameters for defining seascape units listed above are too narrowly focused on visual criteria and as such would be inconsistent with the definition of landscape endorsed in the ELC and the approach adopted to identify terrestrial Landscape Character Types in the EMRLCA.

Therefore, to ensure consistency with the best practice methods for the identification of Landscape Character Types and areas in England, the various physical and cultural influences that influence seascape character have also been considered in the assessment of marine areas. As for terrestrial landscape, physical and cultural influences on the character of marine areas are interrogated to

^{4,5} M Hill et.al. *Guide to Best Practice in Seascape Assessment*. Countryside Council for Wales, March 2001.

⁶ Department of Trade and Industry, *Guidance on the Assessment of the Impact of Offshore Wind farms: Seascape and Visual Impact Report*

inform an understanding of visual, surface water, benthic (sea floor) and pelagic (water column) characteristics, that combine to create areas of unique seascape character.

In adopting this approach, additional datasets have been sourced for offshore areas, including geology, bathymetry, and industrial use of the sea and navigation routes. As with terrestrial landscape character assessment, these datasets have been analysed and overlain to identify areas of common character at the regional level of assessment.

There are currently no Historic Seascape Characterisations (HSCs) available within the Study Area. However, reference has been made to two pilot assessments of historic seascape character^{7,8}, in order to identify whether any aspects of the methodology adopted in HSC are applicable to the EMRLCA.

It is evident that the approach to HSC is based on the principles of terrestrial Historic Landscape Characterisation (HLC). As with terrestrial HLC, which identifies Historic Landscape Types as polygons with similar historic character, HSC identifies equivalent historic seascape types through the analysis of a range of underlying baseline datasets. Considering the close relationship between historic and landscape characterisation, the various Historic Seascape Character Types identified in the two pilot HSC projects have been reviewed to assist in the classification of marine Regional Landscape Character Types (RLCTs). The scale at which Historic Seascape Types are identified is incongruous with the EMRLCA, marine RLCTs being more extensive in geographical coverage and character. However, the rationale for identifying and naming Historic Seascape Character Types has been influential in the identification of offshore RLCTs.

In summary, the EMRLCA adopts a holistic approach to landscape and seascape character assessment and considers inland, coastal and offshore areas as a mosaic of different Landscape Character Types, the identification of which has been derived through a combination of desk based assessment of relevant environmental datasets and, where practical, observations in the field. It should be noted that marine Landscape Character Types identified in the EMRLCA have not been subject to field work. However, it is recommended that future assessments of marine character should incorporate field work.

The EMRLCA is the first region-wide assessment to be undertaken that considers offshore areas as a component of the landscape. As such, the identification of offshore seascape character types in this assessment should be regarded as a pilot initiative for further testing and refinement. Throughout the remainder of the EMRLCA, areas of common character for offshore areas are referred to as Landscape Character Types.

1.5.3 APPROACH TO DEFINING BUILT UP AREAS

Built up areas, such as the region's cities, towns and larger villages are excluded from the regional landscape character assessment. For consistency, built up areas for this study have been defined as areas greater than 1 sq km on the 'Developed Land Use Areas' layer from Ordnance Survey OS Meridian mapping.

The 'Developed Land Use Area' data in OS Meridian is itself derived from OS Strategic map information and is defined as urban areas being greater than 0.5 sq km and constituting 'an area containing a concentration of buildings and other structures' in the OS Strategic User Guide

⁷ *England's Historic Seascapes – Scarborough to Hartlepool and Adjacent Marine Zone Historic Seascape Characterisation, Historic Environment Service (Projects) Cornwall County Council, 2007.*

⁸ *England's Historic Seascapes. Marine HLC Pilot Study: Southwold to Clacton. Oxford Archaeological Unit Ltd, 2007.*

Other, smaller built up areas, such as villages and hamlets, are regarded as an integral part of the wider rural landscape they occupy and are therefore not illustrated or defined as built up areas.

1.5.4 ASSESSMENT FLOW DIAGRAMS

A flow diagram of the assessment process is presented in Appendix 4. A more detailed flow diagram describing the processes in the refinement of the National Landscape Typology and production of Regional Landscape Character Types is presented in Appendix 5.

1.5.5 REPORT STRUCTURE

Section 1 provides a general introduction and overview of the methodology adopted in the EMRLCA. Section 2 presents a summary of existing landscape character assessments and historic landscape characterisations that have informed the EMRLCA. The distribution of National Landscape Character Types and areas is illustrated in Figure 2, and supplemented with a full description of National Landscape Typology descriptive attributes. Figure 3 illustrates the distribution of local scale landscape character assessments and also Historic Landscape Characterisations across the region based on information provided by county and district councils in the region, English Heritage and Natural England.

Section 3 provides an overview of the principal physical and cultural influences that have shaped the region's landscape character. Important geological, cultural, historic and natural features are recorded, and their distribution across the region briefly described. Figure 4 illustrates the distribution of national landscape designations across the region (including the Derwent Valley

Mills World Heritage Site). Figures 5 to 15 illustrate the distribution of key influences on landscape character. A socio economic overview is also presented and illustrated on Figure 16.

Section 4 describes Regional Landscape Character Types (RLCTs). RLCTs are generic in nature in that they may occur in different localities throughout the region. However, wherever they occur, they share broadly similar combinations of geology, topography, drainage patterns, vegetation, historical land uses and settlement patterns.

The description of RLCTs includes a review of baseline conditions under three main themes and includes the physical (geology and soils, landform, hydrology, land use and land cover, woodland and trees), cultural (buildings and settlement, heritage features, boundaries, communications, infrastructure and recreation) and perceptual (tranquillity, remoteness) attributes of the landscape that combine to create its unique character. Additional information is presented on landscape change and management, highlighting the key forces for change acting on the landscape and broad guidance on shaping the future landscape. A summary of the likely or potential forces for change on each of the RLCTs is presented in Section 5.

Consistent with best practice and the methodology set out in the 'Landscape Character Assessment Guidance for England and Scotland', written descriptions of RLCTs avoid value-laden terminology, for example 'beautiful', 'bland', 'attractive' and 'degraded'. In this way, the descriptions can help to raise awareness of all types of landscape and encourage appreciation of variations in character and local distinctiveness across the region, regardless of subjective judgements of value or quality. Nevertheless, subjective judgements are required in relation to identifying the aesthetic and perceptual attributes of the landscape, and also in the guidance on 'Shaping the Future Landscape' in relation to

the identified Forces for Change. However, these subjective findings are based on informed professional judgement by a consistent team of qualified landscape practitioners.

With regard to the landscape character assessment hierarchy, the EMRLCA presents a new strategic regional tier, below National Character Areas and the National Landscape Typology, and above county and district scale landscape character assessments. A diagram of the new hierarchical framework is presented at the end of Section 2.

A map of Regional Landscape Character Types (RLCTs) is presented on Figure 17. A map illustrating the relationship between the Regional Landscape Character Types and National Character Areas is presented on Figure 18.

Additional information is presented in Section 6 and includes a glossary of key terms used in the assessment process, reference materials, and list of Steering Group members, stakeholders and other consultees who have made valuable contributions to the development of the EMRLCA.

All figures are presented in Section 7, illustrating physical and human influences over the Regional Landscape Character Types.

SECTION 2

EXISTING LANDSCAPE AND HISTORIC LANDSCAPE CHARACTER ASSESSMENTS



2.1 INTRODUCTION

A wide range of landscape character assessments and Historic Character Assessments have been undertaken within and covering the region. These demonstrate the great diversity of landscape character that exists from the national to the district scale of assessment.

At the national scale, the Character of England map and its supporting narrative, the National Landscape Typology and Rural Atlas of Settlement in England⁹ provide a broad overview of the variations in landscape character that exist across the region.

At the more local level, several county, district and protected landscape assessments have been undertaken. Some character assessments were undertaken in the early 1990s at a time when the process of LCA was in its infancy. Others follow 2002 best practice guidance.

In addition, several Historic Character Assessments have been undertaken that further contribute to the appreciation of the variations that exist in historic character across the region. However, only one Biodiversity Character Assessment has been completed.

All available reports and supporting mapping have been used in the identification, mapping and description of RLCTs, with the intention of the regional assessment providing a framework for the more detailed assessments. It is also judged that the EMRLCA will act as a signpost to the suite of more detailed or specialist assessments. It will be necessary to refer to these other assessments when seeking to understand variations in landscape character at a more detailed scale or to inform local planning or decision making.

⁹ Brian K Roberts and Stuart Wrathmell, *An Atlas of Rural Settlement in England*. English Heritage, 2000.

2.2 NATIONAL LANDSCAPE CHARACTER

The top tier in the assessment hierarchy in England is the Character of England map which provides a broad characterisation of the English landscape. The assessment identifies 159 National Character Areas (NCAs), 36 of which fall wholly or partially within the East Midlands Region. The distribution of National Character Areas within the region is illustrated in Figure 2. The character of these National Character Areas is described in Countryside Character Volume 4¹⁰.

The National Landscape Typology subdivides the framework of National Character Areas into discrete types of landscape, identified and plotted, based on similarities in their physical, biological and cultural character. The National Landscape Typology arose from GIS manipulation of various baseline datasets and was not subjected to testing in the field.

A total of 41 National Landscape Character Types (NLCTs) can be found within the region (excluding urban). The character of these NLCTs is described through combining definitive attributes of the landscape, summarised by a unique 3 letter code, with each of the three codes representative of Physiography, Landcover and Cultural Pattern.

Several NLCTs recur in several locations in the Region such as landscape type LLW (a summary of L = Lowlands (Physiography), L = Chalk and Limestone (Landcover) and W = Wetland / Waste, Unwooded (Cultural Pattern) which generally follow floodplain valleys. However, a number of others NLCTs, such as the landscape type UDA (a summary of U = Low Hills, D = Heath and Moorland, A = Wooded, Ancient Woods) (coincident with ancient Precambrian rock outcrops in Charnwood Forest) only occur once within the region.

The distribution of National Landscape Character Types is illustrated on Figure 2. For further details, including the National Landscape Typology Definitive Attributes, refer to Appendix 6.

2.3 REVISION OF NATIONAL CHARACTER AREAS AND THE SETTING OF STRATEGIC OBJECTIVES

Natural England is committed to using England's 159 National Character Areas (NCAs) as the national spatial framework for monitoring landscape change and for guiding the delivery of its work regionally.

In summary, the role and purpose of NCAs is to provide a:

- national categorisation of the broad variation of landscape and ecological characteristics across England, providing context to regional and local characterisation;
- national framework and context for reporting on landscape change and the state of ecosystem services; and
- basis for setting strategic landscape objectives that provide some context to regional and local delivery and a 'desired outcome' against which landscape change can be judged.

Natural England is reviewing and updating the NCA descriptions, including changes to their structure, new elements such as thematic topic areas and data based facts, and summaries of recent landscape change. In addition, the key ecosystem functions of each character area are considered, highlighting the contribution the landscape is making to provisioning services, such as food production; regulating services, such as climate regulation; and cultural services which cover the experiential qualities of the landscape.

Strategic objectives, within a landscape context, for each of the NCAs are also being developed. Their principal purpose is to guide integrated, strategic delivery and enable a measure against desired outcomes for both landscape character and landscapes functions.

Phase 1 of the draft NCA description revision has examined eight pilot areas to provide a framework and reference for the update of the remaining NCAs. Interim strategic objectives for all NCAs have been prepared by the Natural England regions. Subject to the outcome of consultation on the draft NCA descriptions and objectives, it is anticipated that the NCA revision will be completed in 2011.

2.4 NATIONAL HISTORIC RURAL SETTLEMENT ANALYSIS

In 2002 English Heritage published a major study of rural settlement in England¹¹, which together with its companion volume¹², brings together a decade of research to define the varied character of England's rural settlement. The two studies plot the distribution of former land uses, such as cleared land, woodlands and open pastures as well as exploring the interaction of physical and cultural factors that underpin the variations that can be observed in rural settlement in England.

2.5 COUNTY AND DISTRICT SCALE LANDSCAPE CHARACTER ASSESSMENT

County and district scale landscape character assessments have been undertaken for several years by local authorities to inform a range of planning and decision making functions. They provide an assessment of landscape character at a more refined scale than nationally available assessments, and as such, present information that is more applicable to local decision making and engagement with local communities, which are often consulted in the assessment process.

The methods adopted for undertaking these assessments are varied, depending on when the assessment was carried out, at what scale, and for what purpose. Since 2002, and the publication of best practice guidance for landscape character assessment, there has been greater consistency in the approaches to these assessments, notably

because of the identification of an assessment hierarchy and the requirement to consider existing and neighbouring assessments in the process of identifying new Landscape Character Types or Areas. However, some disparity in the outputs is evident across the region.

Within the East Midlands, county and district assessments, as well as those undertaken for The National Forest, Lincolnshire Wolds AONB and Peak District National Park, provide full geographic coverage of LCAs across the region. Details of LCAs undertaken within the region are presented in Appendix 1 and their distribution illustrated on Figure 3.

Following the publication of the 2002 guidance, Derbyshire County Council was the first county in the region to produce an LCA, comprising 'The Landscape Character of Derbyshire', 2003. Rutland County Council produced an LCA in the same year. More recent county assessments comprise the comprehensive suite of documents that form the Northamptonshire Environmental Character Assessment that incorporates the integrated parallel assessments for Current Landscape, Historic Landscape and Biodiversity Character, and associated Strategy and Guidelines, and an interrelated Green Infrastructure Strategy (2005). The Peak District National Park finalised its Landscape Character Assessment in 2008 followed by a Landscape Strategy in 2009 and Nottinghamshire County Council updated its earlier 1998 'Countryside Appraisal' and published the Nottinghamshire Landscape Character Assessment in 2010.

A wide range of district assessments nests below the tier of county assessments and provide a further level of detail in the hierarchy of landscape character assessments that covers the region.

11 Brian K Roberts and Stuart Wrathmell, *Region and Place – A Study of English Rural Settlement*. English Heritage. 2002.

12 Brian K Roberts and Stuart Wrathmell, *An Atlas of Rural Settlement in England*. English Heritage. 2000.

A detailed review of the majority of these assessments was undertaken as part of the East Midlands Regional Landscape Scoping Study and is therefore not repeated in this assessment.

The EMRLCA provides a framework for future revisions to existing landscape character assessments in the region or new assessments that may be forthcoming.

POSITION IN NATIONAL HIERARCHY	EXAMPLE IN EAST MIDLANDS REGION	LEVEL IN HIERARCHY
National Landscape Character Area (NLCA)	Nottinghamshire, Derbyshire and Yorkshire Coalfield	National
National Landscape Character Type (NLCT)	Intermediate, Other Heavy Land Coalfields	
National Landscape Character Type (NLCT)	Intermediate, other heavy land coalfields	Regional
Regional Landscape Character Type (RLCT)	Settled Coalfield Farmlands	
County/District Landscape Character Area	Nottinghamshire and Derbyshire Coalfields	Local Authority
County/District Landscape Character Types	Coalfield Village Farmlands and Coalfield Estatelands	
Local Landscape Character Area	The Grassmoor Coalfield Village Farmlands	Local (example)
Local Landscape Character Type	Shallow Coalfield Valley	

2.6 COUNTY AND DISTRICT SCALE HISTORIC LANDSCAPE CHARACTER ASSESSMENT

Historic Landscape Characterisation (HLC) is a tool for assessing and describing the historic dimension of the landscape. HLC classifies the landscape into Historic Landscape Character Types based on a desk based review of documentary resources, maps and GIS data and identifies time depth in the existing landscape by observing patterns of land use, field morphology and other diagnostic features.

HLC is generally undertaken for individual counties as part of an ongoing national programme supported by English Heritage. Its core method¹³ is continually developing through adaptation to changing perceptions and technologies, and in response to regional and local conditions and concerns.

HLCs provide an important evidence base and framework of interpretation and understanding that can be used for informing decisions that have the potential to have an impact on landscape and landscape history, such as planning applications. Other forms of change, such as that which occurs through land management, can also be informed by HLC. HLCs also provide a framework for informing detailed research programmes on landscape evolution or studies that seek to plot or predict the survival of archaeological remains in various types of landscape. By drawing out the cultural dimension in the present landscape, HLCs can be expected to increasingly contribute to the definition and discussion of sense of place and the recognition of the degree to which individual and communal identities are formed by and feed into that sense of place. HLCs also have an important role in informing Landscape Character Assessments, providing a useful interpretation of field morphology and time depth which is not always immediately apparent.

Nationally, the HLC programme is approximately two-thirds complete. Within the East Midlands, several counties have undertaken HLCs which are either complete or are ongoing. Details of Historic Landscape Characterisations undertaken within the East Midlands Region are presented in Appendix 1 and their distribution illustrated on Figure 3.

A diagram of the hierarchical framework of landscape character assessment, including the new regional assessment, is provided below.

¹³ Oscar Aldred and Graham Fairclough, *Historic Landscape Characterisation: taking stock of the method*. English Heritage and Somerset County Council, 2003.

SECTION 3

FOUNDATIONS OF THE EAST MIDLANDS LANDSCAPE



3.1 INTRODUCTION

The diversity of the region's landscape is a result of the complex interplay of a wide range of physical and cultural influences.

The geological structure of the East Midlands, including the range of geological formations and superficial deposits that are present, and the effects of geomorphological processes are the principal factors in determining the character and diversity of the region. In addition to shaping the physical and hydrological structure of the region, this geodiversity has also had a significant effect in influencing the region's economy, patterns of settlement, industrial and cultural heritage and the way that the land has been used for thousands of years. The distribution of mineral resources has influenced the range and distribution of primary industries, while the built character of the region's towns and villages, as well as the range of wildlife habitats and farming regimes can all be attributed, to varying degrees, to these variations in the underlying geology. Section 3.2 describes the main physical influences on the landscape and presents an overview of the region's main land use types.

There is evidence of millennia of human interventions shaping the character of the region's landscape. The generally open character of the landscape has its origins in the prehistoric clearance of native woodland and the ongoing management of natural resources. The patterns created, for example, by hedges, farmed land, common grazing and woodland were all probably in place by the medieval period, as were the principal settlements and communications routes across the uplands and along the river valleys. Six millennia of changes in social organisation and in the concept of land ownership and control are also etched into the landscape; visible in the patterns created for example by hedges, walls and tracks. To the trained eye it is possible to see evidence of communal, perhaps family or clan based territories of the Neolithic period, private estates surrounding Roman villas, the communally farmed open fields of the early medieval period and the private and parliamentary enclosures of more recent centuries. In many instances ancient boundaries continue to mark territories and different land ownerships.

It is onto this ancient framework that change since the Industrial and Agricultural revolutions of the 18th and 19th centuries has had an increasingly dramatic influence on the character of the region's landscape. The rapid growth of cities and towns such as Derby, Leicester, Lincoln, Nottingham and Northampton, together with the consolidation of transportation routes, such as canals, rivers, roads, railways and airports have all had a major influence on the landscape, as well as wider perceptions of landscape quality, tranquillity and remoteness. In the countryside, two centuries of profound change in agriculture, forestry, recreation and the growth of the rural economy have had an equally significant impact on the character of the rural landscape.

Section 3.3 presents a summary of the main episodes of cultural change in the region, as well as key locations in the region to see this evidence. In recognition that landscape is dynamic and continues to evolve, Section 3.4 presents a brief overview of the main forces for change acting on the landscape.

3.2 PHYSICAL INFLUENCES

The geological structure of the East Midlands region, and the juxtaposition and succession of rocks, is fundamental to the form and structure of the landscape. While the underlying bedrock geology is responsible for the principal pattern and elevation of the landform, the different responses of the various rock strata to the effects of weathering processes and erosion have altered the form of the landscape, influenced drainage and soils, and in turn the subsequent patterns of vegetation, land cover and land use. Many of these impacts are not felt in the short term but may take several generations, if not longer to affect the landscape.

The deposition of superficial material during the most recent Quaternary era, such as sands, and gravels, till (predominantly represented as boulder clay) and alluvium, has also been particularly important in moulding and modifying landform patterns. As a consequence, the underlying bedrock is sometimes entirely obscured by extensive superficial deposits.

Sites recognised for their geological importance are preserved as protected Sites of Special Scientific Interest (SSSI) and as Regionally Important Geological and Geomorphological Sites (RIGS) / Local Geological Sites. Currently, however, the latter have no protection.

3.2.1 GEOLOGY AND LANDFORM

Simplified Bedrock Geology is illustrated on Figure 5. Simplified Superficial Geology is illustrated on Figure 6. Landform is illustrated on Figure 7.

Introduction

The East Midlands region lies within a broad belt of sedimentary rocks that dip gently east and south eastwards from the Pennine axis within Derbyshire towards Lincolnshire and the North Sea basin. Rocks ranging in age from the Precambrian to Cretaceous periods form a series of broadly north south aligned rock formations with progressively younger rocks outcropping towards the east. There are very limited outcrops of rocks from the Tertiary Period. In addition to these sedimentary rocks, more isolated areas of igneous rocks are also present, the most significant occurring in Leicestershire. Finally, this bedrock geology is masked in many areas by a range of superficial deposits laid down in the most recent geological Period, the Quaternary.

Relationship with Landform

The landform and 'topographical grain' of the East Midlands Region is inextricably linked to the underlying geological structure and effects of various past climatic variations, periods of tectonic activity, orogenies and marine transgressions that have occurred during the successive geological eras, as well as the characteristics of the rock formations and their differential responses to erosion. In addition to the effects of the deposition of superficial deposits in the Quaternary Period, the existing landform pattern continues to be modified by the effects of macro and micro geomorphological processes. In view of the close relationship between

geology and landform, the principal landform characteristics of the region are described below in association with the geology.

Geological Periods and Rock Successions

Precambrian (600-543 million years ago [Ma])

The Precambrian period commenced with the formation of the earth but rocks local to the East Midlands date from around 600 to 543 million years ago. These are not only the oldest rocks in the region but also some of the oldest in England and Wales. Most of the Charnian rocks are volcanoclastic sedimentary rocks, composed of igneous material – volcanic ash and lava blocks. They were deposited in seas surrounding the volcanoes, a good modern analogy being the island of Montserrat in the Caribbean. Precambrian geology, which only occurs within Charnwood Forest, gained international fame when, in 1957, a schoolboy discovered a primitive fossil in the ancient volcanic rocks. Named *Charnia masonii*, and of a still obscure biological affinity, the fossil was the first evidence found in the world that primitive life forms existed in Precambrian times, and marks a major benchmark in palaeontological and evolutionary thought. The rocks of Charnwood Forest have long been quarried for aggregates and used as building stones.

Cambrian (543-495 Ma)

The youngest rocks in Charnwood Forest are now thought to be of Cambrian age, following the discovery of fossil burrows on gravestones. They comprise mainly marine mudstones that have been cleaved and metamorphosed to slate. These Swithland Slates once formed a major industry in the area, producing roofing slates and grave stones that can be seen on many buildings and in churchyards in and around Charnwood Forest.

Ordovician (495-443 Ma)

During the Ordovician, a new subduction zone formed where England lay, and large magma chambers formed at depth. The molten magma cooled slowly to form coarse grained igneous rocks called granodiorites, now seen at the surface at Mountsorrel and Croft in south Leicestershire.

No rocks from the succeeding Silurian and Devonian periods are now preserved within the region but a major episode of mountain building occurred, the Arcadian orogeny. This raised up the Precambrian rocks into a mountain range, metamorphosing the rocks and producing the cleavage well seen in the Swithland Slate.



Limestone outcrop at Breedon on the Hill (© English Heritage/J Humble)

Carboniferous (355-290 Ma)

By the start of the Carboniferous, England was joined with Scotland for the first time. In the west and north of the region, within Derbyshire, the outcrop of the massive Peak Limestone Group (Carboniferous Limestone Supergroup) forms a broad structural dome with the prominent limestone plateau of the White Peak at the core of this upland area. Differing depositional conditions in the sub-tropical sea in which the limestone was laid down in have resulted in two distinct limestones. The main limestone is a pale grey and thickly bedded shelf limestone that forms the elevated plateau to the south of Castleton. The landform in this area comprises a pastoral upland

plateau dissected by steep-sided limestone valleys (dales), with cave systems locally developed. In contrast, a darker grey basin limestone occurs around the Manifold Valley in the south west of the outcrop. Barrier reefs also developed on the margins of the shelf and these are represented as a hard and fine grained limestone that is particularly resistant to weathering and evident as conical hills known as reef knolls. Notable examples of isolated reefs occur in the Dove Valley such as the hills of Thorpe Cloud and Parkhouse Hill.

Currently, there are 29 working quarries in the limestones of Derbyshire, mainly working aggregate but some working for building stone or lime.

In the Derby area, the youngest rocks of early Carboniferous age (Widmerpool Formation) consist predominantly of mudstones with thin limestones and sandstones. They were deposited in a deep basin, the Widmerpool half-graben. Very limited outcrops of Carboniferous Limestone also occur in Leicestershire and South Derbyshire such as at Breedon Hill, Cloud Hill and Ticknall. These areas have been extensively quarried for their limestone. Surrounding this core of limestone in a horseshoe shape is the younger Millstone Grit Group. These rocks were deposited in a coastal environment with large river deltas building out into the shallow marine waters and forming massive coarse sandstones interbedded with mudstones. The alternating layers of mudstone and sandstone can be observed in the face of Mam Tor where sands had cascaded down the front of the delta. Like the Peak Limestone, the Millstone Grit sandstones are also resistant to erosion and form the upland 'gritstone' moors area of the Dark Peak, as in the Kinder Plateau. They also form distinctive escarpments such as Stanage Edge, Curber Edge and Froggat Edge along the eastern fringe of the Peak District. A small inlier of Millstone Grit occurs around Melbourne in South Derbyshire.

The Millstone Grit is succeeded by the Upper Carboniferous Pennine Coal Measures Group, laid down in low lying swampy deltas with rain forests, when England was on the equator, these comprise a succession of coal seams, formed from

the compressed remains of the rich forest and swamp vegetation, interbedded with mudstones, sandstones, seat earths and ironstones. The principal outcrop in the region forms a broad swathe of undulating land with a recurring pattern of hills, ridges and shallow valleys that extends northwards from Derby and Nottingham to the northern perimeter of the region. A smaller outcrop is present in the vicinity of Swadlincote, Ashby de la Zouch and Coalville forming the Leicestershire and South Derbyshire Coalfields. There are small outliers of Pennine Coal Measures around Melbourne. As well as coal mining, pottery formed a major industry in parts of the region.



Mam Tor near Castleton, Derbyshire (© English Heritage/J Humble)



Escarpment at Froggat Edge near Calver, Derbyshire (© English Heritage/J Humble)

Permian (290 - 250 Ma) and Triassic (250 - 205 Ma)

The succeeding Permian period is mainly represented in the eastern side of Derbyshire and also extending into Nottinghamshire, with small areas of rocks of presumed Permian age in parts of north west Leicestershire. Laid down in the shallow and extensive landlocked Zechstein Sea, a magnesium rich limestone (dolostone) was deposited that now forms the Cadeby Formation ('Magnesian Limestone') outcrop. This porous and hard limestone forms a dramatic elevated ridge and west facing escarpment for much of the length of its outcrop, for example Bolsover Castle. River erosion has also resulted in the creation of steep valleys and gorges such as at Cresswell Crags and Pleasley Valley on the Derbyshire and Nottinghamshire border. The Cadeby Formation has been extensively worked as a building stone.

In the Triassic Period that followed, the arid desert-like conditions that prevailed resulted in the oxidation of iron compounds, so the succession of sandstones, breccias and mudstones that were laid down share a characteristically red colouration. The Early Triassic Sandstones and conglomerates of the Sherwood Sandstone Group were deposited by a major river flowing northwards across much of England from northern France. They form moderately elevated and undulating ground in parts of Leicestershire and between Nottingham, and Sherwood Forest where the acid soils support heathland and oak-beech woodland as well as the more recently planted coniferous plantations. This sandstone is a major aquifer and source of water supply for the East Midlands. Following this is the broad outcrop of the Mercia Mudstone Group of Middle and Upper Triassic age. This rock formation is derived from windblown dust that settled into shallow saline lakes and mudflats within an extensive alluvial plain, with deposits up to 300m thick. It was periodically inundated by flash floods that deposited thin beds of siltstone and sandstone. A major fluvial interval occurred in the Late Triassic, depositing the Arden Sandstone Formation. The Mercia Mudstone extends across the western part of Leicestershire, into South

Derbyshire and Nottinghamshire, where it forms a lower lying gently undulating landscape, and further north where it underlies the broad Trent valley. The Mercia Mudstone is noted for its gypsum which occurs throughout the sequence. In the upper part of the group, particularly thick sequences occur that have been extensively mined and quarried in Leicestershire and Nottinghamshire. The Mercia Mudstone Group is also extensively quarried for brick making in Leicestershire and Nottinghamshire. Major hills that we see today such as Charnwood Forest, Mountsorrel and Breedon-on-the-Hill, were completely buried by the Triassic sediments.

Jurassic (205-140 Ma)

Within the East Midlands the Jurassic Period is represented as a broad arc of rock formations that extend across the region from the south western perimeter of Northamptonshire, and across the remainder of Northamptonshire, much of the eastern part of Leicestershire and all of Rutland and into Lincolnshire. Jurassic rocks are also present within a limited part of Nottinghamshire, east of the Triassic Mercia Mudstone Vale.

The oldest rock units of the Jurassic Period comprise the Lias Group. These were deposited as layers of mud, lime and sand in a warm, tropical shallow sea that was teeming with life, and which covered much of central England. Generally, this extensive outcrop comprises mudstones with thin beds of limestone, sandstone and ironstone. Because the mudstones are relatively soft and easily eroded they form the lower lying land such as in the Vale of Belvoir and parts of the Trent valley. The Marlstone Rock Formation is a particularly distinctive rock unit within the Lias Group sequence which outcrops in Northamptonshire, Leicestershire and Rutland. Due to its harder character this ironstone often forms an escarpment or capping to the underlying softer mudstones as at the Belvoir Scarp and Laughton Hills in Leicestershire, and the high ground between Caldecott and Uppingham in Rutland. It has been extensively quarried for iron ore and has also been used as a building stone together with sandstone in the underlying Dyrham Formation. The mudstones

within the upper section of the Lias Group, the Whitby Mudstone Formation, cover much of the western side of Rutland and have been worked for bricks at Luffenham and Seaton.

To the east of the Lias Group is the extensive outcrop of marine limestones and mudstones of the Middle Jurassic Inferior and Great Oolite groups. These form part of the extensive stone belt that sweeps south west to north east across England from the Dorset to the North Yorkshire coast. The lowest part of the sequence, the Northampton Sand Formation, was deposited in a shallow marine and estuarine environment. This iron-rich sandstone has been an important source of iron ore, notably in the Corby area, and has also used as a building stone. This is displayed in the many villages within Northamptonshire and Rutland with their distinctive orange brown colour. The overlying Lincolnshire Limestone is an off-white to buff-yellow ooidal limestone. The outcrop is also recognised by its extensive use as a building stone and in the Collyweston Slates near Stamford that has been used since Roman times as a roofing slate. Off-white stones are also clearly visible in ploughed fields. This hard rock gives rise to undulating higher ground and also the west facing escarpment of the Lincoln Edge that overlooks the Vale of Trent. The Lincolnshire Limestone and overlying Great Oolite Group rocks form the raw materials for the cement industry, for example at Ketton near Stamford.

The Great Oolite Group is divided into four formations (the Rutland, Blisworth Limestone, Blisworth Clay and Cornbrash Formations). These varied rocks (limestones and mudstones) were deposited in shallow seas, tidal mudflats, and lagoons and give rise to an undulating landform.

East of the ooidal limestone belt the Upper Jurassic is represented by a succession of softer marine mudstones comprising the Kellaways and Oxford Clay formations, followed by the West Walton, Amphill Clay and Kimmeridge Clay formations. These softer mudstones run through the central part of Lincolnshire and floor the Vale of Ancholme between the Lincoln Edge limestone ridge to the west and the Lincolnshire Chalk Wolds to the east.

In the northern part of the region the extent of the Jurassic belt is more limited than further south. Here, the width of the outcrop of rocks narrows as the sequence thins and converges on to the Market Weighton Axis in East Yorkshire.

Cretaceous (140 to 65 Ma)



*Collyweston Slate used extensively in Stamford, Lincolnshire
(© English Heritage/J Humble)*

The Cretaceous Period is represented in the extreme east of the region in Lincolnshire. The succession of Cretaceous rocks is linked to the marine sedimentation processes that occurred within the Spilsby Basin, which was separated from the Yorkshire Basin to the north by the Market Weighton Axis, resulting in a sequence of rocks that is particular to this part of the East Midlands Region. The Lower Cretaceous rocks commenced with the Spilsby Sandstone followed by the iron-rich Claxby Ironstone, after which sequences of mudstones, limestones and sandstones were deposited to form the Tealby Formation. A marine transgression laid down the Carlstone Formation, a gritty iron-rich sandstone, followed by the pink limestone of the Hunstanton Formation (Red Chalk). Finally, a further major marine transgression marked the beginning of the Upper Cretaceous with all of England and Wales submerged beneath a warm sub-tropical sea. In Lincolnshire, and eastwards into the area submerged by the North Sea, up to a 500m depth of almost pure limestone, the Chalk, was deposited in four separate formations.

While the eastern part of the Chalk within Lincolnshire is overlain by Quaternary glacial till deposits, and also extends below the North Sea, it is exposed further west to form the greater part of the Lincolnshire Wolds, albeit at a reduced thickness of about 50m. Here it is represented as a distinctive west facing escarpment, particularly in the northern section, and rolling elevated plateau to the east. Where the Chalk has been removed, Lower Cretaceous rocks have been exposed forming a series of secondary ridges and escarpments.



View towards Lincolnshire Wolds from along the New River Ancholme, Lincolnshire (© R Goodison)

Tertiary (65 – 2.6 Ma)

The presence of Tertiary rocks is extremely limited within the East Midlands Region as these deposits have been largely removed through erosion and therefore have no effect on the landform. Some small areas remain however in north west Derbyshire between Longnor and Wirksworth where there are hollows in the Carboniferous Limestone that are filled with silica sand, mudstone and pebble bands, known as ‘pocket deposits’. The fossil plants in these beds date to the Late Tertiary (Miocene) and are remnants of river deposits that once covered the area.

Intrusive Igneous Rocks and Tectonic Activity

Although the majority of rock formations in the East Midlands Region are of sedimentary origin there are limited outcrops of igneous rocks that give rise to local variations in topography and surface expression.

Intrusive igneous rocks occur in the Charnwood Forest area where at least four periods of intrusion can be recognised. The North and South Charnwood Diorites represent periods of intrusion in the Precambrian. Later intrusions occurred in the Ordovician, when outcrops such as the Mountsorrel Granodiorite and Croft Diorite were formed. Minor dolerite dykes were also intruded in the Carboniferous. These intrusive igneous rocks form the basis for the Charnwood Forest aggregate industry. The quarry at Mountsorrel is one of the largest aggregate quarries in Europe.

The rocks of Charnwood Forest were subjected to considerable folding and uplift during the Silurian, about 420 Ma, during the final stages of the Acadian Orogeny. Once a much higher mountainous area, periods of denudation reduced the mountains to hills and eventually resulted in the core of older rocks being buried beneath softer Triassic deposits. Further denudation in the Cainozoic era has resulted in the exposure of the core of the older rocks so that the isolated hills and craggy peaks, such as Charnwood Forest, rise up above the surrounding Triassic Mudstone plain. The area has been further modified by the more recent cycles of glaciation.

Examples of other limited outcrops of igneous rocks in the region are present in Derbyshire. These date to the Lower Carboniferous Period when volcanic activity on the sea-floor produced lava flows and later intrusions of sills and dykes into the rock sequence, which cooled to form layers of basalt and dolerite. The lava flows are known locally as ‘toadstone’, and their dark colour is distinctive within the lighter limestone.



Craggy outcrops at Beacon Hill, Charnwood Forest, Leicestershire
(© P Wakely)

Quaternary (2.6 – 0Ma)

Superficial Deposits

The bedrock geology is masked in many areas by a wide range of superficial deposits that have been laid down in the Quaternary Period by ice and rivers. The distribution of these unconsolidated deposits is illustrated on Figure 6, Simplified Superficial Geology.

The more recent cycles of Pleistocene glacial periods have had a significant effect on the landscape, culminating in the final, Devensian glaciation that peaked around 30,000 years ago. This ice sheet did not reach the East Midlands but its effects were felt by the melting of the ice sheet which created numerous glacial melt water channels and melting permafrost led to much instability on steep slopes resulting in landslides. The earlier Anglian glaciation, about 440,000 years ago, was responsible for all the glacial deposits found in the region, comprising tills, glaciofluvial and glaciolacustrine deposits. Where glacial till intercepted drainage systems this also resulted in the creation of ‘ponded’ lake systems and glacial spillways as is evident at Calceby in the south where the headwaters of the Great Eau river backed up and overflowed into the Lymn catchment to form the impressive New England valley near Spilsby.

In the more recent Holocene times after the last ice age, extensive erosion has resulted in much deposition, particularly in river valleys as alluvium and river terrace gravels. Solifluction head deposits occur on valley sides and there are more localised areas of blown sand and peat, most of which are confined to parts of Lincolnshire, notably along the county boundary north of Gainsborough and west of Caistor. Extensive growth of blanket bog peat has occurred in the fens. These superficial deposits have had a significant effect on the landform, particularly at the local scale, and also on drainage patterns and soil characteristics. Some are also an important source of sands and gravels.

The Wash is an extensive inlet of the sea bordering Lincolnshire and the East Midlands region on its western side. Much of the Wash itself is very shallow, with several large sandbanks exposed at low tide, especially along its south coast. Formation of The Wash occurred in the Pleistocene. At the end of the latest glaciation, and while the sea level remained lower than it is today, the rivers Witham, Welland, Glen, Nene, and Great Ouse joined into a large river. The deep valley of the Wash was formed, not by the interglacial river, but by ice of the Wolstonian and Devensian stages flowing southwards up the slope represented by the modern coast and forming tunnel valleys. With the post-glacial rising sea levels, the wash has been gradually infilled with sediment. The area has seen much deposition of sediment and land reclamation, markedly altering the coastline within historical times; several towns once on the coast of the Wash are now some distance inland.

Mineral Resources

The bedrock geology and superficial formations provide a rich and diverse assemblage of mineral resources, which have enabled the East Midlands Region to become one of the largest mineral producers in the country. The mineral resource and its relationship with the underlying geology is described in more detail in Section 3.4.5.

Geodiversity

Geodiversity was first simply defined as the ‘variety of rocks, fossils, minerals, soils and natural processes forming our landscape’. This evolved later to include a much broader scope of all features relating to geology, including biodiversity, archaeology, industrial heritage, cultural heritage and art. The key phrase ‘the application of practices for their care, maintenance and management for the long term benefit of all’ has also been used.

A region’s geodiversity is as diverse as the rock types and landforms present. The East Midlands has some of the most diverse geology in England, with rocks ranging from the Precambrian to the present day. These, in turn, have resulted in a very diverse landscape with a wealth of geomorphological features. The rocks reveal a geological history with examples of a diverse range of climates, depositional environments and processes that have helped shape the present day landscape.

Crucial to understanding and promoting the region’s geodiversity are the geological Sites of Special Scientific Interest (SSSIs) and Local Geological Sites [formerly Regionally Important Geological and Geomorphological Sites (RIGS)]. The East Midlands’ geodiversity includes:

- Sites worthy of protection
- The historical legacy of research within the area
- Past and present mineral workings
- Sites and features used for interpreting Earth science
- The influence of Earth science in shaping the environment
- Geological collections and other records
- Published literature and maps
- The inter-relationship and inter-dependence between Earth science and other interests, e.g. biodiversity, archaeology
- The promotion of geological features for tourism and education purposes.

The East Midlands has a long history of mining and quarrying that has left behind a legacy of geological exposures. These are coupled with natural exposures in some areas, including the volcanoclastic rocks of Charnwood Forest, and the limestone and ‘Millstone Grit’ areas of the Peak District. They all require protection and conservation through legislation and working in collaboration with planning departments. Their potential use for education and tourism is critical to their maintenance and upkeep. The sites need to be protected from destruction, through such processes as landfill.

Management plans are needed for many key sites and regular monitoring is required to ensure that access remains easy and that vegetation is kept clear of exposures and rubbish does not accumulate. Consultation with biodiversity specialists is also critical. Close working with all current quarry operators is essential, for drawing up restoration plans that ensure that scientifically important geological exposures are retained.

3.2.2 SOILS

The characteristics of soils in respect of their Natural Drainage, Natural Fertility, Surface Texture and General Soil Condition are illustrated on Figure 8.

The pattern of soils across the region and their characteristics is complex and closely related to the variation of the underlying geology including the superficial deposits, and the hydrological pattern. ‘The East Midlands Soil and Environmental Resource Review’ (November 2006)¹⁴ provides a comprehensive high level review of the soil resource within the region and their complex relationships with both water and habitats, and in the context of climate change. At the top tier the report classified soil associations into twelve broad categories of soil types, based on their pedological and hydrological characteristics, and their expected behaviour under pressure. These included true peat soils, which only

occur to any significant extent in the Peak District. At a more local level there is, of course, a wide range of soil types with marked variation across the region depending in particular on the underlying geology and the effects of hydrology. Soil types and their characteristics are described in each of the Regional Landscape Character Types.

The majority of the region's soils, and the multiple functions they perform, are considered to be either at risk or potentially at risk from loss or damage arising from a wide range of drivers, with climate change as the principal ecological driver. The study sought to identify what is causing these changes, and the impact they are having on the East Midlands Region.

The study's research and findings into the relationship between land use, soil management and water management has led to the proposal to create 'spongy landscapes' across parts of the East Midlands Region. These can be defined as parts of the landscape where the make up of the soils and habitats can act as a sponge to soak up rainfall and help prevent possible flooding downhill or downstream and erosion. They can therefore act as landscape scale sustainable drainage systems and also offer a range of benefits. As well as contributing to water resource management and limiting flood risk and soil loss, there is the added potential for the creation and management of large scale habitats, the restoration of historic landscapes and the conservation of wetland archaeology.

3.2.3 HYDROLOGY

The hydrology of the East Midlands Region is illustrated on Figure 9.

Most of the rivers that drain the East Midlands Region flow into the North Sea either to The Wash, or into the River Humber although some of the Peak District rivers, notably the Goyt and Etherow, drain to the Mersey. The Trent catchment is the most extensive within the region and includes the River

Soar and its tributaries, and eventually flows into the Humber in the north east of the region. The River Ancholme also flows into the Humber but in contrast to the Trent has a very small catchment contained within the Lincoln Edge and Lincolnshire Wolds. Elsewhere, there are a series of catchments that drain into The Wash comprising the Witham, Welland and Nene. The Lincolnshire Wolds separates watercourses that flow west into the Witham and Ancholme catchments, and those that flow east to the North Sea and The Wash.

Very limited sections of the region drain into the Severn and Thames catchments. These are located in the extreme south western part of the region within Leicestershire and Northamptonshire for the Severn, and Northamptonshire in the case of the Thames catchment. Here, an area of elevated land at Arbury Hill marks a nationally important watershed at the heart of the country, separating the catchments of three of England's major river systems: the Nene, the Severn and the Thames. Streams rise in close proximity to form the headwaters of the River Nene that eventually flows into The Wash; the River Leam, a tributary of the Warwickshire Avon, a tributary of the Severn; and the River Cherwell, a tributary of the Thames.

The River Trent is one of England's major rivers and its large catchment area extends across the western, central and northern part of the region. It rises beyond and to the west of the East Midlands Region north of Stoke on Trent. The first settlement on the Trent in the East Midlands is Walton-on-Trent. Between Burton on Trent, again on the western perimeter of the region, and Newark on Trent the river flows along a mainly north easterly course but beyond Newark assumes a predominantly northerly course within the broad clay Vale of Trent, eventually draining into the Humber estuary beyond the region near the village of Alkborough.

Numerous tributaries feed into the Trent, with the major tributaries within the region comprising the broadly south east flowing Rivers Dove and Derwent, which rise in the Peak District and the broadly north flowing River Soar whose lower

reaches, prior to its confluence with the Trent, flows through a valley to the east of Charnwood Forest. Tributary rivers of the Soar extend to the south east of Leicester (River Sence) and to the north east beyond Melton Mowbray (River Wreake) thus further extending the Trent's catchment area.



River Nene near Woodford, Northamptonshire
(© River Nene Regional Park/M Williams)

Further east within the region the River Witham rises to the south of Grantham, and together with its tributary the River Brant, flows northwards along the western foot of the Lincoln Edge after which its course changes abruptly to east west with the river passing through the Lincoln Gap and into the broad Lincoln Clay Vale to the east of the Lincoln Edge. The Witham's circuitous course continues as it then assumes a south easterly course to Boston and then to The Wash. To the south east of Grantham the parallel courses of the East Glen and West Glen Rivers flow south eastwards to the lower reaches of the River Welland and then into The Wash.

The northern part of the Lincoln Clay Vale is drained by the River Ancholme, including the canalised course of the New River Ancholme which now forms the principal drainage channel. The north south aligned course of the Ancholme and the canalised watercourse parallels the lower reaches of the River Trent with the two rivers flowing into the River Humber separated by a distance of only about 10 km.

A series of smaller and shorter rivers and watercourses, including the Great Eau, Long Eau and Waithe Beck, rise on the eastern slopes of the Lincolnshire Wolds and flow in a broadly easterly direction across the Lincolnshire Fens and Marshes to the North Sea coast. Another watercourse, the Steeping River, rises in the south eastern part of the Lincolnshire Wolds eventually draining into The Wash south of Skegness.

The River Welland and River Nene are the major river systems in the southern part of the region. Both follow a broadly south west to north east course, eventually draining into the southern side of The Wash beyond the East Midlands Region. The Nene, the most southerly river in the region, rises in the south west of Northamptonshire with a series of tributaries, including the River Ise and Harper's Brook, draining south eastwards into the main river.



River Steeping draining into The Wash, Lincolnshire
(© Wash Estuary Strategy Group/R Platts)

In addition to the river systems within the region, Figure 9 illustrates the extent of Flood Zone 3 areas where there is an annual probability of flooding of 1% (1 in 100) or greater from rivers, and 0.5% (1 in 200) or greater from the sea. The River Trent floodplain is the most susceptible to flooding with a broad swathe of Flood Zone 3 designated land along the entire valley bottom that broadens progressively towards the northern boundary of the region. Other main rivers with notable Flood Zone 3 areas comprise the floodplain of the River Nene from Northampton to the eastern boundary of the

region, the River Welland, and the River Witham, (including the section of the river valley that passes through the Lincoln Gap), within the clay vale to the east of the Lincoln Edge and the River Soar to the north of Leicestershire.

3.2.4 LAND USE AND LAND COVER

Agricultural Land Use, Quality and Forest Types/Ancient Woodland are illustrated on Figure 10. The distribution of Biodiversity Action Plan Habitats is illustrated on Figure 11 and Nature Conservation Designations are illustrated on Figure 12.

Agricultural Land Use

Land use in the East Midlands is dominated by farming. Over 81% of the land area is occupied by agriculture, with most types of modern and traditional farming practices evident in the region. Approximately 47% of the farmed land is of the best and most versatile agricultural quality (Grade 1, 2 and 3a) which is primarily located in the east of the region. This compares to 39% across all of England. The region also has a significant proportion of the total national resource of Grade 1 land (34%)¹⁵. However, more than 50% of the best and most versatile land is less than 5m above sea level and large areas are therefore prone to or at risk of flooding. The poorer soils (Grade 4 and 5) that are primarily found in Derbyshire and the Peak District, occupy approximately 21% of the region.

In addition to soils, temperature, rainfall and sunshine combine to influence agricultural regimes. Whilst the region is relatively dry, rainfall is sufficient to keep free draining soils fertile and clay vales verdant. Droughts are rare and the timing and duration of frosts encourages a wide range of agricultural crops and good grazing pasture, particularly at lower elevations¹⁶.

The region produces 30% of the nation's vegetables, primarily in the rich and intensively farmed east of the region, but has only 5% of the nation's milk herd¹⁷. 18% of England's cereal holdings are in the East Midlands. Despite the region containing some of the most productive agricultural systems and soils in the country, 66% of all available agricultural land in the region is now in environmental land management agreements.

Although economic factors are important in influencing types of farming activities, decisions on what is grown or reared in a particular area are also guided by the attributes and limitations of local physical conditions. These influences result in general trends and patterns of land use that may be observed at a regional level. For example, in the hillier north west of the region, livestock farming dominates. Further east, in a broad arc running through Northamptonshire, Leicestershire and Nottinghamshire is a mixed farming regime with a predominance of livestock. In the east of region, across Lincolnshire and east Northamptonshire the agricultural landscape is dominated by arable farms with some livestock. Here, the wholesale conversion of grassland and horticulture to arable, driven by post war European agricultural subsidies, has had a profound influence on the character of the agricultural landscape. Indeed, in Lincolnshire virtually the only land unploughed is that protected by environmental or heritage legislation¹⁸.

The impacts of agricultural specialisation and intensification can be seen across the entire region, and is particularly evident in some areas, such as Lincolnshire. Whilst productivity may be improved or more secure markets accessed by changing farming practices, the detrimental effects on landscape and wildlife are notable. For example, agricultural intensification in predominantly arable areas has led to a significant decline in farmland birds, with some species declining by up to 90% over the past 25 years.

¹⁵ EMDA, *The Rural East Midlands in 2007 Summary Report*.

¹⁶ David Stocker, *England's Landscape – The East Midlands*. English Heritage 2006.

¹⁷ East Midlands Regional Assembly and East Midlands Biodiversity Forum, *Putting Wildlife Back on the Map – The East Midlands Biodiversity Strategy. Consultation Draft*. 2004.

¹⁸ David Stocker, *England's Landscape – The East Midlands*. English Heritage 2006

Change is also evident in the more remote or marginal farmlands of the Peak District, where the loss of flower rich grassland is largely a result of a shift from hay to silage production to provide winter feed for livestock. Elsewhere farmers are shifting from livestock to arable production as a result of the BSE crisis and low milk prices, resulting in the further loss of permanent pastures and grassland¹⁹.

The type and nature of farming has a significant impact on the character of the landscape. Variations in land tenure, available resources, size of holding and the techniques and equipment used to farm the land all influence patterns of land use, as well as the type of field boundaries and how they are managed and maintained. Similar variation can be seen in the type of buildings needed to house machinery or stock or to store grain and produce. For example, across the intensively farmed fenlands, the extensive areas of flat or gently undulating land are well suited to arable and vegetable farming. The local landscape is therefore managed accordingly, with large-scale 'industrially farmed' fields, with few dividing hedges, sown annually with crops and harvested using large-scale machines that are housed in modern sheds. Such a farming regime creates an open landscape that retains an exposed, sometimes bleak, and managed character.

By contrast, in the Undulating Mixed Farmlands of Northamptonshire and Leicestershire wide variations of slope, aspect, drainage, and soil productivity have led to a mixed farming regime, where small, hedged arable fields mark well drained areas, and improved pastures indicate the presence of steep or poorly drained areas bordering rivers and streams. Here, landform combined with the enclosing effects of hedgerows and smaller field sizes, creates an altogether more intimate and 'traditional', rural landscape.



Intensively farmed Fenlands of Lincolnshire (© J Watson)



Undulating Mixed Farmlands of Northamptonshire (© River Nene Regional Park/M Williams)

Parklands

Beyond the agricultural landscape, a number of other land uses have a significant influence on the character of the region's landscape. Parklands and their wider estates are particularly notable and can be observed throughout the region. Many fine country houses were built and parklands, including deer parks, were laid out during the post medieval period, although many have their origins in the estates established in the Saxon or Norman period. In many cases, the influence of the designer or owner was taken far beyond the boundary of

19 *East Midlands Regional Assembly and East Midlands Biodiversity Forum, Putting Wildlife Back on the Map – The East Midlands Biodiversity Strategy. Consultation Draft. 2004.*

the park with avenues of trees stretching for great distances through the surrounding countryside, and trees planted and monuments constructed on prominent hills or important locations. Villages were also demolished and rebuilt and distinctive architectural styles employed in the construction of estate villages, giving unity and strength of character to many settlements in the region.

Water and Wetlands

The East Midlands is largely defined by its rivers: the Trent in Nottinghamshire, the Derwent in Derbyshire, the Soar in Leicestershire, Nene in Northamptonshire and Witham in Lincolnshire being central to the identity of these ancient counties. In addition to being the main communications channels, the river valley corridors have been the focus of habitation throughout history and as such, rich in evidence of past settlement and industry. They are also the focus of the region's biodiversity interest with many of the most significant nature conservation sites outside the Peak District and The Wash located in river valleys or wet areas. Artificial wetlands are also important to defining landscape character and for their wildlife and recreation value, whether these are canals, reservoirs or flooded gravel pits. Overall, there is a paucity of wetland sites within the region with a need to re-create wetland habitats where appropriate.

Forestry and Woodland

The region is characterised by lowland mixed deciduous woodlands, alder and willow wet woodlands along river valleys and wetland areas, and upland ash and oak woods in the Peak District as well as a number of coniferous plantations.

Woodland cover in the region is 5.1% of the land area, as compared to 8% for England as a whole. Ancient semi-natural woodlands account for 20% of total woodland, these tend to be confined to some of the most well wooded areas of the region such as the forests of Charnwood, Leighfield and Rockingham.

Trees, forests and woodlands are frequently identified as key characteristics of several of the region's best known areas. They also play an important role in providing habitat for often numerous assemblages of flora and fauna, as well as having a recreational function or contributing to the perceived health or intactness of a landscape. Many woodlands, and notably ancient semi natural woodlands and veteran trees, are also widely cherished as features of the region's cultural heritage. Increasingly, woods and forests are seen as a source of renewable materials and sustainable energy and as an important component in the regeneration of former industrial sites or degraded landscape.

Many woodlands in the region are designated on account of their habitat value. Notable examples include the Peak District Dales woodland and the Birklands and Bilhaugh woodlands in Sherwood Forest which are of European importance.



Birklands and Bilhaugh Woodlands in Sherwood Forest, Nottinghamshire
(© P Wakely)

In some areas, such as the fens or lowland vales, forests and woodlands are largely absent, save for small copses and shelter belts. Here, hedgerows and hedgerow trees are important landscape features, particularly older and more characterful specimens, which act as wildlife havens, or simply as vertical elements in otherwise open agricultural landscape.

The creation of new woodlands is also a feature of the region, with several major initiatives. These include The National Forest, Greenwood Community Forest, Sherwood, Rockingham and East Derbyshire Woodlands, and are helping to redress regional deficiencies in woodland cover and contributing to a national programme of multi-purpose woodland.

Biodiversity

The East Midlands, like the rest of Britain, acquired most of its present day species of flora and fauna by re-colonisation following wholesale extermination during the Pleistocene ice ages. At intervals land connected southern England with continental Europe and these areas served as refuges for plants and animals, which were later to spread back into Britain as the ice and tundra conditions receded northwards.

Following a period when only cold-tolerant species could survive, warmer wetter weather allowed the formation of the 'wildwood'. This was the natural environment that Mesolithic hunter-gatherers began to manipulate and domesticate between 10,000 and 5,000 years ago. These communities are thought to have been nomadic, occupying seasonal hunting camps, and were the first agents of landscape change. Despite their high mobility, evidence suggests that areas of wildwood were burnt to create clearings for more efficient hunting.

Since the adoption of settled agrarian lifestyles from approximately 4,000 BC, more rapid and pronounced change to the natural environment occurred. The Neolithic period saw the first significant removal of woodland to allow for lifestyle changes dependent on settled farming. The native wildwood was progressively removed along with the extinction of numerous native species, often through hunting, and the introduction of competing non-native species of plants and animals by new peoples settling in Britain. In more recent centuries, plant hunters and explorers have brought back exotic species primarily for private parks and forestry planting

The long history of settlement and farming in the region has removed all trace of what can be regarded as a wholly natural habitat, and has significantly limited the extent of areas of semi-natural habitat.

The intensification of farming practices since the Agricultural Revolution, and most significantly from the latter half of the 20th century, has had a profound impact on the extent and resilience of semi natural habitats. The result is that the region has the poorest biodiversity in the country²⁰. Despite this, the East Midlands Region contains some fine semi-natural habitats. Examples include The Wash, where wide areas of coastline and open water are designated as a Ramsar site in recognition of their international importance, and the South Pennine Moors in the Peak District which are recognised as being of European importance and designated as a Special Protection Area (SPA) and Special Area of Conservation (SAC).

Protected sites, such as Sites of Special Scientific Interest (SSSI) cover only a small area of the East Midlands (approximately 4.5%), which is significantly lower than the national average of around 7%. Of the SSSIs, by area, 95.75% are recorded to be in a favourable or recovering condition (Natural England, 2010). In addition to these nationally protected sites, there are many non statutory sites that are afforded protection at the county and local level, including many Local Wildlife Sites. Whilst it is acknowledged that biodiversity has declined nationally, the East Midlands has probably lost more wildlife than any other region. However, recent activity through Local Biodiversity Partnerships across the region is working positively to help reverse this decline.

²⁰ East Midlands Regional Assembly and East Midlands Biodiversity Forum, *Putting Wildlife Back on the Map – The East Midlands Biodiversity Strategy. Consultation Draft. 2004.*

3.2.5 COASTAL AND OFFSHORE LANDSCAPES

The assessment of coastal and offshore landscapes has benefited from analysis of several data sources. Figure 13 illustrates information concerning offshore geology. Bathymetry (water depth) is illustrated on Figure 14.

The Lincolnshire coast, stretching from the Humber Estuary to The Wash comprises a range of land use and habitat types. It is also a popular destination for tourists and holidaymakers, particularly close to the key destinations of Mablethorpe and Skegness.

In the north, the wide shore is characterised by sand and shingle banks and beaches, together with extensive salt marsh and sand dunes. The dunes are noted for the common occurrence of lyme grass, with Lincolnshire alone holding 26% of the national total of lyme grass foredunes.

Other important habitats include coastal scrub, used extensively by migrating birds for food and shelter, and saline lagoons, where man-made brackish water habitats are important to migratory and overwintering birds.

The Wash is characterised by vast areas of salt marsh, sand banks and mud flats and is designated a Ramsar site, Special Protection Area and candidate Special Area of Conservation. It supports internationally important overwintering bird populations and several nationally important plant communities.

Sea levels in the North Sea are rising, in part as a result of global climate change. Wide areas of farmland are protected from the sea by heavily engineered sea defences, which require regular and costly maintenance. Sustainable approaches to coastal management have recently been employed, with the largest scheme in England having been delivered by a partnership of several parties including Defra and the Environment Agency. Near Boston the defences have been deliberately breached

as part of a controlled and coordinated process. By allowing the sea to flood farmland areas, the encroaching sea will encourage the formation of salt marsh, which acts as a natural barrier absorbing the force of the sea.



Duck Point, The Wash Site of Special Scientific Interest, Lincolnshire
(© P Wakely)



Freiston Shore Realignment near Freiston, Lincolnshire
(© Lincolnshire county Council/J Watson)

In the open sea, a range of commercial activities are evident, including fisheries targeting cod, sole, herring, plaice and sprat, and aggregate extraction. Also evident are offshore wind turbines, albeit at some distance from the coast and major navigations, notably those entering the Humber estuary.

3.3 CULTURAL INFLUENCES

As has been demonstrated previously, all landscape in the region is a direct result of the interaction between humans and their environment, albeit influenced by the physical environment and availability or scarcity of natural resources.

Varying qualities of the region's soils, fisheries, building stone and timber and availability of coal, metals, aggregates, brick clay and water power have influenced the development and distribution of industry, agriculture, woodland, rough ground, settlement and infrastructure, all of which are key elements defining the character of the current landscape. Certain events and activities have left more visible traces than others. For example, hundreds of years of Anglo Saxon settlement, agriculture and ritual are largely invisible to those unaware of the strong relationship which current patterns of settlement and communication routes have with this period, whereas Neolithic and Bronze Age burial monuments, such as those of the Peak District, are a tangible and evocative remnant of the ancient past.

Landscape survey, landscape history, historic landscape characterisation, aerial photography and systematic excavation in advance of development all contribute to our understanding of the landscape's development. Through them we see that the East Midlands region has as complex and intriguing a landscape history as anywhere else in Britain. Whilst much remains to be learnt, a great deal can already be said about the evolution of the region's landscape.

3.3.1 PALAEOOLITHIC AND MESOLITHIC (C.500,000- 9,000 BC)

Palaeolithic culture flourished during the Pleistocene geological period when glaciations were interspersed with long periods of more hospitable climate and when humans followed herds of grazing animals into the area that is now the East Midlands. Stone tools and remains of animals found in

the caves of Creswell Crags, a limestone gorge honeycombed with caves and smaller fissures, provide evidence for life during the last Ice Age (between 50,000 and 10,000 years ago) including Britain's only known Ice Age rock art. Elsewhere assemblages in the gravel deposits of rivers such as the Nene and Trent provide tantalising evidence of communities who roamed across wide areas, exploiting various habitats and seasonal gathering and hunting grounds.

As the last Ice Age ended around 8,500 BC the glacial ice sheets that stretched over much of the north of England retreated. Sea level rise separated Britain from the Continent and large areas once occupied were inundated by the North Sea. The spreading woodland would have been dominated by birch at first although in time a 'wildwood' of climax species (dominated by oak) developed. The wildwood's character is subject to debate; some support the idea of a shifting mosaic of grazed clearings and wooded areas rather than dense and intractable forest with unwooded areas restricted to particularly steep slopes, rock outcrops or unstable features such as river banks.

Nomadic Mesolithic communities moved through the region's hills and valleys establishing seasonal hunting camps in these woodlands and exploiting migrating herds of large herbivores. Scatters of flint indicate the location of temporary hunting camps. More sophisticated tools and food procurement practices meant that Mesolithic peoples were the first significant human agents for landscape change. Areas of the wildwood may have been burnt to create clearings attracting grazing animals such as red deer.

3.3.3 NEOLITHIC, BRONZE AGE AND IRON (C.4,000BC - AD43)

The change from Mesolithic hunting and gathering towards settled agrarian lifestyles was gradual and influenced by contact with the continent rather than imposed through colonisation of Britain by farming communities. The Neolithic transition

produced new artefacts: querns, sickles, pottery and polished stone axes. Environmental evidence shows how changes in food procurement practice were accompanied by large scale woodland clearance and the introduction of domesticated sheep, cattle and cereals.

As for the Mesolithic, Neolithic settlement sites are difficult to identify in the region though a study in central Kesteven has revealed a fully occupied Neolithic countryside comprising various types of site. Neolithic ritual and religious remains are more visible and are enigmatic reminders of our ancient past. Some, such as the Arbor Low henge circle in Derbyshire, formed parts of extensive ritual landscape; others, then as now, were single features in an agricultural landscape. Many retained importance for several generations, attracting later burials, or being visual markers of territory boundaries.



*Aerial view of henge monument at Arbor Low, Derbyshire
(© Derbyshire Constabulary)*

Woodland clearance accelerated in the Neolithic and Bronze Age as farmland and open rough grazing were established. Such extensive land clearance destabilised the soil which was washed into rivers and streams, as confirmed and dated by silts in the Fens deposited during a short intense period of freshwater sedimentation from the Ouse, Nene and Welland rivers in the mid third millennium BC. By the early Bronze Age ditched and hedged enclosures, divided by droves leading to seasonal grazings, and interspersed with family farms parcelled up

large areas of the fen-edge landscape for pastoral farming. On the lighter Peak District soils enclosures may have been predominantly for arable farming. The extensive remaining woodlands would have been increasingly managed for coppice and other resources.



Henge monument at Arbor Low, Derbyshire (© English Heritage/J Humble)

The climate deteriorated in the later Bronze Age (after about 1000 BC) obliging Derbyshire upland settlement to contract to the valleys, causing farmland to revert to scrub; peat formed on the waterlogged soils. Fenland water levels rose, forcing slow abandonment of seasonal grazing and increasing reliance on the more elevated cereal growing land. Late Bronze Age populations may have declined, with a new social hierarchy emerging to exploit a period of crisis, perhaps providing protection in return for agricultural produce. This continued in the Iron Age as increasing competition for land and resources speeded the development of a more territorial society in which many settlements were nucleated, as observed through cropmarks in Lincolnshire and Leicestershire. Some were defended. Hill forts, whether military or symbolic, occupied strategic prominent locations for maximum effect; a concentration of sites can be found in northern Derbyshire.

3.3.4 ROMANO BRITISH PERIOD (AD 43 - AD 410)

In the East Midlands, as for much of England, the Roman invasion was rapidly followed by centralised administration based on towns supported by networks of forts and metalled roads. Although much of the pattern of rural settlement and farming continued, the new towns had a profound and lasting influence on local native communities. The market infrastructure enabled farmers to capitalise on surpluses, and in the early Romano British period produce from the region was probably transported around the Empire.

Roman archaeology in the region is rich; towns, forts, several impressive villa sites and engineering schemes, the latter including the Carr Dyke, the first drainage structure to be built in the Fens. Several modern communication routes such as the Fosse Way and Ermine Street and some modern urban street patterns have Roman origins.

The Empire declined during the 4th century and by the mid 5th century, direct Roman rule had been replaced by local governance. The armies had left, much of the Roman infrastructure was falling out of use and the economy was largely agricultural.

3.3.5 SAXON AND EARLY MEDIEVAL PERIOD (AD 410- AD 1066)

Shortly after the decline of Roman control in Britain, Angles, Jutes and Saxons began to invade and settle the East Midlands. Evidence for early Saxon settlement is relatively sparse, largely due to poor quality pottery and the use of wood for building. There may also have been fewer people living in the area during the Saxon period than in the Iron Age.

Despite this, and in contrast to north western and south eastern England where significant woodland regeneration is evident, wide areas of Romano-British field systems continued to be farmed in the East Midlands albeit with increased pasturing.



*Earls Barton Church Tower, Northamptonshire
(© River Nene Regional Park/M Williams)*

Woodland did remain important to the rural economy throughout the early medieval period, although it is interesting to note that the 'Central Province'²¹ had relatively less woodland than other provinces, mirroring the current situation. There were, however, important tracts of forest, subject to careful husbandry and fully populated with livestock, notably pigs, and perhaps under the nobility's direct responsibility. Centralised control allowed policing of scarce resources and also maintained these areas as royal hunting grounds. Forest names attest to this: Sherwood, 'Shire Wood', was in the ownership of an arm of the royal government and the Peak was 'the forest of Pecsætan', a Saxon sub-kingdom. Similarly, the Fens were another scarce resource subject to centralised control, this time by royal monasteries.

The origins of Christianity within the region are unclear but another notable feature of the East Midlands landscape are the Saxon churches and monastic sites. At a time when most buildings were simple timber structures, the stone religious buildings would have gained a symbolic permanence in the landscape.



Brixworth Church, Northamptonshire
(© River Nene Regional Park/M Williams)

Parish churches accompanied changes in land holding from the 9th century onwards. Hundreds of the region's churches were first built in the Saxon period and although Norman and later rebuilding expansion and alteration has often removed all visible traces of their origins, the East

Midlands retains some of England's most important Saxon churches; Brixworth and Earls Barton in Northamptonshire are two fine examples.

The period also saw major reorganisation of agriculture, which had since the Late Bronze Age developed in a land of ditched enclosures surrounded by fences and hedgerows. Homes and farms had been scattered, suggesting that land was probably individually owned. Conversion to farming in common during the late Saxon period meant that farmers pooled their activity and coordinated where, what and when things were done. An individual's land was held in long unenclosed strips in each of the community's large common fields. Stock was also managed communally, and set to graze the marginal heaths and the common fields when not under the plough. Houses could no longer be scattered, but instead were nucleated into a single place, the village, allowing or necessitating creation of other communal facilities: a green to gather stock; a market to trade and exchange goods; a church for communal worship; and an alehouse.

In Lincolnshire, a distinctive pattern of towns and villages (the Townlands) grew in an arc of higher ground around The Wash. Clinging to gravel and clay islands, they were surrounded by predominantly pastoral fields, and linked by droves which followed dykes.

Place names are perhaps the most direct link to Early Medieval settlement patterns in the region. Most traces of these settlements have been removed or covered by subsequent development and place names are often their only remnant. Early Saxon dispersed settlements are evident in names ending with 'ing' (the village of the followers of a leader), 'tun' or 'ton' (a farm or enclosed land), 'ham' (a dwelling or homestead), 'stoke' (an outlying farm), 'leigh' or 'ley' (a clearing in woodland). 'Haw' indicates a burial mound or hill and 'stow', a sacred place. Names also indicate areas where Vikings either settled or had sufficient influence to affect how places were known: 'thwaite' (woodland clearing), 'thorpe' (outlying farm or settlement) and 'by' (homestead or village).

3.3.6 LATER MEDIEVAL AND EARLY MODERN PERIOD (AD 1066 – 1750)

Following Harold's defeat at Hastings in 1066, William the Conqueror allocated confiscated lands to his followers. Fine examples of strategically located motte and bailey castles can be found at Laxton (Nottinghamshire), Egmanton (Nottinghamshire) and Hallaton (Leicestershire). Later castles, and cathedrals, were built in stone, demonstrating the new elite's dominance and power.



Motte and Bailey at Hallaton, Leicestershire (© English Heritage)



Motte and Bailey at Laxton, Nottinghamshire (© English Heritage/J Humble)

Meanwhile the organisation of the East Midlands rural landscape continued relatively unchanged. Growing populations stimulated new villages with new open fields, generally in areas already well settled. Elsewhere, in areas like Charnwood Forest and the Northamptonshire Clay Wolds, populations grew less rapidly. To accommodate growth, many villages expanded into the surrounding open fields. In Lincolnshire, several formerly discrete settlements grew together during the 11th and 13th centuries to form single but polyfocal villages, such as Lindsey, Silkby and Willoughby Kesteven, some of which retain more than one green.

Population growth also necessitated extension of the area cultivated. Between the 11th and 13th centuries some common woodlands, beyond the common fields, were cleared and enclosed in a process known as assarting that created a small-scale and intimate landscape of farms and hamlets linked by winding lanes and irregular fields between patches of surviving woodland. Other new communities were established on heathland, on the edge of moors and within royal woodlands.

The Medieval period was one of prosperity, wealth and economic diversity. Local trades included tanning, cooperage, brewing and baking. Streams were dammed to harness water power for fulling and corn mills. Fishing continued in the rivers and in the Forests, trees were felled, oak bark was stripped for tanning and wood was burned to produce charcoal. Rapid population growth led to increased demand on productive agricultural land.

During the early 14th century the East Midlands, like much of England, experienced profound change. Two key drivers were development of an international wool market, and a fall in population, caused in part by the plague (the Black Death) which first arrived in England in 1348. Much arable land was converted to sheep pastures that required fewer people to manage than the intricate regimes of the common fields. The changes are clearly seen as the ridge and furrow of the common fields, the humps and bumps of deserted villages and the elaborate churches and merchants' houses built on the profits of the international wool trade. Lincoln also prospered, exporting finished cloth all over Europe.

The landscape pattern from the later 14th century was generally settled, albeit with a continuation of the enclosure of former common land by entrepreneurial families. Wool remained the major export, and when war in Europe affected trade, farmers turned to meat production, especially for London markets. Enclosure of common fields for sheep continued to be widespread throughout the region, sometimes obtained strip-by-strip in gradual or piecemeal enclosure. Thus came many of the now familiar single farms set among pasture fields, where once were communally farmed strips of the common fields.

Reclamation of Lincolnshire's coastal marshes and fens gathered pace during this period. Some reclamation was either Roman or Saxon, but from the 16th century drainage was undertaken on a much more massive scale. Cutting of 'drains' and raising of coastal embankments saw large areas come into agricultural use. The increasingly large scale and ambitious schemes of later centuries included longer, straighter drains. Wind pumps were common by the 18th century as the inadequacy of gravity drainage necessitated their construction.

As early as the 13th century, the aristocracy was enclosing hunting grounds with park pales, creating discrete areas managed for the benefit of the chase animals, especially fallow deer. Standard trees in groups, varied undergrowth, clearings (lawns) and lodges and a degree of ornamentalisation were features of medieval parks. In later centuries emparked areas saw the introduction of permanent residences, pleasure grounds and elaborate gardens.

The humble wattle and daub cottages, a feature of villages and farms for several centuries, were replaced by substantial stone buildings, roofed in thatch or slate from quarries such as at Collyweston. Where stone was not readily available elaborate timber frame structures were built. Many of the region's older private residences, in villages and towns, date to the 16th and 17th century period of increased prosperity and private wealth.

The gradual enclosure between 1400 and 1700 of the communal landscape of open fields, commons and woodland for sheep-walks, agricultural closes or parklands, mirrored the growing distinction in society between land owners and the landless. The growing wealth of the emerging middle classes was consolidated in fine town houses and farms while the aristocracy demonstrated their power and wealth through impressive country houses and estates.

3.3.7 INDUSTRIALISATION AND THE MODERN PERIOD (AD1750 -1900)

Between 1750 and 1850 the East Midlands landscape experienced change on a scale not seen since the late Saxon period as a result of widespread and rapid industrialisation and the growth of a property owning democracy.

Building on the process of piecemeal enclosure by private landlords begun in the 14th century, Parliament facilitated a wave of reorganisation through more systematic enclosure. Land was parcelled up into a patchwork of fields, defined by hedgerows and dry stone walls. So complete was this period of enclosure that only one example of the medieval system survives. Common field farming continues to this day at the Nottinghamshire village of Laxton.

Enclosure edged many people out of rural society at a time when a market-orientated society was rapidly developing. Large numbers left the land to find work in manufacturing and service industries in fast expanding towns, cities and factories. Water power drew the earliest factories to valleys where reliable energy could be secured. The Derwent Valley in Derbyshire, the 'cradle of the factory system', and now a World Heritage Site, contained several factories and associated infrastructure and workers' accommodation.

Steam power allowed more flexibility in factory location from the 18th century, enabling industrialisation of the region's other major towns: Nottingham, Leicester and Lincoln. Railways, efficiently transporting coal to boiler and furnace, allowed such towns to prosper and expand, with rows of terraces of workers' houses built, often by factory owners. Welsh slate, again transported by railway, along with red brick, gave the new suburbs a uniform character away from places like the Peak District where readily available gritstone was used.

Growing urban populations required sophisticated sanitation and transport infrastructure. Road, canal, rail and sewage networks expanded and reservoirs were built in the hills to supply the major towns with clean water. The moral and physical health of 19th century urban populations was also catered for through parks, museums and art galleries.

The region's principal manufacturing industries were textiles, leather and boots, and pottery and brick. Stone and gravel were quarried; coal, iron and lead ore mined, iron smelted and lime burnt. Together, these had a profound impact on the urban and rural landscape character of the East Midlands. Whilst much industrial land has been levelled, landscaped or developed, many areas, notably in the Leicestershire and Derbyshire former coalfields retain their industrial character.

The houses and gardens of the elite were often remodelled in the period to follow prevailing fashions or to display complex political or religious ideals, resulting in a rich cultural and artistic legacy. New houses and estates were also established by increasingly wealthy industrialists. Entire villages were sometimes relocated to make room for fashionable new landscaped parks, and were themselves reconstructed as ornamental features.

3.4 CURRENT AND FUTURE LANDSCAPE CHANGE

3.4.1 INTRODUCTION

Change, whether from physical or cultural influences, has always been a feature of the region's landscape. It continues to be so, although there are concerns that if it is left unchecked, the rich and diverse landscape, so cherished by residents of and visitors to the region, will be adversely affected by inappropriate change and development. This is not to suggest that the landscape should remain static, rather that change should be understood in context and managed to bring about positive and sustainable outcomes.

Landscape change is a complex and emotive process. Changes which may be regarded as negative by some may be seen as positive by others and perceptions can change with time. The best example of this arose during the last great episode of landscape change, with the parliamentary enclosures of the 18th and 19th centuries. The 'nature poet' John Clare, a resident of the East Midlands, mourned the loss of the open field landscape and the parcelling up of farmland into a patchwork of hedged and walled enclosures. However, this is the landscape we treasure so much today, regarding a neat landscape of hedged fields interspersed with compact farms as quintessentially English and worthy of protection.

To achieve positive landscape change, it is essential that the communities of the region and those who have control over the main mechanisms for change, are well informed about the diverse character of the landscape and the implications that change can have upon it. The EMRLCA has an important role in this. In addition to presenting a description of the various types of landscape that can be found in the region, the EMRLCA also presents an overview of forces for change acting on each Landscape Character Type and the various mechanisms that can be employed to protect, manage, plan and promote landscape character.

The following pages describe the main forces for change acting on the region today. These are developed in greater detail for the relevant Landscape Character Types in which they occur.

3.4.2 BUILT DEVELOPMENT

The post-war period has witnessed a rural revolution. Increased personal mobility, improvements in public transport provision and advances in telecommunications technology have made some rural areas relatively accessible. These trends, coupled with an enhanced perception of rural life and decline in the profitability of agricultural land, are placing increasing pressures on the countryside to accommodate built development. In parallel with this, existing towns and villages and in particular brownfield sites within them and their undeveloped fringes, are also under considerable pressure to accommodate housing and employment sites.

Housing Provision

The East Midlands Regional Plan March 2009²², contains the most recent housing projections for the region. Based on guidance published by the National Housing and Planning Advice Unit and the Government's Housing Green Paper (2007), the Secretary of State proposes that the East Midlands region must accommodate 452,300 new dwellings during the plan period 2006 – 2026. This represents a substantial increase from the predictions contained within the original Draft East Midlands Regional Plan (2006), and it is likely that up to 40% of these proposed dwellings will need to be accommodated on greenfield land.

The East Midlands Regional Plan aims to concentrate new development in existing urban areas and establishes a target for 60% of new housing to be built on previously developed land. This target has been exceeded in 2006/07; however, there are significant variations between

counties. In 2006/07 over 99% of new development in Nottingham was accommodated on previously developed land, compared to under 30% in the Peak District. The Regional Plan also states that the needs of rural areas should also be provided for, particularly the supply of affordable housing. As such, any new development on greenfield land or in rural communities should seek to respect the distinctive character of the rural landscape and townscape.

In order to deliver the regional housing target, a number of initiatives have been pursued by the Government, which will seek to concentrate development in key areas. North Northamptonshire and West Northamptonshire form part of the Milton Keynes and South Midlands Growth Area, one of four areas designated in the Sustainable Communities Plan²³ to alleviate current housing pressures in the South East. Elsewhere in the region delivery will be facilitated by Growth Points, an initiative to provide support to local communities who wish to pursue large scale and sustainable growth. Locations include the '6Cs Growth Point covering Leicester, Nottingham and Derby, Lincoln, Grantham, Newark on Trent and Gainsborough. There is also potential for new 'eco' towns or settlements in the East Midlands. Several proposals have already been put forward in the region and the Government has indicated that further consideration will be given to future proposals.

The East Midlands Regional Plan: Partial Review – Options Consultation²⁴ was published at the end of June 2009, setting out a range of options and questions on a number of key issues with the aim of accommodating long term projected development growth in the region up to 2031.

Whilst the proposals for Growth Points and new 'eco'-towns or settlements are intended to deliver sustainable development, there will inevitably be some loss of greenfield land and change to the character of the landscape. Green Infrastructure (GI)²⁵ associated with major growth has the potential to bring about environmental

²² East Midlands Regional Plan (2009) – http://www.gos.gov.uk/497296/docs/229865/East_Midlands_Regional_Plan2.pdf

²³ Sustainable Communities: Building for the Future (2003) - <http://www.communities.gov.uk/documents/communities/pdf/146289.pdf>

²⁴ East Midlands Regional Plan: Partial Review – Options Consultation (2009) - <http://www.emra.gov.uk/files/partial-review-options-consultation.pdf>

²⁵ Green Infrastructure for the East Midlands - <http://www.emgin.co.uk/default.asp?PageID=51&n=GIN+Links>

enhancement and strengthen local landscape character. However, like built development, GI planning needs to be considered and designed for its local context. In conjunction with the 6Cs New Growth Point, a Strategic Green Infrastructure (GI) Strategy for the 6Cs Growth Point has been developed setting out priorities and opportunities for action and mechanisms for funding. The Lincoln GI Strategy has also been developed as part of a strategic approach to GI implementation.

In addition to the 'planned' growth described above, incremental growth within and on the fringes of existing towns and rural settlements is also occurring across the region. Such developments can result in a loss of distinctiveness and diminished sense of identity and historic settlement character. However, such developments can also provide opportunities to enhance the appearance of the region's towns and villages, particularly at the urban rural interface, through careful consideration of landscape and townscape character and historic settlement patterns to help mitigate the impact of development. Developers should also be encouraged to consider locally distinctive building styles, use of materials, massing and layouts. Whilst the intention would not necessarily be to replicate the prevailing vernacular style, it may help to initiate a creative and sustainable local response which enhances, rather than dilutes, local distinctiveness. There should also be a place for the use of innovative architectural solutions that take inspiration from local distinctiveness and character whilst utilising eco-friendly and high quality design.

Employment Provision

New employment provision is essential to the future prosperity of the region. The Regional Economic Strategy (RES), produced in 2006 by the East Midlands Development Agency (EMDA), sets out a range of actions to promote a competitive regional economy. Regeneration activity is generally focused on areas that exhibit high and concentrated levels of deprivation, including those areas in the Northern sub-region linked to the decline of the coal and manufacturing industries.

A number of regional studies into employment land have been undertaken in recent years by the East Midlands Regional Assembly (EMRA) and EMDA, and have since been updated and extended by the Regional Employment Land Supply Study (RELS)²⁶ in 2006. The study forecasts relatively little demand for additional employment land in the region. This is largely due to the shift away from industrial space into offices, which occupy space at a higher density, and the relative oversupply of suitable sites.

The focus of regeneration activity on existing communities and the low demand for additional employment land means that employment provision is likely to have a lesser impact on landscape character than new housing. Nevertheless, where there is a concentration of commercial and industrial activity, such as large scale distribution sheds and industrial development, particularly adjacent to the major road networks and on the fringes of urban areas, these will continue to have a significant impact on the landscape.

Despite this, careful consideration needs to be given to ensuring all new development is carefully sited, planned and designed. Issues of tranquillity and perceptions of remoteness should be considered as well as ensuring important or valued landscape features are not lost or adversely affected by new development. In relatively deprived communities, particularly in locations blighted by former coalfields, regeneration activity has a significant role in enhancing landscape character. However, proposals for further development should be carefully considered against the capacity of the landscape to accommodate change and the need to protect features of the area's industrial past.

Consideration should also be given to the acknowledged role that landscape plays in attracting new investment, helping businesses retain a skilled and motivated workforce, stimulating regeneration and raising land and property values.

²⁶ *Regional Employment Land Supply Study (2006)* - <http://www.emra.gov.uk/files/file1040.pdf>

3.4.3 INFRASTRUCTURE

The term 'Infrastructure' has been used to describe the underlying framework of features and systems serving an area, such as transport and telecommunications that are deemed essential to the stability and future growth of the East Midlands.

Transport Infrastructure

The East Midlands, along with the South West Region, has seen the highest growth in traffic in the UK between 1995 and 2006, with an increase of 21% on major roads²⁷. Furthermore, the Government's Transport White Paper²⁸ forecasts that personal motor travel and road freight in the UK will continue to increase, with traffic levels expected to increase by 40% between 2000 and 2025.

The Transport White Paper emphasises that while there is a growing demand for transport, providing more capacity on our roads and railways, it is not a long term solution as the damage to the country's environment, including landscape character, would be unacceptable. Transport based policies in the Regional Plan therefore generally encourage development of sustainable transport modes, reducing the need for travel and improving opportunities for walking, cycling and public transport. However, this does not exclude proposals for new transport infrastructure and a number of major road/rail improvements projects are identified, along with proposals for several new bypass schemes. Some schemes, such as improvements to the A46 between Newark and Widmerpool, have already been approved and are under construction. In particular, traffic and congestion is a problem in and around the Three Cities Sub-Area (Nottingham, Leicester and Derby) and funding has been allocated to investigate improving roads and public transport in the sub region.

Potential future expansions may also be considered at the East Midland Airport. Such development may increase the overall footprint of the airport and associated transport infrastructure, as well as increased noise and lighting associated with aircraft movement. Any improvements will need to be carefully considered in relation to the potential impact on landscape character.



M1 Motorway through Charnwood Forest, Leicestershire
(© Leicestershire County Council)

The Regional Plan also makes provision for five new strategic distribution centres at several locations across the region. While priority will be given to rail-based sites these will operate at inter-modal terminals and will require good access to the highway network. These major infrastructure projects could potentially have significant impacts on landscape character and historical resources and need to be planned, designed and managed carefully.

Minor road improvements can also affect landscape character, especially in rural areas. In particular, the insensitive use of kerbs, road markings, street furniture and signs all bring a degree of standardisation to the countryside, which can erode distinctive features of local character.

It is not only the character of the terrestrial landscape that is influenced by a growing demand for transport. The Southern North Sea, the area

of sea off the Lincolnshire coast extending from Flamborough in the north to Dover in the south, contains some of the world's busiest shipping lanes²⁹. The continued growth of the petroleum industry in particular, has had a significant effect on shipping, increasing the number of vessels passing through the area. Shipping can have a significant impact on tranquillity and visual amenity, especially around main fishing ports. There is also increased risk of environmental damage from additional vessels. However, shipping is responsible for a relatively small proportion of all marine pollution in the UK, with much of the pollution being traced back to centres of population and industrial and agricultural operations.

Transmission Lines and Communication Masts

Overhead transmission lines and communication masts can impair views and visual amenity. The Government has published a draft for consultation on a new national Policy Statement on the future development of the nation's electricity transmission network for new electricity lines with a voltage of higher than 132 kilovolts (kV), and which could result in growth and reinforcement of electricity transmission lines. Work is ongoing to identify solutions which will allow the creation of a network which facilitates the achievement of Government's energy and climate change policy in an economic and efficient manner. This includes the achievement of the 2020 renewable targets as well as ensuring that electricity supply remains secure and affordable.

In the absence of regional or sub regional guidance or specific development proposals, it is not possible to determine the full impact of new transmission lines or masts. However, they can have an urbanising effect on areas which are remote and rural in character. Careful consideration should be given to siting, potential to underground lines, use of materials and shared use of infrastructure in order to minimise adverse effects.

As major transmission lines often extend across the region, there is potential for the development of a strategic regional and sub regional approach and guidance to accommodating new transmission lines. In view of its regional perspective, the findings of the EMRLCA could play an important part in helping to inform such guidance.

3.4.4 ENERGY

As described in the East Midlands Regional Energy Strategy³⁰, the Government has adopted a 10% renewable energy target to 2010 and a 20% target by 2020. Renewable energy currently only contributes 1.4% to the region's energy generation capacity, so the East Midlands will need to see a significant increase in renewable technology. The Regional Plan sets targets for renewable energy sources including micro-generation, biomass and wind energy schemes. While micro-generation and biomass schemes have the potential to change the landscape, it is wind energy schemes that are likely to have the greatest impact due to their scale.

The majority of the region's wind turbines are located in Lincolnshire, taking advantage of the coastal winds. The landscape of the Lincolnshire Coast is therefore experiencing the greatest degree of change. The Yes2Wind website³¹ lists eleven onshore wind energy schemes in the county, with a further thirteen proposed (accurate at July 2009). It is notable that the AECOM study commissioned by EMRA³² predicts that two-thirds of renewable energy in the region will come from onshore wind in future, equivalent to 159-310 turbines or 16-30 wind energy schemes by 2031. As targets for renewable energy sources rise, along with obligations on suppliers and subsidies for developers to source a certain percentage of electricity from renewable sources, it seems likely that there will be an increase in wind energy schemes away from the coast in rural and urban fringe areas. Upland areas in particular, which are

29 *The Southern North Sea Marine Natural Area: A contribution to regional planning and management of the sea around England (2004)* - <http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/englands/marinenaturalareas.aspx>

30 *The East Midlands Energy Challenge: The Regional Energy Strategy (2004)* - <http://www.emra.gov.uk/files/energy-strategy-part1.pdf>

31 <http://www.yes2wind.com/>

32 *Faber Maunsell/AECOM. Reviewing Renewable Energy and Energy Efficiency Targets for the East Midlands. Final Report for EMRA. June 2009.*

the windiest areas of the region outside the coast, are likely to be under pressure to accommodate new installations. Whilst wind energy schemes are of obvious benefit in reducing environmental impacts associated with energy production, they have the potential to impact on landscape character including the cumulative impact of intervisible windfarms. Wind turbines and associated infrastructure can also change the perception of scale in the landscape and sense of tranquillity and remoteness.

In view of the increasing pressure for the establishment of wind energy schemes in the region, both onshore and offshore, a regional and sub regional strategic guidance to accommodating commercial wind energy in the region would be helpful. The findings of the EMRLCA can have an important role in helping to inform such guidance as a result of its regional approach and perspective.

In relation to the Peak District National Park, a Peak Sub Region Climate Change Study was published in 2009,³³ focusing on the capacity and potential for renewables and low carbon technologies, and incorporating a landscape sensitivity study of the area.

Small scale wind initiatives are also an important consideration. As technology improves and the cost of implementation falls, there is likely to be a growing demand amongst private land holders and communities for micro-generation. The incremental effects of such developments will require careful consideration.

In addition to wind energy schemes, the region is pursuing a range of initiatives to reduce energy demand and consumption. Priorities include:

- Reducing the need for energy;
- Using energy more efficiently;
- Using energy from renewable sources; and
- Making clean and efficient use of fossil fuels.



*Wind turbines near Depping St Nicholas, Lincolnshire
(© Wash Estuary Strategy Group/A Lambert)*

Of particular relevance to landscape character is the use of biomass from forestry residues and energy crops, all of which are a major resource in the region. The production of energy crops in particular can dramatically change the landscape; this is discussed in more detail under the heading 'Agriculture, Land Management and Fishing'. There are also a number of sites considered suitable for small scale hydro and solar energy production.

In relation to the seascape, the British Wind Energy Association (BWEA) website³⁴ lists two existing offshore wind energy schemes and a further two under construction, approximately 5km from Skegness. The Government has also identified the area around The Wash as of national importance for offshore wind power, and a further five sites are awarded i.e. allocated for future development. Furthermore, the Southern North Sea contains a series of gas fields which are licensed for extraction. The process of granting new licences, or the abandonment and decommissioning of existing infrastructure, can have significant impacts on seascape character, marine habitats and visual amenity.

3.4.5 MINERALS AND WASTE

The mineral resources within the East Midlands Region are extensive and varied as a result of the wide ranging bedrock geology as well as superficial deposits. The principal resource can be divided into four main categories. Firstly, energy minerals, principally comprising coal, together with localised and smaller quantities of oil and gas; secondly, aggregates consisting of a range of materials: sand and gravel derived from both superficial deposits and bedrock, and crushed rock from dolostone, limestones, sandstone and igneous rocks; thirdly, building materials: brick clay, building stone, fireclay (building products), roofing slate, cement, and materials for more specialist markets, including pottery and gravestones; and finally, metal and other ores: iron, lead, copper, barite, fluorspar, calcite and calcium carbonate. From a geodiversity perspective, around 60 different minerals have been found in the rocks of Charnwood Forest. In addition to these main categories, smaller quantities of gypsum, high purity limestone, and locally distinctive building stone are extracted and distributed to more specialist markets. Mudstones from the Mercia Mudstone Group have also been extensively worked across their outcrop as a source of 'marl' or clay. This was often used to help improve light gravel soils.

The region has been a major producer and exporter of primary aggregates and high quality minerals for a long period, and continues to make a significant contribution to the UK's mineral production. There are consequences associated with this activity, however. The legacy arising from earlier periods of working, notably the decline of the coal industry, has both physical and social manifestations. There are also current and future effects of the continuing extraction, notably direct changes to the landscape during and after the extraction process, as well as indirect effects associated with the demands on the transport infrastructure particularly in rural areas and on tranquillity. It is notable, however, that around 1,150ha of mineral worked and derelict land has been restored to woodland and other habitats and recreation use in The National Forest.

Energy Minerals

Coal: The region has a long history of coal mining linked to its extensive coal reserves. North East Derbyshire was the region's principal area of coal production, although extraction was also widespread in Nottinghamshire within the concealed coalfield, and also in Leicestershire and South Derbyshire. More recently, the Asfordby Coalfield (Leicestershire) was worked for a very short period. The deep-mine coal industry has seen major contraction since the early 1990s, leaving a legacy of dereliction and removal of formerly widespread infrastructure such as mines, bell-pits, tips, railways and railway yards. Subsequently, large-scale programmes of reclamation of coal spoil heaps and other industrial dereliction have changed the appearance of the landscape, creating an emerging juvenile landscape with a mosaic of new farmland, open spaces and areas of built development. Nevertheless, the legacy of the coal mining industry is of industrial archaeological interest and headstocks such as at Snibston and Pleasley are now designated as Scheduled Ancient Monuments.

The closure of many collieries across areas of Nottinghamshire, Leicestershire and Derbyshire has had devastating impacts on local communities, and proposals seek to develop new industrial or commercial sites as a catalyst for economic regeneration. Examples of regeneration schemes include Markham Vale, an 85 hectare business park centred around the mostly derelict Markham Colliery Site, and the innovative Sherwood Energy Village, a mixed use development that has been established in response to the closure of Ollerton Colliery. The establishment of The National Forest is also linked to the wider regeneration of the coalfield area.

While there are relatively few applications for deep-mine workings, there is continued pressure for open-cast coal mining although overall this has declined. Open-cast mines can recover a greater proportion of the coal deposit than underground methods and are therefore more economically viable. This method can result in significant environmental disruption as well as social impacts unless carefully controlled.

Oil and Gas: Although a more limited resource at a regional level, Lincolnshire, Leicestershire and Nottinghamshire support, or have supported, a number of onshore oilfields which cumulatively make a modest contribution to total output. Welton oilfield, north east of Lincoln, is one of the largest onshore oilfields in the UK; others include Gainsborough, Whisby / Doddinton and Saltfleetby. Methane gas is worked as coal mine methane and abandoned mine methane at four localities in Nottinghamshire. The continuing demand for energy may precipitate further exploration for these resources and hence the potential impact of future sites.

Aggregates

The East Midlands region is both the largest producer and exporter of aggregates in the country dispatching over 50% of the output to other regions.

Sand and Gravel: Sand and gravel extraction is widespread across the region. The Trent Valley is the principal extraction area with quarries located along the valley from south of Derby in a broad sweep extending north eastwards to the region's northern boundary. Quarries are also located within the Trent's tributaries, the Dove, Idle, Soar and Wreake. The Nene Valley in Northamptonshire is also an important source of sand and gravel. In the past, areas of glaciofluvial sand and gravel have been worked for aggregate.

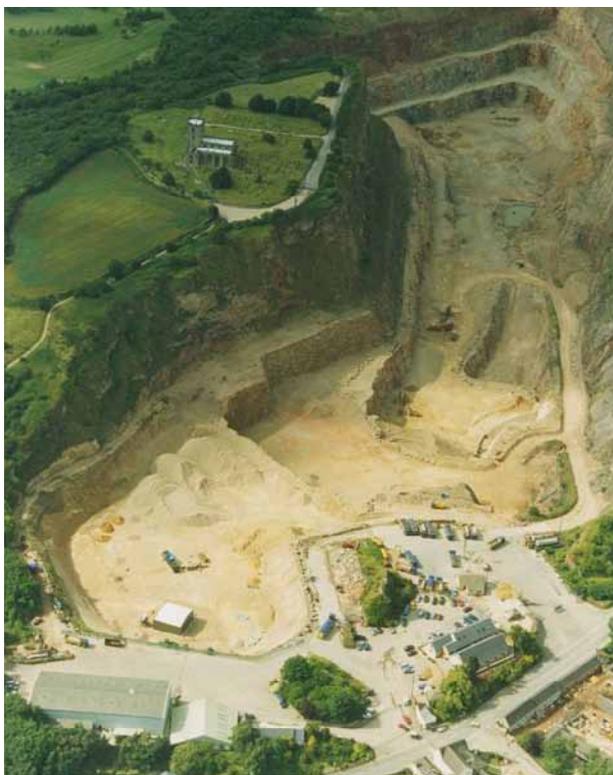
Where workings have taken place in these rivers, much of the floodplain is dominated by active gravel working, the lakes created on former workings and backfilled quarries. Mitigation measures for gravel extraction, often fringed by poplars, do not always suit the character of the landscape; however, in some areas new recreational and nature conservation sites have developed. For example, the lakes in the Nene Valley are now recognised for their exceptionally high biodiversity interest for migrating or overwintering fowl with a number of lakes designated either as SSSIs or SACs.

Sand and gravel extraction also occurs in the Southern North Sea. As pressure on land-based sources continues to increase, there is likely to be an increase in marine dredging for sand and gravel. In addition to the sand and gravel derived from superficial river deposits, the Sherwood Sandstone that outcrops in Nottinghamshire is an important source of silica and has more specialist uses including the glass industry.

Hard Crushed Rock: Crushed rock aggregates output in the East Midlands amounts to 33% of English production. This reflects the availability of suitable hard rocks at or near the surface, coupled with the convenient geographical location of the region.

Igneous rocks are currently extensively worked in and around Charnwood Forest in Leicestershire, producing in excess of 10 million tonnes of aggregate each year. The quarry at Mountsorrel is one of the largest aggregates quarry in the UK. The rocks quarried include intrusive igneous rocks and Charnian volcanoclastic sediments. The crushed stone is exported by road and rail to many areas of England as this is the main source of this type of aggregate.

The region supports a wide range of limestones attributable to the different geological rock formations. Derbyshire and the Peak National Park together produce more limestone than any county in the UK and from some of the largest quarries in Europe. These Carboniferous Limestone quarries are concentrated around Buxton and Wirksworth. Much smaller quarries exploiting the same rock are also found elsewhere in Derbyshire, and in Leicestershire at Breedon Hill and Cloud Hill. Other limestones comprise the 'Magnesian Limestone' in Derbyshire / Nottinghamshire, such as at Bolsover Moor Quarry, and the Ooidal Jurassic Limestone that outcrops in Northamptonshire, Rutland and across Lincolnshire. The principal Jurassic Limestone quarries are worked extensively from Lincoln southwards along the Lincolnshire Edge, into the South Lincolnshire Uplands and Rutland. Chalk is also quarried in the north east of the region, with a notable quarry at Mansgate Hill Quarry. As well as their use as a crushed aggregate, limestones have been quarried for a variety of uses, including cement, building stones and lime.



Quarry at Breedon on the Hill (© English Heritage)

In general, the high demand for aggregates has important implications for the landscape, creating visual intrusion, resulting in the loss of surrounding landscape features, and reducing the sense of tranquillity and remoteness. Abandoned quarry and mining landscapes are commonplace, leaving a permanent mark on the landscape. When land based mineral extraction is complete, restoration of sites can provide a range of opportunities for new uses; however, this can take a considerable amount of time. The sites can form an important geodiversity resource that can be used for teaching at all levels, scientific research and leisure. Proposals for agriculture, forestry, wildlife habitats or recreation can have a positive impact on landscape character, and play an important role in recognising the area's industrial heritage. However, reclamation schemes which introduce permanent structures, infrastructure and facilities have the potential to erode rural character and nature conservation value.

Building Materials

Brick Clay: Many of the mudstone formations in the East Midlands have been worked for brick clay in the past. In many cases, bricks were sourced from a pit dug close to new buildings. Today, the main focus of the industry is in the red and green mudstones, siltstones and sandstones of the Mercia Mudstone Group in west Leicestershire and Nottinghamshire, with Ibstock being the best known. Coal Measures mudstones are worked for bricks in Derbyshire.

Building Stones: A wide variety of hard rocks has been used as building stones in the region. These include the Charnian and igneous rocks of Charnwood Forest, the 'Magnesian Limestone' (Bulwell Stone), the Carboniferous Limestone and Millstone Grit for buildings and dry stone walls, Jurassic Limestones, sandstones and ironstones, notably the Lincolnshire Limestone, Northampton Sand and Marlstone Rock Formations and Triassic sandstones. There are currently no specific building stone quarries open, although some quarries provide it as a sideline and there are operational quarries in Derbyshire with permission for 'block stone' production. With the increasing drive towards the conservation of old buildings and using original materials for repair work, there may be economic incentives for quarries to reopen in the future.

Fireclay: Fireclay has been extensively quarried in the Derby and Swadlincote areas as a source of pottery clay and around Derby, it has been used for china. The Swadlincote industry centred more on industrial pottery such as roofing materials, pipes and sanitary ware. Other historical pottery industries include the Ticknall pottery of South Derbyshire. This industry flourished from the 15-19th centuries and its remains can still be found in the fields around the village.

Roofing Slate: Roofing slate has been quarried in two areas of the East Midlands. Probably the most famous is the Swithland Slate industry in Charnwood Forest. The first recorded working of this industry dates back to Roman times. The industry thrived until the middle of the 18th

century, when with the advent of the railways, cheaper Welsh slate flooded into the area and the industry rapidly died. Also quarried for roofing tiles was the Collyweston Slate. Not a true slate, this is a fissile limestone from the Lincolnshire Limestone. These are one of the most distinctive and familiar features of the historic towns and villages around the village of Collyweston in Northamptonshire. The area where they are found includes North Northamptonshire, South Lincolnshire, Rutland, and north west Cambridgeshire. There is evidence to show that the Romans used it as a roofing slate, with a well organised industry in medieval times. Like the Swithland Slate, the incoming of the Welsh slate marked the end for the industry.

Cement: The East Midlands is an important cement-producing region accounting for approximately 25% of UK output. Cement manufacture occurs at three localities in the East Midlands region, at Hope and Buxton in the Peak District and at Ketton, near Stamford. This latter quarry works the Lincolnshire Limestone Formation as the limestone component and the Rutland and Blisworth Clay Formations as the clay fraction. The quarry boasts the exposure of a complete sequence through the Middle Jurassic of the East Midlands, with the lowermost Upper Jurassic and upper most Lower Jurassic also exposed. Past cement workings were in the basal limestone-mudstone sequence of the Lias Group at Barnstone in Leicestershire.

Gravestones: The Swithland Slate was also extensively used for gravestones and many graveyards in and around Charnwood Forest display fine examples of the stone. Like the roofing slates, its use declined with the introduction of cheaper Welsh slate. Gravestones have also been responsible for yielding the first fossils, comprising burrows, to be found in the Swithland Slate.

Metal, Other Ores and Specialist Materials

Iron Ore: Iron ore has been extensively quarried in the region in two main areas: the Marlstone Rock Formation of Leicestershire and the Marlstone and Northampton Sand Formation of Northamptonshire. These mainly supplied works in Holwell in Leicestershire and the Corby Steel Works in Northamptonshire. The iron production industry in the Corby area goes back at least to Roman times, using charcoal from the Rockingham Forest. Where the ironstone gulleys have not been infilled, they remain a feature in this part of Northamptonshire and many are now designated as SSSIs/SINCs. Small scale extractions of iron ore have also occurred in the Derbyshire coalfield.

Lead: Lead mining in Derbyshire has been traced back to the Bronze and Iron Ages. It is documented from the 12th century and in particular at its peak in the 17-19th centuries. The source of the lead is the Peak Limestone Group (Carboniferous Limestone) in the Peak District, with some very local sources such as at Dimmingsdale in South Derbyshire. Most of the mining was undertaken by the sinking of bell pits. These workings have had a dramatic impact on the local landscape and the lead rakes that are visible today are a tangible reminder of past mining activity.

Gypsum: Gypsum occurs extensively in the Mercia Mudstone Group. Two thick workable seams occur in the Tutbury and Newark gypsums, and are extensively mined and quarried in Nottinghamshire and Leicestershire. .

Other ores worked in the East Midlands include copper; fluorspar, mainly used in the production of hydrofluoric acid; barite, mainly used as a weighting agent for drilling fluids in oil and gas exploration; calcite, used as decorative stone; and calcium carbonate, used as industrial fillers and coatings.

Landfill and Waste

There is a growing movement towards the adoption of sustainable waste management systems, primarily being driven through policy and legislation at the European level, such as the Waste Framework Directive and Landfill Directive. The Regional Waste Strategy (RWS) sets out the priorities and targets for waste management, including zero growth in waste at the regional level, reducing the amount of waste accommodated in landfill sites and increasing the amount of waste recycled and composted. The RWS also establishes current and future trends in the region; waste arisings were estimated to be 25.6 million tonnes in 2004, rising to 39.4 million tonnes by 2020 if recovery, recycling and minimisation measures are not employed.

Considering current legislation and policy, the East Midlands looks set to experience rapid development of waste recovery/treatment infrastructure. Impacts are likely to be minimised by proposals representing extensions to existing industrial areas and waste management sites; however, new facilities can be intrusive in a landscape that is particularly remote and rural in character. New facilities also generate significant heavy goods traffic, placing further pressure on the landscape.

The RWS also indicates that the region has limited capacity in its remaining landfill sites. Should waste management practice continue in its current form, it is estimated that capacity will be exhausted in under 8 years and new landfill sites or extensions to existing facilities will need to be found. While the disposal of waste by landfilling in disused mineral workings provides a means of waste management, the lack of inert waste available for use in the reclamation of gravel extraction pits is a limiting factor. This in turn increases the pressure for restoration to water and wetland features within the river valleys and resultant change in landscape character.

There are conflicts between use of old quarries as landfill sites and the desire to preserve them for their geodiversity, recreational, education and tourism resource value. It should be possible for the relevant organisations to work together to achieve all uses; careful landscape restoration of landfill can, in some cases, improve access to former quarry faces, although each proposal should be considered on individual merits

3.4.6 AGRICULTURE, LAND MANAGEMENT AND FISHING

Over 1.2 million hectares of land is used for agriculture in the East Midlands, accounting for approximately 80% of the region's land use³⁵. Farming is mainly arable with combinable crops (that is, crops harvested by a combine harvester), accounting for approximately 50% of the region's agriculture area. Grassland and forage (pasture) for livestock is less extensive, but still constitutes over 30% of the agricultural area. Nevertheless, there are notable regional variations, for example, Derbyshire supports a much higher percentage of pasture than the regional average. Other agricultural uses, such as root crops, horticulture and fruit are more localised features³⁶.



Pasture for livestock in the Peak District, Derbyshire
(© English Heritage/J Humble)

35 Environment Agency - <http://www.environment-agency.gov.uk/research/library/publications/41157.aspx>

36 State of Farming in the East Midlands (2006)

Agriculture therefore plays an important role in safeguarding the environment, landscape and rural economy; however, the rural landscape of the East Midlands remains under pressure from modern farming practices that threaten to erode local distinctiveness and bring about a degree of standardisation in areas that once were busy and dynamic. Most modern agriculture is based on intensive practices, with an increasing number of farms concentrating on a small number of products to increase efficiency³⁷. The process of intensification and specialisation has led to the loss of landscape features, in particular hedgerows, stone walls, field margins and orchards, and introduction of new features such as large agricultural storage sheds and vast fields of single crops, which has altered landscape and biodiversity character.

Changes in management practices can also threaten the natural environment. For example, pesticide and fertiliser applications can reduce the species diversity of field boundaries, whereas intensive stock rearing can cause soil erosion. Indeed, in upland areas of the region, increased grazing pressure is typical, resulting in the loss and fragmentation of semi-natural grassland, heathland and woodland. In lowland areas of the region, under-management is common, with isolated habitats resulting from intensification, being left to decline.

Farmers are increasingly responding to these challenges with support from Environmental Stewardship; an agri-environment scheme which provides funding to farms and land managers to deliver effective environmental management on their land. In relation to the East Midlands Region, as described by the 'Rural East Midlands' report³⁸, since Environmental Stewardship was launched in 2005, over 500,000 hectares of land has been entered in to the Entry Level Stewardship (basic environmental management, over a 5 year period).

Furthermore, as of July 2006, the East Midlands Region had one of the highest uptake of Entry Level Stewardship in England, second only to the East of England. Examples of projects undertaken in the region include the creation or enhancement of footpaths, hedgerows, dry stone walls and educational access visits.

In addition, over 9,000 hectares of land has been entered into Higher Level Stewardship (HLS), comprising more complex environmental management, over a 10 year period. A wide range of management options are promoted, which are targeted to support key features of the different areas of the English countryside. To further increase the environmental benefits delivered through HLS, Natural England has produced targeting maps, drawing together information on biodiversity, landscape, natural resource protection, public access and historic interests. In the East Midlands, target areas include the Peak District, Lincolnshire Wolds, Sherwood Forest, the Trent Valley, Soar Valley and Charnwood Forest. This will seek to ensure that the most appropriate management activities are undertaken in each area, and contribute to the enhancement of landscape character.

There is likely to be a continued growth in rural diversification, leading to changes in land-use and increased development pressure in rural areas. Indeed, in response to the launch of the Rural Development Programme for England (RDPE) - a new programme to support social and economic development in rural areas, which will run between 2007 and 2013 – EMDA have published the RDPE East Midlands Implementation Plan³⁹. While a variety of projects will be supported, specific targets include investment in renewable energy sources and diversification into alternative or non-agricultural activities.

Support for energy crops in particular is likely to change the agricultural landscape of England, with predictions that biomass crops could cover 20% of farmland by 2040⁴⁰. Under the RDPE grants are available for both Short Rotation Coppice (SRC) and

37 *State of the Natural Environment 2008* - <http://www.naturalengland.org.uk/publications/sone/sections.aspx>

38 *The Rural East Midlands in 2008* - <http://www.emda.org.uk/documents/doclist.asp?action=display&filevar=240>

39 *RDPE: East Midlands Regional Implementation Plan 2007 – 2013 (Draft)* - <http://www.goem.gov.uk/goem/env-rural/reg-rural/ruralprogo713/>

40 *The Future Character and Function of England's Landscapes (2006)*

Miscanthus, both of which are fast growing, tall energy crops. The Department for Environment, Food and Rural Affairs (DEFRA) has developed a set of regional maps identifying opportunities and optimum sitings for energy crops in England. In the East Midlands, much of the region is considered as having high to medium potential, and careful consideration will need to be given to the environmental impacts of such schemes.

In addition to the changing farming practices described above, there is a growing awareness in the region of the multifunctional benefits of the natural environment and the need to take a coordinated approach to land management. The East Midlands Biodiversity Strategy⁴¹ promotes the creation of a green infrastructure network; a range of interlinked urban and rural assets which have a primary or contributory role for biodiversity, but also provide other benefits, such as flood control, climate amelioration and access to the countryside. The East Midlands Soil and Environmental Resource Review⁴² further explores the idea of environmental infrastructure and the link between soil, habitats and landscape. The 6Cs Green Infrastructure Strategy will also add to a suite of studies that are likely to encourage landscape-scale projects, which offer greater potential for landscape protection, planning and management.

In relation to the sea, the East Midlands Region is an important area for fishing activity. In particular, trawling for shrimp occurs along the Lincolnshire coast and in The Wash and dredging for mussels and cockles within the intertidal area of The Wash. While fishing activity is vital for the socio-economic health of fishing communities, it has both direct and indirect impacts on the seascape of the East Midlands, including disturbed seabed and surface sediments, mortality and removal of fish and other non-target species and fishing debris including nets, boxes and buoys. Fishing debris in particular, along with the movements of boats and trawlers, has an impact on visual amenity and tranquillity.



*Fishing boats in Boston Harbour, Lincolnshire
(© Wash Estuary Strategy Group/P Smith)*

3.4.7 FORESTRY AND WOODLAND

The East Midlands Region has approximately 80,000 hectares of woodland. Over 60% of this is broadleaf, less than 20% is conifer and the remainder is mixed woodland and associated habitats. There are almost 6,500 woods over 2 hectares in size in the region and the average woodland covers around 11 hectares. However, as described by The Regional Forest Framework for the East Midlands⁴³, there are wide variations in woodland cover between counties, with 8% cover in Nottinghamshire and just over 3% in Lincolnshire. Furthermore, the East Midlands is the least wooded region in the country with around 5% cover - well below the national average for England of 8%.

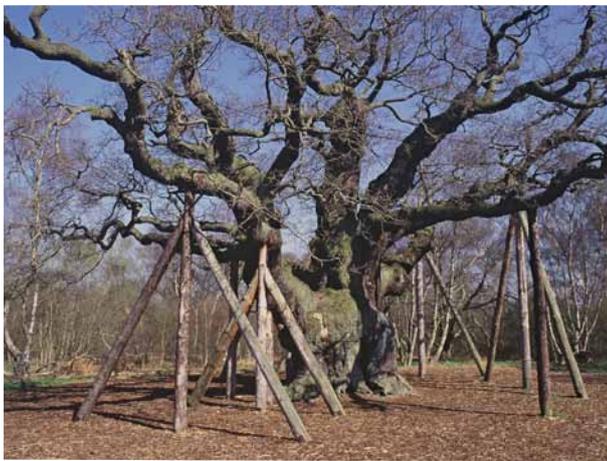
In the past, major efforts have been made to increase the woodland cover of the East Midlands, with over 7,000 hectares planted through initiatives such as The National Forest and Community Forest Schemes. Within The National Forest, 6,000 hectares of woodland has been created, resulting in an increase in woodland cover from 6% to 18%. The Regional Plan continues to promote the creation of new woodlands, highlighting the wide range of social, environmental and economic benefits new woodlands can offer. These are most

⁴¹ *Putting Wildlife Back on the Map: A Biodiversity Strategy for the East Midlands (2006)*

⁴² *East Midlands Soil and Environmental Resource Review (2006)*

⁴³ *Spaces4Trees: The Regional Forest Framework for the East Midlands - <http://www.space4trees.org.uk/>*

likely to be concentrated around urban areas, either as part of new developments or urban expansions, where they can contribute to the development of green infrastructure. Providing they are carefully planned and designed, new woodlands have the potential to positively impact on landscape character, and create well defined urban edges.



Major Oak, a popular attraction at Sherwood Forest Country Park, Nottinghamshire (© P Wakely)

Existing woodlands, such as Sherwood Forest and Rockingham Forest, are increasingly likely to be managed for multi-functional benefits. Similarly, the Charnwood Forest Regional Park Initiative will also provide a focus for multi-functional uses and benefits. Indeed, the Regional Plan states that existing woodlands can make significant contributions to landscape, biodiversity, and recreation, as well as stimulating the economy through tourism, employment and creating an attractive setting for investment. As such, careful management is required to balance these competing interests and guard against damage or fragmentation. The management of ancient woodlands is particularly important, as these typically have long associated heritage and biodiversity interest.

Many incentives are available for planting and managing new and existing woodlands. The Forestry Commission operates the English Woodland Grant Scheme and is supported by the East Midlands Regional Plan. The aim of the

English Woodland Grant Scheme is to sustain and increase the public benefits given by existing woodlands and help create new woodlands to deliver additional public benefit⁴⁴. A variety of grants are also available for farm woodland under the Environmental Stewardship programme, as described under ‘Agriculture and Land Management’.

The East Midlands has an aging population of woodland and trees and a large number of them are being lost to damage and decay. In urban areas, public open spaces and alongside highways, many individual trees have been removed in recent years due to concerns about public safety and liability.

The implications of climate change may also affect woodland and tree cover as a result of pests and disease and a greater degree of stress caused by drought and flood events. However, trees and woodlands also have a valuable role to play in the mitigation of climate change impacts. In the right places they aid the management of surface water run-off and provide shade, shelter and humidity in urban microclimates. They also offer an important alternative source of renewable energy, and Government incentives are available to manage woodlands for short rotation coppice and wood fuel as biomass crops to meet renewable energy targets. This has the potential to significantly change the pattern and type of forestry in the region.

3.4.8 TOURISM AND LEISURE

Tourism includes travel and visits for business, professional and domestic purposes as well as for holidays and recreation. It is a key driver for the regional economy and in 2002 was worth approximately £5 billion to the East Midlands and contributed 3.5% to the region’s GDP⁴⁵. As such the East Midlands Regional Plan proposes growth in the tourism industry to capture the economic benefits and improve the quality of life in the region.

However, many of the areas of the region that are attractive for recreation, leisure and tourism are also important for their landscape heritage, geodiversity and nature conservation interests. Attractions include The Peak District National Park, Sherwood Forest, the Lincolnshire Coast and a variety of historic towns and villages and historic houses and parklands.

There is a need to strike a balance between increasing visitor numbers whilst limiting disturbance and damage to these sites. Furthermore, a large proportion of tourists are also day visitors. As stated in the East Midlands Tourism Strategy⁴⁶, over 90% of visits are day trips, with only 10% staying trips. The large number of day visitors means the environmental impact is also proportionally large, particularly in terms of additional car traffic, and this may have significant impacts on landscape character. Specifically, the Tourism Strategy and the Regional Plan identifies a number of major project opportunities in the East Midlands, and seeks to build upon the environmental and recreational offer of a number of locations, including:

- River Trent;
- Rockingham Forest;
- The Fens;
- The Lincolnshire Wolds;
- The National Forest;
- Charnwood Forest; and
- The 'Welland Vale' – the 'Cotswolds of the East'.

These strategies, whilst of obvious benefit to the tourist economy through increasing visitor numbers, will need to be carefully considered in terms of the tranquillity and remoteness of the existing environment. Increases in traffic, road improvements and car parking, litter, signage and built development may threaten visual amenity and landscape character and the very features of the region that attract visitors.



Opportunities to improve the recreation offer of the Lincolnshire Wolds
(© Lincolnshire Wolds Countryside Service/D Furlong)

Indeed, many areas in the region have already been heavily influenced by existing tourist and leisure facilities. For example, the Lincolnshire coastal resorts account for a large proportion of the region's tourism and are home to large number of amusements, caravan / camp sites and static caravan parks. Elsewhere, the Peak District National Park and Sherwood Forest, and its association with the legend of Robin Hood, are major tourist destinations, attracting large number of visitors and supporting associated shops, attractions and accommodation. The National Forest is also a major visitor destination, attracting over 7.5m people. The Charnwood Forest Regional Park initiative has also been established in recognition of the unique qualities of Charnwood Forest. This non-statutory partnership led initiative recognises the need for the protection and enhancement of the area and for a co-ordinated approach to the development of plans and policies focused on the area.

An increasing emphasis is now being placed on sustainable and green tourism. As described in the East Midlands Tourism Strategy, the region is distinguished by a blend of diverse natural and historic assets. Preserving and enhancing the quality of the environment is critical to the region's future success as a destination, and a 'greenscape' theme underpins the strategy. Indeed high priority is given to habitat enhancements such as the creation of green corridors and woodland screening

along transport routes and adjacent to built attractions. Providing non-car transport alternatives is also a key priority, minimising the number of car journeys and the impact of car parking in sensitive locations, whilst supporting the growing demand for walking, cycling and riding. Such measures will help ensure strategies to increase visitor numbers and/or develop new facilities and infrastructure will avoid significant impacts on the environment.

3.4.9 ENVIRONMENTAL PROCESSES AND CLIMATE CHANGE

The UK climate has varied greatly over time due to natural causes, but human activities, in particular the emission of greenhouse gases from agriculture, industry and waste disposal, are now believed to be causing major changes to the climate. Scientific evidence suggests that it will influence a great many physical, chemical, biological and human activities which have the potential to result in significant changes to the appearance, and therefore the character, of the landscape.

In the East Midlands it is expected to become wetter in the winter and drier in the summer. There will be an increased risk of extreme weather events such as storms, floods and droughts. The UK Climate Impacts Programme (UKCIP) has used computer modelling to predict changes in the climate change in the UK using two different scenarios, one using high emissions of greenhouse gases and the other using low emissions. The model predicts that, if we continue to discharge large amounts of greenhouse gases, by 2050 the following conditions will apply in the East Midlands⁴⁷:

- Annual mean temperatures could rise by up to 2.3°C, with increases greater in the south of the region than in the north;
- Winter rainfall could increase by up to 13%;
- Summer rainfall could decrease by up to 18%; and
- Sea levels on the East Coast could rise by up to 83cm.

And by 2080:

- Average annual temperatures may increase by up to 5°C;
- Winter rainfall may increase by up to 30%; and
- Summer rainfall may decrease by as much as 60%.

The East Midlands Sustainability Round Table published a report highlighting the potential impact of climate change in the East Midlands⁴⁸. Issues of most relevance to the landscape character of the region include:

Built development

- Increased development on land away from locations such as river corridors and low lying areas that are at risk from flooding; and
- Sustainable design and layout of new development to result in less use of water, energy and raw materials.

Infrastructure

- Pressure for renewable energy infrastructure, such as wind turbines, to reduce emissions; and
- Demand for new coastal and riverine defence works in response to tidal surges and high waves.

Minerals and Waste

- Reducing the amount of waste landfilled and increasing the amount of waste recycled and composted.

⁴⁷ <http://www.environment-agency.gov.uk/research/library/publications/41159.aspx>

⁴⁸ *The Potential Impact of climate change in the East Midlands* (2004) - <http://www.emra.gov.uk/publications/regional-communities-policy/climate-change>

Agriculture and Land Management

- Increased erosion of upland areas such as the Peak District;
- Increased risk of coastal and river flooding and loss of land as a result of rising sea levels and coastal erosion;
- Changing weather conditions leading to longer growing seasons and the ability to grow different types of crops;
- The introduction of energy crops to provide an sustainable source of fuel; and
- Gradual changes in flora and fauna in response to warmer, wetter conditions and more disturbed weather patterns.

Forestry and Woodland

- Suitability of forest tree species may alter due to changes in climatic conditions; and
- Lengthy periods of drought and dry conditions may lead to an increased risk of upland forest fire.

Tourism and Recreation

- Increased number of visitors to the countryside, and to more sensitive areas such as the Peak District and Lincolnshire Wolds, due to higher temperatures.

Climate Change Initiatives

Climate East Midlands is a regional partnership which is responding to the effects of climate change. They are currently overseeing the implementation of the Regional Programme of Action on Climate Change 2008-2011.

In terms of mitigation and adaptation to climate change, the East Midlands Region has also co-ordinated the development of a number of projects⁴⁹, including:

- In April 2007, the East Midlands became the first English region to achieve 100% sign-up by local authorities to the Nottingham Declaration on Climate Change;
- The East Midlands undertook Phase 1 of the UK's first region wide Local Climate Impacts Profile (LCLIP) from July 2008 in each of the region's nine Local Area Agreement areas; this work is ongoing and is now in Phase 4;
- A major study is nearing completion on the Economic Impacts of Climate Change (including sub-studies on adaptation/opportunities) in the East Midlands; and
- EMDA piloted approaches to climate change adaptation business support during 2008/9 and are awaiting the results of an evaluation to see how to take this forward.
- Sherwood Adaptation to Climate Change Study: The study aims to assess the vulnerability of environmental assets within the Sherwood NCA to the impacts of climate change and draw together an integrated set of adaptation responses that will ensure their future survival.

3.4.9 ECOSYSTEM SERVICES

Ecosystem services are the wide range of valuable benefits that a healthy natural environment provides for people, either directly or indirectly. The benefits range from the essentials for life, including clean air and a sufficient quantity and quality of water, food and fuel, and freedom from environmentally triggered hazards to those that improve our quality of life and wellbeing, such as recreation and landscape. They also include natural processes, such as climate and flood regulation.

Ecosystem Services can be classified as follows:

- **Supporting services:** services necessary for the production of all other ecosystem services including soil formation, photosynthesis, primary production, nutrient cycling and water cycling.

49 <http://www.defra.gov.uk/ENVIRONMENT/climatechange/adapt/action/regions/east-mid.htm>

- **Provisioning services:** products obtained from ecosystems, including food, fibre, fuel, genetic resources, biochemicals, natural medicines, pharmaceuticals, ornamental resources and fresh water.
- **Regulating services:** benefits obtained from the regulation of ecosystem processes, including air quality regulation, climate regulation, water regulation, erosion regulation, water purification, disease regulation, pest regulation, pollination, natural hazard regulation.
- **Cultural services:** non-material benefits people obtain from ecosystems through the provision of recreational opportunities, access to tranquillity and recognition of a strong sense of place. It covers benefits such as spiritual enrichment, cognitive development, reflection, recreation and aesthetic experiences.

The Ecosystem Services approach is a way of thinking about benefits and services, and a framework for managing environmental systems and achieving the goals of sustainable development. It is now becoming embedded in government policy. Defra sees the approach as playing an important part in securing a healthy natural environment through a more strategic and integrated approach to assist decision-making at all scales. In particular, the approach can ensure the development of multi-functional land use and management that helps secure rich and diverse landscapes fit for the future, thereby matching required functional needs with desired landscapes.

There are both opportunities and challenges associated with identifying existing ecosystem services for large tracts of landscape at the regional scale. Provisioning and regulating services have a spatial dimension and can be interpreted and summarised where existing data exists for those landscapes. However, as supporting services are mainly processes, such as nutrient cycling, they don't necessarily have a spatial dimension or spatially expressed data.

As the landscape is a fundamental functional component of and spatial framework for identifying and managing Ecosystem Services, it follows that the EMRLCA and range of RLCTs provide a valuable basis for understanding and expressing the services operating at the regional level. Water catchment management and flood protection are examples of where a regional level approach to managing ecosystem services is essential. Similarly, the effects of climate change and associated mitigation and adaptation, needs a regional perspective particularly where linked to other major regional changes such as considering the future sustainable management of the Lincolnshire coast, initiatives for woodland planting within the region and large scale development, in particular associated with the Growth Points.

3.5 PERCEPTION OF LANDSCAPE

Following post-war movements to protect the countryside, several areas in England were given protective designation under the National Parks and Access to the Countryside Act 1949. This set out to conserve and enhance certain areas for their natural beauty. The East Midlands contains two nationally designated landscape areas; the Peak District National Park and Lincolnshire Wolds Area of Outstanding Natural Beauty (AONB).

These protected areas and indeed other, non-designated areas such as the Fens, are particularly well known for their strength of character, distinctive identity and ability to evoke strong images in the national consciousness. In some cases the perceptions and images evoked by these areas are based on actual experience of the landscape. However, perceptions have also been shaped by indirect experiences, perhaps through literary associations or exposure in the media.

In contrast to the well known areas, vast tracts of the region are little known or appreciated beyond the people who work and live in them. Indeed, it has been noted⁵⁰ that the area of designated land in the East Midlands is the lowest of any of the English regions, which has led some to infer erroneously that the region's landscape is of limited significance.

To develop a more informed evidence base on such perceptions, a qualitative social research study has been prepared by Natural England in 'Capturing the Cultural Services and Experiential Qualities of Landscape' (October 2009) and provides baseline evidence of the cultural services and experiential qualities that landscapes provide to society.

The Natural England's Countryside Quality Counts (CQC) project⁵¹, which measures landscape change for National Character Areas, indicates that, when compared to England as a whole, more Character Areas in the East Midlands are judged to be changing or in a neglected state. This may be linked to the inference that many regard the East Midlands landscape as being of limited significance. Neglect and declining character is perhaps most notable close to large towns and major transport infrastructure; areas that are consistently undervalued or misunderstood. However, whilst these areas may be regarded as of limited value or importance nationally, they are often of significant local value and are highly cherished by communities that live within them or use them for recreation.

It is evident that perceptions of the landscape vary, and that much depends on scale, knowledge and understanding of the issues. Perceptions are also subjective, and their formation dependent on a vast range of cultural and physical experiences and associations. The European Landscape Convention acknowledges this important principle and recognises that all landscape matters equally.

In order to introduce a degree of objectivity into the process of understanding how certain aspects of the landscape are perceived, the Campaign to Protect Rural England (CPRE) has measured the degree of tranquillity across England, based on a combination of datasets and survey information⁵² (refer to Figure 15). In comparison with other areas of England, the East Midlands ranks 5th out of the nine identified

regions, with the North East being the most tranquil and London the least tranquil. Tranquillity also varies across the region. The east of the region is the most tranquil, with Lincolnshire one of the highest ranked local authority areas in England. Conversely, the west of the region is least tranquil, with Derbyshire identified as one of the lowest ranked areas. This is representative of the remote, rural character of the Fens compared to the heavily industrialised landscape of the Coalfields.

It is notable that The National Forest has received very positive community perceptions of the landscape change that has occurred as a result of The National Forest's creation and implementation of its strategy for woodland creation and management. This perception has been independently verified by a number of studies, notably *Growing Places: a study of social change in The National Forest* (2006)⁵³; *Community Perceptions of The National Forest* (2008)⁵⁴; and a *Citizens Panels research* (2008)⁵⁵ undertaken by The National Forest local authorities.

The CPRE has also mapped night blight, to show the level of light pollution across England⁵⁶. CPRE is particularly concerned about light pollution because darkness at night and starry skies are two features that make the countryside different from towns and cities. Night blight in the East Midlands generally corresponds to changing patterns of tranquillity; the major urban centres of Nottingham, Derby and Leicester are the most heavily polluted, with Lincolnshire the only area left with true dark skies.

51 <http://countryside-quality-counts.org.uk/index>

52 <http://www.cpre.org.uk/campaigns/landscape/tranquillity/national-and-regional-tranquillity-maps>

53 *Growing Places: a study of social change in The National Forest* (2006)

54 *Community Perceptions of The National Forest* (2008), Alison Millward Associates

55 *Citizens Panels Research* (2008), National Forest Local Authorities

56 <http://www.cpre.org.uk/campaigns/landscape/light-pollution/light-pollution-in-your-area>

3.6 SOCIO ECONOMIC

As described by the East Midlands State of the Region Report⁵⁷, the most disadvantaged areas in the region include the major urban centres of Nottingham, Derby and Leicester, districts in the Derbyshire Coalfields area and districts in the Lincolnshire coastal area. The range and extent of inequality is demonstrated by the Index of Multiple Deprivation (IMD), a statistical analysis which combines a number of indicators, covering a range of economic, social and housing issues, into a single deprivation score for areas of England.

The IMD for the region is shown on Figure 16. Large parts of East Lindsey and South Holland Districts show the highest levels of deprivation, suggesting a relationship between deprivation and the most remote areas in the region where there is less access to housing and employment opportunities. Parts of North East Derbyshire, Chesterfield and Bolsover Districts also show high levels of deprivation due to the dereliction and unemployment caused by the decline in the coal and manufacturing industries. Interestingly there is a north south divide within the East Midlands Region, with relatively few areas in the south scoring above the regional average for multiple deprivation. This may be attributed to the frequency of urban centres, providing access to housing, employment and other social infrastructure, along with good connections to London and the South East.

The relative prosperity or poverty of the East Midlands Region is closely linked to trends in the UK and global economy. The cycles of economic decline in the UK, the most recent being the 2008-2009 recession, have significant implications for the built and natural environment and potential effect on landscape character. For example, in relation to built development, as consumer confidence and the lack of available funding decreases, there is likely to be less demand for new housing and employment sites. This may reduce pressure on greenfield sites, but may also prevent the regeneration of disused and derelict land and opportunities for the creation of green infrastructure that can enrich landscape character.

In relation to tourism and leisure, the reduced spending power during an economic downturn is likely to result in more demand for holidays in the UK rather than abroad. The increased visitor numbers may benefit the region's economy by generating income for the upkeep of attractions and supporting tourism industry, such as greater demand for accommodation. It may also provide the catalyst for new 'rural' tourism opportunities linked to farming diversification initiatives. However, this in turn can lead to potential changes in the agricultural landscape through adjustments to the farm plan management. More visitors can also have a negative effect by causing additional disturbance and damage to sensitive areas of landscape, particularly to protected landscapes such as the Peak District National Park and the Lincolnshire Wolds AONB, or intruding into the peace and sense of wildness in the more remote coastal landscapes in Lincolnshire.

As a corollary to this, the East Midlands has the benefit of many areas of accessible woodland, for example The National Forest, Sherwood Forest and Rockingham Forest within the River Nene Regional Park. Emerging Regional Forest Parks are proposed at Sherwood and Charnwood, within which are large areas of woodland as well as country parks. These woodlands and network of country parks provide a valuable social resource, as they are accessible to many urban areas, and for limited cost can provide the physical and emotional benefits of outdoor recreation.

SECTION 4

REGIONAL LANDSCAPE CHARACTER TYPES



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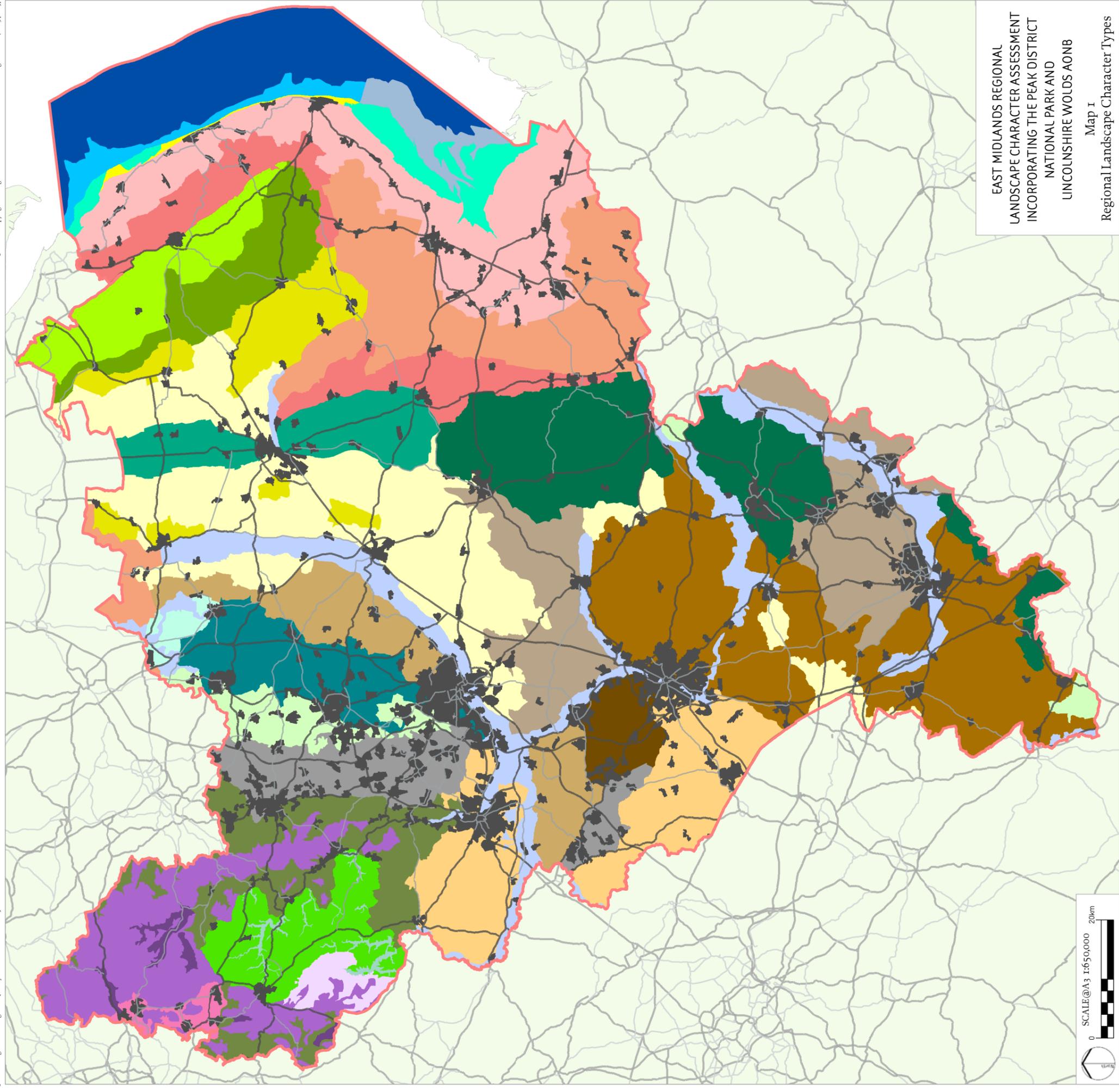
For further information about landscape character, forces for change and shaping the future landscape, refer to relevant National Character Area (NCA) descriptions, the National Landscape Typology and Landscape Character Assessments and Landscape Strategies that have been undertaken at national, county and district level.

Other reference material helpful to understanding landscape character may also be available, such as Historic Landscape Characterisations (HLC) and Townscape Characterisation. Village and Town Design Statements and Conservation Area Appraisals are also useful reference sources that can provide further information about intrinsic built character and sense of place. With regard to offshore coastal areas, English Heritage's Historic Seascapes Characterisation project will also be of relevance, the pilot study for which included Withernsea to Skegness.

A schedule of LCA and HLC assessments available at the time of the publication of the EMRLCA is presented in Appendix 1. Please note that since publication, new or updated material may be available. For further information contact the relevant county and/or district local authority or visit the Natural England website and follow links to the Landscape Character Network and the Database of Landscape Character Assessments in England located there.

EAST MIDLANDS REGIONAL LANDSCAPE CHARACTER ASSESSMENT
INCORPORATING THE PEAK DISTRICT NATIONAL PARK AND
LINCOLNSHIRE WOLDS AONB

MAP 1
REGIONAL LANDSCAPE CHARACTER TYPES



EAST MIDLANDS REGIONAL
LANDSCAPE CHARACTER ASSESSMENT
INCORPORATING THE PEAK DISTRICT
NATIONAL PARK AND
LINCOLNSHIRE WOLDS AONB
Map 1
Regional Landscape Character Types

No dimensions are to be scaled from this drawing. All dimensions are to be checked on site. Area measurements for indicative purposes only.

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Legend

- Study Area Boundary
- Built Up Area
- Group 1: Coast and Sea**
 - 1a: Coastal Saltmarshes and Mudflats
 - 1b: Coastal Dunes, Beach and Intertidal Sand Flats
 - 1c: Shallow Coastal Waters
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 - 1e: Offshore Industries, Fisheries and Navigations
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 - 4b: Wooded Vales
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 - 7a: Chalk Wolds
 - 7b: Wolds Scarps, Ridges and Valleys
- Group 8: Clay Wolds**
 - 8a: Clay Wolds
- Group 9: Coalfields**
 - 9a: Settled Coalfield Farmlands
- Group 10: Woods and Forests**
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 - 10b: Sandstone Forests and Heaths
 - 10c: Wooded Slopes and Valleys
 - 10d: Forested Ancient Hills
- Group 11: Gritstone Moors and Fringes**
 - 11a: Open Moors and Inbye Land
 - 11b: Moorland Valleys
 - 11c: Settled Valleys and Enclosed Gritstone Uplands
 - 11d: Upland Pastoral Hills and Valleys



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GROUP 1

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GROUP 2

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GROUP 3

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GROUP 10

GROUP 11:
GRITSTONE MOORS AND FRINGES
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GROUP 11

GROUP 1:
COAST AND SEA

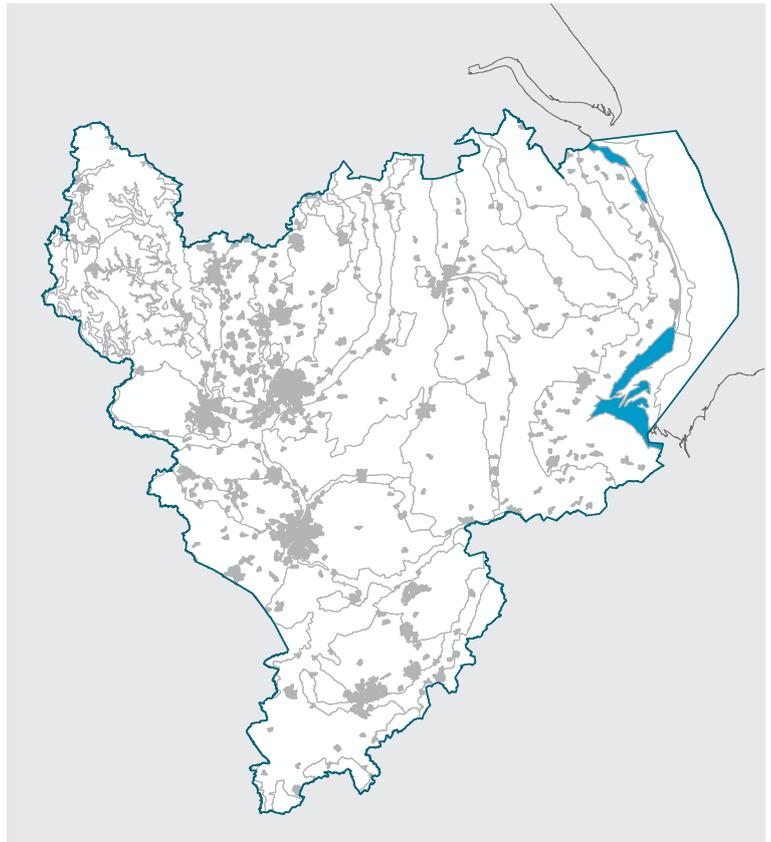


Coastal dunes are characteristic of the Coast and Sea (© Wash Estuary Strategy Group/Lincolnshire County Council)

1A: COASTAL SALTMARSHES AND MUDFLATS



Extensive landscape with wide panoramic views out to sea (© J Watson)



KEY CHARACTERISTICS

- Dynamic landscape formed by natural processes of deposition, inundation and ecological succession;
- Extensive low lying landscape with wide panoramic views out to sea, notably in The Wash albeit limited in some places by sea banks;
- More intimate and varied saltmarsh landscapes on the North Lincolnshire Coast where views inland and out to sea are often obscured by dunes or sea banks.
- Complex networks of brackish pools, tidal creeks and inlets;
- Temporal landscape influenced by tides;
- Generally inaccessible in The Wash with little or no built development evident. Greater access provision to areas of saltmarsh along the North Lincolnshire Coast;
- Rich mosaic of saltmarsh plant communities offer important habitats for waterfowl and invertebrates, and form part of complex and protected coastal ecosystems; and
- Dramatic and evocative landscape offering views of wild places little influenced by human activities.

LANDSCAPE CHARACTER

The Coastal Saltmarshes and Mudflats Landscape Character Type is a simple and visually unified landscape of low lying salt tolerant plant communities, tidal creeks and wide open areas of intertidal mud. The landscape generally retains a wild, remote character and is highly valued for its nature conservation interest as part of extensive maritime habitats extending around the fringes of The Wash and along the North Lincolnshire Coast.

Expansive views from the seabanks and dunes that mark the inland extent of the saltmarshes are possible across large areas characterised by low vegetation, level horizons, and vast skies, particularly in The Wash area. The ebb and flow of tides can also be observed, adding a dynamic quality to otherwise undisturbed landscapes.

The natural character of the landscape prevails. However, mooring along creeks in The Wash and at Gibraltar Point, grazing and occasional evidence of military uses, demonstrates that human influences are at play even in what seem to be undisturbed landscapes.



Coastal Saltmarshes and Mudflats
(© Natural England)

PHYSICAL INFLUENCES

Saltmarsh forms through natural processes in areas between the mean high water level of spring and neap tides on sheltered coasts. They are intimately related to the intertidal flats which form in front of them. The movement of sediment between saltmarsh and flats are a normal part of the functioning of both habitats.

Saltmarsh is characterised by an intricate network of tidal creeks and open areas consisting of various saltmarsh habitats, the most common being pioneer and lower marsh characterised by salt tolerant glasswort, common saltmarsh grass and sea purslane communities. At one time significant areas of higher and middle saltmarsh communities would have existed. In The Wash saltmarshes have been lost to centuries of coastal drainage and agricultural reclamation. However, overall they are accreting. Saltmarsh and mudflat habitats are very important to a number of marine and terrestrial wildlife species, some of which are rare. Indeed, the matrix of wet and dry areas and different plant communities are home to many specialised invertebrates such as spiders, moths, beetles and flies. Many areas of saltmarsh also provide grazing for large flocks of wintering duck and geese and shelter for breeding birds such as redshank. As a consequence the saltmarshes in the region mark the landward limits of important nature conservation designations including The Wash and Humber Estuary Special Protection Areas and Special Areas of Conservation and Ramsar status.

Whilst appearing natural, areas of saltmarsh within The Wash are managed by grazing. Although light grazing can be advantageous, high grazing pressure can reduce conservation interest.

In addition to providing important habitats, many areas of saltmarsh also protect inland areas from flooding by dissipating and reducing the amount of tidal energy reaching the shoreline.

With the flat landscape and no geological exposures within the Coastal Saltmarshes and Mudflats, there is very limited potential for the application of practices for the care, maintenance and management of features of geodiversity interest and the promotion of their educational and interpretational interest. However, the former river channels beneath the fenland deposits often produce raised ground and form excellent geomorphological features worthy of preservation.

CULTURAL INFLUENCES

The Coastal Saltmarshes and Mudflats Landscape Character Type retains a strong sense of wilderness with few visible indicators of human intervention. Exceptions include the seabanks, which define the landward edge of the saltmarshes, visitor facilities such as at Gibraltar Point and the boats that moor in sheltered creeks in The Wash. Some areas also form part of military ranges, and contain infrastructure and buildings such as watchtowers and metalled tracks.



Coastal Saltmarshes and Mudflats
(© Natural England)

AESTHETIC AND PERCEPTUAL QUALITIES

The Coastal Saltmarshes and Mudflats is one of the most remote Landscape Character Types in the East Midlands and marks the transition between land and sea. It has a strong character and sense of place, defined by a limited number of landscape features; intertidal mudflats, low lying salt tolerant vegetation and dendritic patterns of creeks which allow tidal waters to flow in and out.

Whilst views inland and out to sea are sometimes restricted by sea banks and dunes, occasional views can be wide and expansive, adding to the landscape's remote and natural character. Where grazing occurs and where boats are moored in tidal creeks in The Wash the landscape can appear less wild and remote. However, generally wide areas show few signs of human intervention and retain a tranquil character.

LANDSCAPE CHANGE AND MANAGEMENT

INFRASTRUCTURE

Forces for Change

In places, and notably within The Wash, land reclamation for agriculture has historically reduced the proportion of saltmarsh. Whilst the process of land reclamation has eased in recent decades, incremental development such as car parks and viewpoints, flood defence works and infrastructure associated with military ranges have created visual intrusions and reduced the sense of tranquillity in some locations. In some locations the area of saltmarsh has grown as a result of land use change and/or marine sediment deposition.

Shaping the Future Landscape

The strategy should be to protect the simple character of the landscape and consider the visual impact of any new structures or facilities. Fishing, Agriculture and Land Management

AGRICULTURE, LAND MANAGEMENT AND FISHING

Forces for Change

Grazing is important for the vegetation structure and the overall ecology of the saltmarshes and mudflats, notably in The Wash. However, change in agricultural practices has led to a reduction in grazing in recent decades.

Shaping the Future Landscape

The aim should be to manage new and existing saltmarsh through grazing where appropriate, ensuring landscape and biodiversity character is enhanced or restored. The frequency and intensity of grazing should be considered on a site by site basis.



Saltmarsh east of Seaview, Saltfleetby
(© Natural England)

TOURISM AND FISHING

Forces for Change

The Wash section of the Coastal Saltmarshes and Mudflats is generally inaccessible although boat moorings are evident in some of the creeks. A greater level of access is available to the areas of saltmarsh along the North Lincolnshire Coast with visitor facilities, notably at Gibraltar Point. Visitor levels are low and mainly confined to those seeking the enjoyment of the wild, remote character and

nature conservation interest. Nevertheless, at the car parks and principal viewpoints, there is potential to affect the tranquillity and simplicity of the landscape and the provision of further facilities could further detract from an area where there is little evidence of human activity.

Shaping the Future Landscape

The aim should be to manage this landscape to limit the long term impacts of human activity and ensure that existing and any future facilities and access to the saltmarshes are carefully controlled in order to retain the wild and remote character.

ENVIRONMENTAL PROCESSES AND CLIMATE CHANGE

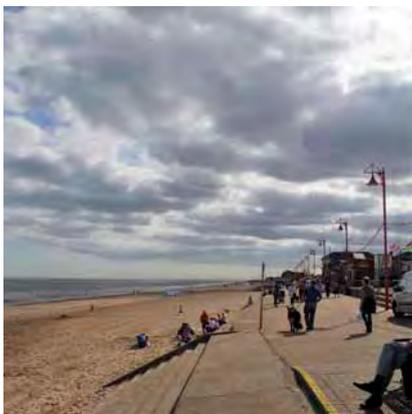
Forces for Change

Climate change could present a major threat to coastal landscapes where the intertidal zones become 'squeezed' between rising sea levels and sea defences. If the defences stay where they currently are, the size and nature of the defences will change significantly, probably to the detriment of landscape quality.

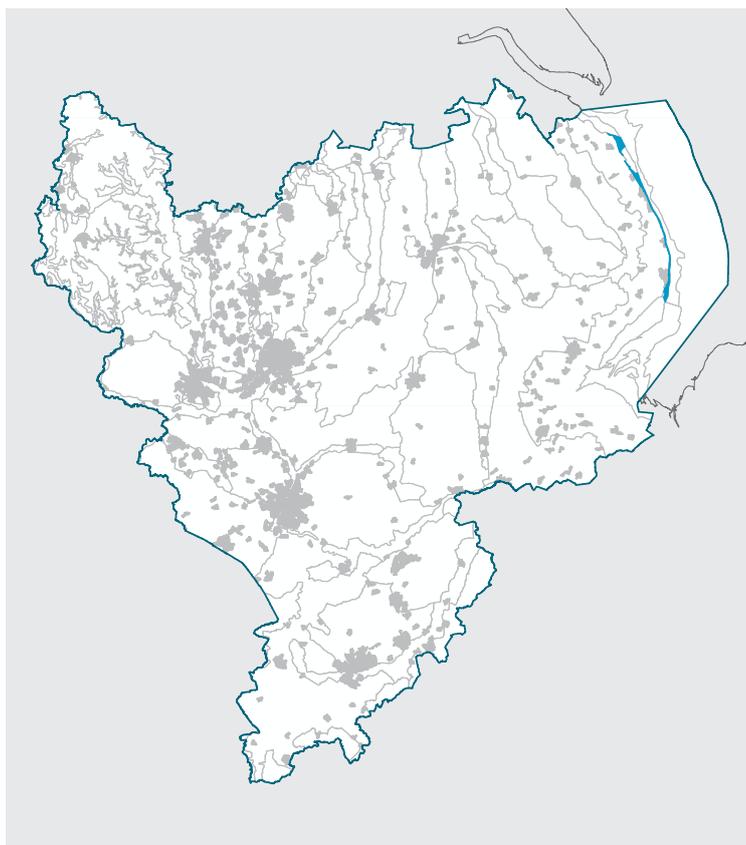
Shaping the Future Landscape

Flood defence work (both new construction and maintenance) should be planned to seek to avoid damage to existing saltmarsh.

1B: COASTAL DUNES, BEACH AND INTERTIDAL SAND FLATS



Mablethorpe Beach Dunes and Beaches
(© Neil Pike, Natural England)



KEY CHARACTERISTICS

- Dynamic landscape intimately linked to natural coastal processes;
- Gently rolling landform of dunes fronted by sandy beaches and intertidal sand flats and occasionally saltmarsh on the North Lincolnshire Coast;
- Intertidal flats and beaches washed by waves with limited or no plant growth;
- Low, fragile vegetation succession ranging from pioneer species on shoreline to scrub and grassland communities across established dunes, indicative of more stable areas beyond the influence of normal tides;
- Limited evidence of human activity beyond fencing, tracks and tourist facilities, such as viewpoints. During the summer months, in locations close to busy holiday resorts, a temporary busy character prevails in contrast to the predominantly empty character elsewhere.

LANDSCAPE CHARACTER

The Coastal Dunes, Beach and Intertidal Sand Flats Landscape Character Type is a dynamic landscape, with change occurring daily as a result of the ebb and flow of the tides, and over longer periods of time due to vegetation succession and erosion and accretion patterns.

A wide range of important habitats, from dry dunes and their flowering plants, to the sand flats with their associated insect fauna contribute to complex maritime ecosystems.

Whilst wide areas retain a remote and tranquil character, accessible stretches of coastline in close proximity to resorts and caravan parks are the focus for significant numbers of holiday makers. In some areas, permanent tourist infrastructure is evident which diminishes the natural character of the landscape and sense of remoteness that prevails elsewhere.



Beach at Theddlethorpe (© Neil Pike, Natural England)

PHYSICAL INFLUENCES

The Coastal Dunes, Beach and Intertidal Sand Flats is a dynamic landscape that demonstrates a complex array of natural processes. It marks the transition from land to sea, and whilst the ebb and flow of the tide is important to the maintenance of the beaches and sand flats, variations in the landward component of the landscape are dependent on a range of other factors.

Coastal dunes, such as those at Gibraltar Point, Saltfleetby and Theddlethorpe are created by wind driven and biological processes, rather than wave action or coastal currents, although marine processes are important in transporting sand to intertidal drying areas from where it becomes available for dune formation. Sea sandwort, sea rocket, and prickly saltwort are characteristic fore-dune plants which are succeeded by dune building grasses that are typical of mobile and semi-fixed dunes. As dunes stabilise other grasses dominate the sward, which if left un-grazed become succeeded by scrub vegetation.

In a few locations behind the dunes, ponds have formed in the clay pits dug to make the sea banks. These 'borrow pits' now support a range of wildlife including rare brackish water invertebrates and bird species. Pits with reedbeds have supported bittern and marsh harrier in recent years whilst other borrow pits have breeding sedge warbler and a varied water plant flora. Others pits have populations of unusual water beetles.

The various sand and dune habitat types represented in the landscape are some of the most valued in the region, with the dune systems at Gibraltar Point being regarded as one of the best sites of its type in the country. Indeed, this area is noted for nationally significant breeding colonies of little tern and ringed plover, which depend on the open sand habitats.

Under natural conditions, dune systems are dynamic and develop in tandem with shoreline evolution. As such, in areas of accretion dunes will move seaward, and in areas of erosion they will move inland.

Grazing animals play an important role in maintaining short turf communities on the dunes, and major new initiatives are being taken to reintroduce livestock grazing to areas of the dunes which have become overgrown with scrub.

Wide areas of the landscape are designated for their nature conservation importance, with National Nature Reserves such as at Saltfleetby and Theddlethorpe offering visitors an opportunity to experience areas of dune and coast.

By contrast to the dunes, sand flats which are highly mobile, tend to support few plants and animals. However, where organic detritus accumulates on the strandline of sandy beaches, mixed pioneer vegetation develops, usually dominated by annual plants. These are often important habitats in the beach shoreline ecosystem that are exploited by a wide variety of plants and animals. Pioneer plants can also trigger the process of dune formation.

The Coastal Dunes, Beach and Intertidal Sand Flats offer very limited potential for the application of practices for the care, maintenance and management of features of geodiversity interest and the promotion of their educational and interpretational interest. However, the range of coastal landforms and associated features are of geomorphological interest.

CULTURAL INFLUENCES

The Coastal Dunes, Beach and Intertidal Sand Flats contains some of the wildest and most natural habitats in the region. Significant areas retain a remote and untamed character. However, in areas close to coastal holiday resorts, dunes and sands can often have a busy character, particularly in summer months. Whilst these landscapes generally contain few built elements, car parks and wartime defences are sometimes visible.

Elevated dunes also provide vantage points. Whilst views to the sea rarely contain modern development beyond occasional ship, and offshore wind energy schemes, views inland encompass development associated with coastal resorts and agriculture, much of which is arable in the south around The Wash. Other human interventions can be seen in the form of infrastructure associated with military ranges, although these are often located in inaccessible areas, thus reducing their impact.

AESTHETIC AND PERCEPTUAL QUALITIES

The Coastal Dunes, Beach and Intertidal Sand Flats generally retain a wild character. Whilst this is significantly diminished in areas close to major holiday resorts, vast areas are tranquil, with little evidence of human intervention. Extensive panoramas across a seemingly unchanged coast and sea are possible, adding to a sense of remoteness and detachment from the modern world.



Coastal Dunes (© Natural England)

In the summer, the dunes and sands close to the major resorts become busy with holidaymakers. This creates a new, temporary character across many areas, with deck chairs, wind breaks and large numbers of people using the beaches and dunes for recreation and relaxation adding dynamism to an otherwise simple, natural landscape. Although this is temporary, in some areas permanent infrastructure has been installed to facilitate enjoyment of the beach and sea by large numbers of people, such as the beach huts at Chapel St Leonards.

This is a dynamic landscape, with the ebb and flow of tides changing the character of the sands hour by hour and the wind shaping the dune fronts. The landscape is also shifting and changing over much longer periods of time, with dune systems moving gradually over several generations. However, tidal surges can be responsible for rapid change in this landscape, with erosion and deposition creating new landscapes overnight.



Coastal Dunes and Intertidal Sandflats (© Natural England)

LANDSCAPE CHANGE AND MANAGEMENT

INFRASTRUCTURE

Forces for Change

Around the popular resorts car parks and access points have developed on the landward side of the dunes over many years. At Donna Nook the targets and signs of the military bombing range creates an engineered visual intrusion on an otherwise natural beach scene further amplified by the sound of the planes when the range is operational.

Shaping the Future Landscape

The aim should be to protect the simple character of the landscape and consider the visual impact of any new structures or facilities and the effects on tranquillity and remoteness.

AGRICULTURE, LAND MANAGEMENT AND FISHING

Forces for Change

Grazing of domestic animals is important for the vegetation structure and overall ecology of the coastal dunes. However, changes in agricultural practices have led to a reduction of grazing in recent decades.

Shaping the Future Landscape

The intention should be to maintain and enhance the varied dune landscape using grazing where appropriate, to manage the balance between grassy and scrubby dunes. The frequency and intensity of grazing should be considered on a site by site basis.

TOURISM AND LEISURE

Forces for Change

The coastal resorts continue to be a popular destination for holidays and day-trips. As such, in the summer months, the beaches close to major resorts are heavily used by holiday makers. This changes landscape character across many areas, transforming a simple, natural landscape into a busy environment. The popularity of holiday resorts such as Skegness and Mablethorpe, including caravan parks, may lead to pressure on the dunes for leisure activities that would be highly visually intrusive and would modify the dune or beach character.

The dunes are also affected by recreational activity. The creation of golf courses and public access has resulted in the damage, loss and fragmentation of dune vegetation.



Theddlethorpe Dunes NNR (© Neil Pike, Natural England)

Shaping the Future Landscape

While this is an inevitable change, the aim should be to manage this landscape to limit the long term impacts of human activity. Management plans should manage the busiest stretches of beaches and dunes, helping to conserve the natural environment whilst enhancing the beach as a tourist resort. It is also important to consider the visual and environmental impact of any new or extended golf courses.

ENVIRONMENTAL PROCESSES AND CLIMATE CHANGE

Forces for Change

Climate change could present a major threat to coastal landscapes where the intertidal zones become 'squeezed' between rising sea levels and sea defences. If the defences stay where they currently are, the size and nature of the defences will change significantly, probably to the detriment of the landscape quality.

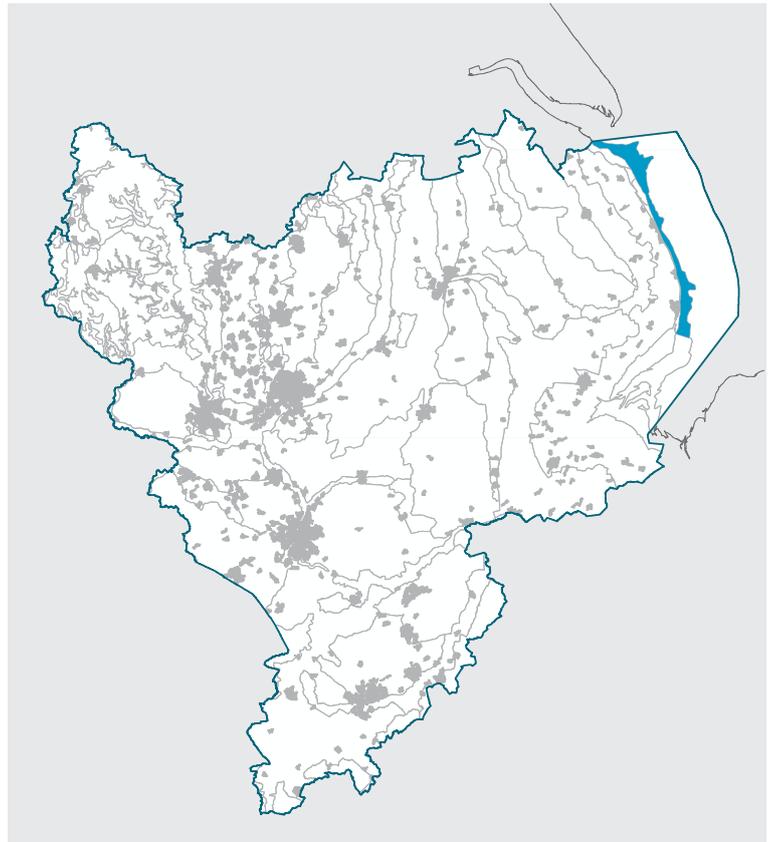
Shaping the Future Landscape

Flood defence work (both new construction and maintenance) should be planned to seek to avoid damage to existing coastal habitat

1C: SHALLOW COASTAL WATERS



*Shallow water along the Lincolnshire coast
(© Wash Estuary Strategy Group/P Gray)*



KEY CHARACTERISTICS

- Shallow marine waters fringing the coastline, influenced by strong wave action coming off the North Sea;
- Shifting sub-tidal sediments and mobile marine communities;
- The upwelling of nutrients that occurs in shallow areas forms important basis for complex food chains;
- Important fisheries, in particular shell fisheries
- Strong human influences close to major holiday resorts associated with recreational uses during the summer; and
- Ecosystems sensitive to onshore and offshore pollution.

LANDSCAPE CHARACTER

The Shallow Coastal Waters Landscape Character Type occupies a narrow stretch of exposed coastline between the more sheltered waters of the Humber Estuary and The Wash.

The constant shifting of the sea bed sediments by tidal action means that few stable plant communities exist. However, seaweeds and planktons form the basis of elaborate food chains and notably shoals of fish. Tidal action also creates a shifting and temporal landscape on its landward edge, where there is an ongoing daily transition from open sea to coastal beaches and flats.

The proximity of major coastal holiday destinations and caravan parks exert a strong influence on the character of the landscape, notably in the summer. Here, shallow waters are popular for bathing and other activities and as such have a busy character for several months of the year. In winter, the landscape reverts to a more semi-natural character, albeit influenced by views to permanent coastal development.



Shallow Coastal Waters - A Shrimper (© Natural England)

PHYSICAL INFLUENCES

The Shallow Coastal Waters Landscape Character Type has been identified along the exposed stretch of the Lincolnshire Coast between the more sheltered waters of The Wash and Humber Estuary and comprises marine areas up to 5m deep. The coastal shelf is generally relatively narrow, extending some 1km offshore. However, towards the Humber Estuary, shallow waters can be seen to extend 6km from the coastline.

The benthic habitats of the North Sea fringing the Lincolnshire Coast are defined by the substrate of the sea bed. A thin veneer of sub tidal unconsolidated sediment, dominated by sands, muds and gravels, is subject to natural movement and change from powerful waves coming off the North Sea.

The varied invertebrate marine fauna is exploited by birds, predatory fish, mobile invertebrates, such as shrimps and crabs and by fishermen.

Sheltered areas close to the coastline are important nursery grounds for fish and other marine life, such as herring, which spawn off the North Norfolk Coast and feed in the North Sea where they are fished commercially.

To date, the geodiversity interest within the offshore environments has not been investigated but there may be features relating to bedforms on the sea floor with potential for interpretation and of educational interest.

CULTURAL INFLUENCES

Evidence of human activity is sparse. However, views to onshore development, offshore wind energy schemes, and general activity associated with shipping, fishing and recreational uses of the shallows makes these areas more heavily influenced by humans than the deeper offshore waters of the North Sea.

Of particular note are recreational pursuits such as swimming and wildlife watching in the shallow waters off the major holiday resorts. Small scale commercial fishing craft are also notable, although these also venture further out into deeper waters. The shallow seas off several resorts have been popular since the mid 19th century although there is little tangible evidence of historic tourist activity remaining.

As with other marine environments, the impact of human activity on benthic and pelagic areas is not immediately evident. However, pollution from onshore and offshore sources threatens water quality and the health and diversity of habitats.

Wrecks and other obstructions are relatively common, and many visible wrecks are popular shallow water dive sites.

AESTHETIC AND PERCEPTUAL QUALITIES

The Shallow Coastal Waters is a visually dynamic landscape, encompassing views inland and further out to sea. Indeed, the changing coastline significantly influences seascape character, with areas in close proximity to the major coastal resorts having a distinctly different sense of tranquillity and 'naturalness' to areas where views to the land consist of undeveloped coastal dunes and sands. Similarly, areas of the coast which are busy navigation routes or are in close proximity to wind energy schemes are perceived as being less remote.

The character of the landscape is also significantly affected by the seasons. In summer, the accessible coastline attracts thousands of holidaymakers

who use the shallow waters for a range of leisure pursuits. Outside the holiday season, the shallow coastal waters return to their natural peaceful state, albeit continually influenced by views to coastal resorts, offshore wind energy schemes and commercial activity such as dredging. In wild and remote areas the sea is less affected by summer visitors except for people taking the opportunity to view offshore wildlife. Some areas are subject to military training activities which also limits public access.

LANDSCAPE CHANGE AND MANAGEMENT

INFRASTRUCTURE

Forces for Change

In recent decades there have been minor infrastructure developments along the Lincolnshire Coast, such as moorings and launching slips which, depending on tidal action, extend into the Shallow Coastal Waters. Such infrastructure has the potential to create visual intrusions and diminish the semi-natural character of the coastline.

Shaping the Future Landscape

The aim should be to manage the transitional character of the landward edge, ensuring any new infrastructure is of appropriate design and scale.

AGRICULTURE, LAND MANAGEMENT AND FISHING

Forces for Change

While the majority of fishing activity generally occurs further out to sea, it is a major contributor to litter that can be found on UK beaches and in the shallow coastal waters. Items may include nets, boxes and buoys and can have a significant impact on visual amenity and perceptions of scenic quality as well as being detrimental to wildlife. There is also risk of pollutants enter the sea through discharges of effluents and run-off.

Shaping the Future Landscape

Management plans should target the busiest stretches of beaches and shallow coastal waters, and help to conserve the natural environment whilst enhancing the beach as a tourist resort. This could include monitoring levels of litter and strategies for litter collection and removal.

The aim should be to continue to protect against effluents and run-off, following due processes, ensuring benthic and pelagic habitats are maintained. Pollution should be addressed at source, with River Basin Management Plans produced for managing and monitoring river water quality. These should also inform management plans for individual farms and/or land holdings, as part of proposals to remediate against the sources of pollution and enhance the quality of ditches and dykes.

TOURISM AND LEISURE

Forces for Change

The coastal resorts continue to be a popular destination for holidays and day-trips. As such, in the summer months, the shallow coastal waters are used for bathing and other activities. This changes the landscape character across many areas, transforming a simple, natural landscape into a busy, man-made environment.

Shaping the Future Landscape

The intention should be to manage the semi natural character of the landward edge, including sea-based leisure activities such as boat trips and diving, and ensure any new infrastructure is of appropriate design and scale.

ENVIRONMENTAL PROCESSES AND CLIMATE CHANGE

Forces for Change

Rising sea levels associated with climate change will have a significant effect on the Shallow Coastal Waters Landscape Character Type with a progressive realignment of the area lying within this type.

Shaping the Future Landscape

There are no opportunities for mitigation but instead an observation of the inevitability of the interplay of geomorphological and marine processes

ID:
SHALLOW INLET BAY



Shallow bays within the Mouth of The Wash
(© Wash Estuary Strategy Group/L Curtis)



KEY CHARACTERISTICS

- Unique marine environment characterised by shallow waters over fluvial and marine mud flats and sandbanks;
- Sheltered waters, albeit influenced by high tidal ranges;
- Accumulations of marine and terrestrial sediments;
- Important nursery ground for several fish species and recognised for internationally important habitats;
- Limited evidence of human activity and semi natural character prevails; and
- Temporal landscape displaying marine and terrestrial characteristics dependent upon tides.

LANDSCAPE CHARACTER

The Shallow Inlet Bay Landscape Character Type of The Wash represents a unique marine environment. It is effectively an estuary lying beyond where the rivers Witham, Welland, Nene and Great Ouse meet the sea.

Centuries of sediment deposition and land reclamation have created the current coastline. Marine and terrestrial sediments continue to be deposited in The Wash, and create shallow waters interspersed with several large sandbanks which are exposed at low tide fringing a deep channel at the centre of The Wash.

Despite generally being characterised by calm, sheltered waters, the shallows and banks of sediment in The Wash make navigation hazardous. As such, some of the most prominent human influences in the landscape are buoys and lightships, located to guide shipping into the coastal ports of King's Lynn and Boston.

PHYSICAL INFLUENCES

The Shallow Inlet Bay of The Wash is a unique marine environment consisting of shallow waters over a complex array of fluvial and marine muds, sands and gravels, generally no more than 10m in depth. In deeper areas gravel predominates whereas closer to the shore, sand is mixed with varying amounts of gravel or mud. As tides ebb and flow, the landscape shifts from sea to intertidal mud flats and as a result there is a blurred transition from terrestrial to marine over much of the area.

At the end of the last glaciation, when sea levels were lower than today, the rivers Welland, Nene and Great Ouse were tributaries of a single great watercourse. However, the deep valley of The Wash was not created by this river, but by earlier glacial ice flows carving a deep channel.

In contrast to the North Lincolnshire Coast, the enclosed shallow nature and orientation of the embayment reduces the power and impacts of waves considerably. The average spring tide range is 6.5m between high and low water levels, which is the highest on the east coast of Britain. The tides and currents that move sediments into, out of and around The Wash have a significant influence on the overall nature of the embayment.

Since the last Ice Age the Shallow Inlet Bay of The Wash has been a sediment sink, gradually accumulating muds, sands and gravels. Whilst some is from the terrestrial fenland rivers, much of the sediment is marine in origin, with several million tonnes of marine sediment entering The Wash each year. This is derived in part from the near-shore seabed off the Central Lincolnshire Coast.

Intertidal flats and sandbanks are associated with the major estuarine systems of the North Lincolnshire Coast and The Wash. These consist of vast flat areas of muds and sediments that become inundated at high tide. Some areas extend outwards from the shore, whereas others are 'islands' in open water, notably in The Wash. Muddy sands are often rich habitats and important to a range of organisms including worms and arthropods which in turn are an important food source for higher organisms such as fish and wading birds.

The diverse habitats that characterise the Shallow Inlet Bay are dynamic and dependent on a range of physical processes, and along with the intertidal flats, are of outstanding importance to wildlife, notably a great diversity of fish. Harbour Seals use the intertidal sandbanks within The Wash as extensive pupping areas. The intertidal mudflats and sandbanks of The Wash also support internationally important numbers of migrating and overwintering wildfowl. These birds also use surrounding saltmarsh and agricultural fields to roost.

In recognition of its international nature conservation significance, the entire Wash Area has been designated as a Special Protection Area and Special Area of Conservation.

To date, the geodiversity interest within the offshore environments has not been investigated but there may be features relating to bedforms on the sea floor with potential for interpretation and of educational interest as well as features exposed at low tide that are of geomorphological value.

CULTURAL INFLUENCES

Evidence of human activity is sparse, and the Shallow Inlet Bay Landscape Character Type retains a remote, natural character, albeit influenced by views to coastal development and various types of shipping.

The absence of major coastal resorts and caravan parks on the coastline, and limited recreational use of the coastal waters of The Wash enhances the natural character of the landscape. However, navigation buoys located along established channels to guide vessels between shallow waters and sand bars into the coastal ports of Boston and King's Lynn, are evident in some areas. Markers associated with designated anchorages are also notable, albeit located in the deep water channel at the centre of The Wash. The historic environment of the Shallow Inlet Bay also has the potential to include drowned cultural landscapes, as well as specific artefacts, such as wharves and wrecks.

Significant areas are also marked as danger areas, and form part of large military training areas. The mudflats of The Wash also contain a unique circular feature dating to the 1970s. Whilst this is located outside the Study Area, it can be seen for several kilometres around including from the mudflats and waters of The Wash. The 'Donut' was one of two experimental sites to determine the feasibility of storing freshwater offshore. The experiment failed. However, the site remains a dramatic and enigmatic feature in an otherwise featureless seascape and is now an important breeding bird colony.

As with other marine environments, the impact of human activity on benthic and pelagic zones is not immediately evident. However, pollution from onshore and offshore sources threatens water

quality and the health and diversity of marine habitats and ecosystems. Infrastructure, such as that associated with offshore wind energy schemes also has a localised impact.

AESTHETIC AND PERCEPTUAL QUALITIES

The enclosed nature of the bay is significant, creating a sheltered peaceful environment when compared to the more exposed coastal waters off North Lincolnshire. Whilst buoys and markers associated with busy shipping lanes are evident leading into Boston and King's Lynn, the landscape retains a natural character with few indications of human intervention or activity.

The shifting nature of the tides is also a significant factor affecting the perceptual quality of the landscape. As tides fall, large areas of intertidal flats and creeks are exposed, which become submerged again on the rising tide. As such, the Shallow Inlet Bay is perceived as a temporal space, shifting between marine and terrestrial character.

LANDSCAPE CHANGE AND MANAGEMENT

AGRICULTURE, LAND MANAGEMENT AND FISHING

Forces for Change

While the majority of fishing activity occurs offshore, trawling for shrimp also occurs in the Shallow Inlet Bay of The Wash and the intertidal flats are dredged for mussels and cockles. In recent decades, fishing activity has been transformed by more powerful fishing gear and vessels, increasing pressure on stocks and potentially causing long term damage to sediments. Fishing activity has also been identified as a major contributor to litter. Items may include nets, boxes and buoys and can have a significant impact on visual perceptions of the seascape and well as 'ghost fishing', where discarded equipment continues to fish.

Shaping the Future Landscape

The aim should be to manage fishing activity, ensuring trawling does not compromise scenic quality or benthic and pelagic habitats.

ENVIRONMENTAL PROCESSES AND CLIMATE CHANGE

Forces for Change

A rise in sea level linked to the effects of climate change will affect the physical processes, morphology and disposition of fluvial and marine deposits associated with the Shallow Inlet Bay of The Wash. In due course the sand banks and intertidal mud flats currently exposed at low tide will become progressively and permanently submerged, resulting in a change in the dynamics and disposition of the rich and diverse habitats that are currently supported .

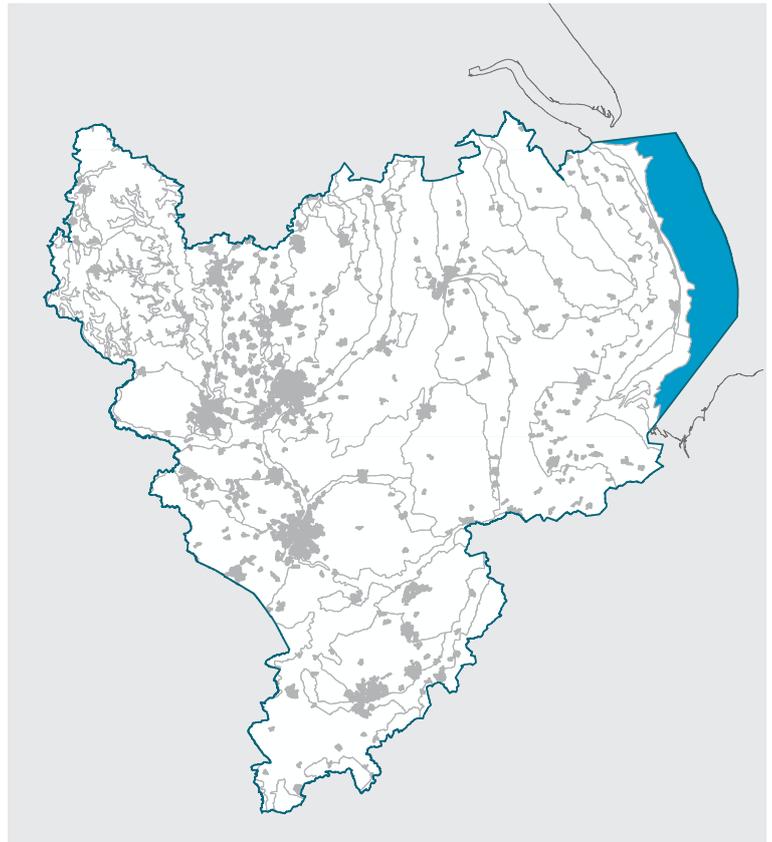
Shaping the Future Landscape

In view of the international nature conservation significance of The Wash area, there will be careful monitoring of the effects of sea level change on this transitional area of terrestrial and marine environments. The depth of the sea, and the ebb and flow of the tides are fundamental determinants of this fragile environment, so there are no opportunities for mitigation but instead an observation of the inevitability of the interplay of geomorphological and marine processes.

1E: OFFSHORE INDUSTRIES, FISHERIES AND NAVIGATIONS



*Shipping lanes along the Lincolnshire coast
(© J Watson)*



KEY CHARACTERISTICS

- Visually unified landscape of open water extending for several kilometres out into the North Sea;
- Increasingly limited visual influences from coastal development with distance from the shoreline;
- Natural and remote character, influenced in places by modern commercial activities such as navigations, fisheries and wind energy schemes; and
- Other commercial activities such as dredging and dumping have localised influence on benthic and pelagic environments.

LANDSCAPE CHARACTER

The Offshore Industries, Fisheries and Navigations Landscape Character Type has been identified beyond the near-shore coastal waters of the Lincolnshire Coast and The Wash. Unlike these shallower waters, water depths are such that no major mudflats or sand banks are exposed at low tide. As such, albeit superficially, the landscape is a constant expanse of open sea.

Modern commercial use of the sea has had a dramatic albeit geographically limited influence on the character of these expansive seascapes, with notable visual intrusions arising from wind energy schemes and large scale vessels. Commercial activity can also be identified on the sea bed in the form of licensed dredging and dumping grounds. Whilst these have limited influence at the surface, the natural characteristics of the sea bed and marine environments can be affected.

The seaward extent of the Offshore Industries, Fisheries and Navigations Landscape Character Type is defined in this assessment by the Study Area boundary. Further into the North Sea, water depths limit commercial use of the sea for dredging, gas drilling and wind energy schemes. As such a further Landscape Character Type is recognised (the Open Sea Landscape Character Type). However, as this lies beyond the Study Area boundary, it has not been assessed and described in the EMRLCA.

PHYSICAL INFLUENCES

Much of the sea floor consists of marine sands and gravels that date to the Pleistocene or more recent periods. These mask the underlying geology and have a significant influence on benthic and pelagic habitats and also on modern extraction industries.

As with the shallower coastal waters, various benthic and pelagic habitats exist. In the water column, plankton provides a critical role in the food chain of oceanic wildlife including fish, birds and marine mammals. The abundance of plankton is strongly influenced by factors such as depth, tidal mixing and temperature stratification. Plankton blooms generally occur far offshore in March when nutrient levels are high, the amount of daylight increases, and the sea gradually warms.

Benthic habitats are defined by the substrate of the sea bed. A thin veneer of sub tidal unconsolidated sediment, dominated by sands and gravels, is subject to natural movement and change from powerful waves.

The varied invertebrate marine fauna is exploited by birds, predatory fish and mobile invertebrates such as shrimps and crabs.

Sheltered areas close to the coastline are important nursery grounds for fish and other marine life, such as herring which spawn off the north Norfolk coast and feed in the North Sea where they are fished commercially.

To date, the geodiversity interest within the offshore environments has not been investigated but there may be features relating to bedforms on the sea floor with potential for interpretation and of educational interest.

CULTURAL INFLUENCES

In areas of otherwise featureless open seas, commercial activities have a notable influence on the character of the landscape.

Fisheries extending further out into the North Sea attract large numbers of commercial fishing vessels and trawlers, although smaller vessels are also common. However, in the vastness of the sea these vessels exert only a limited influence on the natural character of the sea. By contrast, large commercial cargo ships, tankers and ferries are more visually prominent, particularly because they follow strictly defined shipping lanes. Within the Study Area, large vessels are particularly prominent off the North Lincolnshire coast entering the Humber Estuary.

A further and more visually prominent human influence on seascape character are offshore wind energy schemes. Two constructed wind energy schemes are located approximately 5km off the Lincolnshire coast and are visible for many kilometres. Indeed the scale and massing of the turbines can be seen from the shoreline. Turbines can also be regarded as incongruous features in an otherwise natural environment. They also create movement, and as such impact on the open views of sea from land. Lighting also impacts on otherwise dark skies at night.



Offshore Industries, Fisheries (© Natural England)

The commercial use of the sea floor also has an influence on the character of the landscape. A single licensed dumping ground is located within the Study Area. Strict controls are in place to govern the type of waste that can be disposed of to ensure that environmental impacts are minimised. However, such activity adds to the commercial character of these marine areas. Commercial dredging / aggregate extraction is also evident, albeit in a single location, further adding to the commercial importance of the North Sea.

The historic environment of the offshore area has the potential to include drowned cultural landscapes, as well as specific artefacts, such as wharves, wrecks and aircraft (war graves).

AESTHETIC AND PERCEPTUAL QUALITIES

The deeper waters of the North Sea are visually unified, encompassing views across extensive and unchanging tracts of largely open water. In contrast to shallower coastal waters, the ebb and flow of tides is imperceptible, although the swell of waves and breakers can be dramatic.

Across wide areas, and notably where views are further out to sea and not influenced by modern commercial developments, the prevailing characteristics are of remoteness and isolation.

By contrast, views that encompass large scale wind turbines bring a developed and modern utilitarian character to seascape character.

LANDSCAPE CHANGE AND MANAGEMENT

INFRASTRUCTURE

Forces for Change

There are many shipping lanes within the deeper waters of the North Sea and sea traffic and fishing vessels can have an impact on tranquillity and visual amenity, albeit locally and temporarily. There is also risk of operational pollution, accidental pollution and physical damage resulting from the movement of vessels, damaging benthic and pelagic habitats.

Shaping the Future Landscape

The aim should be to manage shipping, ensuring sea traffic and fishing vessels are kept outside the most sensitive marine environments.

ENERGY PROVISION

Forces for Change

Offshore wind energy schemes are a feature of the seascape, with two wind energy schemes located approximately 5km off the coast. Given the Government's commitment to increasing energy from renewable sources, the reliance on wind power is likely to continue, and further schemes are under construction, consented or in planning. New offshore wind energy schemes will create visual landmarks in this open, flat seascape and reduce the tranquil, natural character of the sea. In addition, the submerged element of the turbines can be damaging to coastal process and benthic habitats.

Shaping the Future Landscape

With the inclusion of a seascape character assessment within the EMRLCA, it has the potential to contribute to the development of strategic regional and sub regional level guidance on commercial wind energy schemes, both onshore and offshore, including considerations of cumulative impact.

While there are limited opportunities to protect the open character of the seascape, the aim should be to protect visual amenity by siting infrastructure away from sensitive onshore and coastal locations with sensitive receptors or particularly strong or valued semi-natural character. The strategy should also protect biodiversity by siting offshore wind energy schemes outside of the most sensitive marine environments and further offshore to limit impacts to sensitive landscape.

MINERALS AND WASTE

Forces for Change

Sand and gravel extraction occurs in the North Sea. As pressure on land-based sources continues to increase, there is likely to be greater reliance on dredging. As described under 'infrastructure' vessels used for dredging can have a significant impact on tranquillity and visual amenity, albeit locally and temporarily. Dredging also disturbs benthic habitats, removing the substrata and changing the topography of the seabed.

Gas extraction also occurs in the North Sea and natural gas fields are located approximately 25-30 kilometres offshore, and as such lie beyond the Study Area of this assessment. Therefore, whilst extraction is unlikely to directly affect the seascape of the Study Area, exploration, construction, operation and decommissioning of facilities can have a detrimental effect on the character and visual amenity of the wider environment.

Shaping the Future Landscape

The goal should be to manage dredging, ensuring vessels are kept outside the most sensitive marine environments.

Measures should be taken to ensure impacts of gas extraction are localised if practical, protecting the landward seascapes.

AGRICULTURE, LAND MANAGEMENT AND FISHING

Forces for Change

In recent decades, fishing activity has been transformed by more powerful fishing gears and vessels, thereby increasing pressure on stocks and potentially causing long term damage to sea floor sediments. Fishing activity has also been identified as a major contributor to litter. Items may include nets, boxes and buoys and can have a significant impact on visual perceptions of the seascape and well as 'ghost fishing', where discarded equipment continues to fish.

Shaping the Future Landscape

The aim should be to manage fishing activity, ensuring trawling does not compromise seascape or biodiversity character.

ENVIRONMENTAL PROCESSES AND CLIMATE CHANGE

Forces for Change

Rising sea levels associated with climate change will result in a progressive realignment of the geographical area lying within this Offshore Industries, Fisheries and Navigation Landscape Type.

GROUP 2:
FENLAND
AND FENLAND
MARGINS

GROUP 2
PAGES 97-118

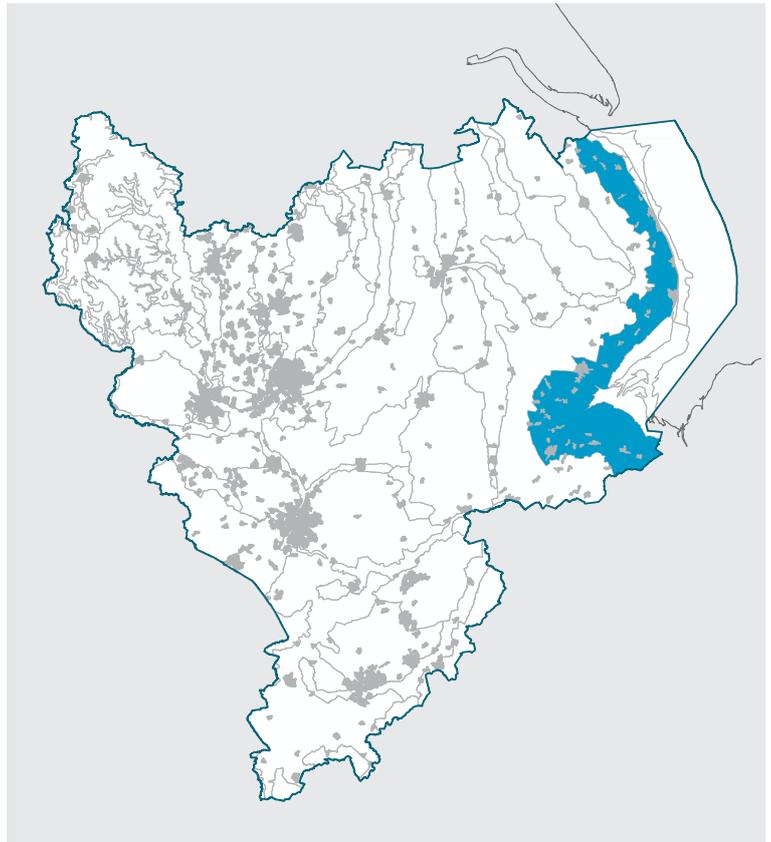


Flat farmlands with extensive and uninterrupted vistas are characteristic of the Fenland and Fenland Margins (© J Watson)

2A: SETTLED FENS AND MARSHES



Fertile soils support arable farming and horticulture
(© Wash Estuary Strategy Group/A Lambert)



KEY CHARACTERISTICS

- Low lying, flat and open landscape with wide horizons and panoramas encompassing vast skies;
- Fertile soils supporting highly productive arable farming with limited biodiversity interest;
- Successive periods of enclosure creating local variations in character from organic late Saxon enclosures to rigid 19th and 20th century geometric field systems towards the coast;
- Field boundaries predominantly defined by wet dykes, sea walls, roads and canalised rivers; few hedgerows, hedgerow trees and woodlands;
- Large farm buildings and glass houses often associated with industrial scale agricultural and horticultural operations; and
- Coastal seaside resorts with large areas of static caravans and associated facilities contrast to productive farmland and remote countryside elsewhere.

LANDSCAPE CHARACTER

The Settled Fens and Marshes is a complex Landscape Character Type that has been strongly influenced by various episodes of enclosure and settlement of former saltmarsh and fen.

Lying beyond the limits of the Roman's first sea defences that ran between Peterborough and Lincoln further to the west, the area was first drained and settled by the Saxons. The organic pattern of enclosure boundaries and roads of the 'Townlands' provide a tangible link to the origins of the well settled agricultural landscape. Here, ancient villages and outlying hamlets mark the first of several successive waves of drainage, enclosure and settlement, culminating in the more geometric patterns associated with 19th and 20th century enclosures towards the coast.

Land use is typically arable, the area being particularly fertile and productive. This has resulted in only small areas of land being noted for their habitat value. Wide areas are well settled and busy, notably coastal resorts during the summer months. Elsewhere, the scarcity of settlement and access means that wide areas are remote and isolated, with perceptions enhanced by featureless horizons and vast skies.



Grazing Marshes and Pasture, Saltfleetby, Settled Fens and Marshes.
(© Neil Pike, Natural England)

PHYSICAL INFLUENCES

The underlying geology is largely Quaternary tidal flat deposits of clay and silt, which give rise to naturally wet, fertile loamy and clayey soils. Landform is generally flat and low lying, typically between sea level and 5m AOD, although some areas lie below sea level.

From the 4th century rising sea levels led to the deposition of a band of marine silts which in turn led to the creation of intertidal salt marshes with localised areas of slightly higher ground. Prior to improvement, the river systems, along with tidal inundations, caused widespread seasonal waterlogging of the area. Centuries of drainage and water management have created artificial, canalized river channels which run straight for several kilometres and are flanked by high embankments to protect the adjacent lower lying fields. Elsewhere smaller streams appear to occupy more natural winding courses. However, these too are part of a highly managed water management system to maintain the viability of agricultural areas.

With the flat landscape and no geological exposures, there is very limited potential for the application of practices for the care, maintenance and management of features of geodiversity interest and the promotion of their educational and interpretational interest. However, the former river channels beneath the fenland deposits often produce raised ground and form excellent geomorphological features worthy of preservation.

Land cover is dominated by productive agriculture comprising predominantly wheat, barley, legumes and brassicas. However, some pasture is evident in smaller hedged fields close to villages and along seabanks. Bulb growing is also notable, with fields of flowers providing seasonal colour and visual interest. Intensive agriculture has resulted in only limited retention of semi-natural habitats, but with the close proximity of internationally important coastal and marine habitat, this highlights the importance of good agricultural practices across the landscape.

Woodland cover is generally sparse. However, some areas fringing the Lincolnshire Wolds retain higher levels of woodland cover, a significant proportion of which is ancient woodland. The predominant pattern across the Settled Fens and Marshes is of small plantations of young trees, often arranged in geometric shelter belts and plantations close to farms or along field boundaries in an otherwise open, agricultural landscape. Hedgerows are also largely absent, giving visual prominence to trees found along roadsides, in belts around farms and clustering on the fringes of villages.

CULTURAL INFLUENCES

The Settled Fens and Marshes display a complex history of land drainage, settlement and agriculture. In a landscape that displays a simple unity in the underlying physical influences of geology, soils, landform and land use, the local variations in landscape character are significantly influenced by the age and type of land reclamation and more recent patterns of settlement and agricultural land management.



River Eau at Saltfleetby, Settled Fens and Marshes
(© Neil Pike, Natural England)

During the prehistoric and Roman period the landscape would have been coastal in character characterised by intertidal salt marsh and areas of marginally higher ground. However, rather than being beyond settlement and practical use, the landscape would have been a rich wetland environment exploited by local communities for wildfowl and an important base for salt manufacture.

In the mid Saxon period, cattle ranches were set up on the higher ground, linked to inland areas by drove roads. However, it was during the medieval period that the coastal fens and marshes began to be comprehensively drained and settled. The ‘Townlands’, located in a broad arc inland from The Wash form the historic core of the landscape and represent a period of drainage and enclosure from at least the late Saxon period. A string of nucleated medieval market towns and villages lie along winding arterial routes running parallel to the coastline, with several having outlying satellite settlements, often sharing the name of the parent community. The villages and towns of the Townlands are characterised by ancient stone churches and post medieval brick structures, set within a framework of winding rural roads and sinuous enclosures.

The seaward edge of the Townlands is defined by the Roman Bank, constructed around 1300, beyond which lay areas of coastal saltmarsh that were reclaimed in later centuries. The land was initially used for wildfowling and seasonal grazing, with livestock being driven between extensive areas of common saltmarsh and drier areas inland close to the villages. During the post medieval period (between 1660 and early 19th century) the common saltmarsh was drained for farming with field patterns becoming more regular and geometric as time progressed. Here, settlement tends to be dispersed, strung out along roads with older properties tending to be of red brick and dating from the 1750s onwards, interspersed with modern agricultural buildings, some of which are on an industrial scale. Windmills remain a common sight, which along with church towers, are iconic

and prominent landmarks in an otherwise flat, open landscape. A fine example can be seen at Moulton, where the early 19th century tower mill mirrors the scale of the nearby medieval church spire.

Further towards the coast, a network of active and relict earthen sea banks is evident, along with continuation of agricultural land uses, associated with 19th and 20th century reclamation and enclosure. When compared to inland areas, the coastal enclosures display a more rigid and geometric character and a lower settlement density, with large areas retaining a remote and inaccessible character.

Boundaries throughout the Settled Fens and Marshes generally comprise narrow, shallow wet dykes interspersed with modified river channels. The characteristic organic pattern of roads and enclosures is a dramatic contrast to the rigidly geometric patterns evident across the neighbouring fens. These variations are often a good indication of the period of time that the land was reclaimed and settled. However, even within the organic framework of Saxon and medieval boundaries, reorganisation has occurred including field amalgamation and sub divisions, often as a result of post 1950s agricultural reform.

Several towns served as coastal ports during the medieval and post medieval period. As rivers and havens became silted up and coastal sand bars grew, a number of ports such as the historical settlement of Boston, which was associated with the European wool trade, could only function as navigations after rivers were straightened and widened to decrease upstream flooding. Other settlements such as Wainfleet, which was important for the herring and salt industries, could no longer function as ports.

During the 19th century several coastal settlements benefited from a significant influx of people and money. One example is Skegness, a former fishing village which grew rapidly in the late 19th century. Initially its prosperity was a result of the local middle classes indulging in the new fashion for sea bathing. However, in the later 19th century

the railway arrived, bringing day trippers from the industrial cities. The subsequent decades saw planned growth and expansion, including the construction of piers, promenades and parks. The continued popularity of coastal resorts has resulted in their expansion throughout the 20th century, with recent decades seeing the growth of large static caravan parks.

The Lincolnshire Coastal Grazing Marshes Project has undertaken a detailed study of the 'outmarsh' that forms part of this landscape type. The area is rich in archaeological remains that contribute to the landscape character of the area, including prehistoric archaeology, ridge and furrow and abandoned settlements.



Settled Fens and Marshes (© Carol Paterson, Natural England)

AESTHETIC AND PERCEPTUAL QUALITIES

Whilst superficially there is a great unity of character across the Settled Fens and Marshes, largely as a result of its simple landform and intensive arable land use, there is great contrast in the way the landscape is perceived at local level. The sinuous and ancient character of the Townlands is evocative of a long and continuous settlement history stretching back over a thousand years, whereas elsewhere the geometric field patterns and industrial scale farm complexes creates an altogether more modern character.

Similarly, wide areas appear remote and tranquil, particularly in inaccessible areas around the coastal fringe, where the vast skies and broad, sometimes featureless horizons add to their isolated character. By contrast, in close proximity to the Townlands villages and arterial roads, tranquillity is all but lost and the landscape is perceived as well settled, busy and active. Across much of the landscape, many long views are foreshortened by tree belts. Whilst not extensive, these merge in views at ground level to form a backdrop to many panoramic views to the wide horizon.

Whilst there is a strong, simple unity of land cover features, great variation in colour and texture is created by various agricultural regimes, the absence of hedgerows allowing wide vistas across a geometric pattern of contrasting colour and texture.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

Modern built development is affecting the Townlands villages, eroding their architectural and historic character. Development on settlement margins can be particularly damaging, creating visual intrusion, resulting in the loss of surrounding landscape features and increasing the risk of coalescence. Proliferation of smaller, unplanned residential development along arterial roads is also changing the landscape, reducing the sense of remoteness and enclosing views.

Rising sea levels associated with climate change, and future changes to the coastal morphology is likely to affect the availability of land for future development with severe restrictions on growth and the longer term prospects for settlements, such as the historic settlement of Boston.

Shaping the Future Landscape

The aim should be to protect the distinctive character of settlements throughout the landscape and consider the visual impact of any new development. Specific mechanisms include Village and Town Design Statements, guiding the design of new development and ensuring the appropriate use of vernacular styles and building materials; and planning guidance for settlement coalescence, ensuring strategic gaps between settlements are maintained. As well as Village and Town Design Statements, Conservation Area Appraisals can also be important tools.

Best practice innovative architectural ideas and planning solutions utilising eco-friendly and high quality design that minimise impact on local landscape and townscape character should also be encouraged, along with limited tree planting around settlement fringes to help integrate new development into the landscape.

INFRASTRUCTURE

Forces for Change

Road improvements are commonplace, including straightening of existing routes and new 'by-pass' schemes designed to alleviate congestion within the Townlands villages. This has an urbanising effect and brings a degree of standardisation to the countryside.

Windmills are a common feature of this landscape, acting as distinctive local landmarks. However, while no new windmills are being built, some existing windmills are in poor condition. This can affect scenic quality and create an impression of disrepair.

Shaping the Future Landscape

The aim should be to protect the existing character of the rural road network, whilst having regard to safety requirements. Any new roads should be carefully planned and designed to provide positive environmental and landscape enhancements and strengthen prevailing character.

The aim should be to protect existing windmills, ensuring they positively contribute to the landscape character and enhance legibility in an area. Opportunities should be explored to manage and promote deteriorating windmills, providing recreational and educational benefits.

ENERGY PROVISION

Forces for Change

Wind energy schemes are a common feature of this landscape due to the strength of prevailing winds off the North Sea. Given the Government's commitment to increasing energy from renewable sources, there is likely to be continued pressure to accommodate new wind energy schemes. Indeed, further schemes are under construction, consented or in planning. New wind energy schemes will create visual landmarks in this predominantly flat landscape and reduce the sense of remoteness and isolation.

Shaping the Future Landscape

The aim should be to protect the historic character of villages and the open character of the surrounding landscape by siting wind energy schemes away from visually prominent locations. The impact on long distance views from the coast and areas inland should also be considered. There is potential for strategic regional and sub regional guidance on commercial wind energy schemes, including cumulative impact, informed by the EMRLCA and other studies. In addition, planning guidance for the siting and design of wind energy schemes should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development and setting out

the criteria against which new applications will be assessed.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

There is marked evidence of agricultural intensification and farm amalgamation, accompanied by a move towards arable production. This has resulted in the loss or damage of many typical landscape features, including traditional patterns of field boundaries and remnants of ridge and furrow, contributing to a more homogenous landscape. Soil erosion associated with the large and exposed open fields is an ongoing problem and may be exacerbated by further agricultural intensification and also the effects of climate change. The loss of pasture is particularly evident around settlements, where grazing animals and smaller field sizes contribute to the setting and structure of several villages.

There is also a proliferation of new large scale agricultural buildings, reflecting the loss of small holdings and the general increase in farm size. The popularity in bulb growing is also notable, with an increase in the number of poly-tunnels and glass houses. Such structures can reduce the sense of remoteness in rural areas and cause visual intrusion, enclosing previously open views.

Shaping the Future Landscape

The aim should be to protect existing rural landscape features, whilst encouraging positive management of those features lost or under threat. In particular the restoration of hedgerows should be given priority around urban areas, along with an increase in grassland and pasture, creating a stronger and more mixed pattern of land use, whilst helping to integrate new development into the landscape. This will also help to limit the occurrence and effects of soil erosion. However, care should be given not to disrupt the characteristic wide horizons and panoramas in more remote locations.

The aim should be to protect the distinctive open character of the landscape and consider the visual impact of any new structures. New, large scale agricultural buildings should be carefully sited, away from visually prominent locations and located amongst existing buildings where possible. The opportunity to conserve and upgrade existing barns and buildings should also be explored.

FORESTRY AND WOODLAND

Forces for Change

Woodland cover is generally sparse; however, there is evidence of more recent tree planting close to settlements or along field boundaries in an otherwise open agricultural landscape. Coniferous shelterbelts are particularly common around isolated farm buildings. While trees can be used to screen or soften views of buildings and create opportunities for recreation and nature conservation, new planting can introduce inappropriate and visually intrusive elements in this flat and open landscape.

Shaping the Future Landscape

The aim should be to protect the distinctive open character of the landscape by ensuring the type, scale and location of new woodland and tree planting is appropriate. Tree planting should generally be limited to roads margins or ditches where trees are already a local feature or in and around established settlements as part of mechanisms for visual containment of new built development. Instead priority should be given to managing more characteristic habitats and features, such as saltmarsh and drainage ditches as part of enhanced habitat reserves.

TOURISM AND LEISURE

Forces for Change

The continued popularity of coastal resorts has resulted in their expansion, with recent decades seeing the growth of large static caravan parks. This is particularly evident around towns such as Skegness and Mablethorpe. As with any new development on settlement margins this can be particularly damaging, causing visual intrusion, and resulting in the loss of surrounding landscape features and increasing the risk of coalescence. Static caravans tend to homogenise the landscape, creating a repetitive pattern of similar sized and shaped units.

Shaping the Future Landscape

The aim should be to protect the distinctive open character of the landscape and consider the visual impact of any new or extended caravan parks. Planning guidance for the siting and design of static caravan sites should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development and ensuring strategic gaps between settlements are maintained. The management of native tree and hedgerow planting should also be encouraged, containing the edges of sprawling resorts.

ENVIRONMENTAL PROCESSES AND CLIMATE CHANGE

Forces for Change

Along the coast is a network of sea banks, protecting against tidal flooding and inundation. In an effort to combat the growing threat associated with sea level rise linked to the effects of climate change, new engineered flood defences are being created and parts of the existing sea bank are deliberately being breached. This process is resulting in a new line of defence and the loss of some productive agricultural land.

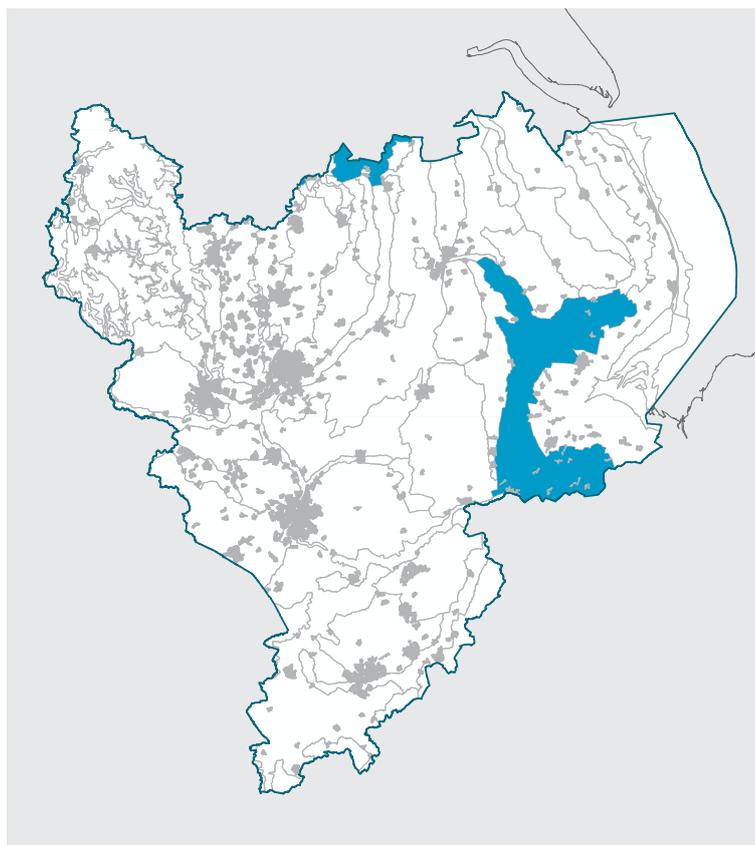
Shaping the Future Landscape

The aim should be a planned process for the future sustainable management of the coast, conserving areas further inland and creating new areas of saltmarsh along the coast. New or realigned flood defences should attempt to not compromise existing recreation, nature conservation or heritage features. The management of new and existing salt marshes should also be considered, including the re-introduction of grazing.

2B:

PLANNED AND
DRAINED FENS AND
CARRLANDS

Drainage channels divide the landscape
(© J Watson)



KEY CHARACTERISTICS

- Consistently low lying terrain and simple palette of land uses and landscape features gives visual unity and strong sense of identity;
- Large scale open landscape of flat farmlands with extensive and uninterrupted vistas to distant horizons beneath vast skies;
- 18th and 19th century enclosure characterises historic landscape patterns underpinned by complex history of drainage and enclosure stretching as far back as the late Saxon period in some places;
- Significant areas at or below sea level, with modestly elevated areas acting as the focus of settlement;
- Hierarchy of canalised rivers, high level drains and ditches divide the landscape up into rigid geometric patterns, dictating the grain of the landscape and patterns of movement and settlement;
- Limited settlement pattern characterised by isolated farms and linear villages strung out along roads; majority of buildings in brick with tile roofs, further adding to uniform character of the landscape;
- Rich and varied arable land uses, root crops, bulbs, vegetables and horticultural glass houses give the landscape a highly productive character and seasonal variations in colour and texture; and
- Strong sense of remoteness in expansive and sparsely settled areas although periods of intense activity during harvest.

LANDSCAPE CHARACTER

The Planned and Drained Fens and Carrlands Landscape Character Type possesses a strong landscape character derived from a simple palette of landscape features. Low lying terrain, some of which lies below sea level, is the strongest unifying character, although the rigid geometry of field drainage ditches and roads, extensive arable farms and limited settlement all combine to add to the strong and instantly recognisable identity of the landscape.

The history of the various areas of fens and carrlands that combine to form this Regional Landscape Character Type is complex. Some areas were drained and settled relatively late, whereas others demonstrate ancient patterns of enclosure that stretch back as far as the late Saxon period. Despite this, the characteristic rigid geometry of parliamentary enclosures, roads and sparse settlement create visual unity in the landscape.

The land is highly productive and is particularly well suited to intensive modern arable agriculture. This has resulted in only very limited areas of biodiversity interest. Settlement is also thinly spread, maximising the area of agricultural land.

The landscape is one of vast skies, wide panoramas and distant horizons. Whilst periodically the landscape is busy with machines and gangs of agricultural labourers, it is typically quiet with a prevailing sense of remoteness and isolation.



Planned and drained Fens and Carrlands
(© Carol Paterson, Natural England)

PHYSICAL INFLUENCES

The underlying geology is largely Quaternary deposits of clay and silt, which give rise to naturally wet, loamy or friable peaty soils. Landform is generally flat and low lying with significant areas lying at or below sea level.

A multitude of rivers and streams once meandered through the landscape, that from at least the Neolithic period deposited clays and silts washed down from neighbouring uplands to cloak the underlying geology and create a rich matrix of wetland environments. The influence of the sea is also important to note in areas fringing The Wash in Lincolnshire. Here, rising sea levels in the late Roman period around the outer, seaward fringes of the fens resulted in vast areas of marine silt being deposited, which in turn stemmed the flow of the rivers draining the neighbouring uplands, behind which freshwater peat fens developed.

With the flat landscape and no geological exposures, there is very limited potential for the application of practices for the care, maintenance and management of features of geodiversity interest and the promotion of their educational and interpretational interest. However, the former river channels beneath the fenland deposits, which often produce raised ground, and the river terraces associated with the rivers draining the landscape, form excellent geomorphological features worthy of preservation.

Centuries of water management have canalised the main rivers, straightened streams and created a gridded network of drainage channels, allowing widespread use of the productive soils for farming. Land cover is dominated by arable production, notably cereals, legumes and brassicas. Bulb and flower cultivation is also notable, with vast acres providing seasonal colour and visual interest.

Tree cover is sparse except for geometric shelter belts and plantations along field boundaries and close to farmsteads. Intensive and widespread land improvement has significantly reduced the coverage of semi natural habitat, which at one time would have been a combination of fenland, wet woodland, carr and standing open water, highly valued by local communities for fishing and wildfowling.

Despite widespread intensive agriculture, some linear stretches of reed bed and grassland are noted for their biodiversity value along several major drains and rivers, such as the River Glen south east of Bourne, and remnant semi natural habitats continue to thrive on the River Idle in Nottinghamshire. However, it should be noted that surviving semi natural habitat is highly fragmented, with sites located in extensive areas of intensively managed agricultural land.

CULTURAL INFLUENCES

Superficially, the fens and carrs appear to have been drained and settled in a relatively short space of time between the late 18th and early 19th centuries. However, there is significant time depth and complexity within the seemingly modern geometric landscape. Whilst there are remnants of ancient drove roads preserved in modern boundaries and routes and evidence of late Saxon and medieval strip enclosure on the Lincolnshire fens, the dominant pattern of medium to large rectilinear fields, defined by shallow wet field dykes, is generally associated with drainage from the 17th century onwards. This is overlain with the rigid and unrelenting geometry of the later parliamentary enclosures of the late 18th and early 19th centuries.

The General Drainage Act of the late 16th century opened the way for extensive reclamation of the Lincolnshire fens which was largely driven and funded by private and aristocratic investors, known as 'Adventurers'.

Reclamation of the fens continued throughout the centuries. However, as the peaty soils shrank and oxidised as they dried out, artificial methods of land drainage were needed, first in the form of windmills and steam pumps, and later by diesel and electric

alternatives. Initially the reclaimed land was unenclosed common grazing. From the late 18th and 19th centuries, however, population growth and food shortages prompted the common grazing to be enclosed and turned over to arable crops which thrived on the rich peaty soils.

A similar pattern can be seen in the carrlands of north Nottinghamshire. Here successive drainage schemes saw land reclaimed from common grazing from the 17th century onwards, later to be overlain by a grid of regular geometric parliamentary enclosures and roads and the installation of pumps to drain the farmland into the River Idle.

Therefore, within a framework of centuries old enclosure, the geometric pattern of parliamentary fields was created across the landscape. The construction of road infrastructure and settlement of the reclaimed lands would also have mostly occurred at the time of the parliamentary enclosures, which further contributes to the current perception that the fenland and carrland areas we see today are the result of just two centuries of endeavour.

In recent times boundary loss has been a feature of the landscape, with the drive towards increased yields and development of ever larger machines promoting the creation of prairie fields in many areas. Other changes have arisen from the industrialised nature of modern farming practices with large buildings for the storage, processing and distribution of agricultural produce now a common feature.

The relatively late agrarian exploitation of these areas is evidenced in the low density of settlement and prevalence of isolated brick farmsteads of the 18th and 19th centuries. These isolated farmsteads are often the only built elements in wide areas of arable farmland and as such contribute to the perceived remoteness of some areas. In the absence of stone or wood, brick is the ubiquitous building material of the landscape and whilst there are various building styles and type of brick used, its widespread use adds to the visual unity of the landscape.

AESTHETIC AND PERCEPTUAL QUALITIES

The consistent relief of level landform and widespread arable land uses gives a high level of visual unity to the landscape, as well as contributing to a strong sense of place and local identity. This is further enhanced by the ubiquitous use of brick as the principal building material and 18th and 19th settlement patterns within a regular pattern of geometric parliamentary enclosures and roads networks.

The flat, featureless topography creates large scale and expansive views across wide areas. Combined with the relative absence of settlement and activity this gives the landscape a remote, tranquil character, although this is significantly reduced at times of the year when large gangs of seasonal labourers are employed to harvest vegetables.

The agricultural landscape is carefully controlled, with only very limited areas of semi natural habitat in evidence, giving the landscape a productive and utilitarian character. Where present, areas of scrub, semi natural woodland and reedbed gain added significance and provide a tantalising glimpse of the appearance of the landscape prior to drainage and enclosure.



Planned and Drained Fens and Marshes
(© Carol Paterson, Natural England)

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

Whilst there is generally little settlement, piecemeal development along arterial roads is reducing the sense of remoteness and creating visual intrusion. Light industrial uses in particular, such as garages and workshops, interrupt the landscape. Where development is particularly concentrated, this can enclose views and dilute the landscape's typically strong identity.

Shaping the Future Landscape

The aim should be to protect the distinctive character of the landscape. New residential, commercial and industrial development should generally be encouraged within and around existing settlements, limiting widespread incremental development. Where isolated development is unavoidable, innovative best practice architectural ideas and planning solutions that minimise impact on the landscape should be encouraged.

ENERGY PROVISION

Forces for Change

Wind energy schemes are a common feature of this landscape due to the strength of prevailing winds off the North Sea. Given the Government's commitment to increasing energy from renewable sources, this trend looks set to continue with increasing pressure for wind energy schemes. New wind energy schemes will create visual landmarks in this predominantly flat landscape and reduce the sense of remoteness and isolation.

Shaping the Future Landscape

The aim should be to protect the open character of the surrounding landscape by siting wind energy schemes away from visually prominent or sensitive locations. The impact on long distance views from the coast and areas inland should also be considered. There is potential for strategic regional and sub regional level guidance on commercial wind energy schemes, including cumulative impact, informed by the EMRLCA and other studies. In addition, planning guidance for the siting and design of wind energy schemes should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development and setting out the criteria against which new applications will be assessed.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

There is marked evidence of agricultural intensification and farm amalgamation, accompanied by a move towards arable production. Due to the flat, featureless topography of the area, specifically the lack of hedgerows, the implications of agricultural intensification is generally expressed in ‘improvements’ to dykes and embankments.

Indeed, ditches are a key feature of the landscape, draining the fens to create productive agricultural land. This process has implications for the shrinkage of peat soils and reducing water quality caused by soil erosion and nutrient leaching. Soil erosion associated with the large and exposed open fields may also be exacerbated by further agricultural intensification and the effects of climate change.

There is also a proliferation of new large scale agricultural buildings, reflecting the loss of smallholdings and the general increase in farm size. The impact of new structures is to reduce the sense of remoteness and create visual intrusions.

In addition to wind energy schemes, energy crops are being cultivated to meet renewable energy targets, including Miscanthus and Short Rotation Coppice (SRC). These fast growing and tall crops can radically change the appearance of the landscape. There is also a requirement for storage and processing facilities, which along with other types of agricultural buildings, can result in the loss of landscape features and increase visual intrusion.

Shaping the Future Landscape

The aim should be to protect the distinctive open character of the landscape and consider the visual impact of any new structures. New large scale agricultural buildings should be carefully sited, away from visually prominent locations and amongst existing buildings where possible. Specific design guidance for farmsteads may be appropriate, establishing the criteria for new development. Although the introduction of energy crops will be more difficult to manage, grant applications to Natural England or the Forestry Commission may require an assessment of landscape and visual impacts.

In response to agricultural intensification, natural vegetation should be managed along dykes, drainage ditches and field margins, creating visual and biodiversity interest. The aim should also be to manage water quality and levels of dykes and ditches. Management plans should be encouraged which seek to identify and remediate against the sources of pollution and soil erosion, and could also incorporate phased enhancements to ditches and dykes to enhance biodiversity. Such proposals may be supported by Environmental Stewardship grants.

FORESTRY AND WOODLAND

Forces for Change

Woodland cover is generally sparse; however, there is evidence of more recent tree planting close to settlements or around individual farm buildings. Fast growing coniferous trees, such as *Cupressocyparis leylandii*, are particularly common, used as a screen to development or to provide shelterbelts. Unless carefully sited, new planting can introduce inappropriate and visually intrusive elements in this flat and open landscape.

Shaping the Future Landscape

The aim should be to protect the distinctive open character of the landscape by ensuring the type and location of new woodland and tree planting is appropriate. Tree planting should generally be discouraged in remote areas. However, very limited native tree planting may be appropriate to soften the impact of agricultural or industrial buildings in the landscape. Instead, priority should be given to managing more characteristic habitats and features, such as dykes and drainage ditches.

TOURISM AND LEISURE

Forces for Change

Although the landscape is not currently a major tourist destination, there are an increasing number of visitor centres, picnic spots, caravan/camp sites and holiday cottages. As with any new development this can cause visual intrusion and result in the loss of landscape features. The effect is particularly evident in locations with little or no settlement.

Shaping the Future Landscape

The aim should be to protect the distinctive open character of the landscape and consider the visual impact of any new tourist facilities. Planning

guidance for the design and siting of new tourist facilities should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development whilst ensuring facilities respond to projected demand. In addition, the diversification of farms to provide attractions and accommodation should be carefully managed to ensure a balance is struck between maintaining rural character and supporting the rural economy.

ENVIRONMENTAL PROCESSES AND CLIMATE CHANGE

Forces for Change

The effects of rising sea level as a consequence of climate change has the potential to progressively affect the lower lying area and inundation of some areas may occur in the future. There is also the potential for the water table to rise in the river terrace deposits, resulting in waterlogged ground conditions and flooding.

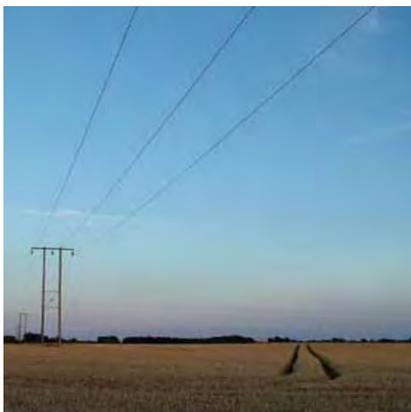
Shaping the Future Landscape

The aim should be to adapt agricultural land management practices to accommodate the projected effects of sea level rise and inundation and flooding in the locations where this is anticipated, and in association with a planned process of future sustainable management options for the adjacent Settled Fens and Marshes.

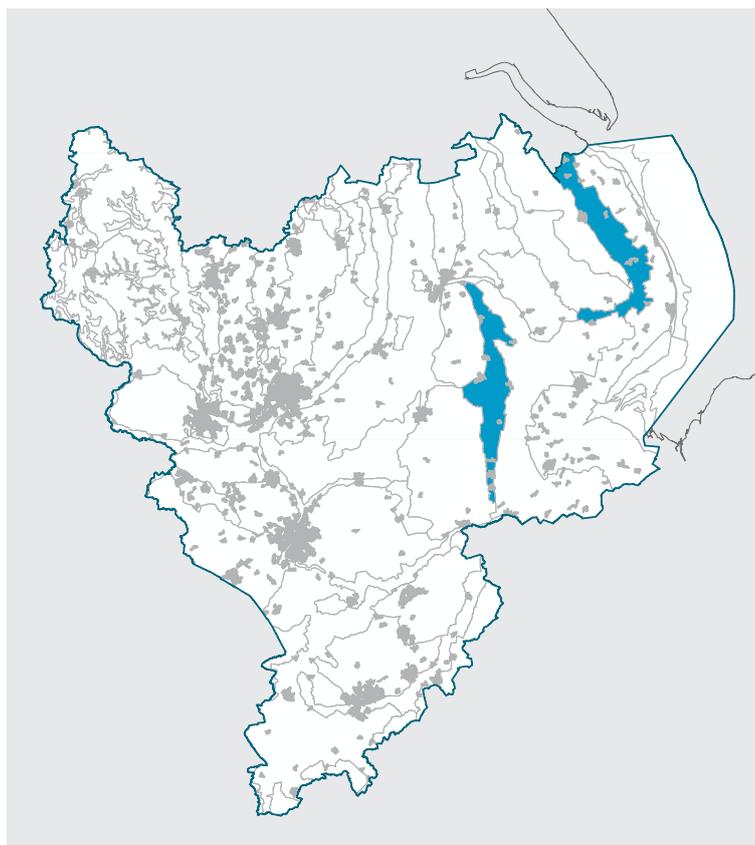


Planned and Drained Fens (© Carol Paterson, Natural England)

2C:

FEN AND MARSH
MARGIN FARMLANDS

Large scale open landscape, displaying features of the low lying fens (© J Watson)



KEY CHARACTERISTICS

- Transitional landscape, displaying features characteristic of elevated areas to the west, and lowland fens and marshes to the east;
- Lowland landscape formed across expansive superficial deposits of till which gives unity of character despite varied underlying geology;
- Broad east facing landscape with consistent pattern of streams and field drains that run west to east create a gently undulating character and structure to the landscape;
- Small scale rural landscape of mixed farms with permanent pasture along valley bottoms;
- Well maintained hedgerows, woodlands, copses and plantations that contribute to well treed and intimate character;
- Network of sinuous winding rural roads linking nucleated villages, located at junctions of two or more routes; and
- Medieval moated sites and areas of remnant ridge and furrow combine with ancient road network and compact settlement cores to create a landscape of notable historic interest.

LANDSCAPE CHARACTER

The rural character of the Fen and Marsh Margin Farmlands Landscape Character Type demonstrates characteristics of both the low lying fens and settled marshes, and more elevated areas further inland but it is not typical of either.

The widespread deposits of glacial till create a unity of character despite contrasts in the underlying bedrock. A number of rivers and streams drain the neighbouring uplands to create a softly undulating landscape that shelves gently eastwards.

The rural landscape is characterised by a patchwork of medium sized fields, enclosed by hedgerows and ditches, and interspersed with woodlands, copses and plantations to foreshorten views and create a more intimate character than exists in the neighbouring fens.

An ancient pattern of roads and tracks creates a network of sinuous routes across the landscape. Nucleated villages and towns are often located at the junction of north south and east west routes, which along with the rivers create a framework within which more recent geometric field patterns can be observed. Churches and old stone buildings at the centre of villages, many of which display Saxon and Norse place names, provide tangible evidence of the long period of time that the landscape has been settled. Areas of remnant ridge and furrow and medieval moated sites also add to the historic interest of the landscape.



Fen and Marsh Margin Farmland (© Carol Paterson, Natural England)

PHYSICAL INFLUENCES

The Fen and Marsh Margin Farmlands is underlain by various rock types, predominantly comprising Jurassic mudstones, sandstones and limestones and Cretaceous chalk in areas fringing the Lincolnshire Wolds. However, the underlying geology has limited surface expression beyond stone used in older cottages at the centre of villages, due to widespread superficial deposits of till that mask the underlying rocks and create a unity of landscape character. This landscape type has limited potential for the application of practices for the care, maintenance and management of features of geodiversity interest and the promotion of their educational and interpretational interest. However, it includes features of geomorphological interest and educational value such as river terraces, and the stone buildings also provide interest.

Land generally falls eastwards from the more elevated areas of the Lincolnshire Wolds and limestone hills of the Kesteven Uplands and Lincolnshire Edge. A series of watercourses drain off these hills into the neighbouring Fens creating a regular pattern of east west valleys and watersheds and a soft, gently undulating topography, typically between 30 and 10m AOD. The watercourses are sinuous and appear to follow natural courses, unlike in the neighbouring fens and marshes. They are generally not highly visible in the landscape due to their small scale. However, their course can often be traced by observing lines of alder and willow trees and areas of wet woodland.

The superficial clay deposits give rise to seasonally wet loamy and clayey soils across much of the landscape. These are particularly suited to a mixed agricultural regime of improved grasslands and arable farming consisting of root crops and cereals. In low lying areas, such as along stream valleys, naturally wet alluvial soils are common, and used predominantly for permanent pasture. In contrast to the neighbouring lowlands to the east, the fields tend to be of medium scale and defined by well maintained hedgerows and ditches, with frequent hedgerow trees.

Widespread agricultural improvement has resulted in only limited areas of semi natural habitat in the landscape. However, sizable areas of ancient wet woodland bordering the fens and rivers and streams are a notable feature. Linear stretches of calcareous grassland are also notable on railway embankments and stretches of now dismantled railway lines winding through the landscape, indicating that quantities of limestone were imported for their construction. The dense and often well managed hedgerow and drainage ditches are also noted as contributing to local biodiversity interest and creating habitat networks in an otherwise highly managed agricultural areas.

CULTURAL INFLUENCES

The widespread distribution of villages throughout the landscape indicates that settlement patterns have been established for some considerable time with place name evidence indicating Norse and Anglo Saxon origins for many villages. Indeed, the location of these elevated lands would have been attractive to farmers looking for dry land for raising crops, and close to the rich natural resources and seasonal grazing that would have been widespread in the fens and marshes prior to their drainage and improvement.

Villages and hamlets tend to be nucleated, set around a historic core consisting of a dense cluster of older stone cottages and a church located at the junction of roads criss-crossing the landscape. They also are frequently sited centrally within long narrow parishes running west to east, seemingly planned and arranged originally to encompass upland areas for cereal cropping and low lying wetlands for seasonal grazing and wildfowling.

Indeed, several villages are located on or adjacent to the Carr Dyke, a drainage channel dug in the Roman period with each settlement 'owning' its own stretch of fenland. This pattern is less prevalent across the areas fringing the Lincolnshire Wolds, however. Louth was historically the local administrative and trading centre of the wolds to the west and marshes to the east, indicating it marks a strategic position at the transition between two very different types of landscape and rural economy.

Whilst the characteristic pattern of nucleated villages has close parallels to settlements in the neighbouring upland areas to the west, several linear hamlets and village extensions can be observed with rows of brick farm workers cottages strung out along roadsides. This is more typical of the fens and marshes, further emphasising the transitional character of the landscape.

As indicated previously, there is a strong pattern of transportation routes criss-crossing the landscape, some parts of which may have ancient origins as part of a network of drove roads accessing seasonal grazing in the marshes and fens. East west routes tend to be more numerous and follow watersheds between streams and rivers. North south routes are fewer, but are generally the principal arterial route through the landscape and focus for settlement. In contrast to the planned character of the fens, these routes tend to be winding and sinuous, indicating their ancient origins. The road network, along with winding streams and rivers create a broad framework into which the characteristically straight hedgerow boundaries of parliamentary enclosure can be observed.

Beyond the historic villages and network of ancient transportation routes, the landscape is rich in features of historic and cultural interest. The Carr Dyke, which defines the several stretches of the boundary of the landscape character type south of Lincoln, is of particular interest. Remnants of once more extensive ridge and furrow and a great number of medieval moated sites and fish ponds can be observed throughout the landscape in areas of permanent pasture, albeit in differing states of preservation and visibility in the landscape. Indeed the high occurrence of medieval defensive enclosures and castles indicates that the landscape has been of significant strategic importance for some considerable time. This is further evidenced in the distribution of defensive structures built during the Second World War.

AESTHETIC AND PERCEPTUAL QUALITIES

The landscape of mixed farms, medium sized fields and woodlands retains a strong rural character with a high degree of visual interest. Views tend to be foreshortened by undulating landform and woodlands, creating a domestic and intimate scale landscape, particularly adjacent to the neighbouring uplands. However, in some areas, and notably where land lies adjacent to the more open and expansive fens and marshes, long distance and panoramic views are common.

The intact and well maintained character of the landscape retains a strong historic character. Whilst the pattern of hedgerows largely dates to parliamentary enclosure of the 18th and 19th centuries, the underlying framework of winding roads, parish boundaries and small stone villages is a remnant of ancient settlement and land management. Areas of ridge and furrow and other historic sites preserved beneath pasture are also an important link to the past and evocative of past land use, which is a marked contrast to the neighbouring fens. The high occurrence of medieval defensive sites is of particular interest, and indicates that the landscape was regarded as a frontier for some considerable time.



Fen and Marsh Margin Farmland (© Carol Paterson, Natural England)

The landscape generally retains a quiet, rural character, albeit displaying a higher level of activity than is evident across the remote fens and marshes or the more sparsely settled uplands of the Lincolnshire Wolds and Kesteven Uplands. Areas surrounding the major towns and villages such as Bourne and Louth are busy, with recent growth adversely affecting the rural character and setting of these settlements.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

Modern in-fill residential development is affecting historic villages and hamlets, eroding their architectural and historic character. Development on settlement margins can also be particularly damaging, creating visual intrusion, resulting in the loss of surrounding landscape features and increasing the risk of coalescence. This is particularly evident on the fringes of larger towns, such as Louth, where new commercial and industrial premises are being developed.

Shaping the Future Landscape

The aim should be to protect the rural character of the landscape and limit the visual impact of any new development by locating development close to existing settlement. Townscape character should be considered, and care taken to ensure new development is appropriate in terms of design and scale. Specific mechanisms include Design Statements for those villages and market towns most prone to infill development and expansion and the use of best practice innovative architectural ideas and planning solutions that minimise impact on local landscape and townscape character, encourage the appropriate use of vernacular styles and building materials and utilise eco-friendly high quality design.

INFRASTRUCTURE

Forces for Change

Road improvements are commonplace, including straightening of existing routes and new ‘by-pass’ schemes designed to alleviate congestion within the villages. This has an urbanising effect and brings a degree of standardisation to the countryside. The network of green lanes, comprising tracks connecting farms and villages to the market towns within the area, is also significant and an important green infrastructure asset that forms part of a wider sustainable movement network. New development on the fringes of villages and towns could result in severance of these tracks and interconnected routes if priority is not given to their retention and incorporation.

Shaping the Future Landscape

The aims should be to protect the existing character of the rural road network, whilst having regard to safety requirements. Any new roads should be carefully planned and designed to provide positive environmental and landscape enhancements. The network of green lanes should be managed as a historical and recreational asset, ensuring their continued contribution to landscape character and enjoyment of the countryside.

ENERGY PROVISION

Forces for Change

Wind energy schemes are not characteristic of this landscape, although do occur in the neighbouring Settled Fens and Marshes Landscape Character Type to the east. Given the Government’s commitment to increasing energy from renewable sources, there is likely to be pressure to accommodate new wind energy schemes. New wind energy schemes will create visual landmarks in this predominantly flat area and reduce the sense of remoteness and isolation.

Shaping the Future Landscape

The aim should be to protect the open character of the surrounding landscape by siting wind energy schemes away from visually prominent locations. There is potential for strategic regional and sub regional level guidance on commercial wind energy schemes, including cumulative impact, informed by the EMRLCA and other studies. In addition, planning guidance for the siting and design of wind energy schemes should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development and setting out the criteria against which new applications will be assessed.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

There is marked evidence of agricultural intensification and farm amalgamation, accompanied by a move towards arable production. This has resulted in loss or damage to many typical landscape features, including traditional field boundaries and remnants of ridge and furrow, contributing to a more homogenous landscape.

In addition to wind energy schemes, energy crops are being cultivated to meet renewable energy targets, including Miscanthus and Short Rotation Coppice (SRC). These are fast growing and tall crops that can radically change the appearance of the landscape.

There is also a requirement for storage and processing facilities, which along with other new large scale agricultural buildings, can reduce the sense of remoteness in rural areas and cause visual intrusion.

Shaping the Future Landscape

The aim should be to protect the distinctive open character of the landscape and consider the visual impacts of any new structures and changes to farming practices. New buildings and infrastructure should be carefully sited away from visually prominent locations and amongst existing structures where possible. Although the introduction of energy crops will be more difficult to manage, grant applications to Natural England or the Forestry Commission may require an assessment of landscape and visual impacts.

The aim should also be to encourage positive management of those features lost or under threat. The restoration of hedgerows should be given priority, along with an increase in grassland and pasture, creating a stronger and more mixed pattern of land use. However, consideration should be given to local variations in landscape character, particularly close to the Fens and Marsh Margin Farmlands where it is important to maintain a sense of openness.

FORESTRY AND WOODLAND

Forces for Change

Woodland cover varies across the landscape, with generally more woodland towards the Lincolnshire Wolds and limestone hills of the Kesteven Uplands and Lincolnshire Edge. Considering the transitional nature of this landscape, new woodland planting would be generally appropriate, strengthening the relationship between adjoining RLCTs, reinforcing the intimate character and sense of enclosure, whilst increasing overall woodland coverage in the East Midlands Region. New woodland could also be used in and around settlements to integrate new development into the landscape and contain future growth.

Shaping the Future Landscape

The aim should be to plan new woodland creation in upland areas and around key settlements. Such proposals should be undertaken in collaboration with the Forestry Commission and local landowners, and financial support may be available through the English Woodland Grant Scheme. Existing woodlands are characteristically small plantations or copses and large scale woodlands should be discouraged. However, consideration should be given to local variations in landscape character, particularly close to the Fens and Marshes Margin Farmlands where it is important to maintain a sense of openness.

ENVIRONMENTAL PROCESSES AND CLIMATE CHANGE

Forces for Change

The effects of rising sea level as a consequence of climate change has the potential to progressively affect this lower lying part of the Fen and Marsh Margin Farmlands that occur in the eastern part of the region adjacent to the Settled Fens and Marshes, and inundation of some areas may occur in the future.

Shaping the Future Landscape

The aim should be to adapt agricultural land management practices to accommodate the projected effects of sea level rise and inundation for the eastern part of this Landscape Type in the locations where this is anticipated, and in association with a planned process of future sustainable management options for the adjacent Settled Fens and Marshes.

GROUP 3:
RIVER VALLEY
FLOODPLAINS

GROUP 3
PAGES 119-134



River channels bordered by riparian habitat are characteristic of the River Valley Floodplains (© River Nene Regional Park/M Williams)

3A: FLOODPLAIN VALLEYS



Pastoral farming along river channels
(© Nottinghamshire County Council)



KEY CHARACTERISTICS

- Deep alluvium and gravel deposits mask underlying bedrock geology to create wide, flat alluvial floodplains surrounded by rising landform of adjacent Landscape Character Types;
- River channels, often along managed courses, bordered by riparian habitat;
- Predominance of pastoral land use, with cereal growing increasing in some areas. 'Warping' areas subject to more intensive cereal growing;
- Limited woodland cover; however, steep riverside bluffs and areas close to settlement or on former gravel extraction sites notable for a higher level of woodland cover;
- Regular pattern of medium to large fields defined by hedgerows or post and wire fencing, breaking down and becoming open in some areas;
- Hedgerow and riverside trees important component of landscape. Alder, Willow and Poplar are typical riverside trees;
- Limited settlement and development in rural areas;
- Sewage Treatment Works and power stations common close to larger settlements that fringe the floodplains;
- Roads and communication routes often define the outer edges of the floodplain; and
- Restoration of sand and gravel extraction sites to open water creates new character across many areas.

LANDSCAPE CHARACTER

The Floodplain Valleys Landscape Character Type is found throughout the region, along the broad valleys of the Trent, Nene, Welland, Wreake, Soar and Dove, and short stretches of the Derwent and Witham. Despite occupying different parts of the region, and therefore contrasting bedrock geologies, the broad flat belts of alluvium and gravel terrace deposits flanking the river channels are a strong unifying characteristic.

Historically, the floodplains would have shared common land use characteristics with a predominance of permanent pasture on riverside meadows and arable fields on drier gravel terraces. Whilst many stretches of permanent pasture and riverside meadows remain, increasing arable and silage production, and the influence of large urban areas and sand and gravel extraction creates significant contrasts in local landscape character.

Whilst the floodplains themselves are generally devoid of settlement, the rivers and neighbouring gravel terraces have been a focus for settlement for several thousands of years. As such, many areas are noted for their rich and varied archaeological deposits. The majority of the region's major towns are located adjacent to the floodplains and exert a strong but localised influence on their character. Elsewhere, the floodplains constitute some of the most remote and peaceful terrestrial lowland areas in the East Midlands.



Floodplain Valley (© Carol Paterson, Natural England)

PHYSICAL INFLUENCES

The various major rivers of the East Midlands traverse different geology. However, great unity of character is derived from the characteristics of the succession of river-borne superficial deposits, consisting mainly of flood gravels of varying age, and more recently deposited alluvial clays and silts. Peat may also be common.

Alluvial deposits form wide, flat floodplains fringing the meandering river channels. Many of the major rivers flood regularly, and as a consequence, considerable stretches of river have been modified to control flooding and also canalised to facilitate navigation. However, many of the rivers across much of the region appear to retain natural characteristics such as meanders.

The gravels tend to form low terraces along the fringes of the floodplain and on the adjacent valley sides as well as islands within the floodplain itself. The gravel terraces and islands are usually slightly raised above the alluvial floodplain and provide areas of dry land, and as such are sometimes identified by arable fields or settlement.

There are a number of features within the landscape type that are of geodiversity interest. In particular the river valleys provide an important geodiversity resource with the many continual exposures in working sand and gravel quarries together with a range of geomorphological features associated with the rivers, notably meanders, ox-bow lakes, abandoned channels and terrace features. While the application of practices for the care, maintenance and management of features of geodiversity interest within the landscape type are important, and the promotion of their educational and interpretational value, the long term preservation of sand and gravel faces in quarries is not easy.

Soils developed on the floodplain have a predominantly coarse loamy texture, with local variations in the nature of superficial deposits having a strong influence on their drainage and agricultural capacity. In general, soils with higher clay content have impeded drainage and are better suited to grazing. As such, land bordering the main channel tends to be used for grazing cattle and sheep with arable land typically occupying more elevated gravel terraces. Historically permanent pasture would have been more widespread in the floodplains; remnants of flood meadow systems indicating the widespread management of river water to ensure an early flush of grass in the spring. However, recent decades have seen greater emphasis on flood management with river straightening and construction of sluices and flood banks. This has prompted a greater use of the floodplain for cereal production. In some areas, notably north of Gainsborough in the Trent Valley, the level of the land surface has been raised by the addition of sediment transported from elsewhere in a process known as ‘Warping’ to create highly fertile and well drained soils that are well suited to cereal production.

The Floodplain Valleys tend to be sparsely wooded, and indeed no substantial ancient woodland sites are noted throughout the region’s major floodplain river valleys. However, steep wooded bluffs at the fringes of the river channel and small broadleaved copses are characteristic of some areas, and notably close to areas of settlement on the fringes of the floodplain. Wet woodlands within or adjacent to floodplain meadows are also notable and form important remnants of once much more extensive semi-natural habitat, and are sometimes the remnants of osier beds. In recent decades, significant woodland planting has become established around former gravel workings adding to the planned character of these newly created landscape features. Part of the Floodplain Valleys farmland that lies within the Trent Valley is located in The National Forest.

Despite low woodland cover, trees along rivers and in field boundaries add to the overall perception of a well treed landscape, particularly when viewed at ground level. Of particular significance are wetland species, such as willow, poplar and ash which contribute to the overall pastoral character of the floodplain landscape.

CULTURAL INFLUENCES

The region’s major river valleys have been important transportation routes throughout history. Indeed, before canals, rail lines and metalled and well maintained roads were common, river boats and barges would have been the quickest and most reliable form of transport. The free draining gravel terraces, close to reliable sources of water, would also have been the focus of settlement and farming from the earliest times. Therefore, the alluvial soils and gravels contain widespread archaeological remains. In some areas, where the alluvial clays are permanently wet, they may be peaty. Organic remains survive, such as seeds, pollen, wood and leather and offer a unique insight to palaeoenvironments and elements of material culture that do not typically survive in drier conditions.

Settlement is most typically located at the edges of the floodplain. Indeed many of the region’s larger towns are located immediately adjacent to the Floodplain Valleys Landscape Character Type. The majority of these large riverside settlements have ancient origins, and were often originally established to control strategic river crossings. As the towns have grown, they have tended to avoid encroaching onto the floodplain and as such, have either developed in a linear fashion, along the edge of the river valley, or wrapped around and ‘captured’ large areas of floodplain within the urban envelope. Occasionally urban areas, predominantly consisting of Victorian terraces, post war industrial development and sports stadiums, extend into and across the floodplain, as at Northampton, Nottingham, Leicester and Melton Mowbray.

Where urban areas are located adjacent to the floodplain, they exert a strong influence on local landscape character. Sewage treatment works, power stations, industrial parks and transport or energy infrastructure features are common urban fringe land uses across the floodplains and gain visual prominence in the otherwise flat and open landscape. Wide areas of degraded landscape are also evident in the urban fringes, with scrub and horse pastures noticeable in the floodplain around several towns. In more recent decades, and in recognition of the aesthetic and recreational value of the river, riverside areas are being redeveloped, and as such new blocks of flats are being constructed to overlook the floodplain landscape and riverside parks created or enhanced.

In rural areas, the regular inundation of the floodplain generally precludes widespread settlement. Therefore, built development is restricted to scattered dwellings and farmsteads. Despite this, small villages and hamlets are evident within the rural floodplain landscape, albeit located on areas of slightly elevated ground or protected by flood embankments. In many instances villages in the floodplain landscape are linear, stretching out along roads parallel to the main river channel, or at right angles to it when associated with a bridge crossing.

Beyond these villages the character of the floodplain landscape contains fewer direct cultural influences. Field boundaries, largely in geometric patterns dating to parliamentary enclosure, divide the floodplain into medium to large fields, with the pattern breaking down in some places to create open areas of farmland. In areas of permanent pasture, ridge and furrow and former flood meadow systems are preserved and are an important remnant of former farming practices. Other commonly occurring historic sites of interest include mill sites and races and canalised sections of rivers and associated locks and sluices constructed in order to control the rivers through canalisation. A range of features associated with transport infrastructure, notably bridges, canals and stretches of dismantled railway line are evocative of the importance of the river valleys for travel and communication.

Large areas of the floodplain landscape are significantly influenced by sand and gravel extraction. Whilst some extraction sites have been restored to farmland, the general pattern since the 1970s, particularly in the Nene Valley, has been to flood old workings and create artificial landscape features, typically characterised by large tracts of open water adjacent to the main river channel surrounded by blocks of native woodland. In contrast to this, other gravel pits, particularly in the Trent Valley, have been backfilled with fly-ash or domestic refuse and not flooded. Many tracts of the Nene and Trent floodplains are now characterised by woods, lakes, open drainage ditches and wetlands, which form a stark contrast to areas of open pasture elsewhere. These areas are highly valued for their recreation potential and nature conservation interest, notably for overwintering birds. Indeed, several former mineral sites are designated as Sites of Special Scientific Interest (SSSI).

AESTHETIC AND PERCEPTUAL QUALITIES

The nature of local land cover and land use has a profound influence on the very varied aesthetic and perceptual qualities of the Floodplain Valleys.

Vast stretches of floodplain landscape retain an intact and traditional character. Here the predominance of permanent grazing land interspersed with meandering river channels fringed by riparian habitats and riverside trees creates a visually coherent and intimate pastoral landscape. The general absence of built development enhances the quiet, rural character of the landscape, which is only occasionally interrupted by roads crossing the river, or views to farms and villages on drier, more elevated land. Hedgerows and rising landform fringing the floodplain enclose views and create an intimate, human scale landscape fringing the more open floodplain.

Occasionally increased occurrence of cereal cropping or silage production and declining hedgerow networks creates a less distinctive landscape that merges with rural areas beyond the edge of the floodplain. Elsewhere, and notably in the Warp lands of north Nottinghamshire, intensive cereal farming creates a highly distinctive floodplain landscape of large fields which are in stark contrast to the intimate riverside pastures evident elsewhere.

In close proximity to the region's major towns, urban fringe land uses are evident across wide areas of floodplain landscape. Here, the visual prominence of sewage treatment works, power stations, pylons and transport infrastructure are set against a backdrop of urban development and create a degraded peri-urban landscape. Despite this, their proximity to urban populations, open character and accessibility of the river combine to make these popular areas for walking and informal recreation.

Former gravel workings represent a marked contrast to more typical pastoral floodplains elsewhere. Wide open expanses of open water, surrounded by extensive tree belts, are wholly artificial but are gradually assimilating into their surroundings to create areas of entirely new character. Whilst some areas are remote and tranquil, others which offer recreational facilities are active and increasingly popular for informal recreation and nature watching.



Floodplain Valley (© Carol Paterson, Natural England)

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

Development on settlement margins is damaging the character of the landscape, creating visual intrusion and extending the urban edge into the Floodplain Valleys. In particular the edges of Leicester, Nottingham and Derby, and also Northampton and Wellingborough in the Nene Valley, need to be carefully considered as these are identified Growth Points that will receive significant levels of new mixed use development in the short and longer term. Large-scale industrial developments, such as sewage treatment works and power stations are particularly prominent in this otherwise flat and open landscape.

Shaping the Future Landscape

The aim should be to protect the open and unsettled character of the landscape and limit the visual impact of any new structures by locating development on previously developed land or close to existing settlement and avoiding development on greenfield sites. The siting of new development should also avoid floodplain areas, in accordance with government planning policy. Best practice innovative architectural ideas and planning solutions that minimise impact on local landscape and townscape character and utilise eco-friendly high quality design should also be encouraged, along with tree planting around settlement fringes to help integrate new development into the landscape and contribute to the overall perception of a well treed landscape.

INFRASTRUCTURE

Forces for Change

In response to flood risk, engineered solutions, such as concrete flood walls and embankments, have been installed in many locations along the river channels. This has resulted in the canalisation of rivers and loss of riverside vegetation, meadows and pastures, changing the natural character of the Floodplain Valleys, although historic structures can contribute to the character of the river. In some instances, the height of the defences screens the river from view, reducing the sense of openness and sense of place.

There is also the potential for the river landscapes to change due to shifting river channels, cutting off of meanders and the creation of features such as oxbow lakes. This may result from flooding or other influences, and with the effects of climate change, there is a high potential for this to happen in the medium and long term.

Shaping the Future Landscape

The aim should be to manage flood risk, implementing land management practices to control run-off and make more space for water. Specific mechanisms include restoring floodplains and creating flood storage areas. Promotion will also be necessary to ensure landowners along river channels are encouraged to develop appropriate methods of land-use and land management.

MINERALS AND WASTE

Forces for Change

Sand and gravel extraction is commonplace along river channels. Due to large-scale projected housing growth in the UK, there is continued demand for sand and gravel and therefore new extraction sites. Such sites are in marked contrast to more typical pastoral floodplains, creating short to medium term visual intrusion during the extraction period and reducing the sense of tranquillity in more remote areas.

Shaping the Future Landscape

The aim should be to protect the open character of the landscape by siting extraction sites away from visually prominent locations or intact floodplain landscapes. The impact on long distance views from surrounding villages and towns should also be considered. Where extraction does occur, it will be necessary to plan for site restoration and after-use. In the Nene Valley in particular, the general pattern has been to flood old workings and create entirely new landscape features, typically characterised by large tracts of open water. Elsewhere, many have been backfilled with fly-ash or domestic rubbish.

The preference should be for the creation of wetland habitats such as meadows, reedbeds and marshland which maximise biodiversity benefits, and which have typically been lost due to the erection of flood defences and agricultural intensification. In producing restoration plans for former extraction sites, a diversity of uses needs to be considered, as full restoration to a dry site may not always be an option due to restrictions on the volumes of inert fill.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

There is marked evidence of agricultural intensification, accompanied by a move from pastoral towards arable farming. This has resulted in the loss or damage of many typical landscape features, including riverside meadows, which would have traditionally defined the river channels and distinguished them from the surrounding farmland. Of those river meadows that remain, many have been agriculturally improved by herbicides and fertilisers, reducing species diversity and visual interest.

Shaping the Future Landscape

The aim should be to protect existing river valley features, whilst encouraging positive management of those features lost or under threat. In particular the restoration of meadows should be given priority, strengthening the character of river channels and providing a diverse range of habitats. Such proposals may be supported by Environmental Stewardship grants.



Floodplain Valley (© Carol Paterson, Natural England)

FORESTRY AND WOODLAND

Forces for Change

Small woodland blocks and remnants of wet woodland are common on the fringes of the floodplain, contributing to the overall perception of a well treed landscape. Significant woodland planting has also become established around former gravel workings as part of their restoration. However, woodland cover is generally sparse, and unless carefully sited, new planting can introduce inappropriate and visually intrusive elements in this open landscape.

Shaping the Future Landscape

The aim should be to protect the open character of the landscape by ensuring the type and location of new woodland and tree planting is appropriate. Large-scale tree planting should generally be avoided, with priority for wet vegetation and riverside trees, strengthening the character of river channels and providing a diverse range of habitats. However, limited native tree planting may be appropriate to soften the impact of built development on settlement margins and as part of the future restoration of sand and gravel workings.

For those areas in the Trent Valley that lie within The National Forest, design guidance for woodland creation should be in accordance with the National Forest Strategy, 2004-14 that has been consulted on and endorsed at the national level. The aim should be to plant small-scale woodlands and linear riverine belts of planting or associated with lakes and pools within the pastoral floodplain with larger scale farm woods within more open agricultural landscapes.

ENVIRONMENTAL PROCESSES AND CLIMATE CHANGE

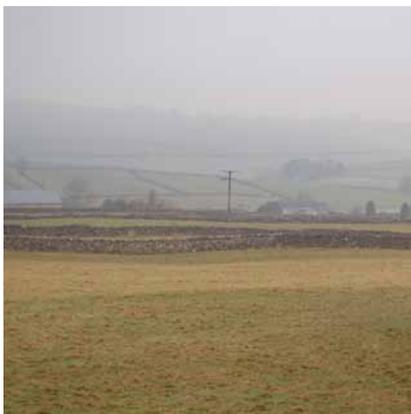
Forces for Change

The effects of climate change has the potential to lead to increased flooding, and changing river channels and summer desiccation of wetlands

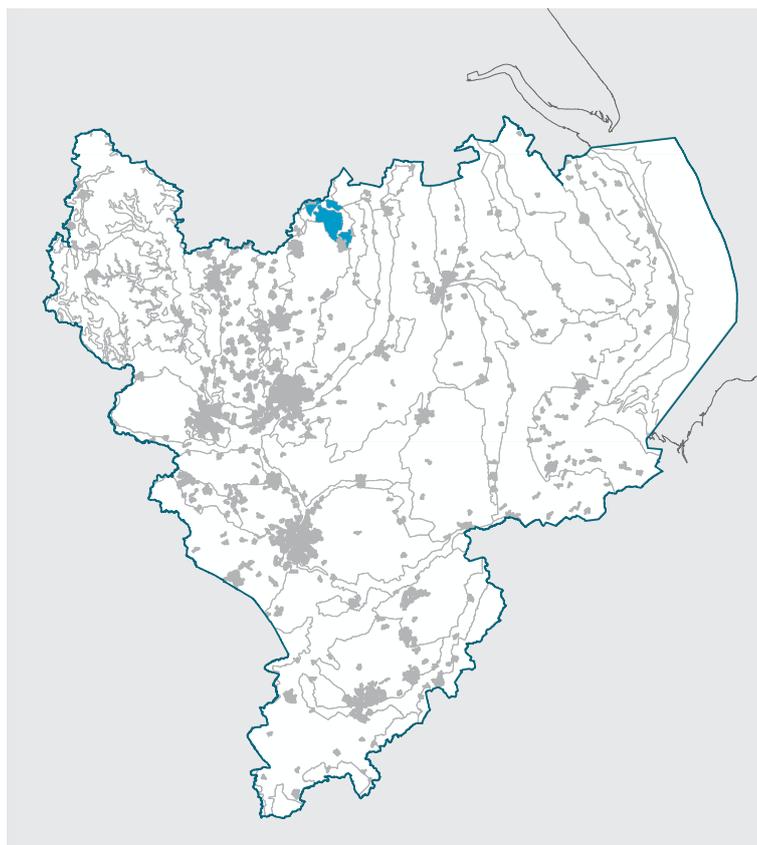
Shaping the Future Landscape

The aim should be to adapt agricultural land management practices to accommodate the projected effects of flooding and desiccation.

3B:

SANDLAND
FARMLANDS

Intensively managed and productive arable farmland (© LDA Design LLP)



KEY CHARACTERISTICS

- Gently rolling agricultural landscape of low hills set amongst flat low lying floodplains and levels;
- Regular pattern of roads and fields associated with the enclosure of land;
- Intensively managed and productive arable farmland with few remnants of semi-natural woodland, heath and peat habitat remaining;
- Pattern of small nucleated rural villages and isolated brick farms associated with the enclosure of farmland;
- Flooded sand and gravel pits, creating new landscape character of scrub, woodland and open water in some areas; and
- Localised influence arising from deep mining operations.

LANDSCAPE CHARACTER

The Sandland Farmlands Landscape Character Type, located on the fringes of the River Idle in north Nottinghamshire, is unique within the East Midlands Region. The area is characterised by a series of sandstone hills and ridges which rise above lower lying levels and river valleys to increase their visual prominence.

The hills have been the focus of settlement for some considerable time. The modern settlement pattern reflects this, with rural villages and farms occupying more elevated locations above the valley floodplains and low lying levels.

The thin, sandy soils across the hills and ridges are generally of low fertility, but have been improved through the application of fertilisers and manuring. The landscape is now one of order, associated with the enclosure of land principally in the late 18th and early 19th centuries, with productive arable fields set within a geometric framework of ditched and hedged fieldscapes.

The overburden of glacial deposits has a significant influence on the landscape. As well as creating smooth, rolling landform that merges gradually into the surrounding lowlands, sand and gravel has been worked over many years. Several sites have been restored and are now characterised by open water, wetland, scrub and woodland; a stark contrast to the geometry of the arable farmlands nearby. Coal mining is also evident, with spoil tips, infrastructure and typical colliery architecture forming a further contrast to the more rural landscape of arable fields, villages and brick farmsteads.

PHYSICAL INFLUENCES

The bedrock of Triassic sandstones forms the underlying framework of the landscape, with a series of low hills and ridges orientated north to south, rising above the lower lying river valleys and plains. However, it is superficial deposits originating some 18,000 years ago that have had the most significant influence on landscape character and patterns of land use.

As the ice sheets retreated northwards at the end of the last Ice Age, rivers flowed rapidly in a braided pattern across the floor of a former lake and deposited successive banks of silt, sand and gravel across the undulating sandstone hills. Gradually, river borne alluvium was deposited in low lying areas and peat formed where drainage became impeded, leaving the gravel and sand banks as a series of hills and ridges surrounded by low lying river basins. Higher areas also retain a capping of till, as at Barrow Hills west of Everton in Nottinghamshire

The hills rise to a maximum elevation of approximately 40m AOD. However, generally they are lower, rising to 30m above the low lying floodplains and peat areas that are just above sea level. The glacial deposits are also significant as they create a rounded and rolling topography that merges gradually into the adjoining low lying areas.

The quarries in the local sandstone bedrock and river terraces support a range of geomorphological features. As a result, this landscape type has some scope for the application of practices for the care, maintenance and management of features of geodiversity interest and the promotion of their educational and interpretational interest..

The pattern of soil types across the landscape shares a close relationship to the underlying geology. At lower elevations and across belts of glacio-fluvial sand and gravel, naturally wet acidic sandy and loamy soils occur. Despite their generally low fertility, the light sandy soils are easily worked, and with the application of manure or fertiliser are well suited to arable and horticulture cropping.

Where the superficial deposits have thinned out the underlying bedrock exerts a stronger influence on soil structure and slightly acid and free draining sandy soils predominate. These areas have thinner soils and as such, were historically of marginal agricultural value and have only relatively recently been brought into cultivation. Beyond the region these areas are characterised by commercial forestry. Here significant tree planting is also notable in the landscape, generally in the form of mixed plantations and belts of broadleaved woodland close to gravel extraction sites such as in the vicinity of Ranskill and Lound. A single area of ancient woodland is evident on Barrow Hills, which is an indication of the local area's marginal agricultural potential.

Historically, the area's poor acidic soils would have supported dry heathland, perhaps with scattered remnants of natural oak woodland. However, centuries of agricultural improvement have reduced the coverage of semi natural habitat across the Sandland Farmlands. No large areas of heath survive. However, their former extent is reflected in the widespread occurrence of bracken and other heathland communities. Areas of peat are also evident in some places. These once more extensive deposits have been subject to widespread drainage and reversion to arable cropping. Where drainage has been partially successful the land is under permanent pasture.

Open water areas are also a common landscape feature. These occur in areas of former sand and gravel extraction. In contrast to extraction sites on the region's major rivers, the pattern of pits is of a smaller scale and restoration is generally to a more intimate matrix of open water and wetland habitats surrounded by woodland and scrub.

CULTURAL INFLUENCES

Evidence suggests that the landscape has been cleared and settled for some considerable time, with occupation extending across the hills and lower riverside areas. However, from the later Roman period, when conditions at lower elevations worsened, it appears that settlement contracted from the marginal wetland areas to the drier lands of the hills and ridges. Place names attest to this, the suffix 'ey' meaning island in the Saxon period.

As populations increased during the medieval period villages grew significantly. As they did, woodland and heath were cleared from all but the most marginal areas and the lower wetter areas were increasingly drained for farming.

During the later 18th and early 19th centuries, the existing and dominant pattern of relatively large geometric fields was set out, around a framework of straight roads and tracks. Generally fields are defined by low, well maintained hedgerows, although in lower lying areas ditches are also evident. Enclosure inevitably led to the creation of new farms outside the villages. These typically consist of a farm house with extensive brick outbuildings located centrally within new units of land and surrounded by belts of trees for shelter and ornament. Echoing past settlement patterns, these farms were often located on elevated areas of land to avoid flooding.

In recent times, the most significant influence on landscape character has been extractive industries. Sand and gravel extraction is particularly evident fringing the River Idle and across low lying areas east of Ranskill. Restoration of former extraction sites has generally been to open water, but some sites have been restored to farmland or woodland. Where restoration to farmland has occurred, the evidence of working is less obvious. However, the greater incidence of scrub and woodland and the absence of hedged fields are often a clear indication of past land use.

The Sandland Farmlands also lies within the Yorkshire and East Midlands Coalfield. Coal bearing strata dip gently eastwards, and as such the coal has to be extracted from depths of up to 1000m. An active pit is located at Harworth, where the coal tip and mine structures dominate the local landscape. Harworth, like other colliery towns grew rapidly during the early 20th century, and shares many characteristics with other colliery towns in the region.

AESTHETIC AND PERCEPTUAL QUALITIES

The low hills and ridges are raised above their surroundings by just a few metres. However, their visual prominence is emphasised significantly by their location in otherwise flat, low lying levels. From these lower lying areas, the hills and ridges form a backdrop to otherwise panoramic views and create a sense of visual enclosure. By contrast, extensive views are possible from several hills across wide areas of the surrounding landscape, creating a somewhat exposed character, albeit with vistas interrupted by hedgerows and trees.

The Sandland Farmlands is a settled agricultural landscape with small rural villages and farms set amongst productive fields. Whilst significant areas retain a peaceful agricultural character, notable portions of the landscape are influenced by extraction industries, with coal mining and sand and gravel workings evident in several locations. These busy areas are characterised by noticeably higher levels of activity and industrial infrastructure when compared to rural areas.

The geometric pattern of roads and fields creates a regular patchwork landscape, with a highly managed character, which is often reinforced by modern linear shelterbelts and mixed plantations. The limited retention of semi-natural habitats further contributes to the managed character of the landscape. However, the undulating character of the hills and ridges often makes the underlying geometric pattern of fields difficult to discern from ground level. In addition, the sinuous course of river channels flanked by rushy pastures, and

the organic shapes of reclaimed sand and gravel workings combine to create a complex and semi-natural character that is in contrast to the ordered geometry of arable fields.

The reclamation of former mineral workings is creating new landscape features, typically characterised by open water, wetland, scrub and woodland. As they mature, these areas create ecologically rich environments, and add significantly to local landscape character and visual diversity.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

Built development is having a suburbanising effect on many of the villages in the Sandland Farmlands, eroding the character of both historic market towns and mining settlements. Development on settlement margins can be particularly damaging, creating visual intrusion and creating a new urban edge to the countryside.

Shaping the Future Landscape

The aim should be to protect the distinctive character of rural settlements throughout the landscape and consider the visual impact of any new development. Specific mechanisms include Village and Town Design Statements, and tree planting around settlement fringes to help integrate new development into the landscape and ensure the appropriate use of vernacular styles and building materials. As well as Village and Town Design Statements, Conservation Area Appraisals can also be important tools. There should also be a place for the use of best practice innovative architectural solutions and planning solutions that take inspiration from local distinctiveness and character whilst utilising eco-friendly and high quality design.

MINERALS AND WASTE

Forces for Change

Sand and gravel extraction is occurring north of Retford, where the Sandland Farmlands adjoins the Floodplain Valleys. While extraction sites are in marked contrast to the surrounding arable fields, reducing the sense of tranquillity and creating visual intrusion, such infrastructure is not uncommon in this landscape; a deep coal mining site is located at Harworth and a land-fill site is located near Torworth.

Shaping the Future Landscape

The aim should be to protect the open character of the landscape by siting extraction sites and waste facilities away from visually prominent locations. The impact on long distance views from surrounding villages and towns should also be considered. It will also be necessary to plan for their restoration and after-use of operational sites. In relation to the restoration of sand and gravel extraction sites, the preference should be for wetlands habitats such as meadows, reedbeds and marshland. In relation to colliery and landfill sites, opportunities for restoration to woodland and farmland should be explored.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

There is marked evidence of agricultural intensification, accompanied by a move from pastoral towards arable farming. This has led to the loss and decline of field boundaries generally, and also a reduction in meadows and wetland habitats more locally in areas adjoining the river corridors.

Shaping the Future Landscape

The aim should be to protect existing rural landscape features, whilst encouraging positive management of those features lost or under threat. In particular the restoration of hedgerows should be given priority, strengthening the pattern of land use. Hedgerows can also be used in and around settlements as a mechanism for containing urban expansion.

GROUP 4:
LOWLAND VALES

GROUP 4
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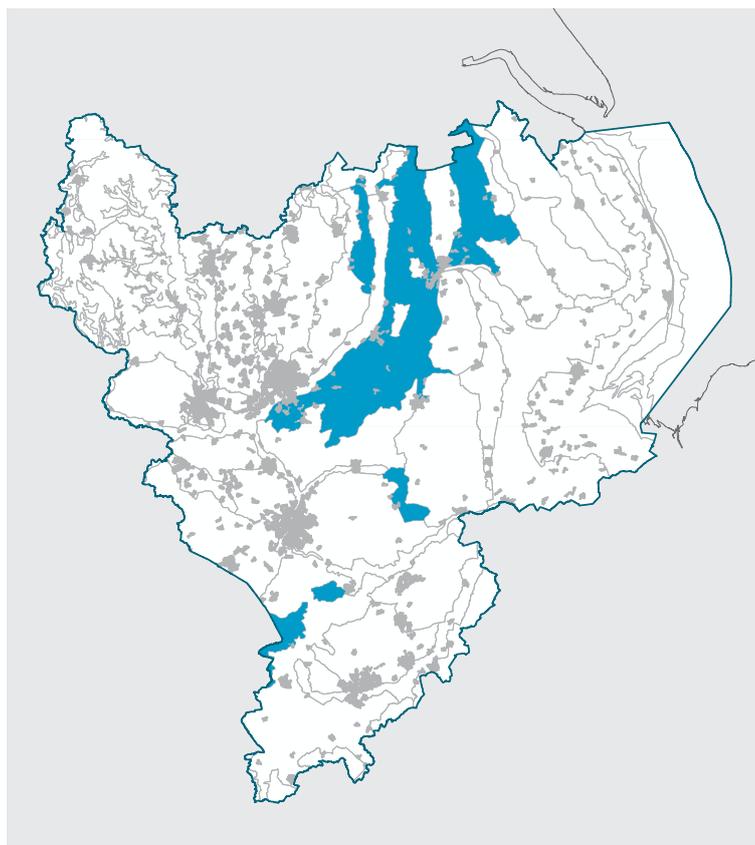


Gently undulating landform is characteristic of the Lowland Vales (© LDA Design LLP)

4A: UNWOODED VALES



*Flat, open landscape with expansive views
(© LDA Design LLP)*



KEY CHARACTERISTICS

- Extensive, low lying rural landscape underlain by Triassic and Jurassic mudstones and clays and widespread superficial deposits;
- Expansive long distance and panoramic views from higher ground at the margin of the vales gives a sense of visual containment;
- Low hills and ridges gain visual prominence in an otherwise gently undulating landscape;
- Complex drainage patterns of watercourses that flow within shallow undulations often flanked by pasture and riparian habitats;
- Limited woodland cover; shelter belts and hedgerow trees gain greater visual significance and habitat value as a result;
- Productive arable and pastoral farmland, with evidence of increasing reversion to arable cropping in recent times;
- Regular pattern of medium sized fields enclosed by low and generally well maintained hedgerows and ditches in low lying areas; large modern fieldscapes evident in areas of arable reversion; and
- Sparsely settled with small villages and dispersed farms linked by quiet rural lanes.

LANDSCAPE CHARACTER

The rural Unwooded Vales Landscape Character Type within a central area of the region on a broadly north south axis, and whilst various underlying bedrock geologies exert a local influence, superficial deposits create a softly undulating landscape and consistent and recognisable character.

The Vales generally have a strong sense of place, with major landform features flanking the lower lying areas creating broad scale visual containment. Within the vales, low hills and ridges are also important, foreshortening views and creating subtle relief features.

The vale landscape is generally characterised by productive mixed agriculture, set within an enclosed landscape of low, well maintained hedgerows. Wide areas are under permanent pasture, often grazed by dairy herds. However, areas of pasture are increasingly being ploughed up for cereals and hedgerows removed to accommodate large machines. Rivers and streams are also an important landscape feature. Whilst these occupy shallow folds and are not immediately apparent in views, their courses can often be observed by tracing sinuous belts of riparian habitat and riverside trees.



Unwooded Vales (© Carol Paterson, Natural England)

The vast majority of the Vales retain a deeply rural and tranquil character, with farms and small nucleated villages located throughout areas of productive farmland, linked by narrow winding lanes and roads. Despite low levels of woodland cover, local landform, hedgerows and shelter belts create visual containment and give the Vales landscape an intimate character. By contrast, panoramic views are possible from elevated locations albeit contained by rising land at the edges of the Vales.

PHYSICAL INFLUENCES

The Unwooded Vales of the East Midlands are closely associated with the broad belts of Triassic and Jurassic mudstones and clays that run northwards through the region. Whilst local variations in the bedrock exist, these rock formations generally give rise to a low, gently undulating landform. Occasionally hills and ridges rise out of the vales, marking the watersheds between watercourses draining through the vales. These elevated areas are often capped by villages or trees emphasising their visual prominence.

Variations in the underlying bedrock are masked by the extensive glacial deposits of till, together with alluvium, sand and gravel and solifluction deposits (head). These deposits further soften landform features and exert a strong influence on soils and therefore patterns of agricultural land use.

Drainage patterns throughout the vales are complex, with a multitude of rivers and stream channels draining neighbouring uplands to join the region's main river systems. Watercourses, often bordered by narrow alluvial floodplains, wind through the landscape along shallow valleys, appearing little more than gentle folds in the landscape. Indeed, these watercourses are often not discernible in the landscape and only become evident by tracing alder and willow trees, and sinuous belts of riparian habitat or rushy pastures.

The varied geological framework of bedrock and glacial deposits has a significant influence in the distribution of various soils types in the Unwooded Vales; loamy, peaty, clayey and sandy soils are all in evidence across the landscape. Free draining soils are not typical although a small area of shallow lime-rich soils is evident on the ooidal limestone north of Lincoln. Generally, therefore, the vales landscape contains soils with impeded drainage and naturally wet soils along the belts of alluvium bordering streams.

The series of quarries associated with the past and present extraction of mudstones and gypsum offers some potential the application of practices for the care, maintenance and management of features of geodiversity interest and the promotion of their educational and interpretational interest. Some of the abandoned quarries may have potential for geo-conservation by re-exposing the geology.

Despite improvement and drainage creating a greater unity in the agricultural capacity of the vales landscape, local variations in soils continue to have an influence on patterns of agricultural land use. The Unwooded Vales are generally characterised by a mixed farming regime; many areas are well suited to pasture farming, and indeed large areas of the vales are evident as improved pasture for dairy cattle. Permanent pastures are typical along the alluvial belts bordering stream channels, where ranker and rushy pastures are common. Cereal and vegetable cropping is widespread and in some areas hedgerow removal has created some very large fields, often under a single crop.

In this long settled and productive agricultural landscape there are typically low levels of woodland cover and very low levels of surviving ancient woodland. Despite this, the landscape appears well treed, largely on account of ground level views across wide areas encompassing hedgerows and well established, moderately sized, game coverts, mixed plantations and shelter belts. Whilst not common, hedgerow trees, notably oak and ash, are also important both to provide shelter and to add to the overall treed character of the landscape.

Similar to the low retention of woodland cover, the landscape has retained little semi natural habitat, reflected in the low occurrence of areas designated for their nature conservation value. Indeed, it is interesting to note that many of the key biodiversity assets, such as Rutland Water, Grantham Canal and sand and gravel pits at Whisby are artificial. In such a managed agricultural environment, networks of hedgerows and hedgerow trees gain significance in offering a refuge for birds and insects.

CULTURAL INFLUENCES

It is not unreasonable to assume that the vales were settled and exploited throughout prehistory. However, the clay soils are not particularly suited to displaying crop-marks, and the rural landscape has not been extensively surveyed by archaeologists, and as such there is little evidence to create an accurate picture of pre-historic land uses.

Roman evidence is more widespread with several Roman towns located within or fringing the vales. Several Roman roads, such as the Fosse Way, Great North Road and Watling Street, pass through the Unwooded Vales, indicating that these gentle and low lying areas provided convenient routes through the hills and wetlands.

It is to the late Saxon period that the existing dispersed pattern of nucleated settlements can largely be traced; place name evidence suggesting settlement by both Saxon and Norse communities. Building on a much more dispersed pattern of settlement the mid to late Saxon period saw the establishment and consolidation of the vales villages. These tend to be nucleated around a central church, and located at the junction of two or more roads that wind through the landscape. Many villages are located on spinal routes that pass along watersheds and raised landform running between rivers and streams. The roads and watercourses combine to give a subtle grain to the landscape, although this is interrupted by the numerous 'cross routes'.

As communities grew, so did the villages, and much of the vales landscape was brought into cultivation. During the medieval period some settlements, such as Market Harborough, were gaining status, and developed as centres of commerce and trade serving their rural hinterland. Remnants of the medieval agricultural economy can be found throughout the vales landscape. The ridges and furrows of the open fields are widespread, preserved beneath areas of pasture.

In some areas, the conversion of open fields to enclosed grazing occurred as early as the Tudor period. However, enclosure of much of the Unwooded Vales landscape occurred in the late 18th and early 19th century, with surveyors setting out regular fields bounded by hedgerows. Many hedgerows were laid out in geometric patterns, although much older hedges are evident, often as sinuous belts of trees and shrubs, perhaps defining parish boundaries and older field systems into which the straight enclosure boundaries were established. The period also saw other improvements to agricultural land with enhanced drainage and the straightening of watercourses. Farms were also established in the new field systems.

The rebuilding of many villages in the vales also took place in this period. The use of clay brick and tile roofs was widespread, and many older timber framed cottages were encased in more durable materials, or demolished altogether.

In recent decades, the productivity of the land has stimulated widespread change in the rural landscape. Large areas of permanent grassland have been ploughed up, leading to some areas with a predominance of arable, some of which appears as vast areas of monoculture. The enclosure landscape has been modified by the removal of hedgerows and ditches so that fields can better accommodate large scale machinery. In many instances the only clues to former field patterns are remnants of low grass banks within ploughed fields.

The flat and open character of the Unwooded Vales made the landscape ideal for the development of wartime airfields, and there are a number of redundant airfields still present.

AESTHETIC AND PERCEPTUAL QUALITIES

The Unwooded Vales is a simple and unified landscape type, consisting of a limited palette of features and elements, principally comprising, permanent pastures alongside watercourses; productive mixed farmland within a planned pattern of hedged and ditched enclosures; and nucleated villages and dispersed farmsteads linked by narrow winding lanes and more direct arterial routes.

Whilst the landform of the Unwooded Vales is typically low and subdued, rising landform towards their fringes creates a sense of visual containment. In the broader vales, this is sometimes difficult to discern; however, glimpses of neighbouring elevated areas are often sufficient to provide a strong sense of place. Within the broad vales, and typically along river and stream valleys, more intimate and human scale areas can be discerned. These 'sub-vales' generally follow river valleys with their outer limits defined by low hills and ridges along watersheds.



Unwooded Vales (© Carol Paterson, Natural England)

The soft and gently undulating landscape and low levels of woodland cover creates a relatively open and expansive landscape. Wide panoramic views are possible from the low hills and ridges that form watersheds between watercourses. However, a more intimate character prevails in lower lying areas, particularly where intact hedgerow networks or belts of riverside trees truncate views. The Unwooded Vales landscape character type is also perceived as being relatively sparsely settled, with villages, hamlets and farms widely distributed throughout the rural landscape. These are often relatively small and nucleated, with surrounding belts of trees integrating them into their landscape setting, the skyline often only being punctuated by the church spire or tower which can be seen from some distance away.

The Unwooded Vales Landscape Character Type has a strong agricultural character, with wide areas retaining a sense of rural tranquillity. This is particularly evident where the vale landscape is intact, with farmland interspersed with small villages and hamlets.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

The majority of new built development is located on the fringes of the larger settlements of Nottingham, the southern fringe of which lies in the Unwooded Vale, and Lincoln and Newark-on-Trent, all of which are identified in the Regional Spatial Strategy as growth points to receive significant levels of growth. However, many of the rural villages have not seen widespread expansion. Development pressure continues today, with demand for housing, commerce and industry creating visual intrusion and extending the urban fringe.

Shaping the Future Landscape

The aim should be to manage growth, ensuring development is appropriate in terms of type, scale and location. Best practice innovative architectural ideas and planning solutions should be employed to minimise impact on local landscape and townscape character and the planting of new trees and woodland around urban fringes should be encouraged, helping to integrate new large scale mixed use development into the landscape. For development associated with the rural villages, specific mechanisms include Village Design Statements, and tree planting around settlement fringes to help integrate new development into the landscape and ensure the appropriate use of vernacular styles and building materials. As well as Village and Town Design Statements, Conservation Area Appraisals can also be important tools.

INFRASTRUCTURE

Forces for Change

The flat, open landscape of the Unwooded Vales contains several airfields. While redundant airfields provide an opportunity for new housing or employment uses, this reduces tranquillity and the sense of remoteness in sparsely settled areas.

The construction of new roads or road alteration schemes has the potential to significantly affect the landscape with implications for change in character. The significant impact of the A46 widening scheme is a demonstration of this process and the effect on the wider countryside.

Shaping the Future Landscape

The aim should be to manage redundant airfields, ensuring development is appropriate in terms of type, scale and location and provision is made for new landscape features. In addition, it may be appropriate to retain existing infrastructure, providing an historic link with those that had a wartime role.

New road schemes, as well as widening or realignment of existing roads should ensure that they are carefully integrated into the landscape through sensitive attention to alignment, detailing and planting where appropriate.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

The most widespread change has been agricultural intensification and the change from pastoral to arable cropping. This has resulted in the loss of hedges, and consequently, an increase in field size. Although the remaining hedgerow network is generally strong, there is nevertheless evidence of decline in a number of areas, with gaps and few hedgerow trees. The loss of pasture is particularly evident around settlements, where grazing animals and smaller field sizes contribute to the setting and structure of several villages. Watercourses are also an important feature of the landscape, although often indiscernible.

Shaping the Future Landscape

The aim should be to protect existing rural landscape features, whilst encouraging positive management of those features lost or under threat. In particular, the restoration of hedgerows should be given priority where there is evidence of decline. The creation of new hedgerows and permanent pasture along watercourses should also be a priority, enhancing the visibility of streams and dykes, whilst increasing the occurrence of semi-natural habitats.

FORESTRY AND WOODLAND

Forces for Change

Woodland does not form a significant component of this landscape, and considering its open and expansive character, extensive new woodland planting would be generally inappropriate. However, limited tree planting could be used in and around settlements to integrate new development into the landscape and in more intimate low-lying areas to help create a mixed pattern of land-use, increase the occurrence of semi-natural habitats and maintain the perception of a 'well treed' landscape.

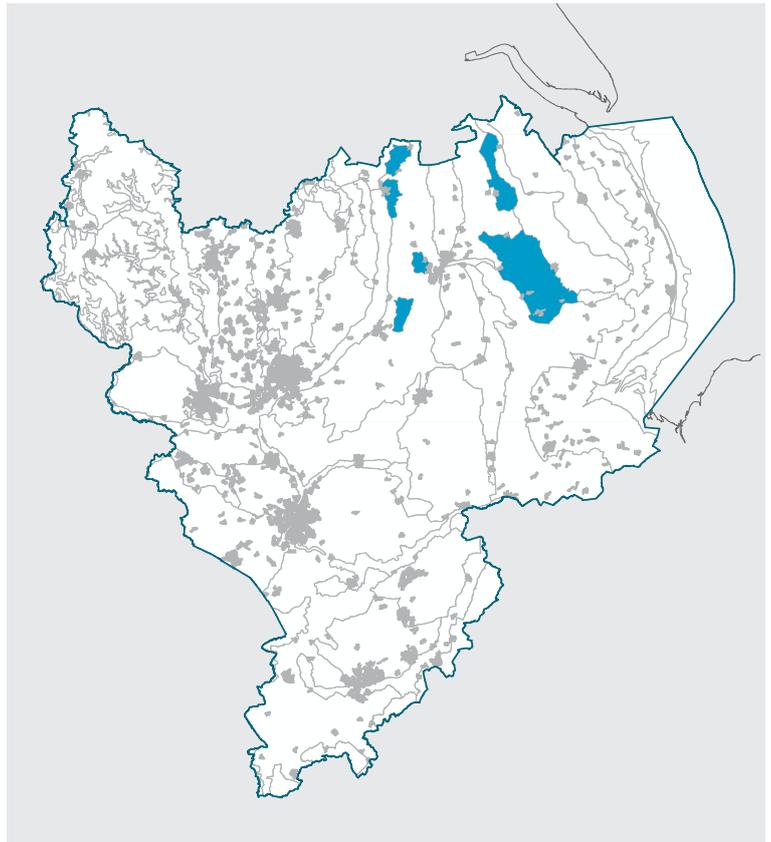
Shaping the Future Landscape

The aim should be to plan new tree planting around key settlements and other suitable locations. Trees should be typically grouped in small plantations/copses or as individual trees within hedgerows. Such proposals should be undertaken in collaboration with the Forestry Commission and local landowners, and financial support may be available through the English Woodland Grant Scheme.

4B: WOODED VALES



Large coniferous plantation, enclosing areas of farmland (© LDA Design LLP)



KEY CHARACTERISTICS

- Gently undulating landform formed over soft mudstone and clay geology, sharing many characteristics with the wider Unwooded Vales Landscape Character Type;
- Deposits of superficial geology, particularly cover sands and till influences local land use and semi-natural habitat cover;
- Low hills and ridges gain visual prominence; elevated landform fringing vales give broad sense of containment;
- Numerous watercourses flow within shallow undulations often flanked by pasture and riparian habitat;
- Relatively high levels of woodland cover, with notable tracts of ancient semi-natural woodland along outer fringes of parishes and large coniferous plantations;
- Productive arable and pastoral farmland, with evidence of increasing reversion to arable cropping;
- Irregular shaped assarted fields marked by belts of trees and tall hedgerows, juxtaposed with regular pattern of medium sized fields associated with enclosure of land, with low and generally well maintained hedgerows and ditches in low lying areas;
- Open, modern fieldscapes created by hedgerow removal in areas of arable reversion;

- Sparsely settled with small villages and dispersed farms linked by quiet rural winding lanes often flanked by tall hedgerows and tree belts; and
- Rural and historic character prevails, although coniferous plantations and modern arable fields diminish sense of antiquity.

LANDSCAPE CHARACTER

The sparsely settled Wooded Vales Landscape Character Type generally occurs in north Lincolnshire and lies within the much broader and extensive Unwooded Vales. Whilst various underlying bedrock geologies can be identified, extensive superficial deposits of till and cover sand create a softly undulating landscape.

The Wooded Vales generally has a strong sense of place, with major landform features flanking the lower lying areas creating broad scale visual containment. High levels of woodland cover are in evidence when compared to the Unwooded Vales and add to local distinctiveness and provide a coherent and recognisable character and strong identity.

Woodlands and localised variations in landform also foreshorten views and obstruct wide panoramas to create a more intimate scale landscape than is experienced in the Unwooded Vales. However, uninterrupted panoramic views across farmland are possible, albeit with woodlands often forming a dark backdrop or feature on the horizon.

The Wooded Vales landscape is generally characterised by productive mixed agriculture, set within an enclosed landscape of well maintained hedgerows, sometimes marking ancient assarts. Wide areas are under permanent pasture. However, areas of pasture are increasingly being ploughed up for cereals and hedgerows removed to accommodate large machines.

Whilst agricultural improvement has created large tracts of productive farmland, significant areas remain thickly wooded with ancient broadleaved woodlands and planted ancient woodlands. Sizable areas of sandy heathland are also evident on areas of cover sand, although some have been extensively forested with conifers. Rivers and streams are also an important landscape feature. Whilst these occupy shallow folds and are not immediately apparent in views, their course can often be observed by tracing sinuous belts of riparian habitat, wet woodland and riverside trees.

The vast majority of the Wooded Vales retains a historic, deeply rural and tranquil character, with farms and small nucleated villages located throughout areas of productive farmland and linked by narrow winding lanes and roads.

PHYSICAL INFLUENCES

The Wooded Vales of the East Midlands are closely associated with the broad belts of Triassic and Jurassic mudstones that run northwards through the region. Whilst local variations in the bedrock exist, the soft mudstones generally give rise to a low, gently undulating landform. Occasionally hills and ridges rise out of the Wooded Vales, marking the watersheds between watercourses draining through the vales. Variations in the underlying bedrock are almost entirely masked by the glacial deposits of till, which themselves are capped in places by cover sand deposits. These deposits further soften landform features and exert a strong influence on soils and therefore patterns of agricultural land use and semi natural habitat. Indeed, the cover sands are particularly notable as having a higher retention of semi natural acid grassland and lowland heath habitat.

A multitude of rivers and stream channels drain neighbouring upland areas to join the region's main river systems. Watercourses, bordered by narrow alluvial floodplains, wind through the landscape along shallow valleys. These appear as little more than gentle folds in the landscape and only become evident by tracing alder and willow trees, and sinuous belts riparian habitat or rushy pasture. Sizable areas of ancient wet woodland are also notable along several watercourses. Many wet woodland sites are characterised by native broadleaved species. However, several have been replanted with conifers and are classified as Planted Ancient Woodland (PAW).

Of particular significance are the Lime Woods that occupy areas of till to the east of Lincoln. These are the most important small leaved lime woods in Britain, and are noted for their great age and wildlife value. Some areas are believed to be remnants of the Wildwood that developed after the retreat of the ice sheets and as such are of national significance and of great cultural and biodiversity value. Large areas of ancient lime wood have been designated for their wildlife value.

Acidic soils have developed across areas where cover sand deposits overly the underlying till. Whilst natural fertility is low, agricultural improvement has allowed productive arable and horticulture farming. Some marginal areas have avoided improvement, and are notable for sizable tracts of birch fringed lowland heath and acid grassland. Even in improved areas, the acidic nature of the soils is evident in the presence of indicator species, such as gorse, bracken and birch trees along roadsides and in hedgebanks.

Loamy soils are also widespread across areas of thick till. Semi natural habitat cover is low, although large tracts of mixed deciduous woodland are evident set within a landscape of pasture and arable farms. Cereal farming is the prevalent agricultural land use, although improved pastures are also widespread, often in close association with unimproved pastures along stream channels and adjacent to woodlands.

This landscape type offers very limited opportunities for the application of practices for the care, maintenance and management of features of geodiversity interest and the promotion of their educational and interpretational interest. However, there may be good geomorphological features worthy of preservation.



Wooded Vales (© Carol Paterson, Natural England)

CULTURAL INFLUENCES

The sparse distribution and small scale of the villages across the Wooded Vales suggests that the landscape has generally been marginal to widespread settlement and agricultural exploitation for some considerable time. The poor soils associated with the wind-blown cover sands and cold intractable tills are likely to have only been heavily exploited in recent centuries with the advent of deep plough technology and modern fertilisers.

From the late Saxon period, settlements and fields were carved out of previously more extensive areas of woods and scrub. However, woodlands and heaths would have remained important to the local economy, and so were preserved at the fringes of the parish and managed for wood products and communal grazing. The modern landscape appears to preserve this ancient pattern of settlement and land management, with woods and heaths occupying areas along the boundaries of the vales parishes. Place names also provide some evidence of this, with several woodlands being named after a local village, indicating that they once belonged to a particular community. Even within large continuous tracts of woodland, several village names are attributed for different parcels of wood with parish boundaries marking these internal divisions.

During the Medieval period, as populations increased the demand for farmland grew. As such, woodlands would have been cleared, often as a result of assarting. Fragmented woods, irregular field boundaries and isolated belts of ancient trees forming hedgerows are evidence of assarting or woodland clearance across the vales.

Into an ancient framework of sinuous belts of trees and hedgerows defining irregular shaped fields and parish boundaries, the straight and planned enclosure boundaries were established. Many fields were laid out in geometric patterns within the older organic field patterns. Farms were established in the new field systems, often located away from villages in remoter tracts of open farmland. These are

commonly characterised by red brick outbuildings clustered around a grand farmhouse at the end of a straight track off the main network of winding rural roads.

The early modern period also saw rebuilding of many villages and hamlets in the Wooded Vales. The use of clay brick and tile roofs was widespread, and many older timber framed cottages were encased in more durable materials, or demolished altogether.

In recent decades, large areas of permanent grassland have been ploughed up, leading to some areas with a predominance of arable farming. The landscape of irregular and straight fields has also been modified by the removal of hedgerows and ditches so that fields can better accommodate large scale machinery.

AESTHETIC AND PERCEPTUAL QUALITIES

The Wooded Vales is a complex landscape with a strong sense of place and rich historic character. Large areas of ancient and species-rich native woodland are juxtaposed with regular blocks of coniferous plantations. Similarly, irregular patterns of ancient fields defined by sinuous hedgerows and tree belts and remnant heaths and acid grasslands contrast with the regular pattern enclosure of fields and farms associated with the period of planned enclosure and modern arable fields where hedgerows have been removed.

The landform of the vales is typically low and subdued. However, rising landform and woodlands characteristically combine to create visual containment and a sense of enclosure. Despite this, some panoramic and extensive views are possible from elevated locations where views are uninterrupted by intervening vegetation.

The Wooded Vales landscape is sparsely settled, with small villages, hamlets and farms evenly distributed across the landscape. Villages are typically small and nucleated.

The landscape has a strong agricultural character, with wide areas retaining a sense of rural tranquillity and intactness, notably where ancient hedgerow patterns, woodlands and winding rural lanes are a prominent characteristic.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

The sparsely settled landscape of the Wooded Vales has seen relatively little urban growth, although some expansion and in-fill development is noted in larger settlements, such as Market Rasen, Horncastle and Wragby. This can erode architectural and historic character, whilst creating visual intrusion and extending the urban fringe. The impact on the setting of village churches is particularly important as these are distinctive local landmarks.

Shaping the Future Landscape

The aim should be to protect the distinctive character of the settlements and consider the visual impact of any new development with a requirement for best practice and innovative architectural and planning solutions. Specific mechanisms include Village Design Statements, guiding the design of new development and ensuring the appropriate use of vernacular styles and building materials that minimise impact on local character and utilise eco-friendly high quality design. As well as Village, and where appropriate, Town Design Statements, Conservation Area Appraisals can also be important tools. Considering the wooded nature of this landscape, substantial tree planting would also be an appropriate mechanism for containing growth.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

Agricultural intensification and farm amalgamation are resulting in the loss or damage of many typical landscape features, including traditional patterns of field boundaries, remnants of ridge and furrow, and grasslands. This contributes to a more homogenous landscape, and the effect is particularly evident around settlements, where grazing animals and smaller field sizes contribute to the setting and structure of several villages.

Shaping the Future Landscape

The aim should be to protect existing rural landscape features, whilst encouraging positive management of those features lost or under threat. In particular, the restoration of hedgerows should be given priority, strengthening the field pattern and enhancing linkages between woodlands. An increase in grassland reversion should also be encouraged, increasing the occurrence of semi-natural habitats and creating a more mixed pattern of land use.

FORESTRY AND WOODLAND

Forces for Change

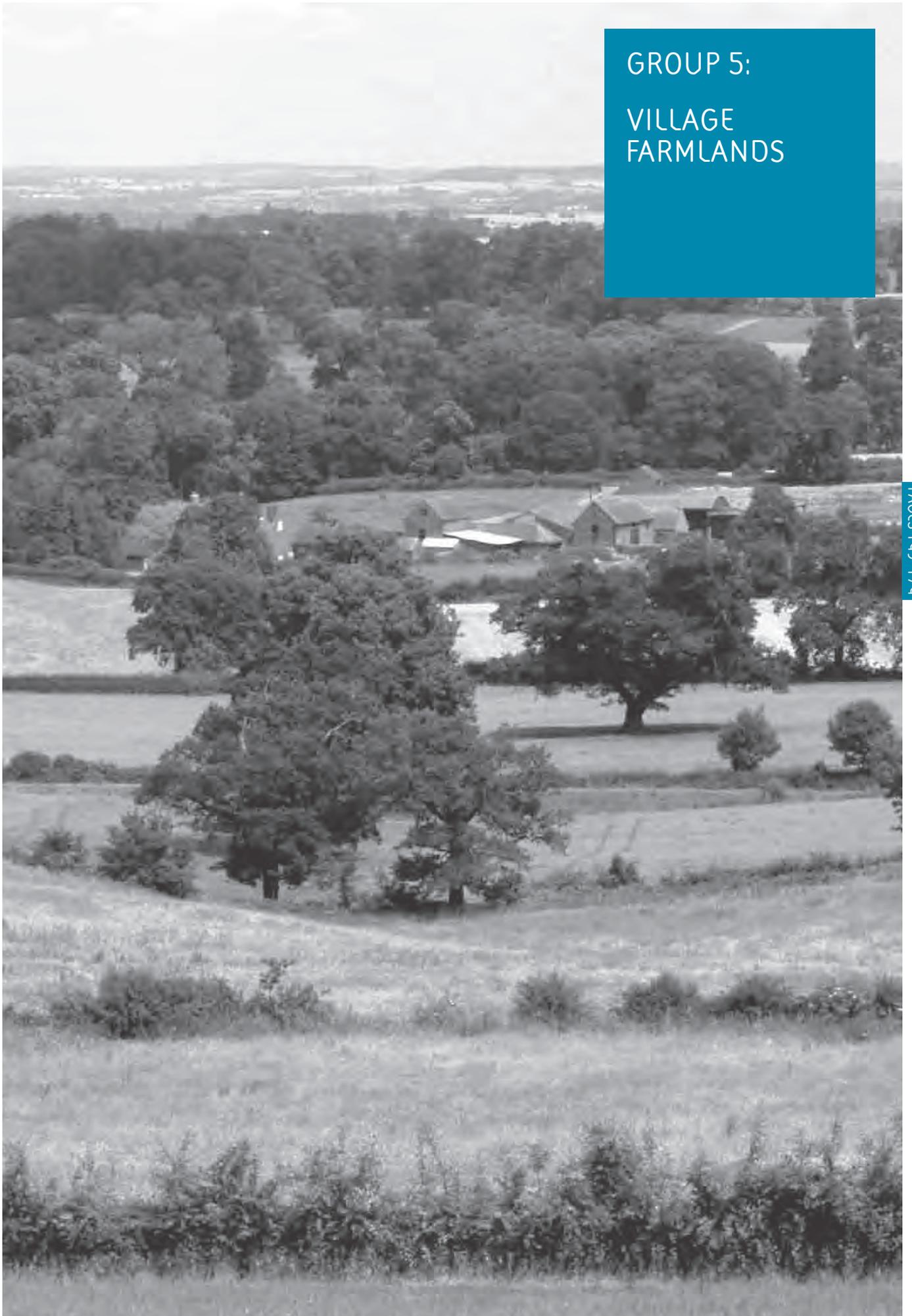
Woodland is a significant component of this landscape, and new woodland planting would be generally appropriate, increasing the overall woodland coverage in the region. However, the landform of the Wooded Vales is typically low and extensive panoramas are possible, often framed by larger areas of woodland. Any new woodland planting should therefore be carefully sited as to avoid disrupting long-distance views and the sense of openness where it exists.

Shaping the Future Landscape

The aim should be to plan new woodland in the most suitable locations. This may include in and around settlements, where woodland could help integrate new development into the landscape, and in more intimate low-lying areas, where woodland could help create a mixed pattern of land-use. Consideration should also be given to the management of existing trees and woodland, enhancing biodiversity value and age structure through new planting and the creation of woodland edge habitats.

GROUP 5:
VILLAGE
FARMLANDS

GROUP 5
PAGES 149-174

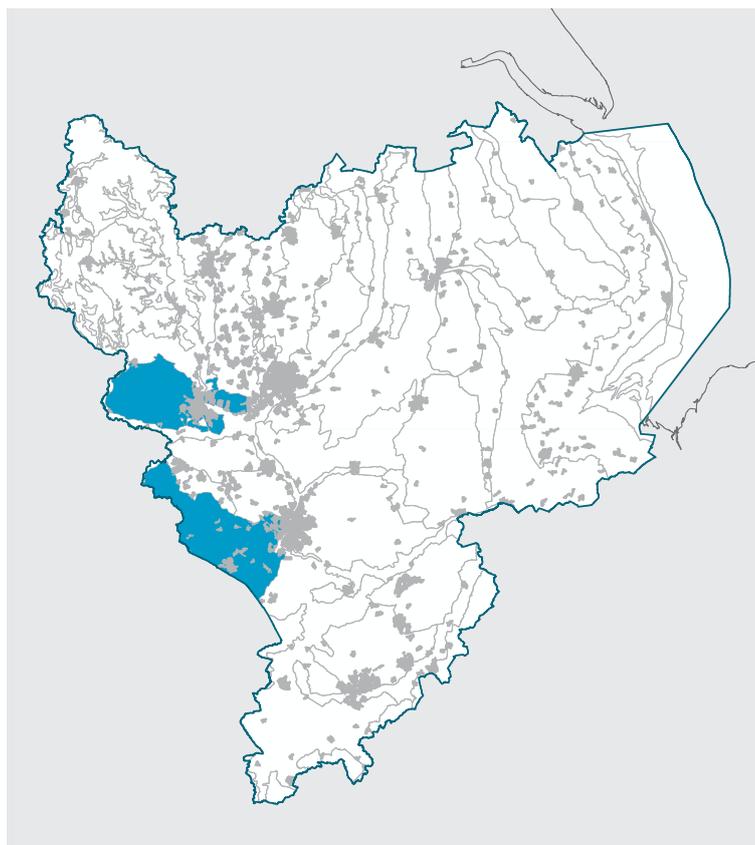


Rolling landform and frequent woodland and hedgerow trees are characteristic of the Village Farmlands (© Derbyshire County Council)

5A: VILLAGE FARMLANDS



Gently undulating landscape with well treed character (© Derbyshire County Council)



KEY CHARACTERISTICS

- Gently undulating lowlands, dissected by stream valleys with localised steep slopes and alluvial floodplains;
- Moderately fertile loamy and clayey soils with impeded drainage over extensive till deposits on higher ground and gravel terraces bordering main rivers;
- Mixed agricultural regime, with localised variations but with a predominance of either dairy farming on permanent pastures, or arable cropping;
- Small and moderately sized broadleaved woodlands and copses, often on sloping land; extensive new areas of planting associated with The National Forest;
- Hedgerows and frequent oak and ash trees along hedgelines and streams contribute to well treed character of landscape;
- Moderately sized well maintained hedged fields across rolling landform create patchwork landscape of contrasting colours and textures;
- Extensive ridge and furrow and small historic villages linked by winding lanes contribute to historic and rural character of the landscape; and
- Localised influence of large estates.

LANDSCAPE CHARACTER

The Village Farmlands Landscape Character Type forms part of an extensive tract of landscape that extends beyond the Study Area and across wide areas of the West Midlands. The landscape is characterised by undulating farmlands over Triassic and Permian geology, with localised influences arising from superficial deposits of till on elevated areas and gravel terraces and alluvial flats fringing rivers and streams.

The base rich soils that can be easily improved are widely used for arable cropping. However, wide areas, notably on the less well drained clays, are characterised by verdant improved pastures grazed by cattle. The intensive nature of farming across the landscape has resulted in only limited remnants of semi natural vegetation. However, woodlands, copses and occasional meadows and unimproved grasslands are important, as are areas of connective habitats such as hedgerows and river corridors.

The landscape also has a relatively intact historic character, with sinuous hedgerow patterns, remnant areas of ridge and furrow and winding rural lanes, evocative of medieval land management. Country houses also exert a strong, albeit localised influence on the landscape, with landscaped parks particularly prominent in the vicinity of Derby. Their influence can also be seen in the wider landscape in the form of game coverts, small scale plantations and estate farms.

The rural landscape, whilst not particularly tranquil, retains a quiet, rural character that appears to have changed little over recent decades. Modern development on the fringes of villages is particularly notable, although most settlements retain their rural and historic character. New woodland planting associated with The National Forest is also significant in changing the character of the landscape.

PHYSICAL INFLUENCES

The underlying geology of Permian and Triassic mudstone, siltstone and sandstone gives rise to a gently undulating lowland landscape that is further softened by extensive deposits of till and by gravel terrace deposits and alluvial floodplains fringing the main river channels.

The most elevated areas rise to approximately 250m AOD on the fringes of neighbouring uplands and fall to 60m AOD bordering the River Trent. Numerous streams drain the neighbouring uplands into the Trent and its major tributaries. These flow along relatively steeply incised valleys in more elevated areas, further contributing to the undulating character of the landscape. As they enter the lowlands the valleys become shallower, the slower flowing streams depositing silts and clays to create narrow alluvial floodplains.

The main geodiversity interest within the landscape type is associated with geological exposures within the brick clay quarries in western Leicestershire that show good sequences of the Mercia Mudstone Group. The long term retention of these exposures will require the application of practices for the care, maintenance and management of features of geodiversity interest and the promotion of their educational and interpretational interest, and in particular through appropriate restoration plans.



Needwood and South Derbyshire Claylands
(© Martin Banham, Natural England)

Soils are generally reddish loamy and clayey soils. Slowly permeable and seasonally wet soils are widespread over the elevated areas where till deposits cloak the underlying geology. Here the moderately fertile soils are used for grazing livestock, their susceptibility to periods of waterlogging evident in poached pastures. Elsewhere, and notably across the lower lying areas, arable land uses on the moderately fertile soils are more prevalent, albeit forming part of a mixed agricultural regime.

Widespread agricultural improvement and intensive farming has limited the retention of large areas of semi-natural habitat across the Village Farmlands landscape. However, some isolated examples of unimproved grassland and hay meadow are notable close to farmsteads and on steeper slopes fringing stream channels.

Whilst not extensive, small broadleaved woodlands, coverts and copses are locally important biodiversity assets. Several woodlands are classified as ancient and whilst generally of a small scale, they can form important habitat reservoirs within extensive tracts of intensively managed farmland. Several hundred hectares of new woodland planting have also taken place as part of The National Forest initiative between Walton-on-Trent (Derbyshire) and Ibstock (Leicestershire). Once established this will add significantly to the wooded character of the landscape, perhaps of sufficient magnitude to require revisions to the boundary of the Village Farmlands and neighbouring Settled Coalfield Farmlands in Leicestershire on which the initiative is centred.

Hedgerows, hedgerow trees, predominantly comprising oak and ash, and riparian habitats with trees such as alder and willow along streams are also locally important, acting as corridors between remnant woodlands and unimproved grasslands as well as representing locally important habitats in themselves for a range of birds, mammals and invertebrates.

CULTURAL INFLUENCES

Scattered evidence of Neolithic and Bronze Age occupation generally indicates that early settlement spread outwards from the main river valleys onto the more marginal clay hills, and that occupation gradually became more widespread throughout the Iron Age and Roman periods. Whilst two major Roman roads (Fosse Way and Long Lane) traverse the Village Farmlands landscape, there appears to have been limited non military Roman influences and it is possible that large areas remained wooded and were only thinly settled until the Saxon period.

Therefore, the most widespread evidence of early settlement is derived from the Saxon place names. The majority of names contain 'ton' and 'bury' indicating that these villages and farms were established in an already cleared landscape. However, many settlement names contain the suffix 'leigh' or 'ley' indicating that they were established as clearings in woodlands. It is also interesting to note that settlements are commonly located on low hills off the till and close to river valleys, perhaps to take advantage of the better drained and more easily worked soils. Many village names that are located closer to rivers and streams contain the element 'ford', indicating that they originated at strategic crossing points.

Ridge and furrow, preserved beneath areas of permanent pasture, and sinuous and irregular strip field systems are both features associated with medieval land management, and are widespread in the Village Farmlands, adding significantly to the historic character of the landscape. These ancient enclosures and evocative traces of past ploughing regimes are typically found in close proximity to villages; the wider medieval landscape probably comprising common grazing land and woodland on the more difficult to work clays.

From the mid 17th century onwards, the open fields, common wastes and woods around villages were cleared and enclosed. Again, traces of this can be seen across the landscape, with various patterns indicating enclosure by both private individuals and by awards.

Some reorganisation of the landscape also occurred from the late 19th century as a consequence of Parliamentary Enclosure. Whilst evidence of professional surveyors dividing up the underlying organic patterns of fields and tracks with ruler straight field boundaries and enclosure roads is evident, much of the landscape appears to retain significant tracts of pre-parliamentary enclosure land division as well as ancient tracks and roads, often winding through the landscape and bordered by tall hedgerows or occupying deep cuttings.

The landscape generally escaped widespread change throughout the industrial and modern periods. Indeed, beyond the construction of transport infrastructure, such as canals, major roads and rail lines, there are some parts of the Village Farmlands landscape that appear much as they would have done at the turn of the 20th century.

Most settlements are nucleated with older properties clustered around an ancient church, typically located at the heart of the settlement and constructed from local sandstone. Whilst some older stone cottages and half timbered structures survive in many settlements and add significantly to local historic character, the principal building material used in the older houses in villages and hamlets is local brick with tile roofs, indicating that much rebuilding took place from the Georgian period onwards. In contrast to the rural settlement character prevalent in Derbyshire, villages in Leicestershire saw rapid expansion in the 19th and 20th centuries, identifiable as terraces of red brick and slate roofed houses. More recent village expansion and infilling is also conspicuous here, and several former rural settlements have grown significantly to small town status, notably fringing the M69 to the west of Leicester as at Earl Shilton and Barwell.

Whilst not a particularly common feature of the landscape, parklands associated with large country houses are a locally significant feature of the Village Farmlands. This is particularly the case around the fringes of Derby, with Locko Park, Kedleston Hall, Elvaston Castle and Sudbury Hall, as well as numerous smaller parks, being notable for their influence on local landscape character. Here, rural areas beyond the bounds of the park display the influence of the controlling landowner, typically through the increased occurrence of small-scale plantations, game coverts and large estate farm complexes.

AESTHETIC AND PERCEPTUAL QUALITIES

The Village Farmlands, whilst displaying local variations in land use, is a visually unified landscape consisting of a limited palette of elements and features. The gently folded and undulating landform is particularly important in creating a cohesive landscape framework. However, it is the mixed agricultural regime, frequent small copses and woodlands and hedgerow networks that create a particularly strong and identifiable landscape character.

Whilst not being particularly tranquil or remote, the landscape possesses a quiet quality, with areas of rural and historic character. The narrow winding lanes linking small nucleated villages and remnant ridge and furrow are particularly significant in contributing to historic character, as are the sinuous and irregular field patterns and intermittent woodlands. This historic character is further enhanced in areas that are more remote from the effects of the principal transport infrastructure and urban fringe development.

Despite a low level of woodland cover, hedgerow and field trees, as well as those along river streams and rivers, are well represented and make a significant contribution to landscape character. Collectively, trees in the landscape, despite sometimes being widely distributed, filter views and along with the undulating nature of landform and intermittent copses and woodlands, create a strong sense of enclosure. The well treed character of the landscape is further supplemented by parklands, which are often characterised by belts of perimeter trees, plantations and coverts.

Trees and woodlands create a sense of physical and visual enclosure; however, some relatively wide panoramas are possible from elevated areas and along or across wide valleys. In many instances, church spires and towers are prominent landmarks, punctuating the horizon. Farm complexes are also notable, occupying elevated areas of landform between the valleys.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

Villages are under increasing pressure from development, especially those closer to Derby and Leicester, which are popular with commuters. In-fill development on available land within settlement boundaries, and development on village margins, can damage architectural and historic character, create visual intrusion and extend the urban fringe into the countryside.

Large scale mixed-use development is also occurring on the outskirts of Leicester, Nottingham and Derby, with a number of edges of these settlements adjoining the Village Farmlands Landscape Character Type. With their location within the identified Growth Points they are targeted to receive significant levels of new mixed use development

in the short and longer term. This is particularly evident along the main routes in and out of the cities, such as the M69 and A38, where development can utilise existing transport infrastructure.

Shaping the Future Landscape

The aim should be to protect the character of villages and consider the visual impact of any new development. Specific mechanisms include Village Design Statements, guiding the design of new development, and ensuring the appropriate use of vernacular styles and building materials; and best practice innovative architectural ideas and planning solutions that minimise impact on local landscape and townscape character. As well as Village and Town Design Statements, Conservation Area Appraisals can also be important tools. Planting of new trees around settlement fringes should also be encouraged, helping to integrate new development into the landscape.

The aim should be to manage the growth of larger settlements, ensuring development is appropriate in terms of design and scale. As with development in more rural areas, tree and woodland planting can help minimise adverse impacts. There should also be a place for the use of innovative architectural solutions that take inspiration from local distinctiveness and character whilst utilising eco-friendly and high quality design. Care should also be taken to prevent coalescence, ensuring separation is maintained between the urban fringe and surrounding settlements.

INFRASTRUCTURE

Forces for Change

Although parts of the landscape type retain a quiet, rural character, a network of transport routes crosses the landscape, in particular major roads such as the M42, M69, A5 and A50. Continued improvements to roads, including new junctions and road widening, further fragment the landscape and reduce the sense of tranquillity, whilst also generating opportunities for further development. Road improvements are also occurring on the network of minor roads, better connecting isolated villages with larger towns and cities.

Although the East Midlands Airport is located in the adjacent Wooded Village Farmlands, the wider area beyond the airport, including parts of the Village Farmlands, is affected by the aircraft activity and can adversely affect the tranquillity of quieter rural areas. This potential expansion of the airport will impact further on the loss of tranquillity.

Shaping the Future Landscape

The aim should be to manage the expansion of the transport network, ensuring improvements are carefully planned to provide positive environmental and landscape enhancements. In more rural areas, road improvements should reflect local character and avoid bringing a degree of standardisation to the countryside.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

The Village Farmlands has a mixed agricultural regime, with localised variations in permanent pastures and arable cropping. While the landscape generally has an intact and well maintained appearance, some areas have suffered from a loss of hedgerows and hedgerow trees, resulting in larger fields and a sense of exposure. The intensification of farming across the landscape has also resulted in the loss of semi-natural habitats, leaving occasional areas of meadow and unimproved grassland.

In some locations energy crops, in particular Miscanthus and Short Rotation Coppice, are being cultivated to meet renewable energy targets. These fast growing and tall crops can radically change the appearance of the landscape. There is also a requirement for storage and processing facilities, which along with other new agricultural buildings, can reduce the sense of remoteness in rural areas and cause visual intrusion.

Shaping the Future Landscape

The aim should be to protect existing hedgerows and semi-natural habitats, whilst encouraging positive management of those features lost or under threat. This will create a stronger pattern of land use and reinforce the rural character. In particular, the restoration of meadow and grassland should be considered, enhancing biodiversity and landscape character. Linear features in this landscape, such the Ashby Canal, dismantled railways and numerous streams could also benefit from habitat enhancement to improve connectivity.

In relation to energy crops, new structures should be located away from visually prominent locations, and close to existing settlement and infrastructure. Although the introduction of energy crops will be more difficult to manage, grant applications to Natural England or the Forestry Commission may require an assessment of landscape and visual impacts.

FORESTRY AND WOODLAND

Forces for Change

Woodlands in the Village Farmlands are typically small and scattered. Small scale woodland and tree planting could be used in and around settlements to integrate new development into the landscape and in more intimate low-lying areas to help maintain a mixed pattern of land-use. More extensive woodland planting is anticipated arising from The National Forest initiative with the potential to have a significant influence on local landscape character.

Shaping the Future Landscape

Outside of The National Forest, the aim should be to plant new small-scale woodland in suitable locations and consider the management of existing trees and woodland. The opportunity exists to enhance biodiversity value and age structure through new planting and creation of woodland edge habitats. Such proposals should be undertaken in collaboration with the Forestry Commission and local landowners, and financial support may be available through the English Woodland Grant Scheme.

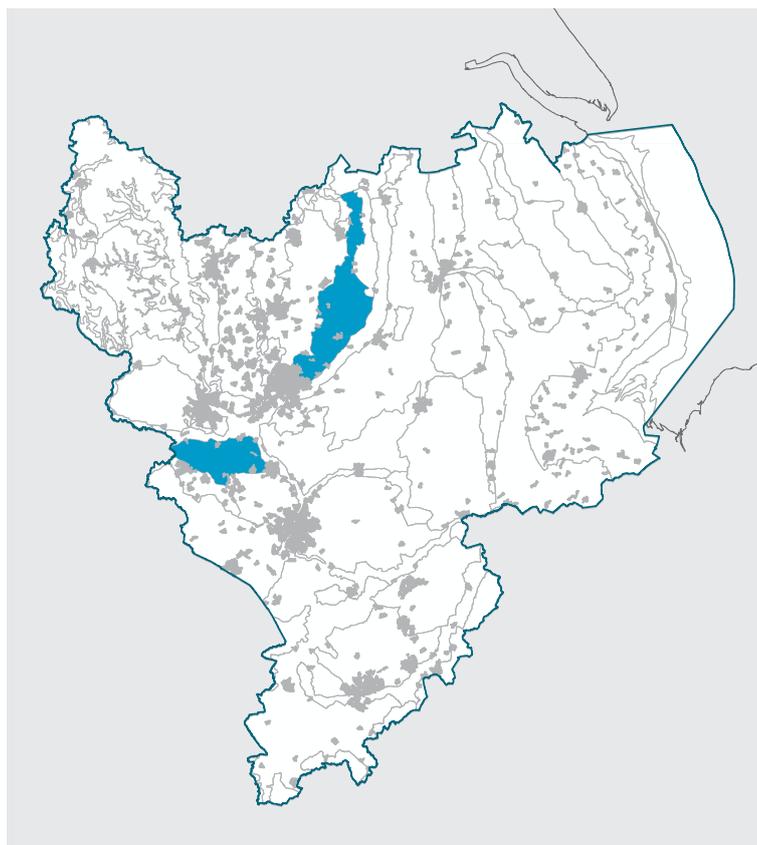
For those areas that lie within The National Forest, design guidance for woodland creation should be in accordance with the National Forest Strategy, 2004-14 that has been consulted on and endorsed at the national level. The aim should be to plan for new woodlands, ensuring new planting schemes take full advantage of opportunities to enhance nature conservation and recreation, whilst respecting the pattern and scale of the landscape.

The National Forest Strategy highlights the potential for large scale plantations and community woodlands in this landscape type, complementing the pattern of the large scale fields. In addition, a range of other tree and woodland planting is recommended including farm woodlands in more open area. Where possible, new woodlands would be linked with existing semi-natural woodland, together with improvements to hedgerows and riparian habitats along streams and rivers.

5B:

WOODED VILLAGE
FARMLANDS

*Prominent woodland on hills and valley sides
(© Derbyshire County Council)*



KEY CHARACTERISTICS

- Varied topography, ranging from gently undulating farmlands to rolling hills, becks and steep sided valleys, locally known as 'Dumbles';
- Scattered farm woodlands, ancient woodlands on prominent hills and tree lined valleys contribute to a well wooded character;
- Well maintained pattern of hedged fields enclosing pasture and arable fields, with evidence of decline close to urban areas;
- Sparsely settled, with traditional pattern of farms and small rural villages linked by quiet country lanes; and
- Strong sense of landscape history.

LANDSCAPE CHARACTER

The Wooded Village Farmlands Landscape Character Type is characterised by productive and well wooded rolling farmlands and valleys over Triassic, Permian and Carboniferous geology, with localised influences arising from harder bands of rock and alluvial flats fringing rivers and streams.

The base-rich soils that can be easily improved are widely used for arable cropping, but areas, on the less well drained clays and along alluvial flood plains, are often characterised by verdant improved pastures grazed by cattle. Only limited remnants of semi natural vegetation remain in the agricultural landscape. However, broadleaved woodlands, copses and occasional meadows and unimproved grasslands in parkland are important, as are areas of connective habitats such as species rich grasslands, hedgerows and river corridors.

The landscape also has a relatively intact historic character, with sinuous hedgerow patterns and winding rural lanes evocative of medieval land management. Country houses also exert a strong, albeit localised influence on the landscape, with landscaped parks particularly prominent in the vicinity of Melbourne. Their influence can also be seen in the wider landscape in the form of game coverts, small scale plantations and estate farms.

The landscape, whilst not particularly tranquil, retains a quiet, rural character that appears to have changed little over recent decades. Some areas, notably those close to larger towns, are showing signs of decline, as are hedgerow networks in areas where there is an intensification of arable production.

PHYSICAL INFLUENCES

Although the Wooded Village Farmlands is underlain by a range of bedrocks it is principally associated with a broad belt of Triassic mudstone, siltstone and sandstone that extends northwards to the Humberhead levels in South Yorkshire and southwards into the West Midlands. Localised areas of Carboniferous sandstones and Coal Measures are also evident. However, their extent is more limited and it is the continuity of land cover and land use that creates a visually cohesive landscape.

The outcrops of Carboniferous Limestone and Millstone Grit that occur in the vicinity of Melbourne, together with the Sherwood Sandstone to the west, have a localised impact on landscape character with a distinctive dip and scarp topography with the sandstone beds forming pronounced dip slopes. The most widely recognised limestone outcrop is at Breedon Hill. Here the limestone has been extensively quarried. The church located at the top of the hill has survived and continues to command the local skyline. A further large quarry, Cloud Hill, is located nearby at Breedon Cloud. Other extensive outcrops of limestone occur around Ticknall and Calke Abbey and were also quarried.



*Melbourne Parklands from Breedon Hill
(© Martin Banham, Natural England)*

The underlying Triassic bedrock generally gives rise to low rolling topography. However, where alternating bands of harder and softer rock formations occur, a much more varied and undulating landform is evident. There are also only limited superficial deposits of till and gravel terraces across the landscape. Elsewhere in the region, these deposits soften landform features and create more gently undulating landscape. As such, relief features tend to be more dramatic than elsewhere over Triassic geology.

Although the Mercia Mudstone lowland areas to the north of Nottingham offer limited geodiversity interest there are good geological exposure potential in a brick quarry at Dorkett Hill near Nottingham. In contrast, the Carboniferous Limestone and Millstone Grit of the Melbourne area and Sherwood Sandstone to the west offer much greater potential for geodiversity interest as several working and abandoned quarries present good geological exposures. There are also some natural exposures and the sandstone is well displayed in buildings. Geomorphological features are also evident including a fossil Triassic inselberg at Breedon Hill. In view of the range of geodiversity and geomorphological features, it is important that practices are in place for their care, maintenance and management, and the promotion of their educational and interpretational interest,

The impervious nature of the underlying geology has meant that the landscape has become heavily dissected by streams, which tend to occupy well defined valleys. Many of the valleys are floored by narrow alluvial floodplains, creating a flat floodplain fringed by steep valley sides. Valleys are particularly deeply incised bordering juvenile streams and gradually soften as they enter lower lying areas. Of particular local interest are the small, narrow ravines, often tributaries of the larger streams and rivers. These occur to the north of Nottingham and are known locally as Dumbles and Becks. Dumbles can be up to 10m deep and contain miniature waterfalls where harder bands of rock over softer strata have resisted erosion. Steep sided valleys are also evident close to Melbourne, although their topography is obscured by large

reservoirs, created by damming of rivers, notably the two major reservoirs of Foremark and Staunton Harrold.

The underlying geology gives rise to fertile, slightly acidic loamy and clayey soils with impeded drainage. Once improved, these are particularly well suited to arable cultivation, and as such this is the predominant land use. Areas of less fertile and permeable soils are also evident, giving rise to pastoral land uses.

Agricultural improvement and intensive farming has limited the retention of semi-natural habitats, although localised areas of species rich meadows and rushy riverside pastures are evident. The most prominent semi natural habitat is broadleaved woodland, which is an important component of the landscape, adding significantly to nature conservation interest in an otherwise intensively managed agricultural landscape. Woodlands are typically deciduous or mixed and are generally small to medium size. Of particular importance is the wide distribution of ancient woodlands, often prominently sited on hilltops and rising land. Parklands and estate copses and coverts further add to the well-wooded character of the landscape, as do the many willow lined streams and hedgerow trees. The nature conservation value of ancient woodlands and parkland habitats is evident in the widespread designation of these features as SSSIs.

As with other agricultural areas in the lowlands, hedgerows, hedgerow trees, riparian habitats and pollarded willows along streams are important as corridors between remnant woodlands and unimproved grasslands. However, across wide areas, and notably areas of intensive arable production, hedgerows are gappy, low and heavily clipped with few hedgerow trees. Hedgerows tend to be better maintained and form continuous habitat networks across steeper landform and on estate farmlands.

CULTURAL INFLUENCES

Scattered evidence of prehistoric occupation in the Wooded Village Farmlands is suggestive of activity spreading out from the major river valleys. Clearance of woodland for settlement and farming would have been more widespread during the Iron Age and Roman periods. However, it was during the mid to late Saxon period that settlements became consolidated and the framework of the current landscape established.

Place names give some indication of the origins of settlement with derivations suggestive of both Saxon and Nordic influences. Many place names refer to woodland or woodland clearance, and some to the north east of Nottingham also mention animals, possibly relating to the responsibilities some communities had to pasturing royal herds.

Whilst being sparsely settled, villages appear to have been located beside watercourses to take advantage of better drained soils. These would have been surrounded by open fields and beyond these would have been blocks of woodland, often forming grazing for neighbouring communities to share. Traces of these earlier landscape patterns are evident in the irregular patterning of field boundaries, of winding country lanes and remnant ancient woodlands along parish boundaries. Indeed, at Laxton an almost complete picture of the medieval landscape survives, with the castle, manorial earthworks, fishponds, open strip fields and riverside meadows being a tangible link to a once more common scene.

Other than in the vicinity of Laxton, post medieval enclosure of the landscape was widespread, and it is to this period, and notably the later 18th and early 19th centuries that the geometric patterns of straight enclosure roads and hedgerows can be dated. Despite this, ancient boundaries and divisions can still be observed, notably in the intricate and organic boundaries of parishes and winding lanes. The late 18th and 19th centuries also saw the establishment of new farms in the rural landscape, and rebuilding of humble stud and mud or timber cottages in villages with brick.

Areas of parkland were enclosed during the medieval period to provide the sport for the nobility, often taking in areas of woodland, but also containing land for grazing and sometimes cultivation. Remnants of these medieval parklands are widespread in the Wooded Village Farmlands Landscape. For example, three parks were created close to the Archbishop of York's estate at Southwell, at Hexgreave, Norwood and Newpark. In the centuries following enclosure, many areas were converted to farmland or reduced in scale. However, others prospered and were modified to form fashionable parklands surrounding a country residence.

A notable concentration of impressive parks is evident close to Melbourne. During the Saxon period the area was a major ecclesiastic centre for the kingdom of Mercia and later monasteries were established at Calke, Repton and Gresley which had extensive parks in the surrounding area. Following the dissolution, these formed the basis for large private estates.

Recent decades have seen relatively little change in the rural landscape. However, as with some other areas in the region, increasing reversion to arable farming and decline in hedgerow networks, as well as the introduction of new crops such as oilseed rape has had an impact on local landscape character and perceptions of landscape condition. As with other rural landscapes in the region, major infrastructure such as the M1 has also had an effect on local landscape character.



Wooded Village Farmlands near Kedleston, (© P Clarke, Natural England)

AESTHETIC AND PERCEPTUAL QUALITIES

Undulating landform, mixed agricultural land use and relatively high levels of woodland cover creates a strong sense of visual unity across the landscape, with features such as Breedon Hill, large designed parklands and reservoirs south of Melbourne providing areas of local interest that are well integrated by a generally high level of tree cover.

Where field patterns remain intact, and local villages have seen limited late 20th century growth and development, the landscape retains a strong historic character, with tangible evidence of land use and settlement stretching back into the medieval period. Of particular significance are the ancient woodlands, organic field patterns and winding rural lanes between long established villages and hamlets. Set within this overall framework are sites of significant historic interest such as the medieval village of Laxton and designed parklands which display evidence of early emparkment, ecclesiastic origins and later fashions in architecture and landscape design.

Undulating landform and woodlands generally combine to create visual containment and sense of enclosure. Despite this, some panoramic and extensive views are possible from elevated locations where views are uninterrupted by intervening vegetation.

The landscape has a strong agricultural character, with wide areas retaining a sense of rural tranquillity and intactness, notably where ancient hedgerow patterns, woodlands and winding rural lanes have seen little modernisation. In some areas, and notably on the fringes of towns, or where agricultural regimes are shifting towards intensive arable production, gappy hedgerows and peri-urban land uses creates a sense that landscape quality is declining.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

Villages within the Wooded Village Farmlands have seen limited growth and development. However, large scale modern mixed-use development is evident on the fringes of larger towns, such as Swadlincote and Loughborough, creating visual intrusion and resulting in the loss of surrounding countryside.

Shaping the Future Landscape

The aim should be to manage the growth of larger settlements, ensuring development is appropriate in terms of design and scale, and consider the visual impact of any new development. Specific mechanisms include best practice innovative architectural designs and planning solutions, and planting of trees, helping to integrate new development into the landscape. Care should also be taken to prevent coalescence, ensuring separation is maintained between the urban fringe and surrounding settlements.

INFRASTRUCTURE

Forces for Change

Localised road improvements are evident in the road network, especially near larger settlements and around the East Midlands Airport, where existing routes are being straightened and widened to accommodate increased levels of traffic. This has an urbanising effect and brings a degree of standardisation to the countryside.

If the potential expansion of the footprint of the East Midlands airport goes ahead, this will have significant effects on the landscape including the extended transport infrastructure, and noise and lighting associated with increased aircraft movements. There will also be an adverse effect on the tranquillity of the surrounding area.

Shaping the Future Landscape

The aim should be to manage road improvements, ensuring improvements provide positive environmental and landscape enhancements and maintain the character of the rural road network. Measures may include grassland, hedgerows and tree planting along road verges to enhance character and increase the occurrence of semi-natural habitats.

With regard to the potential extension of the East Midlands airport, the aim should be to mitigate for the visual effects of the development through innovative and sensitively designed buildings and associated structures and off site woodland planting that is appropriate to the character of the area.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

There is marked evidence of agricultural intensification, accompanied by a move towards arable production. This has resulted in the loss or damage of many typical landscape features, including traditional field boundaries and areas of ridge and furrow, contributing to a more homogenous landscape. The loss of pasture is particularly evident along the various rivers and streams which traverse the countryside.

Areas of parkland are also a feature of this landscape, contributing to the variety of land use and land cover. However, not all of the parkland is well managed and areas of pasture and woodland have been lost to increasing agricultural intensification.

In some locations energy crops, in particular Miscanthus and Short Rotation Coppice, are being cultivated to meet renewable energy targets. These fast growing and tall crops can radically change the appearance of the landscape. There is also a requirement for storage and processing facilities, which along with other new agricultural buildings, can reduce the sense of remoteness in rural areas and cause visual intrusion.

Shaping the Future Landscape

The aim should be to protect existing rural landscape features, whilst encouraging positive management of those features lost or under threat. The restoration of hedgerows should be given priority, along with an increase in pasture, creating a stronger and more mixed pattern of land use. This will be particularly beneficial along watercourses, enhancing their visibility and creating a more integrated habitat network.

The aim should also be to manage parklands, ensuring their reinstatement and sustained contribution to landscape character and diversity. However, care should be taken to ensure that enhancements do not conflict with their original design and layout.

In relation to energy crops, new structures should be located away from visually prominent locations, and close to existing settlement and infrastructure. Although the introduction of energy crops will be more difficult to manage, grant applications to Natural England or the Forestry Commission may require an assessment of landscape and visual impacts.

FORESTRY AND WOODLAND

Forces for Change

Woodland is a significant component of this landscape, particularly in the south western section of the Landscape Type, which lies within The National Forest, and new woodland planting would be generally appropriate, increasing the overall woodland coverage in the Region. However, any new woodland planting should be carefully sited as to avoid disrupting long-distance views and the sense of openness where it exists.

Shaping the Future Landscape

The aim should therefore be to plan for new woodlands, ensuring new planting schemes take full advantage of opportunities to enhance nature conservation and recreation, whilst respecting the pattern and scale of the landscape. Small to medium broadleaved woodlands are likely to be most appropriate, linked with existing semi-natural woodland by improvements to hedgerows and riparian habitats along streams and rivers. Such proposals should be undertaken in collaboration with the Forestry Commission and local landowners, and financial support may be available through the English Woodland Grant Scheme.

For those areas in the Wooded Village Farmlands that lie within The National Forest, design guidance for woodland creation should be in accordance with the National Forest Strategy, 2004-14 that has been consulted on and endorsed at the national level. Much of the area coincides with the 'Wooded Parkland' landscape type identified in The National Forest Strategy and which confirms that there is limited scope for large-scale planting. Here, the aim should be to establish small to medium sized mixed broadleaved woods that respect the historic landscape character, together with farm woods and estate forestry, with some commercial plantations away from the parkland settings.

TOURISM AND LEISURE

Forces for Change

Several large landscape parks and country houses are popular tourist attractions, along with The National Forest, Foremark and Staunton Harold reservoirs in Leicestershire, and numerous publicly accessible woodlands. Some of these sites experience considerable visitor pressure and many sites include infrastructure such as car parks, picnic spots, and viewpoints. This can result in the damage, loss and fragmentation of natural features, while visitor facilities can create visual intrusions and reduce the sense of tranquillity.

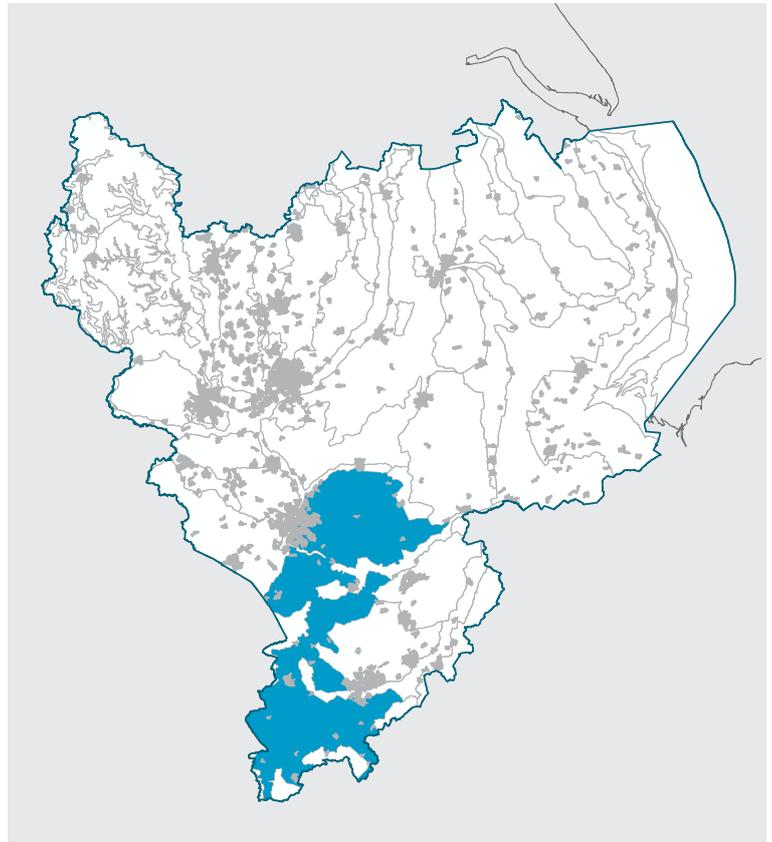
Shaping the Future Landscape

The aim should be to protect the distinctive character of the landscape and consider the visual and environmental impact of any new or extended visitor facilities. The management of public access should also be encouraged, helping to conserve the quiet, peaceful character of the area whilst enhancing the parks, houses, reservoirs and woodland as recreational and educational resources.

5C: UNDULATING MIXED FARMLANDS



Undulating Mixed Farmlands
(© Ken Johnston, Natural England)



KEY CHARACTERISTICS

- Varied landform of broad rolling ridges, steep sided valleys, rounded hills and undulating lowlands;
- Well treed character arising from abundant hedgerow trees, copses and woodlands;
- Upland areas mark a major watershed in Middle England and are the source of major rivers;
- Mixed farming regime with mainly arable land uses on hills and ridges and in fertile lowlands; intact hedgerow networks generally associated with pastoral land uses;
- Sparse settlement patterns with limited modern development; widespread use of local limestone and ironstone in vernacular buildings and churches;
- Network of quiet country lanes linking rural communities;
- Remote, rural and sometimes empty character; and
- Frequent and prominent ridge and furrow and evidence of deserted or shrunken medieval settlements.

LANDSCAPE CHARACTER

The Undulating Mixed Farmlands Landscape Character Type forms an extensive landscape stretching from the Oxfordshire and Warwickshire borders, through Northamptonshire and into the heart of Leicestershire. Despite its scale, varied underlying geology and complex draining patterns that have created a landscape of hills, ridges and valleys, the landscape has a strong visual unity.

Of particular importance to creating this visual unity is the undulating nature of the landform, interspersed with relatively high hills and ridges, a mixed agricultural regime and areas of permanent pasture preserving widespread ridge and furrow, occasional woodlands and spinneys, and a network of well treed hedgerows. The dispersed pattern of villages and farms, and widespread use of the local ironstone rich geology in churches, vernacular buildings and country houses is also significant in contributing to local identity and sense of place.

The rural landscape retains a tranquil and sometimes empty character, particularly where there is limited influence from neighbouring villages and farms, and where winding country lanes and roads have seen little improvement. Landscape condition is generally good, notably where hedgerow networks are well maintained and contain frequent hedgerow trees. Wide areas also have a historic character, with only limited evidence of change and development from recent decades.



Leicester Wolds near Whissendine (© Martin Banham, Natural England)

PHYSICAL INFLUENCES

A complex series of geological formations underlies the Undulating Mixed Farmlands landscape, influencing localised patterns of landform, land cover and land use. Lias geology predominates, with Scunthorpe Mudstone, Charmouth Mudstone, Marlstone Rock Whitby Mudstone and Northampton Sand Formations being particularly widespread. At higher elevations, the ironstone-rich Jurassic Marlstone Rock Formation caps several hilltops which often create distinctive elevated ridges and hills generally above 200m AOD, such as Eydon Hill and Burrough Hill. A thick mantle of till is also evident across the landscape, notably in areas forming the catchment of the Tove and Sence and across all but the most elevated areas of High Leicestershire.

The geodiversity interest and potential of this landscape type is varied. Within the Scunthorpe Mudstone there are many thin beds of limestone many of which are distinct and can be found in ploughed fields. They have been locally used for building stone. In the ironstone areas of the Marlstone and Northampton Sand there are many former quarries preserved as RIGS and the stone is readily visible in local buildings. The varied topography offers potential for the conservation of geomorphological sites. In view of the range of geological and geomorphological features, it is important that practices are in place for their care, maintenance and management, and the promotion of their educational and interpretational interest.

Landform features are closely linked to the nature of the underlying geology. High, often steep sided scarps tend to be associated with ironstone bearing rocks, separating sometimes wide flat ridge tops and broad rounded hills. More gently undulating landform features are evident across lower elevations where the Whitby Mudstone forms the predominant bedrock. Wide areas are also cloaked in thick deposits of glacial till which further soften landform features. Many of the steep slopes capped by ironstone have been subjected to landslides with some showing evidence of recent movement but all having the potential for catastrophic movements, with or without man's interference.

The upland areas of the Undulating Mixed Farmlands mark a major watershed between many of Middle England's river systems. Indeed, the village of Bruntingthorpe, in Leicestershire, marks the point where tributaries of Thames, Nene, Welland, Great Ouse and Trent can all be identified in a small geographic area.

Slowly permeable and slightly acid loamy and clayey soils are predominant across the landscape, and despite great consistency in the nature of the soils, a mixed agricultural regime is evident; the distribution of arable and pasture largely dictated by variations in landform. On steeper slopes and wetter areas bordering streams and rivers, improved and semi-improved pastures are prevalent, with particularly steep slopes marked by remnant areas of woodland or unimproved species rich grassland. On gently undulating and sloping land, cereal cultivation is notable. Localised outcroppings of the Marlstone Rock and Northampton Sand Formations give rise to free draining acidic soils which are particularly well suited to arable farming. However, whilst arable cultivation is evident, steep sloping land has tended to lead to the retention of acid grassland, scrub and woodland.

The agricultural landscape is punctuated by numerous small deciduous woodlands and spinneys and whilst these are generally not extensive, they are often prominent features when occupying steep slopes or elevated hills and ridges. Several ancient woodlands are also notable, providing significant local wildlife interest in an otherwise agricultural landscape. The notable concentration of ancient woodlands that comprises Leighfield Forest marks the remnants of the medieval royal hunting area of the Forest of Rutland.

Hedgerows and hedgerow trees also contribute to the well treed character of the landscape. In areas of intensive arable production, hedgerows can be low and trees intermittent, particularly where they mark later periods of enclosure. However, elsewhere the hedge cover is generally very good, and contributes significantly to the perception of a well maintained agricultural landscape. Sinuous hedgerows marking ancient boundaries are particularly rich. Indeed,

in a landscape with relatively low semi-natural vegetation cover, trees and hedgerows provide important refuges and connective habitats for wildlife.



*Rolling landform with well treed character
(© River Nene Regional Park/M Williams)*

CULTURAL INFLUENCES

The thickly wooded uplands and intractable soils across the deposits of till would have been marginal to early agriculture, and settlement of the landscape would have gravitated towards the river valleys, particularly where the overburden had been eroded to expose freer draining gravels. Despite this, evidence of later prehistoric communities can be found across the more elevated hills; sites such as Borough Hill and Burrough Hill, both now country parks, are the sites of large hillforts, located to take advantage of their prominent locations with commanding views across wide areas.

The main evidence for early settlement and farming in the landscape is in the form of Saxon and Scandinavian place names. Their wide distribution suggests that the landscape was less densely settled than more fertile areas elsewhere in the vicinity during the late Saxon and early medieval periods, although as pressure on land increased, it appears that up to the mid 14th century wide areas were being cleared of woodland to establish new nucleated villages surrounded by open fields in ridge and furrow cultivation. It is also to this period

of settlement expansion and prosperity that many village churches date.

From the mid 14th century, the landscape saw widespread depopulation, largely as a result of the limited quality of the soils for cereal cultivation and the actions of landlords who could see greater profits in the reversion of land to grazing for vast flocks of sheep. Today, the landscape displays widespread evidence of this period, with deserted and shrunken villages located throughout the area and the ridges and furrows of former open fields preserved beneath areas of permanent pasture. In some cases villages were not entirely abandoned, but declined to leave just one or two farms where once there was a thriving community.

From the Tudor period, the landscape was also increasingly being enclosed, quick growing thorn hedges being used to demarcate boundaries and divide up the landscape. This continued until the widespread Parliamentary enclosure of the remaining open land in late 18th and early 19th centuries resulting in a complex patchwork pattern of fields overlying much older field systems.

The growing wealth of landowners, particularly from the Tudor period, led to further developments in the landscape. Churches were embellished and many villages saw the construction of substantial stone cottages, often utilising the distinctive iron-rich Northampton Sand and Marlstone geology.

Wealthy landowners also established grand residences and parks. Many had earlier origins as hunting enclosures for the nobility. However, others were created on newly enclosed lands and sometimes preserve the remains of abandoned villages and their open fields beneath areas of parkland such as at Baggrave and Lowesby.

Whilst several early houses remain largely intact, as at Ashby St. Ledgers and Canons Ashby, others such as Althorp House was substantially remodelled, mainly in the 18th century, to reflect the growing fortunes and taste of the owners. Again, as with vernacular cottages in the villages, stone was sourced locally, and as such these fine houses provide a tangible link to the underlying geological framework and have strong visual unity with their surroundings.

Although the industrial age saw the construction of canals and railways, the landscape was largely agricultural and there was only limited expansion of settlements or rebuilding in brick and tile. The 20th century saw relatively little change in the rural landscape although as with some other areas in the region, a decline in hedgerow networks and the consolidation of fields to form large parcels of land for intensive arable farming has had a notable effect. Some localised influences have also occurred as a result of modern infill and village edge development and major infrastructure, such as communications masts on more elevated hilltops.



Leicestershire near Uppingham (© Martin Banham, Natural England)

AESTHETIC AND PERCEPTUAL QUALITIES

There is considerable variety across the Undulating Mixed Farmlands landscape. Exposed and elevated areas provide wide sweeping panoramas across neighbouring lowlands, with nearby hills and ridges punctuating the skyline. Elsewhere, and notably along valleys or below steep scarp slopes, the landform obscures middle and long distance views to create a more intimate and enclosed landscape. Despite these contrasting visual characteristics, the landscape has a strong visual unity, largely arising from the mixed agricultural regime, widespread ridge and furrow and generally well maintained hedgerow networks. Whilst areas of woodland are limited, the landscape also has a well treed character, which further contributes to it being perceived as being in generally good condition.

Where hedgerow patterns have seen little fragmentation and local villages have seen limited late 20th century growth and development, the landscape retains a strong historic character, with tangible evidence of land use and settlement stretching back into the medieval period. Of particular significance are the quiet winding rural lanes between long established villages, hummocky landform associated with ridge and furrow farming and other medieval features such as deserted or shrunken villages and manorial complexes preserved beneath areas of permanent pasture.

Vernacular architecture, particularly where the locally sourced Marlstone and Northampton Sand Formations have been used, also provides visual unity in the landscape. This is further enhanced by older churches and large country houses which also display the use of these ironstones with their distinctive warm brown colour.

The landscape has a strong agricultural character. Despite widespread settlement, and the local influence of large towns such as Daventry and major transport infrastructure routes, large areas possess an empty and tranquil character.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

The Undulating Mixed Farmlands have seen limited late 20th century growth and development and many areas remain remote and rural. However, modern mixed-use development is evident on the fringes of larger settlements such as Leicester, Northampton and Daventry and in and around those villages closest to the main towns. This creates visual intrusion and extends the urban fringe. Further expansion of Northampton and Daventry can be anticipated as these lie within the MKSM Growth Area. Similarly, Leicester forms part of the 6Cs Growth Point although at present, the main directions of growth are proposed to the north and west of Leicester, and outside of the Undulating Mixed Farmlands. These areas are likely to experience considerable development pressure and high levels of growth with mixed use development on the fringes of the urban areas.

Shaping the Future Landscape

The aim should be to protect the character of the countryside and consider the visual impact of any new development included areas of large scale mixed use development associated with the identified Growth Areas. Specific mechanisms include best practice innovative architectural design and planning solutions, and planting of new trees and woodland, helping to integrate new development into the landscape. Care should also be taken to prevent coalescence, ensuring separation is maintained between the urban fringe and surrounding settlements. The findings and guidance of Landscape Character and Historic Landscape Assessments will together provide tools to inform the development of major urban extensions around the main settlements of Northampton, Daventry and Leicester.

Many villages would benefit from Village Design Statements, guiding the design and scale of new development, and ensuring it is appropriate to the existing vernacular styles and building materials. As well as Village and Town Design Statements, Conservation Area Appraisals can also be important tools. There should also be a place for the use of innovative architectural solutions that utilise eco-friendly and high quality design.

INFRASTRUCTURE

Forces for Change

Localised road improvements are evident in the road network in order to better connect isolated villages with larger towns and cities. This has an urbanising effect and brings a degree of standardisation to the landscape.

The aim should be to manage road improvements, maintaining the existing character of the rural road network, whilst having regard to user and safety requirements. Any road improvements should be carefully planned and designed to provide positive environmental and landscape enhancements and strengthen prevailing character. This may include grassland, hedgerows and trees along road verges to enhance character and increase the occurrence of semi-natural habitats.

ENERGY PROVISION

Forces for Change

Although not currently characteristic of the Undulating Mixed Farmland Landscape Character Type, the more elevated areas face pressure for wind farm development, including the potential for cumulative impacts. Such development can create prominent landmarks and reduce the sense of remoteness and isolation.

Shaping the Future Landscape

The aim should be to protect the character of the landscape by appropriately siting and designing new wind farm installations, and also considering any potential cumulative effects. There is potential for strategic regional and sub regional level guidance on commercial wind energy schemes, informed by the EMRLCA and other studies. In addition, planning guidance should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development and setting out the criteria against which new applications will be assessed.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

While the rural landscape retains a mixed land-use, with areas of pasture and arable, there is evidence of agricultural intensification, resulting in the loss or damage of many typical landscape features. This includes loss of hedgerows and hedgerow trees and damage to areas of ridge and furrow. There is also a proliferation of new large scale agricultural buildings, reflecting the loss of smallholdings and the general increase in farm size.



Leicestershire near Twyford (© Martin Banham, Natural England)

Shaping the Future Landscape

The aim should be to protect the structure and unity of the landscape and consider the impact of any new structures and changes to farming practices. New large scale agricultural buildings should be carefully sited, away from visually prominent locations and amongst existing buildings where possible. Specific design guidance for farmsteads may be appropriate, establishing the criteria for new development. Consideration should also be given to the management of those features lost or under threat. In particular the restoration of hedgerows should be given priority, creating a stronger pattern of land use and reinforcing the well-treed character.

FORESTRY AND WOODLAND

Forces for Change

Woodland cover and type varies dramatically across the landscape, with generally more woodland within upland areas, and a range of broadleaved, conifer and mixed plantations. New woodland planting should therefore be considered at a county level, reflecting local variations. However, opportunities exist to use new tree planting and small-scale woodland as screening of new residential and agricultural development and to link existing woodlands.

Shaping the Future Landscape

The aim should therefore be to manage existing trees and woodland, including the protection of ancient semi natural woodlands including measures to reduce their fragmentation. In addition new tree planting should be encouraged to ensure a varied age structure and creation of woodland edge habitats to enhance their landscape and biodiversity character.

GROUP 6:
LIMESTONE
FARMLANDS

GROUP 6
PAGES 175-208

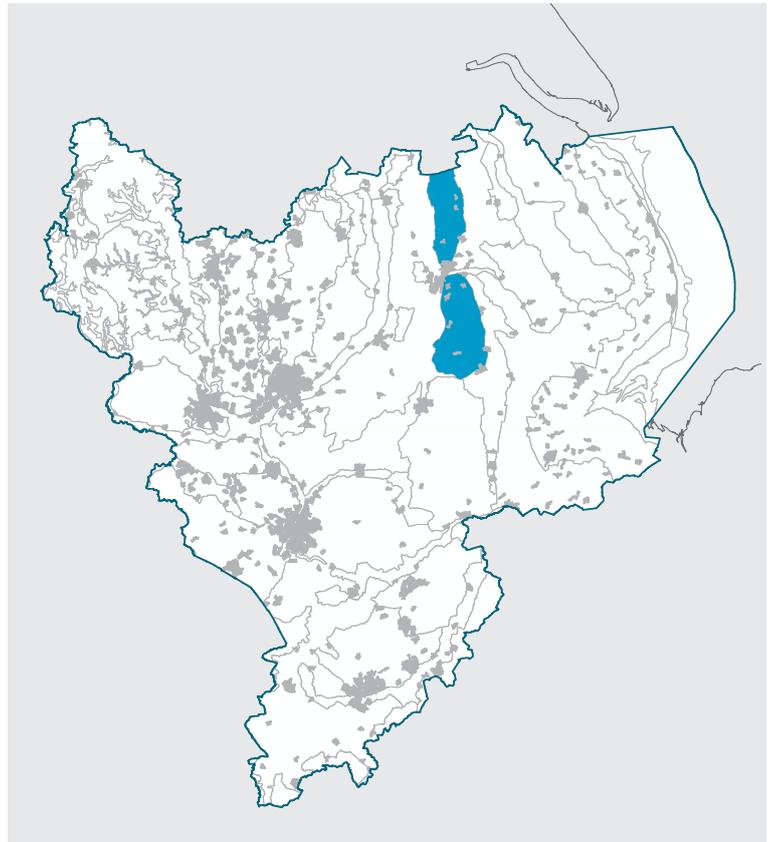


Upland Limestone Pastures, Derbyshire (© Derbyshire County Council)

6A: LIMESTONE SCARPS AND DIPSLOPES



Escarpment forms backdrop to the Unwooded Vales (© LDA Design LLP)



KEY CHARACTERISTICS

- Limestone escarpment and dip-slope with strong north south alignment;
- Diverse patterns of land use and regular spring line settlements along scarp in contrast to the more open and exposed dip slope;
- Limestone villages retain strong historic character, and provide strong link to the nature of the underlying geology;
- Ermine Street forms a significant feature of the landscape, and continues to dictate landscape patterns and boundaries;
- Place names and some indicator species are reminders of once widespread heathland; and
- Evidence of declining landscape condition across intensively farmed areas.

LANDSCAPE CHARACTER

The Limestone Scarps and Dipslopes Landscape Character Type is part of the Jurassic limestone belt that runs from Dorset to the Humber. It is reminiscent of the Cotswolds, both in its physical structure, large scale arable land uses and the character of many of the stone built villages along the lower scarp slopes. However, in contrast to elsewhere with areas of similar geology, locally occurring heathland on thinning limestone created a unique character up until agricultural improvement in the 19th century.

The escarpment, known locally as the Lincolnshire Edge or Cliff, rises above the Trent Vale and forms a prominent and distinctive landscape feature and backdrop to views eastwards from the neighbouring vale.

To the east of the scarp extends a gently undulating and tilted limestone dip slope that merges with the adjacent fenland and marshland fringes of eastern Lincolnshire. It is thought that the landscape has remained largely devoid of trees since the prehistoric period. Whilst it is assumed that the landscape was farmed from at least the Neolithic, place names and occasional indicator species provide clues to the marginal and heathy character of the landscape prior to agricultural improvement.

The consistent alignment of the edge has created a strong sense of linearity, further emphasised by ancient transportation routes. Ermine Street was created in Roman times to link London to York and possibly consolidated much more ancient trackways running along the top of the edge. Superimposed on the north south axis of the Roman road is a less dominant but nonetheless distinctive pattern of east west routes and field boundaries that adds to the geometric character of the dip slope landscape.

Despite evidence of long established settlement and exploitation, the dip slope retains a modern and sometimes declining character, largely as a result of intensive arable production and poor boundary maintenance. However, the edge and scarp villages continue to retain a more intricate and intact historic character.

PHYSICAL INFLUENCES

The Limestone Scarps and Dipslopes are predominantly formed of Middle Jurassic Lincolnshire Limestone, and are part of the belt of ooidal limestones that runs from the Humber Estuary to the Dorset coast. Indeed, the scarp and dipslope are reminiscent of a diminutive Cotswolds, where a prominent scarp overlooking the Severn Vale provides the face of the tilted limestone massif. The morphology of the scarp and dip slope is a consequence of the regional dip of the Jurassic strata, with the steep west facing slopes forming a prominent face and exposure of the Lower Jurassic geology. These strata tilt eastwards where they are overlain by younger rocks from the Jurassic period.

The scarp forms a distinctive topographic feature. It is very pronounced in some places such as Normanton-on-Cliffe, where it rises up to 70m above the adjacent lowland vales. However, elsewhere, such as at Grayingham, it is much softer. Despite this, the straightness and sharpness of the edge makes up for its lack of height.

The lower section of the scarp slope is formed by the mudstones of the Lias Group. Water percolating through the permeable limestone rocks above issues as springs at the point where it meets the impermeable rocks towards the base of the scarp. These springs have been the focus of settlement along the edge, and villages can be seen regularly spaced out along the escarpment. These springs form major streams as they flow through the neighbouring vale but are of only limited significance at the very edge of the scarp landscape.

Behind the scarp face, the Middle Jurassic limestone dip slope shelves gently eastwards across even gradients. Erosion has removed the later Jurassic deposits across the majority of the dip slope; however, they can still be found along the lower eastern fringes and across the neighbouring marsh and fen fringe farmlands. In some areas the limestone is locally thin and inliers of the underlying sands and clays occur.

The effects of glaciation and periglaciation and the distribution and types of superficial deposits has also shaped the landscape and influenced the morphology of local landforms and soil types.

In some places on the dip slope, the water table is close to the surface, resulting in several streams emerging close to the top of the scarp and flowing eastwards. These streams are relatively insubstantial, and occupy gentle folds in the underlying landscape. As with the springs at the foot of the scarp, watercourses emerging on the dip slope have been the focus of settlement, and villages can be seen at regular intervals on the margins of the adjacent fenland fringes. Dry valleys are also evident and are indicative of the porous nature of the underlying geology.

There are many active and former quarries in the Lincolnshire Limestone that show a varied stratigraphy so there is a good potential for geodiversity interest as well as geomorphological features. The Lincolnshire Limestone has been used extensively as a building stone and this is reflected in the local vernacular of the characteristic limestone villages. In view of the range of geological and geomorphological features, it is important that practices are in place for their care, maintenance and management, and the promotion of their educational and interpretational interest.



Limestone Scarp and Dipslope (© Carol Paterson, Natural England)

The underlying geology gives rise to shallow lime rich soils across the gently undulating dip slope, giving way to loamy soils with impeded drainage on and below the steep scarp. Where superficial deposits occur these can affect the soil types, for example where till overlies the limestone bedrock resulting in a change from predominantly alkali to acid soils. The differences in soils and landform have a significant influence on land cover. The steeper scarp slopes are predominantly pastoral with intermittent woodlands while intensive arable farming dominates the dip slope. Where the scarp is particularly gentle, arable fields can be observed to roll over the crest of the edge and down into the adjacent vale.

Intensive agricultural land uses have diminished the extent of semi-natural habitat across the landscape, although some small remnant species-rich grasslands and woodlands are locally significant, particularly when associated with parklands. The low and generally poor quality of hedgerows further diminishes the wildlife interest of the farmland areas.

Despite the underlying limestone geology, frequent place names refer to heathland, which is characterised by acid loving species. Historic accounts of the area also appear to identify the dipslope landscape as heath up until agricultural improvement in the 19th century. It is possible that the localised thinning of the limestone geology created conditions favourable for gorse and bracken to thrive; however, evidence of this is now sparse.

CULTURAL INFLUENCES

The elevated, dry land of the Limestone Scarps and Dipslopes would have been attractive to early settlers, and it is suggested that the ridge would have been cleared of woodlands in the early Neolithic. The elevated linear nature of the scarp would also have been valued as an overland route through neighbouring marshy and densely wooded lowlands located to the east and west.

Despite some evidence of prehistoric activity, it is from the Roman period that the main evidence of early settlement can be found in the form of communication routes and archaeological sites, which include a marching camp at Sudbrook near Ancaster. It is assumed that the environs of the road along the ridge top would have been maintained clear of trees allowing wide visibility, and as such it is likely that the ridge would have been open and probably farmed throughout the Roman period. Remnants of a villa site at Scampton and Roman settlement near Owmbly, north of Lincoln may support this theory.

The main Roman road is Ermine Street, a major route linking London to York and whilst its metalled and straight course was created by engineers, it is not unreasonable to assume that it consolidated much older prehistoric trackways and routes along the top of the ridge.

The course of Ermine Street remained an important feature of the landscape throughout history. Parish boundaries, probably established in the mid to late Saxon period, are in part defined by the road and it also delineates the axis along which large arable fields are arranged. Its course continues to be an important route, and is preserved as modern roads and tracks.



Limestone Scarp and Dipslope (© Carol Paterson, Natural England)

Place name evidence suggests that today's villages are of Scandinavian or Saxon origin. Interestingly, few names provide evidence of them being established as clearings in woodland, further supporting the view that the landscape was cleared of woodland and managed as farmland for some considerable time prior to Saxon settlements being established.

The arrangement of villages and parish boundaries provide some clues as to past land use and land cover. Villages tend to be located at the edges of the landscape, either on the spring line at the base of the scarp or on the fringes of the dip slope. They are each set within elongated parishes stretching out into the surrounding lowlands and up onto the higher land of the dip slope, taking advantage of wetter land for pasturing and elevated areas for arable crops. The drier soils on the upper slopes of the ridge would have been open fields, giving way to areas of common heath, and indeed many villages can be identified as having a corresponding heath with Ermine Street forming a common axis.

The marginal nature of the soils prior to improvement from the Victorian period would have limited their productivity, and indeed, several deserted mediaeval villages may be reflective of a decline associated with the limited capacity of the land to sustain viable populations.

Enclosure and improvement from the 19th century created the existing patterns of large geometric fields interspersed with isolated farms. Ermine Street continued to form an important axis on the arrangement of enclosure fields laid out in the period, although it is possible that some modern boundaries preserve much earlier land divisions, perhaps dating back to the Roman period. South of Lincoln, several farms, houses and granges are named 'Heath' and other features names contain the term 'ling' (heather) and 'gorse' both of which are typical heathland species, and provide evidence of the heathy nature of land in which these farms and fields were established.

The rural landscape has remained largely intact since this time, with an emphasis on cereals and root crop cultivation within large geometric fields, bounded by stone walls and gappy hedgerows. Some decline is evident in the condition of field boundaries, and where older boundaries are particularly poor, post and wire fencing is conspicuous.

The dry, load bearing character of the geology and the shallow gradients made the landscape ideal for the development of wartime airfields, and several can be seen across the dip slope landscape.

AESTHETIC AND PERCEPTUAL QUALITIES

Despite its relatively low elevation, the Limestone Scarps and Dipslopes is a distinctive and locally prominent landscape, forming both a backdrop to views from the adjacent lowlands and an elevated vantage point with wide panoramas across vast areas.

The visual character of the landscape varies considerably dependent on location. The scarp has a diverse character, with pasture, arable, woodland and hedgerows creating an intricate and textured landscape. The straightness of the edge, transport routes and regularity of scarp edge villages also imbues a subtle regimented character, which is further reinforced by the geometric patterns of fields.

The strong geometry of the landscape continues onto the dip slope. However, declining field boundaries often make these patterns difficult to discern. As a further contrast to the scarp slopes, the dip slope has an open and empty character. Wide views across vast treeless fields emphasises the sense of remoteness, although this becomes diminished with proximity to transport infrastructure and the occasional farms, villages and airfields.

Despite the landscape being long settled, the landscape of the dip slope has retained a relatively modern character, largely as a result of the geometric nature of field boundaries and intensive character of farming. By contrast the pastoral and wooded scarp, interspersed with small stone built villages, retains a more tangible connection to historic character. Whilst landscape condition across the scarp is generally good, the declining hedgerow and stone boundaries across the dip slope, impart a declining character.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

Villages are under increasing pressure from development, damaging the character and pattern of settlement. The expansion of ridgeline villages is particularly harmful due to their visually prominent locations. The impact of the new development on the setting and views of Lincoln Cathedral and village churches is particularly important, as these are distinctive regional/local landmarks. There is also evidence of mixed-use development on the fringes of Lincoln, creating visual intrusion and resulting in the loss of surrounding landscape features.

Shaping the Future Landscape

The aim should be to protect the character of the countryside and consider the visual impact of any new development. Specific mechanisms include planting of new trees, helping to integrate new development into the landscape and the use of best practice innovative architectural solutions and planning solutions that take inspiration from local distinctiveness and character whilst utilising eco-friendly and high quality design. Many villages would benefit from Village Design Statements, guiding the design and scale of new development, ensuring it is sensitive to the existing vernacular styles and building materials. As well as Village and Town Design Statements, Conservation Area Appraisals can also be important tools.

The aim should also be to protect key views and vistas, ensuring view lines are maintained. The expansion of villages on the crests of ridges should be avoided, and in the case of views towards Lincoln Cathedral, height restrictions for surrounding development may be necessary. The preservation of green wedges is also an important mechanism for protecting the setting of uphill Lincoln, including the Cathedral.

INFRASTRUCTURE

Forces for Change

Roman roads and the network of enclosure roads are distinctive landscape features of the Limestone Scarps and Dipslopes; however, these are under threat from lack of management and inappropriate planting.

Airfields are also a feature of the Limestone Scarps and Dipslopes. Those that are no longer operational are a potential threat to the tranquillity of the landscape, at risk of either falling into disrepair or being redeveloped.

Although not currently characteristic of this landscape, the Limestone Scarps and Dipslopes are under threat from telecommunications infrastructure, creating prominent visual features in this predominantly open landscape and reducing the sense of remoteness and isolation.

Shaping the Future Landscape

The aim should be to manage the historic road network, ensuring its continued contribution to biodiversity and landscape character. The course of Ermine Street in particular should be maintained as an important asset, ensuring a continuous recreation and habitat corridor, even where the current road deviates from the original alignment.

The aim should also be to manage redundant airfields, ensuring any new built development follows the footprint of existing structures as closely as possible, limiting visual intrusion and the loss of surrounding landscape features. Original features of the airfields should be retained, providing a link with the wartime past and a focal point for new settlement. For abandoned airfields, woodland planting, grassland and the removal of ancillary buildings should be considered.

The aim should be to protect the character of the landscape by siting infrastructure away from visually prominent locations and ensuring installations are of an appropriate size and scale. Increased sharing of masts and sites between operators should also be considered, along with removal of redundant masts.

ENERGY PROVISION

Forces for Change

Although not currently characteristic of this landscape, the Limestone Scarps and Dipslopes is likely to experience pressure to accommodate wind energy schemes due to the strength of the winds across the more elevated and open dip slope. As with telecommunication equipment, such infrastructure can create visual landmarks and reduce the sense of remoteness and isolation.

Shaping the Future Landscape

The aim should be to protect the character of the landscape by appropriately siting and designing new wind energy installations. There is potential for strategic regional and sub regional level guidance on commercial wind energy schemes, including cumulative impact, informed by the EMRLCA and other studies. In addition, planning guidance should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development and setting out the criteria against which new applications will be assessed.

MINERALS AND WASTE

Forces for Change

There are a number of quarries within this landscape, serving local and national demand for limestone. There are many impacts associated with quarrying, including visual intrusion, loss of tranquillity and adverse effects on heritage features and wildlife habitats. The high demand for aggregates, and therefore pressure for new and expanded quarries, is likely to further damage the landscape.

Shaping the Future Landscape

The aims should be to manage quarrying, ensuring activity is located away from visually prominent or sensitive locations. Planning guidance for the siting and design of quarries should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development and setting out proposals for after-use; quarries can provide valuable landscape, geodiversity, biodiversity and recreation benefits.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

The landscape is under increasing pressure from intensification of arable cultivation. This has resulted in field enlargement, removing field boundaries and creating a more open landscape. This is particularly evident on the dip slopes, where there is little existing enclosure. Intensification has also led to decline of ridge and furrow, limestone grassland and earthworks of deserted settlements, all of which are vulnerable to agricultural improvement.

Shaping the Future Landscape

The aim should be to protect existing landscape features, whilst encouraging positive management of those features lost or under threat. The restoration of hedgerows and stone walls should be given priority, creating a stronger field pattern and helping to integrate new development into the landscape. The priority should also be to protect the mosaic and diversity of land use, seeking opportunities to restore grassland and areas of pasture.

FORESTRY AND WOODLAND

Forces for Change

Woodland along the scarp is a significant landscape feature, defining the ridgeline and helping to contain settlement. However, existing woodlands are often small and isolated, and suffer from a lack of management.

Shaping the Future Landscape

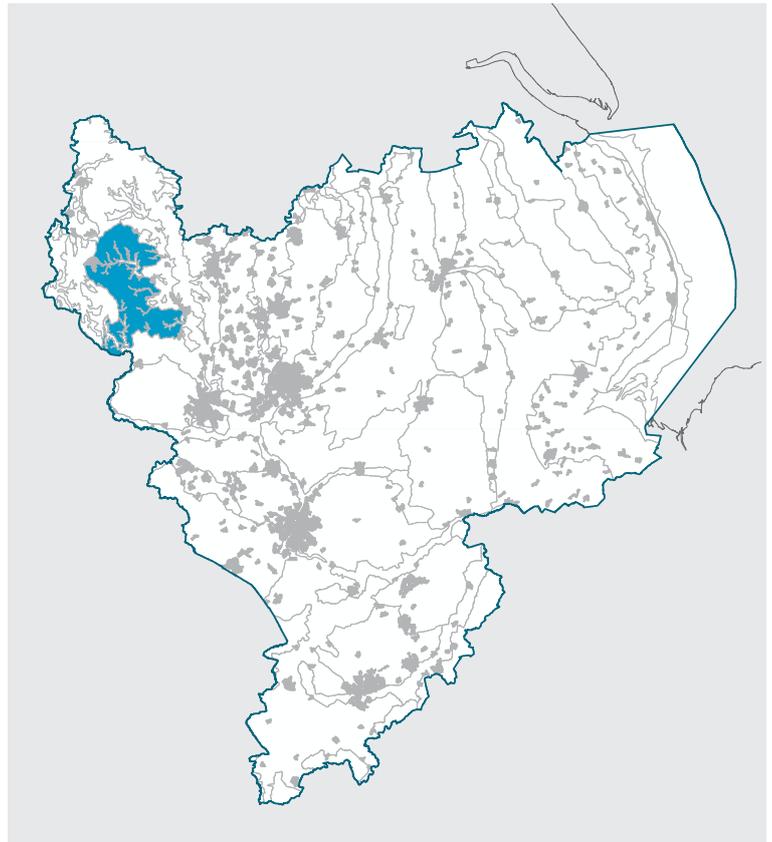
The aim should be to plan for new woodlands, ensuring new planting schemes take full advantage of opportunities to enhance the scarp slope, integrate new development into the landscape, and contain future growth. The aim should also be to manage existing trees and woodland, encouraging new planting to ensure a varied structure, whilst removing invasive species.

The planning and management of new woodland should be undertaken in collaboration with the Forestry Commission and local landowners, and financial support may be available through the English Woodland Grant Scheme. Consideration should also be given to the relationship between Limestone Scarps and Dipslopes and Unwooded Vales, ensuring new planting does not negatively impact on the open character of the adjoining Landscape Character Type.

6B:

UPLAND LIMESTONE
PASTURES

Stone walls define field boundaries
(© Derbyshire County Council)



KEY CHARACTERISTICS

- Elevated, gently undulating limestone plateau with occasional rock outcrops, screes and caves;
- Significant deposits of minerals in veins within the limestone bedrock;
- Simple landform structure dissected by steep sided dales and gorges;
- Long, narrow shelterbelts of broadleaved trees on high ground;
- Nucleated villages of limestone cottages connected by hill top and valley roads;
- Improved verdant pastures grazed by cattle interspersed with occasional dew ponds contrast with localised rough grassland and heathy scrub on upland peat;
- Distinctive field patterns, generally defined by dry stone walls reflecting underlying geology and tangible evidence of a long history of settlement and farming;
- Widespread evidence of Neolithic and Bronze Age ritual activity in the form of visually prominent monuments; and
- Open landscape, with views framed by hills or rising ground.

LANDSCAPE CHARACTER

The Upland Limestone Pastures Landscape Character Type is simple yet distinctive, with a strong sense of place and unity of character. This is largely derived from the widespread outcropping of Carboniferous limestone and its consistent use in dry stone walls and buildings. Local variations in land cover, landform, underlying geology, and patterns of settlement and land use can be observed. However, the networks of dry stone walls appear to bind the disparate parts of the landscape together to create a visually unified whole, especially when viewed as part of a vast panorama from elevated hillsides.

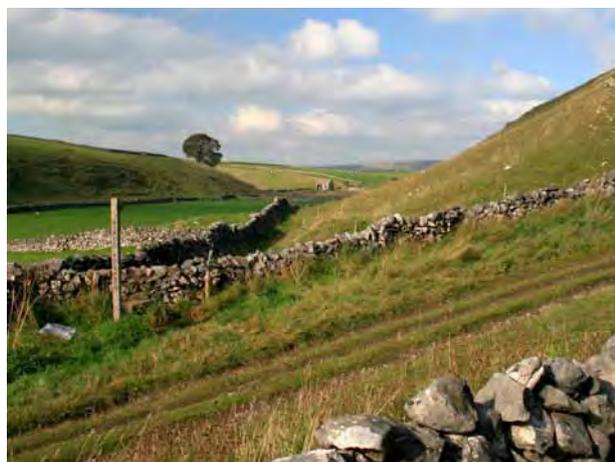
The rural landscape is largely pastoral, with verdant pastures on deeper loess soils contrasting with rough species rich grasslands and rock outcrops on thinner soils and heath and scrub on upland peat. There is limited woodland cover, and indeed it is possible that the landscape has remained cleared of woodland for a significant period of time.

The landscape has a strong historic character, displaying tangible evidence of settlement and farming from the prehistoric period. Particularly evocative are the hill top monuments of the Neolithic and Bronze Age, notably the Arbor Low henge. However, field boundaries are also significant, displaying changing patterns of enclosure and farming over several thousand years including the most recent and widespread organisation of the landscape in the 19th and 20th centuries. The use of the local limestone has ensured that such features and boundaries have survived millennia of change and development and continue to exert a significant influence on the character of the landscape.

Despite the sparse settlement pattern and productive agricultural landscape creating a deeply rural and remote character, evidence of widespread mining activity is evocative of a more industrial past. Whilst the majority of rakes and other mines have been closed and reclaimed by nature, large scale limestone quarries remain in the landscape and continue to exert a strong influence on their locale.

PHYSICAL INFLUENCES

Several major types of Carboniferous limestone can be observed across the Upland Limestone Pastures, their varying properties having an influence on local landform and visual character. Plateau areas tend to occur over the thickly bedded pale grey 'shelf' limestone, giving way to the darker grey 'basin' limestone and reef limestone which is unbedded and rich in fossils. Hard fine-grained limestone which is more resistant to weathering is also evident as conical hills known as reef knolls, such as those at Wetton Hill and Thorpe Cloud. Unlike the broader gently undulating hills elsewhere, the reef knolls tend to rise steeply from the surrounding landform forming prominent and distinctive landscape features. Glaciation and periglaciation has also had a major effect on shaping the landscape and the landform and features that are evident today are testimony to these geomorphological processes.



*Upland Limestone Pastures, Dam Dale White Peak
(© Jim Horsfall, Natural England)*

Dolomitized limestones are also evident, creating tors, such as Rainster Rocks and Harboro Rocks. Volcanic rocks, known locally as Toadstones are also common. These tend to be interbedded within the limestone, and are often associated with spring lines.

The movement of mineralizing fluids, probably at the end of the Carboniferous period, has left significant deposits of lead, copper and zinc ores, as well as fluorspar, calcite and barites as veins within the limestone geology. These have been extensively worked and have been an important part of the local economy. Traces of mineral workings are located throughout the landscape in the form of old mines, linear rakes and spoil heaps.

The landscape type has a high potential for geodiversity interest with many resources, such as working and disused quarries, natural exposures, caves, relics of former lead mining and well represented geomorphological processes. In view of the range of geodiversity and geomorphological features, it is important that practices are in place for their care, maintenance and management, and the promotion of their educational and interpretational interest.

As is typical of limestone geology, the landscape is generally devoid of permanent watercourses. Many dry valleys are evident, as are other classic features of limestone geology, including pot holes, caves and caverns, created as the soluble limestone has become eroded by water percolating through it. Mirroring the variations in geology, various soil types are evident across the landscape. Plateau soils tend to be well drained, fine silty brown earths over wind blown drift. Loess was deposited across the plateau by icy winds during the final phase of the last Ice Age and has given rise to relatively deep fertile soils which have been the focus of settlement and farming, particularly when located close to springs or other sources of water. On the most elevated areas, where high annual rainfall is common, leaching has occurred and soils are acidic and often peaty. Where the drift thins on steep slopes and hill crests, patches of poorer or stony soils and rocky outcrops are evident. Where

pastures have been abandoned, gorse and bracken scrub is evident. Whilst the improved pastures are generally of low habitat value, the unimproved marginal grasslands and heaths are often important for the various habitats they support.

Local variations in soils and land form have a significant influence on land use. Where deeper soils are found, improved pastures grazed by cattle predominate, interspersed with occasional arable fields. On thinner soils, hay meadows and unimproved pastures and calcareous grasslands can be observed, with rough grazing and regenerating scrub evident on some particularly steep hillsides and crests. Vestiges of species rich grassland can also be found along road verges.

Above 350m, the cooler climate favours the development of peaty soils and ironpans. Here, the leached soils give rise to acid grasslands. Limestone heaths are also locally significant. Elsewhere, lead mines, with their toxic spoil heaps, attract many specialist plants that are able to tolerate the heavy metals and further contribute to local nature conservation interest.

Woodland cover is restricted to small groups of trees and occasional coverts and linear shelter belts plantations of sycamore, beech and ash, often planted on former rakes and close to farms. Where present, the plantation woodlands, often consisting of few species, and have a very strong visual character in the open, upland landscape. The uplands and steep slopes, with their thin soils, are particularly open, further adding to their exposed and windswept character. In the generally open landscape, occasional trees along field margins and close to villages and farmsteads gain visual significance.

CULTURAL INFLUENCES

The upland limestone landscape has been the focus of settlement for a significant time, displaying evidence of activity as far back the lower Palaeolithic. It has long been supposed that the river valleys may have been the main areas of activity; however, some find spots on the high, dry plateaux indicate forays were made out onto the hills, perhaps in pursuit of migratory herds.

The most conspicuous evidence for prehistoric activity is the numerous ritual monuments of the Neolithic and Bronze Age that can be seen across the landscape. Little is known about why sites such as Arbor Low and Minninglow chambered tomb were constructed. However, their location on prominent crests and hills suggests that they functioned partly as territorial markers, perhaps using the visible presence of ancestors to mark the limits of land associated with small farming communities located along nearby valleys. The frequency and visual prominence of ritual sites suggests that they were located in a largely open landscape, and that the native woodlands of the plateau were cleared over several generations with stone and then bronze tools. Stones were also cleared from fields, and mounds associated with clearance can still be found.



Upland Limestone Pastures, Eyam-Foolow
(© Paul Clarke, Natural England)

Evidence in the form of enclosures and building platforms across the landscape suggests that large areas of the plateau remained open in the Iron Age and Roman periods. Indeed, it is thought that some stone walls on the plateau mark the location of prehistoric field boundaries.

Whilst some settlements may have much older origins, the modern pattern of permanent settlements was established in the Saxon period. As with lower lying areas, the pattern of nucleated villages, surrounded by open fields and common grazing was developed. Villages tend to be linear, often being located along dry valleys, and small, perhaps reflecting the historically marginal nature of the land and water supply difficulties. Isolated farms were also established, often as monastic granges. These can often be identified by place names, such as at Meadow Place Grange, and by the occurrence of sub rectangular field enclosures. Place names ending in moor, heath and common are also helpful in identifying the vast areas that were common grazing and marginal to settlement up until enclosure and improvement.

In the later medieval period, the open fields and commons gradually became enclosed by drystone walls. In early times, boundaries were set up around strips within the common fields, and can be seen today as long, thin and sometimes sinuous enclosures close to villages. Elsewhere and notably across the former commons and heaths, the enclosures are later. Here, surveyors planned the enclosure of vast tracts of land into geometric fields. Again, the abundance of local stone meant that thorn hedges were rarely used, and as such the various episodes of enclosure are preserved in lengths of dry stone wall. However, the use of quarried stone rather than rubble, often gives these later boundaries a neater appearance.

The enclosure of the heaths and commons in the late 18th and early 19th centuries allowed for these areas to be improved and brought into production. New farms were established, and field barns constructed, often close to new enclosure roads across the uplands. The period also saw the construction of associated features such as dew ponds which gave cattle access to water in the dry landscape. Field kilns allowed for the local production of lime to spread on the fields, initially to burn off rank vegetation and later to counteract the natural acidity of the peaty soils.

The rural landscape of the Upland Limestone Pastures has also been the focus of intensive industrial activity. Naturally occurring minerals within the limestone have been worked from at least the Roman period. Between 1650 and 1850 activity was significant and widespread. Whilst much of the mining activity has now ceased, the landscape is marked by distinctive rakes, pits, shafts and spoil heaps. Most have been naturalised by the growth of vegetation, leaving little visible in the landscape but some sites are significant, particularly when associated with standing structures such as engine houses. Several villages and towns such as Winster saw rapid growth associated with the influx of mine workers and their families.

Quarrying for limestone has also had a significant influence on the character of the landscape. Small delves and pits were worked for centuries for lime production or building stone. Following the arrival of the Peak Forest Tramway in 1796 mining activity was commercialised. Recent times have seen significant quarrying activity, notably for roadstone and cement, resulting in some of the largest quarry sites in Europe.

AESTHETIC AND PERCEPTUAL QUALITIES

The unifying influence of the underlying geology and recurrent visual themes such as the high open plateau and verdant pastures creates a strong landscape character and sense of place. This is further reinforced by built features such as stone cairns, prehistoric monuments, village cottages, farm buildings and dry stone walls which are constructed from the local limestone. Walls are also particularly important in binding disparate parts of the landscape together and emphasising the rolling nature of the landscape.

Large areas of the upland plateau retain a strong sense of remoteness and tranquillity. The absence of woodlands allows vast, sweeping panoramas and a somewhat windswept quality. The landscape also possesses a strong and tangible sense of history.



Winnats Pass (© Paul Clarke, Natural England)

Whilst 18th and 19th century enclosure patterns, farm buildings and remnants of mineral workings are the dominant characteristic of the historic landscape, the sinuous boundaries of medieval strip enclosures and prehistoric monuments add significantly to the sense of time depth. Again, the consistent use of the local limestone in creating physical structures has meant that, in contrast to other Landscape Character Types in the region, widespread evidence of occupation, religion and farming has survived as above ground features.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

There is little potential for large scale built development, but incremental infill with residential development is affecting the pattern and character of rural settlements. Development on village margins can be particularly damaging, creating visual intrusion and resulting in the loss of surrounding landscape features. There is also an increase in conversion of traditional agricultural buildings into housing, further damaging architectural and historic character.

Shaping the Future Landscape

The aim should be to protect the distinctive character of the landscape and nucleated settlement pattern, ensuring development is appropriate in terms of design and scale. Best practice innovative architectural and planning solutions that take inspiration from local distinctiveness and character whilst utilising eco-friendly and high quality design should be encouraged and new tree planting should be employed to minimise impact on local character and help integrate new development into the landscape. In settlements that are experiencing considerable development pressure, Village and Town Design Statements may be appropriate, ensuring appropriate use of vernacular styles and building materials. As well as Village and Town Design Statements, Conservation Area Appraisals can also be important tools.

INFRASTRUCTURE

Forces for Change

Although not currently characteristic of this landscape, the Upland Limestone Pastures is under threat from telecommunication infrastructure, creating visual landmarks in this predominantly open landscape and reducing the sense of remoteness and isolation.

Shaping the Future Landscape

The aim should be to protect the character of the landscape by siting infrastructure away from visually prominent locations and ensuring installations are of an appropriate size and scale. Increased sharing of masts and sites between operators should also be considered, along with removal of redundant masts.



Upland Limestone Pastures, Great Rocks Dale & Chee Dale (White Peak)
(© Phil Sturges, Natural England)

ENERGY PROVISION

Forces for Change

Although not currently characteristic of this landscape, given the Government's commitment to renewable energy provision, the Upland Limestone Pastures is likely to experience pressure for wind energy schemes due to the strength of prevailing winds across these elevated plateaux. As with telecommunication equipment, such infrastructure can create visual landmarks and reduce the sense of remoteness and isolation.

Shaping the Future Landscape

The aim should be protect the character of the landscape by ensuring that any new wind energy installations are appropriately sited and designed, and that they are of a scale that protects the character of the landscape and its cultural heritage. There is potential for strategic regional and sub regional level guidance on commercial wind energy schemes, including cumulative impact, informed by the EMRLCA and other studies. In addition, planning guidance should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development and setting out the criteria against which new applications will be assessed.

MINERALS AND WASTE

Forces for Change

There are a number of large quarries within this landscape, serving local and national demand for limestone. In addition, the landscape type has a strong historic legacy for metalliferous mining, notably for lead, copper, fluorspar and barites. There are many impacts associated with quarrying, including visual intrusion, loss of tranquillity and adverse effects on heritage features and wildlife habitats. The high demand for aggregates, and therefore pressure for new and expanded quarries, is likely to further damage the landscape.

Shaping the Future Landscape

The aims should be to manage quarrying, ensuring activity is located away from visually prominent or sensitive locations including the Peak District National Park. Planning guidance for the siting and design of quarries should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development and setting out proposals for after-use; quarries can provide valuable landscape, geodiversity, biodiversity and recreation benefits and the historic legacy of old metalliferous mines has potential for geotourism.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

The Upland Limestone Pastures is a largely pastoral landscape, with occasional areas of species rich grassland. However, agricultural intensification has resulted in the loss of semi-natural habitat. Furthermore, while there has not been widespread loss of stone wall field boundaries, they are generally less well maintained, especially where grazing has ceased. This weakens the pattern of land-use and contributes to a more homogenous landscape.

Shaping the Future Landscape

The aim should be to protect existing landscape features, whilst encouraging positive management of those features lost or under threat. The restoration of stone walls should be given priority, creating a stronger field pattern and helping to integrate new development into the landscape. The restoration of limestone grasslands, which are generally found on the rocky outcrops, is also a priority. This will help to create a more mixed pattern of land use, whilst increasing the occurrence of semi-natural habitats. In particular, grassland should be recreated on areas that are currently cultivated and as part of the restoration of quarries.



Dove Holes (© Paul Clarke, Natural England)

FORESTRY AND WOODLAND

Forces for Change

Woodland in this landscape is limited to shelter belts, small plantations and boundary trees. Considering the open and expansive character, extensive new woodland planting would be generally inappropriate; however, limited tree planting and small-scale woodland could be used in and around settlements to integrate new development into the landscape and as part of restoration proposals for quarries. Many of the existing woodlands are threatened by neglect, with aging trees and scrub encroachment.

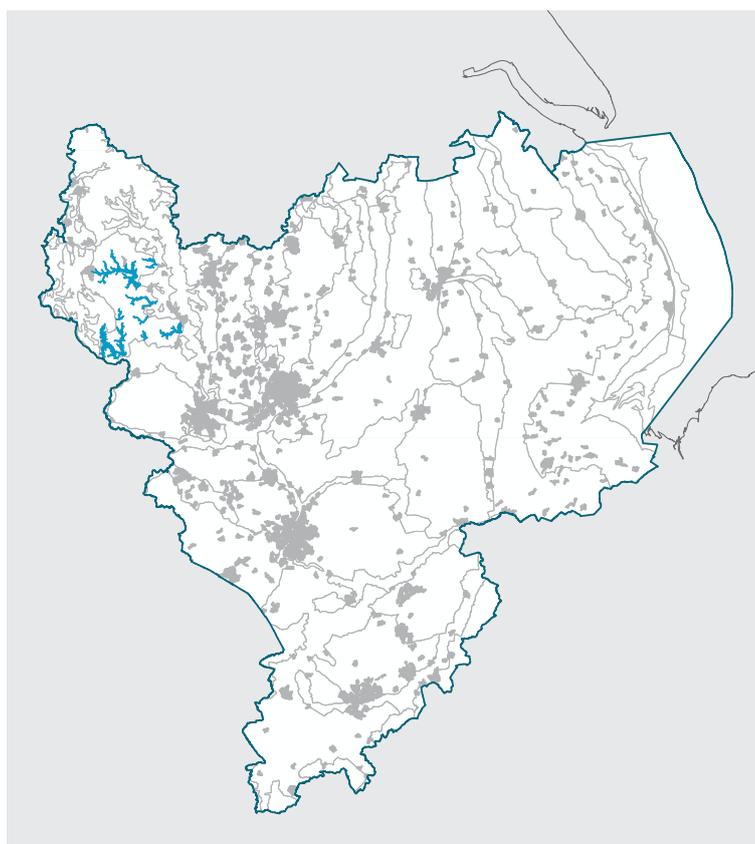
Shaping the Future Landscape

The aim should be to plan new woodland and tree groups around key settlements and other suitable locations and manage existing woodlands, restoring age and improve their structural diversity. This may include the creation of woodland edge habitats, but with the exclusion of the visually bold and simple shelterbelt plantations that are often confined to very few species. Along with the restoration of grassland, this will help to create a mixed pattern of land-use and enhance the occurrence of semi-natural habitats. Such proposals should be undertaken in collaboration with the Forestry Commission and local landowners, and financial support may be available through the English Woodland Grant Scheme.

6C: LIMESTONE DALES



Steeply valley sides and clear fast flowing streams are typical of many Limestone Dales
(© Derbyshire County Council)



KEY CHARACTERISTICS

- Intricate and dramatic landscape of steep dales and gorges dissecting the plateau of the Upland Limestone Pastures;
- Valley morphology strongly influenced by nature of underlying geology with tight narrow gorges and cliffs in contrast to wider valleys;
- Clear, fast flowing streams and rivers in some dales; others remain dry or are only seasonally wet;
- Mosaic of herb-rich grassland, ancient woodland and scrub on steep dale sides provide valued and protected semi natural habitats;
- Craggy outcrops, cliff profiles, stacks and caves often form evocative shapes and are named features in the landscape;
- Sporadic evidence of industrial activity in the form of water powered mills and mines;
- Settlement, transport infrastructure and tourism have a localised effect on sense of rural tranquillity and naturalness that is particularly strong in the more remote upper reaches of the narrowest dales; and
- Landform and woodland enhance the strong sense of visual containment and detachment from wider landscape.

LANDSCAPE CHARACTER

The Limestone Dales is perhaps one of the most distinctive and intricate landscape types in the region and is characterised by steep sided valley formations and ravines through the rolling plateau of the Upland Limestone Pastures.

The dale sides are characterised by steep rocky cliffs and scree slopes and are generally inaccessible, often leading to the dales landscape retaining a remote and tranquil character. Access is possible along the floor of the dales, and many of the larger dales have been utilised as transport corridors, with roads and tracks running parallel to the narrow watercourse, perhaps following ancient routes through the landscape.

The thin soils and light grazing regimes have ensured that dales are characterised by a diverse range of habitats, including species rich calcareous grassland, ancient woodland and scrub. The complex matrix of habitats leads to a semi natural character, and the high species diversity has prompted significant areas to be designated for their nature conservation interest.

Woodland cover and steep valley sides impart a strong sense of enclosure and visual containment. As such, when the dales remain free of infrastructure and development, they retain a tranquil and secluded character. However, during the summer, many dales attract visitors in great numbers, and consequently some areas have a very busy character.



Limestone Dales (© Natural England)

PHYSICAL INFLUENCES

The gently rolling plateau of the Upland Limestone Pastures is dissected by several major rivers, notably the Dove Manifold, Lathkill and Wye and associated dry tributaries. Given the porous nature of the limestone geology, it is suggested that the courses of the main rivers, rising on the less permeable grits and mudstones to the north, were 'superimposed' onto the limestone surface as the overlying rocks were slowly eroded away. Subsequently the watercourses became deeply incised, with the effect of lowering the regional water table to the extent that the upper sections of the network of tributary valleys are now dry.

The nature of the underlying geology has exerted a strong influence on the character of the dales. The rivers have cut impressive gorge-like incisions into the limestone plateaux, which in some cases, may have been the result of opening up underground passages and cave systems. Particularly dramatic features occur where outcrops of harder or softer limestone and natural fault lines create precipitous buttresses, caves and rock spires, such as Ilam Rock in Dove Dale. Many of these natural features have been given evocative names and may have once been part of folklore and legend. By contrast, dales in the strongly folded basin 'limestones', such as the valley of the Manifold, are much more open and on a larger scale and contain fewer dramatic limestone features. These features, together with quarries, provide an excellent geodiversity resource so it is important that practices are in place for their care, maintenance and management, and the promotion of their educational and interpretational interest.

Whilst many dales contain permanent watercourses, in some areas the rivers disappear underground for part of their course. Many tributaries are also dry because of the lowering of the water table. In winter or periods of heavy rainfall, dry dales and stretches of valley with no surface stream, can flow with water again, although in many instances this is a short-lived phenomenon and a period of dry weather can quickly lower the water table making surface water flows disappear.

The underlying limestone generally gives rise to shallow and in places strongly calcareous soils. These are particularly thin on steep rocky slopes and deeper along the floor of the dales. The steep slopes are unsuited to intensive grazing or arable farming, and as such, extensive areas of unimproved herb rich limestone grasslands are characteristic. These tend to be grazed by sheep, although where grazing is restricted, grasslands are found with regenerating scrub, often dominated by hawthorn. Woodlands are also characteristic, with daleside ashwoods of particular local significance. Indeed, semi-natural broadleaved woodlands are a defining characteristic of several dales, adding significantly to nature conservation interest and sense of visual containment.

The dales rivers are among the purest in the UK. One of the key indicators of water purity is the 'crawkie' or freshwater crayfish, which can be found in a several locations. The clear water also attracts swarms of hoverflies, mayflies and dragonflies, which in turn encourage large populations of birds to the daleside woods and scrubland. The nature conservation importance of the dales is recognised by extensive stretches of the dale floor and sides being designated for the nature conservation value.

CULTURAL INFLUENCES

Settlement and farming is not common in the dales, owing to their inaccessibility and the limited and marginal nature of available land for agriculture. Despite this, it is possible to imagine Palaeolithic and Mesolithic communities sheltering in some of the many caves in the dales as they followed herds across the neighbouring uplands.

In later centuries, the dales appear to have been used to define territories surrounding communities across the plateau. Remnants of numerous prehistoric bowl barrows have been found on the margins of the dales, perhaps indicating that small communities were established on more gently sloping dale sides and were siting ancestral tombs along the crests of hills to legitimise claims on the land. Today, parish boundaries lie along the centre of many valleys, and it is possible that these mark parts of much more ancient territories. Many dales also function as convenient routes through the limestone uplands, and again, several of today's routes and crossing points in the dales may have prehistoric origins, but were first metalled between the late 17th and early 19th century as Turnpike roads. Limited stretches of the dales were also used to take rail lines through the uplands. Many are now dismantled but their routes form the basis of popular walking routes. Several sites were also exploited in the early industrial period. Fast flowing streams became the focus of water powered mills; larger mills for textile working can still be seen at Cressbrook and Litton, both established on the Monsal Dale in the late 18th century, although smaller mills for corn and lead processing can be found throughout the dales.

Beyond the widespread urbanisation of the Matlock Dale, and occasional daleside villages, there is only limited settlement within the dales landscape, and significant areas retain a semi natural character. However, even in the wildest and most remote areas, stone walls or other boundaries mark out land ownerships or control grazing herds.

The dramatic and remote character of the dales has long attracted visitors, and they continue to be popular destinations for walking and relaxing. Several of the most popular sites, such as the caves and stepping stones of Dove Dale contain tourist facilities such as picnic sites and car parking, and attract hundreds of thousands of visitors every year.

AESTHETIC AND PERCEPTUAL QUALITIES

Secluded stretches of the Limestone Dales sometimes appear timeless, and evoke scenes probably little changed to those experienced by the earliest communities that moved through the landscape following the retreat of the last glacial ice sheets. In particular, scree slopes and limestone cliffs with caves, cloaked in occasional belts of scrub and woodland are particularly evocative. Indeed, long stretches of the dales are inaccessible except on foot, and notable tracts appear little disturbed by visitors.



Limestone Dales, Wolfscoate (© Martin Banham, Natural England)

Whilst many of the dales retain a remote character, settlement or transport infrastructure are sometimes present and exert a dramatic influence on local landscape character. However, visual intrusion is often reduced by the effects of vegetation and landform limiting long distance views. Also, in the summer, even the most remote areas are affected by many hundreds of visitors walking along the dales and visiting popular destinations.

On the whole, the Dales possess an intimate, secluded character and provide significant opportunities to find remote and tranquil places that are rich in biodiversity, and contain evocative natural geological landmarks or heritage features.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

Settlement is not common in the Limestone Dales and there is little pressure for new built development. However, mills built to harness water power are a characteristic feature.

Shaping the Future Landscape

The aim should be to protect existing mills, ensuring that they continue to contribute to the landscape character and provide a tangible reminder of their historic use and industrial archaeological interest. Opportunities should be explored to manage the sensitive restoration of deteriorating mills for recreational and educational benefits.

MINERALS AND WASTE

Forces for Change

Man-made activities impact on the character of the Limestone Dales in the form of modern limestone quarries and lead mining remains. Although the area benefits from the protection afforded by national landscape, heritage and nature conservation designations, the high demand for aggregates, and therefore pressure for new and expanded quarries, could result in further visual intrusion, loss of tranquillity and potential adverse effects on heritage features and wildlife habitats.

Shaping the Future Landscape

The aim should be to manage mineral extraction, ensuring activity is located away from visually prominent and sensitive locations including the Peak District National Park. Planning guidance for the siting and design of quarries should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development and setting out proposals for restoration of quarries including the protection and management of sites and areas of geodiversity interest, including access for education and interpretation, and opportunities for biodiversity enhancement.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

The slopes in the dales are generally too steep for arable farming and improvement, and the landscape retains extensive areas of unimproved grassland. Grazing is important for maintaining the vegetation structure and overall ecology of the grassland. However, changes in agricultural practices have led to a reduction of grazing in recent decades.

Shaping the Future Landscape

The aim should be to manage the frequency and intensity of grazing, ensuring landscape and biodiversity character is enhanced or restored.

FORESTRY AND WOODLAND

Forces for Change

The Limestone Dales are well wooded, with large mixed woodland along the valley sides. This creates a strong sense of enclosure and an intimate character. However, increasing woodland cover has resulted in the loss of views and species-rich grassland. Woodland management is also sporadic in places, resulting in scrub encroachment.

Shaping the Future Landscape

The aim should be to manage existing woodland, limiting the invasion of scrub and removing invasive species. Consideration should also be given to restoring the mosaic of habitats and opening up of key views by selective removal of wooded areas. New woodland planting is generally inappropriate. However, tree planting may form part of quarry restoration proposals.

TOURISM AND LEISURE

Forces for Change

The White Peak is a popular tourist destination, famed for its tranquillity and rich geological and cultural heritage. As such, this area experiences considerable visitor pressure. Indeed, the Limestone Dales are popular with walkers and day-trippers, and there are a number of car parks along the valley floors. In a few places, large numbers of people, along with supporting visitor facilities, can result in the damage, loss and fragmentation of natural features, reduce tranquillity and cause visual intrusion.

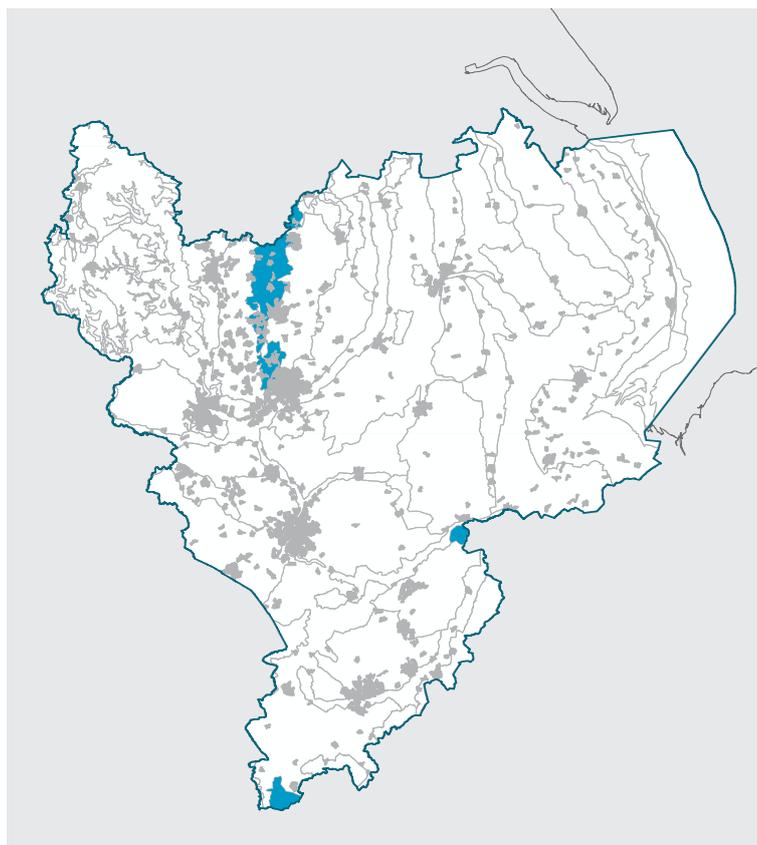
Shaping the Future Landscape

The aim should be to protect the distinctive character of the landscape and consider the visual and environmental impact of any new or extended visitor facilities. The management of public access should also be encouraged, helping to conserve the natural environment whilst enhancing the dales as a recreational resource.

6D:

LIMESTONE
FARMLANDS

Gently rolling landform with large woodlands
(© Derbyshire County Council)



KEY CHARACTERISTICS

Derbyshire Limestone Farmlands

- West facing escarpment and gently rolling limestone dip slope with areas of subdued relief and rolling summits;
- Series of deeply incised valleys and gorges;
- Fertile soils supporting productive arable farmland, set within a regular pattern of large hedged fields;
- Well wooded dip slope with large and medium woodlands and belts of trees;
- Nucleated pattern of small stone villages and large industrial age towns;
- Consistency in the use of 'Magnesian Limestone' for simple cottages, workers houses, industrial premises and grand country houses up until the widespread use of brick in the later Victorian period;
- Widespread evidence of past mining operations, with localised evidence of continued quarrying activity; and
- Long distance views from the scarp slope westwards over the neighbouring Settled Coalfield Farmlands.

Northamptonshire Limestone Farmlands

- Gently undulating and elevated open plateau overlying limestone with expansive long distance views and wide panoramas;
- Predominance of arable land with isolated areas of pasture, with mainly large to medium scale geometric fields contained by stone walls or hedgerows, and smaller field adjacent to villages;
- Sparse woodland cover limited to small deciduous and occasionally coniferous farm woodlands;
- Underlying geology expressed in the consistent use of limestone for buildings, roof slates and stone walls; and
- Sparsely settled with a network of minor roads connecting rural settlements

LANDSCAPE CHARACTER

In Derbyshire, the Limestone Farmlands Landscape Character Type is strongly influenced by the nature of the underlying geology, both directly in the form and shape of the land, and indirectly by the changing patterns of land use and industry. The principal representation of the landscape type occupies a distinct belt of rising ground along the eastern fringes of Derbyshire. Here, the western fringes of the landscape type are defined by a steep, folded scarp slope overlooking the neighbouring Settled Coalfield Farmlands. From here the land falls eastwards gradually across an undulating dipslope to the Sandstone Forests and Heaths to the east.

The landscape type is also represented in Northamptonshire in two small areas in the south western and north eastern sections of the county where the Jurassic Limestone outcrops. Here, the limestone farmlands are represented as a sparsely settled plateau landscape with a strong agricultural character. Arable farmland predominates with intermittent small deciduous copses and

shelterbelts. Isolated farmsteads are dispersed across the area together with small compact villages, often on the fringes of the plateaux. Active military airfields are also present, which together with their associated infrastructure, are conspicuous in the open landscape.

The Limestone Farmlands Landscape Character Type is a simple yet distinctive agricultural landscape characterised by a well defined pattern of fields and woodlands, interspersed with rural villages and estates across the dipslope and a more open character along the western scarp of the 'Magnesian Limestone' and the plateaux within Northamptonshire. In Derbyshire, the influence of coal mining is evident in some areas in the form of large mining settlements and restored pit heaps. Indeed, several settlements have grown to form large urban areas, which exert a strong influence on their rural hinterland.



Limestone Farmlands, Ashford in the Water
(© P Clarke, Natural England)

PHYSICAL INFLUENCES

In Derbyshire the Permian ‘Magnesian Limestone’ (Cadeby and Brotherton Formations) sequence forms the dominant geological influence on the landscape. This comprises sequential layers of dolomite and dolomitic limestone and red mudstone. This sequence is often difficult to discern, but may be observed where rivers have cut through the bedrock.

The properties of the underlying rocks have had a significant influence on the shape of the land. The ‘Magnesian Limestone’ is a compact, partially crystalline rock which provides good building stone. With its relative hardness it generally forms the most elevated areas, whereas the softer red clays of the Edlington Formation give rise to a more subdued relief.

The limestone forms a steep scarp along the western fringes of the landscape overlooking the neighbouring Settled Coalfield Farmlands. The scarp is irregular and folded as a result of westward draining streams cutting deep valleys into the underlying Coal Measures. To the east is a pronounced dip slope, with an average fall of 90m. The thickness and compactness of the limestone gives rise to a series of rolling summits, particularly evident in the vicinity of Mansfield. These geomorphological features, together with quarries, provide a good geodiversity resource so it is important that practices are in place for their care, maintenance and management, and the promotion of their educational and interpretational interest.

The limestone escarpment forms a significant local watershed. Several rivers and streams drain eastwards across the dip slope towards the Trent, often occupying narrow, deeply incised valleys. The Milford Brook at Creswell Crags is a particularly dramatic example. To the west of the scarp are a series of smaller watercourses. To the north of Mansfield these form the headwaters of tributaries of the River Rother, and to the south they feed numerous tributaries of the River Erewash, which meets the Trent at Nottingham. The most

prominent of the valleys is associated with the Meden, notably at Pleasley Vale. The river has cut back through the escarpment so that its headwaters now lie in the neighbouring coalfields.

The ‘Magnesian Limestone’ has been weathered to form fertile, free-draining calcareous brown earth soils. These have a fine loamy texture and are productive and easy to work, resulting in widespread arable farming across the gentle topography. Soils developed on the Permian Marl have a heavier texture, with slowly permeable clay subsoils leading to seasonal waterlogging and placing limitations on agricultural capacity. Despite this, drainage and management allows productive arable farming.

Post war agricultural intensification and reversion to arable cropping has significantly reduced the area of semi natural habitat. Despite this, small, isolated pockets of limestone grassland survive, notably on road verges, railway cuttings and in old quarries. The major habitat features are large woodlands on the dip slope. Many larger woodland sites are ancient, although replanting with conifers has resulted in the suppression of their species rich flora. Notable areas of new planting are also evident, often associated with reclamation and restoration of former quarries or mines.

In Northamptonshire, the Limestone Farmlands are underlain by the Jurassic Oolitic Limestones with the Blisworth Limestone Formation and the Lincolnshire Limestone underlying the south western and north eastern parts of county, respectively. This limestone geology is expressed in the buildings, stone walls and roof slates and also in the rock fragments in the ploughed fields.

The elevation of the Limestone Farmlands is relatively low, with an almost flat or very gently undulating landform, and with few watercourses. However, the wide and often uninterrupted panoramas give the impression of a more elevated landscape. More varied and steeper slopes are evident on the fringes of the plateaux, however.

The land use is predominantly intensive arable farmland in medium to large scale geometrical fields and although generally well managed there is some evidence of dilapidated stone walls and gappy hedges. Woodland cover is low across the Limestone Farmlands confined to small deciduous copses and geometric shelterbelts. Soils are generally thin, stony, free draining and alkaline in the south western area, but in the north east are mainly well drained, brashy, fine loamy soils.

Where large military airfields occur on the Limestone Farmlands, these are associated with areas of improved grassland and blocks of coniferous woodlands or other alien species.



Limestone Farmlands (© P Clarke, Natural England)

CULTURAL INFLUENCES

Derbyshire Limestone Farmlands

Some of the most compelling evidence for the earliest phases of human occupation in the region can be found in the many caves found throughout the 'Magnesian Limestone'. Finds suggest that communities were settling, albeit perhaps temporarily, in the area during and after the later Ice Ages. The most well known site is at Creswell Crags which shows that successive generations of hunter gatherers were returning to a landscape that was gradually changing from tundra to birch and pine forest, later to become the dense oak forests of the wild wood.

Surface finds of flint and stone tools suggest that Neolithic farmers were the first to make substantial clearances of these woodlands although these clearances were to continue through successive millennia up to the end of the Iron Age, when the woodlands would have been substantially felled and the brown earths cultivated.

Whilst evidence of prehistoric settlement and farming is scarce, finds give more certainty in establishing patterns of Romano British occupation, and it is suggested that wide areas of the landscape were being cultivated, and woodlands, probably managed as coppice, were only retained in marginal areas such as on sloping landform that was too steep to plough.

Following the decline in population in the 4th and 5th centuries, it is suggested that settlement and farming contracted to the western fringes of the limestone, close to a greater variety of resources, and that woodland or limestone heath regenerated in more marginal areas. However, as populations again began to rise in the mid to late Saxon period, permanent settlements were being established or at least formalised as clearings in the woods or on former heath land. The 'field' suffixes of Ashfield and Mansfield implies settlement in a landscape largely cleared of wood whereas 'ley' suggests settlements within woodland clearings as at Pleasley and Whaley Thorns.

By the early Norman period, the landscape was thinly populated and characterised by woods and heaths with settlements gravitating towards the western fringes of the 'Magnesian Limestone' where the clays of the adjacent coalfields could be cultivated. The general scarcity of population may have prompted the Norman Kings to bring much of the area under Forest Law, and led to the creation of hunting parks and donation of lands for the formation of monasteries.

Despite royal interventions through the redefinition or reaffirmation of the special status of the landscape in the 13th century, the landscape was under increasing pressure though settlement expansion or creation. In the north this was perhaps more limited; however, the general picture is one of widespread farming and patchy woodland, with

sizable tracts of woodland conserved in private parks or on monastic estates. This pattern was to continue throughout the 16th and 17th centuries when monastic estates passed into private hands, and new parks were added to existing manor houses. It was further reinforced in the 18th and 19th centuries by the setting out of larger ornamental gardens and plantations around grand country residences.

This period also saw the enclosure and improvement of the agricultural landscape, with surveyors setting out the large regular and rectangular fields that contrast to earlier piecemeal fields around the periphery of settlements. Initially animal husbandry dominated, although this was to take a marked shift towards cereal production from the late 19th century, and especially during and after the Second World War.

Despite the predominantly rural character of the landscape, traces of its industrial past can still be found. Wool processing and cloth making were particularly significant and led to the first phase of industrialisation and settlement expansion in the later 18th century. Stone was generally more readily available than brick, and as such, newly established farms, mills, factories and workers cottages were all built out of the local limestone, creating a distinctive building style in both rural and urban areas.

From the mid 19th century further transformation of the landscape arose from the development of deep coal mining in the form of pit heads, waste heaps, further settlement expansion and major infrastructure such as canals and railways. Whilst the mines have all but closed, remnants of this period can still be seen in the landscape, and perhaps most dramatically in the Victorian and Edwardian brick suburbs of several towns fringing the landscape.

Northamptonshire Limestone Farmlands

There is limited evidence of former periods of occupation, with sites of heritage interest mainly confined to the south western area of Northamptonshire including the Iron Age hill fort of Rainsbrough Camp, and a few deserted medieval settlements. Intensive farming following the period of enclosure appears to have largely obliterated many features including field systems or ridge and furrow.

The Limestone Farmlands are sparsely settled with isolated compact farmhouses contributing to a remote character. Villages are small and dispersed and many are located on the fringe of the plateau areas where steeper land falls away to the surrounding lowland. Use of the local limestone for the buildings is a unifying feature.

The military airfields within the Northamptonshire Limestone Farmlands, comprising RAF Croughton in the south west and RAF Wittering in the north east, are significant landscape features. Wittering Aerodrome dates back to the First World War and is now the home of the Harrier Jump Jet. The airborne manoeuvres and flights associated with both bases, and also the lighting, affects the tranquillity of the surrounding rural area. The fencing, infrastructure and military buildings and housing associated with the airfields also affects wider views across the open plateau farmlands.

AESTHETIC AND PERCEPTUAL QUALITIES

The predominance of intensive arable farming across the Derbyshire Limestone Farmlands imparts a productive agricultural character to the landscape. The rural character is further reinforced by frequent nucleated rural limestone villages and parklands, often set around large country residences.

In juxtaposition to this, large urban areas and evidence of mining and industry, notably around the old coal mining centres, have a localised influence on landscape character, adding somewhat to the distinctive local identity and sense of place. In many instances, the enclosure of the land and industrialisation were being undertaken in parallel, such that the perception of the landscape is one of industrial age rationalisation and industrialisation. Indeed, the use of the local 'Magnesian Limestone' in rural cottages, villages, farmhouses and factories, binds contrasting elements together to provide some visual cohesion.

The network of hedgerows defining the large regular fields emphasise the gently rolling character of the dipslope landscape. Areas associated with the larger estates appear to be well maintained, with dense networks of hedgerows dividing up moderately sized fields, interspersed with deciduous shelterbelts, plantations and larger irregular woodland blocks such as in the vicinity of Shirebrook, Whaley Thorns and east of Creswell. However, some areas, and notably close to large urban centres, are showing signs of decline. Elsewhere, hedgerow removal to create large fields is evident, further contributing to the perceived declining character of the landscape.

On the dip-slope and notably in areas along the eastern fringes, parklands, large woodlands and belts of trees combine with the rolling landform to create a strong sense of enclosure. Where longer distance views are possible, these are often truncated by wooded horizons. By contrast, wide panoramas across the neighbouring Settled Coalfield Farmlands are possible from the crest of the escarpment.

Despite the low elevation and small scale of the Northamptonshire Limestone Farmlands, the impression is of an expansive and large scale landscape. The generally sparse settlement pattern also conveys an 'empty' and isolated character. In contrast, other areas such as those around villages and in proximity to the large military airfields appear busy and cluttered.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

Modern development is affecting the character of rural villages and extending the urban fringe of larger settlements, such as Nottingham and Mansfield, in the Derbyshire Limestone Farmlands where there are opportunities for large scale residential, commercial and industrial development. In contrast, there is limited evidence of development within the Northamptonshire Limestone Farmlands, confined to infill and small scale extensions within the rural villages.

Shaping the Future Landscape

The aim should be to manage growth, ensuring development is appropriate in terms of type, scale and location and considers the visual impact of any new development. Best practice innovative architectural ideas and planning solutions should be employed to minimise impact on local character, and tree and hedgerow planting should be used to

help integrate new development into the landscape. In more rural areas, Village Design Statements may be appropriate, ensuring appropriate use of vernacular styles and building materials. In more urban areas, planning guidance for settlement coalescence may be appropriate, ensuring strategic gaps between main towns and surrounding settlements are maintained. As well as Village and Town Design Statements, Conservation Area Appraisals can also be important tools.

INFRASTRUCTURE

Forces for Change

Although not currently characteristic of this landscape, the Limestone Farmlands are under threat from telecommunication infrastructure, creating visual landmarks in this predominantly open landscape and reducing the sense of remoteness and isolation.

Shaping the Future Landscape

The aim should be to protect the character of the landscape by siting infrastructure away from visually prominent locations and ensuring installations are of an appropriate size and scale. Increased sharing of masts and sites between operators should also be considered, along with removal of redundant masts.

ENERGY PROVISION

Forces for Change

Given the Government's commitment to renewable energy provision, the Limestone Farmlands may face pressure from wind farm development, due to the strength of the prevailing winds across the open elevated landform. As with telecommunication equipment, such infrastructure can create visual landmarks and reduce the sense of remoteness and isolation.

Shaping the Future Landscape

The aim should be to protect the character of the landscape by appropriately siting and designing new wind energy installations. There is potential for strategic regional and sub regional level guidance on commercial wind energy schemes, including cumulative impact, informed by the EMRLCA and other studies. In addition, planning guidance should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development and setting out the criteria against which new applications will be assessed.

MINERALS AND WASTE

Forces for Change

In the Derbyshire Limestone Farmlands there are currently a number of large quarries serving local and national demand for limestone. These are located near Nottingham and Mansfield, and are generally well hidden by settlement, infrastructure and landform. However, the high demand for aggregates, and therefore pressure for new and expanded quarries, is likely to result in further visual intrusion, loss of tranquillity and adverse effects on heritage features and wildlife habitats.

The coal mining industry also has localised impacts on the landscape. The development of collieries, spoil tips and infrastructure has altered the character of many rural areas, and the decline of the coal industry is now leading to their replacement with new forms of industry. As with other forms of built development, this can create visual intrusion and loss of surrounding landscape features.

Shaping the Future Landscape

The aim should be to manage quarrying, ensuring activity is located away from visually prominent and sensitive locations. Planning guidance and action plans for specific sites for the siting and design of quarries should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development and setting out proposals for after-use; quarries can provide valuable landscape, geodiversity, biodiversity and recreation benefits.

The aim should be to manage the redevelopment of former coal mining sites, ensuring new development is appropriate to the landscape and visual context and that heritage features are retained, providing a link with the industrial past and a focal point for new development.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

Agricultural intensification has brought about the large-scale loss and damage of many characteristic features, including field boundaries, semi-natural habitats and features of historic interest, such as ridge and furrow. This weakens the pattern of land use and contributes to a more homogenous landscape.

There is marked evidence that energy crops, in particular Miscanthus, are being cultivated to meet renewable energy targets. These fast growing and tall crops would radically change the appearance of the open character of the Limestone Farmlands, altering localised views and character. There is also a requirement for storage and processing facilities, which along with other new agricultural buildings, can cause visual intrusion and reduce the sense of remoteness.

Shaping the Future Landscape

The aim should be to protect existing landscape features, whilst encouraging positive management of those features lost or under threat. The restoration of hedgerows and stone walls should be given priority, creating a stronger field pattern and helping to integrate new development into the landscape. The restoration of limestone grassland is also a priority, helping to create a more mixed pattern of land use, whilst increasing the occurrence of semi-natural habitats. In particular, grassland should be recreated on areas that are currently cultivated and as part of the restoration of quarries.

The aim should be to protect the distinctive open character of the landscape and consider the visual impact of energy crops and associated facilities. New buildings should be located away from visually prominent locations and close to existing settlement and infrastructure where possible. Although the introduction of energy crops will be more difficult to manage, grant applications to Natural England or the Forestry Commission may require an assessment of landscape and visual impacts.

FORESTRY WOODLAND

Forces for Change

In the Derbyshire Limestone Farmlands woodland forms a significant component of the dipslope landscape, with medium to large woodlands evident close to towns such as Whaley Thorns, Shirebrook and associated with parklands as at Welbeck Abbey east of Creswell. Woodland is less extensive within the open plateau landscape of the Northamptonshire Limestone Farmlands, and confined to small copses and shelterbelts.

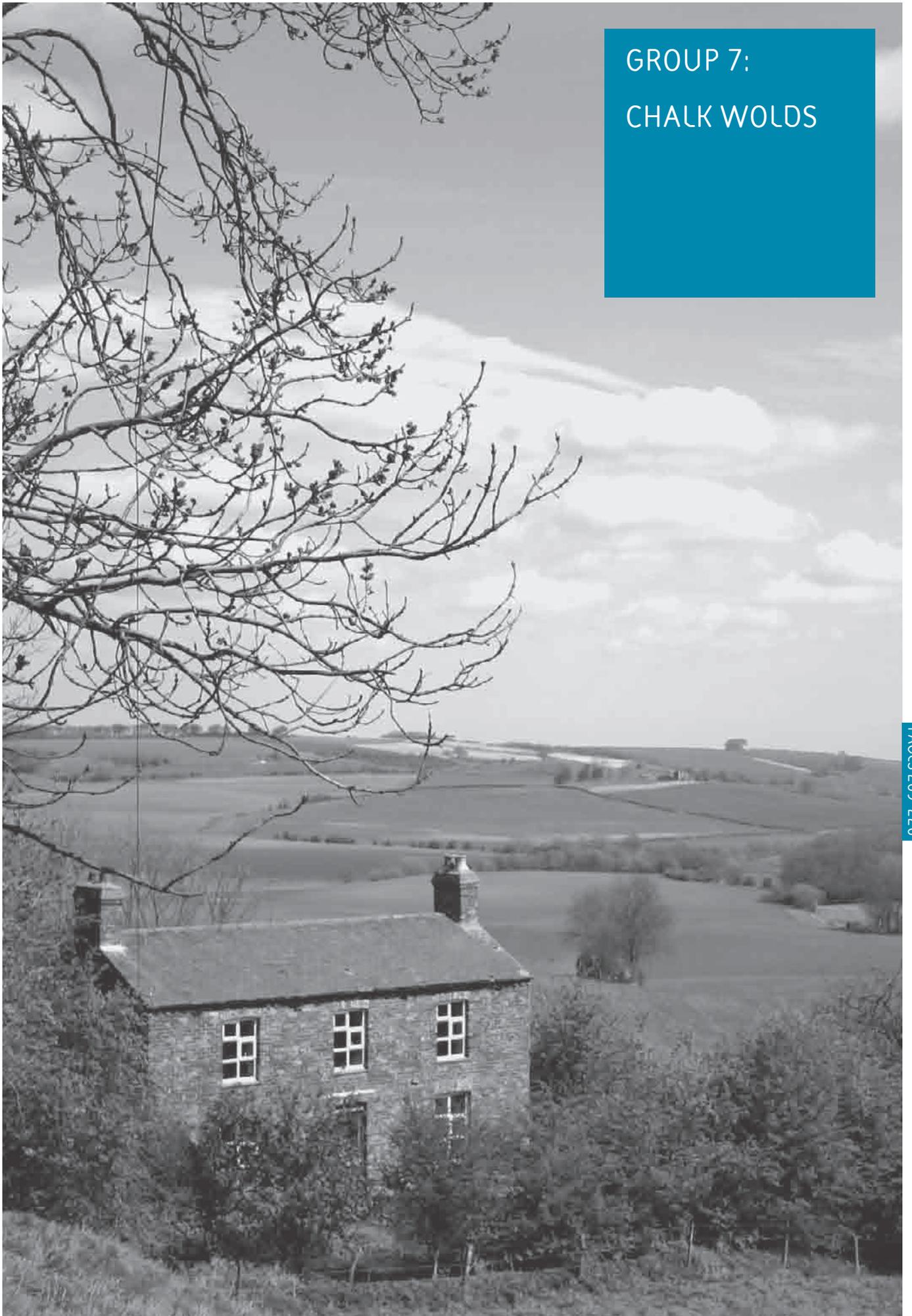
Shaping the Future Landscape

The aim should be to promote amenity trees and small tree groups around key settlements, and more intimate and low lying areas, and as part of proposals to restore and / or enhance parkland. However, much of this farmland remains open, and it is important to retain open views from more elevated locations.

In the Derbyshire Limestone Farmlands new woodland planting would be generally appropriate in association with existing wooded landscapes, helping to increase the overall woodland coverage in the region and used as part of proposals to screen new development and restore redundant quarries. However, new woodland planting in the more open landscapes along the western 'Magnesian Limestone' scarp would be considered inappropriate, and particularly where views across the neighbouring lowlands would be obscured. Similarly, in the Northamptonshire Limestone Farmlands, new woodland planting should be confined to small scale woodlands that complement the existing pattern.

The aim should also be to manage existing woodlands, restoring age and ecological diversity. This should include the creation of woodland edge habitats, which along with the restoration of grasslands, will to help create a mixed pattern of land use and enhance biodiversity. Such proposals should be undertaken in collaboration with the Forestry Commission and local landowners, and financial support may be available through the English Woodland Grant Scheme.

GROUP 7:
CHALK WOLDS

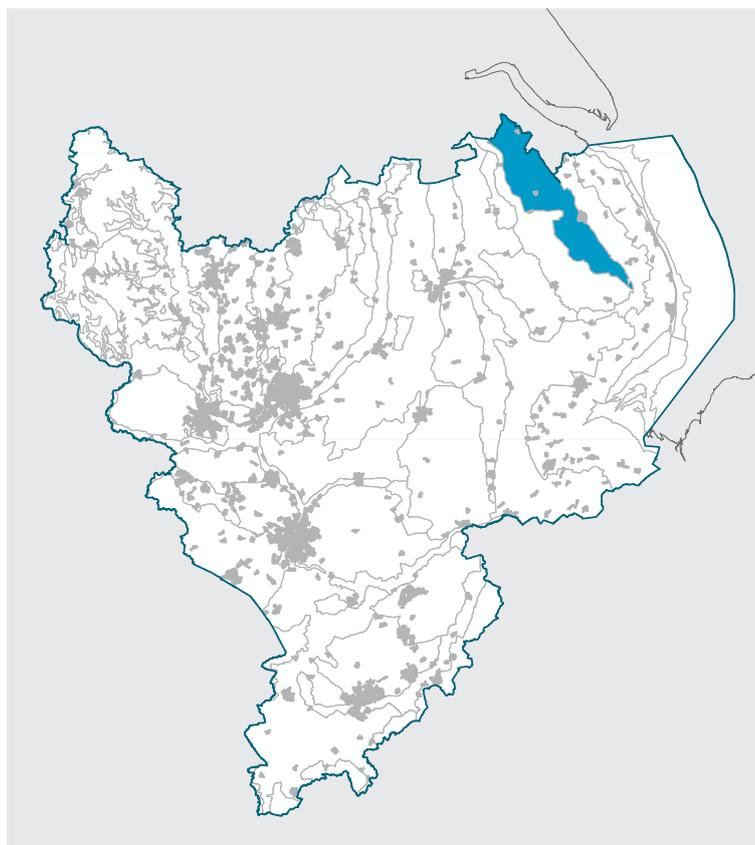


Sparse settlement and isolated farm buildings are characteristic of the Chalk Wolds (© Lincolnshire Wold Countryside Service/N Gurnhill)

7A: CHALK WOLDS



Former drove road with wide verges (©
Lincolnshire Wold Countryside Service/D Furlong)



KEY CHARACTERISTICS

- Open, elevated and gently dipping chalk plateau dissected by a system of valleys including dry valleys that create a pronounced rolling landform;
- Huge expanses of field and sky across the plateau top with extensive views emphasising the large scale of the landscape;
- Intensively farmed character extending across the plateau with large scale rectilinear fields predominantly under arable cultivation with restored and mechanically maintained hedgerows increasingly evident;
- Changing crop patterns dominate the plateau top contrasting markedly with the numerous secluded valleys with their lush pastures and wooded slopes
- Sparse woodland cover on the plateau tops confined to occasional shelter belt plantations and beech clumps; Woodlands on steeper slopes and particularly within the valleys that dissect the plateau;
- Sparse settlement pattern on plateaux; elsewhere a dispersed pattern of small nucleated villages, often of Saxon and medieval origin located in sheltered valleys and spring-line villages at junction of the Chalk Wolds and Clay Wolds;
- Diverse Lower Cretaceous geology exposed in valleys provide a source of building materials that is represented in buildings constructed in the local vernacular;

- Plateau crossed by former drove roads with wide verges that support herb rich grassland; and
- Area rich in archaeological features, notably ridge-top ancient roads and trackways, prehistoric features such as long and round barrows, deserted or shrunken medieval villages and west east salters' roads convey the sense of a long period of occupation.

LANDSCAPE CHARACTER

The Chalk Wolds Landscape Character Type has a strong unity and distinctive character defined by the open and elevated rolling plateau, broad sweeping views, and intensively managed arable land with its seasonally changing field and cropping patterns. A network of steep valleys including numerous dry valleys dissects the plateau area resulting in the pronounced rolling landform. In contrast to the open and expansive landscape of the upland plateau areas, the valleys have a more secluded character with sheltered and 'hidden' areas and steeper slopes.

The woodland cover across much of the open plateau is sparse and limited to occasional small blocks of woodland including beech clumps. However, the valleys support a lush vegetation with many areas of woodland hugging the steeper slopes as well as in the valley bottoms.

The Chalk Wolds landscape is associated with a long period of occupation resulting in a rich archaeological heritage with visual remnants of ancient tumuli and deserted or shrunken medieval villages. Ancient routeways and former drove roads also cross the plateau, the latter characterised by wide herb rich grass verges and species rich hedgerows.

To the east of the main area of the Chalk Wolds, extensive deposits of glacial till mask the underlying chalk with a gently sloping ridge dipping to the east before merging with the Fen and Marsh Fringe Farmlands. This is the most heavily wooded part of the Chalk Wolds where numerous blocks of

woodland are interspersed with cultivated arable and pasture fields. This deeply rural area has an isolated and remote feel. The ridge-top salters' roads, spring-line villages and archaeological features are notable features within this part of the broader type.

PHYSICAL INFLUENCES

The chalk that underlies the Chalk Wolds Landscape Character Type is more than 100m in depth and forms part of a much wider outcrop that extends from the Yorkshire Wolds to the south coast of England, in East Sussex and in Dorset. Prior to the deposition of the Chalk, the marine conditions that prevailed during the Lower Cretaceous Period provided a sequence of deposits that is unique to the East Midlands Region.

The topography of the Chalk Wolds has been extensively and dramatically modified by glacial and periglacial activity. In the final glacial period that peaked around 30,000 years ago the ice sheet did not reach the East Midlands but numerous meltwater channels were created as it melted, while melting permafrost led to much instability on steep slopes resulting in landslides. The Landscape Character Type therefore presents notable remnants of ancient coastal cliff lines, glacial spillways and meltwater channels, ponded lake systems and glacial tills and gravels all of which have played important roles in shaping the drainage pattern and the form of the current landscape.

The Chalk Wolds are marked by numerous small disused chalk quarries where the chalk has been dug for local use as agricultural lime and hard core. Chalk is also extracted from a few quarries for both aggregate and industrial purposes, including lime production for steel manufacture and industrial fillers, for constructional purposes and agricultural use.

The chalk scenery offers excellent geodiversity interest with a variety of geomorphological features and quarries representing much of the chalk sequence. In view of the range of geological

exposures and geomorphological features, it is important that practices are in place for their care, maintenance and management, and the promotion of their educational and interpretational interest.

With the exception of the area masked by till, woodland cover across the Chalk Wolds Landscape Character Type is low, but nevertheless is an important landscape and habitat component. Much of the present day woodland was planted during the parliamentary enclosures of the late 18th and early 19th centuries providing a mix of small game coverts, parkland, tree belts and avenues. Small plantations and clumps of predominantly beech, with some ash, sycamore and pine, are still dotted around the Chalk Wolds, and where they occur, form conspicuous landscape features that punctuate the otherwise open plateau landscape.

The steep slopes within the many glacially modified valleys and spillways, particularly in the eastern section of the Chalk Wolds, are more difficult to cultivate and often support fine examples of woodlands on these marginal and undisturbed areas. The largest blocks of woodland in the Chalk Wolds occur in the south east where the pattern merges into the neighbouring Fen and Marsh Margin Farmlands Landscape Character Type. There is very limited ancient woodland with a rare example occurring at Tetford Wood.

The chalk is one of the main aquifers of the East Midlands. Chalk streams are one of the most important wildlife habitats in the Chalk Wolds, originating from springs from the chalk aquifer that emerge in the higher parts of the plateau and which flow over the chalk for a substantial distance. Springs occur either at the edge of the chalk where it meets the clay or where water rises through the chalk along structural weaknesses. Typical chalk streams are shallow and wide with a gravel bed. The flow is stable and the clear mineral-rich water supports a high diversity of plants and animals, notably brown trout, brook lamprey, spined loach, eel, water vole and otter as well as important invertebrates.

The soils across the Chalk Wolds closely reflect the underlying geology. Shallow lime rich soils predominate across the plateau but in valley bottoms, freely draining lime rich loamy soils are evident. Although much of the Wolds has long been under the plough, grassland habitats remain an important albeit often localised landscape and wildlife resource. The majority of the Chalk Wolds' grasslands and rough pastures are found on the steep slopes where soils are thin and the ground hard to cultivate, in the valley bottoms as lush pastures and wet flushes, and in disused quarries.

Grass verges associated with the network of roadsides and green lanes are a distinctive landscape feature of the Chalk Wolds with some as wide as 20 metres. Those found alongside the former drovers roads and other ancient routeways commonly provide the most flower-rich verges and are thought to be remnants of pre-enclosure pastures.

In the past the verges were used for grazing flocks of sheep en route to the coastal grazing marshes. Until quite recently many of the wide verges in the Wolds were cut and baled by farmers, providing a useful source of 'long acre' hay, however, this activity has diminished in the past decade. The verges continue to provide an important additional grassland habitat, often acting as linear corridors for birds, small mammals and insects.



Calkwell Hill Chalk Wolds (© Neil Pike, Natural England)

CULTURAL INFLUENCES

The Chalk Wolds has a rich cultural heritage signified by the wealth of archaeological and historic landscape features that is present including some of the oldest human remains in Britain. Every period of human habitation has left its mark on the landscape through a wide variety of cultural features.

The oldest known evidence of human activity on the Chalk Wolds dates from the Palaeolithic period, with an important stratified site at Welton le Wold. By the Neolithic period the Wolds had become a cultural focal point. Indeed, the Chalk Wolds has an exceptional ritual landscape including the densest distribution of long barrows in the country and an important grouping of round barrows. Significant settlement and burial sites can be traced through the Bronze and Iron Ages and analysis of prehistoric and Roman remains shows that many Iron Age centres were superseded as Roman settlements. The ridge top route of Bluestone Heath Road and Barton Street provided an important trackway throughout the prehistoric period and into more recent times.

During early medieval times this was one of the most densely populated parts of England but with the rapid decline of the population following the Black Death and the rise in wool production many villages became depopulated hence the numerous deserted villages. Other features include distinctive stone churches that are constructed in the locally available stone from the Lower Cretaceous rock formations. In more secluded valley areas, particularly in the north eastern part of the Chalk Wolds, there are remnants of the pre-enclosure landscape. In more recent times, the regimented pattern of enclosure fields is evident albeit many having since been enlarged following the amalgamation of fields. Although there are no extensive parklands, smaller estates are a particular feature and often include modest Tudor or Georgian country houses, together with Victorian farmsteads and farm workers cottages.

A large number of Anglo-Saxon cemeteries, such as the one at South Elkington, show the continued importance of the area for ritual purposes. The Wolds was important in the formative years of Christianity in the county with a very early monastery at Partney. Substantial numbers of remains date from the medieval period, with numerous monasteries and nunneries and one of the highest concentrations of deserted medieval villages in England.

More recent cultural and social change in the Chalk Wolds Landscape Character Type has resulted in further features within the landscape notably a number of now disused airfields that were established in the First and Second World War, taking advantage of the flat landform and strategic location on the east coast of England.

Settlement is widely dispersed across the Chalk Wolds with a pattern of small nucleated vernacular villages that nestle into the wooded and secluded valleys, their presence often identified by landmark church towers and spires constructed in the local Lower Cretaceous stone that is exposed in the valleys below the chalk. Across the plateau tops there is a pattern of widely dispersed farms and occasional isolated dwellings.



Chalk Wolds (© Carol Paterson, Natural England)

AESTHETIC AND PERCEPTUAL QUALITIES

The Chalk Wolds Landscape Character Type has a strong unity of character with a simple and recurring palette of features. The repetitive rhythm of the folded rolling landform of the open plateau is particularly distinctive, with the regular pattern of the extensive arable fields further emphasising this simplicity.

This is a landscape of large scales where the wide expanses of the large fields meet vast skies and afford extensive and exhilarating outward views across the plateau as well as to adjoining areas. Settlement on the plateau tops is sparse which further emphasises a sense of emptiness and isolation, as well as tranquillity.

The presence of numerous archaeological features within the landscape conveys a sense of continuity and the long period of time that man has settled in and moved through the Chalk Wolds.

In contrast to the open wolds, the secluded and secret valleys that dissect the plateau have a more intimate and inward looking character. Within these valleys there is an intricate pattern and balanced relationship of features, notably the woodlands on the steeper slopes, valley bottom pastures, and rural villages often dating from the Saxon and medieval periods with many dwellings constructed in the local vernacular and locally sourced stone. These combine to convey the sense of a long settled rural landscape that is in harmony with its surroundings.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

Built development is affecting the pattern and character of rural settlements. Development on village margins can be particularly damaging, creating visual intrusion and resulting in the loss of surrounding landscape features. There is also an increase in conversion of traditional farm buildings into housing, further damaging architectural and historic character.

The Chalk Wolds is also increasingly being affected by noise and light pollution particularly where there is redevelopment of hilltop settlements and brownfield sites such as alternative uses for former airfields, including small scale industrial expansion.

Shaping the Future Landscape

The aim should be to protect the distinctive character of the landscape and nucleated settlement pattern, ensuring development is appropriate in terms of design and scale. Specific mechanisms include Village Design Statements for those villages most prone to infill development and expansion to help integrate new development into the landscape and ensure the appropriate use of vernacular styles and building materials that harmonise with local character. There should also be a place for the use of best practice innovative architectural and planning solutions that take inspiration from local distinctiveness and character whilst utilising eco-friendly and high quality design. As well as Village and Town Design Statements, Conservation Area Appraisals can also be important tools.

The impacts of light and noise pollution need to be carefully considered with any future development proposals with the aim of minimising impacts through careful design and use of appropriate planning conditions.

INFRASTRUCTURE

Forces for Change

Green lanes and the grass verges associated with the network of drovers roads are a distinctive landscape feature of the Chalk Wolds; however, these are under threat from lack of management and inappropriate planting. The Chalk Wolds is under continuing threat from telecommunication infrastructure, creating visual landmarks in this predominantly open landscape and reducing the sense of remoteness and isolation.

Shaping the Future Landscape

The aim should be to manage the historic road network, ensuring their continued contribution to biodiversity and landscape character.

The aim should be to protect the character of the landscape by siting masts away from visually prominent locations. Increased sharing of masts and sites by operators should be considered, along with removal of redundant masts.

ENERGY PROVISION

Forces for Change

Wind energy schemes are not characteristic of this landscape. However, there are two sizeable wind energy schemes in the neighbouring coastal Fens near Mablethorpe and Conisholme that can be viewed from the Chalk Wolds. Given the Government's commitment to increasing energy from renewable sources, further schemes may be proposed both within and adjacent to the Chalk Wolds, adding further visual intrusions. The cumulative impacts of further schemes will need careful consideration as there are likely to be increasing effects upon the views both within and beyond the Chalk Wolds.

Shaping the Future Landscape

The aim should be to protect the character of the landscape by siting wind energy schemes away from visually prominent locations and ensuring installations are of an appropriate size and scale. There is potential for strategic regional and sub regional level guidance on commercial wind energy schemes, including cumulative impact, informed by the EMRLCA and other studies. In addition, planning guidance for the siting and design of wind energy schemes should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development and setting out the criteria against which new applications will be assessed. This could also be extended to cover developments of a similar size and scale, such as telecommunications infrastructure.

MINERALS AND WASTE

Forces for Change

The chalk that underlies the Chalk Wolds landscape has been quarried for centuries, and there are numerous small disused chalk quarries where the Chalk has been dug for local use as agricultural lime and hard core. In addition there are a few working quarries on the fringes of the landscape. These can be visually intrusive, reduce the sense of tranquillity in more remote areas, and have adverse effects on heritage features and wildlife habitats.

Shaping the Future Landscape

The aim should be to protect the open character of the landscape by siting extraction sites away from visually prominent and sensitive locations. The impact on long distance views from surrounding villages and towns should also be considered. Where extraction does occur, it will be necessary to plan for their restoration and after-use, ensuring appropriate landscape, geodiversity, biodiversity, educational and recreational benefits.



Chalk Wolds (© Carol Paterson, Natural England)

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

There is marked evidence of agricultural intensification and farm amalgamation, accompanied by a move towards arable production. This has resulted in the loss or damage of many typical landscape features, including traditional patterns of field boundaries, areas of pasture, and semi-natural habitats, contributing to a more homogenous landscape. The loss of pasture is particularly evident around settlements, where grazing animals and smaller field sizes contribute to the setting and structure of several villages. Chalk streams are also an important feature of the landscape.

Shaping the Future Landscape

The aim should be to protect existing rural landscape features, whilst encouraging positive management of those features lost or under threat. The restoration of hedgerows should be given priority, along with an increase in grassland creating a stronger and more mixed pattern of land use.

Wherever possible, new hedge planting schemes should help provide connectivity via habitat links to neighbouring hedgerows, copses and woodland. Priority should be given to schemes that follow historic boundaries. Grassland creation should favour high and steep ground, and where there is strong heritage interest, in addition to the encouragement of low input grassland adjacent to streams.

FORESTRY AND WOODLAND

Forces for Change

Woodland cover across the Chalk Wolds Landscape Character Type is generally low, consisting of small, isolated plantations and copses. However, woodland is an important landscape component, contributing to the mosaic of different land use and habitat types and helping to integrate development into the landscape. There has been a general neglect and lack of management with many of the woodlands, following the widespread reduction in demand for traditional woodland products.

Shaping the Future Landscape

The aim should therefore be to plan for new small-scale woodlands around key settlements and more intimate and low lying areas, ensuring the open character of this landscape is maintained. The aim should also be to manage existing trees and woodland, encouraging new planting to ensure a diverse age and ecological structure. Consideration should also be given to the creation of woodland edge habitats, enhancing their contribution to landscape and biodiversity character, and strengthening links with restored hedgerows and grassland areas. Further plantings and management to reinforce the pattern of distinctive 'beech clump' woodlands should be encouraged, many of which are located on prominent hilltop locations.

Such proposals should be undertaken in collaboration with the Forestry Commission, the Lincolnshire Wolds Countryside Services (LWCS) and local landowners. Financial support may be available largely through the English Woodland Grant Scheme with further opportunities possible via LWCS Grants Scheme and Sustainable Development Fund. The relationship between the Lincolnshire Wolds and the Fens should also be considered, ensuring some transition within existing woodland patterns whilst retaining the

wider distinction between the two Landscape Character Types. Future woodland planting within the adjacent coastal marshes needs to be carefully planned to avoid the interruption of popular views from the eastern Chalk Wolds ridge (the fossil sea cliff).

TOURISM AND LEISURE

Forces for Change

The Lincolnshire Wolds has much to offer as a tourist destination and is increasing in popularity. Although much of the tourist activity is within the existing villages and market towns, new development in the countryside, such as picnic areas, caravan sites and holiday lodges, can cause visual intrusion and result in the loss of landscape features and character. The affect is particularly evident in locations with little or no settlement.

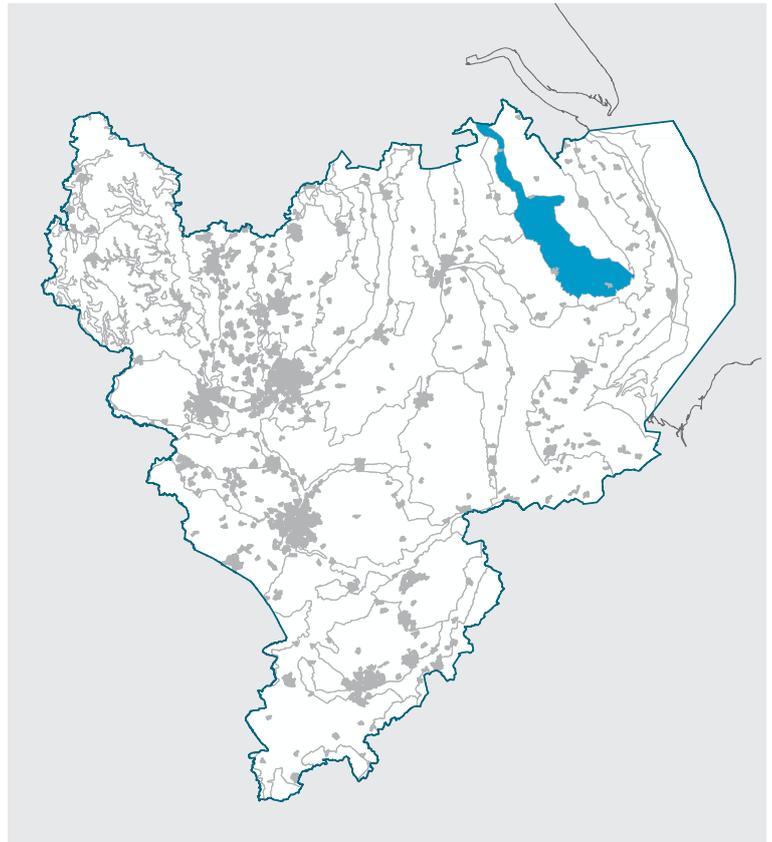
Shaping the Future Landscape

The aim should be to protect the distinctive open character of the landscape and consider the visual impact of any new tourist facilities. Planning guidance for the design and siting of new tourist facilities should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development whilst ensuring facilities respond to projected demand. In addition, the diversification of farms to provide attractions and accommodation should be carefully managed to ensure a balance is struck between maintaining rural character and supporting the rural economy.

7B:

WOLDS SCARPS,
RIDGES AND VALLEYS

*Pronounced escarpment with rounded ridge tops
(© Lincolnshire Wold Countryside Service)*



KEY CHARACTERISTICS

- Pronounced escarpment with rounded ridge top profile at north western section of the Chalk Wolds, with exposed scars of chalk, and ironstone outcrops;
- Steep, hummocky scarp slopes with land cover of rough pasture and scrub, intermittent copses and larger blocks of mainly deciduous woodland including, some wet pastures and distinctive ridge top beech clumps along summit ridge;
- Complex landform with areas of landslips and wet flushes particularly at junction of chalk and Lower Cretaceous rocks and spoil heaps associated with old ironstone working;
- Panoramic and exhilarating views from top of escarpment to the Wooded and Unwooded Vales to the west;
- Scarp dissected by minor watercourses, dry valleys and spring lines;
- Few settlements on scarp except for occasional farmsteads; distinctive pattern of spring line villages at foot of escarpment with older buildings constructed in Lower Cretaceous limestone and ironstone;
- Elevated undulating landscape of prominent chalk ridges bisected by deep combs and wide river valleys in the southern section of the type;

- Mosaic of mixed pastoral and arable land in the southern section, enclosed by mature hedgerows and intermittent woodlands, a network of narrow winding roads and a dispersed pattern of small nucleated villages; and
- Area rich in archaeological features with ancient trackways, burial mounds and deserted medieval villages and drovers roads signifying a long period of settlement of the area.

LANDSCAPE CHARACTER

The Wolds Scarps, Ridges and Valleys Landscape Character Type is represented in the East Midlands region as the western limit of the chalk outcrop in Lincolnshire where it forms a prominent west facing escarpment. The panoramic views that are obtained from the summit ridge of the escarpment across the Wooded and Unwooded Vales to the west and more limited views to the crest of the rolling Chalk Wolds to the east convey a sense of elevation and exhilaration. The escarpment slopes are steep and with a sometimes hummocky appearance, with the landform convoluted by a sequence of valleys associated with springs that rise on the scarp slopes. There are also working chalk quarries on the escarpment, notably the Mansgate Quarry, near Caistor.

A mosaic of rough pasture, scrub vegetation and intermittent woodland extends across these slopes and supports an area rich in wildlife. Woodlands often cap the steepest slopes or are located within the folds of the valleys, further emphasising the landform. While settlement is generally absent on the slopes, a number of spring-line villages are located at the foot of the scarp, forming a distinctive feature. Many of the older dwellings and churches within these villages are constructed from the Lower Cretaceous sandstones and limestones that are exposed at the base of the main chalk escarpment. Ancient trackways such as Caistor High Street follow the summit ridge and, together with features such as tumuli and long barrows, are indicative of occupation of the area since prehistoric times.

The southern extension of the Wolds Scarps, Ridges and Valleys has a much more complex landform and land use. This is attributable to the exposure of a succession of Lower Cretaceous and Upper Jurassic rocks that occurs in this area together with areas of glacial drift deposits. The differing characteristics and erosional responses of these rock formations in relation to the chalk, as well as the intermittent areas of drift materials, has resulted in a more convoluted and angular landform with a succession of ridges and valleys as well as outliers of the more resistant rock formations. The prominent ridges and internal facing escarpments are dissected by deep combs and wide river valleys and support a patchwork of pastoral and arable fields, woodland, hedgerows, country estates and parkland, and a network of rivers and streams. Many river valley floors are marshy and alder carr woods are present. As with the northern section of the escarpment, the southern part of the Wolds Scarps, Ridges and Valleys also displays evidence of a long period of occupation. Prehistoric barrows and earthworks are common on hill tops together, with routes of Roman roads, medieval moated sites and deserted medieval villages.



Wolds Scarps, Ridges and Valleys (© Carol Paterson, Natural England)

PHYSICAL INFLUENCES

The Wolds Scarps, Ridges and Valleys Landscape Character Type marks the western limit of the outcrop of Cretaceous rocks within the East Midlands Region. The Upper Cretaceous Chalk present here is a much reduced thickness than to the east but is nevertheless represented as a prominent escarpment, particularly to the north between North Willingham and Nettleton where there are extensive views to the west across the lowland vales of the coversands. The chalk has been quarried at a number of locations and while a number are now disused, working quarries are still evident, as at Mansgate Quarry, near Caistor.

Where the Chalk has been removed through erosion, Lower Cretaceous rocks have been exposed forming a complex series of secondary escarpments and ridges and valleys. This is particularly pronounced in the southern section of the Landscape Character Type where the Rivers Bain, Waring and Lymn have cut through the chalk to expose these older rock formations, including the Upper Jurassic Kimmeridge Clay. These rocks are also evident at the lower section of the more pronounced chalk escarpment in the north.

The Lower Cretaceous sequence commences with the Spilsby Sandstone followed by the iron rich Claxby Ironstone, after which sequences of mudstones, limestones and sandstones form the Tealby Formation. In the southern and central Wolds, the Tealby Formation is succeeded by the Roach Formation comprising clay, sand and pebbles of quartz and ironstone, and then the Carstone Formation, a gritty iron-rich sandstone followed by the pink limestone of the Red Chalk (Hunstanton Formation).

The differential resistance and variable characteristics of the Lower Cretaceous rocks have given rise to the changing landform patterns as well as the presence of landslides, for example at Nettleton and Hainton, with some extensive landslides in the underlying Kimmeridge Clay that have been induced by springs at the base of the Spilsby Sandstone. There are also areas of wet flushes. The harder bands of rock have also proved

suitable as building stones. Buildings constructed in the rich brown hues of the Caxby Ironstone, and the paler honey colour of the Tealby Limestone, such as at Tealby Church and the hill top medieval church at Walesby, are tangible links with the underlying geology. In the southern part of the Wolds Scarps, Ridges and Valleys the green brown hues of the Spilsby Sandstone is evident.

The chalk is one of the main aquifers of the East Midlands. A number of 'mixed geology' chalk streams rise or flow through the Wolds Scarps, Ridges and Valleys, comprising the shorter courses of Nettleton Beck and the Rase in the north that dissect the chalk escarpment, and the Bain, Waring and Lymn that rise in the Chalk Wolds before descending across Lower Cretaceous sands, clays and ironstones that form a series of low hills and ridges with gravel terraces. Within the valleys of the Bain and Lymn, the Kimmeridge Clay that outcrops has resulted in the creation of marshy and poorly-drained vales where nationally important alder carr woodlands occur. The streams provide important habitat for trout, eel, water vole, otter and numerous invertebrates.

The soil patterns closely reflect the bedrock and superficial geology. To the north, the plateau tops and slopes of the escarpment are dominated by light lime rich soils, below which there is a striking variation of colour and texture reflecting the underlying Red Chalk and Lower Cretaceous beds. Within the Lymn Valley, the outcropping Spilsby Sandstone has resulted in well-drained, sandy loams, but in the lower reaches, and in the Bain valley there are deep, coarse permeable loams except where the presence of Kimmeridge Clay gives rise to heavier clay soils and localised wet areas.

As with the Chalk Wolds, the chalk scenery of the Wolds Scarps, Ridges and Valleys offers excellent geodiversity interest with a variety of geomorphological features and quarries representing the chalk sequence. In view of the range of geological exposures and geomorphological features, it is important that practices are in place for their care, maintenance and management, and the promotion of their educational and interpretational interest.

CULTURAL INFLUENCES

In common with the Chalk Wolds to the east, the Wolds Scarps, Ridges and Valleys Landscape Character Type bears evidence of a long period of occupation from prehistoric times. There are significant Mesolithic remains in the southern part of the Landscape Character Type, particularly in the Lymn valley, and prehistoric barrows and earthworks are common on hill tops. Ancient trackways also follow the upper sections of the Wold Scarps, Ridges and Valleys, often commanding extensive views. The Bluestone Heath Road, which forms the eastern boundary of the type, is particularly noteworthy and also the High Street which follows the top of the escarpment in the northern section. The line of a west east aligned Roman road can be traced through the southern section of the Wolds Scarps, Ridges and Valleys, notably at Tetford. This route linked Lincoln and the east coast and was used for the coastal salt industry.

In the northern section of the Wolds Scarps, Ridges and Valleys, settlement avoided the steep slopes of the chalk escarpment favouring the shallower slopes at the base of the escarpment where there were richer soils and a source of water from the chalk springs. The spring line villages remain a distinctive feature of the Landscape Character Type.

In the more complex landscape of the Wolds Scarps, Ridges and Valleys to the south a number of settlements were established during the Saxon period, and subsequently by the Danes as is evident in the many place names ending in 'by'. Although well populated by the early medieval period, villages were progressively abandoned from the 12th century culminating in the late 14th century linked to the Black Death, climate fluctuations, enclosure and the development of the wool trade. This area now has one of the highest concentrations of deserted and shrunken medieval villages in England.

While the parliamentary enclosures had an influence on the southern section of the Wolds Ridges and Valleys many areas escaped the wholesale rationalisation of the landscape into geometric field enclosures and a pattern of smaller scale irregular fields, winding roads and sunken lanes and a more intimate and enclosed character is still evident. A patchwork of fields also extends across the escarpment slopes in the north of the type, although the steepest slopes remain uncultivated with scrub and woodland.

Despite the economic and social changes of 20th and 21st centuries the landscape of the Wolds Scarps, Ridges and Valleys has remained largely unaffected. Expansion on the perimeter of settlements, local road improvements and isolated features such as telecommunication masts at high locations are evident but the overall impression is that of a quiet rural landscape.



Peak Fringe near Kelstedge (© Martin Banham, Natural England)

AESTHETIC AND PERCEPTUAL QUALITIES

The visually imposing rising slopes of the chalk escarpment to the north and the more rugged and complex succession of scarps, ridges and valleys to the south of the type present a dramatic and varied landscape. The commanding views from the northern escarpment are particularly exhilarating encompassing the expanse of the vales to the west and more limited views to the crest of the rolling Chalk Wolds to the east that is followed by the ancient trackway of Caistor High Street. While the summits of the ridges to the southern section of the Wolds Scarps, Ridges and Valleys also afford expansive views, the more convoluted and complex landform and the series of valleys creates a more varied and sometimes enclosed landscape.

The influence of the chalk is dominant, with its simplicity of colour and effect on landform profiles, particularly in the northern scarp. In contrast, however, the older Lower Cretaceous rock formations that outcrop at the base of the chalk have resulted in a more colourful and varied landscape, with their differing qualities evident in a range of building materials and soils.

In the southern section of the Wolds Scarps, Ridges and Valleys the mosaic of land uses with pastoral and arable fields, hedgerows, woodlands, country estates and parkland, rivers and streams all contribute to the perception of a quiet and deeply rural area. Although the many archaeological features are tangible reminders of earlier periods of occupation and length of time that this area has been settled, there is nevertheless an impression that many areas have undergone little change over the last few centuries.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

Modern residential development is affecting the historic villages and hamlets, eroding their architectural and historic character. Development on settlement margins can also be particularly damaging, creating visual intrusion and resulting in the loss of surrounding landscape features. Localised settlement expansion and infilling has often occurred following formulaic designs with minimal consideration to the local vernacular.

While it is important to maintain the open and undeveloped character, there is evidence of abandonment of farms and cottages, along with depopulation of some rural villages, due to the degree of isolation and lack of local services. This can result in the loss of local identity and create visual detractors.

Shaping the Future Landscape

The aim should be to protect the open and undeveloped character of the landscape and limit the visual impact of any new development. Ideally new development should be sited close to existing settlement; however, care should be taken not further diminish settlement character. Specific mechanisms and advice should include reference to Town and Parish Plans and Village Design Statements for those villages and market towns most prone to infill development and expansion. As well as Village and Town Design Statements, Conservation Area Appraisals can also be important tools. There should also be a place for the use of best practice innovative architectural and planning solutions that take inspiration from local distinctiveness and character whilst utilising eco-friendly and high quality design.

The aim should also be to protect against further decline of rural communities, ensuring appropriate support for the rural economy and links to services in larger settlements.

INFRASTRUCTURE

Forces for Change

Road improvements are commonplace, including straightening of existing routes and new 'by-pass' schemes designed to alleviate congestion within the villages. This has an urbanising effect and brings a degree of standardisation to the countryside. The Wolds Scarps, Ridges and Valleys is under less threat from telecommunications masts due to the more complex landform. However, infrastructure on the summit of the scarp would severely detract from the simple but dramatic open skyline.

Shaping the Future Landscape

The aim should be to protect the existing character of the rural road network, whilst having regard to safety requirements. Any new roads should be carefully planned and designed to provide positive environmental and landscape enhancements. The aim should also be to manage historic routes, ensuring their continued contribution as biodiversity and recreational corridors.

The aim should be to protect the character of the landscape by siting potential telecommunications masts and other large developments away from visually prominent locations.

MINERALS AND WASTE

Forces for Change

The chalk that underlies the Wolds Scarps, Ridges and Valleys has been quarried for centuries, and there are currently some quarries still operating. These can be visually intrusive, reduce the sense of tranquillity in more remote areas, and have adverse effects on heritage features and wildlife habitats.

Shaping the Future Landscape

The aim should be to protect the open character of the landscape by siting extraction sites away from visually prominent and sensitive locations. The impact on long distance views from surrounding villages and towns should also be considered. Where extraction does occur, it will be necessary to plan for their restoration and after-use, ensuring appropriate landscape, geodiversity, biodiversity, educational and recreational benefits.



Wolds Scarps, Ridges and Valleys (© P Clarke, Natural England)

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

There is marked evidence of agricultural intensification resulting in the loss or damage of many typical landscape features, including chalk grassland and field boundaries. This weakens the pattern of land-use and contributes to a more homogenous landscape. Rivers and streams are also an important feature of the landscape.

Energy crops, in particular Miscanthus, are being cultivated to meet renewable energy targets. These are fast growing and tall crops that can radically change the appearance of the landscape. There is also a requirement for storage and processing facilities, which along with other new agricultural buildings, can reduce the sense of remoteness in rural areas and cause visual intrusion. There are a large number of traditional agricultural buildings, many of which provide important heritage and visual features but are often in a poor state of repair. Sympathetic restoration should be encouraged.



West Keal Scarp Wolds (© Neil Pike, Natural England)

Shaping the Future Landscape

The aim should be to protect existing landscape features, whilst encouraging positive management of those features lost or under threat. The restoration of hedgerows should be given priority, strengthening the pattern of land use. Furthermore, grazing should be reintroduced where appropriate, increasing the extent and quality of grassland whilst meeting and sustaining local and regional market needs. The creation of grassland along watercourses should also be considered, enhancing their visibility, whilst increasing the occurrence of semi-natural habitats. Hedgerow maintenance and restoration should seek to enhance local landscape and biodiversity through enhanced cutting schedules with new planting schemes focusing on historic boundaries and increased connectivity between woodland and copses.

The aim should be to protect the distinctive open character of the landscape and consider the visual impact of energy crops and associated facilities. New structures should be located away from visually prominent locations and close to existing settlement and infrastructure where possible. Although the introduction of energy crops will be more difficult to manage, grant applications to Natural England or the Forestry Commission may require an assessment of landscape and visual impacts.

FORESTRY AND WOODLAND

Forces for Change

Woodland cover varies across the landscape, with generally more woodland towards the southern section of the Wolds Scarps, Ridges and Valleys and distinctive clumps along the summit ridge. New woodland planting would therefore generally be appropriate, reinforcing the character and increasing overall woodland coverage in the region.

New woodland could also be used in and around settlements to integrate new development into the landscape and contain future growth. All new schemes do require sensitive planning to minimise any undesirable impacts particularly upon prominent viewpoints and heritage assets. There is also a general neglect and lack of management of existing woodlands.

Shaping the Future Landscape

The aim should be to plan new woodland creation in appropriate areas and around key settlements. The aim should also be to manage existing trees and woodland, encouraging new planting to ensure a diverse age and ecological structure. Consideration should also be given to the creation of woodland edge habitats, enhancing their contribution to landscape and biodiversity character, and strengthening links with restored hedgerows and grassland areas.

Such proposals should be undertaken in collaboration with the Forestry Commission, the Lincolnshire Wolds Countryside Service (LWCS) and local landowners, and financial support may be available largely through the English Woodland Grant Scheme with further opportunities possible via the LWCS Landscape Grants Scheme and Wolds Sustainable Development Fund.

TOURISM AND LEISURE

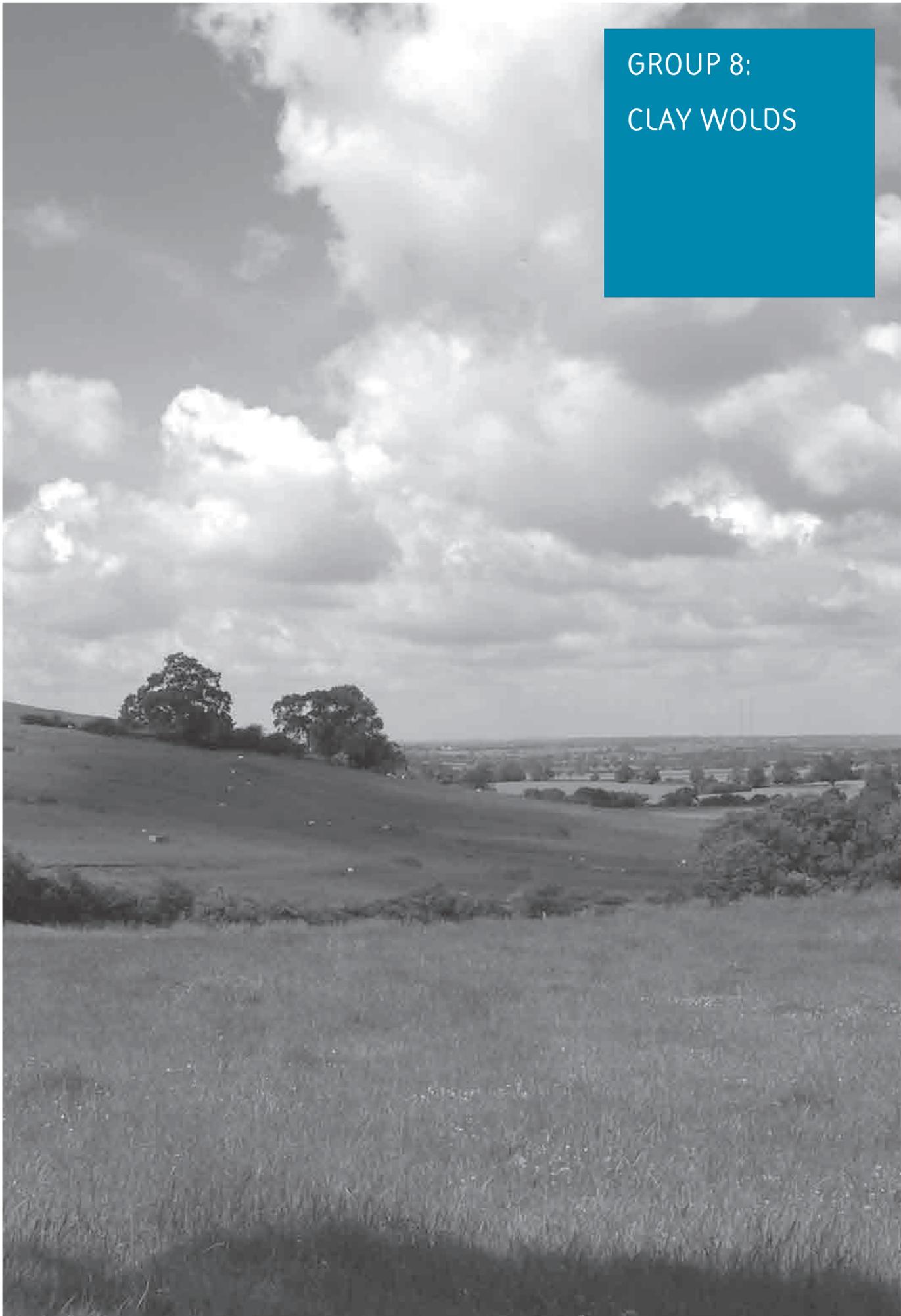
Forces for Change

The Lincolnshire Wolds is a popular tourist destination. Although much of the tourist activity is within the existing villages and market towns, new development in the countryside, such as picnic areas and camping sites, can cause visual intrusion and result in the loss of landscape features. The affect is particularly evident in locations with little or no settlement.

Shaping the Future Landscape

The aim should be to protect the distinctive open character of the landscape and consider the visual impact of any new tourist facilities. Planning guidance for the design and siting of new tourist facilities should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development whilst ensuring facilities respond to projected demand. In addition, the diversification of farms to provide attractions and accommodation should be carefully managed to ensure a balance is struck between maintaining rural character and supporting the rural economy.

GROUP 8:
CLAY WOLDS



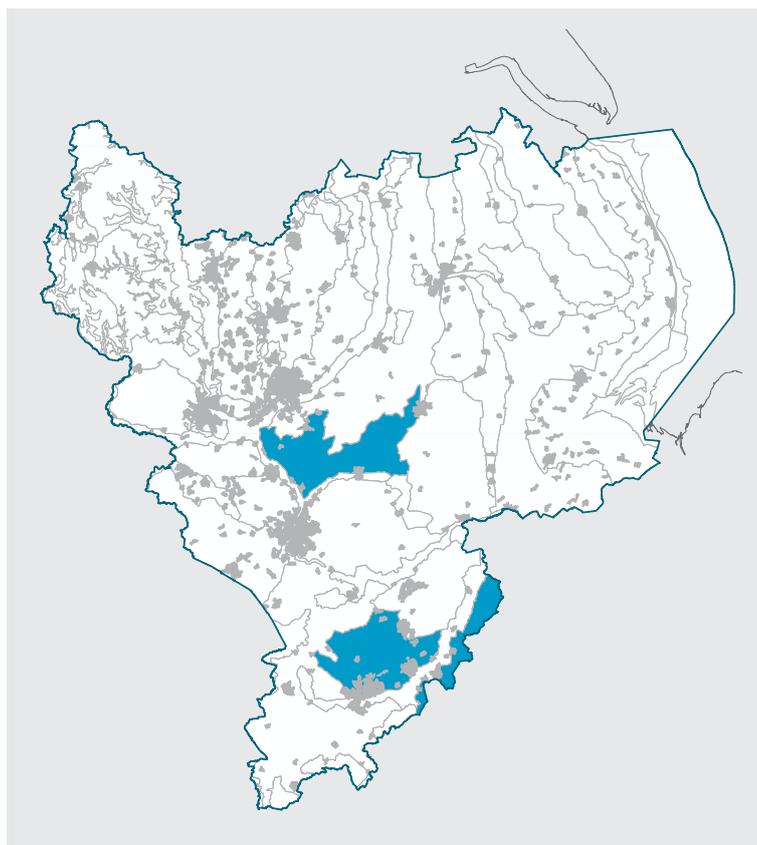
GROUP 8
PAGES 227-234

Prominent scarp slopes are characteristic of the Clay Wolds (© River Nene Regional Park/M Williams)

8A: CLAY WOLDS



Well treed character from hedgerows, hedgerow trees, copses and small woodlands
(© River Nene Regional Park/M Williams)



KEY CHARACTERISTICS

- Broad plateaux overlain by thick mantle of till surrounded by undulating ridges and valleys, and prominent scarp slopes;
- Clay plateaux drained radially by streams occupying arrow valleys creating rolling landform;
- Mixed farming but with mainly arable on the plateau tops and pasture on steep sloping land and along valleys; hedged fields generally medium to large scale, with some evidence of amalgamation;
- Well treed character from hedgerows, hedgerow trees, copses and small woodlands despite limited areas of large woodland;
- Sparse settlement pattern of small villages and farms with little modern development;
- Ironstone and limestone churches and vernacular buildings, but brick the most abundant and -widespread building material;
- Frequent and prominent ridge and furrow close to villages;
- Quiet and remote, often empty character with expansive views contrasting with more intimate and intricate areas close to villages; and
- Damming of several valleys to create reservoirs which have localised impact on landscape character.

LANDSCAPE CHARACTER

The Clay Wolds Landscape Character Type represents a distinctive elevated plateau farmland landscape across thick belts of boulder clay separated by rolling valleys. Historically, the intractable clays of the plateau appear thinly settled, with settlements generally gravitating to the more easily worked soils on the neighbouring slopes and valleys. Remnants of this pattern of settlement remain evident in the modern landscape, and many of the elevated clays are sparsely settled, and retain a remote, sometimes empty character, enhanced by panoramic views over the surrounding landscape possible from their fringes. The valleys drain radially from the uplands and form a major component of the River Nene and several tributaries of the Trent. Here the landscape is more intricate and intimate, with long distance views obscured by landform and vegetation. Villages remain small and rural, although their built character is dominated by the use of brick.

The historic character of the landscape is dominated by hedged fieldscapes dating to the 18th and 19th centuries, albeit overlain onto a much older pattern of sinuous boundaries and routes across the hills. Other influences are limited to occasional rail routes winding through the landscape and reservoirs. In more recent decades, the removal of hedgerows and increased reversion to cereal farming has had a subtle influence on landscape character.



*Clay Wolds, Nottinghamshire near East Leake.
(© Martin Banham, Natural England)*

PHYSICAL INFLUENCES

The Clay Wolds Landscape Character Type occupies various bedrock geology formations, including Lias Group mudstones, Ooidal limestones and the Marlstone Rock and Northampton Sand Formations, the latter two of which have been used extensively as a building stone and are represented in the local vernacular of buildings within many of the villages. Jurassic mudstones are also extensive to the east of the Nene, stretching into neighbouring Cambridgeshire. Whilst influencing the elevation and main landform features, such as the escarpment and outliers that rise above the Vale of Belvoir, the surface expression of the bedrock is often subdued by a thick mantle of glacial till which also softens landform features to create a smooth, gently undulating landscape, interspersed with often steep sided valleys. The steep slopes in mudstone may be subjected to landslides.

The clay wolds to the south and east of Nottingham and east of Northampton offer only limited potential for features of geodiversity interest with very few exposures but some geomorphological features. The area to the north of Northampton offers much more potential. With the many former ironstone and building stone quarries and more pronounced geomorphological features, it is important that practices are in place for their care, maintenance and management, and the promotion of their educational and interpretational interest.

The streams that rise on the elevated plateaux flow into the surrounding river valleys in a radial drainage pattern. The influence of these valleys on landscape character is significant; the streams having eroded convex sloped valleys that are, in part, responsible for creating the undulating landform.

The superficial covering of till was deposited by glacial ice and is formed from unlithified rocks, sands and clays that have their origins as far north as Yorkshire, Lancashire and beyond. The covering was once more extensive, but has since been eroded by the numerous streams draining these low hills and deposited in the valleys of the major rivers, first as gravels and then as muds and silts. As such, the clay mantle now occupies only the more elevated areas and watersheds between the valleys, allowing the underlying geology to emerge at the fringes of the landscape.

On the plateaux and other more elevated areas, the soils derived from the till are lime-rich, loamy and clayey with impeded drainage. They are characteristically stony and contain a wide range of pebbles and rock fragments, indicating that the underlying tills have diverse geological origins. Where the clay overburden has eroded to expose the underlying Marlstone Rock and Northampton Sand Formations, soils are free draining, slightly acid but base-rich.

Despite the impeded drainage of the clays, cereal cultivation predominates across the fertile soils and gentle topography of the plateaux and gently sloping hills and valleys. Indeed, some areas are particularly intensively farmed through field amalgamation and the cultivation of single crops across wide areas. However, pastures are conspicuous on steeply sloping topography along valleys and close to villages. Here, field patterns tend to be more intricate and a wider range of land uses combine to create a more colourful and textured character than that of the simpler and more expansive plateau tops.

Widespread improvement and cultivation has diminished the nature conservation interest of the agricultural landscape. However, isolated areas of species rich grassland remain and are noted for their biodiversity value. Woodlands are also locally important, although not generally a dominant feature. Ancient woodlands are limited in scale and tend to be located on the thick clays. Evidence also suggests that these are often at the edge of parishes, perhaps indicating they were retained as communal

resources at the fringes of the best and most readily cultivated land. Elsewhere, larger woodlands are a feature of parklands, valley sides and steep sloping scarps overlooking the Vale of Belvoir. Small geometric broadleaf copses and coverts are also an important landscape feature, providing cover for game and other farmland species.

Hedgerow trees, notably oak and ash, and lines of trees fringing watercourses also add to the wooded character of the landscape. Whilst the scale of fields, and therefore the distance between boundaries limits their ability to reduce the open character of the landscape, hedgerows are also locally important, providing visual containment and networks of habitat through the agricultural landscape.

CULTURAL INFLUENCES

Evidence of prehistoric settlement and activity on the Clay Wolds is limited. It is possible that the intractable clays would have been a constraint to the early exploitation as a consequence of primitive plough technology. However, the intensive arable farming of the past few decades may have removed evidence of prehistoric and Roman fields and farms.

Early Anglo Saxon occupation may also have been limited, and it is unclear whether the Saxon and Scandinavian place names evident represent consolidation of pre-existing farms and settlements or mark a new phase of occupation in the mid to late Saxon period. The repeated reference to 'Wolds' in place names, almost all of which occur on the till deposits, is indicative of open hill pastures, perhaps interspersed with woodland. Such resources would have been carefully managed as communal grazing and timber reserves. The distribution of settlements is also of note. The majority of villages appear to have been established at the edges of the thick till mantle, indicating that the elevated areas were managed as communal grazing, with open fields on the free draining soils of the slopes and lower lying areas. Remnants of ridge and furrow also support this, with most surviving areas lying on the fringes of the clay and where the clay mantle has been removed to expose the underlying bedrock.

Parish boundaries, established in the late Saxon period, and perhaps indicating much older divisions, also allude to this pattern of settlement and system of land management. Parish boundaries appear to show that valuable upland grazing resources were equitably divided amongst settlements on the lower ground. It is interesting to note that many ancient woodland sites survive on the fringes of several parishes, perhaps indicating that woodlands marked boundaries and were shared by neighbouring communities.

During the early medieval period, it is also possible that large areas of the landscape fell under forest law. For example Rockingham Forest once extended to Northampton, and would have included much of the landscape of the Clay Wolds west of Kettering. The Bromswold, mentioned in the 11th century tale of Hereward the Wake, once extended east from the Nene towards the River Great Ouse and is also significant. However, it is not clear to what degree such 'forest' areas were wooded, and evidence suggests that much of the land was cleared by the time of the Domesday survey.

There appears to have been piecemeal enclosure of the landscape from the 15th century onwards, and wide areas may have been thinly populated and dominated by sheep grazing. This goes some way to explain the thinly settled character of the landscape, small villages and few farms. Indeed it is possible that many areas remained unenclosed until the 18th and 19th centuries. During this time, the landscape was divided up as part of parliamentary and non parliamentary enclosures, resulting in today's pattern of rectangular hedged fields set within a more sinuous pattern of older enclosures, winding lanes and watercourses. Many village cottages and farms were also built or rebuilt in brick at this time. Whilst some limestone or ironstone buildings are evident, particularly in churches, brick is the dominant material.

During the 19th and 20th centuries agricultural improvement allowed arable cultivation to become more widespread and recent decades have seen hedgerow removal to create larger fields to accommodate modern farm machinery. Whilst industrialisation has not been a significant influence on the landscape, and villages have retained their rural character, the modern period has seen the construction of several rail lines across the Clay Wolds landscape, airfields and several reservoirs, notably in the valleys north of Northampton such as Pitsford Water, Hollowell and Thorpe Malsor.



Clay Wolds (© Graham Murray, Natural England)

AESTHETIC AND PERCEPTUAL QUALITIES

Despite being a productive agricultural landscape, in close proximity to several large towns, the absence of buildings and people across wide areas of the elevated clay landscape imparts a distinctive, albeit subtle, remote character. Where particularly long distance views are possible a sense of exposure prevails. This contrasts with the more settled character along river valleys. Here landform, small woodlands and hedgerow trees serve to limit views and create a more intimate landscape.

The predominance of brick in many farms and villages gives a unity of character, and implies relatively late settlement of the landscape. However, areas of ridge and furrow and ancient churches, as well as sinuous field boundaries and country lanes are suggestive of a much longer period of settlement and exploitation.

Colours and textures across the landscape are generally simple and muted, largely as a result of large fields of single crops. Where hedgerow removal or absence of management is in evidence, a declining character is perceived. More intact areas surrounding villages, perhaps displaying arable and pasture farming, wet meadows and areas of woodland, provide an important contrast, particularly where hedgerows are well maintained and form continuous unbroken networks.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

Large scale modern mixed-use development is evident on the fringes of larger settlements in the south of the Clay Wolds, such as Northampton, Wellingborough and Kettering, creating visual intrusion and extending the urban fringe. These settlements are targeted for further growth as they are located within the MKSM Growth Area. There is also pressure for residential development in the villages around the towns, which are popular with commuters, eroding architectural and historic character. The impact of the new development on the setting and views of churches is particularly important, as these are distinctive local landmarks.

Shaping the Future Landscape

The aim should be to protect the character of the countryside and consider the visual impact of any new development. Specific mechanisms include best practice innovative architectural designs and planning solutions and the planting of new trees, helping to integrate new development into the landscape.

In urban areas, care should also be taken to prevent coalescence, ensuring separation is maintained between the urban fringe and surrounding settlements. In rural areas, village expansion should generally be avoided in open, elevated areas where development would damage the sense of remoteness and expansive views. Many settlements would benefit from Village and Town Design Statements, guiding the design and scale of new development and ensuring the appropriate use of vernacular styles and building materials. As well as Village and Town Design Statements, Conservation Area Appraisals can also be important tools.

ENERGY PROVISION

Forces for Change

Given the Government's commitment to renewable energy provision, elevated areas of the Clay Wolds Landscape Character Type may be under pressure for wind farm development. Such development can create visual landmarks and reduce the sense of remoteness and isolation.

Shaping the Future Landscape

The aim should be to protect the character of the landscape by appropriately siting and designing new wind energy installations. There is potential for strategic regional and sub regional level guidance on commercial wind energy schemes, including cumulative impact, informed by the EMRLCA and other studies. In addition, planning guidance should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development and setting out the criteria against which new applications will be assessed.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

While the rural landscape retains a mixed land use, with areas of pasture and arable, there is evidence of agricultural intensification, resulting in the loss or damage of many typical landscape features. This includes loss of hedgerows and hedgerow trees and damage to areas of ridge and furrow and other earthworks. There is also proliferation of new, large scale agricultural buildings, reflecting the loss of smallholdings and the general increase in farm size.

Shaping the Future Landscape

The aim should be to protect the structure and unity of the landscape and consider the impact of changes to farming practices. Consideration should be given to the management of those features lost or under threat. In particular the restoration of hedgerows should be given priority, creating a stronger pattern of land use and reinforcing the well-treed character. Management plans may also be appropriate for areas of ridge and furrow and other earthworks, to identify those areas most at risk.

The aim should also be to manage new agricultural development, ensuring development is appropriate in terms of type, scale and location. New large scale agricultural buildings should be carefully sited, away from visually prominent locations and amongst existing buildings where possible. Specific design guidance for farmsteads may be appropriate, establishing the criteria for new development.

FORESTRY AND WOODLAND

Forces for Change

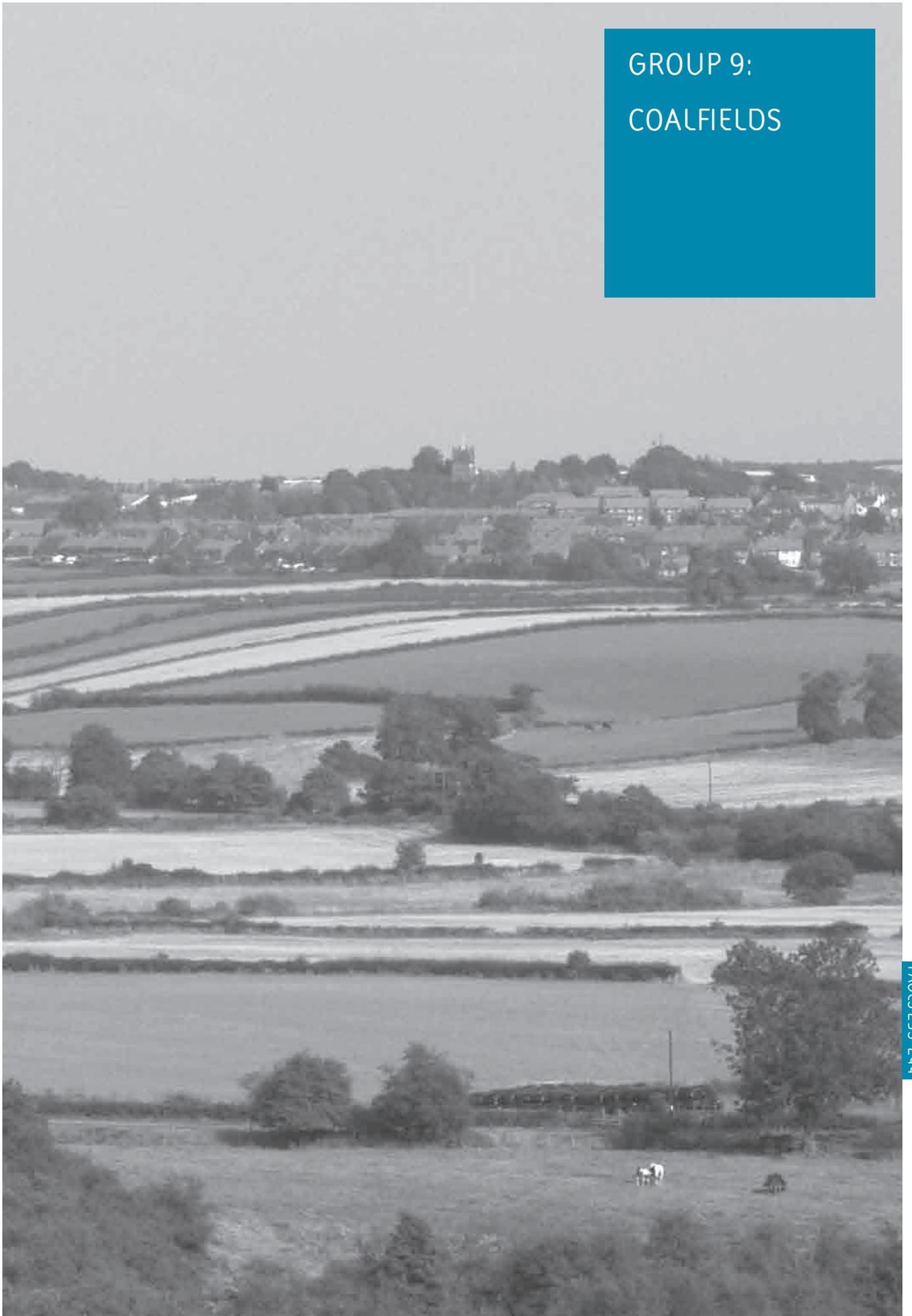
Woodland cover varies across the landscape, with generally more woodland within upland areas. New woodland planting would therefore generally be appropriate, reinforcing the character and increasing overall woodland coverage in the region. New woodland could also be used in and around settlements to integrate new development into the landscape and contain future growth. There is also a general neglect and lack of management, resulting in the decline of woodlands and hedgerow trees although where field sports, notably hunting, are practiced this will ensure the longer term management of woodlands as game coverts.

Shaping the Future Landscape

The aim should be to plan for new woodland creation in appropriate areas and around key settlements. The aim should also be to manage existing trees and woodland, encouraging new planting to ensure a diverse age and ecological structure. Consideration should also be given to the creation of woodland edge habitats, enhancing their contribution to landscape and biodiversity character, and strengthening links with restored hedgerows and grassland areas.

Such proposals should be undertaken in collaboration with the Forestry Commission and local landowners, and financial support may be available through the English Woodland Grant Scheme.

GROUP 9:
COALFIELDS



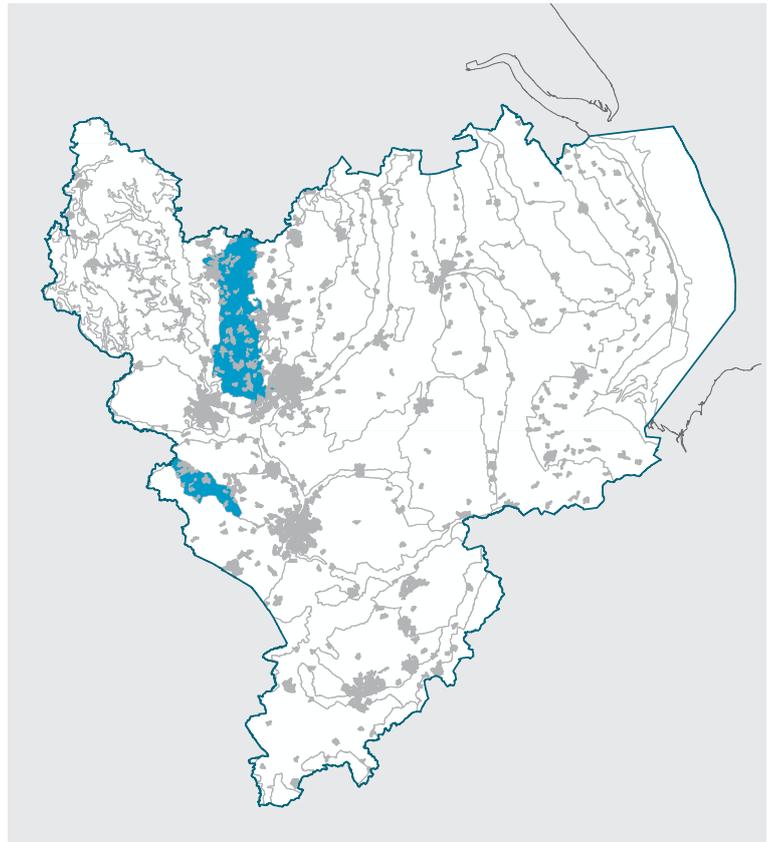
GROUP 9
PAGES 235 - 244

Small towns and villages are characteristic of the Coalfields (© Derbyshire County Council)

9A:

SETTLED COALFIELD
FARMLANDS

*Undulating landform of low hills and ridges
(© Derbyshire County Council)*



KEY CHARACTERISTICS

- Undulating landform of low hills and ridges, and shallow valleys with local variations reflecting the differing characteristics of the underlying Coal Measures geology;
- Evidence of past and present exploitation of area with former mine sites, pit heaps, clay pits, disused railway lines, tramways, canals and opencast coal and clay working areas;
- Substantial areas of intact agricultural land with mixed farming predominating, varied field sizes and hedgerows but with localised areas of small fields and dense hedgerows;
- Scattered, small broad-leaved woodlands, copses and linear tree belts and some relict ancient semi-natural woodlands; more extensive woodlands and plantations associated with the restoration of former mining areas and also within The National Forest;
- Heathy vegetation associated with steeper slopes and uncultivated land;
- Small towns, villages, hamlets and scattered farmsteads constructed from local Coal Measures sandstone, with some villages expanded as sprawling mining settlements with red brick former mining terraces and ribbon development;
- Network of narrow winding lanes between urban areas; and
- Strong cultural identity and industrial archaeological interest associated with history of coal mining.

LANDSCAPE CHARACTER

The Settled Coalfield Farmlands Landscape Character Type occurs in two discrete areas within the East Midlands Region. The largest area is located within an approximately 10-12 km wide belt of land extending from the north of Derby and Nottingham to the northern perimeter of the region and the Sheffield conurbation. To the south, a much smaller area is located in the north western part of Leicestershire and extending into the southern margin of Derbyshire, coinciding with the Leicestershire and South Derbyshire Coalfield. This northwest to south east aligned area is located between the Charnwood Forest area to the north east and the broad valleys and lowland areas associated with the Rivers Mease and Sence. It includes the settlements of Swadlincote, Ashby de la Zouch and Measham and extends up to the eastern perimeter of Coalville.

The character of this Landscape Character Type is closely related to the physical manifestation of the underlying Carboniferous Coal Measures geology where the changing sequence of rocks and their relative resistance has given rise to the undulating landform of low hills and ridges separating a sequence of shallow valleys. Superimposed on this physical form are the profound effects of the extensive exploitation of the coal seams within these rocks, as well as clay deposits. As a consequence of the rich mineral resources, the Derbyshire and Nottinghamshire Coalfields, and further south the Leicestershire and South Derbyshire Coalfields have seen constant change and development since the industrial revolution. This is manifested in the character of the landscape which displays a complex mosaic of often disparate and fragmented land uses that bear testimony to the progressive exploitation of the area. Urban and industrial development and evidence of past and present mining and related activities are widespread features across the Landscape Character Type and provide a constant reminder of the legacy of the coal mining industry. Despite this, their presence has contributed to a strong cultural identity and the numerous former mine sites, pit heaps, clay pits,

disused railway lines, tramways and canals are a rich industrial archaeological resource and contribute to the Landscape Character Type's unique sense of history. However, an agricultural landscape of mixed farming with a predominance of pasture, and a complex of narrow winding lanes, still remains in a number of areas. This serves as a reminder of a once more extensive area of rural farmland that permeated the landscape before the imposition of mining activities and industrial uses.

The settlement pattern reflects the process of change and development. While many rural villages and scattered farmsteads remain, with older buildings often constructed in the local Coal Measures sandstone, many villages have been expanded into sprawling mining settlements with red brick former mining terraces and ribbon development.

Although the Landscape Character Type has a generally low woodland cover, there are nevertheless notable fragments of ancient woodland as well as a mosaic of small woods and copses within farmed areas and ribbons of dense streamline vegetation. Occasional areas of heathy vegetation are present on the sandy soils that overlie sandstone outcrops, and are remnants of a once much wider heathland cover. New plantations are also evident often in association with the restoration of derelict land or open cast coal mining areas. This is particularly notable within the Leicestershire and South Derbyshire area where extensive woodlands have been established as part of The National Forest.



Morton Tip (© Derbyshire County Council)

PHYSICAL INFLUENCES

The Settled Coalfield Farmlands are underlain by the Upper Carboniferous Coal Measures. The sequence of rock formations and presence of coal and other mineral resources is key to determining not only the characteristics of the landform but also the historic and cultural development of the area.

The productive coal bearing strata are divided into the Pennine Middle and Lower Coal Measures. The Lower Coal Measures consist of proportionately greater amounts of sandstone and fewer seams of coal and crop out towards the northern perimeter of the Landscape Character Type within the East Midlands. This more elevated area of hills and valleys is included within the Wooded Slopes and Valleys Landscape Character Type. The Middle Coal Measures consists of narrow bands of sandstone and many successive coal seams and encompasses the majority of the Settled Coalfield Farmlands, creating a broadly undulating landscape of ridges and valleys.

Access to sites and areas of geodiversity interest is limited with very few exposures remaining, although new opencast workings offer potential sites of interest. However, there are good geomorphological features and also many examples of the mining legacy in industrial heritage features, all of which will benefit from care, maintenance and management, and the promotion of their educational and interpretational interest.

A number of rivers flow across the Settled Coalfield Farmlands within the Nottinghamshire and Derbyshire section notably the Rother and its tributary the Doe Lea in the north and the Erewash which flows south to the Trent and forms the boundary between the two counties for a substantial part of its course. These generally flow in broad valleys with alluvial floodplains. Whilst there are no major rivers in the Leicestershire and South Derbyshire coalfield a number of brooks and streams rise on the higher land that forms the watershed between the Rivers Mease and Sence to the south west, and the Soar to the north east. Their courses are defined by a succession of shallow valleys that dissect the broader landform pattern.

Although the industrialisation of the coalfield area has altered the landscape's visual and ecological integrity, small fragmented remnants of the pre-industrial landscape are still evident and are testimony of a once much richer resource. Isolated areas of ancient semi-natural woodland are present representing fragments of a more extensive woodland cover. More recently, plantations and new woodlands have been established particularly in association with the restoration of derelict land and open cast coal mining areas and notably within The National Forest in the southern representation of the type.

Valuable wetland habitats have established within the lower lying land associated with the rivers and streams. The coal and other mineral exploitation activities within the type have also resulted in the creation of areas of biodiversity interest notably the marginal land associated with the networks of canals and disused railway lines and the numerous waterbodies that have developed as a consequence of subsidence arising from mining operations. These and other areas of post industrial land are often of biodiversity value, albeit at a local level.

The soils within the Settled Coalfield Farmlands are generally poor and predominantly heavy, clayey to loamy in texture and seasonally waterlogged. These traditionally support dairy farming but in some areas, where soils are freer draining over sandstone, there is a stronger presence of arable farming. Mining activity has resulted in the disturbance of soils and decline in their quality, particularly in association with open cast coal mining and where the standards of soil storage and restoration practices have been compromised.

There are few remaining areas of heathland, but the presence of localised patches of sandier acid soils that occur in some areas overlying the sandstone outcrops, has resulted in the development of 'heathy' habitats. A once more widespread presence of this former habitat, particularly on the ridges, hill summits and steeper slopes, is indicated by place names such as Heather Lee and Moor Top in Derbyshire and Heather and Normanton-le-Heath in Leicestershire.

CULTURAL INFLUENCES

Widespread exploitation of the Coalfields in the last two centuries has eradicated much of the archaeological evidence of the past occupation of the land up to the Roman period and indicators are limited to upstanding remains and discoveries of artefacts. The Domesday survey indicates that the Coalfields were well wooded at the time with a settlement pattern of nucleated villages. By medieval times clearance of much of the original forests had resulted in a landscape of villages, hamlets and scattered farmsteads, with former common land characterised by small clusters of wayside cottages. In the Nottinghamshire and Derbyshire Coalfield the piecemeal enclosure and felling systems resulted in a pattern of open fields particularly around settlements in the east but with more irregular woodland clearance further west. Hunting forests and deer parks were also established, and along with the open fields and commons, were gradually enclosed, privately at first, and later by the Parliamentary Enclosure Acts. This diverse history of enclosure has resulted in a variable field pattern across the Landscape Character Type. There are also a number of historic estates and associated castle or halls within the Landscape Type, notably Bolsover Castle and Sutton Scarsdale Hall, which is now a ruin. These occupy prominent ridge top locations and are clearly visible from the M1.

The industrial revolution had a profound effect on the Coalfield areas with major changes to the landscape beginning in the early 19th century with the development of deep mining across the exposed coalfield. However, mining of the coal reserves began much earlier than this with evidence that the Romans excavated the coal, where surface outcropping seams were easily accessible. Mining is also documented from the 13th century onwards, as is evident in the north eastern part of the Leicestershire and South Derbyshire Coalfield in the Newbold and Coleorton area where a dispersed pattern of settlements developed to serve the local small scale mining operations. Although mining was widespread across the Coalfields in the 16th to 18th centuries, activities were still at a local level,

substantiated by the presence of bell pits and shafts constructed to reach the shallow seams.

The dramatic expansion of the coal industry from the 1830s reached its climax in the last quarter of the 19th century. A huge inward migration of people to work in the mines resulted in an extensive building programme to house the new mine workers and their families, accompanied by ancillary industries, services, railways and other infrastructure to serve the coal mining operations and the expanding population. Many of the quiet agricultural villages were rapidly expanded to accommodate this sudden influx of population; their scale and character was transformed as red brick terraces which emerged in stark contrast to the traditional village buildings which were typically constructed in the local sandstone. The previously predominantly agricultural landscape was therefore replaced in some areas by one where industrial and related activities dominated.

This pattern has since been reinforced by 20th and early 21st century development, particularly housing and roads, and notably the M1 in the Nottinghamshire and Derbyshire section of the Landscape Character Type. This overlaying of new developments and route patterns has resulted in further dissection of the agricultural landscape leaving isolated blocks of land surrounded by urban and suburban settlements and causing fragmentation of the network of older historic roads and lanes. Industry has continued to transform much of the agricultural landscape, with the expansion of light industry, technology and related industries widely evident together with large scale industrial warehouses and sheds close to the M1. Further expansion of many of the mining settlements has also taken place with large housing and industrial estates and amalgamation of some villages into larger urbanised areas. Historic settlement patterns are rapidly becoming overlain and disguised by modern development. The effects of opencast coal mining and the progressive restoration of the spoil heaps has also introduced new landforms, woodlands and field layouts to create a juvenile and emerging landscape in many areas.

AESTHETIC AND PERCEPTUAL INFLUENCES

The Settled Coalfield Farmlands is a complex and varied Landscape Character Type encompassing a wide range of often disparate land uses. The overall perception is of a landscape that has experienced, and continues to undergo, significant change and development.

The diversity of the landscape character is derived from the interplay of a densely settled and heavily industrialised landscape intermixed with pockets of mainly pastoral farmland. Where farmland and villages have escaped the effects of industrial development, a quiet and simple rural character representative of the pre-industrial landscape is characteristic. The simplicity of such areas represents a strong contrast with surrounding areas where landscape change has been profound. Here, degraded areas or emerging restored post industrial land uses are common.

Although a significant proportion of the land area continues to be managed for agricultural production, the association with heavy industry and the legacy of the coal mining activities remains a significant influence on the perception of this landscape. Features such as pit heaps and closely spaced mining settlements, often prominently situated on ridgelines, as well as canals and disused and active railway lines are a reminder of the rapid industrialisation of this area during the 18th and 19th centuries. In contrast to this, there are also a number of historic houses that occupy ridge top locations and form iconic landmarks within the landscape, such as Bolsover Castle and Sutton Scarsdale Hall.

The unique period of development of the Settled Coalfield Farmlands, founded on the rich mineral resources and association with the industrial revolution, lies at the heart of the Landscape Character Type's strong cultural identity and the palpable sense of mining heritage.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

The Settled Coalfield Farmlands is a densely settled landscape, with many of its towns and villages rapidly expanding during industrial expansion in the 19th century. Large scale development pressure continues today, with further growth targeted for the identified Growth Points. The demand for housing, commerce and industry on the fringes of larger towns can create visual intrusion and result in the loss of rural areas. Modern development is also affecting smaller settlements, with new residential development on the village margins, creating a new urban edge to the countryside. There is also proliferation of smaller, residential developments along arterial roads, reducing the sense of remoteness and enclosing views.

Shaping the Future Landscape

The aim should be to manage growth, ensuring development is appropriate in terms of type, scale and location and considers the visual impact of any new development. Best practice innovative architectural and planning solutions that take inspiration from local distinctiveness and character whilst utilising eco-friendly and high quality design, and planting of new trees around settlement fringes should also be encouraged, helping to integrate new development into the landscape.

In urban areas, planning guidance to resist settlement coalescence may be appropriate, ensuring strategic gaps between main towns and satellite settlements are maintained. In more rural areas, Village Design Statements may be appropriate, ensuring appropriate use of vernacular styles and building materials. As well as Village and Town Design Statements, Conservation Area Appraisals can also be important tools.

INFRASTRUCTURE

Forces for Change

There is widespread influence of transport routes, with major roads such as the M1, A42 and A38 crossing the landscape. Continued improvement to roads, including new junctions and widening, further fragments the landscape and reduces the sense of tranquillity, whilst also generating further development. Road improvements are also commonplace on more minor roads, better connecting isolated villages with larger towns and cities. In addition, new or improved roads are evident, serving new residential and commercial developments around existing settlements.

Shaping the Future Landscape

The aim should be to manage the expansion of the transport network, ensuring improvements are carefully planned and designed to provide positive environmental and landscape enhancements, whilst having regard to user and safety requirements. The aim should also be to protect the existing character of the rural road network, ensuring improvements are sympathetic to the prevailing character.

ENERGY PROVISION

Forces for Change

Given the Government's commitment to renewable energy provision, elevated areas of the Settled Coalfield Farmlands Landscape Character Type may be under pressure for wind farm development on the ridgelines. Such development can create visual landmarks, reduce the sense of remoteness and isolation, and affect the setting of historic houses where these occupy ridge top locations and form notable iconic features in the landscape.

Shaping the Future Landscape

The aim should be to protect the character of the landscape by appropriately siting and designing new wind energy installations. There is potential for strategic regional and sub regional level guidance on commercial wind energy schemes, including cumulative impact, informed by the EMRLCA and other studies. In addition, planning guidance should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development and setting out the criteria against which new applications will be assessed.

MINERALS AND WASTE

Forces for Change

The coal mining industry had a significant impact on the landscape and there continue to be ongoing pressures for opencast coal extraction. The development of bell pits, collieries, spoil tips and infrastructure has altered the character of many rural areas, and the decline of the coal industry is now leading to their replacement with new forms of industry. This typically includes large industrial estates and business parks, as experienced at Markham Vale. As with other forms of built development, this can create visual intrusion resulting in the loss of surrounding landscape features.

Shaping the Future Landscape

The aim should be to manage the redevelopment of former coal mining sites, ensuring new development is appropriate to the landscape and visual context and that heritage features are retained, providing a link with the industrial and agricultural past and a focal point for new development. Coalfield reclamation also offers significant opportunities for new recreation, creation of wildlife sites and access to sites of geodiversity interest including geological exposures.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

There is marked evidence of agricultural intensification resulting in the loss or damage of many typical landscape features, including field boundaries and remnants of semi-natural vegetation. This weakens the pattern of land use and contributes to a more homogenous landscape. Furthermore, farm buildings are being sold off for residential conversion, bringing a degree of suburbanisation to the countryside.

Energy crops, in particular Miscanthus, are being cultivated to meet renewable energy targets. These fast growing and tall crops can radically change the appearance of this open, exposed landscape. There is also a requirement for storage and processing facilities, which along with other new agricultural buildings, can reduce the sense of remoteness in rural areas and cause visual intrusion.

Shaping the Future Landscape

The aim should be to protect existing landscape features, whilst encouraging positive management of those features lost or under threat. In particular the restoration of hedgerows should be given priority, along with an increase in grassland and pasture, creating a stronger and more mixed pattern of land use.

The aim should also be to protect the distinctive open character of the landscape and consider the visual impact of changes to land use or buildings. In relation to energy crops, new structures should be located away from visually prominent locations, and close to existing settlement and infrastructure. Although the introduction of energy crops will be more difficult to manage, grant applications to Natural England or the Forestry Commission may require an assessment of landscape and visual impacts. In relation to the conversion of rural buildings, development should be of appropriate design and scale.

FORESTRY AND WOODLAND

Forces for Change

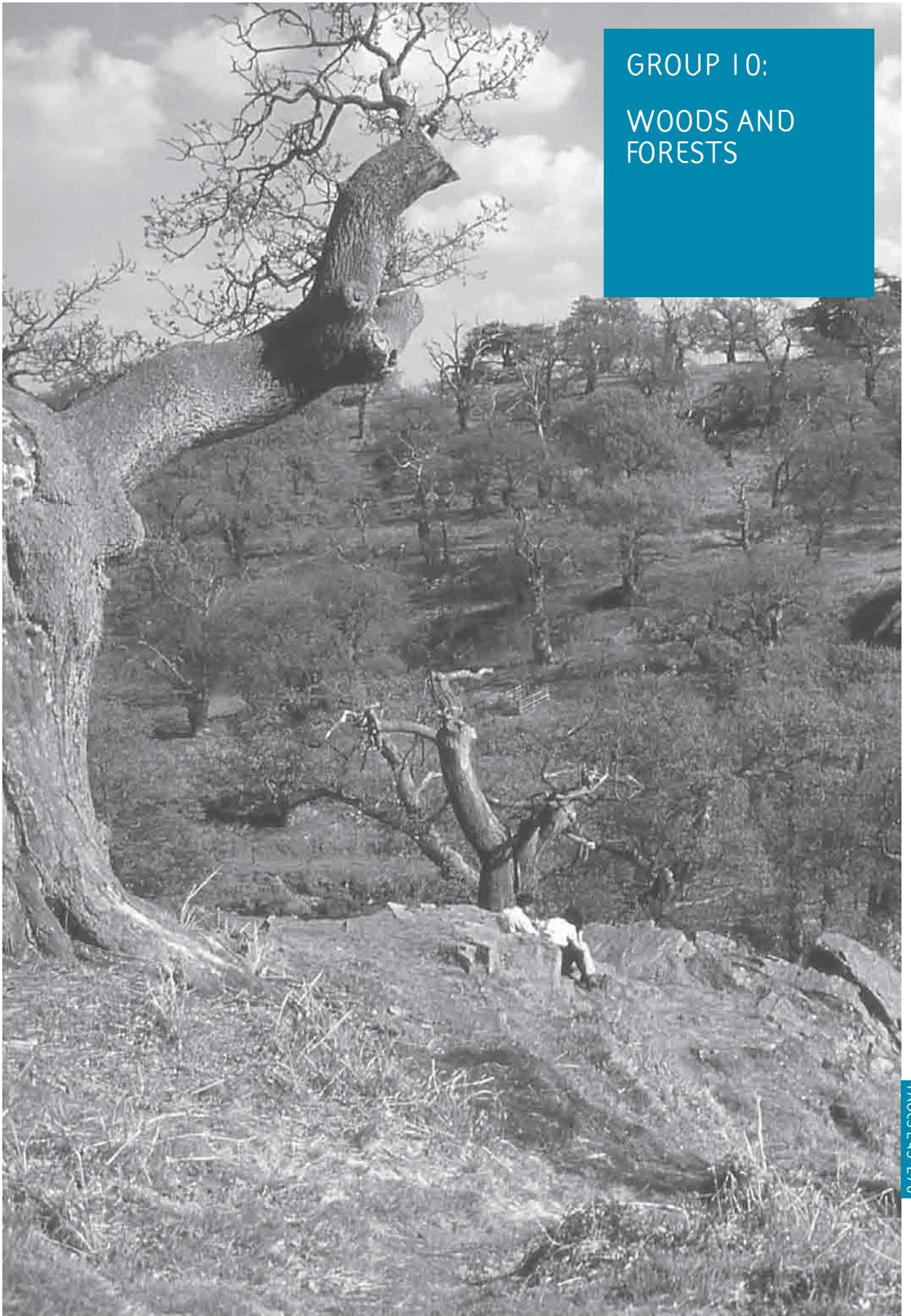
Although woodland cover is generally low over many parts of the landscape type it is nevertheless a significant component where large and medium woodlands have been established in association with large-scale reclamation programmes of former coalfields. In particular, there has been a significant increase in woodland coverage around Swadlincote, in the southern Settled Coalfield Farmlands, as a consequence of The National Forest programme. The Greenwood Community Forest in Nottinghamshire is also a notable strategic initiative that has provided the catalyst for additional woodland and tree planting. New woodland planting would therefore be appropriate, helping to increase the overall woodland coverage in the region and restore derelict and contaminated land.

Shaping the Future Landscape

The aim should be to plan new woodland around key settlements and other suitable locations, creating sites for recreation, education, and nature conservation. Consideration should also be given to the management of existing trees and woodland, encouraging new planting to ensure a varied age structure and to create woodland edge habitats, which along with the restoration of hedgerows, will help create a mixed pattern of land use and enhance biodiversity.

For those areas that lie within The National Forest, design guidance for woodland creation should be in accordance with the National Forest Strategy, 2004-14 that has been consulted on and endorsed at the national level. The aim should be to plan for new woodlands, ensuring new planting schemes take full advantage of opportunities to enhance nature conservation and recreation, whilst respecting the pattern and scale of the landscape. The National Forest Strategy highlights the potential for large scale plantations and community woodlands in this landscape type, complementing the pattern of the large scale fields . In addition, a range of other tree and woodland planting is recommended including farm woodlands in more open area. Where possible, new woodlands would be linked with existing semi-natural woodland, together with improvements to hedgerows and riparian habitats along streams and rivers.

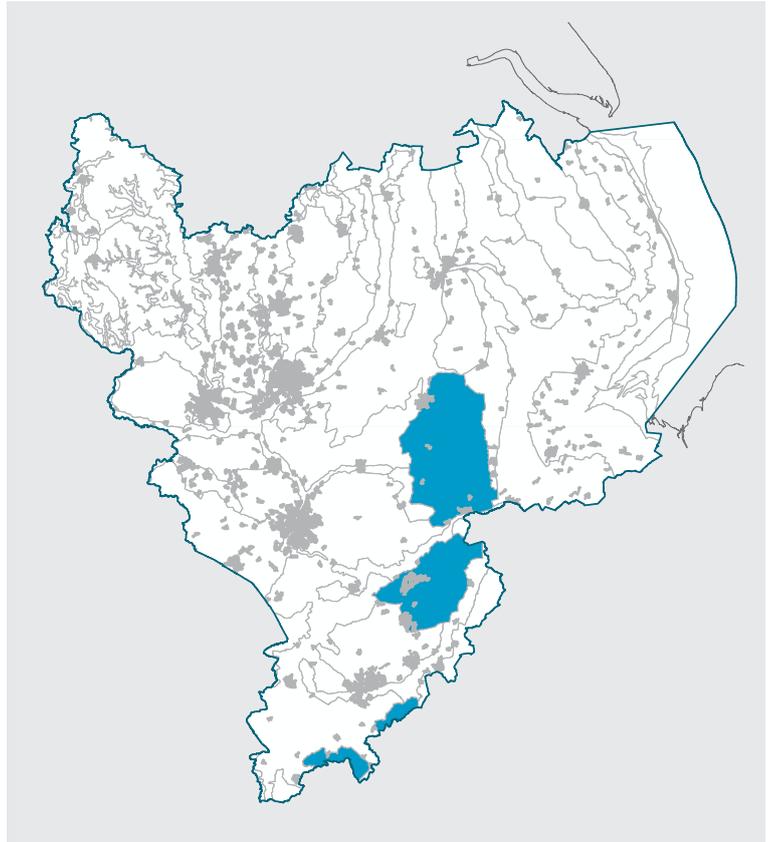
GROUP 10:
WOODS AND
FORESTS



10A: FOREST HILLS AND RIDGES



Woodland forms backdrop to farmland
(© River Nene Regional Park/M Williams)



KEY CHARACTERISTICS

- Broad, elevated plateaux and ridges with undulating landform;
- Till deposits overlie many parts of the Landscape Character Type, obscuring variations in the underlying bedrock geology and imparting a unity of character linked to the predominance of slowly permeable clay soils;
- Extensive areas of woodland of scenic and nature conservation value, including semi-natural and ancient woodlands, with many woodlands forming important remnants of former Royal Forests;
- Where drift deposits are absent, the underlying Middle Jurassic limestones which predominate, together with sandstones and mudstones, have resulted in well drained calcareous and loamy ferruginous soils, and influenced vegetation types including woodland species;
- Woodlands on elevated ground form a backdrop to farmland with predominantly medium and large arable fields, often with low and well clipped hedges and intermittent hedgerow trees;
- Many areas of mature designed parkland and estates add to the wooded character of the landscape; and
- Sparsely populated with a quiet and tranquil character across central plateaux areas and ridges with dispersed settlement pattern of distinctive villages, many constructed in local stone, mainly located in sheltered locations and along valleys.

LANDSCAPE CHARACTER

The Forest Hills and Ridges Landscape Character Type is represented in three separate areas within the East Midland Region. The first area comprises the Low Wooded Clay Ridge in the southern perimeter of Northamptonshire across which extends the adjacent areas of the Whittlewood Plateau and Salcey Forest, and Yardley Chase. The Wooded Clay Plateau of Rockingham Forest in the north eastern perimeters of Northamptonshire forms the second area. To the north, the third area comprises the Kesteven Uplands which is predominantly located in south of Lincolnshire but also extends into the eastern side of Leicestershire where it known as the Cottesmore Plateau.

Although there are variations between these three areas, they share some important common characteristics which together present a unity of character. The nature of the underlying geology is particularly significant as the Landscape Character Type is located on a succession of Middle to Upper Jurassic rocks. These range from mudstones, limestones and ferruginous sandstones but with the Lincolnshire Limestone of Great Oolite Group particular prevalent and which forms part of the great Jurassic stone belt that sweeps across the region, and England. Of particular importance, however, is the thick mantle of glacial deposits that masks the underlying geology, mainly comprising till but with smaller areas of glacial sands and gravels. The extensive areas of drift material have obscured the characteristics of the underlying rocks, and softened the landform profile to create a gently undulating plateau and ridges. The till has also influenced the soils resulting in heavy intractable and slowly permeable clays.

Historically, the characteristics of the soils deterred widespread clearance and cultivation of the land resulting in much of the area remaining as woodland and forests. Many areas of woodland, and particularly Rockingham Forest and the Whittlewood – Yardley Chase – Salcey Forest woodlands are of historic importance forming remnants of former Royal Hunting Forests. Many woodlands are ancient and former coppice woods

and contain a diverse range of species that are of considerable nature conservation interest.

Large areas of woodland cover remain a significant feature of the Forest Hills and Ridges landscape, with areas of broadleaved as well as commercial coniferous plantations extending across the elevated plateaux and ridges. Whilst not forming continuous belts across the plateaux, the blocks of woodland often coalesce visually with hedgerow trees, smaller copses and coverts and shelterbelts around farmsteads to increase the perception of an extensive woodland cover across the landscape. In some areas this imparts a tranquil and remote character and a sense of being ‘back in time’.

The wooded landscape contains large areas of agricultural land, with the farmland and woodland forming a simple harmonious combination, and wooded areas often defining a backdrop to stretches of mainly arable land enclosed by hedgerows and stone walls in some areas.

The till summit areas and ridge tops are sparsely populated, with settlements generally located on the rims of the plateaux and within the valleys, where more easily cultivated land is available. Here, there is generally a more intimate character, with valley settlements tending to be surrounded by small pasture fields, together with a dispersed pattern of farms beyond the village settlements. A more robust network of hedgerows and stone walls is also evident that contrasts with the more expansive and open areas of the wooded uplands.

Larger settlements also contribute to the character of the area, notably Stamford, with a network of historic trackways converging on the town, and similarly for other larger settlements. Within Rockingham Forest the settlement pattern is indicative of its forest history with isolated farmsteads and predominantly small villages, except for settlements such as Brigstock and King’s Cliffe. There are also a number of historic parks and houses, and associated parkland which contribute positively to the wider landscape.

PHYSICAL INFLUENCES

The areas represented by the Forest Hills and Ridges Landscape Character Type are underlain by rocks of the Jurassic Period. They range from the Lower Jurassic Lias Group Whitby Mudstone Formation to rocks from the Middle Jurassic Inferior and Great Oolite Groups. The Northampton Sand Formation, which forms part of the Inferior Oolite Group, has been extensively quarried. The Inferior Oolite, which includes the Lincolnshire Limestone, Blisworth Limestone and Clay formations, is particularly extensive within the Landscape Character Type notably within the Rockingham Plateau and the elevated parts of the Kesteven Uplands. Outcropping to the east and south east of these rocks are the younger Upper Jurassic rocks, notably the softer mudstones of the Kellaways and Oxford Clay Formations and more limited areas of Cornbrash Formation. Outcrops of these mudstones are also present in the southern representation of the Landscape Character Type that extends across the Whittlewood Plateau and Salcey Forest and Yardley Chase.

Whilst the differential resistance of the succession of rocks of the underlying bedrock geology has influenced elevation and the main landform features, they have little surface expression due to the thick mantle of till that overlies much of them together with more isolated patches of glacio-fluvial sand and gravel. The underlying geology is therefore only evident at the fringes of the plateaux and ridges where these deposits thin out and rivers and streams have eroded the mantle of glacial till. Here, the harder beds of limestone and ironstone commonly form dip and scarp topography and many of the steeper scarp faces have been subjected to landslides.

The landform is generally smooth, comprising a gently undulating plateau or low ridges. The underlying rocks have been moulded by rivers and streams to form valleys, with a more pronounced slope profile and undulating landform on the rim of the plateaux and ridges. However, where water action has not been an influencing factor or limited to minor streams and brooks, the landscape retains a plateau like appearance.

The geological diversity for the landscape type is strong with outcrops of Lincolnshire Limestone that have been worked for aggregate and building stone. There are also quarries in the Northampton Sand Formation. Many of the working and abandoned quarries are designated as RIGS/Local Geological Sites. The Ketton Cement quarry is located within this type and displays a complete sequence through the Middle Jurassic rocks of the East Midlands, and is one of the best non-coastal geological sequences exposed in England. In view of the range of geological and geomorphological features, it is important that practices are in place for their care, maintenance and management, and the promotion of their educational and interpretational interest.

Where watercourses have cut through the mantle of till, narrow bands of alluvium extend along the valley bottoms although a number are devoid of alluvium indicating that material is carried further downstream before deposition.

Soils throughout the Landscape Character Type are characteristically stony with a wide range of pebbles and rock fragments. Typical soil types comprise slowly permeable calcareous clayey soils and slowly permeable, seasonally waterlogged, clayey and fine loamy over clayey soils. Where limestones are exposed beyond the till mantle, and in the valleys, areas of shallow, well drained, brashy calcareous clayey soils are present.



Forest Hills and Ridges (© Natural England)

CULTURAL INFLUENCES

The pattern of large tracts of woodland interspersed with farmland that extends across many parts of the Forest Hills and Ridges Landscape Character Type is consequence of the widespread deposits of till and associated heavy wet soils that render these areas less favourable for cultivation. In the Neolithic and Bronze Ages, clearance of land for cultivation is likely to have focused on the valleys and lighter soils rather than the more intractable clays. Much of the land within this type, particularly on the more elevated parts of the plateaux therefore remained as woodland. Roman influence is evident by the presence of principal roads that cross these plateaux and ridges, utilising lower lying gaps in the terrain, as well as evidence of settlements. The iron ore resources within the Rockingham Forest area were also exploited by the Romans, building on the mining that commenced in the Iron Age, notably in the Weldon area.

Following the Roman period, Saxon settlements tended to be sited around the periphery of the central woodlands that were controlled by royal or former royal manors. This ancient pattern of settlement persists to the present day as can be observed in the central forested area of Rockingham Forest, which remains sparsely settled.

The most significant phase in the evolution of the Forest Hills and Ridges Landscape Character Type occurred after the Norman Conquest in the 13th century when the large areas of woodland that still covered the ridges and upland plateaux were appropriated as Royal Hunting Forests to provide a source of fuel and building material, as well as hunting grounds. This appropriation ensured that many areas avoided the intensive clearance and drainage that was to occur in the adjacent lowlands.

The existing pattern of woodlands that extend across Yardley Chase, Salcey Forest, and Whittlewood, and Rockingham Forest in the north east of Northamptonshire are a tangible reminder of this earlier period when the extensive areas of woodland and forests were the domain of the King and his favoured subjects. Further north, within the Kesteven Uplands there is a more tenuous link to the presence of a Royal Forest. However, the many areas of woodland that are present are indicative of a more extensive cover that once extended across the upland plateau particularly on the high and poorer drained land.

Clearances over time, often medieval assarts, created a patchwork landscape of woodland and open field cultivation surrounding nucleated villages, as well as extensive areas of waste and common, and isolated farmsteads cut out of the woodlands. After the medieval period, the area of forest continued to decline as a result of further enclosure for agricultural use, the greatest clearances following the removal of the legal status of the Royal Forests and the effects of the Parliamentary Enclosure Acts. Despite these significant losses, extensive areas of ancient and replanted woodland remain and are a strong and unifying characteristic of the Landscape Character Type.



Forest Hills and Ridges (© Natural England)

Throughout the Landscape Character Type, areas of woodland are generally separated by large fields, mainly in arable use, which tend to have low hedges and intermittent trees. The increase of arable cultivation in recent decades has been mirrored by hedgerow removal and field amalgamation, which has resulted in a number of large fields being created. In the valleys, more intimate areas exist where better maintained hedgerows and dry stone walls and hedges enclose improved pastures.

Building stone varies across the landscape indicating the local and varied distribution of rock types that underlie the till and outcrop in the valleys. Ironstone is more prevalent in villages in the areas forming the western representations of the type whilst limestone occurs to the east.

AESTHETIC AND PERCEPTUAL QUALITIES

The Forest Hills and Ridges comprise a harmonious and peaceful rural landscape with large areas of ancient as well as more recently planted woodlands, enclosing a pattern of farmland, parkland and estates, and small stone-built villages. Although there are extensive areas of productive and mainly arable farmland interspersed with numerous farms and small villages, the landscape retains a remote character in many areas. Where longer distance views are possible from unwooded and more elevated areas within the undulating landform, a sense of exposure and openness prevails, with the containing framework of the strong form of the wooded horizons creating a large scale yet simple rural landscape. Elsewhere, where woodland and tree cover is more extensive, the apparent scale of the landscape is reduced with the vegetation cover combining to impart a more intimate character and human scale. Hedgerows and trees are also important textural elements and link with the woodlands to create green networks between areas of woodland and a perception that the landscape is even more wooded than it actually is.

At the broader scale, colours and textures are generally simple, particularly where arable farming occupies much of the undulating landscape contained within large areas of woodland. At a more local scale, the changing cropping regimes and the trees and woodlands add textural elements and colours that change with the seasons. The autumn colours of many woodlands are a particularly striking feature of the landscape.

Associations with Royal Hunting Forests are strong within this Landscape Character Type and add to the landscape's appeal. This is strengthened by the nature conservation value of the woodlands within the landscape, particularly the important stands of ancient woodland.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

The Forest Hills and Ridges has distinctive small, nucleated settlements and inappropriate residential development can be particularly damaging, eroding the architectural and historic character, creating visual intrusion, and creating a new urban edge to the countryside. However, significant levels of growth are targeted for some parts of the landscape type, notably Corby and its wider setting that lies within the MKSM Growth area.

Shaping the Future Landscape

The aim should be to protect the rural character of the landscape and limit the visual impact of any new development by ensuring new development is appropriate in terms of design and scale. Specific mechanisms include Design Statements for those villages and market towns most prone to infill development and the larger scale expansion of settlements lying within the Growth Points. The use of best practice innovative architectural and planning solutions that take inspiration from local distinctiveness and character should be promoted whilst utilising eco-friendly and high quality design. As well as Village and Town Design Statements, Conservation Area Appraisals can also be important tools.



Forest Hills and Ridges (© Natural England)

INFRASTRUCTURE

Forces for Change

The Forest Hills and Ridges is characterised by a number of redundant airfields. These are a potential threat to the tranquillity of the landscape, both in terms of falling into disrepair and being redeveloped for new housing or employment uses. The network of green lanes, comprising tracks connecting farms and villages to the market towns within the area, are also a feature of the landscape; however, the grass verges associated with the network of enclosure roads are under threat.

Shaping the Future Landscape

The aim should be to manage redundant airfields, ensuring they offer opportunities for positive landscape enhancement. Any redevelopment should follow the footprint of existing structures as closely as possible, limiting visual intrusion and the loss of surrounding landscape features. In addition, certain features of the airfield should be retained, providing a link with the wartime past and a focal point for new settlement.

The aim should be to manage the historic road network, ensuring their continued contribution to biodiversity and recreational network. The priority should be to maintain existing grassland and re-create species diversity on neglected verges.

ENERGY PROVISION

Forces for Change

Given the Government's commitment to renewable energy provision, elevated areas of the Forest Hills and Ridges Landscape Character Type may be under pressure for wind farm development. Such development can create visual landmarks and reduce the sense of remoteness, isolation and tranquillity that is evident within parts of this wooded landscape.

Shaping the Future Landscape

The aim should be to protect the character of the landscape by appropriately siting and designing new wind energy schemes. There is potential for strategic regional and sub regional level guidance on commercial wind energy schemes, including cumulative impact, informed by the EMRLCA and other studies. In addition, planning guidance should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development and setting out the criteria against which new applications will be assessed.

MINERALS AND WASTE

Forces for Change

The hard stone and mineral resources of the Forest Hills and Ridges have been quarried for centuries, and there are currently a number of quarries within this landscape. The quarries are generally well hidden within the landform but can be visually intrusive from some viewpoints. The pressure for new and expansion of existing quarries, is likely to create further visual intrusion, while reducing the sense of tranquillity and remoteness. In addition there are a number of redundant quarries that have not been restored or have been inappropriately restored, with little regard for the surrounding landscape context.

Shaping the Future Landscape

The aim should be to manage mineral extraction, ensuring activity is located away from visually prominent locations. Planning guidance for the siting and design of quarries should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development and setting out proposals for after-use including management that ensures that their geodiversity access potential is fully exploited. The aim should also be to plan for the enhancement of redundant quarries that have not yet been restored, ensuring such sites provide opportunities for landscape and biodiversity enhancements, the protection and interpretation of sites of geodiversity interest, and recreation.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

Agricultural intensification has led to the hedgerow removal and decline, significantly changing the field pattern of the landscape. Locally, stone walls have also been removed or are in need of repair. Other features under threat include areas of grassland and meadows along river valleys, with conversion of permanent pasture to improved grassland for silage and grass leys, resulting in a more uniform and homogenous landscape. Areas of estate parkland are also a feature of this landscape, contributing to the variety of land-use and land-cover. However, not all of the parkland is well managed and areas of pasture and woodland have been lost to agricultural improvement.

Shaping the Future Landscape

The aim should be to protect existing rural landscape features, whilst encouraging positive management of those features lost or under threat. The restoration of hedgerows and stone walls should be given priority to help strengthen the existing field pattern. Where possible, the predominantly pastoral land use should be retained, limiting the impact of agricultural intensification and discouraging the conversion of permanent pasture for silage and grass leys. As discussed in relation to 'Minerals and Waste', such proposals may be appropriate as part of quarry restoration and enhancement.

The aim should also be to manage parkland landscapes, ensuring their reinstatement and sustained contribution to landscape character and diversity. Restoration plans may be necessary to establish management objectives and guide future projects and proposals.

FORESTRY AND WOODLAND

Forces for Change

Woodland forms a significant component of this Landscape Character Type, and new woodland planting would be generally appropriate, accentuating the wooded appearance of landscape, linking existing habitats, screening development and contributing to the overall woodland coverage in the region. Woodland management is generally good; however, some woodlands are even aged or have been planted with non-native species.

Shaping the Future Landscape

The aim should therefore be to plan for new woodlands, ensuring new planting schemes take full advantage of opportunities to enhance nature conservation and recreation, whilst providing links with existing ancient/semi-natural woodland. However, it is important to retain the Landscape Character Type's traditional land use mix and avoid loss or damage to areas of parkland, grassland and meadow.

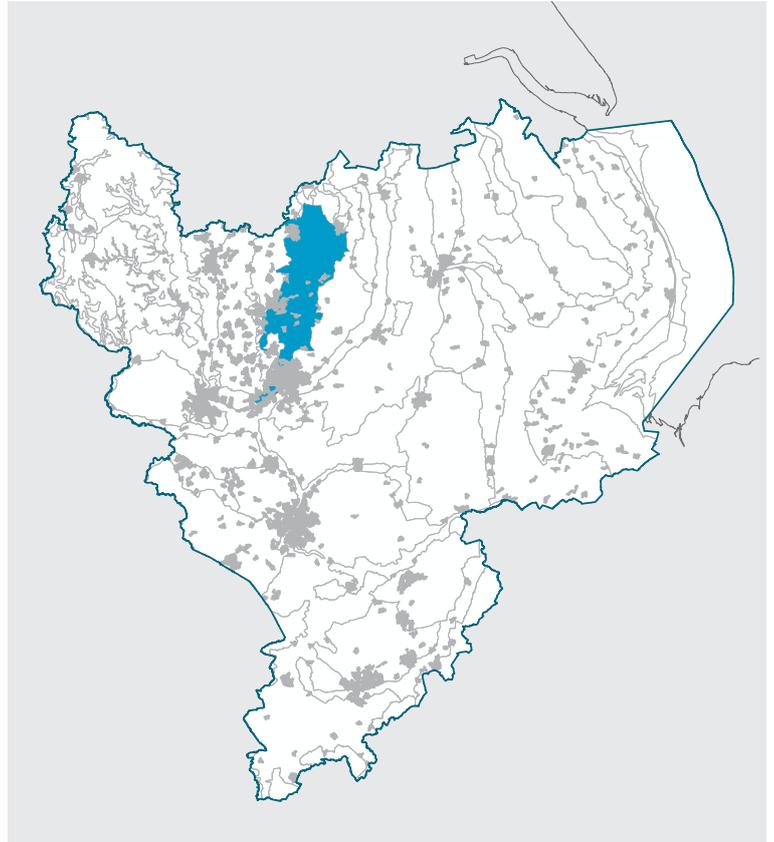
Consideration should also be given to the management of existing trees and woodland. Existing woodlands are typically mixed plantations, and the opportunity exists to enhance biodiversity value and age structure through conversion to broadleaved woodland and creation of woodland edge habitats.

Such proposals should be undertaken in collaboration with the Forestry Commission and local landowners, and financial support may be available through the English Woodland Grant Scheme.

10B: SANDSTONE FORESTS AND HEATHS



Coniferous woodland, enclosing tracts of farmland
(© Nottinghamshire County Council)



KEY CHARACTERISTICS

- Undulating landform of low rounded hills on sandstone geology with numerous dry valleys;
- Mosaic of broadleaved, mixed and coniferous woodlands creating wooded skylines and enclosing extensive tracts of open arable farmland with large scale geometric fields and neatly trimmed and often treeless hedges;
- Free draining acid soils supporting many areas of unenclosed heathland vegetation often associated with woodland areas and also on marginal land and roadsides;
- Narrow river corridors with pasture, flood meadows and woodland, contrast with adjacent open arable farmland;
- Numerous large estates and associated parkland;
- Frequent evidence of remains of coal mining industry with mining settlements and associated spoil heaps, disused mines and old railway lines, and areas associated with reclaimed pit heaps; and
- Sandstone quarries for aggregates are locally conspicuous.

LANDSCAPE CHARACTER

The Sandstone Forests and Heaths Landscape Character Type is confined to one area within the East Midlands Region. Extending from the north of Nottingham to the northern boundary of the region the type principally coincides with the outcrop of the Triassic Sherwood Sandstone Group and Permian Lenton Sandstone Formation, which forms a belt of low undulating hills and the heartland of Sherwood Forest.

While there is a diversity of land uses within this Landscape Character Type, the overarching characterising features comprise the strong pattern of coniferous and broadleaved woodlands and areas of heathland that extend across an undulating landscape of low hills and dry valleys. The wooded horizons frame extensive areas of open arable farmland with large rectilinear fields contained by low hawthorn hedges. The absence of field trees and low hedgerows emphasises the undulating landform and the folds of the succession of dry valleys.

The underlying Permo-Triassic sandstones have resulted in free draining and acidic soils that have influenced the vegetation cover, particularly the many areas of heathland vegetation, and also the predominance of improved arable land principally confined to cereal production and root crops. While livestock rearing is also evident, this is mainly confined to pigs and poultry so there is limited pasture. The exception to this occurs in areas associated with the large estates and associated country houses set in parkland, notably in an area referred to as 'The Dukeries'. Here there are areas of permanent pasture, as well as improved pasture associated with estate villages linked to the estates, set with a wider framework of woodland.

The landscape is rich in industrial heritage. The influence of the coal mining industry is much in evidence across this Landscape Character Type as the Coal Measures that underlie the Permo-Triassic sandstones resulted in the working of the coal within the concealed coalfield area. The legacy of this industrial landscape is marked by former

mining settlements with their conspicuous spoil heaps and settling lagoons, disused pit gear and railway lines that served the coal mines. Reclaimed sites are also a characteristic feature. Quarrying of the Sherwood Sandstone for aggregate is also evident in some parts of the landscape.

PHYSICAL INFLUENCES

Within the East Midlands region the Landscape Character Type is principally underlain by the Permian Lenton Sandstone Formation and Triassic Sherwood Sandstone Group which dip gently to the east. The Lenton Sandstone comprises the bright red fine-grained sandstone above which is the much thicker and more extensive outcrop of the brownish red coarse grained Nottingham Castle Sandstone Formation, which also contains quartzite pebbles. These sandstones are represented as a line of low, broadly south west to north east aligned undulating hills. With the highly permeable nature of the bedrock there is a general absence of surface drainage and many dry valleys. The few rivers that do flow across the Sandstone Forest and Heaths are just below the water table and flow in alluvial corridors with occasional wetland marshy flats and narrow man-made lakes. These water features contrast with the predominantly dry hills and rising slopes.



Sandstone Forests and Heaths (© Neil Pike, Natural England)

The Carboniferous Pennine Coal Measures that lie below the Sherwood Sandstone form the concealed coalfield and were extensively mined during the late 19th and 20th centuries. As a consequence of the gently dipping strata, the mines were progressively deeper to the east. The legacy of this mineral resource has had a major effect on the Landscape Character Type.

In addition to the coal resource, the Sherwood Sandstone is an important source of aggregates for use in the construction industry. While some quarries are now dormant, there are a number of active quarries notably to the north east of Nottingham, for example at Burntstump and Rufford, and a further concentration of sites in areas such as Carlton Forest, Styrrup and Serlby. The sandstone aggregate quarries are of geodiversity interest, and together with a range of geomorphological features, form an important resource that would benefit from practices for their care, maintenance and management, and the promotion of their educational and interpretational interest.

Geological conditions have also resulted in this Landscape Character Type forming an important source of water supply for the wider sub region as the porous sandstones overlie an impervious Permian Marl and form the base of the major aquifer of the East Midlands.

The underlying sandstones have given rise to well drained and acidic sandy soils with a low fertility. The characteristics of this soil type have suited the establishment of extensive woodlands and areas of heathland although many areas of have since been cleared and the soils improved to support arable farmland.

On the lower slopes of the dry valleys the accumulation of head material arising from solifluction processes has resulted in the development of better drained coarse loamy soils which favour arable production.

On the eastern side of the Sandstone Forests and Heaths Landscape Character Type intermittent outcrops of Mercia Mudstone occur which has resulted in the development of localised surface and ground water gley soils derived from the underlying clays. These heavier soils have slightly stoney clay loam surface horizons, and the heavy texture and the soil wetness imposes a limit on cropping types and regimes.



Sandstone Forests and Heaths (© Natural England)

CULTURAL INFLUENCES

From the earliest periods of occupation of the Landscape Character Type the inherent constraints imposed by the porosity and fragility of the soils is likely to have been a major influence on settlement and land use. There is limited evidence of occupation of the area during most of the late prehistoric period and much of the area would have remained as woodland and may have been an important timber resource for adjacent communities as well as for grazing, involving limited clearances.

During the Roman period, archaeological evidence indicates that much of the woodland was cleared, although substantial stands may have remained in the south of the type, based on the density of crop mark evidence. In the post Roman period, however, the area became largely depopulated allowing

much of the woodland to regenerate. In 1086 the area is recorded as wood pasture, and utilised by the larger settlements on the margins of the Landscape Character Type. It can therefore be surmised that at this stage much of the area was covered in extensive stands of oak and birch woodland of varying densities, together with tracts of sandland heath, particularly on the areas cleared by the Romans. The Norman kings soon brought the area under Forest Law and by 1300 there was little land that was not linked to the economies of royal or monastic estates or of local manors and communities. Throughout the 12th, 13th and 14th centuries, documentary references indicate a process of continual piecemeal enclosure, assarting and illegal encroachment by both individuals and whole communities. The woodland was gradually eroded and by the 16th century only the core woods of the surviving royal estates and parks remained.

While common pasture meant there was no need to enclose for animal husbandry, the area nevertheless shared in the trend towards farm engrossment and piecemeal enclosures. Formal enclosures arrived in the 18th and 19th centuries and much of the permanent arable land was enclosed, primarily to allow for improved crop rotation and closer stock management.

The dissolution of the monasteries was a particularly significant stage in the evolution of the landscape as the transfer of the monastic sites and estates was limited to a few powerful and influential families. This led to the establishment of a number of great country houses from the 18th century and their associated parklands and estates notably in areas in the central part of the type referred to as the 'The Dukeries'. This chain of parks continues to have a significant effect on the landscape character. Many of the landowners became progressive agriculturalists and embraced the agrarian revolution investing in the development of agriculture on the sandlands, experimenting with fertilisers and crop rotations and establishing new woodlands and plantations. Together with the enclosure of arable land, the physical framework of this landscape that was established by the end of the 18th and early 19th century has been largely maintained to the present.

The coal mining industry has also had a major effect on the Sandstone Forests and Heaths. The sinking of deep mines in the late 19th and early 20th centuries resulted in the establishment of colliery sites, pit heads, spoil heaps and the adjacent mining settlements, many absorbing smaller existing settlements. The network of railways and roads added further to the transformation of a once simple wooded, heathy and agrarian landscape to one with an industrial focus. Although the coal mining industry has declined, the legacy of this period is still evident. Derelict workings or new landscaped areas are emerging where land has been reclaimed and restored to agricultural and amenity uses; subsidence features can also be seen.

The porous and nutrient low sandy soils of the Sandstone Forests and Heaths have been a constraint to viable agricultural production. Within the last century there have been periods of decline, such as in the early 20th century, when marginal farms were abandoned and once again the sandy soils reverted to a heathland and secondary scrub vegetation. However, modern farming methods have facilitated improvement and the soil is now able to support extensive areas of arable land, with intensive farming particularly evident in the north of the Landscape Character Type.

The settlement pattern in many areas is a dispersed pattern of small villages and farmsteads serving the agricultural area; in the north, small country estates and their parklands are integral to this pattern. The sequence of larger estates that make up 'The Dukeries' form a particularly distinctive area in the central part of the type, such as Clumber Park and Worksop Manor, often with the associated estate villages that were established to serve the estate. Many of the former farming settlements were expanded into colliery settlements although the closure of the mines has led to the subsequent decline of some. A positive and proactive response to the regeneration of a former mining settlement is being achieved near Ollerton, at the Sherwood Energy Village.

AESTHETIC AND PERCEPTUAL QUALITIES

The perception of this Landscape Character Type is influenced by the recurring pattern of the undulating or rolling landform of the low hills across which are strongly defined horizons of large areas of woodland, frequently coniferous, interspersed with bracken and heather heathland. Within this framework of woodlands and heathland, the wide expanses of open and generally treeless arable farmland evoke the sense of a simple and empty landscape, particularly where settlement is sparse and confined to occasional farmsteads.

In contrast to this simple and seemingly unchanging palette of landscape elements, elsewhere the legacy of the mining industry and the influences of adjacent larger urban areas are indicative of a more dynamic and emerging landscape. The restoration of derelict colliery land together with the regeneration of former mining settlements is introducing an evolving landscape structure and character as new urban and amenity land uses are integrated within areas of young woodland plantations and emerging heathlands.



Sandstone Forests and Heathlands (© Natural England)

Areas of extensive parkland and estates introduce a further dimension to the perception of the landscape. The extensive areas of planned woodland and ornamental parkland associated with the many estates present a managed and imposing scale to the landscape, as well as an historical association, contrasting with the 'wilder' character of the naturalised areas of heathland.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

The Sandstone Forests and Heathlands is a sparsely settled landscape, with main urban areas located on the fringes of the Landscape Character Type. The majority of urban growth is located in the larger towns of Nottingham, Mansfield and Worksop. However, villages within easy reach of major towns are particularly vulnerable to development, eroding the architectural and historic character and creating visual intrusion.

Shaping the Future Landscape

The aim should be to manage growth of settlements, ensuring development is appropriate in terms of design and scale, and to protect the pattern of a sparsely settled landscape, ensuring new development is located close to existing buildings and structures. Furthermore, urban growth should be planned alongside proposals to create new woodland, using tree planting to screen and contain settlement edges. Best practice innovative architectural and planning solutions that take inspiration from local distinctiveness and character whilst utilising eco-friendly and high quality design, should also be encouraged, helping to integrate new development into the landscape.

INFRASTRUCTURE

Forces for Change

There is widespread influence of transport routes, with major roads such the A614 and A617 crossing the landscape. Continued improvement to roads to accommodate the growing numbers of tourists (see ‘Tourism and Leisure’) and commuters, including new junctions, straightening and widening, further fragments the landscape and reduces the sense of tranquillity.

Shaping the Future Landscape

The aim should be to manage the expansion of the transport network, ensuring improvements are carefully planned and designed to provide positive environmental and landscape enhancements, whilst having regard to user and safety requirements.

MINERALS AND WASTE

Forces for Change

The Sandstone Forests and Heaths Landscape Character Type is mined for coal and quarried for Sherwood Sandstone. The coal mining industry has had a significant impact on the landscape. The development of collieries, spoil tips and infrastructure has altered the character of many rural areas, and the decline of the coal industry is now leading to their replacement with new forms of industry. In contrast, the sandstone quarries are generally well hidden within the landform and wooded character. The high demand for aggregates, and therefore pressure for new and expansion of existing quarries, is likely to create further visual intrusion, while reducing the sense of tranquillity and remoteness. However, it will offer increased educational and access potential to sites of geodiversity interest including geological exposures.

Shaping the Future Landscape

The aim should be to manage the redevelopment of former coal mining sites, ensuring new development is appropriate to the landscape and visual context and that heritage features are retained, providing a link with the industrial past and a focal point for new settlement. Sherwood Energy Village, near New Ollerton, offers an exemplar of coalfield regeneration schemes, addressing social, environmental and economic needs in the local area. Indeed, coalfield reclamation also offers significant opportunities for the creation of new recreation and wildlife sites. The aim should be to plan for new landscapes, ensuring restoration proposals include appropriate amounts and type of open space.

The aim should also be to manage quarrying, ensuring activity is located away from visually prominent locations. Planning guidance for the siting and design of quarries should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development and setting out proposals for after-use. As discussed in relation to ‘Agriculture, Land Management and Fishing’ the creation of new grassland and heathland habitats is likely to be most appropriate.



Sandstone Forests and Heaths (© Sherwood Forest Trust)

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

Agricultural intensification and improvement, accompanied by a move towards arable production, has resulted in the loss or damage of many typical landscape features. This includes traditional patterns of field boundaries and areas of pasture and heathland, contributing to a more uniform and homogenous landscape. Indeed, the loss of meadows is particularly evident along river corridors, which would have traditionally defined the river channels and distinguished them from the surrounding farmland, while the loss of heathland is also evident in and around woodlands, reinforcing the woodland edge.

Areas of estate parkland are a feature of this landscape, contributing to the variety of land uses and contrasting with the 'wilder' character of areas of woodland and heathland. However, not all of the parkland is well managed and areas of pasture and woodland have been lost to increasing intensification.

Energy crops are being cultivated to meet renewable energy targets, in particular Short Rotation Coppice (SRC). These fast growing and tall crops can radically change the appearance of the landscape. There is also a requirement for storage and processing facilities, which along with other types of development previously described, can result in the loss of landscape features and increase visual intrusion.

Shaping the Future Landscape

The aim should be to protect existing rural landscape features, whilst encouraging positive management of those features lost or under threat. The restoration of hedgerows should given priority, strengthening the hedged field pattern, along with an increase in pasture and heathland, creating a more mixed pattern of land use. The restoration of grassland/heathland habitat is also a priority, accentuating existing features and providing a

diverse range of habitats. Such proposals may be appropriate as part of quarry restoration and enhancement.

The aim should be to manage parkland landscapes, ensuring their reinstatement and sustained contribution to landscape character and diversity. Restoration plans may be necessary to establish management objectives and guide future projects and proposals. However, care should be taken to ensure that enhancements do not damage heritage features, such as ornamental historic parkland. The aim should also be to manage proposals for energy crops and consider the impact on views and pattern of land use. The rolling landform and wooded character of the Sandstone Forests and Heaths means operations are likely to be more readily accommodated, but should be avoided in more remote, open areas of this landscape.

FORESTRY AND WOODLAND

Forces for Change

The Sandstone Forests and Heaths is one of the most wooded parts of the region. New woodland planting would therefore be appropriate, strengthening the well wooded appearance, integrating new development into the landscape and as part of future reclamation of colliery sites.

Shaping the Future Landscape

The aim should be to plan new woodland around key settlements and other suitable locations, creating sites for recreation, education, and nature conservation. Consideration should also be given to the management of existing trees and woodland. Existing woodlands are typically mixed plantations, and the opportunity exists to enhance biodiversity value through conversion to broadleaved woodland and creation of woodland edge habitats, which along with the restoration of heathlands, will help to enhance visual and biodiversity interest.

Such proposals should be undertaken in collaboration with the Forestry Commission and local landowners, and financial support may be available through the English Woodland Grant Scheme.

TOURISM AND LEISURE

Forces for Change

Sherwood Forest is a popular tourist destination, attracting over one million visitors a year. Walking, cycling and horse-riding are the most popular activities and as such many sites experience considerable visitor pressure. Furthermore, a number of tourist facilities have been provided, including a visitor centre at Sherwood Forest Country Park and numerous car parks, picnic spots, and surfaced paths. Such infrastructure can result in the damage, loss and fragmentation of natural features, while visitor centres can cause visual intrusion.

There are also campaigns for Sherwood Forest to be developed as a Regional Park. Such a designation may increase visitor pressure and therefore potential damage to the natural environment. However, it may also benefit nature conservation, landscape and access assets, offering protection and a mechanism for securing additional resources.

Shaping the Future Landscape

The aim should be to protect the distinctive character of the landscape and consider the visual and environmental impact of any new or extended visitor facilities. The management of public access should be encouraged, helping to conserve the natural environment whilst enhancing Sherwood Forest as a recreational and educational resource.

The aim should also be to continue to promote Sherwood Forest as a Regional Park, whilst ensuring appropriate management strategies are in place in the interim.

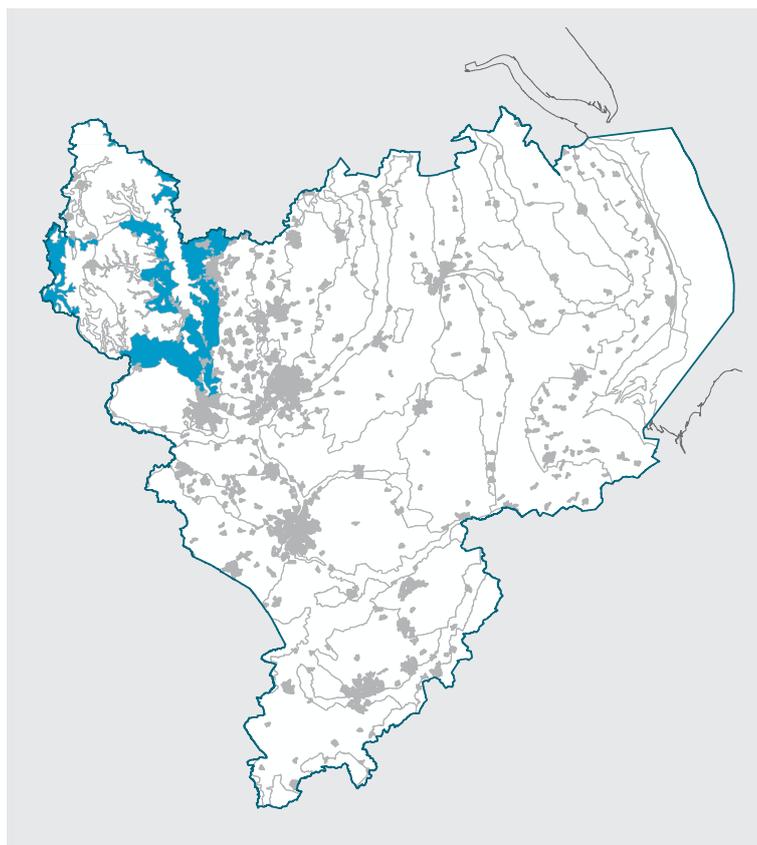


Sandstone Forests and Heaths (© Natural England)

10C: WOODED SLOPES AND VALLEYS



Dense woodland along valley slopes
(© Derbyshire County Council)



KEY CHARACTERISTICS

- Moderate to steeply sloping and undulating valley slopes rising up to moorland and gritstone edges;
- Low lying and gently undulating landform in valley bottoms with network of streams often defined by dense streamline vegetation;
- Areas of semi-improved and acid grasslands together with widespread bracken and localised gorse, particularly on the thinner soils on steeper slopes;
- Densely scattered small to medium sized irregular blocks of ancient and secondary woodlands, mostly on steeper slopes and along streams;
- Permanent pasture for sheep and dairy cattle, particularly in valley bottoms, with small to medium sized, mainly irregular shaped fields enclosed by mixed species hedgerows and hedgerow trees, with dry-stone walls often enclosing a more regular field pattern;
- Network of winding, often sunken lanes particularly on steeper slopes, with rocky banks;
- Dispersed pattern of farmsteads in local stone with stone slate roofs, and with localised clusters of farmsteads; and
- Localised parkland with distinctive large historic halls and houses set in parkland, generally located on the undulating landform of the valley slopes, and associated estate villages and farmsteads and large blocks of plantation woodland within the estates.

LANDSCAPE CHARACTER

The Wooded Slopes and Valleys Landscape Character Type is represented across areas within Derbyshire and the Peak District National Park. Within Derbyshire the Landscape Character Type is principally represented within the Derbyshire Peak Fringe and Lower Derwent Valley area where there is mosaic of landscapes, including, at the county/district scale, wooded slopes and valleys, wooded farmlands and settled farmlands. As well as occurring in close proximity to the wooded slopes and valleys, tree cover and woodlands are often a notable component of these latter landscapes. A contiguous area of wooded hills and valleys within the Nottinghamshire, Derbyshire and Yorkshire Coalfield on the northern perimeter of the Study Area is also included within this Regional Landscape Character Type.

Within the National Park Wooded Slopes and Valleys occur within a number of areas. These are principally located on the South West Peak within the valleys that rise above Macclesfield and Leek. A further notable area is found within the upper reaches of the Derwent Valley where wooded slopes and valleys are a frequent component of the landscape, particularly on the eastern edge of the main valley slopes extending down to the Derwent Valley. The valley farmlands and estatelands that occur within the wider Derwent Valley area are also included within the Regional Landscape Character Type as areas of woodland and trees are notable features that contribute to a wooded character and sense of enclosure.

Further areas of Wooded Slopes and Valleys also occur in the Yorkshire Fringe of the National Park within the series of valleys that drain eastwards towards the Sheffield conurbation and further north to Holmfirth. A small area is also located within the Dove Valley where it forms an extension of the Landscape Character Type that occurs to the east within Derbyshire and beyond the designated area.

The character of the Wooded Slopes and Valleys Landscape Character Type is principally derived from the mosaic of woodlands and trees that form a continuous feature throughout the landscape. These are interspersed with more open areas within the valley bottoms and also across the moderate to steeply sloping valley landscapes. The sense of enclosure that the woodland and tree cover imparts is enhanced by the contrast with the open and treeless character of the moorland summits and the gritstone edges that are often a prominent feature at the tops of the steeper slopes. Areas of small to medium size areas of ancient and secondary woodlands, many of irregular outline, are widespread. They are particularly associated with the agriculturally poor soils on the steeper valley slopes as well as the heavier soils at the base of valleys. Watercourses in the valley bottoms are often defined by lines of trees and linear woodlands. Together, these woodlands provide important wildlife habitats and linkages to more isolated areas of uncultivated land as well as to the hedgerow network within the pastoral farmed landscape principally located in the valley bottoms.

Bracken and smaller areas of gorse are present on the heathy acid grassland that occurs on the thin, well drained soils overlying the sandstone, with bracken particularly widespread on the steeper slopes, as well as along field boundaries and on road verges.



Wooded Slopes and Valley near Grindleford
(© Paul Clarke, Natural England)

The lower valley slopes and valley bottoms have a pastoral and settled character. The pattern of smaller woodlands is enriched with a network of species rich hedgerows and hedgerow trees that enclose medium to small mainly irregular shaped fields. In more elevated areas, however, and particularly within the Peak District, the hedgerows give way to a prevalence of gritstone walls.

A pattern of dispersed farmsteads constructed in local stone with stone slate roofs, and with localised clusters of farmsteads is evident across this Landscape Character Type. Within more limited areas, notably the Derwent Valley, there are some large estates with associated historic houses and associated parkland. The extensive areas of ornamental and estate woodlands and plantations, and pattern of estate villages and pastoral farmland contribute to the character of the valley where these are present.

PHYSICAL INFLUENCES

The Landscape Character Type is principally located on the Carboniferous Millstone Grit Group, which outcrops as a horseshoe shape surrounding the broad structural dome of the Peak Limestone Group (Carboniferous Limestone Supergroup) that forms the prominent limestone plateau of the White Peak at the core of this upland area. The sediments were deposited in a coastal environment with large river deltas building out into the shallow marine waters and forming massive coarse sandstones, known locally as gritstone, interbedded with siltstones, and mudstones. In common with the Peak Limestone, the Millstone Grit sandstones are resistant to erosion and form the upland gritstone moors area of the Dark Peak, as in the Kinder Plateau. They also form distinctive escarpments or ‘gritstone edges’.

A series of rivers have cut through the Millstone Grit to exploit the softer mudstones and created broad valleys as in the Derwent Valley to the east of the White Peak, and steeper and more incised valleys within the south western part of the Peak District National Park – the South West Peak. The sequence of mudstones and interbedded

sandstones and gritstones has resulted in a dissected and undulating landform and, in places, a more continuous sweeping landform with low ridges associated with the classic dip and scarp topography, with the sandstone beds locally producing extensive dip slopes.

The Pennine Coal Measures outcrop to the east of the Millstone Grit, with the Lower Coal Measures predominantly consisting of massive sandstones and mudstones with limited coal seams. These occur on the north western edge of the Coalfield area with a broadly undulating topography dissected by moderately steep valleys and form part of the Wooded Slopes and Valleys Landscape Character Type.

This landscape offers much in the way of geodiversity interest resources, for both geomorphological features and rock outcrops. The wide range of natural exposures and former quarries also provide a rich resource. In view of the range of geodiversity and geomorphological features, it is important that practices are in place for their care, maintenance and management, and the promotion of their educational and interpretational interest.

Soils are variable and reflect the range and nature of the underlying geology and steepness of the slopes. Over the gritstone bands and on steeper slopes they mainly comprise shallow, free-draining soils that are coarse and loamy. On the lower lying slopes, or over the mudstone bands, slowly permeable and seasonally waterlogged gley soils are found. Soils are generally poor and consequently the dominant land use is permanent grassland for pasture or hay.

Small streams, springs and wet flushes are also evident at the junction of the mudstones and gritstone, while on the better drained soils over sandstone there are occasional arable fields. Many of the steep scarp faces are unstable and landslides are extensive in places.

Ash and oak are the principal tree species together with coniferous woodland plantations on estate land. There is often a good woodland ground flora reflecting continuous woodland cover for hundreds

of years. Frequent fields of semi-improved and acid grasslands, with bracken and gorse are present on the steeper valley slopes together with fields of improved grassland on more easily accessible areas. On the poorer soils, there are remnants of acid grassland with patches of bracken. Within the area of Wooded Slopes and Valleys that extends into the coalfield area there are densely scattered patches of ancient, semi-natural woodland interspersed with the mixed farming areas, as well as patches of 'heathy' vegetation on areas of uncultivated land on the freer draining sandy soils that have developed from the underlying sandstone.

CULTURAL INFLUENCES

Very early colonisation took place within the valleys on the fringes of the White Peak and Dark Peak upland areas as there is evidence of prehistoric settlement within a number of caves that have been discovered in the Derwent Valley. The Romans were active in the area and the Roman road, Ryknild Street, skirts part of the eastern boundary of the Derbyshire Peak Fringe that forms the eastern extent of this Landscape Character Type.

The Wooded Slopes and Valleys have strong associations with earlier periods of industrial exploitation. The area has a long tradition of lead and iron mining and quarrying, particularly around Ashover. This, together with former quarries for building stone, has left a rich industrial heritage on the landscape. The decline of lead mining and smelting in the 19th century saw a consequent decline in the population within the upland villages. The combination of steep, often boulder strewn, slopes and poor soils meant that much of this land was never suitable for arable or intensive pastoral farming so woodland and rough grazing has dominated the landscape for centuries.

There is a predominance of small to medium sized regular and irregular shaped fields in small areas between the woodlands, and enclosed by a mixture of thorn hedges and gritstone walls. In some areas, such as above Bamford and Hathersage in the Upper Derwent Valley, larger areas of fields can be found. Many of these fields are unimproved, and potentially of medieval or early post-medieval date. On steeper slopes some of the irregular enclosures may be ancient, associated with scattered individual medieval farmsteads rather than the villages with a more communal form of agriculture.

There is evidence that the woodlands in many of the valleys were important for high quality timber and as coppiced woodland for white coal (kiln dried wood), used for lead smelting from the 16th to 18th centuries.

Where estates are owned and managed within the Wooded Slopes and Valleys Landscape Character Type, such as Chatsworth and Haddon in the Derwent Valley, their influence is extensive. More sophisticated or 'advanced' agricultural practices led to more intensively managed permanent pasture within a regular pattern of medium to large scale fields. Contained within a mosaic of coniferous woodlands and parkland, this forms a strong pattern. Views are framed by the sloping landform and interlocking blocks of woodland, with the imposing large houses and halls, and associated nucleated 'estate' villages and outlying farmsteads complementing this pattern of features within the landscape.



Wooded Slopes and Valley, Hathersage (© Paul Clarke, Natural England)

AESTHETIC AND PERCEPTUAL INFLUENCES

The Wooded Slopes and Valleys, together with the associated valley farmlands and estatelands, is a generally peaceful landscape. In contrast to the open and exposed gritstone moors that rise above these Wooded Slopes and Valleys, where they occur in the Pennine Uplands, these areas possess a more intimate scale and softer appearance. The many areas of woodland strengthen the sense of enclosure and limit longer distance views. Within the more open areas that are present within the mosaic of woodlands, the perception of the contrasting sense of openness and connection with distant horizons and summit areas, is enhanced.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

Residential development is affecting historic settlement pattern, including ribbon development and conversion and enlargement of existing properties. This damages the historic settlement pattern, resulting in the loss of surrounding landscape features and creation of visual intrusion. The effect of urbanisation is also evident within parts of this landscape, particularly on the western edge of Chesterfield and around Matlock and Darley Dale.

Shaping the Future Landscape

The aim should be to protect the distinctive character of settlements and consider the visual impact of any new development. Best practice innovative architectural and planning solutions should be encouraged that take inspiration from local distinctiveness, whilst utilising eco-friendly and high quality design, along with planting of new trees around settlement fringes to help integrate new development into the landscape.

ENERGY PROVISION

Forces for Change

There is a strong history of using water as an energy source within the Derwent Valley and there is potential to reconnect to this cultural heritage with new forms of hydroelectric power generation. This opportunity has been generally welcomed in the Peak District Landscape Strategy. Harnessing of this source of renewable energy will support of the government's wider agenda for energy provision from renewable sources.

Shaping the Future Landscape

The aim should be to ensure that the siting and design of hydroelectric power installations and their associated infrastructure is carefully considered in relation to the landscape character and scale of the valley.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

There has been a general decline in the extent of unimproved grassland and the quality of semi-natural habitats along the river corridors. There has also been agricultural intensification, leading to a decline of field boundaries, and evidence of farm diversification, with holdings being used for hobby farming and 'horsiculture'.

Shaping the Future Landscape

The aim should be to protect existing rural landscape features, whilst encouraging positive management of those features lost or under threat. The restoration of hedgerows and stone walls should be given priority, strengthening the field pattern, along with an increase in pasture, creating a more mixed pattern of land use.

FORESTRY AND WOODLAND

Forces for Change

The landscape is generally well wooded, with small to medium broadleaved woodlands on the steeper, uncultivated slopes of the valley. This creates a strong sense of enclosure and intimate character. However, increasing woodland cover has resulted in the loss of views and species-rich grassland. Woodland management is also sporadic in places, resulting in scrub encroachment.

Shaping the Future Landscape

The aim should be to manage and where appropriate restore a mosaic of habitats and opening up key views by managing existing woodland, limiting the invasion of scrub and removing invasive species where they are encroaching on species-rich grassland. Where it would not encroach on important views or other semi-natural habitats, establishment of new, particularly native, woodland should be encouraged to link existing woodland blocks, and appropriate tree planting may form part of schemes to integrate development into the landscape.

Consideration should also be given to the creation of complementary habitats adjacent to woodland, enhancing physical links between existing woodland blocks. However, care should be taken not to encroach on semi-natural habitats within the valley floor or on fringes of the adjoining moorland summits which are very sparsely wooded. Account should also be given to the management of boundary trees, particularly veteran trees, associated with mixed species hedgerows.

TOURISM AND LEISURE

Forces for Change

The Wooded Slopes and Valleys is a popular tourist destination, both as a gateway to the Peak District and as an attractive and intimate landscape in its own right, and as such, this area experiences significant visitor pressure. Indeed, the valleys are popular with walkers and day-trippers, which can reduce the sense of tranquillity, and there are a number of car parks along the valley floor, which can result in the loss and fragmentation of natural features.

Shaping the Future Landscape

The aim should be to protect the distinctive character of the landscape and consider the visual and environmental impact of any new or extended visitor infrastructure. The management of public access should be encouraged, helping to conserve the natural environment whilst enhancing visitor experience.

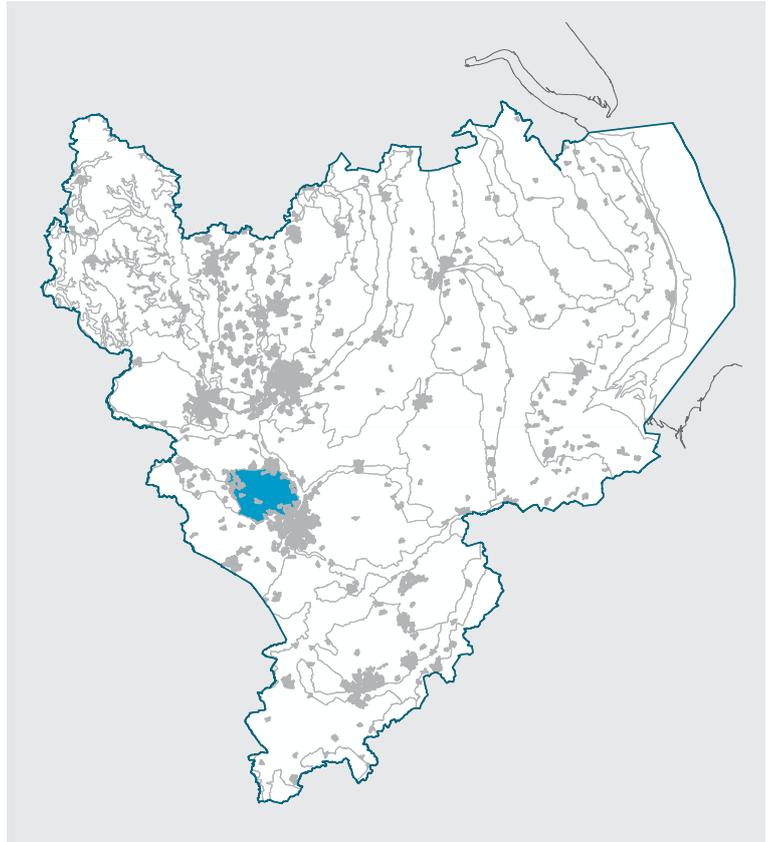


Wooded Slopes and Valleys, Hathersage
(© Paul Clarke, Natural England)

10D: FORESTED ANCIENT HILLS



*Distinctive mixture of woodland and farmland
(© Leicestershire County Council)*



KEY CHARACTERISTICS

- Upland landscape of ancient Pre-Cambrian igneous rocks, rising out of lowland farmland;
- Distinctive rocky outcrops and knolls on elevated slopes and summits with extensive open areas;
- Clear, fast flowing streams on upper slopes that support an abundance of wildlife;
- High proportion of woodland cover;
- Land use is a distinctive mixture of woodlands, predominantly pastoral farmland, heathland, and parkland;
- Strongly rectilinear patterns of parliamentary enclosure fields and roads bounded by a mix of dry stone walls and hedges;
- Remnant historic parks and associated houses;
- Large reservoirs and pools are common landscape features; and
- Occasional villages and scattered farmsteads within the upland area, often constructed in the dark local stone, in contrast to larger villages and settlements located mainly at the edge of the elevated ground.

LANDSCAPE CHARACTER

The Forested Ancient Hills Landscape Character Type is confined to a single area within the East Midlands Region comprising the Charnwood Forest area. The uniqueness of this Landscape Character Type is attributable to the underlying Pre-Cambrian geology which only occurs in this part of the region and has given rise to a distinctive area of elevated land with exposures of rugged rocky outcrops that rise above the surrounding lowland plain.

Overall, the Forested Ancient Hills has a well wooded character derived from the many areas of mixed deciduous and coniferous woodlands that are present, including ancient and wet woodlands. Within this pattern of woodlands, a mosaic of land uses extends across this elevated and dissected Landscape Character Type, comprising more open upland areas with heathland, mixed arable and pasture farmland, and remnant medieval parks, which together contribute to the diversity of the area. There is a notable concentration of SSSIs within the Forested Ancient Hills which is indicative of the high biodiversity value of many parts of the area it covers. The network of hedgerows and associated hedgerow trees that extends across the predominantly pastoral farmland contributes further to the sense of a well-wooded character.

The more elevated and open areas of the Forested Ancient Hills Landscape Character Type command expansive views to the surrounding lowland plain and distant horizons. In contrast, at lower elevations views are contained by the intricate pattern of woodlands and farmland and convey a secluded and intimate character.

PHYSICAL INFLUENCES

The Forested Ancient Hills has a distinctive geological history. The underlying structure of the landscape is formed by Pre-Cambrian and Cambrian rocks which have been folded to form a series of semi-elliptical outcrops, interrupted by faulting and partially obscured by later Mercia Mudstone strata of the Triassic Period and more recently by superficial deposits (head) in the Holocene. These ancient rocks comprise a complex mixture of slates, volcanoclastic sandstones, breccias, tuffs and intrusive igneous rocks that have all been extensively quarried. The discovery in 1957 of a Charnian fossil in the ancient volcanoclastic rocks was of international importance as it provided evidence that primitive life forms existed in Precambrian period. Recent new discoveries have established Charnwood Forest as having one of the best Precambrian fossil assemblages in the world.



Beacon Hill (© Leicestershire County Council)

Charnwood Forest offers great potential for geodiversity interest with extensive natural and man made exposures. The geology is varied with many RIGS / Local Geological Sites and also many SSSIs for both geodiversity and biodiversity. The uniqueness of the landscape also offers great potential for geomorphological features. As well as the Precambrian rocks, many of the quarries also expose a spectacular unconformity with the overlying Triassic rocks and Pleistocene sediments. Relict landscapes and geomorphological features are also preserved such as the fossil Triassic tors at Budden Wood

Quarry, Mountsorrel. In view of the wide range of geodiversity and geomorphological features, it is important that practices are in place for their care, maintenance and management, and the promotion of their educational and interpretational interest.

The elevated core of the Forested Ancient Hills follows a broadly north west – south east orientated spine rising to summit areas of 278m at Bardon Hill and 245 m at Beacon Hill. The drainage pattern generally follows this north west to south east landform trend with wider and more open valley sections within areas underlain by the Mercia Mudstone in contrast to the deep gorge-like valleys where watercourses have cut through the harder Pre-Cambrian rocks.

At the heart of the Forested Ancient Hills the older rocks give rise to the thin, infertile and stony acidic soils that support a heathland vegetation but where Mercia Mudstone is present the land is more fertile. In contrast to the surrounding lowland areas, which have a predominant pattern of either urban or agricultural land cover, the Forested Ancient Hills has a more complex pattern with a mosaic of woodland, parkland, heathland and farmland. The woods are predominantly secondary. Oaks are the main deciduous tree but there are conifer woodlands and mixed plantations together with ancient woodlands, such as at Buddon and Swithland. Here, sessile oak and birch are characteristic of the thin acid soils rocks and pedunculate oak and ash are characteristic of the deeper soils on the mudstones.

Overall, the woodland cover is much greater than in the neighbouring lowland areas and is likely to increase within the western part of Charnwood Forest that is located in The National Forest. The parks are characterised by their mature oaks. Bradgate is the largest, and it is here and at Beacon Hill that the two main areas of heathland, now substantially invaded by bracken, can be found. However, there are patches elsewhere which typically include heather, bilberry and dry heathland grasses, with purple moor grass on the wetter areas.

Much of the agricultural land is divided up by a regular pattern of hawthorn hedges with oak trees together with dry stone walls but there is also the much less regular pattern and mixed hedges of ancient enclosure. Pasture is the predominant land cover but there are occasional patches of arable.

There are a number of large reservoirs within the Landscape Character Type which are an important water resource for the surrounding urban sub region. The hard rock resources have also resulted in a number of large quarries on the outer rim of the area, although the oldest of these are now partially encroached upon by scrub vegetation.



Bradgate Park near Leicester (© Leicestershire County Council)

CULTURAL INFLUENCES

There is evidence of occupation of the Forested Ancient Hills and exploitation of the natural resources since Neolithic times. The exceptionally hard stone present together with the wood from the forests provided the resources for making hand-axes and finds date from this period. The discovery of a late Bronze Age hoard (1700 – 600BC) provides further evidence of prehistoric occupation, although this is likely to have been limited to localised focal points. An Iron Age hill fort dating from 600BC to AD43 is located at Beacon Hill, one of the highest points in Charnwood Forest, and attributable to the Coritani tribe which occupied this area at the time of the Roman Invasion.

Use of the Landscape Character Type's resources continued in the Roman Period with quarrying of the local Mountsorrel granite, and also the Swithland Slate, for roofing. There is evidence of these materials in Roman remains in the local area including the Roman military outpost of Ratae Corieltauvorum, the site of which is now occupied by the city of Leicester as well as sites in the wider area extending into Nottinghamshire and Lincolnshire, where transportation of these quarried materials was facilitated by the Roman road network. The Anglo Saxons also continued to exploit these resources.

The forested character of the Landscape Character Type is formally recorded in the Domesday Book, identified as the woodland tract of Hereswode. The area remained generally uninhabited, with only one small settlement recorded at Charley. Thus, by the end of the 11th century much of the Forested Ancient Hills remained unclaimed and it was not until the 12th and 13th centuries that the land began to be cleared and settled. The surrounding villages located beyond the core of the Forest area each had a proportion of the extensive wooded area. As new villages were created, principally in the lower and more fertile valleys, each took substantial areas of land out of the Forest for agricultural use. A settlement pattern therefore began to evolve with a ring of villages surrounding the higher ground together with a smaller number of villages in the core of the Landscape Character Type.

A secluded location and cheaply available land for cultivation favoured the establishment of monastic settlements within the Landscape Character Type in the medieval period. These included Garendon Abbey and Ulverscroft Priory, established in 1133 and 1150 respectively, an Augustine Priory at Charley Hall in 1190, and Alderman's Haw in 1220. These establishments resulted in the reclamation of the higher land beyond the valley bottoms and clearance of the forest so deforestation was a notable process during this period. During this period a number of medieval hunting parks were also established around the core of the forested upland area utilising land that was too poor for agriculture but ideal for game hunting by the Lord of the manor and his guests. Examples include Groby, Bradgate,

Quorndon, Beaumanor and Bardon.

A number of larger country houses and associated parklands were established towards the end of the medieval period. The 15th century Bradgate House and Park (now Bradgate Park) is a notable example and also retains the mosaic of woodland and clearings that was typical of its earlier use as a medieval hunting forest.

From 1600 to the early 19th century there was very little change or colonisation within the Forested Ancient Hills and the area remained largely unenclosed. By this stage, however, the woodland cover that once extended across much of the Landscape Character Type was depleted and many of the hunting parks had also gone leaving large areas of moorland, heathland and pasture.

The combination of the effects of the 1829 Enclosure Act and the establishment of commercial quarrying of the granite brought significant changes to the landscape. The Enclosure Act was the final stage in the gradual piecemeal enclosure of the forest lands that had been progressing since the 16th century and a culmination of a process that has brought the most significant man made change in the evolution of this Landscape Character Type. The remaining unenclosed woodland, moorland / heathland, and open farmland was divided up into many privately owned farming units marked out with hedges or stone walls together with a rationalisation of the roads and trackways within the forested areas. According to the Enclosure Award Map of 1829, almost 11,000 acres of open moorland within Charnwood Forest were enclosed and brought into cultivation.

At various times in the past, the Precambrian rocks were worked for building stone. The expansion of quarrying in the late 18th century, and into the 19th to 20th centuries, introduced major change to the landscape, focused at sites such as Mountsorrel and Shepshed initially producing granite setts but subsequently principally for roadstone aggregate. The Soar and Wreake Navigations and Charnwood Forest Canal (now defunct) enabled the aggregates to be transported countrywide. In addition Swithland Slate was quarried commercially from

the mid 18th century when, with the introduction of gunpowder, quarries were workable to a far greater depth. Competition from roofing tiles and Welsh slate quarries forced the Swithland Slate industry into decline, eventually ceasing at the end of the 19th century. The quarrying activity has left a significant industrial heritage footprint within the area. Further 19th century landscape change associated with the effects of the industrial revolution was the construction of Swithland, Cropston, Blackbrook and Thornton Reservoirs and the introduction of railways with branch lines to serve the quarries.

From the 20th century to the present day the Forested Ancient Hills Landscape Character Type has continued to change and evolve. The progressive expansion of the settlements on the perimeter of the upland areas and consequent loss of farmland and open areas is particularly notable. There has also been a reduction in grazing of the surviving heathland areas and a change from pasture to arable farming in response to the period of agricultural subsidies as well as a reduction in hedgerows and hedgerow trees due to intensified farming practices. Infrastructure developments have also had their effect notably the construction of the M1, telecommunication masts and the more limited presence of small and localised wind turbines.



Forested Ancient Hills (© Roger Rixon)

AESTHETIC AND PERCEPTUAL QUALITIES

The elevated landform of this Landscape Character Type, with its exposed rocky outcrops and crags, and the perception of a well wooded cover provides a strong sense of place and identity that distinguishes it from the surrounding lower lying plain. Overall it is a colourful, peaceful and unified type.

The mosaic of woodland cover, interspersed with farmland, heathland and parkland, and rocky summits results in a range of experiences. Thus, an enclosed and secluded character pervades where there is a high concentration of woodland, balanced by a gentler and more pastoral experience within the rural agricultural landscape that prevails on the lower lying vales that extend through the area. In further contrast, the more elevated areas with their open summit areas and rocky crags and areas of heathland afford extensive views across the surrounding lowland landscape providing a sense of exhilaration and expansiveness, as well as remoteness.

The peacefulness of this predominantly rural landscape is sometimes broken or interrupted by infrastructure elements that serve as reminders of the pace and effects of evolving technology and progress. These comprise the M1 motorway, transmission lines along the Rothley Brook, prominent adjacent telecommunication masts and some localised wind turbines.

The ancient settlement pattern of villages that ring the upland area, the remnants of the former medieval forests and heathland, and the pattern of quarries, both active and disused, provides a tangible reminder of the historic development of the area.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

Large scale modern development is damaging landscape character, creating visual intrusion, resulting in the loss of surrounding landscape features and increasing the risk of coalescence of outlying villages. This trend looks set to continue, with 17,800 homes to be built in and around Leicester as part of the 'Three Cities Growth Point'. Proposals also include sustainable urban extensions at Coalville and Loughborough. More minor but suburbanising influences through farm building conversions and enclosure of large gardens by railings are also damaging character.

Shaping the Future Landscape

The aim should be to protect the character of the landscape and limit the visual impact of any new development by locating it on previously developed land or close to existing settlement. Mechanisms include Design Statements for those villages and towns most prone to infill development and expansion, the use of best practice innovative architectural ideas and planning solutions that minimise impact on local landscape and townscape character and tree and woodland planting around settlement fringes to help integrate new development into the landscape.

MINERALS AND WASTE

Forces for Change

The hard stone of the Forested Ancient Hills has been quarried for centuries, and there are currently a number of quarries within this landscape. These are generally well hidden within the landform but can be visually intrusive from some viewpoints. There is a high demand for aggregates, and Charnwood Forest is a major source of hard rock aggregate for central and southern England. Therefore, pressure for new and expanded quarries, is likely to create further visual intrusion, while reducing the sense of tranquillity and remoteness.

Shaping the Future Landscape

The aim should be to manage mineral extraction, ensuring activity is located away from visually prominent locations. Planning guidance for the design of quarries should be produced at the county and/or district level where necessary, establishing the most appropriate sites for development and setting out proposals for after-use. Restoration plans for quarries also need to ensure that the geodiversity resource is protected and managed, including access to sites and areas for their valuable educational and interpretational interest.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

There is marked evidence of agricultural and forestry intensification resulting in the loss or damage of many typical landscape features, including pasture, heathland and field boundaries. This weakens patterns of land use and contributes to a more homogenous landscape.

Proposals for the ‘6Cs Growth Point’ include a major sub-regional Green Infrastructure (GI) Strategy, which seeks to enhance the network of green spaces and natural elements in and around the three cities of Leicester, Nottingham and Derby. The Consultation Draft of the 6Cs GI Strategy recognises Charnwood Forest as being a key element of sub-regional strategy.

Shaping the Future Landscape

The aim should be to protect existing landscape features, whilst encouraging positive management of those features lost or under threat, creating a stronger and more mixed pattern of land use. The restoration of hedgerows including new hedgerow oaks and stone walls should be given priority particularly around urban areas, helping to integrate new development into the landscape. Furthermore, grazing should be reintroduced where appropriate, increasing the extent and quality of heathland.

The aim should also be to contribute to the green infrastructure vision, managing change to ensure the most valuable areas are protected and that new green infrastructure increases the occurrence of traditional land-uses, such as woodland and heathland.

FORESTRY AND WOODLAND

Forces for Change

Woodland forms a significant component of this landscape, and new woodland planting would be generally appropriate, making a contribution to increasing the overall woodland coverage in the region and integrating new development into the landscape. Indeed, much of this landscape is within The National Forest, which encourages new planting and appropriate management.

Shaping the Future Landscape

The aim should therefore be to plan for new woodlands, ensuring new planting schemes take full advantage of opportunities to enhance nature conservation and recreation. However, care should be taken to ensure new woodland does not damage the area’s traditional land use mix. Consideration should also be given to the management of existing trees and woodland. Existing woodlands are typically mixed plantations, and the opportunity exists to enhance biodiversity value through conversion to broadleaved woodland and creation of woodland edge habitats, which along with the restoration of heathlands, will help to enhance visual and biodiversity interest.

Such proposals should be undertaken in collaboration with the Forestry Commission and local landowners, and financial support may be available through the English Woodland Grant Scheme.

For those areas in the Forested Ancient Hills that lie within The National Forest, design guidance for woodland creation should be in accordance with the National Forest Strategy, 2004-14 that has been consulted on and endorsed at the national level. Much of the area includes the ‘Wooded Parkland’ and ‘Enclosed Farmlands’ landscape types identified in the National Forest Strategy, together with a smaller area of Coalfield Village Farmlands. With this mosaic of landscape types at the more local scale, a range of woodland planting options is appropriate. In general smaller scale mixed broadleaved woodlands are considered appropriate in the Wooded Parkland that respect the historic landscape character. Elsewhere, larger scale woodlands are promoted with a range of estate farmland and farm woodlands as well as areas of commercial plantations, together with small-scale planting in remnant pastoral landscapes around villages and linked to estates.

TOURISM AND LEISURE

Forces for Change

Charnwood Forest is a popular leisure destination, containing a number of country parks and reservoirs. Some of these sites experience considerable visitor pressure, resulting in a loss of tranquillity, and many sites include infrastructure such as car parks, picnic sites, and viewpoints, which can result in the damage, loss and fragmentation of natural features.

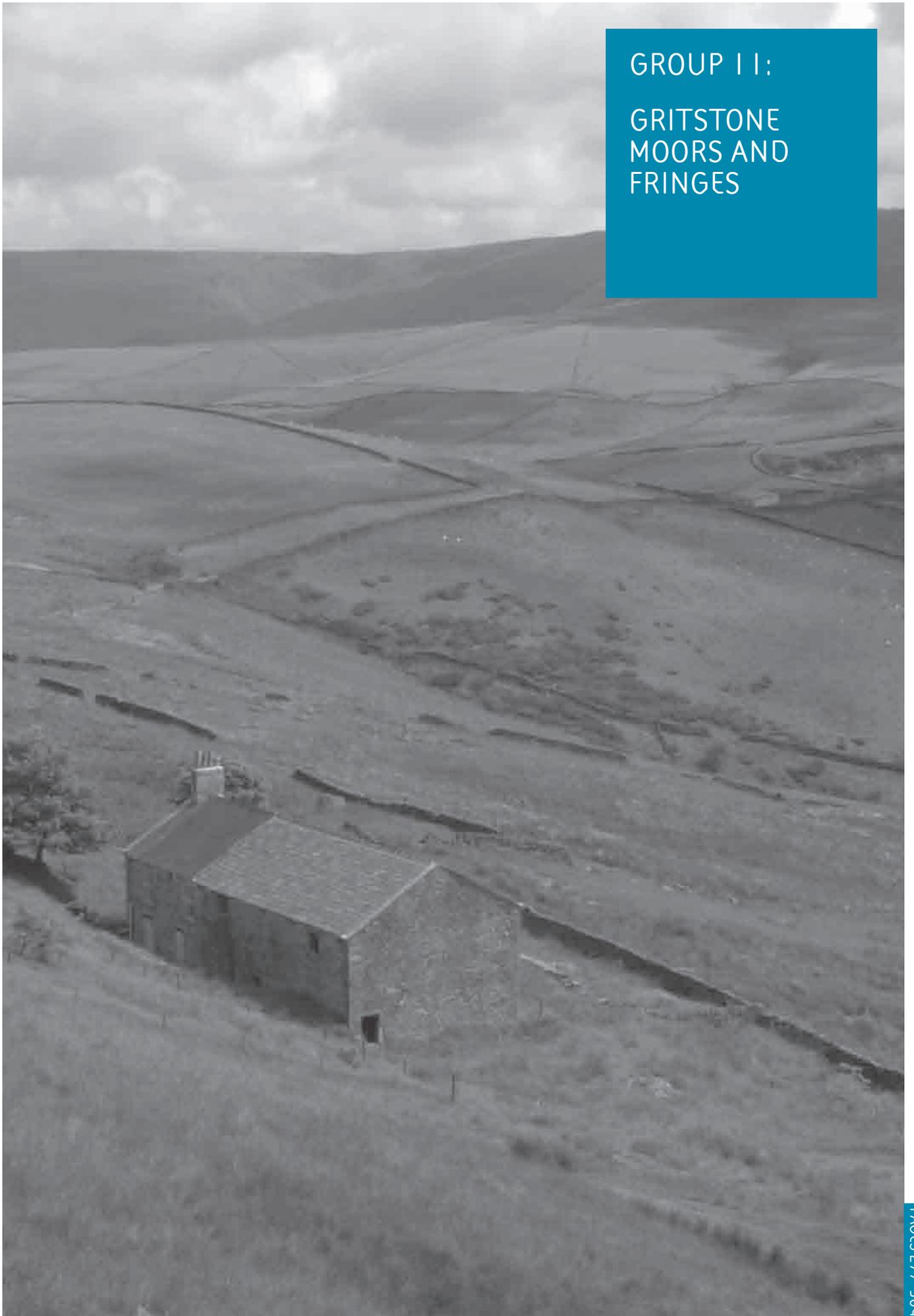
There are plans for Charnwood Forest to be developed as a Regional Park. Such a designation may increase visitor pressure and therefore potential damage to the natural environment. However, it would also benefit nature conservation, landscape and access and a mechanism for securing additional resources.

Shaping the Future Landscape

The aim should be to protect the distinctive character of the landscape and consider the visual and environmental impact of any new or extended visitor facilities. The management of public access should be encouraged, helping to conserve the natural environment whilst enhancing Charnwood Forest as a recreational and educational resource. This should be undertaken in coordination with the sub-regional green infrastructure strategy, using less vulnerable assets to accommodate leisure activities and encouraging sustainable access.

The aim should be to continue to promote Charnwood Forest as a Regional Park that recognises its special character, particularly in respect of its international geological significance, whilst ensuring appropriate management strategies are in place in the interim.

GROUP 11:
GRITSTONE
MOORS AND
FRINGES

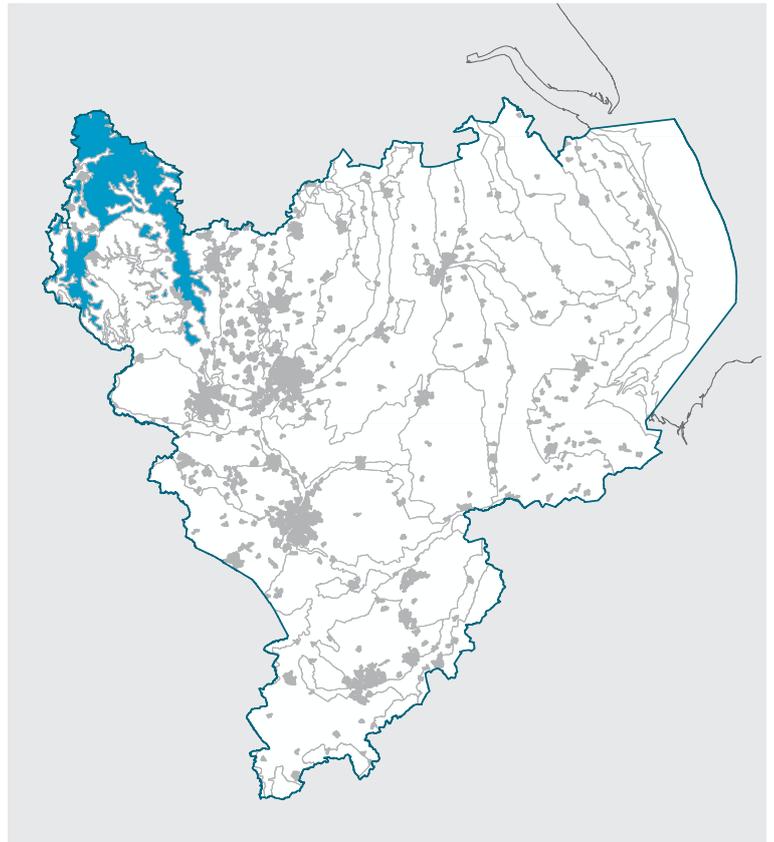


Isolated farm building within enclosure (© Derbyshire County Council)

11A:

OPEN MOORS AND
INBYE LAND

Empty and remote open moorland
(© Derbyshire County Council/M Williams)



KEY CHARACTERISTICS

- Dramatic moorland plateaux with gritstone outcrops and edges, drained by steep sided cloughs and surrounded by moorland slopes;
- Uninterrupted panoramic views across undulating upland moors create empty and remote character;
- Moorlands drained by deep cloughs, often containing rough grazing with relict areas of oak-birch woodland;
- Thin, unproductive soils as well as extensive tracts of peat moorland give rise to treeless landscape;
- Unsettled character across open moors and only sparse settlement on the fringes of moorlands. Limited evidence of modern human intervention adds significantly to wild character;
- Enigmatic evidence of prehistoric ritual activity;
- Inbye enclosures around dispersed gritstone farmsteads and associated small tree groups and cultivated moorland fringes on lower slopes;
- Durable and robust architecture displayed in dispersed farms, agricultural buildings and occasional settlements on moorland fringes; use of local gritstone, with typical blackened appearance, contributes significantly to visual unity of landscape and unique sense of place; and
- Evidence of recreational pursuits and enjoyment of the landscape.

LANDSCAPE CHARACTER

The dark and enigmatic plateaux of rolling terrain and steep slopes, punctuated by edges, rocky tors, landslides and boulder fields are some of the most remote and distinctive areas in the East Midlands.

The elevation, thin soils and areas of peat moorland give rise to a treeless landscape characterised by heather moor and peat bog with only limited evidence of settlement, generally in the form of isolated old farms surrounded by inbye land. The extent of semi natural habitat cover, managed by extensive sheep grazing and occasional burning for game, adds significantly to the wild character of the landscape and is highly valued for its biodiversity interest.

The uplands are drained by steep sided cloughs, often cloaked in rough pastures and occasional oakwoods. These provide shelter in an otherwise open and exposed upland area. The cloughs and lower moorland slopes are also more widely farmed and settled, with evidence of piecemeal and parliamentary enclosures.

The remote moors contain little evidence of human intervention. Some of the more visible and enigmatic features are associated with ritual monuments from the later prehistoric, standing stones and cairns perhaps marking the limits of territories of communities living in the neighbouring lowland valleys.

The landscape has long been important for recreation. The tranquil and remote upland landscape is popular walking country, with wide areas of open access land allowing ramblers to roam across the moors. Crags and cliffs attract climbers, and shooting is also a popular pastime and important for maintaining heather moorland habitats.

PHYSICAL INFLUENCES

The underlying geology of coarse sandstones of the Carboniferous Millstone Grit Group has had a profound influence on the character of the landscape, in the shape of the land, the natural vegetation and patterns of settlement, architecture and land use. Various rock types characterise the Millstone Grit Group, although all were formed through rivers and deltas depositing fine silts, sands and pebbles as mudflats and sandbanks. These materials were then compressed over several million years to form alternating bands of hard 'gritstone' and softer mudstone beds.

The hard and slowly weathered sandstone and gritstone and softer mudstones together give rise to the distinctive topography of elevated plateaux of broadly rolling terrain and steep slopes. Sandstone and gritstone outcrops are particularly distinctive where they punctuate the rolling moorland tops and create rocky tors and vertical cliff faces, known as edges. These rocky tors and edges add significantly to the wild character of the open moorland and increase the sense of exposure. The steep scarp faces of many of the sandstones are unstable and have been subjected to landslides.

The most elevated areas of the landscape are the plateaux tops. The highest is Kinder Scout, rising to 636m AOD. However, the remainder all generally lie above 500m AOD, forming the most elevated areas in the region.



Grindsbrook Clough Dark Peak (© Jim Horsfall, Natural England)

This landscape type offers a high potential for access to areas of geodiversity interest with many natural and man-made exposures. Good geomorphological features are also well represented. In view of the range of geodiversity and geomorphological features, it is important that practices are in place for their care, maintenance and management, and the promotion of their educational and interpretational interest.

The soils of the plateaux are impoverished, and the combination of elevation and high rainfall has created extensive areas covered in blanket peat, which has developed slowly over the last 10,000 years. These form distinctive rounded domes in many places although this smooth and simple landscape is dissected by gully erosion and sinuous drainage channels, known locally as 'groughs'. Landcover is typically semi-natural blanket bog communities over deep peat and wet heather moor habitats on lower moorland slopes. Natural erosion of the peat is often evident, exacerbated by air pollution, heavy grazing, fire and drainage, resulting in bare peat and peat hags. Where gritstones are exposed as crags, tors and boulder slopes, the exposed rock supports lichen flora, and some form breeding sites for peregrine and raven. The poor quality of the soils has limited agricultural improvement and ensured that large, continuous tracts of semi natural habitat remain. The significance of these vast areas of landscape has been recognised through large areas of open moor being designated as a Special Protection Area and Special Area of Conservation.

Watercourses draining the peat often flow into steep sided cloughs which eventually form more significant rivers such as the Derwent. Cloughs are characteristically deeply incised, albeit relatively broad in some places and contain fast flowing juvenile streams. Some have been dammed to form small reservoirs. At the junction of the gritstone and mudstone on clough sides, flushes and springs emerge, which support particularly rich botanic communities. The soils of the valley sides are acid-loamy upland soils with a wet peaty surface and well suited to upland rough pasture. Some isolated semi-improved pasture fields are also notable on the margins of the moors, although even here the semi-natural heathy and rushy vegetation is evident on sloping ground and as isolated patches in some fields.

Tree cover is not a common characteristic of the Open Moors and Inbye Land Landscape Character Type, natural regeneration being limited by the open grazing, wet soils and exposure. However, some sheltered cloughs and moorland slopes support sessile oak woods, which often contain birch and a holly or hazel understorey and rich ground flora. Few are ancient in origin, and some coniferous plantations are evident, often extending up onto the moorland slopes from broader lowland valleys. Small tree groups associated with isolated farmsteads are also a defining characteristic in this otherwise open, treeless landscape.



Open Moors and Inbye Land, Stanage Edge
(© P Clarke, Natural England)

CULTURAL INFLUENCES

Whilst the open moors retain a remote and empty character today, there is evidence of considerable activity in prehistoric times, including extensive finds of stone tools from Mesolithic hunter-gatherers discovered when the peat has become disturbed or eroded. It is unlikely that later prehistoric farming communities found the hostile upland environment suitable for widespread settlement, although it is suggested that the area provided upland grazing for communities living in the more sheltered valleys or on the adjacent limestone plateaux to the south. Whilst some evidence does indicate early settlement and farming, such as Bronze Age field systems on Bamford Moor, much evidence of prehistoric communities is in the form of ritual monuments. Hilltop burial cairns and stone circles perhaps mark the limits of territories of communities living in the neighbouring valleys.

The current character of the landscape of open grazing and occasional enclosure and inbye land has emerged over the last 100 years. Whilst wide areas on the open moors remain unenclosed, occasional drystone walls on the moorland slopes and cloughs define ownership boundaries. These are locally irregular and regular in form indicating different periods and types of enclosure; typically parliamentary enclosures are evident on the more sheltered fringes of the moors and identifiable as medium to large regular fields. Smaller and more irregular fields are evidence of much older enclosure or as a result of private landowners. On the moors, enclosures are generally expansive although small scale enclosures are associated with the inbye of isolated farmsteads, many of which have medieval origins.

In later centuries, up until coal was widely accessible, the landscape was an important source of peat fuel. Peat cutting was a communal right throughout the medieval period until land fell under private ownership. It often occurred on the moorland tops close to settlements, and the remnants of this activity can still sometimes be seen in the form of tracks and sled runs.

The open moors is an unsettled landscape with few built features beyond occasional grouse butts, shooting cabins and isolated robustly built gritstone farm buildings, stock pens and field barns. Many properties on the moors were located to take advantage of natural shelter and are often surrounded by trees. Many farms on the lower lying moorland slopes date to the period of parliamentary enclosure.

Whilst of marginal value to agriculture, recreational pursuits have long been enjoyed across the open moors. In the medieval period, the landscape formed part of royal hunting grounds, and since the 19th century, some of the upland moors have been managed as heather moorland by large private estates to provide habitat for grouse. The periodic burning and regular grazing has produced much of the characteristic land cover of the high moors, and distinctive strips of alternating colour and texture differentiate the old and new growth. More modern recreational land uses are also evident with gliding clubs located on some prominent hills. Walking and rock climbing are also very popular activities. Developments during the 20th century in this landscape have had a profound influence on these pursuits; Kinder Scout Plateau is celebrated as the destination for the mass trespass in April 1932 that had far reaching consequences for public access provision, including the Countryside and Rights of Way Act (2000) that now legislates for a limited right to roam across wide areas of the open moors.

AESTHETIC AND PERCEPTUAL QUALITIES

The open moors are the most elevated and remote areas in the East Midlands, noted for their desolate and timeless character and expansive views across open, treeless country. The sense of exposure and wildness is further enhanced by only sporadic modern intrusions, harsh climate and widespread semi-natural habitat.

The vast tracts of uniform land cover create a great sense of visual unity in the landscape, further enhanced by the dark gritstones, exposed on dramatic cliffs and rocky tors, and used in the construction of drystone walls and occasional farm buildings.

Whilst the landscape's grandeur and identity is directly linked to its scale and simplicity, often to be observed in sweeping panoramas from vantage points on exposed hilltops, significant local variation can be observed. Indeed, seasonal changes in the heather foliage and acid grasslands and flushes provide significant seasonal interest; in the summer, white cotton grass and purple heather dominate, giving way to more subdued hues in autumn.



Open Moors and Inbye Land, Hathersage
(© Paul Clarke, Natural England)

In contrast to the open moors, sheltered and extensively grazed cloughs, irregular intakes around farmsteads and more regular enclosures on the fringes of the moor, represent less hostile environments and transition to the more densely settled and farmed lowlands.

Occasional roads and tracks cross the moors. Whilst surfaced roads represent a modern intrusion in the otherwise semi-natural moorland landscape, they often follow ancient packhorse tracks and Roman routes through the hills. Travelling along these routes is often highly evocative, particularly on the highest moorland plateaux.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

The Open Moors are unsettled, with very limited scope for accommodating residential or commercial development. By contrast, limited settlement is evident on the fringes of the moors landscape. In these fringe locations, housing demand is affecting the architectural and historic character of villages and is beginning to encroach on the pastures and woodlands that define the edges of the moors, and provide a transition between the upland and lowland landscapes.

Shaping the Future Landscape

The aim should be to protect the distinctive character of the open moorland landscape. Built development in these areas should be resisted. Towards the fringes of the moors where existing settlement is characteristic, features such as stone walls and limited tree planting should be used to integrate new development into the landscape. The planning and design of any new development should be sensitive to local landscape and settlement character and respect the local vernacular style and building materials.

INFRASTRUCTURE

Forces for Change

Transport infrastructure is a limited feature of the Open Moors and Inbye land, and most of the moorland is only accessible by foot. However, there remain a number of old track-ways across the moors that would have traditionally linked farms, areas of grazing and surrounding settlements. Today these are commonly used as recreational routes. There is also evidence of new access roads to assist land management. These can create visually prominent detractors and reduce the sense of remoteness

Shaping the Future Landscape

The aim should be to ensure that any new transport infrastructure is restricted to access tracks away from the moorland areas, ensuring appropriate siting and use of materials..



Open Moors and Inbye Land, Stanage (© P Clarke, Natural England)

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

Grazing is important for the vegetation structure and overall ecology of the moors. However, changes in agricultural practices have led to areas of over-grazing, leading to the conversion from heather to grass moor. Furthermore, grazing and stock sheltering in clough woodland is leading to a decline in habitat diversity.

Shaping the Future Landscape

The aim should be to protect existing rural landscape features, whilst encouraging positive management of those features lost or under threat. In particular the restoration of stone walls and inbye land will help create a more mixed pattern of land-use and provide visual interest locally. Alternatively, it may be desirable to allow reversion of inbye land to moorland. The overall character of the moors remains unenclosed, and care should be taken to ensure that the sense of openness is not reduced.



Open Moors and Inbye Land (© P Clarke, Natural England)

The aim should be to protect the distinctive open character of the landscape and consider the visual impact of any new structures. New agricultural buildings in particular should be carefully sited away from the open moors and visually prominent locations and be located amongst existing buildings where possible. Specific design guidance for farmsteads may be appropriate, establishing the criteria for new development. The opportunity to conserve and upgrade existing barns and buildings should also be explored.

The aim should also be to manage the frequency of grazing, ensuring landscape and biodiversity character is enhanced or restored. Best practice guidance should be established for grazing generally on the moors, and the frequency and intensity of grazing should be considered on a site by site basis.



Open Moors and Inbye Land, Stanage Edge
(© Tom Marshall, Natural England)

FORESTRY AND WOODLAND

Forces for Change

The open moors are characteristically treeless, with woodland cover generally limited to the cloughs and valleys and around settlements on the fringes of the moors. As described earlier, existing woodland fringing settlements is under threat from new residential development and inappropriate grazing.

Shaping the Future Landscape

The aim should be to protect existing woodland fringing the moors close to settlements, ensuring landscape and biodiversity character is maintained. New tree planting on the moors should be resisted and the open character of these areas should be protected. The priority should be given to managing characteristic habitats and features, such as heather moorland.



Open Moors and Inbye Land, North Lees (© P Clarke, Natural England)

TOURISM AND LEISURE

Forces for Change

The Peak District is a major tourist destination, and the open moors in particular are popular for walking, climbing and shooting. Indeed, much the landscape is 'open access land' giving members of the public unrestricted access to the countryside without the need to follow dedicated footpaths. However, in a few particularly sensitive locations recreational activity can result in the loss of tranquillity in rural areas and can physically damage the moorland vegetation. Furthermore, there are an increasing number of car parks, view points and picnic sites along main roads across the moors. As with any new development this can cause visual intrusion and result in the loss of landscape features. The effect is particularly evident in locations with little or no settlement.

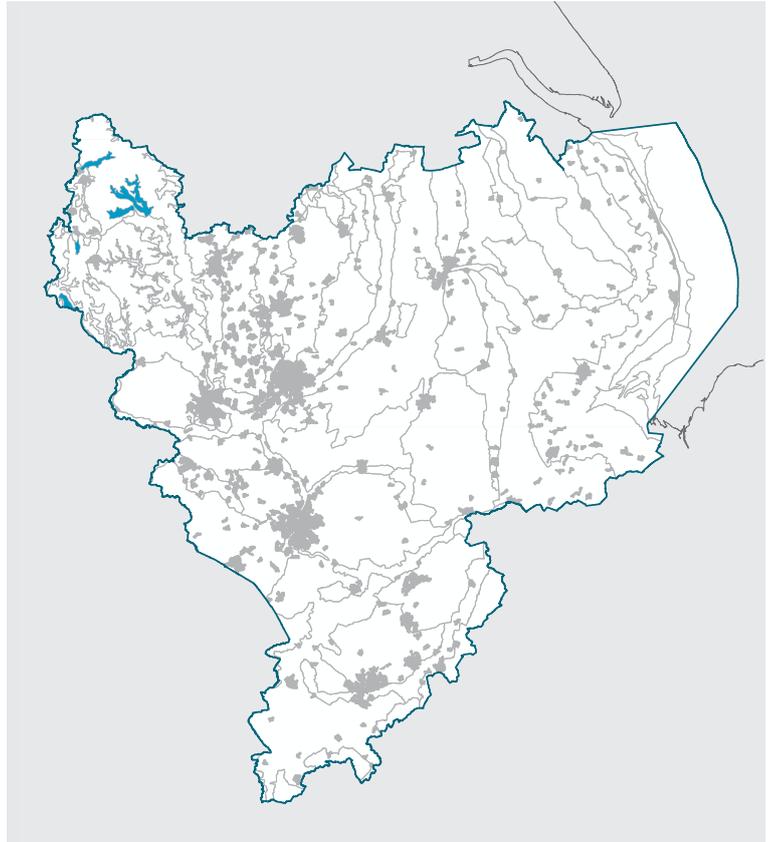
Shaping the Future Landscape

The aim should be to protect the distinctive open character of the moorland landscape and consider the impact of visitors and any new tourist facilities. The management of public access should be encouraged, helping to conserve the natural environment whilst enhancing the moors as a recreational resource.

11B: MOORLAND VALLEYS



Steeply sloping incised moorland valley
(© LDA Design LLP)



KEY CHARACTERISTICS

- Gently undulating albeit steep sloping valley topography, rising to adjacent moorland plateaux;
- Network of streams and localised damp hollows; some lower valleys dammed to form large reservoirs, supplying water to urban areas;
- Valleys characterised by pastoral farmland, with small to medium sized fields enclosed by hedgerows on lower slopes and gritstone walls towards the moorland plateaux;
- Interlocking coniferous and mixed plantation woodland with some limited semi-natural woodland cover;
- Narrow winding lanes along lower valley slopes or valley bottom; often sunken, when traversing slopes up onto the adjacent moors; and
- Dispersed settlement pattern of isolated farmsteads and small villages; reservoir valleys largely cleared of settlement prior to flooding, leaving occasional gritstone farmsteads.

LANDSCAPE CHARACTER

The steep sided Moorland Valleys dissecting the elevated gritstone plateaux have long been the focus of settlement and farming. As such, several centuries of clearance, enclosure and agricultural improvement have created a cultural landscape of woodlands, verdant pastures, gritstone walls, hedgerows, ancient farmsteads and occasional small settlements. The diversity of land uses and built elements represents a dramatic contrast to the remote and lonely moorland plateaux close by, although the upper valley slopes mark a transition between the two. Here, the sense of enclosure lessens, and there is an increased occurrence of rough grazing and semi-natural moorland vegetation, particularly adjacent to brooks and flushes.

The construction of large reservoirs has had a significant influence on the character of the Moorland Valleys Landscape Character Type. From the 19th century the damming of streams to create large water bodies and extensive planting of conifer trees on the steep valley slopes has created a dramatic, albeit artificial visual character.

Many routes in the Moorland Valleys follow ancient trails through and onto the adjacent gritstone plateaux. Several are known packhorse trails, although some may have origins in the prehistoric period. Active and disused rail routes are also evident. These were developed to replace the packhorse trails in order to carry goods and raw materials between industrial centres in the neighbouring lowlands of Yorkshire, Lancashire, Derbyshire and Nottinghamshire. The valleys remain important to communications, and several carry major roads through the uplands. These provide easy access to dramatic valleys from several major conurbations, and as such, make the Moorland Valleys a popular visitor destination.

PHYSICAL INFLUENCES

Erosion of the underlying geology of coarse sandstones of the Carboniferous Millstone Grit series and softer mudstones has given rise to a generally unified, steeply sloping landform with narrow valley bottoms.

The valley sides, notably on less steep areas where iron pans have formed, are characterised by acid loamy upland soils with a wet peaty surface, giving way to freely draining or seasonally wet slightly acid loamy soils on steeper slopes over gritstone bedrock. Whilst some areas of semi natural habitat are evident, notably species rich grasslands in the Edale Valley, this is, for the most part, a moderately intensively farmed pastoral landscape.

In some areas, the poor quality of the soils, and limited productivity gives rise to the retention of semi natural habitats, unimproved pasture and hay meadows. On poorly drained land, particularly rich botanic communities can be found and many areas serve as breeding grounds for wading birds. On sloping ground flushes, giving rise to mosses, sedges and soft rush, are also locally significant.

Areas of ancient semi natural woodland are also a notable habitat resource, and make a significant contribution to the wooded character of tracts of landscape. Significant planting of conifer woodlands is also evident, often on the site of former ancient semi natural broadleaved woodland. Woodlands are particularly characteristic of reservoir valleys. The Vale of Edale is notable for the absence of large scale woodlands and conifer plantations. This may reflect the gentler valley form being more amenable to agricultural improvement and management for grazing. Here, woodlands are confined to narrow belts along deeply incised cloughs, although scattered hedgerow and trees along watercourses on the valley floor contribute to the perception of a well treed character within the Vale of Edale.

There is a range of features of geodiversity interest within the valleys of this upland landscape with evidence of geomorphological features associated with fluvial processes. It is important that practices are in place for their care, maintenance and management, and promotion of their educational and interpretational interest.

CULTURAL INFLUENCES

The Moorland Valleys has been the focus for agriculture from later prehistory. However, whilst these sheltered valleys with permanent supplies of running water would have been the focus of settlement, communities would have also relied on the uplands for various resources such as grazing and peat for fuel.

Little is known about early settlement in the valleys, although it may have been similar to the existing pattern in the Vale of Edale. Here, small farming communities are dispersed along the more favourable south facing valley slopes and located adjacent to brooks draining into the main river channel. Several settlements have the suffix 'booth'. A booth was the name given to pasturage units defined as part of the medieval hunting forest and let by bailiffs to villagers and foresters. As such, the villages can be traced to the medieval period, although may have much more ancient origins. In Edale, the booths developed into small gritstone settlements although a period of expansion and building in brick occurred with the creation of Edale Mill and railway station.



Vale of Edale (© P Clarke, Natural England)

Elsewhere the deep, steep sided valleys have been used for water catchment. The reservoirs were built from the mid 19th century to supply potable water to industrialised cities such as Sheffield and Manchester. Since their construction they have remained a prominent landscape feature and continue to attract visitors and for active recreational activities and relaxation. The construction of reservoirs necessitated evictions and destruction of communities such as Derwent and Ashopton; however, some traces of buildings can be seen in periods of particularly low water.

Despite reservoirs removing many traces of past land use and settlement, the framework of dry stone walls surrounding former farmsteads can still be traced up the valley sides, with hedgerow boundaries often prevalent on lower slopes. The date of these enclosures varies, and in many instances they pre-date Parliamentary Enclosure with some perhaps originating before the mid 17th century. The irregular nature of some enclosures also suggests that they originated as assarts. In Edale, where coniferous plantations and reservoirs are absent, the intricate patterns of enclosures can be best appreciated, with irregular but linear fields, bound by hedgerows stretching up onto the valley slopes from the wooded river channel. These give way to larger walled enclosures on the upper valley slopes and unenclosed areas on the open moors.

Communications routes are also a key characteristic of the Moorland Valleys. Tracks and braided hollow ways in the modern landscape may mark much more ancient routes along the valley sides and up the steep slopes onto the neighbouring moors. Of particular interest are the remnant Roman roads and packhorse trails which developed in the medieval period to allow 'jaggers' to carry goods and materials through the moorland hills. Building on the packhorse trails, the Victorian and modern period has seen the consolidation and improvement of communications routes. Metalled roads and rail lines now traverse the gritstone plateaux through the Moorland Valleys, providing easy access to dramatic moorland scenery for the large population in the neighbouring urban conurbations of Manchester and Sheffield.

AESTHETIC AND PERCEPTUAL INFLUENCES

In contrast to neighbouring uplands, the Moorland Valleys Landscape Character Type has an intimate, pastoral and settled character. This is particularly evident in the Vale of Edale, which retains the pattern of ancient villages and farms, rail lines and multiple routes through and up the sides of the valleys. Reservoir valleys also often have a busy character, particularly in summer months when visitors are attracted by the dramatic valley scenery and large expanses of open water.

Views in the valley bottoms tend to be truncated by landform, riverside tree belts and hedgerows, further enhancing the intimate human scale of the landscape. However, on the valley sides, views become increasingly expansive with elevation, with upper slopes affording dramatic views across the valley below to neighbouring uplands.

On the uplands, the often muted or monochromatic expanse of heather moor and peat with dark gritstone crags and tors, contrasts with the patchwork of enclosed pastures, with verdant areas of improved pasture interspersed with rushy pasture, occasional arable fields, deciduous woodlands and coniferous plantations. The dark, reflective waters of the reservoirs set within dramatic valleys also add significantly to the aesthetic qualities of the valley landscape.



Moorland Valleys, Up the Snake Pass (© P Clarke, Natural England)

LANDSCAPE CHANGE AND MANAGEMENT

INFRASTRUCTURE

Forces for Change

There are roads along the valley floor, typically following the course of the river or reservoir. Due to relative lack of infrastructure within the Peak District, these roads can be busy, providing access across the moors landscape. Road improvements are therefore commonplace, designed to improve traffic flow. This has an urbanising effect and brings a degree of standardisation to the countryside.

Shaping the Future Landscape

The aim should be to protect the existing character of the rural road network, whilst having regard to safety requirements. During the summer months, as a consequence of tourist activity, these roads can become very congested, further reducing the sense of tranquillity. As part of a wider vision for visitor management (see “Tourism and Leisure”) the aim should also be to manage seasonal traffic, using public transport alternatives and park-and-walk systems to limit the number of cars within the valley landscape.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

There is generally pastoral farming within the valleys, characterised by small, enclosed fields. However, there is evidence of agricultural intensification, leading to the loss and damage of features such as stone walls and wet pastures and hay meadows. Indeed, the loss of pasture and meadows is particularly evident along the valley floor, which would have traditionally defined the river channels and distinguished them from the valley slopes. Furthermore, the practice of grazing and stock sheltering in woodland is leading to a decline in habitat diversity.

Shaping the Future Landscape

The aim should be to plan for the creation of new grassland habitats, strengthening the character of existing features and providing a diverse range of habitats. Such proposals may be supported by Environmental Stewardship grants. The aim should also be to manage the frequency of grazing, ensuring landscape and biodiversity character is enhanced or restored.



Moorland Valleys, Snake Pass (© P Clarke, Natural England)

FORESTRY AND WOODLAND

Forces for Change

The landscape is generally well wooded, with large woodlands along the valley sides. This creates a strong sense of enclosure and intimate character. As described earlier, existing woodland is under threat from grazing.

Shaping the Future Landscape

The aim should therefore be to protect existing woodland, ensuring landscape and biodiversity character is maintained. There is likely to be little opportunity for new woodland; however, existing woodlands are typically coniferous plantations, and the opportunity exists to enhance biodiversity value through conversion to mixed woodland and the creation of woodland edge habitats. However, care should be taken not to encroach on semi-natural habitats within the valley floor or on fringes of the adjoining moorland summits which are very sparsely wooded.

TOURISM AND LEISURE

Forces for Change

The reservoirs within the Moorland Valleys are popular tourist destinations, used for water sports and as a basis for circular walks. In a few particularly sensitive locations recreational activity can result in the loss of tranquillity in rural areas and can physically damage existing habitats and vegetation. Furthermore, there are an increasing number of car-parks, view points and picnic sites along main roads through the valleys. As with any new development this can cause visual intrusion and result in the loss of landscape features.

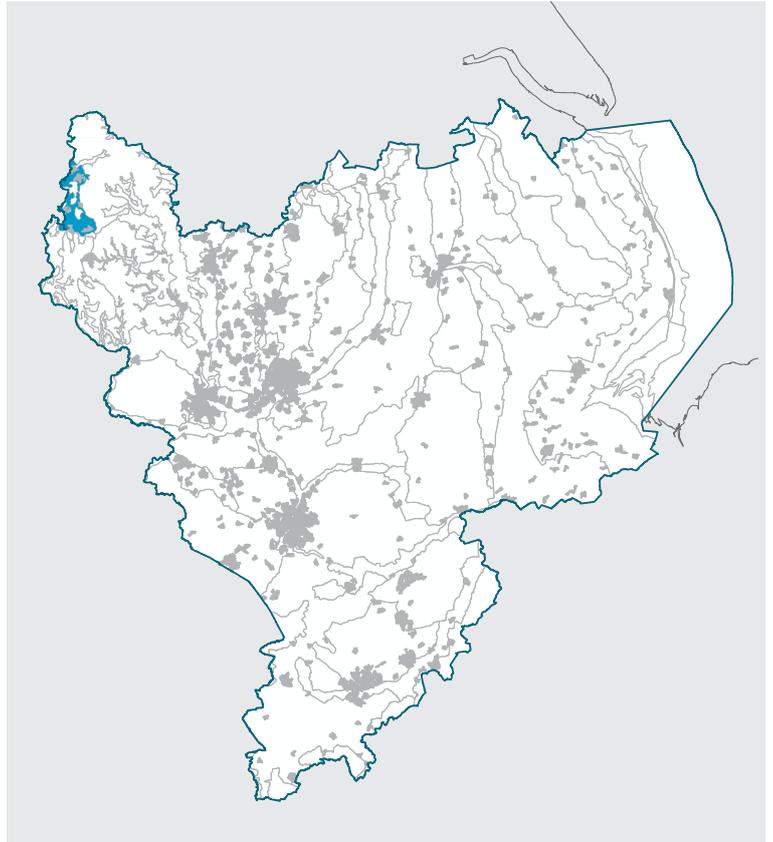
Shaping the Future Landscape

The aim should be to protect the remote character of the landscape and consider the impact of visitors and any new tourist facilities. The management of public access should be encouraged, helping to conserve the natural environment whilst enhancing the reservoirs as a recreational resource. Considering the limited transport infrastructure and relative distance from major settlements, this should include traffic management options.

11C:

SETTLED VALLEYS AND
ENCLOSED GRITSTONE
UPLANDS

Woodland and grassland along valley floor
(© Derbyshire County Council)



KEY CHARACTERISTICS

- Complex landform of hills and valleys created by streams and rivers draining the adjacent uplands;
- Poorly drained soils generally managed as improved pasture, with localised species rich grassland on wetter ground and steep slopes;
- Wooded character associated with tree belts along streams and cloughs and scattered hedgerow trees and tree groups around settlements and farmsteads;
- Small irregular fields enclosed by hedgerows and occasional drystone walls, particularly at higher elevations;
- Well settled landscape of scattered farms and nucleated settlements, often with distinctive built environment relating to industrial heritage; and
- Enclosed landscape with views filtered by trees; extensive views from elevated areas along valleys to surrounding lowlands and urban areas.

LANDSCAPE CHARACTER

The Settled Valleys and Enclosed Gritstone Uplands Landscape Character Type is associated with the lower slopes of broad upland valleys formed by rivers eroding the Millstone Grit and Coal Measures. The landscape is well settled, with villages and towns located in sheltered locations to take advantage of the better agricultural soils. Soils and landform are best suited to pasturing cattle, and wide areas of the landscape are characterised by improved pastures. Despite this, some limited areas retain ecological interest. Although there is only limited woodland cover, the landscape is perceived as well treed, notably through the retention of belts of woodland along cloughs and valleys and dense hedgerows with frequent hedgerow trees.

Hedgerows have a particularly important function in linking isolated areas of semi natural habitat. Early industrial development in the form of textile mills initiated a wave of settlement expansion. This continued throughout the 19th and early 20th centuries following the arrival of the Peak Forest Canal and rail line which were constructed to carry materials such as limestone and gritstone, quarried from the adjacent uplands to markets in the industrialised cities and towns to the west.

PHYSICAL INFLUENCES

The complex and intricate character of the Settled Valleys and Enclosed Gritstone Uplands is strongly influenced by the underlying geology and the action of rivers and streams draining into the River Goyt. For example, undulating lower valley slopes are evident where Millstone Grit Group mudstones or Pennine Coal Measures are exposed. Till is also evident in many valleys, further softening landform features. Hills and ridges mark areas of harder gritstone that are more resistant to erosion. The larger hills are capped by moorland plateaux. These 'outliers' have become separated from the main area of Open Moors and Inbye Land to the east by the action of rivers and streams cutting steep valleys around them. Narrow belts of alluvium and river terrace gravels are also evident fringing the main watercourses. The River Goyt is the principal watercourse and meanders through an increasingly wide floodplain to the east of Buxworth.

Both natural and man-made geological exposures are present in this landscape type so the geodiversity interest is high. There are also good geomorphological features. It is therefore important that practices are in place for their care, maintenance and management, and promotion of their educational and interpretational interest.

Local differences in the underlying geology and landform give rise to similar variations in the type and productivity of soils. Soils on the lower, less steep valley slopes over shales are slowly permeable, seasonally waterlogged and loamy over clay. On steeper sloping landform over gritstone, there are coarser loams over the underlying bedrock or finer loams over slowly permeable subsoil.

The nature of the soils and landform mean that stock rearing and dairying is the predominant agricultural land use, with much of the land down to permanent pasture. On steeper sloping landform, land tends to be less intensively grazed, resulting in coarser and more acidic grassland. Occasional hay meadows and heathy vegetation on thin soils are also significant and add to local biodiversity interest.

Belts of broadleaved woodland are a characteristic of steep sided cloughs and along sections of the alluvial floodplain fringing the canal and main river channel. At higher elevations, poorer soils and exposure result in lower levels of tree cover and hedged boundaries. In this generally improved agricultural landscape, the dense network of well treed hedgerows and wooded streams, as well as small clumps of trees surrounding villages and farms also have an important role in offering linear belts of habitat, and in linking otherwise isolated areas of biodiversity interest. Tree cover is sufficient to give the overall effect of a well treed landscape.

CULTURAL INFLUENCES

The landscape has long been settled although there is only sparse evidence of prehistoric activity in the area. The Murder Stone, a prehistoric megalith is a notable exception, sited on a low hill overlooking the Goyt Valley.

Up until the industrial age the landscape would have been sparsely settled, with isolated farms and small settlements, perhaps continuing dispersed patterns of settlement stretching back into the Saxon period. Indeed, it is thought that much of the area fell within the Royal Forest of Macclesfield, a hunting reserve owned by the Earls of Chester. Local communities would have been engaged primarily in agriculture but some small scale stone quarrying and textile manufacturing in the later medieval period would have been an important part of the local economy.

From the 18th century, the landscape became increasingly well settled, with settlements along the main river valleys expanding rapidly following the establishment of water powered textile mills. Further settlement expansion followed the construction of the Bugsworth Canal Basin, sited at the head of the Peak Forest Canal. Located on the southern fringes of the river valley floodplain, the canal linked Bugsworth to Manchester and the trans-Pennine canal network, and as such, was vital to the haulage of gritstone, coal and lime to wider markets. The coming of the railway in the mid 19th century provided a further stimulus for

growth. Road infrastructure is also a significant feature of the landscape, further emphasising its strategic location. Major road and rail lines hug the lower valley slopes immediately off the floodplain. Elsewhere, a dense network of lanes link rural communities and farms to the main centres of population and to the adjacent moors.

Many of the larger settlements have a distinctive character, derived from the building traditions of the Manchester area and to its industrial heritage. Of particular interest are the gritstone terraces and mills. More recent settlement expansion has also occurred and significant post war industrial development is evident along valleys.

Surrounding the settlements and extending up the valley slopes and hillsides is a pastoral landscape divided into a patchwork of small irregular enclosures, interspersed with isolated farmsteads and rural hamlets. Hedgerows are most common on lower slopes and along the floodplain and characteristically well treed. It is possible that several hedgerow boundaries mark the remnants of cleared woodland. Gritstone walls are more common on the upper slopes and towards the moorland plateaux.

AESTHETIC AND PERCEPTUAL QUALITIES

In contrast to the neighbouring upland moors, the Settled Valleys and Enclosed Gritstone Uplands landscape has an intimate pastoral and settled character, interspersed with strong evidence for the Landscape Character Type's industrial heritage and strategic location for the transportation of goods to cities and towns to the west. This is particularly evident in the Goyt Valley, where the ancient pattern of villages, farms and gritstone enclosures is overlain by features associated with rapid growth and development in the industrial age, such as the canal, rail line, mills and terraces of gritstone cottages.

Larger towns, notably Glossop, exert a localised urbanising influence on their hinterland, and significantly reduce perceptions of remoteness and tranquillity. Despite this, some remoter areas continue to retain a rural and tranquil character.

Views in the valley bottoms tend to be truncated by valley landform, tree belts and hedgerows, enhancing the intimate human scale of the landscape. However, on the valley sides, views become increasingly expansive with elevation.

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

The Settled Valleys and Enclosed Gritstone Uplands is a densely settled landscape, with many of its towns rapidly expanding during industrialisation in the 19th century. Development pressure continues today, with demand for housing, commerce and industry on the fringes of larger towns, creating visual intrusion and resulting in the loss of remaining rural areas.

Modern development is also affecting smaller settlements, with new residential development on the village margins and along arterial roads, altering the distinctive form of outlying settlements and damaging traditional features, such as mill buildings and industrial age terraces. Furthermore, farm buildings are being sold off for residential conversion, bringing a degree of suburbanisation and gentrification to the countryside.

Shaping the Future Landscape

The aim should be to manage growth, ensuring development is appropriate in terms of type, scale, design and location and consider the visual impact of any new development. Best practice innovative architectural ideas and planning solutions that are sensitive to local character should be employed. Planting of new trees and appropriate boundary treatments around settlement fringes should also be encouraged, helping to integrate new development into the landscape. Village Design Statements may also be appropriate, identifying features to be protected and ensuring appropriate use of vernacular styles and building materials for new development. As well as Village and Town Design Statements, Conservation Area Appraisals can also be important tools

INFRASTRUCTURE

Forces for Change

There is widespread influence of transport routes, with a dense road and rail network crossing the landscape. Continued improvement to roads, including new junction and widening, further fragments the landscape and reduces the sense of tranquillity, whilst also generating further development. Road improvements are also commonplace on more minor roads, better connecting isolated villages with larger towns and cities.

Furthermore, the network of enclosure roads is a distinctive landscape feature of the Settled Valleys and Enclosed Gritstone Uplands. However, these are under threat from lack of management and inappropriate planting.

Shaping the Future Landscape

The aim should be to manage the expansion of the transport network, ensuring improvements are carefully planned and designed to provide positive environmental and landscape enhancements, whilst having regard to user and safety requirements.

The aim should also be to protect the existing character of the rural road network, ensuring improvement are sympathetic to the prevailing character. This includes historic routes, ensuring their continued contribution to biodiversity and landscape character.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

There is marked evidence of agricultural intensification resulting in the loss or damage of many typical landscape features, including field boundaries and remnants of semi-natural vegetation. This weakens pattern of land-use and contributes to a more uniform and homogenous landscape.

Shaping the Future Landscape

The aim should be to protect existing landscape features, whilst encouraging positive management of those features lost or under threat. In particular the restoration of field boundaries should be given priority, along with an increase in grassland and pasture, creating a stronger and more mixed pattern of land use. The restoration of hedgerows and permanent pasture alongside streams and rivers should also be considered, enhancing their visibility, whilst increasing the occurrence of semi-natural habitats. Alternatively, it may be appropriate to consider the managed decline or removal of field boundaries and allow some areas to revert to extensive moorland grazing.

FORESTRY AND WOODLAND

Forces for Change

The landscape is generally well treed, and notably in cloughs and on steep sided land. This creates a strong sense of enclosure and intimate character. However, woodland cover is generally sparse in some places.

Shaping the Future Landscape

The aim should be to plan new woodland where coverage is poor, and seek to locate on steeper sloping land and in close proximity to existing woodlands. Small sized and irregular shaped woodland blocks are likely to be most appropriate, complimenting existing areas of woodland and reinforcing the intricate character of the landscape. Tree planting along hedgerows should also be considered, especially in areas of decline. Consideration should be given to the management of existing woodland restoring age and ecological diversity. This should include the creation of woodland edge habitats, which along with the restoration of grassland, will help to create a mixed pattern of land-use. However, care should be taken not to encroach on semi-natural habitats within the valley floor or on the fringes of the adjoining moorlands.

Such proposals should be undertaken in collaboration with the Forestry Commission and local landowners, and financial support may be available through the English Woodland Grant Scheme.

TOURISM AND LEISURE

Forces for Change

The Settled Valleys and Enclosed Gritstone Uplands is a popular destination, providing a gateway to the more isolated and remote moors and valleys of the Peak District. As such, many of the larger towns contain tourist attractions and accommodation, while camp-sites and holiday cottages are a feature of more rural areas. Furthermore, golf courses are common on the edges of Glossop and Bollington, which capitalise on the undulating landform and scenic views.

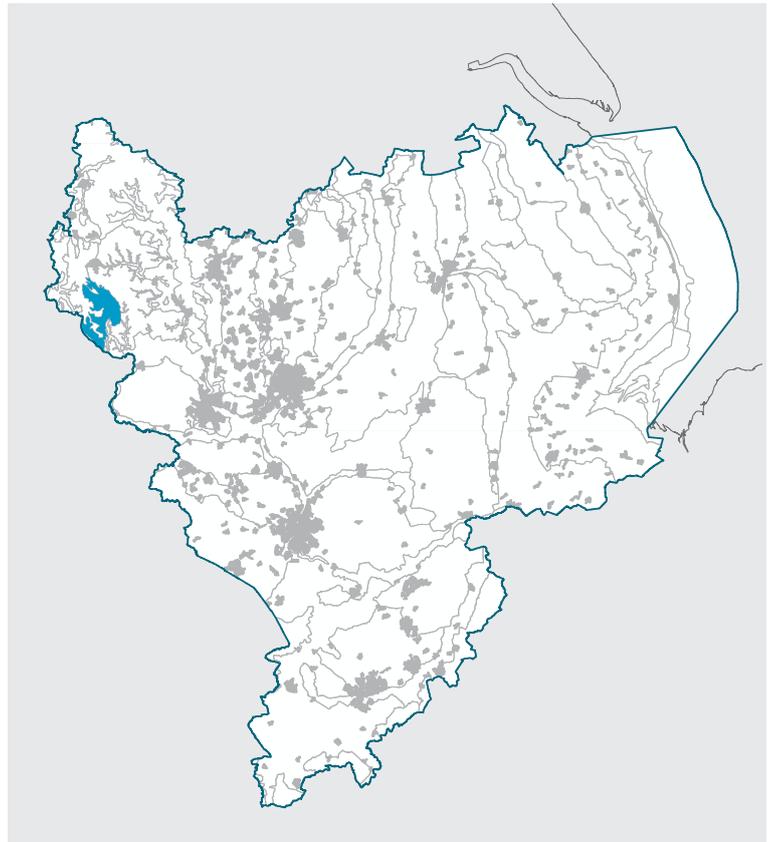
Shaping the Future Landscape

The aim should be to protect the distinctive intimate character of the landscape and consider the visual impact of any new tourist facilities, including golf courses. In addition, the diversification of farms to provide attractions and accommodation should be carefully managed to ensure a balance is struck between maintaining rural character and supporting the rural economy.

I I D:

UPLAND PASTORAL
HILLS AND VALLEYS

Upland Pastoral Hills and Valleys, Chinley
(© P Clarke, Natural England)



KEY CHARACTERISTICS

- Topography of broad shallow valleys, steep sided hills and ridges and deeply incised cloughs and stream valleys;
- Irregular small to medium sized fields of permanent pasture enclosed by gritstone walls and hedgerows on lower slopes and along valleys;
- Occasional species-rich meadows, rushy pastures on wetter ground and patches of bracken and heather on marginal areas that have not been improved or drained;
- Sparse woodland cover, scattered trees along hedgerows, around settlements and along streams and cloughs contribute to well treed character;
- Settlement pattern characterised by small nucleated or linear villages and hamlets and dispersed gritstone farmsteads linked by narrow winding lanes; and
- Rural and intact traditional landscape character, with limited evidence of industrialisation.

LANDSCAPE CHARACTER

The Upland Pastoral Hills and Valleys Landscape Character Type is a traditional mix of dispersed gritstone farmsteads and small ancient villages set within rolling valley pastures interspersed with wooded cloughs.

The undulating character of the Upland Pastoral Hills and Valleys is strongly influenced by the underlying geology and the action of rivers and numerous tributary streams draining eastwards from the high gritstone plateau between Axe Edge Moor and Merryton Low to the deeply incised Limestone Dales and Upland Limestone Pastures of the White Peak area.

Whilst there is evidence of prehistoric activity in the form of numerous hilltop barrows, much of the historic character of the landscape derives from the medieval period when small villages and isolated farmsteads were established within or on the fringes of the Malbanc Frith or Forest. Over the centuries, increasing areas of land were enclosed and improved to form the current landscape of small to medium sized irregular fields.

The consistent use of gritstone and limestone in boundary walls and in the construction of farms and villages, coupled with widespread pastoral land uses interspersed with occasional wooded cloughs and well treed hedgerows, gives the landscape a consistent visual identity and strength of character. There is only limited evidence of industrialisation, and as such, the landscape retains a deeply rural and traditional character.

PHYSICAL INFLUENCES

The geological framework of the landscape is a complex mix of interbedded sandstones, gritstones and mudstones and occasional limestone strata. The higher land marks areas of harder gritstone, which is more resistant to erosion. Here, land rises to around 400m AOD and forms several large moor capped hills and ridges that project into the lower pastoral valleys and act as watersheds between the upper Hamps, Manifold and Dove Rivers. Elsewhere, lower steep sided hills and ridges such as Sheen Hill and Hollins Hill form distinctive local landmarks and form watersheds between smaller tributary streams. It is likely that prior to agricultural improvement, these hills would also have been capped by moorland.

Geological exposures are present in the disused quarries within this landscape type and together with a range of geomorphological features, are of geodiversity interest. It is therefore important that practices are in place for their care, maintenance and management, and promotion of their educational and interpretational interest.

The rivers occupy broad valley features underlain by soft mudstones, although their upper reaches are often deeply incised. As the main rivers flow onto the adjacent limestone landscapes, the main valleys of the Manifold and Dove become much deeper and narrower and form distinctive topographic features known as Dales. The main rivers are also fringed by distinctive flat alluvial floodplains and occasional gravel terraces.

Local differences in the underlying geology and landform give rise to similar variations in the type and productivity of soils. Across land fringing the upper moorland slopes, soils are slowly permeable acid upland soils with a peaty surface, giving rise to remnant patches of wet heath and bog. Soils on the valley slopes and low hills tend to be heavy and prone to seasonal waterlogging. Loamy and clayey floodplain soils with naturally high groundwater occur along the major valley of the Manifold.

Much of the landscape is managed as improved pasture for stock rearing and dairying or is cut for hay or silage. Widespread improvement has meant that there is only limited semi-natural habitat which is generally in the form of occasional species rich pastures and meadows and wet or marshy grasslands. Occasional acid grasslands and localised patches of bracken, heather and bilberry are also evident, particularly on the less intensively grazed slopes and upper valley sides fringing the moors. Woodland cover is sparse, although narrow belts of broadleaved woodland are a characteristic of cloughs and areas of steep sloping landform. At higher elevations, poorer soils and exposure result in lower levels of tree cover and hedged boundaries.

In this generally improved agricultural landscape, the dense network of well treed hedgerows and wooded streams, as well as small clumps of trees surrounding villages and farms, also have an important role in offering linear belts of habitat, and in linking otherwise isolated areas of biodiversity interest. Tree cover is sufficient to give the overall effect of a well wooded landscape.



*Upland Pastoral Hills and Valleys, near Chapelenlefrith
(© P Clarke, Natural England)*

CULTURAL INFLUENCES

There is only sparse evidence of prehistoric activity in the area. However, barrows located on valley slopes above the River Manifold and other streams, and on the adjacent upland moors and Limestone Dales fringing the landscape, may mark the edge of territories of later prehistoric communities farming in the valleys.

Similarly, little is known about early medieval settlement in the landscape although it is possible that it may have been limited by much of the area falling within the Malbanc Frith or Forest, which extended between Beresford and Leek. Despite the inferred limitations on settlement arising from the application of Forest Law, it was during the medieval period that the existing settlement pattern of widely distributed farmsteads and small villages emerged. Villages such as Longnor developed as local market and service centres and were perhaps located to take advantage of trade routes through the adjacent hills. The villages would have been surrounded by open fields, leading to communal grazing and wood pasture on the surrounding hills. Evidence of such farming can still be seen, with narrow strip fields being preserved in hedgerow patterns around Longnor and Butterton.

In the wider landscape it appears that much of the land was managed as pasture whether for common grazing or as part of the hunt. Several modern farms have the suffix 'booth' which was the name given to pasturage units defined as part of a medieval hunting forest and let by bailiffs to villagers and foresters. Other farms are probably later in origin, and perhaps part of late and post medieval enclosure of woods and marginal grazing land.

The irregular pattern of the fields evident in the landscape today suggests that much of the landscape was cleared and enclosed by the mid 19th century at the latest. Drystone walls are most common on the upper valley slopes, with hedgerows common on lower lying land. A particularly distinctive pattern of hedged fields is evident around Warslow and Butterton.

Despite their early origins, many structures in villages and hamlets are constructed from the local gritstone and date from the 17th to 19th centuries, when substantial rebuilding appears to have taken place. Several ancient village churches were also rebuilt in the Victorian period.

Larger villages of Longnor, Warslow and Butterton have a compact nucleated character set around the junction of several roads. However, elsewhere a linear settlement pattern prevails, such as at Sheen, Newton and Fawfieldhead.

The landscape is crossed by a relatively dense network of sinuous routes bordered by drystone walls and hedgerows. Several major roads may mark the course of ancient trading routes along the valley sides. Elsewhere, narrow lanes preserve local movement patterns that were established to connect the outlying farmsteads and isolated hamlets to local centres.

Unlike the Settled Valleys and Enclosed Gritstone Uplands further to the north, there is no evidence of rail lines or canals having been constructed in the landscape. As such, the industrial period does not appear to have had a significant effect locally and the villages and landscape more generally retain a deeply rural character. Whilst cottage industries such as silk weaving would have had an important role in the local economy there appears little to have stimulated major settlement expansion in the 19th and 20th centuries.

AESTHETIC AND PERCEPTUAL QUALITIES

The verdant rolling valley pastures and well maintained hedgerows and drystone walls give a high level of visual unity to the landscape, as well as contributing to a strong sense of place and local identity. This is further enhanced by the ubiquitous use of gritstone and limestone as the principal building material in the isolated farms and occasional small villages and hamlets. Despite the proximity of the industrial towns of the Potteries, the absence of major transport infrastructure or industrial development also creates a deeply rural and tranquil character.

The agricultural landscape is carefully controlled, with only very limited areas of semi natural habitat in evidence, giving the landscape a productive and utilitarian character. Where present, areas of species rich grassland and semi natural woodland along cloughs and valleys gain added significance. Views in the valley bottoms tend to be truncated by valley landform, tree belts and hedgerows, enhancing the intimate human scale of the landscape. However, on the valley sides, views become increasingly expansive with elevation.



Upland Pastoral Hills and Valleys near Hathersage
(© P Clarke, Natural England)

LANDSCAPE CHANGE AND MANAGEMENT

BUILT DEVELOPMENT

Forces for Change

Modern built development is affecting the villages of the Upland Pastoral Hills and Valleys and eroding the architectural and historic character. Development on settlement margins can be particularly damaging, creating visual intrusion and creating a new urban edge to the countryside.

Shaping the Future Landscape

The aim should be to protect the distinctive character and pattern of settlements throughout the landscape and consider the visual impact of any new development. Specific mechanisms include Village Design Statements, guiding the design of new development, and best practice innovative architectural ideas and planning solutions that minimise impact on local landscape and townscape character. As well as Village, and where appropriate, Town Design Statements, Conservation Area Appraisals can also be important tools. The landscape around settlements is well treed, and therefore limited tree planting can also be used around settlement fringes to integrate new development into the landscape.



*Upland Pastoral Hills and Valleys, Losehill Ridge
(© Phil Sturges, East of England)*

INFRASTRUCTURE

Forces for Change

The network of enclosure roads is a distinctive landscape feature of the Upland Pastoral Hills and Valleys. However, these historic rural roads and lanes are under threat from lack of management.

Shaping the Future Landscape

The aim should be to manage these historical assets, ensuring their continued contribution to landscape character.

AGRICULTURE AND LAND MANAGEMENT

Forces for Change

There is marked evidence of agricultural intensification, accompanied by a move towards arable production. This has resulted in the loss or damage of many typical landscape features, including field boundaries and pasture, contributing to a more homogenous landscape. There are also a number of new and derelict agricultural buildings, reflecting changes to farming techniques and machinery. Such structures can reduce the sense of remoteness in rural areas and cause visual intrusion, enclosing previously open views.

A key characteristic of the landscape is the transition between the 'wild' moorland to the west and the more 'managed' limestone pastures to the east, which is under threat from both agricultural intensification and lack of management.

Shaping the Future Landscape

The aim should be to protect existing rural landscape features, whilst encouraging positive management of those features lost or under threat. In particular the restoration of stone walls will strengthen the strong field pattern and sense of enclosure. Retention of the existing areas of pasture and meadow will continue to

strengthen the predominantly pastoral land use while opportunities to introduce greater botanical diversity for grasslands and increase the occurrence of semi-natural habitats will further enhance the biodiversity of the area.

The aim should be to protect the distinctive open character of the landscape and consider the visual impact of any new structures. New agricultural buildings in particular should be carefully sited, away from visually prominent locations and amongst existing buildings where possible. Specific design guidance for farmsteads may be appropriate, establishing the criteria for new development. The opportunity to conserve and upgrade existing barns and buildings should also be explored.

The aim should also be to protect transitional nature of this landscape. Proposals that change land use or promote new landscape features should be carefully considered in the context of the adjoining Landscape Character Types, helping to conserve the overall character of the Peak District.

FORESTRY AND WOODLAND

Forces for Change

Woodland cover is generally sparse; however, narrow belts of broadleaved woodland within cloughs and frequent hedgerow trees give the impression of a well treed landscape. There is also more recent evidence of planting close to settlements or around isolated farm buildings. While new tree planting can be used to screen or soften views of buildings and create opportunities for recreation and nature conservation, new planting can introduce inappropriate and visually intrusive elements in the landscape, especially on the fringes of the adjoining moorland summits which are very sparsely wooded.

Shaping the Future Landscape

The aim should be to protect the distinctive character of the landscape by ensuring the type, scale and location of new woodland and tree planting is appropriate. Tree planting should generally be limited to cloughs or field boundaries where trees are already a local feature, in and around established settlements as part of a planned aim for visual containment of new built development, or to accentuate key features, such as hilltop barrows. Priority should be given to managing more characteristic habitats and features, such as meadow and grassland as part of enhanced habitat reserves.

TOURISM AND LEISURE

Forces for Change

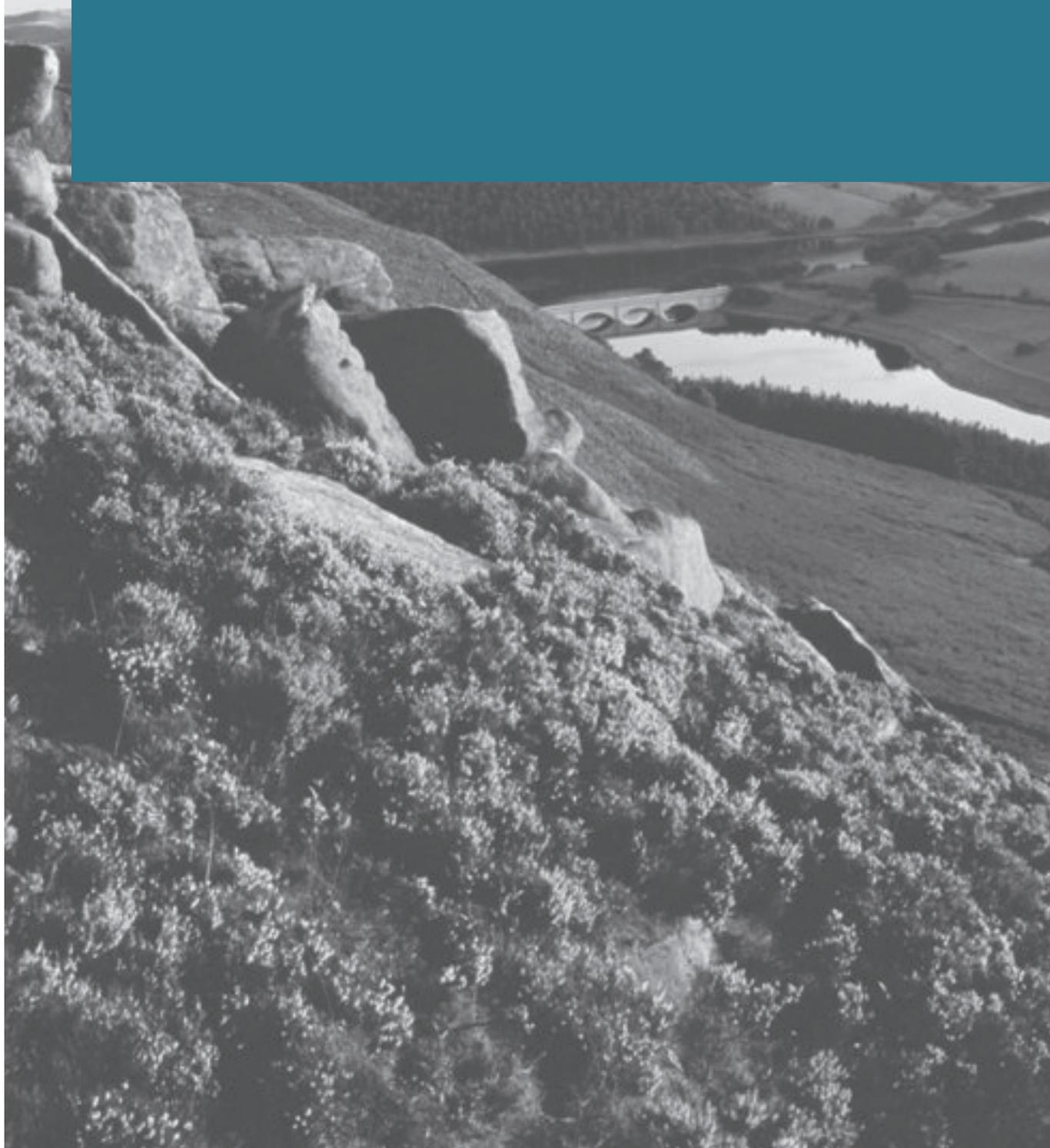
The Upland Pastoral Hills and Valleys is a popular destination, providing a gateway to the more isolated and remote moors and valleys of the Peak District. Indeed, there is a dense footpath network in this location along with areas of open access land. As such, camping and caravan sites and holiday cottages are a feature of more rural areas, along with local tourist attractions, such as craft centres.

Shaping the Future Landscape

The aim should be to protect the distinctive intimate character of the landscape and consider the visual impact of any new tourist facilities. In addition, the diversification of farms to provide attractions and accommodation should be carefully managed to ensure a balance is struck between maintaining rural character and supporting the rural economy.

SECTION 5

SUMMARY OF FORCES FOR CHANGE



The following table summarises the likely or potential forces for change that have been identified for each of the Regional Landscape Character Types. For further details, reference should be made to the Landscape Change and Management section for each of the Landscape Character Type Descriptions in Section 4.

Forces for change have been identified through a combination of documentary research, consultation and observations in the field. Forces for Change identified in the EMRLCA and summarised in the following tables are not to be interpreted as a justification for certain types of development to occur in the future and nor are they a guide to the capacity of a landscape character types to accommodate a particular type of development and change.

LANDSCAPE TYPE	FORCES FOR CHANGE		
	BUILT DEVELOPMENT	INFRASTRUCTURE	ENERGY PROVISION
GROUP 1: COAST AND SEA			
1A. Coastal Saltmarshes and Mudflats		Targets and signs of military ranges.	
1B. Coastal Dunes, Beach and Intertidal Sand Flats		Targets and signs of military ranges.	
1C. Shallow Coastal Waters		Moorings and launching strips.	
1D. Shallow Inlet Bay			
1E. Offshore Industries, Fisheries and Navigations		Movement of vessels.	Likely or anticipated pressure to accommodate wind energy schemes.
GROUP 2: FENLAND AND FENLAND MARGINS			
2A. Settled Fens and Marshes	Residential development on settlement margins/ along arterial roads.	Road improvements, including straightening and by-pass schemes. Deterioration of windmills.	Likely or anticipated pressure to accommodate wind energy schemes.
2B. Planned and Drained Fens and Carrlands	Light industrial development along arterial roads.		Likely or anticipated pressure to accommodate wind energy schemes.

It is acknowledged that the Forces for Change identified for Regional Landscape Character Types can be regarded as relevant for all landscape within the region. However, the EMRLCA seeks to identify the principal forces for change acting on the various landscape character types to help guide and promote positive change at the regional scale.

For further information about landscape character, forces for change and shaping the future landscape, refer to relevant Countryside Character Area descriptions, the National Landscape Typology and Landscape Character Assessments and Landscape Strategies that have been undertaken at national, county and district level.

FORCES FOR CHANGE				
MINERALS AND WASTE	AGRICULTURE, LAND MANAGEMENT AND FISHING	FORESTRY AND WOODLAND	TOURISM AND LEISURE	ENVIRONMENT PROCESSES AND CLIMATE CHANGE
	Reduction in grazing.		Car parks and viewpoints.	Sea level rise Flood defence works.
	Reduction in grazing.		Seasonal holiday makers. Recreational facilities, such as golf courses. Car parks and viewpoints.	Sea level rise Flood defence works.
	Litter from fishing activity. Pollution from fishing vessels and land-based activities.		Seasonal holiday makers.	Sea level rise Changes in coastline and marine environment
	Trawling and dredging activity. Litter from fishing activity.			Loss or change in sand banks and marine environment
Sand and gravel extraction. Gas extraction. Demand for new extraction sites.	Litter from fishing activity. Pollution from fishing vessels.			Sea level rise and changes in coastline
	Agricultural intensification. Increase in arable production. Proliferation of large scale agricultural buildings.	Planting of shelterbelts. No opportunity for new woodland planting.	Growth of static caravan parks.	Sea level rise Flood defence works.
	Agricultural intensification. Increase in arable production. Proliferation of large scale agricultural buildings. Improvements to dykes and embankments. Cultivation of energy crops.	Planting of shelterbelts. Limited opportunity for new woodland planting.	Increasing number of visitor centres, caravan/camp sites and holiday cottages	Sea level and water table rise, and inundation and flooding

LANDSCAPE TYPE	FORCES FOR CHANGE		
	BUILT DEVELOPMENT	INFRASTRUCTURE	ENERGY PROVISION
2C. Fen and Marsh Margin Farmlands	Residential development on settlement margins. Industrial and commercial development around larger towns.	Road improvements, including straightening and by-pass schemes. Severance/loss of green lanes.	Likely or anticipated pressure to accommodate wind energy schemes.
GROUP 3: RIVER VALLEY FLOODPLAINS			
3A. Floodplain Valleys	Development on settlement margins, including large-scale utility development	River flood defence works and river channel modifications	
3B. Sandland Farmlands	Residential development on settlement margins.		
GROUP 4: LOWLAND VALES			
4A. Unwooded Vales	Mixed-used development on the fringes of larger settlements.	After-use and redevelopment of air-fields. Road improvements	
4B. Wooded Vale	Village expansion.		
GROUP 5: VILLAGE FARMLANDS			
5A. Village Farmlands	Village expansion. Mixed-used development on the fringes of larger settlements.	Road improvements, including widening and new junctions.	
5B. Wooded Village Farmlands	Mixed-used development on the fringes of larger settlements.	Road improvements, including widening and new junctions. Airport expansion	
5C. Undulating Mixed Farmlands	Mixed-used development on the fringes of larger settlements.	Road improvements	Likely or anticipated pressure to accommodate wind energy schemes.

FORCES FOR CHANGE				
MINERALS AND WASTE	AGRICULTURE, LAND MANAGEMENT AND FISHING	FORESTRY AND WOODLAND	TOURISM AND LEISURE	ENVIRONMENT PROCESSES AND CLIMATE CHANGE
	Agricultural intensification. Increase in arable production. Cultivation of energy crops.	Opportunity for woodland planting in upland areas.		Sea level rise and inundation of coastal margins.
Sand and gravel extraction. Demand for new extraction sites.	Agricultural intensification. Increase in arable production.	Opportunity for small-scale woodland planting.		Increased flood risk. Changing river channels. Summer desiccation of wetlands.
Sand and gravel extraction. Deep coal mining. Landfill operations.	Agricultural intensification. Increase in arable production.			
	Agricultural intensification. Increase in arable production.	Opportunity for small-scale woodland planting.		
	Agricultural intensification.	Opportunity for woodland planting, but sited to avoid more open areas.		
	Agricultural intensification. Cultivation of energy crops.	Opportunity for woodland planting.		
	Agricultural intensification. Increase in arable production. Inappropriate parkland management. Cultivation of energy crops.	Opportunity for woodland planting.	Visitors to parks, reservoirs and woodland. Development of new visitor infrastructure.	
	Agricultural intensification. Proliferation of large scale agricultural buildings.	Opportunity for woodland planting in upland areas.		

LANDSCAPE TYPE	FORCES FOR CHANGE		
	BUILT DEVELOPMENT	INFRASTRUCTURE	ENERGY PROVISION
GROUP 6: LIMESTONE FARMLANDS			
6A. Limestone Scarp and Dipslopes	Village expansion. Mixed-used development on the fringes of larger settlements.	Management of historic routes. Redevelopment of air-fields. Potential for telecom infrastructure.	Likely or anticipated pressure to accommodate wind energy schemes.
6B. Upland Limestone Pastures	Village expansion. Conversion of traditional agricultural buildings.	Potential for telecom infrastructure	Likely or anticipated pressure to accommodate wind energy schemes.
6C. Limestone Dales	Deterioration of mill buildings.		
6D. Limestone Farmlands	Village expansion. Mixed-used development on the fringes of larger settlements.	Potential for telecom infrastructure	Likely or anticipated pressure to accommodate wind energy schemes.
GROUP 7: CHALK WOLDS			
7A. Chalk Wolds	Village expansion. Conversion of traditional agricultural buildings.	Management of historic routes. Potential for telecom infrastructure.	Likely or anticipated pressure to accommodate wind energy schemes.
7B. Wolds Scarps, Ridges and Valleys	Development on settlement margins. Abandoned buildings.	Road improvements, including straightening and by-pass schemes. Management of historic routes. Potential for telecom infrastructure.	
GROUP 8: CLAY WOLDS			
8A. Clay Wolds	Village expansion. Mixed-used development on the fringes of larger settlements		Likely or anticipated pressure to accommodate wind energy schemes.
GROUP 9: COALFIELDS			
9A. Settled Coalfield Farmlands	Village expansion. Mixed-used development on the fringes of larger settlements	Road improvements, including widening and new junctions.	Likely or anticipated pressure to accommodate wind energy schemes.

FORCES FOR CHANGE				
MINERALS AND WASTE	AGRICULTURE, LAND MANAGEMENT AND FISHING	FORESTRY AND WOODLAND	TOURISM AND LEISURE	ENVIRONMENT PROCESSES AND CLIMATE CHANGE
Limestone quarrying. Demand for new quarries.	Agricultural intensification.	Opportunity for small-scale woodland planting, along the scarp.		
Limestone quarrying. Demand for new quarries.	Agricultural intensification. Maintenance of stone walls.	Limited opportunity for new woodland planting. Management of existing woodland.		
Limestone quarrying. Demand for new quarries.	Reduction in grazing.	Limited opportunity for new woodland planting. Management of existing woodland.	Visitor pressure from day-trippers and walkers. Development of new visitor infrastructure.	
Limestone quarrying. Demand for new quarries. Redevelopment of former coal mining sites.	Agricultural intensification. Cultivation of energy crops.	Opportunity for woodland planting.		
Chalk quarrying. Demand for new quarries.	Agricultural intensification. Increase in arable production.	Opportunity for small-scale woodland planting. Management of existing woodland.	Visitor pressure on historic towns. Increasing number of visitor centres, caravan/camp sites and holiday cottages.	
Chalk quarrying. Demand for new quarries.	Agricultural intensification. Cultivation of energy crops. Poor state of repair of historic agricultural buildings.	Opportunity for woodland planting. Management of existing woodland.	Visitor pressure on historic towns. Increasing number of visitor centres, caravan/camp sites and holiday cottages.	
	Agricultural intensification. Proliferation of large scale agricultural buildings.	Opportunity for woodland planting. Management of existing woodland.		
Redevelopment of former coal mining sites.	Agricultural intensification. Cultivation of energy crops.	Opportunity for woodland planting.		

LANDSCAPE TYPE	FORCES FOR CHANGE		
	BUILT DEVELOPMENT	INFRASTRUCTURE	ENERGY PROVISION
GROUP 10: WOODS AND FORESTS			
10A. Forest Hills and Ridges	Village expansion. Mixed use development on the fringe of larger settlements.	Management of historic routes. Redevelopment of air-fields.	Likely or anticipated pressure to accommodate wind energy schemes.
10B. Sandstone Forests and Heaths	Village expansion. Mixed-used development on the fringes of larger settlements.	Road improvements, including widening and new junctions.	
10C. Wooded Slopes and Valleys	Residential along arterial routes. Mixed-used development on the fringes of larger settlements.		Anticipated opportunities for hydro electric power provision.
10D. Forested Ancient Hills	Village expansion. Development around Leicester and other urban extension as part of growth point.		
GROUP 11: GRITSTONE MOORS AND FRINGES			
11A. Open Moors and Inbye Land	Limited village expansion on moorland fringes.	New access roads to assist land management.	
11B. Moorland Valleys		Road improvements to reduce congestion.	
11C. Settled Valleys and Enclosed Gritstone Uplands	Village expansion. Mixed-used development on the fringes of larger settlements. Conversion of traditional agricultural buildings.	Road improvements, including widening and new junctions. Management of historic routes.	
11D. Upland Pastoral Hills and Valleys	Village expansion.	Management of historic routes.	

FORCES FOR CHANGE				
MINERALS AND WASTE	AGRICULTURE, LAND MANAGEMENT AND FISHING	FORESTRY AND WOODLAND	TOURISM AND LEISURE	ENVIRONMENT PROCESSES AND CLIMATE CHANGE
Stone quarrying. Demand for new and restoration of redundant quarries.	Agricultural intensification. Maintenance of stone walls. Inappropriate parkland management.	Opportunity for woodland planting.		
Sandstone quarrying. Demand for new and restoration of redundant quarries.	Agricultural intensification. Increase in arable production. Cultivation of energy crops. Inappropriate parkland management.	Opportunity for woodland planting. Management of existing woodland.	Visitors to Sherwood Forest. Development of new infrastructure. Aspiration for Sherwood Forest Regional Park.	
	Agricultural intensification and diversification.	Opportunity for small-scale woodland planting. Management of existing woodland.	Visitor pressure from day-trippers and walkers. Development of new visitor infrastructure.	
Stone quarrying. Demand for new and restoration of redundant quarries.	Agricultural intensification.	Opportunity for woodland planting. Management of existing woodland.	Visitors to country park and reservoirs. Aspiration for Charnwood Forest Regional Park.	
	Over grazing on moors and in clough woodlands.	Threat from grazing. Opportunity for small-scale woodland planting in cloughs and valleys.	Visitor pressure from day-trippers and walkers. Development of new visitor infrastructure.	
	Agricultural intensification. Over grazing in woodlands.	Threat from grazing. Management of existing woodland and conversion to mixed woodland.	Visitors to reservoirs. Development of new visitor infrastructure.	
	Agricultural intensification.	Opportunity for small-scale woodland planting.	Visitor pressure on historic towns. Increasing number of visitor centres, caravan/camp sites and holiday cottages.	
	Agricultural intensification. Poor state of repair of historic agricultural buildings.	Planting of shelterbelts. Limited opportunity for new woodland planting.	Visitor pressure from day-trippers and walkers. Development of new visitor infrastructure.	

SECTION 6

ADDITIONAL INFORMATION



Chalk Wolds escarpment near Tetford, Lincolnshire (© Lincolnshire Wold Countryside Service)

6.1 GLOSSARY

Key Landscape Character Assessment Terms

Analysis	The process of dividing up the landscape into its component parts to gain a better understanding of it.
Approach	The step-wise process by which landscape assessment is undertaken.
Assessment	The term used to describe all the various ways of looking at, analysing, evaluating and describing the landscape.
Character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
Characterisation	The process of identifying, classifying, mapping and describing areas of similar character.
Central Province	English Heritage, in its Atlas of Rural Settlement in England (Robert and Wrathmell, 2000), divided England up into three broad Provinces on the basis of each area's distinctive mixture of nucleated and dispersed settlements. These have been further divided into sub-provinces and local regions. The Central Province in the East Midlands region contains the modern administrative areas of Northamptonshire, Leicestershire, Rutland, Lincolnshire and the southern portions of both Nottinghamshire and Derbyshire.
Elements	Individual components, which make up the landscape, such as trees and hedges.
Features	Particularly prominent or eye catching elements, such as tree clumps, church towers, or wooded skylines.
Land cover	Combination of land use and vegetation that cover the land surface.
Land form	Combinations of slope and elevation that produce the shape and form of the land surface.
Landscape	Primarily the visual appearance of the land including its shape, form and colours. However, landscape is not purely a visual phenomenon. The landscape relies on a range of other dimensions including geology, landform, soils, ecology, archaeology, landscape history, land use, architecture and cultural associations.
Objective	Method of assessment in which personal feelings and opinions do not influence characterisation.
Subjective	Method of assessment in which personal views and reactions are used in the characterisation process.

Other Technical Terms

3Cs/6Cs	The Three Cities area associated with Derby, Leicester and Nottingham was originally announced by Government as the Three Cities Growth Point in the region. Subsequently, in the spirit of partnership working to oversee implementation of growth, the term 6Cs was adopted (3 Cities 3 Counties). The name 3Cs and 6Cs is often used interchangeably but does apply to the same regional sub area.
Alluvium	Sedimentary deposits resulting from the action of rivers, and including those laid down in river channels, floodplains, estuaries and lakes.
Ancient Woodland	Land continuously wooded since AD 1600. It is an extremely valuable ecological resource, usually with a high diversity of flora and fauna.
Assarting	The process of clearing woodland or waste land for cultivation, associated particularly with the 12th and 13th Centuries
Bathymetry	The process of measuring the depth of a body of water.
Benthic	The environment that exists on the ocean floor.
Breccia	A coarse grained rock composed of angular broken rock fragments held together by a mineral cement or in a fine-grained matrix.
Bronze Age	(c. 2,500 – 750 BC) A cultural phase in humankind’s evolution when alloying of copper and tin was perfected. Metalworking technology and new types of flint tool and pottery design were introduced at the start of this period. Changes in society were reflected in the emergence of new burial techniques, particularly round barrows. In the Middle Bronze Age, cremation replaced inhumations and in the late Bronze Age social and economic changes led to the abandonment of old funerary rights in favour of less traceable rights.
Cainozoic	The latest era of geologic time that includes the Tertiary and the Quaternary Periods. It is characterised by the formation of modern continents, glaciation, and the diversification of mammals, birds, and plants.
Cambrian	The first period of the Palaeozoic era, 543 to 495 million years ago. It was dominated by marine environments
Carboniferous	Period of the Palaeozoic era following the Devonian and preceding that of the Permian. It ranged from 355 million years to about 290 million years ago. Economically, the Carboniferous is the most important of the systems as it contains most of the world’s coal reserves and other deposits such as oil and iron ore.
Carr	Woodland in waterlogged terrain; characteristic species include alder, willow and willow.

Clint	Blocks of flat limestone isolated by deep fissures known as grykes and which together make up limestone pavement.
Cretaceous	The third and final period of the Mesozoic era, following the Jurassic and preceding the Palaeocene periods. It ranged from 140 to 65 million years ago and was dominated by marine environments
Coppice	A group of small trees or shrubs, maintained by periodic cutting or pruning to encourage the growth of long, straight shoots that can be harvested.
Geomorphology	The study of landforms and their origins .
Geology	The study of the origin, structure, composition and history of the Earth together with the processes that have led to its present state.
Glacial	Term used to describe a cold phase during the ice age.
Gritstone	A coarse sandstone in which the particle shape is angular to sub angular.
Gryke	A deep fissure between and isolating blocks of limestone pavement, known as clints, and formed by corrosive drainage along a joint or a crack in the limestone rock.
Head	Superficial deposit generally of Holocene age formed by solifluction and hill wash
Holocene	Term used to describe the whole of the recent life and referring to all of the time that has elapsed since the Pleistocene. It is one of the two epochs that make up the Quaternary period. The date of the beginning of the Holocene is considered to be 10,000 million years ago.
Hillfort	Any hilltop fortress, although the term usually applies to defensive sites of the Late Bronze Age or Iron Age. Some hillforts were permanent settlements but many were temporary refuges.
Iron Age	(c. 750 BC – AD 43) A cultural phase of humankind's evolution when technical improvements in iron-working enabled iron tools and weapons to replace those of the preceding Bronze Age. Population growth led to competition for land and the development of a more territorial society. Improved farming technology and scarcity of land brought about the cultivation of heavier and poorer soils.
Jurassic	The middle period of the Mesozoic era, preceding the Cretaceous, succeeding the Triassic periods, and named after the Jura Mountains of central Europe. It commenced about 205 million years ago and terminated about 140 million years ago during which time dinosaurs reached their maximum size. Rock strata consisting of varying thicknesses of mudstones, limestones and some sandstones that were deposited in fluctuating shallow and deep seas, interspersed with periods of estuarine and fluvial deposition.

Mesolithic	(c. 8,000 – 4,000 BC) An archaeological term meaning ‘middle stone’ age and used to describe the culture achieved during the early Post Glacial period when humankind had moved from herd-hunting practices of the upper Palaeolithic, but had not yet discovered or adopted the use of agriculture.
Neolithic	(c. 4,000 – 2,500 BC) An archaeological term used to describe the ‘new stone’ age. This applies to the culture achieved during the middle Post Glacial period when mankind had begun to polish and grind stone artefacts (a technological advance from the bashing and flaking of the Palaeolithic and Mesolithic). The Neolithic also saw the introduction of agriculture.
Ooid	A sedimentary rock made up of ooids, comprising spherical rock particles formed by the gradual accretion of material around an inorganic (e.g. sand) or organic (e.g. shell) nucleus. Ooliths are small and their appearance has been likened to fish roe (from where the name is derived).
Outcrop	The area where a particular rock appears at the surface.
Ordovician	The second geological period of the Paleozoic era. The period includes rocks that were formed between about 495 million and 443 million years ago.
Orogenies	Major periods of ‘fold-mountain’ formation.
Palaeolithic	An archaeological term used to describe the earliest form of human culture. The earliest toolmakers lived during the Pleistocene in Britain after the main glacial periods had passed.
Palaeozoic	The first of the eras of geological time after the Pre-Cambrian and prior to the Mesozoic. It lasted from about 543 million years to 250 million years ago.
Pelagic	The environment of the open ocean as distinct from the ocean floor.
Permian	The last geological period of the Paleozoic era, from 290 to 250 million years BP. It was dominated by arid desert conditions in the west of the region and warm seas in the east. It was a period of intense erosion.
Pleistocene	The first epoch of the Quaternary period from 2.6 million to 10,000 years ago and characterised by a series of ice ages and associated interglacial periods.
Central Province	The Atlas of Rural Settlement in England (Robert and Wrathmell, 2000), divided England up into three broad Provinces on the basis of each area’s distinctive mixture of nucleated and dispersed settlements. The Central Province in the East Midlands region contains the modern administrative areas of Northamptonshire, Leicestershire, Rutland, Lincolnshire and the southern portions of both Nottinghamshire and Derbyshire.

Quaternary	The younger of the two geological periods of the Cainozoic. This was the era that saw the appearance of humankind. It comprises two epochs, the Pleistocene and the Holocene and deposits consist largely of alluvium, tufa, head, head gravel and river terrace deposits.
Querns	Shaped stones that were used to hand-grind corn.
RIGS	Regionally Important Geological and Geomorphological sites. These are sites of geological importance notified to county councils that should be considered in all planning applications. They carry no protection
Riparian	River bank habitats.
Reef knolls	A dome like mass of limestone that has grown upwards from a reef in order to keep pace with the deposition of surrounding sediments.
Scree	An accumulation of fragmented rock waste below a cliff or rock face formed as a result of weathering of a rock exposure.
SSSI	Sites of Special Scientific Interest. These are sites of geological and biological importance designated and managed by Natural England. They are fully protected.
Till	A sediment left behind by melting ice sheets in the Pleistocene; generally a sandy, pebbly clay (diamicton), and formed by the abrasion of rocks and soils by the ice. Its composition is dependent upon the rock types eroded.
Topography	Term used to describe the surface features of the earth's surface.
Transgression	An advance of the sea across a former land area.
Triassic	The first geological period of the Mesozoic era, extending from about 250 to 205 million years ago. It succeeded the Permian and preceded the Jurassic. In Britain, Triassic rock formations consist mainly of mudstones, sandstones, and conglomerates. This period saw deposition in arid continental environments by rivers and aeolian processes..
Vernacular	Built in local style from local materials.
Veteran Tree	A tree which is of interest biologically, culturally or aesthetically because of its age, size or condition.

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Capturing the Cultural Services and Experiential Qualities of Landscape - <http://naturalengland.etraderstores.com/NaturalEnglandShop/NECR024>

6.3 ACKNOWLEDGEMENTS

The East Midlands Regional Landscape Character Assessment has benefited from the expertise and guidance of a number of individuals and organisations. Thanks are extended to all those who contributed.

Overall Concept and Project Management

Project Design and Delivery

Project Steering Group (Phases 1 and 2)

GIS Data Supply and Advice

Thanks are extended to the many individuals who gave their advice throughout the project on specific areas of expertise including

Thanks are also extended to the many individuals and organisations who reviewed and provided comprehensive comments on the East Midlands Regional Landscape Character Assessment Consultation Draft.

SECTION 7

SUPPORTING FIGURES



LIST OF FIGURES

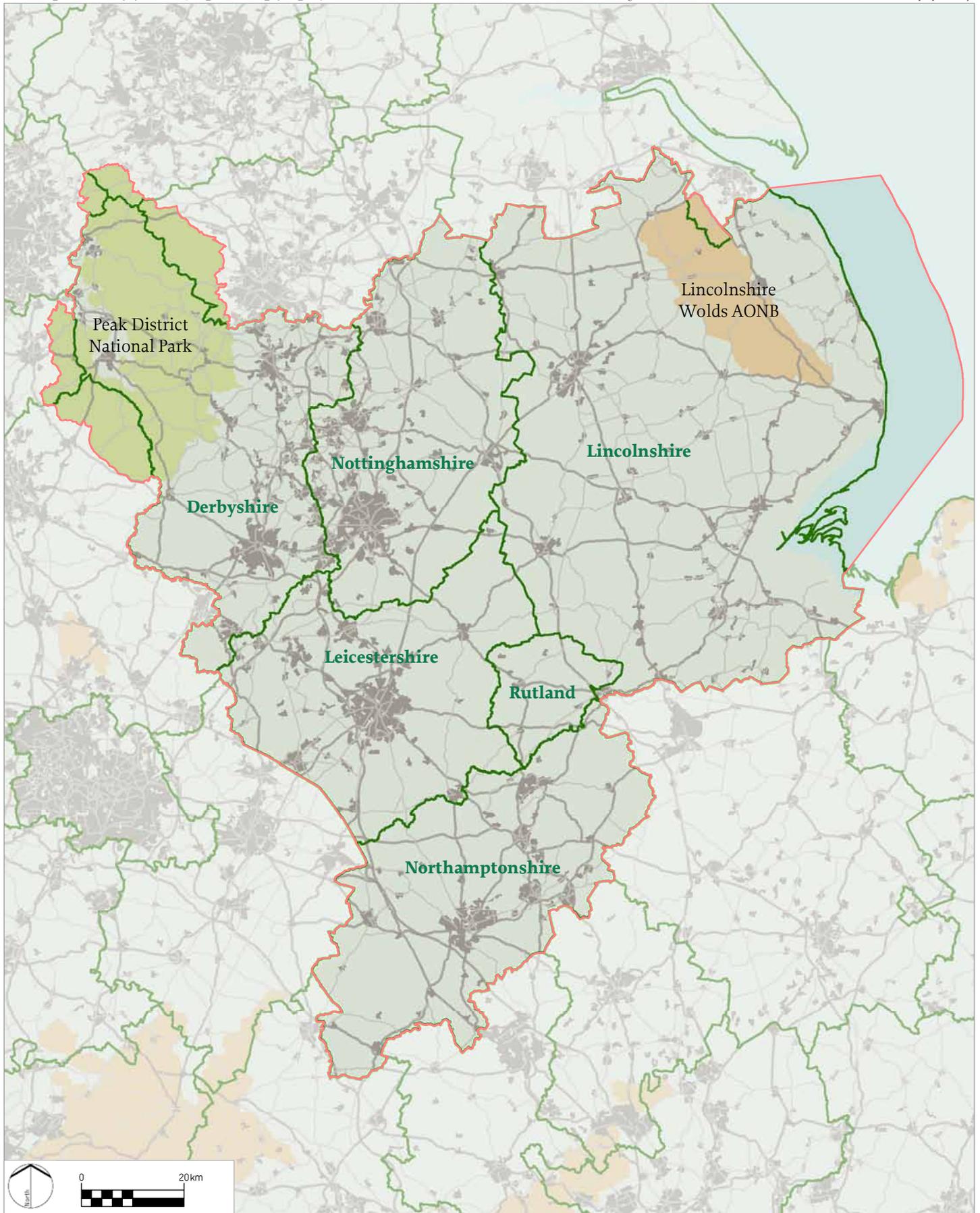
- FIGURE 1: Study Area
- FIGURE 2: National Character Areas and National Landscape Typology
- FIGURE 3: Distribution of Landscape Character Assessments and Historic Landscape Character Assessments
- FIGURE 4: National Landscape / Coastal Designations and World Heritage Sites
- FIGURE 5: Simplified Solid Geology
- FIGURE 6: Simplified Superficial Geology
- FIGURE 7: Landform
- FIGURE 8: Soils
- FIGURE 9: Hydrology
- FIGURE 10: Agricultural Land Use, Quality Forest Types / Ancient Woodland
- FIGURE 11: Distribution of Biodiversity Action Plan (BAP) Habitats
- FIGURE 12: Nature Conservation Designations
- FIGURE 13: Offshore Geology
- FIGURE 14: Bathymetry
- FIGURE 15: Tranquillity
- FIGURE 16: Index of Multiple Deprivation
- FIGURE 17: Regional Landscape Character Types
- FIGURE 18: National Character Areas and Regional Landscape Character Types

FIGURE I: STUDY AREA

Plan illustrates the Study Area Boundary. This is defined by the extent of the East Midlands Region, and the full extent of the Peak District National Park and Lincolnshire Wolds AONB which are also shown. The Study Area extends 15km offshore. Administrative Counties within the region are also illustrated

Legend

-  Study Area Boundary
-  County Boundary
-  Area of Outstanding Natural Beauty
-  National Park



EAST MIDLANDS REGIONAL
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INCORPORATING THE PEAK DISTRICT
NATIONAL PARK AND LINCOLNSHIRE WOLDS AONB

LDĀ DESIGN

Figure 1
Study Area

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DWG.NO	2757/Figure 1	
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SCALE@A4	1:1,000,000	CHECKED IH
STATUS	FINAL	APPROVED SC

FIGURE 2: NATIONAL CHARACTER AREAS AND NATIONAL LANDSCAPE TYPOLOGY

Plan illustrates Natural England's National Character Areas and National Landscape Typology

Legend



Study Area Boundary



National Character Area Boundary

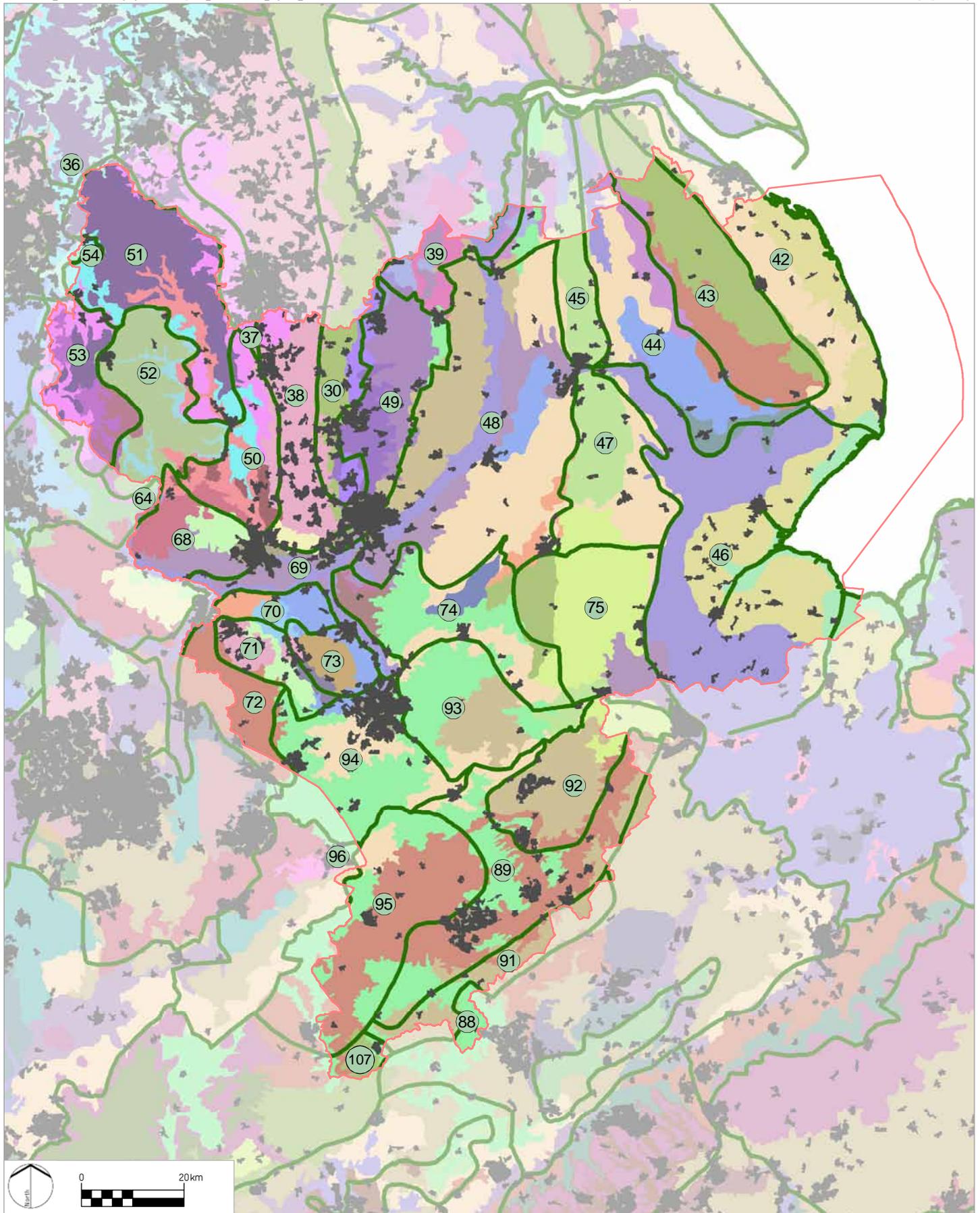
47

National Character Area Number

- 30 - Southern Magnesian Limestone
- 36 - Southern Pennines
- 37 - Yorkshire Southern Penine Fringe
- 38 - Nottinghamshire, Derbyshire and Yorkshire Coalfield
- 39 - Humberhead Levels
- 42 - Lincolnshire Coast and Marshes
- 43 - Lincolnshire Wolds
- 44 - Central Lincolnshire Vale
- 45 - Northern Lincolnshire Edge with Coversands
- 46 - The Fens
- 47 - Southern Lincolnshire Edge
- 48 - Trent and Belvoir Vales
- 49 - Sherwood
- 50 - Derbyshire Peak Fringe and Lower Derwent
- 51 - Dark Peak
- 52 - White Peak
- 53 - South West Peak
- 54 - Manchester Pennine Fringe
- 64 - Potteries and Churnet Valley
- 68 - Needwood and South Derbyshire Claylands
- 69 - Trent Valley Washlands
- 70 - Melbourne Parklands
- 71 - Leicestershire and South Derbyshire Coalfield
- 72 - Mease/Sence Lowlands
- 73 - Charnwood
- 74 - Leicestershire and Nottinghamshire Wolds
- 75 - Kesteven Uplands
- 88 - Bedfordshire and Cambridgeshire Claylands
- 89 - Northamptonshire Vales
- 91 - Yardley - Whittlewood Ridge
- 92 - Rockingham Forest
- 93 - High Leicestershire
- 94 - Leicestershire Vales
- 95 - Northamptonshire Uplands
- 96 - Dunsmore and Feldon
- 107 - Cotswolds



Colours illustrate National Landscape Character Types



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Figure 2
 National Character Areas
 and
 National Landscape Typology

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FIGURE 3: DISTRIBUTION OF LANDSCAPE CHARACTER ASSESSMENTS AND HISTORIC LANDSCAPE CHARACTER ASSESSMENTS

Plan illustrates the distribution of Landscape Character Assessments and Historic Landscape Character Assessments undertaken at different scales within the study area.

Legend

 Study Area Boundary

County Scale Landscape Character Assessments

-  The Landscape Character of Derbyshire, Derbyshire County Council, 2003
-  Leicester Leicestershire and Rutland Landscape & Woodland Strategy, Leicestershire County Council, 2001 [Leicestershire part]
-  Northamptonshire Current Landscape Character Assessment, LDA Design, 2005. RNRP CIC and Northamptonshire County Council
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Other Landscape Character Assessments

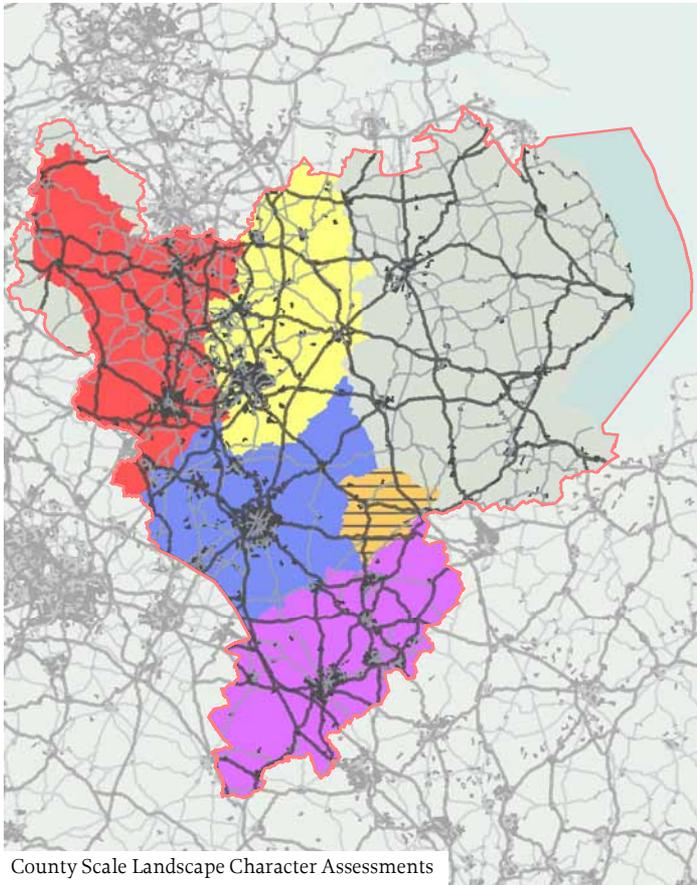
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-  National Forest Strategy 2004-2014, National Forest Company, 2004
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District Scale Landscape Character Assessments

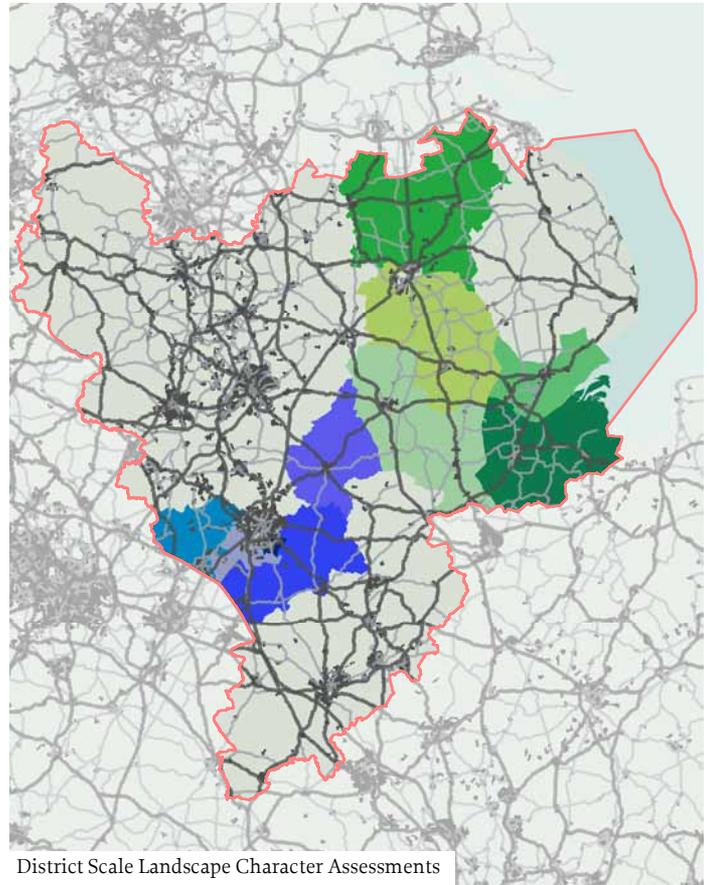
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Historic Landscape Character Assessments

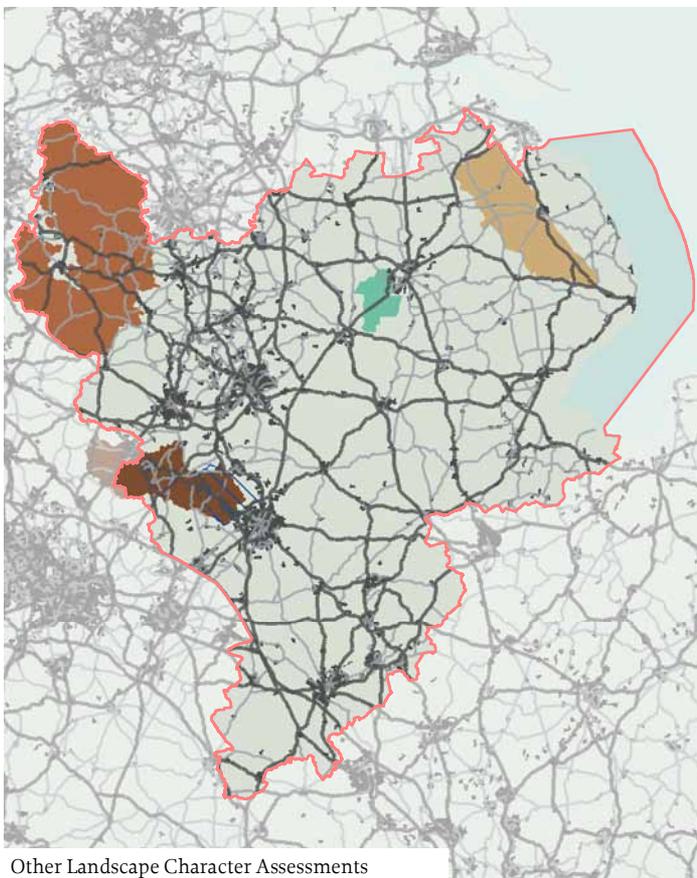
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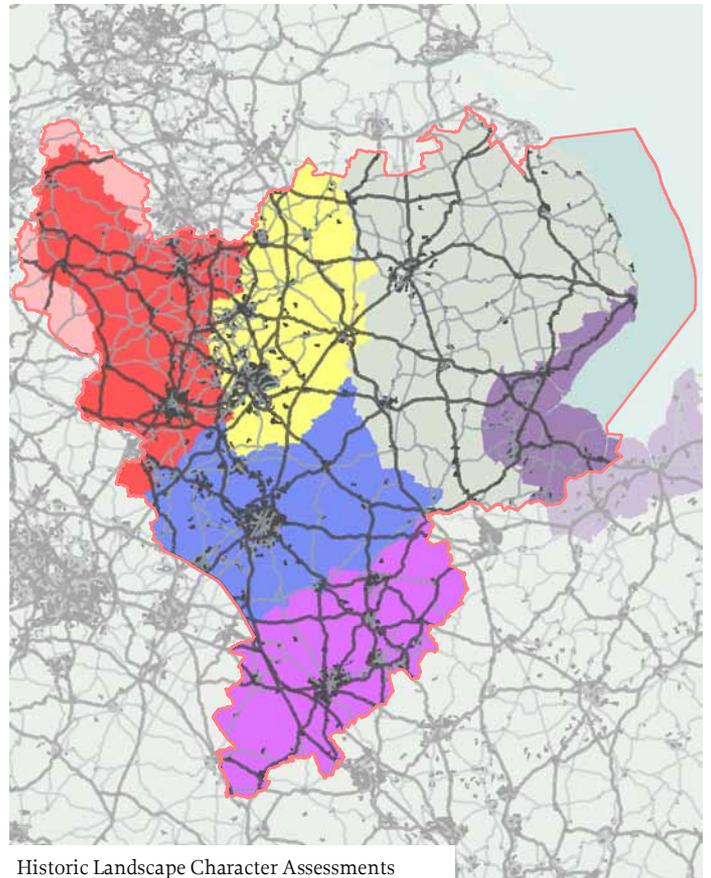
County Scale Landscape Character Assessments



District Scale Landscape Character Assessments



Other Landscape Character Assessments



Historic Landscape Character Assessments

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Figure 3
Distribution of Landscape
Character Assessments and
Historic Landscape Character
Assessments

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FIGURE 4: NATIONAL LANDSCAPE, COASTAL DESIGNATIONS AND WORLD HERITAGE SITES

Plan illustrates the distribution of National Parks, Areas of Outstanding Natural Beauty, Heritage Coasts and World Heritage Sites

Legend

 Study Area Boundary

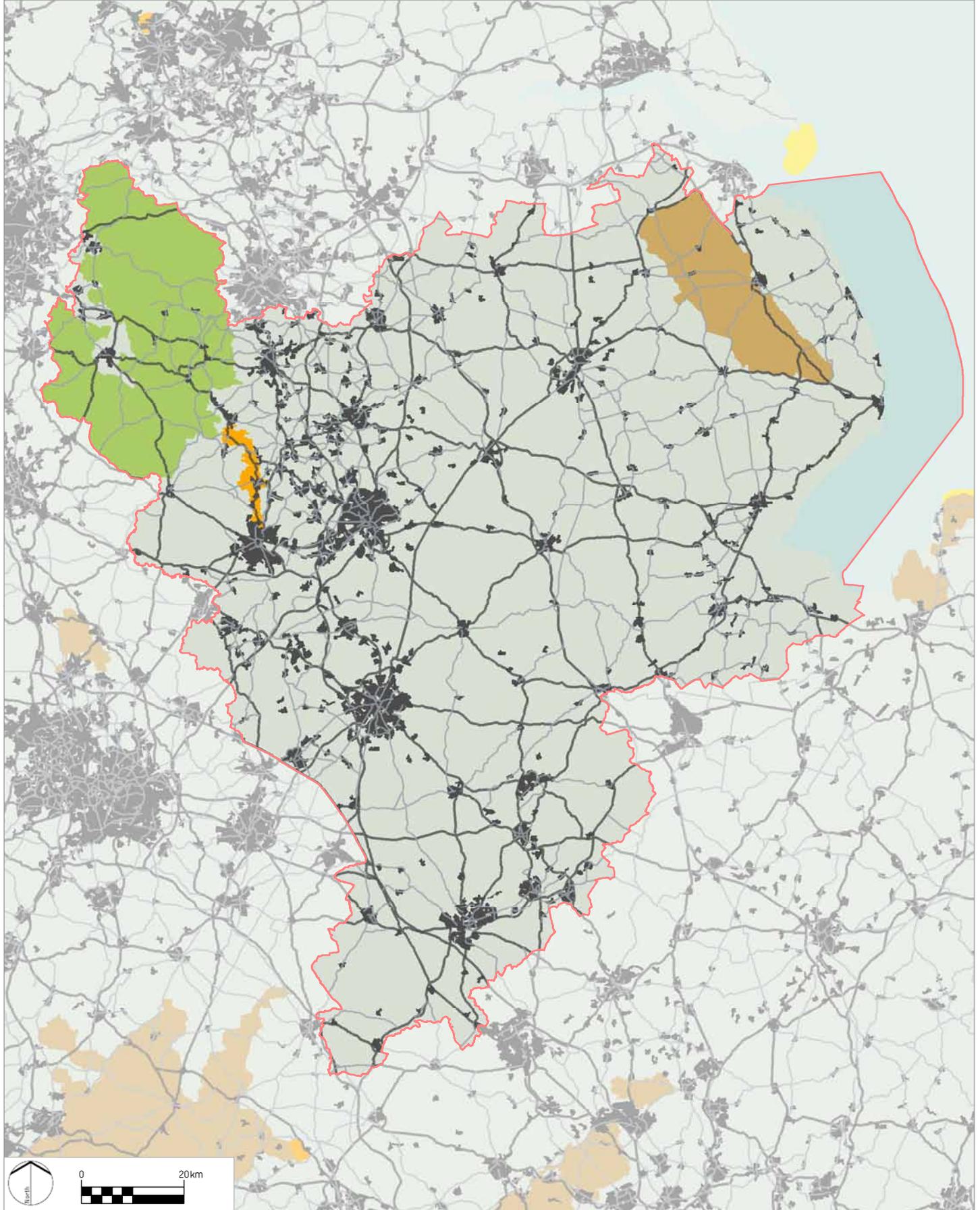
National Designation

 Area of Outstanding Natural Beauty

 National Park

 Heritage Coast

 World Heritage Site



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Figure 4
 National Landscape, Coastal Designations
 and World Heritage Sites

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FIGURE 5: SIMPLIFIED BEDROCK GEOLOGY

Plan illustrates major rock groups by geological period.
(adapted from Fig 1.6 East Midlands Solid Geology in
David Stocker, England's Landscape - The East Midlands
English Heritage, 2006)

Legend

 Study Area Boundary

Palaeogene

 London Clay Formation

Cretaceous

 Chalk Group

 Greensand (Upper and Lower) and Gault Formations

Jurassic

 Amphill and Kimmeridge Clay Formations

 Oxford Clay and Kellaway Formations

 Cornbrash Formation

 Great Oolite Group

 Inferior Oolite Group

 Lias Group (Whitby Mudstone, Marlstone Rock,
Charmouth Mudstone and Scunthorpe
Mudstone Formations)

Permian and Triassic

 Triassic Mudstones (Mercia Mudstone Group)

Permian

 Permian and Triassic Sandstones
Undifferentiated (Sherwood Sandstone
Group and Lenton Sandstone Formation)

 Permian Mudstones (Edlington Formation)

 Cadeby Formation ('Magnesian Limestone')

Carboniferous

 Pennine Coal Measures

 Craven and Millstone Grit Groups

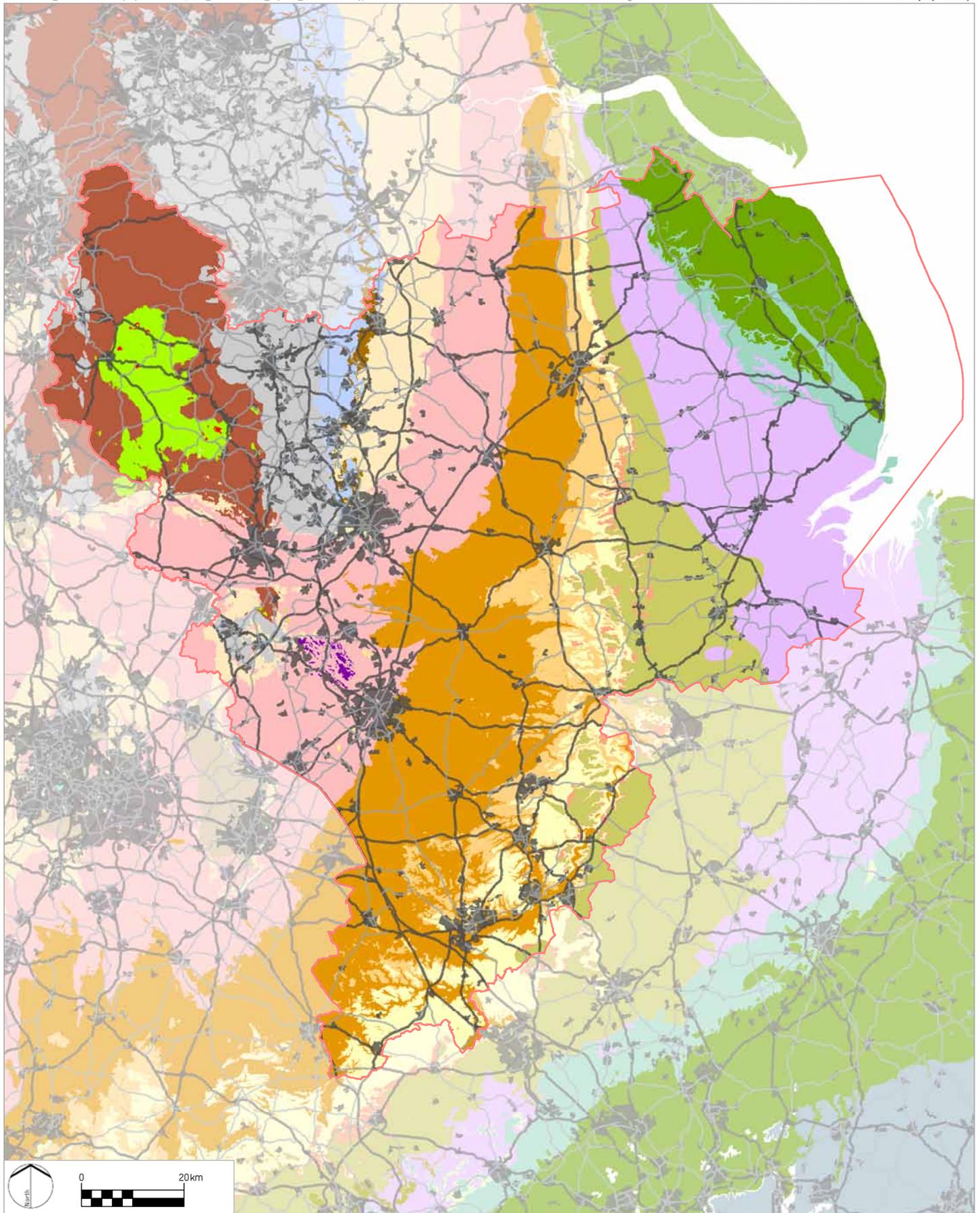
 Carboniferous Limestone Supergroup

Precambrian

Igneous Rocks (Intrusive and Extrusive)

 Microgabbro (Dinantian)

 Charnian Supergroup



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Figure 5
 Simplified Bedrock Geology

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 © Crown Copyright. All rights reserved. Licence number Natural England 100046223 [2009]
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FIGURE 6: SIMPLIFIED SUPERFICIAL GEOLOGY

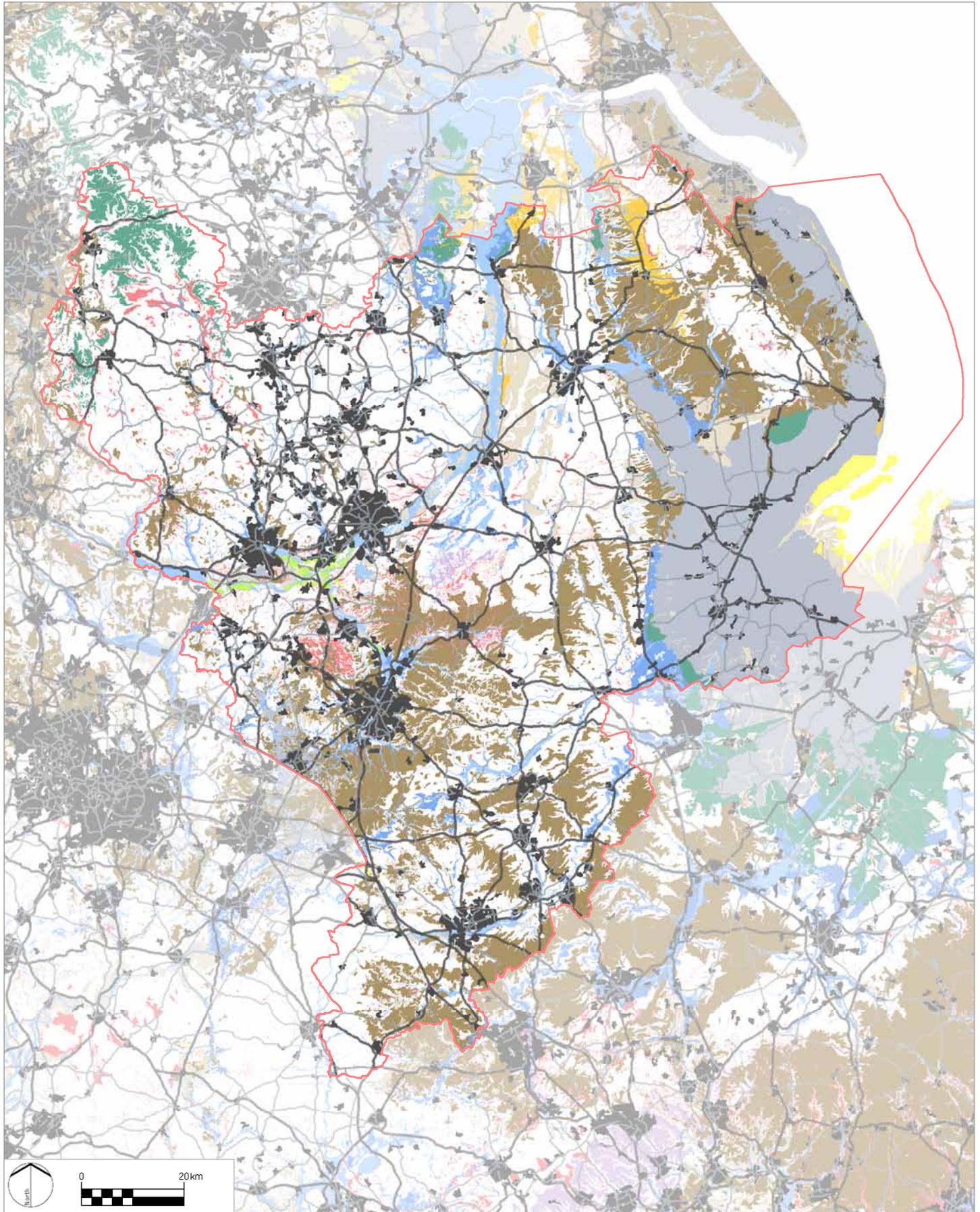
Plan illustrates simplified superficial geology.

Data in the British Geological Survey Data RCS_D theme has been grouped into major groups of like deposits.

Alluvial, Head, River Terrace and Blown Sand Deposits from the LEX_D theme are overlain for added detail.

Legend

	Study Area Boundary
	Alluvium and Alluvium Fan Deposits
	River Terrace Deposits
	Head
	Blown Sand
	Clays
	Clay with Sand, Silt, Sand and Gravel and Gravelly Clay
	Diamicton
	Silty Deposits
	Sand Deposits
	Sand with Gravel, Silt, Clay and Gravel and Boulders
	Peat



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Figure 6
 Simplified Superficial Geology

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FIGURE 7: LANDFORM

Plan illustrates topography at intervals of 50m.

Legend

 Study Area Boundary

Landform

 600m AOD - 650m AOD

 550m AOD - 600m AOD

 500m AOD - 550m AOD

 450m AOD - 500m AOD

 400m AOD - 450m AOD

 350m AOD - 400m AOD

 300m AOD - 350m AOD

 250m AOD - 300m AOD

 200m AOD - 250m AOD

 150m AOD - 200m AOD

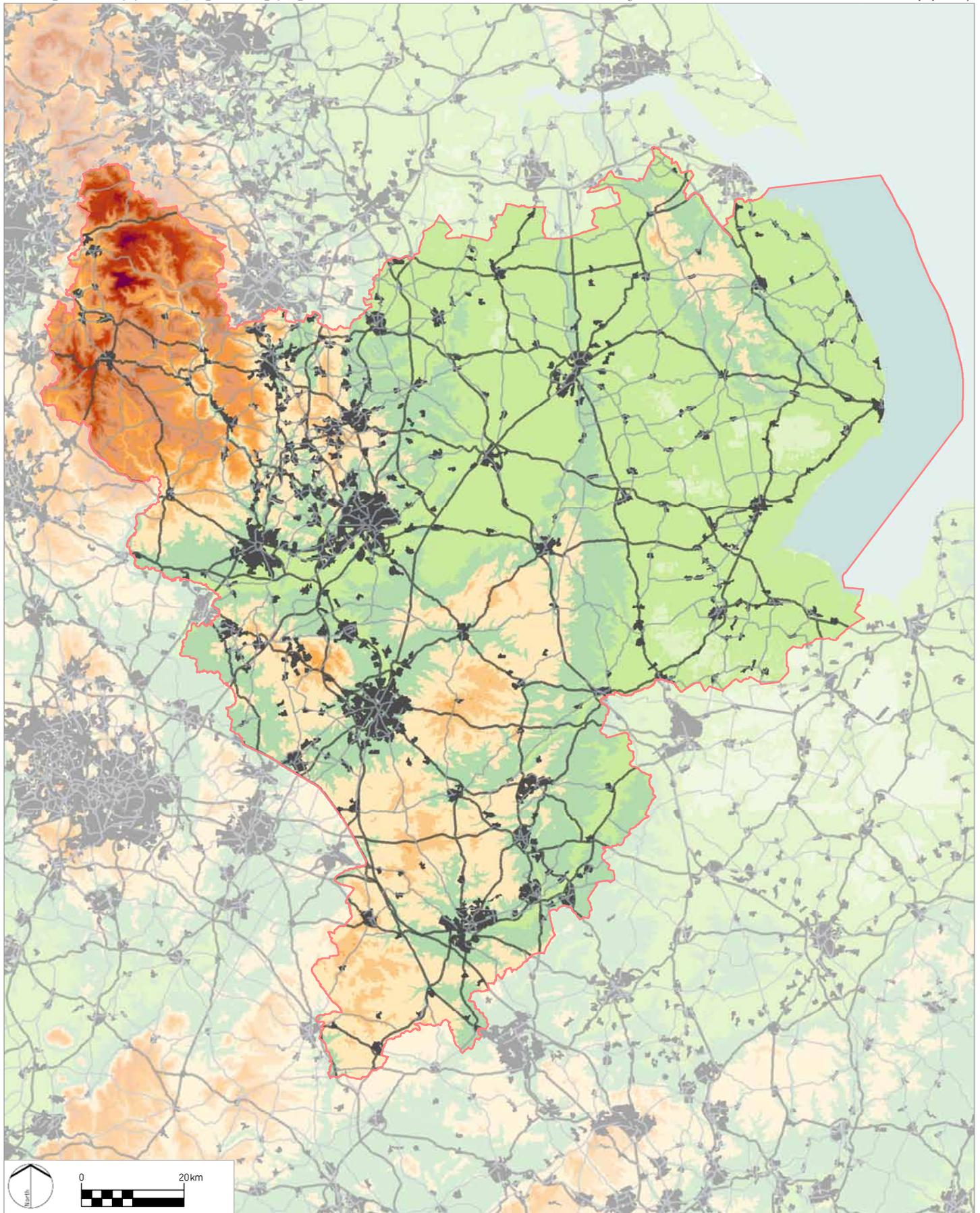
 100m AOD - 150m AOD

 50m AOD - 100m AOD

 0m AOD - 50m AOD

 Below 0m AOD

 Sea



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Figure 7
 Landform

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FIGURE 8: SOILS

Plan illustrates the following soil attributes:

Natural Drainage

Surface Texture

Soil Fertility

Soil Condition - by reference to one of 27 different broad types of soil.

Legend

 Study Area Boundary

Natural Drainage

-  Freely draining
-  Impeded drainage
-  Naturally wet
-  Slightly impeded drainage
-  Surface wetness
-  Variable

Surface Texture

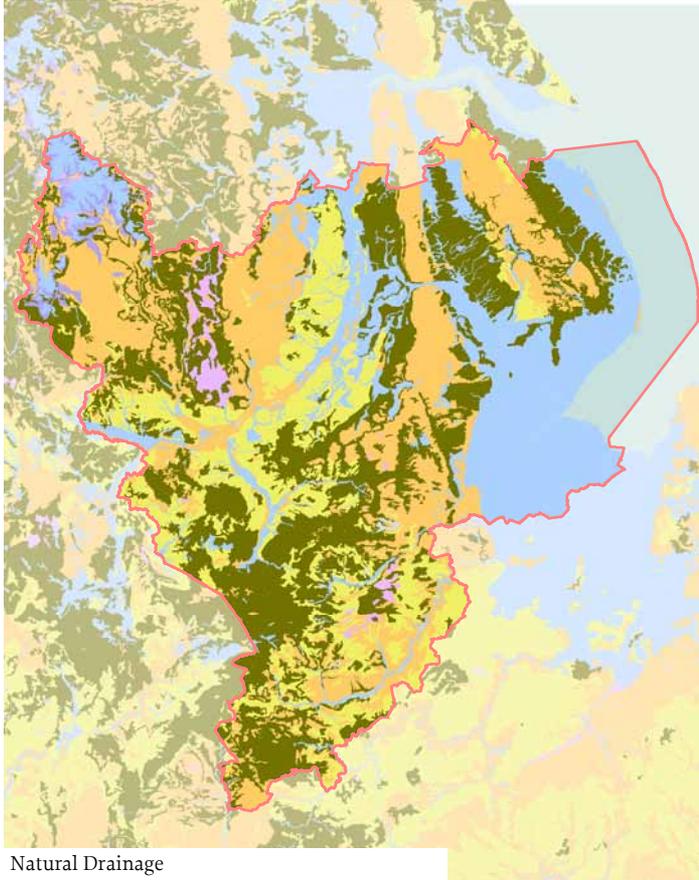
-  Clayey
-  Loamy
-  Peaty
-  Sandy

Natural Fertility

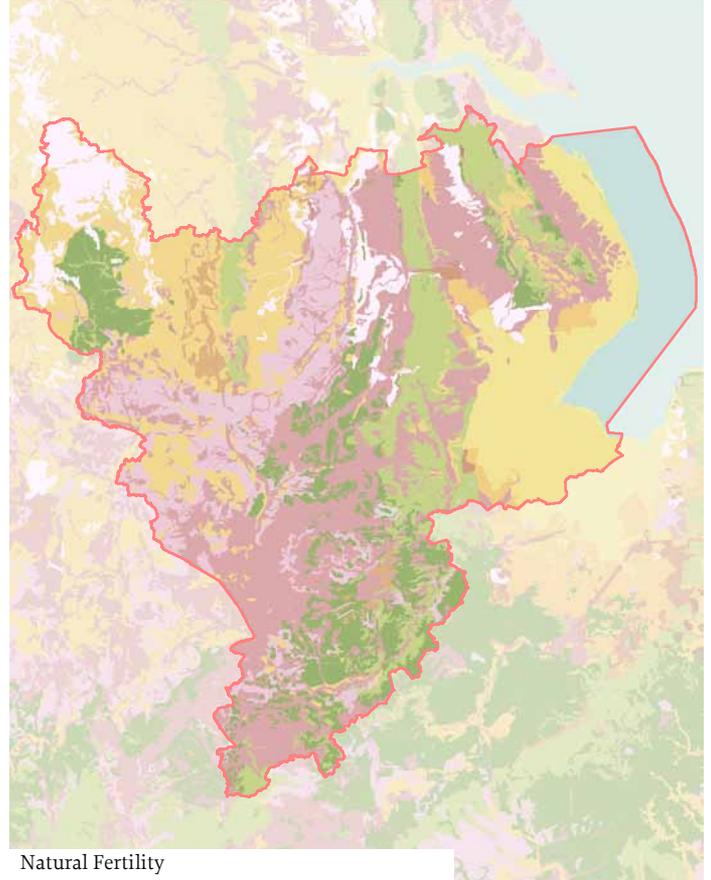
-  High
-  Lime-rich
-  Lime-rich but saline
-  Lime-rich to moderate
-  Low
-  Low to high
-  Low to moderate
-  Mixed, lime-rich to low
-  Mixed, low to lime-rich
-  Moderate
-  Moderate to high
-  Very low

Soil Condition

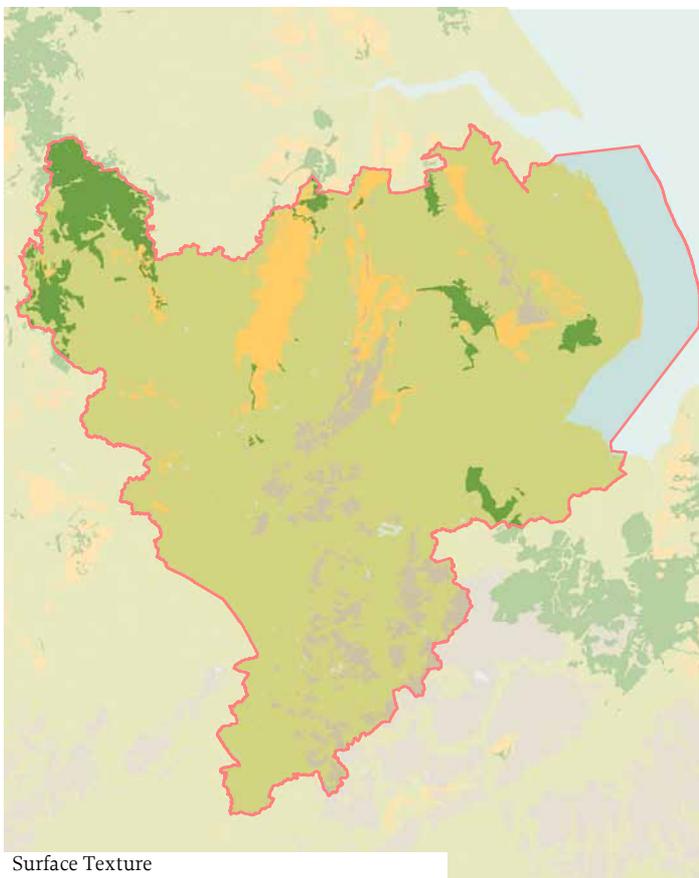
-  Saltmarsh soils
-  Shallow very acid peaty soils over rock
-  Shallow lime-rich soils over chalk or limestone
-  Sand dune soils
-  Freely draining lime-rich loamy soils
-  Freely draining slightly acid loamy soils
-  Freely draining slightly acid but base rich soils
-  Slightly acid loamy and clayey soils with impeded drainage
-  Lime-rich loamy and clayey soils with impeded drainage
-  Freely draining slightly acid sandy soils
-  Freely draining sandy Breckland soils
-  Freely draining floodplain soils
-  Freely draining acid loamy soils over rock
-  Freely draining very acid sandy and loamy soils
-  Naturally wet very acid sandy and loamy soils
-  Very acid loamy upland soils with a wet peaty surface
-  Slowly permeable seasonally wet acid loamy and clayey soils
-  Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils
-  Slowly permeable wet very acid upland soils with a peaty surface
-  Loamy and clayey floodplain soils with naturally high groundwater
-  Loamy and clayey soils of coastal flats with naturally high groundwater
-  Loamy soils with naturally high groundwater
-  Loamy and sandy soils with naturally high groundwater and a peaty surface
-  Restored soils mostly from quarry and opencast spoil
-  Blanket bog peat soils
-  Raised bog peat soils
-  Fen peat soils



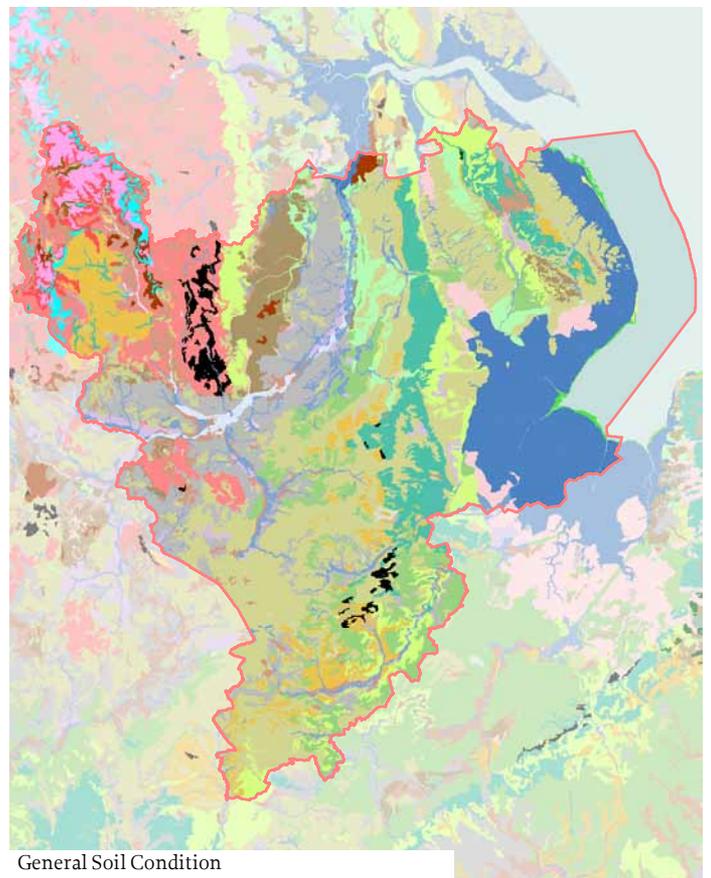
Natural Drainage



Natural Fertility



Surface Texture



General Soil Condition

EAST MIDLANDS REGIONAL
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NATIONAL PARK AND LINCOLNSHIRE WOLDS AONB

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Figure 8
Soils

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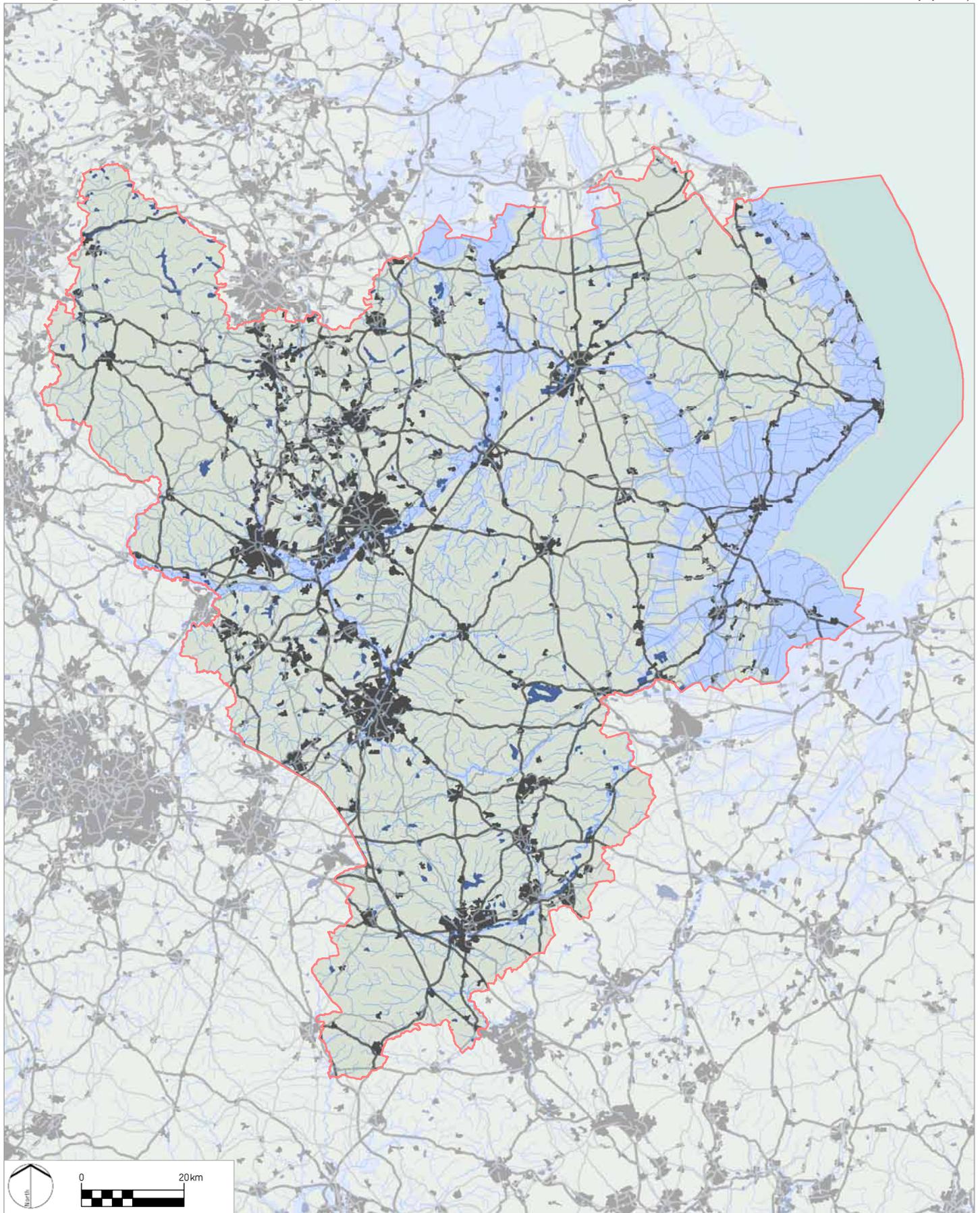
FIGURE 9: HYDROLOGY

Plan illustrates hydrological features (major water bodies and major rivers) from Ordnance Survey Mastermap.

Flood Zones show the extent of Flood Zone 3 data from the Environment Agency. Flood Zone 3 indicates the extent of areas with an annual probability of flooding of 1% (1 in 100) or greater from rivers, and 0.5% (1 in 200) or greater from the sea.

Legend

-  Study Area Boundary
-  Major River
-  Major Water Bodies
-  Flood Zone



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Figure 9
 Hydrology

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FIGURE 10: LAND USE, AGRICULTURAL LAND QUALITY, FOREST TYPES AND ANCIENT WOODLAND

Plan illustrates the distribution of major land use types.

Agricultural land use is illustrated using CEH Land Cover Map 2000 data. Simplified land cover types are shown from the BH Sub theme.

Agricultural Land Classification illustrates ALC Grades 1-5, Non Agricultural and Urban. Grade 3 land includes both sub Grades 3a and 3b.

Woodland Types are illustrated using the Forestry Commission National Inventory of Woodland and Trees.

Ancient Woodland illustrates the distribution of Ancient Semi-natural Woodland (ASNW) and Planted Ancient Woodland Sites (PAWS).

Legend

 Study Area Boundary

Land Use

-  Broad-leaved woodland
-  Coniferous woodland
-  Arable and horticulture
-  Improved grassland
-  Neutral / unimproved grassland
-  Calcareous grassland
-  Acid grassland
-  Inland rock / quarry
-  Littoral sand
-  Open water

Forest Types

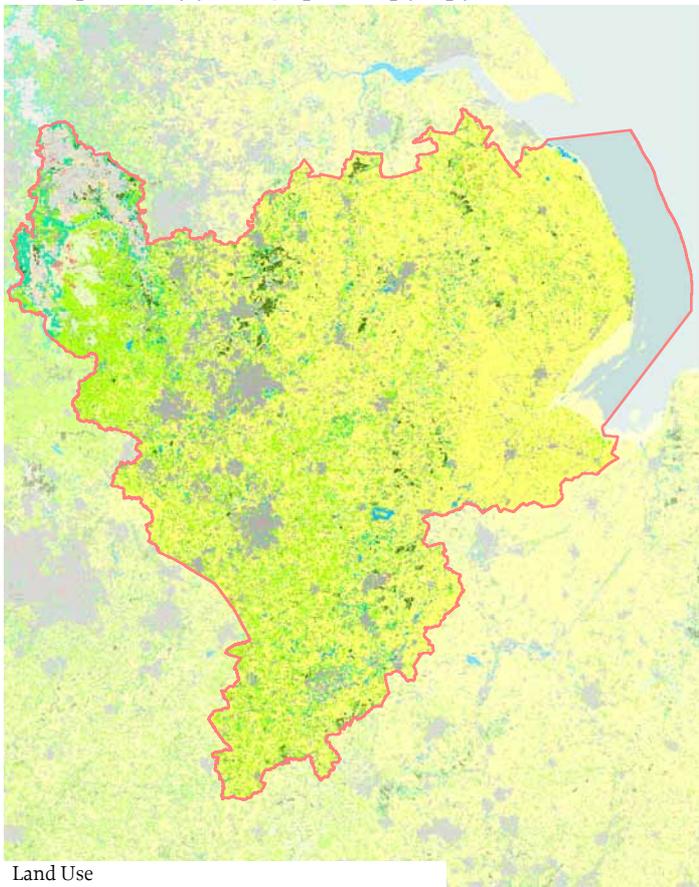
-  Broadleaved
-  Coniferous
-  Coppice
-  Felled
-  Ground prepared for planting
-  Mixed
-  Shrub
-  Young trees

Agricultural Land Quality

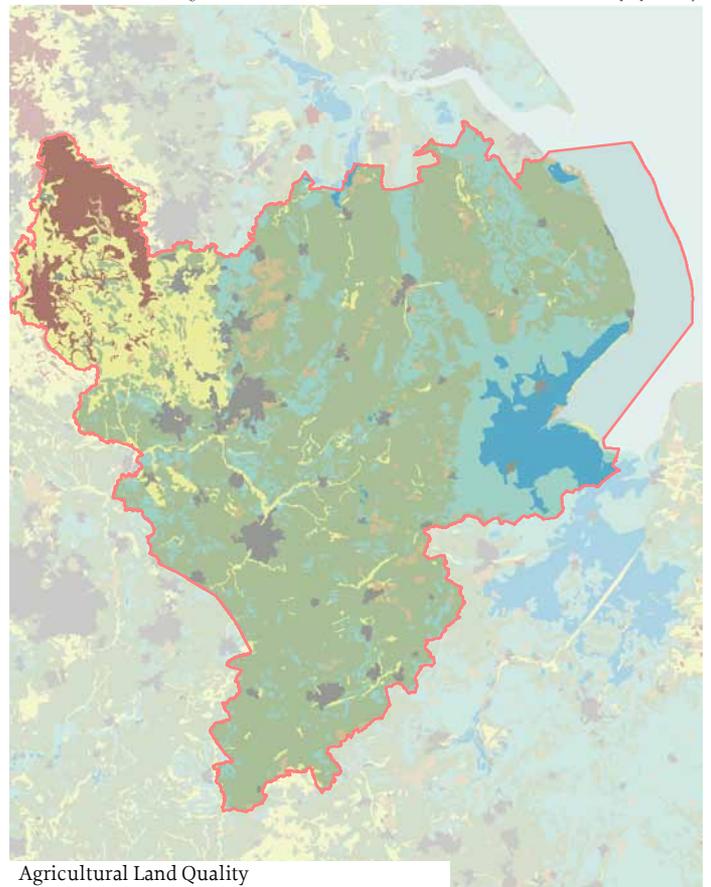
-  Grade 1
-  Grade 2
-  Grade 3
-  Grade 4
-  Grade 5
-  Non - Agricultural

Ancient Woodland

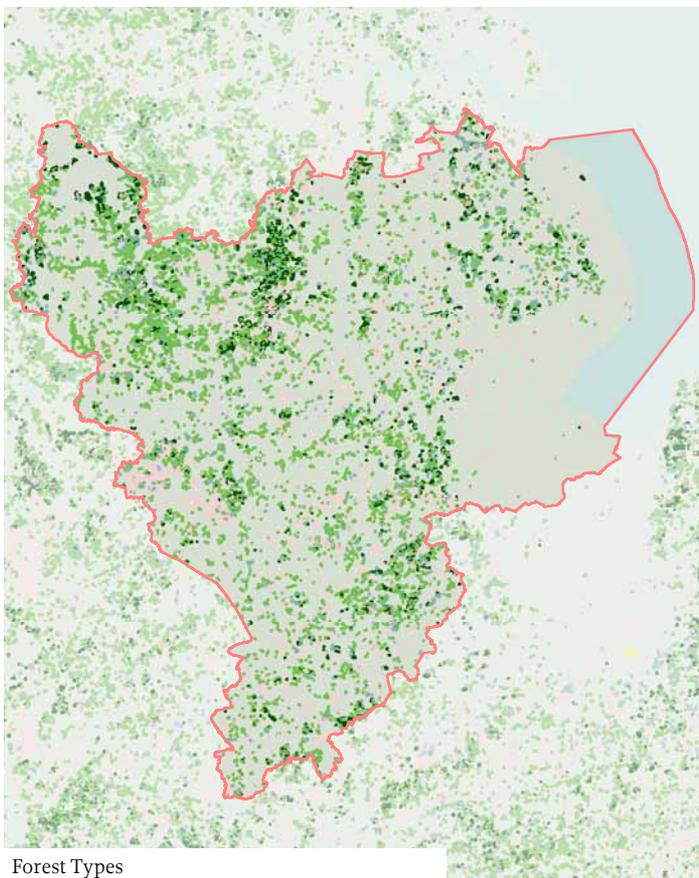
-  Ancient semi-natural woodland
-  Planted ancient woodlands sites



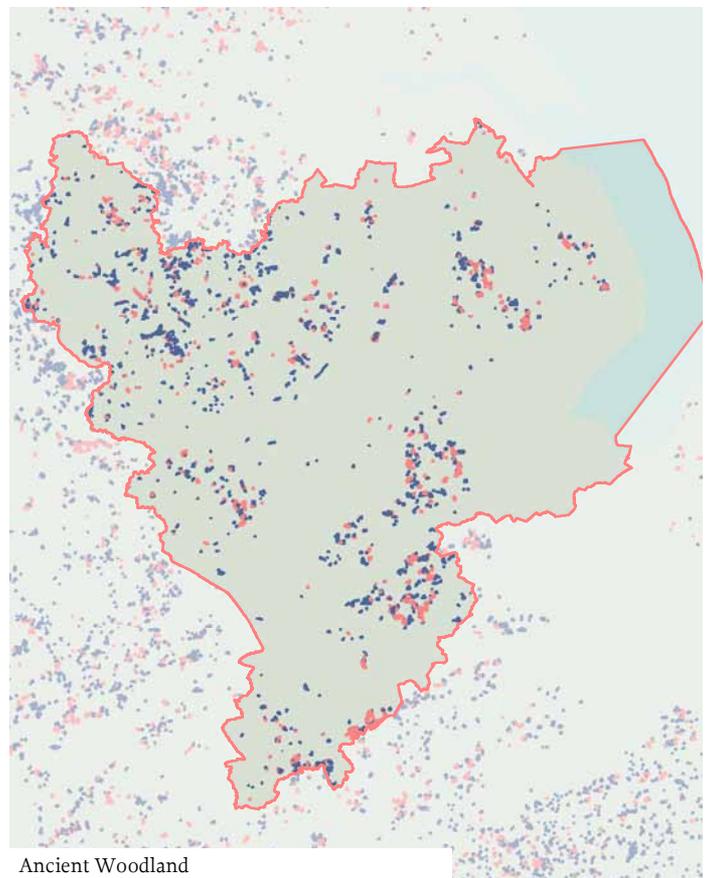
Land Use



Agricultural Land Quality



Forest Types



Ancient Woodland

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Figure 10
 Land Use, Agricultural Land Quality,
 Forest Types and Ancient Woodland

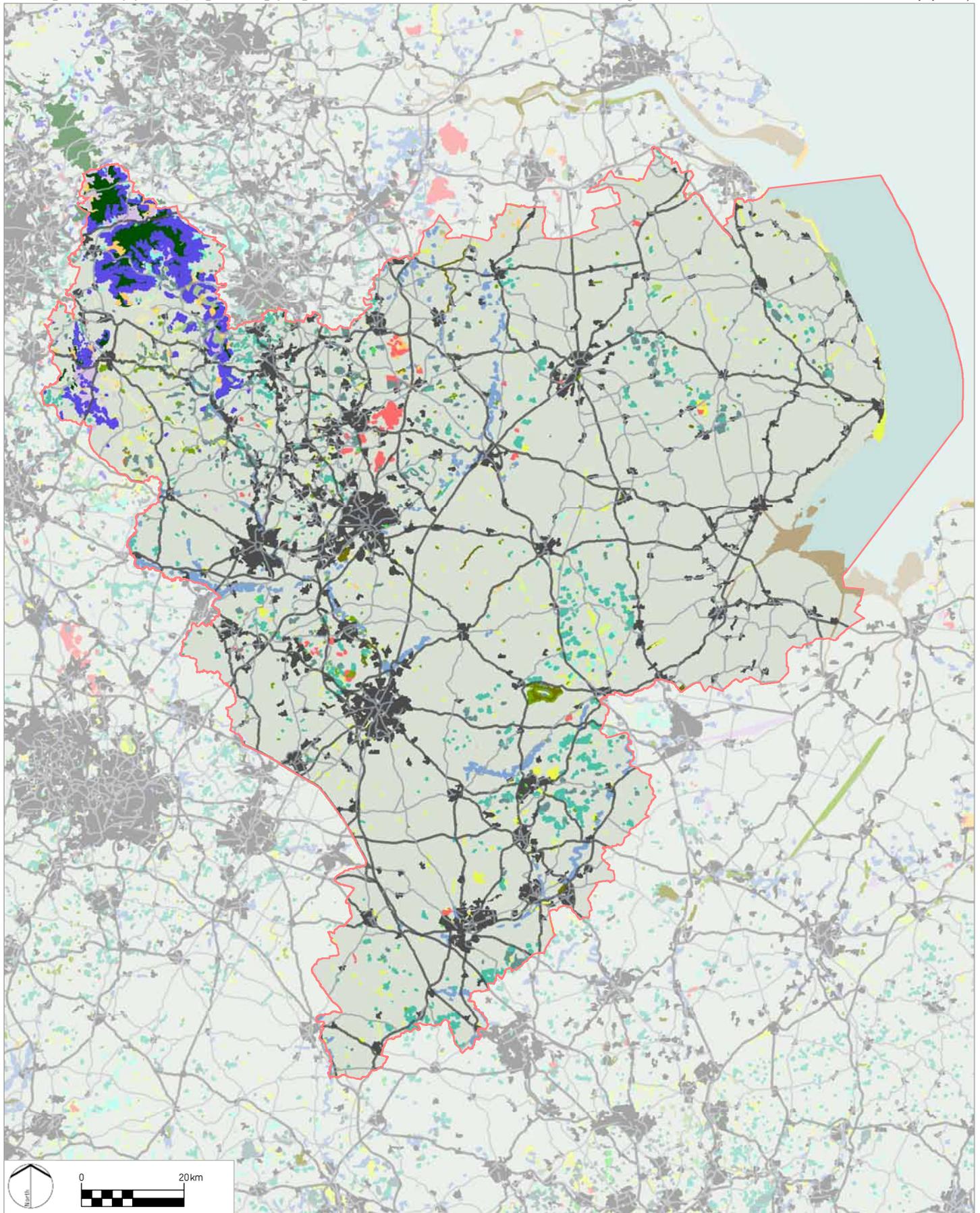


FIGURE 11: DISTRIBUTION OF BIODIVERSITY ACTION PLAN (BAP) HABITATS

Plan illustrates distribution of BAP Habitats.
The extents of habitats is exaggerated to enhance their visibility at the display scale.

Legend

	Study Area Boundary
	Blanket bog
	Coastal & floodplain grazing marsh
	Coastal sand dunes
	Fens
	Lowland beech and yew woodland
	Lowland calcareous grassland
	Lowland dry acid grassland
	Lowland heathland
	Lowland meadows
	Lowland mixed deciduous woodland
	Mudflats
	Purple moor grass and rush pastures
	Reedbeds
	Saline lagoons
	Undetermined grassland
	Undetermined woodland
	Upland calcareous grassland
	Upland heathland
	Upland mixed ashwoods
	Upland oakwoods
	Wet woodland



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Figure 11
 Distribution of
 Biodiversity Action Plan (BAP) Habitats

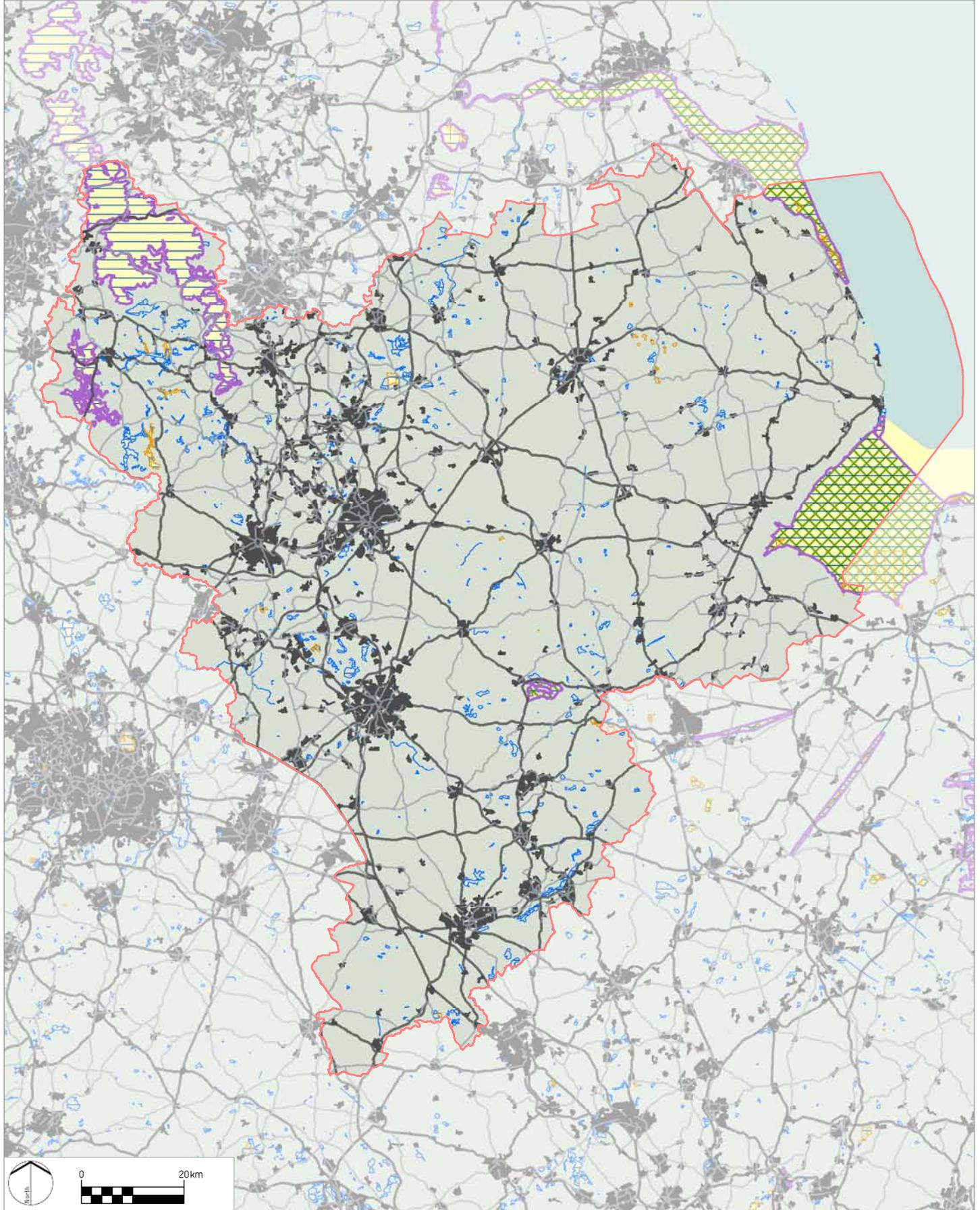
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DWG.NO	2757/Figure 11	
DATE	April 2010	DRAWN CM
SCALE@A4	1:1,000,000	CHECKED IH
STATUS	FINAL	APPROVED SC

FIGURE 12: NATURE CONSERVATION DESIGNATIONS

Plan illustrates distribution of statutory nature conservation designations.

Legend

	Study Area Boundary
	Special Protection Area (SPA)
	Site of Special Scientific Interest (SSSI)
	Ramsar Site
	National Nature Reserve (NNR)
	Special Area of Conservation (SAC)



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Figure 12
 Nature Conservation Designations

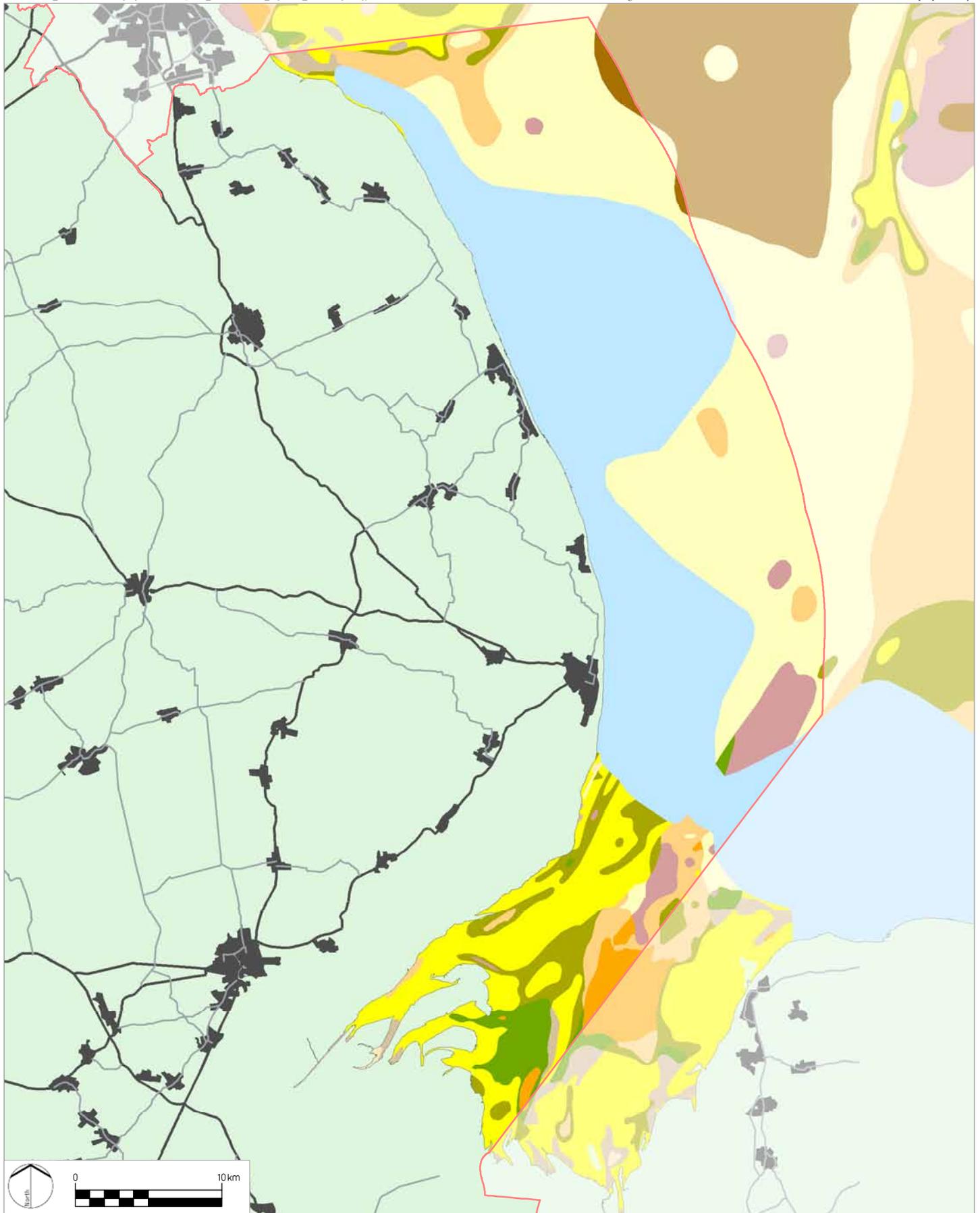
ISSUED BY	Oxford	T	01865 887 050
DWG.NO	2757/Figure 12		
DATE	April 2010	DRAWN	CM
SCALE@A4	1:1,000,000	CHECKED	IH
STATUS	FINAL	APPROVED	SC

FIGURE 13: OFFSHORE GEOLOGY

Plan illustrates offshore geology.

Legend

	Study Area Boundary
	Gravel
	Gravelly Muddy Sand
	Gravelly Sand
	Muddy Sand
	Muddy Sandy Gravel
	Sand
	Sandy Gravel
	Sandy Mud
	Shells
	Slightly Gravelly Muddy Sand
	Slightly Gravelly Sand
	No Data



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Figure 13
 Offshore Geology

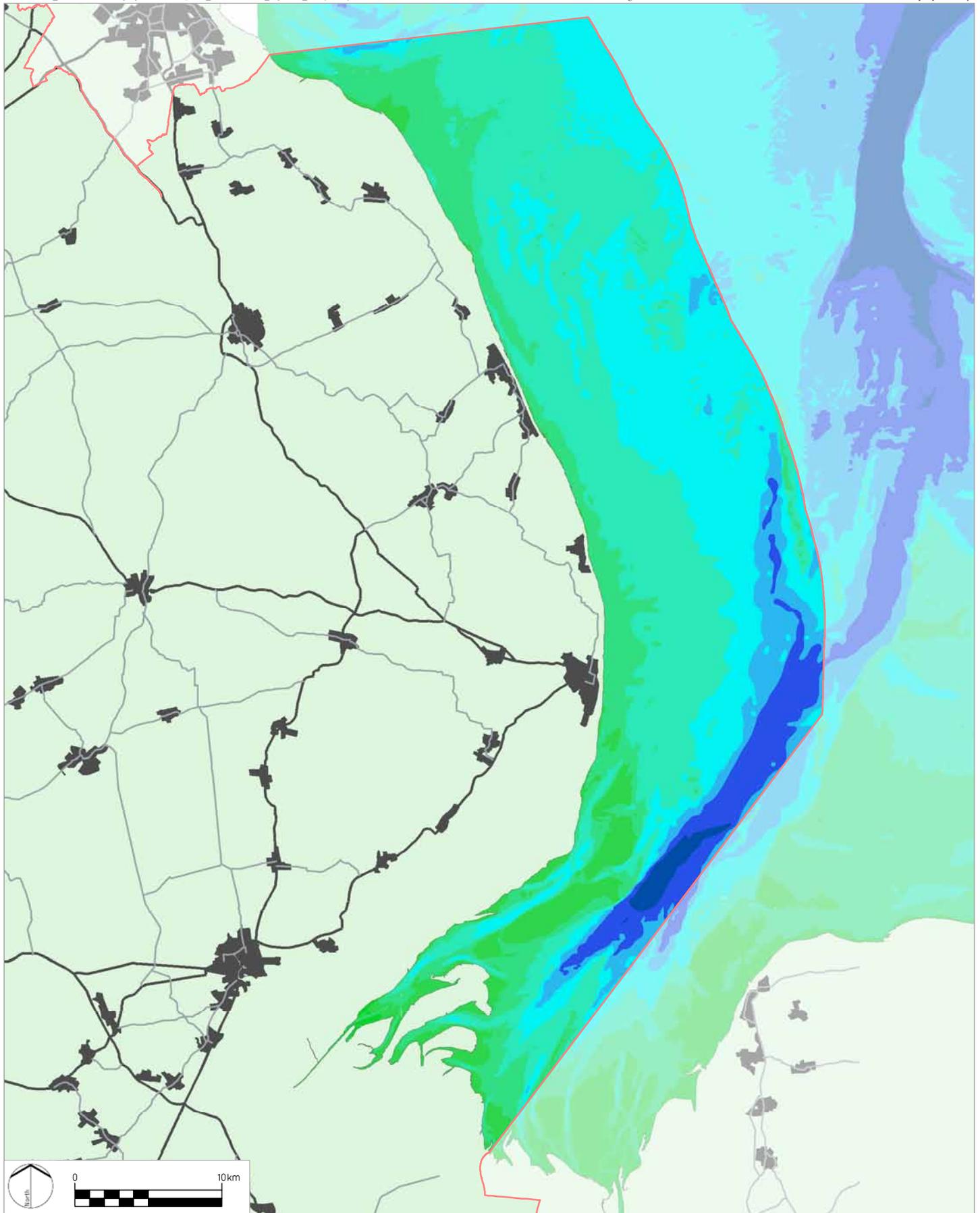
ISSUED BY	Oxford	T 01865 887 050
DWG.NO	2757/Figure 13	
DATE	April 2010	DRAWN CM
SCALE@A4	1:350,000	CHECKED IH
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FIGURE 14: BATHYMETRY

Plan illustrates offshore bathymetry (sea depth).

Legend

	Study Area Boundary
	+2m to Sea Level
	Sea Level to -5m
	-5m to -10m
	-10m to -15m
	-15m to -20m
	-20m to -25m
	-25m to -30m
	Depths greater than -30m



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Figure 14
 Bathymetry

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DWG.NO	2757/Figure 14		
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STATUS	FINAL	APPROVED	SC

Source: Ordnance Survey, SeaZone Solutions Limited Under os licence
 © British Crown and SeaZone Solutions Limited. All rights reserved. Products Licence No. PGA062006.004
 © Crown Copyright. All rights reserved. Licence number Natural England 100046223 [2009]
 © LDA Design Consulting LLP. Quality Assured to BS EN ISO 9001 : 2000

FIGURE 15: TRANQUILITY

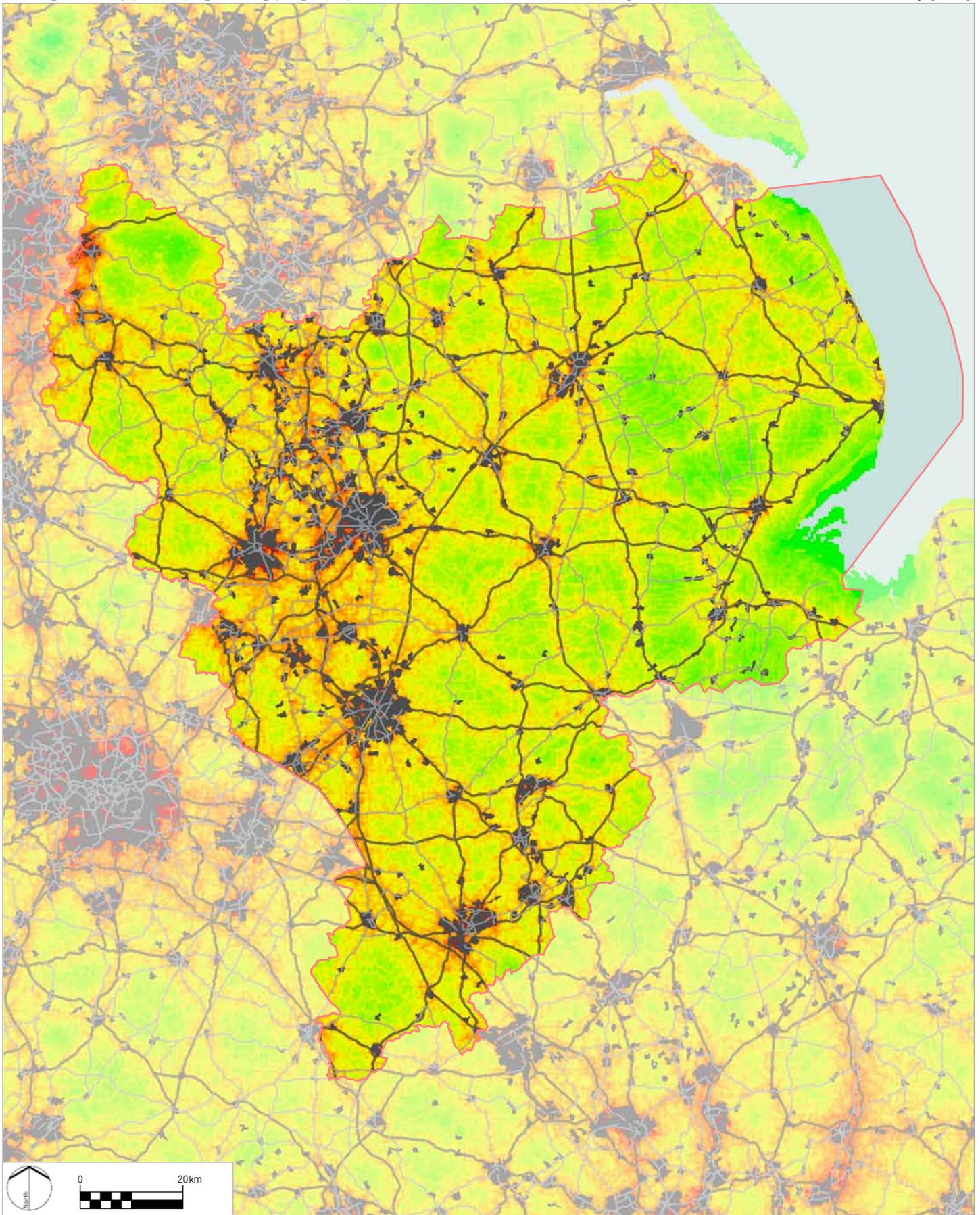
Plan illustrates CPRE Tranquillity data. For further information refer to CPRE website (www.cpre.org.uk)

Legend

 Study Area Boundary

 Most Tranquil

 Least Tranquil



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Figure 15
 Tranquillity

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FIGURE 16: INDEX OF MULTIPLE DEPRIVATION

Plan illustrates 2007 IMD Data, This is a measure of the deprivation for every Super Output Area and Local Authority Area in England. The IMD 2007 was constructed by combining seven transformed domain scores into a single deprivation score and rank.

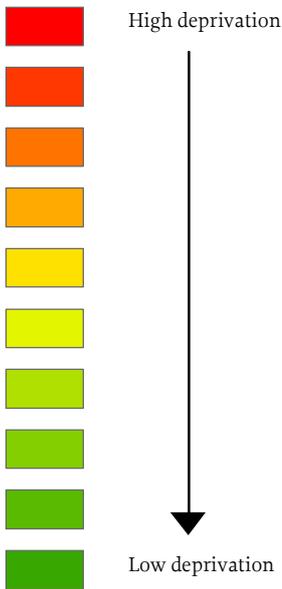
The domains and associated weightings are:

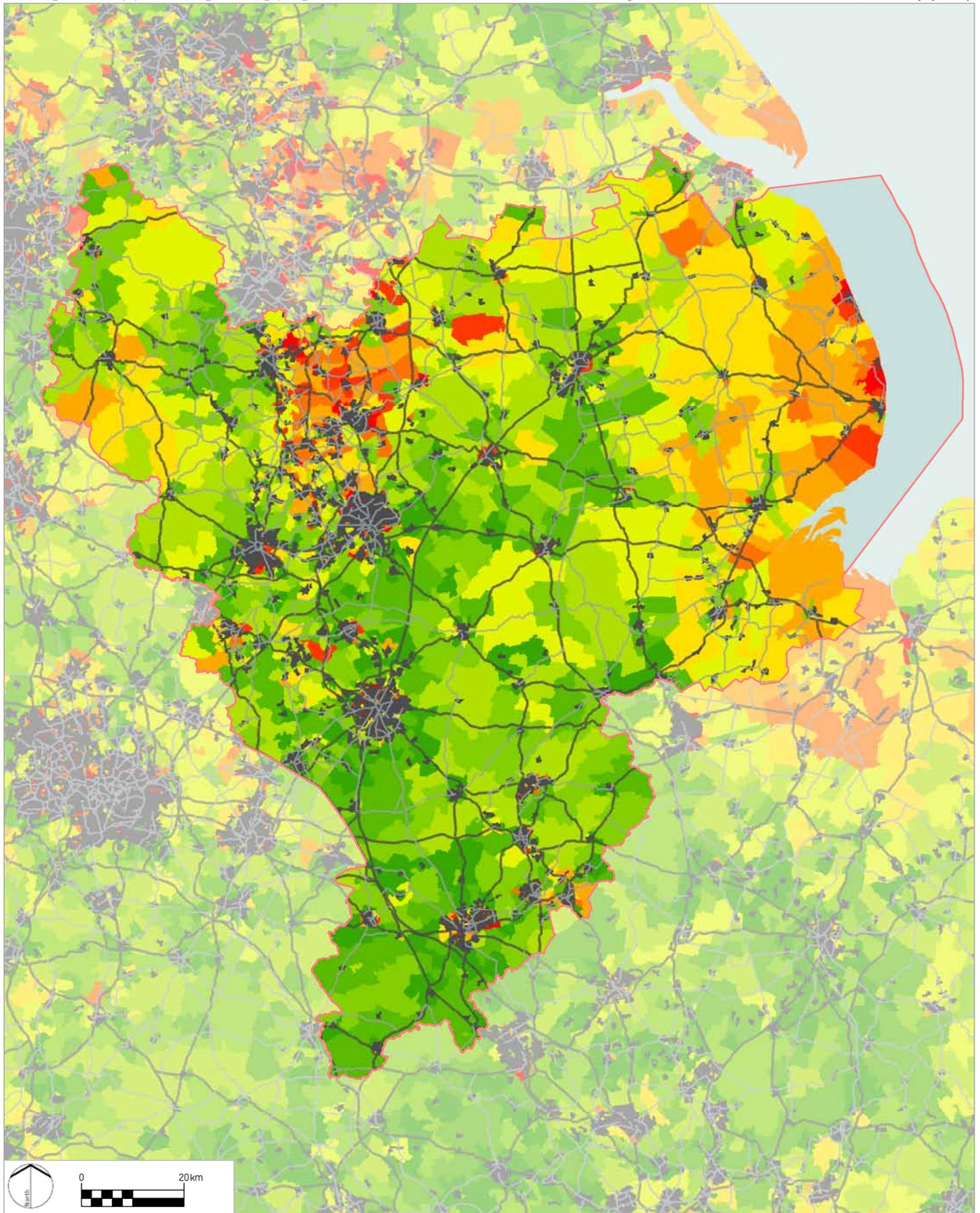
- Income (22.5%)
- Employment (22.5%)
- Health Deprivation and Disability (13.5%)
- Education, Skills and Training (13.5%)
- Barriers to Housing and Services (9.3%)
- Crime (9.3%)
- Living Environment (9.3%)

Legend

-  Study Area Boundary
-  Built Up Area

Index of Multiple Deprivation





EAST MIDLANDS REGIONAL
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Figure 16
 Index of Multiple Deprivation

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FIGURE 17: REGIONAL LANDSCAPE CHARACTER TYPES

Plan illustrates distribution of Regional Landscape Character Types.

Legend

 Study Area Boundary

 Built Up Area

Group 1: Coast and Sea

 1a: Coastal Saltmarshes and Mudflats

 1b: Coastal Dunes, Beach and Intertidal Sand Flats

 1c: Shallow Coastal Waters

 1d: Shallow Inlet Bay

 1e: Offshore Industries, Fisheries and Navigations

Group 2: Fenland and Fenland Margins

 2a: Settled Fens and Marshes

 2b: Planned and Drained Fens and Carrlands

 2c: Fen and Marsh Margin Farmlands

Group 3: River Valley Floodplains

 3a: Floodplain Valleys

 3b: Sandland Farmlands

Group 4: Lowland Vales

 4a: Unwooded Vales

 4b: Wooded Vales

Group 5: Village Farmlands

 5a: Village Farmlands

 5b: Wooded Village Farmlands

 5c: Undulating Mixed Farmlands

Group 6: Limestone Farmlands

 6a: Limestone Scarps and Dipslopes

 6b: Upland Limestone Pastures

 6c: Limestone Dales

 6d: Limestone Farmlands

Group 7: Chalk Wolds

 7a: Chalk Wolds

 7b: Wolds Scarps, Ridges and Valleys

Group 8: Clay Wolds

 8a: Clay Wolds

Group 9: Coalfields

 9a: Settled Coalfield Farmlands

Group 10: Woods and Forests

 10a: Forest Hills and Ridges

 10b: Sandstone Forests and Heaths

 10c: Wooded Slopes and Valleys

 10d: Forested Ancient Hills

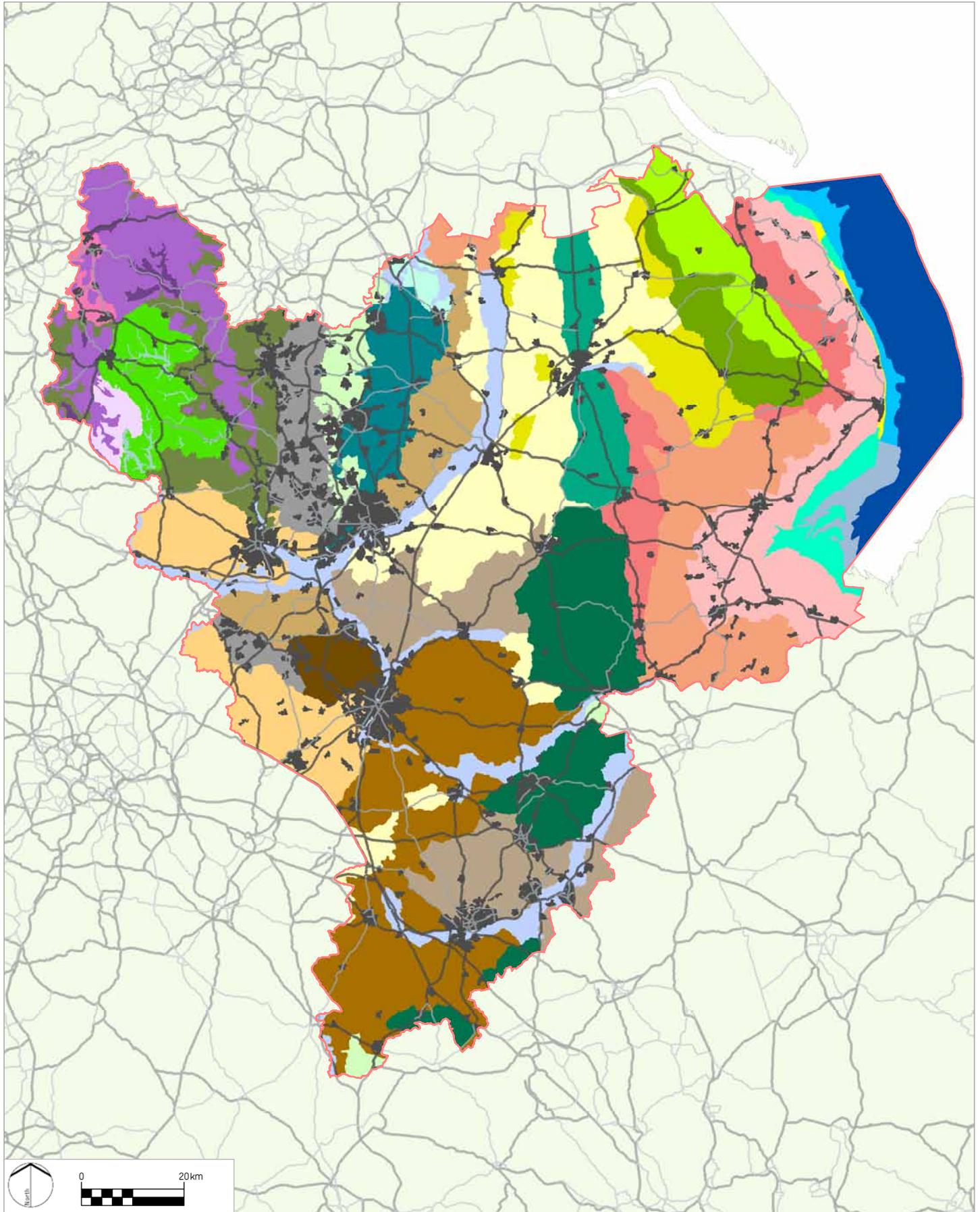
Group 11: Gritstone Moors and Fringes

 11a: Open Moors and Inbye Land

 11b: Moorland Valleys

 11c: Settled Valleys and Enclosed Gritstone Uplands

 11d: Upland Pastoral Hills and Valleys



EAST MIDLANDS REGIONAL
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Figure 17
Regional Landscape Character Types

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FIGURE 18: NATIONAL CHARACTER AREAS AND REGIONAL LANDSCAPE CHARACTER TYPES

Plan illustrates Natural England's National Character Areas and Regional Landscape Character Types

Legend

-  Study Area Boundary
-  Built Up Area
-  National Character Area Boundary
-  National Character Area Number

- | | |
|--|--|
| 30 - Southern Magnesian Limestone | 68 - Needwood and South Derbyshire Claylands |
| 36 - Southern Pennines | 69 - Trent Valley Washlands |
| 37 - Yorkshire Southern Penine Fringe | 70 - Melbourne Parklands |
| 38 - Nottinghamshire, Derbyshire and Yorkshire Coalfield | 71 - Leicestershire and South Derbyshire Coalfield |
| 39 - Humberhead Levels | 72 - Mease/Sence Lowlands |
| 42 - Lincolnshire Coast and Marshes | 73 - Charnwood |
| 43 - Lincolnshire Wolds | 74 - Leicestershire and Nottinghamshire Wolds |
| 44 - Central Lincolnshire Vale | 75 - Kesteven Uplands |
| 45 - Northern Lincolnshire Edge with Coversands | 88 - Bedfordshire and Cambridgeshire Claylands |
| 46 - The Fens | 89 - Northamptonshire Vales |
| 47 - Southern Lincolnshire Edge | 91 - Yardley - Whittlewood Ridge |
| 48 - Trent and Belvoir Vales | 92 - Rockingham Forest |
| 49 - Sherwood | 93 - High Leicestershire |
| 50 - Derbyshire Peak Fringe and Lower Derwent | 94 - Leicestershire Vales |
| 51 - Dark Peak | 95 - Northamptonshire Uplands |
| 52 - White Peak | 96 - Dunsmore and Feldon |
| 53 - South West Peak | 107 - Cotswolds |
| 54 - Manchester Pennine Fringe | |
| 64 - Potteries and Churnet Valley | |

Group 1: Coast and Sea

-  1a: Coastal Saltmarshes and Mudflats
-  1b: Coastal Dunes, Beach and Intertidal Sand Flats
-  1c: Shallow Coastal Waters
-  1d: Shallow Inlet Bay
-  1e: Offshore Industries, Fisheries and Navigations

Group 2: Fenland and Fenland Margins

-  2a: Settled Fens and Marshes
-  2b: Planned and Drained Fens and Carrlands
-  2c: Fen and Marsh Margin Farmlands

Group 3: River Valley Floodplains

-  3a: Floodplain Valleys
-  3b: Sandland Farmlands

Group 4: Lowland Vales

-  4a: Unwooded Vales
-  4b: Wooded Vales

Group 5: Village Farmlands

-  5a: Village Farmlands
-  5b: Wooded Village Farmlands
-  5c: Undulating Mixed Farmlands

Group 6: Limestone Farmlands

-  6a: Limestone Scarps and Dipslopes
-  6b: Upland Limestone Pastures
-  6c: Limestone Dales
-  6d: Limestone Farmlands

Group 7: Chalk Wolds

-  7a: Chalk Wolds
-  7b: Wolds Scarps, Ridges and Valleys

Group 8: Clay Wolds

-  8a: Clay Wolds

Group 9: Coalfields

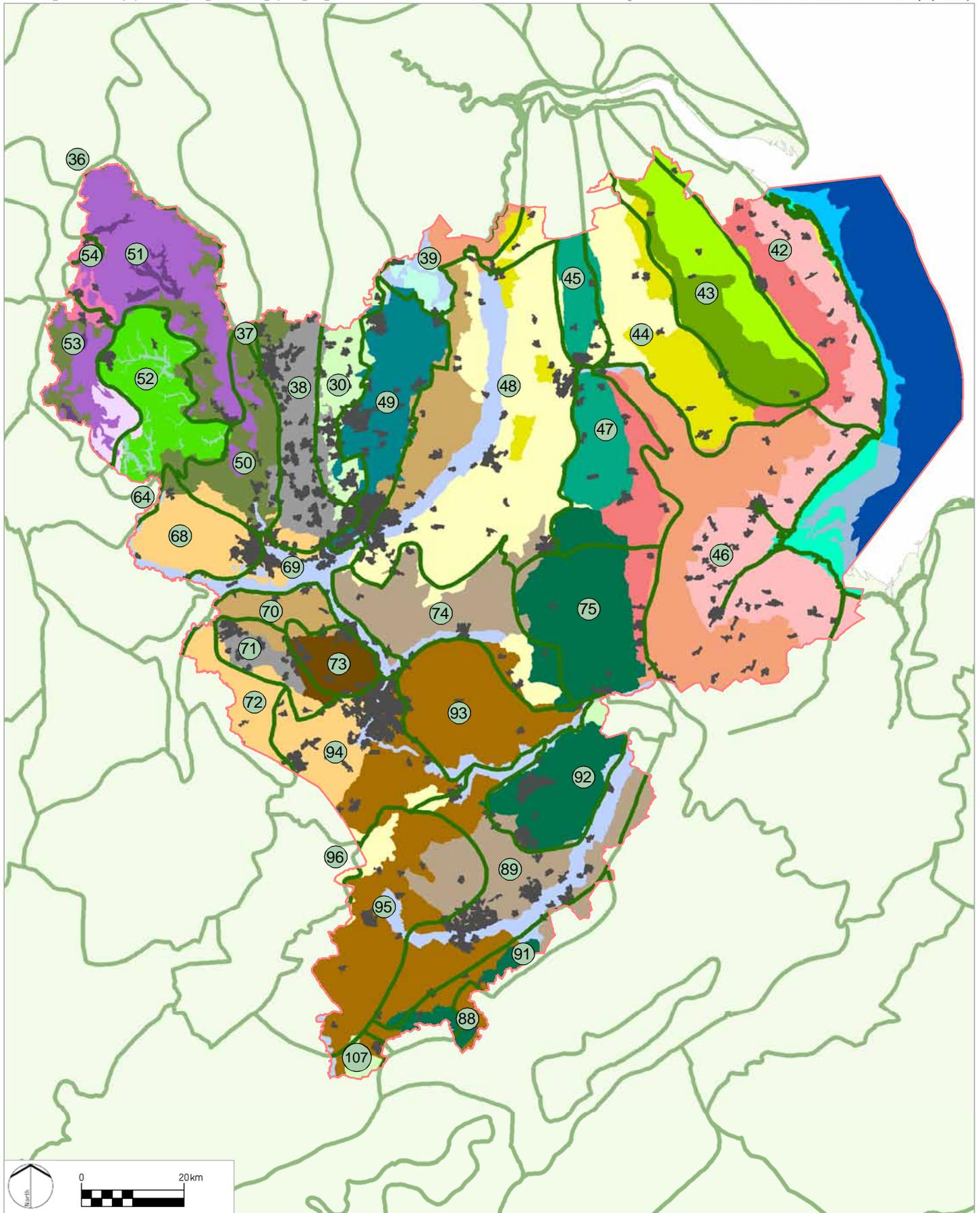
-  9a: Settled Coalfield Farmlands

Group 10: Woods and Forests

-  10a: Forest Hills and Ridges
-  10b: Sandstone Forests and Heaths
-  10c: Wooded Slopes and Valleys
-  10d: Forested Ancient Hills

Group 11: Gritstone Moors and Fringes

-  11a: Open Moors and Inbye Land
-  11b: Moorland Valleys
-  11c: Settled Valleys and Enclosed Gritstone Uplands
-  11d: Upland Pastoral Hills and Valleys



EAST MIDLANDS REGIONAL
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Figure 18
 National Character Areas
 and
 Regional Landscape Character Types

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SECTION 8

APPENDICES



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APPENDIX I

REVIEW OF LANDSCAPE CHARACTER ASSESSMENTS AND HISTORIC LANDSCAPE CHARACTERISATIONS



LANDSCAPE CHARACTER ASSESSMENT	DATE, SOURCE AND AUTHOR
DERBYSHIRE	
The Landscape Character of Derbyshire	Derbyshire County Council, 2003
LEICESTERSHIRE	
Leicester, Leicestershire and Rutland Landscape and Woodland Strategy.	Leicestershire County Council, 2001
Oadby and Wigston Landscape Character Assessment	David Tyldesley & Associates, 2005. Oadby & Wigston Borough Council
Blaby District Character Assessment	TEP, 2008. Blaby District Council
Melton Borough Landscape and Historic Urban Character Assessment Report	ADAS, 2006. Melton Borough
Harborough District Landscape Character Assessment.	Atkins, 2007. Harborough District Council,
Hinckley and Bosworth Landscape Character Assessment.	Hinckley and Bosworth Borough Council, 2006
Charnwood Forest Landscape and Settlement Character Assessment	TEP, October 2008. Leicestershire County Council
RUTLAND	
Rutland Landscape Character Assessment	David Tyldesley & Associates, 2003. Rutland County Council
NORTHAMPTONSHIRE	
Northamptonshire Environmental Character Assessment	LDA Design, 2005. River Nene Regional Park CIC and Northamptonshire County Council
Northamptonshire Current Landscape Character Assessment	LDA Design, 2005. RNRP CIC and Northamptonshire County Council
LINCOLNSHIRE	
Witham Valley Landscape Character Assessment (Draft)	Jacobs, 2007. Lincolnshire County Council
North Kesteven Landscape Character Assessment	David Tydesley and Associates, 2007. North Kesteven District Council
Boston District Landscape Character Assessment – Desk study.	ECUS, 2007, Boston Borough Council
South Kesteven Landscape Character Assessment	FPCR, 2007, South Kesteven District Council
West Lindsey Landscape Character Assessment	Environmental Resources Management, West Lindsey District Council, 1999

South Holland District Landscape Character Assessment	South Holland District Council, 2003
East Lindsey Landscape Character Assessment (Draft)	ECUS, East Lindsey District Council. 2008
NOTTINGHAMSHIRE	
Nottinghamshire Landscape Character Assessment 2009	Nottinghamshire County Council, 2009
OTHER NON ADMINISTRATIVE AREAS	
National Forest Strategy 2004-2014	The National Forest Company, 2004
Peak District Landscape Character Assessment	Peak District National Park Authority, 2008
Peak District Landscape Strategy (Consultation Draft)	Peak District National Park Authority, 2009
Lincolnshire Wolds Landscape	Countryside Commission, 1993

HISTORIC LANDSCAPE CHARACTERISATIONS	DATE, SOURCE AND AUTHOR
NORTHAMPTONSHIRE	
Northamptonshire Historic Landscape Character Assessment	River Nene Regional Park CIC and Northamptonshire County Council, 2005
DERBYSHIRE	
The Derbyshire Historic Landscape Character Assessment	Peak District National Park Archaeology Service and Derbyshire County Council, 2000
NOTTINGHAMSHIRE	
The Character of Nottinghamshire's Historic Landscape	Nottinghamshire County Council, 2002
LEICESTERSHIRE	
Historic Landscape Characterisation project for Leicestershire, Leicester and Rutland	Leicestershire County Council, forthcoming, 2009
LINCOLNSHIRE	
Wash Historic Landscape Character Assessment (draft)	Wash Estuary Project, forthcoming
PEAK DISTRICT	
Landscape through time: Historic Landscape Characterisation in the Peak Park	Peak District National Park Archaeology Service, 2003

APPENDIX 2

LIST OF DATA USED IN THE ASSESSMENT AND SOURCE



THEME/ DATASET	SOURCE
BASE MAPPING	
1:250,000 OS (Raster with World Files)	Natural England / Ordnance Survey
1:50,000 OS (Raster with World Files)	Natural England / Ordnance Survey
1:25,000 OS (Raster with World Files)	Natural England / Ordnance Survey
OS Meridian	Natural England / Ordnance Survey
PHYSICAL BASELINE	
1:50,000 Geology BGS (Bedrock and Drift)	British Geology Survey
1:250,000 map of soils	National Soil Resources Institute, Cranfield University
OS Landform Profile ASCII Point Data	Natural England / Ordnance Survey
HYDROLOGY	
Open water / reservoirs	Natural England / Environment Agency
River channels	Natural England / Environment Agency
Floodplains	Natural England / Environment Agency
PERCEPTUAL QUALITIES	
Night Blight Dark Skies Mapping	CPRE
Tranquillity Mapping	CPRE
LAND USE AND LAND COVER	
Natural Areas	Natural England
BAP Habitats	Natural England
CEH Landcover Map	Natural England / CEH
National Woodland Inventory	Natural England / Forestry Commission
Ancient Woodland	Natural England
AGRICULTURAL / LAND MANAGEMENT	
Agricultural Land Classification (1:250,000)	Natural England
Environmental Stewardship	Natural England
HLS Phase 2 Target Mapping	Natural England
HERITAGE	
Conservation Areas	Local Authorities / Peak District National Park
Registered Parks and Gardens	Natural England / English Heritage
Battlefields	Natural England / English Heritage
Ridge and Furrow / Medieval Open Field Areas	Natural England / English Heritage

ACCESS TO THE COUNTRYSIDE	
National and Promoted Trails	Natural England
Sustrans Routes	Sustrans
CROW Access Land	Natural England
Forestry Commission Sites	Natural England / Forestry Commission
Woodland Trust Sites	Natural England / Woodland Trust
National Forest	Natural England / The National Forest
Natural England Regional Access Mapping	Natural England
Country Parks	Natural England
National Trust Access Land	National Trust
NATURE CONSERVATION DESIGNATIONS	
RAMSAR	Natural England
Special Protection Areas	Natural England
Special Areas of Conservation	Natural England
SSSIs	Natural England
National Nature Reserves	Natural England
County Wildlife Sites	Local Authorities/ Peak District NPA
OFFSHORE AREAS	
Offshore Geology	SeaZones Solutions LTD under OS Licence
Bathymetry	SeaZones Solutions LTD under OS Licence
Offshore Installations and Activity	Natural England
Wrecks and Obstructions	Natural England
Offshore Navigations	Natural England
LANDSCAPE DESIGNATIONS	
AONB	Natural England
National Park	Natural England
Heritage Coast	Natural England
LOCAL LANDSCAPE DESIGNATIONS	
Green Belt / Green Wedges or equivalent	Local Authorities
Section 3 Areas (Peak District National Park only)	Peak District National Park Authority
Local Landscape Designations	Local Authorities

NATIONAL LANDSCAPE CHARACTER	
Countryside Character Areas	Natural England
National Landscape Typology	Natural England
Local Landscape Character Assessments (County/ District or other study area such as Peak District National Park)	Local Authorities/ Peak District NPA
OTHER CHARACTER ASSESSMENTS	
East of England Draft Regional LCA	Natural England
Natural England Seascape Assessment	Natural England
Historic Landscape Character Assessments	Local Authorities/ Peak District NPA
Historic Seascape Assessment	English Heritage
OTHER	
Political Boundaries (county and district)	Natural England

APPENDIX 3A

DIGITAL FIELD SURVEY FORM - I



Intertidal flats and beaches along the Lincolnshire Coast (© J Watson)

I. HOUSEKEEPING

1a. Surveyor Name	1b. Date

1c. Location

1d. GPS Grid Reference	1e. Map Survey Point (SP) Number
E:	
N:	

1f. Digital Photograph Numbers							

1g. Draft Regional Landscape Character Type (RLCT)

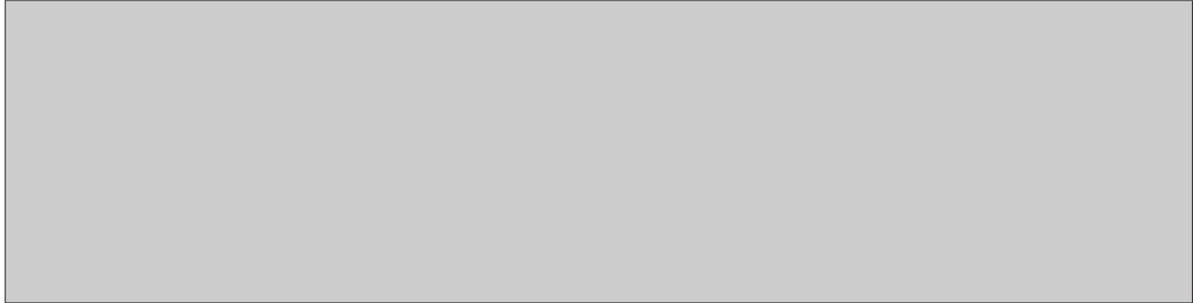
1h. Influence on or relationship to neighbouring Regional Landscape Character Type (RLCT)

Note:

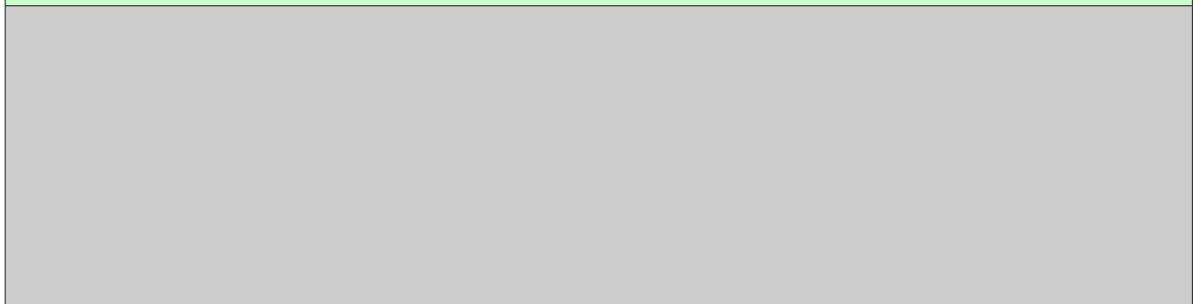
When completing the following questions use the prompting sheet provided.

2. PHYSICAL INFLUENCES

2a. Topography and geology – Describe geological features, soil type and landform. Mark principal features on the map (using annotations provided).



2b. Hydrology, Land Use and Land Cover– Describe the main hydrological features, land use and land cover elements evident in the landscape (including trees and woodlands).

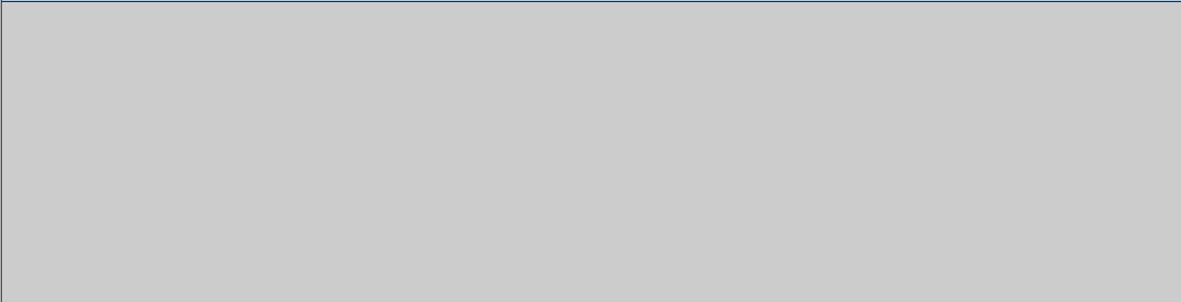


3. HUMAN INFLUENCES

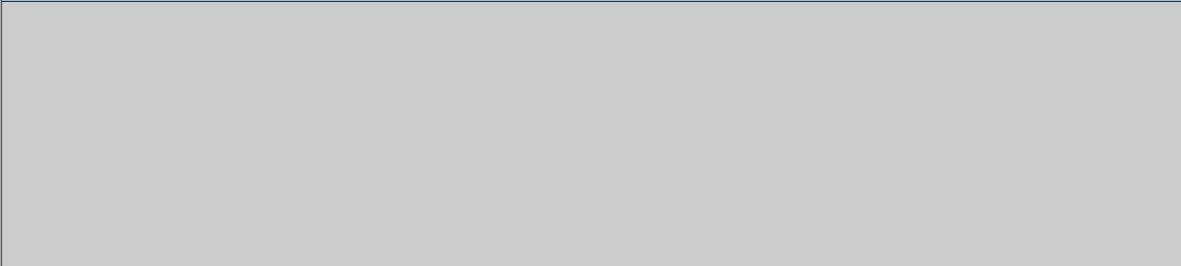
3a. Buildings, Settlement and Heritage – Describe settlement types and the patterns they create and any significant heritage features.



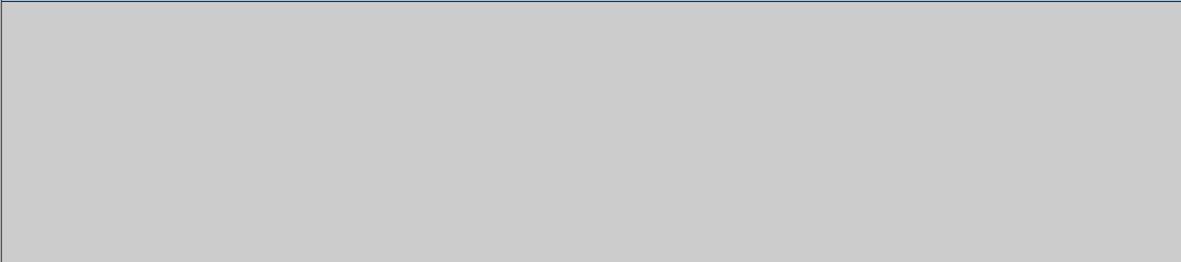
3b. Boundaries – Record the main boundary features present, their state of repair/ condition and the patterns they create in the landscape (and historic significance).



3c. Communications and Infrastructure– Record the dominant communication and infrastructure features and describe any obvious patterns and the contribution they make to landscape character.



3d. Recreation - Describe any significant recreational features and elements in the landscape.

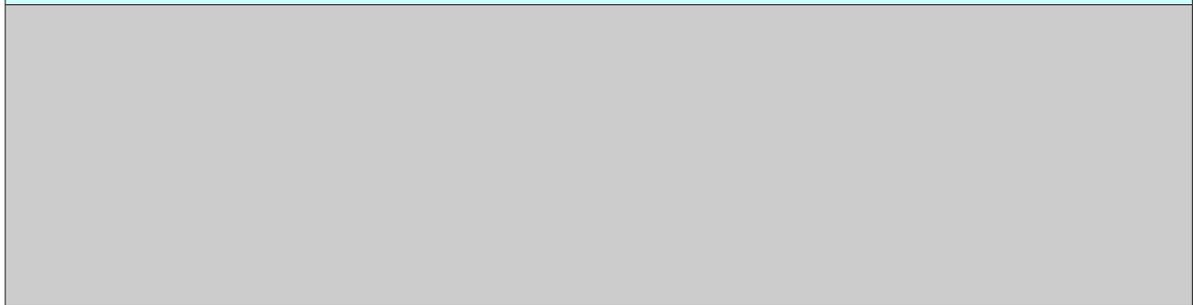


4. AESTHETIC AND PERCEPTUAL QUALITIES

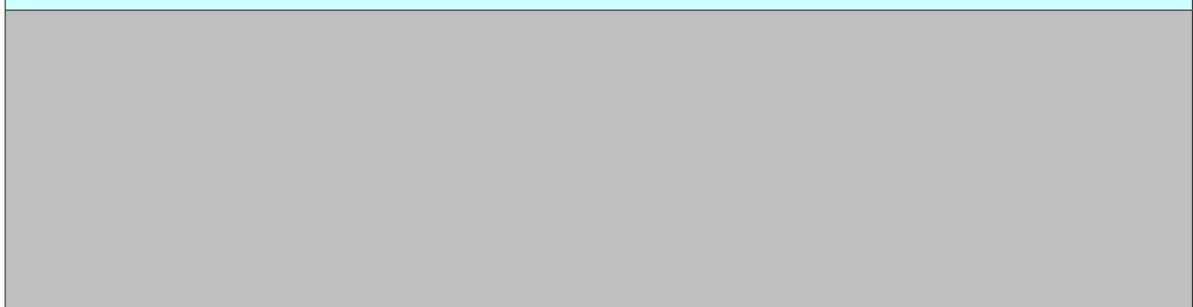
4a. Aesthetic Qualities – Record the aesthetic qualities of the landscape.



4b. Perceptual Qualities and Distinctiveness – Record perceptual qualities of the landscape and degree of local distinctiveness.



4c. Major Landmarks – Photograph, record and name major landmark features and assess the contribution (positive, neutral or negative) they make to landscape character. Mark principal landmarks on the map.



5. LOCAL DISTINCTIVENESS, LANDSCAPE CONDITION AND LANDSCAPE CHANGE

5a. Landscape Condition – Assess the condition of the landscape by reference to named features and determine the overall condition.

Landscape Feature 1 (name):					Notes:
Excellent	Good	Declining	Poor	Derelict	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Landscape Feature 2 (name):					Notes:
Excellent	Good	Declining	Poor	Derelict	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Landscape Feature 3 (name):					Notes:
Excellent	Good	Declining	Poor	Derelict	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Overall Landscape Condition					Notes:
Excellent	Good	Declining	Poor	Derelict	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

5b. Landscape Change – Identify the principal Forces for Change (FFC) on the landscape and their effect on landscape character by reference to named elements if appropriate.

FFC 1 (name):			Notes:
Implications on landscape character/key characteristics:			
Widespread	Localised	Limited	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

FFC 2 (name):			Notes:
Implications on landscape character/key characteristics:			
Widespread	Localised	Limited	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

FFC 3 (name):			Notes:
Implications on landscape character/key characteristics:			
Widespread	Localised	Limited	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

APPENDIX 3B

DIGITAL FIELD SURVEY FORM - 2



Stone walls are a feature of the Upland Limestone Pastures (© Derbyshire County Council)

2. PHYSICAL INFLUENCES

2a. Geology and Soils

Bedrock	Drift	Soils	Surface Expression
Limestone	Alluvium	Sandy	Quarry / delve
Ironstone	Boulder Clay	Clay	Exposure
Lias Group	Gravel	Loam	Habitat / land cover
Gritstone		Deep	Reef Knoll
Shale		Thin	Edge
Chalk		Stony	
Coal Measures		Colour	
Sandstone			

2a. Landform

Flat	Plain	Hills	High
Gently undulating	Plateau	Ridge	Intermediate
Undulating	Scarp	Deep gorge	Low
Rolling	Dip Slope	Broad valley	
Sloping	Lowland	Narrow valley	
Steep	Upland	Hillock	
Vertical	Basin	Terrace	
		Combe	
		Dry valley	
		Clough	
		Dale	
		Valley floor	
		Valley sides	

2b. Hydrology

Main river	Reservoir	Canal – active	
Main tributary	Lake – natural	Canal – disused	
Stream	Lake – artificial / purpose	Mill leat	
Dry valley	Lake – naturalised		
Spring	Pond – natural		
Spring line	Pond – artificial / purpose		
Drainage ditch			
Watershed			
Floodplain			

2b. Land Use and Land Cover

Arable (cereals)	Permanent pasture	Cows	Scrub	Quarry - active
Arable (vegetables)	Improved pasture	Sheep	Marsh	Quarry - disused
Arable (other)	Unimproved pasture	Pigs	Heath	Sand and gravel
Orchard	Meadow	Oilseed / linseed	Recreation	Restored workings
Horticulture	Rough grazing	Energy crops	Horsiculture	
Glasshouses	Grazing marsh	Silage bales	Parkland / Estates	
	Setaside	Flowers / bulbs	Amenity grassland	
	Mixed farming		Moorland	
			Poached pasture	

2b. Woodland and Trees

Forest	Deciduous	Small (< 1 ha)	Field trees	Poplar
Extensive woodland	Coniferous	Medium (1-5 ha)	Parkland trees	Alder
Shelterbelt	Mixed	Large (> 5 ha)	Clumps	Willow
Linear woodland	Plantation	Regular	Hedgerow trees	Oak
Wet woodland	Semi-natural	Irregular	Riverside trees	Ash
Game covert	Ancient	Geometric	Self sown	Birch
Arboretum	Coppice	Organic	Garden / amenity trees	Pine
Parkland	Pollards			Exotics
Unwooded				Sycamore

3. HUMAN INFLUENCES

3a. Buildings and Settlement

Urban	Farming – old barn	Linear	Granite	Wall copings
(Market) town	Farming – agri shed	Radial	Brick (colour)	Render
Village	Industry -heavy	Nucleated	Sandstone	Ashlar
Estate village	Industry - light	Dispersed	Gritstone	Rubble
Hamlet	Mining	Organic	Tile	
Farmstead	Military	Planned	Thatch	
Isolated house	Airfield - active	Hill / ridge top	Timber frame	
	Airfield - disused	Valley floor	Timber boards	
		Valley side	Limestone (colour)	
		Springline	Ironstone	
			Slates	
			Stone slates	
			Combination	
			Clay pantile	

3a. Heritage Features

Prehistoric defensive	Industrial heritage	Cathedral	Assarts
Prehistoric ritual	Transport heritage	Monastery	Ridge and furrow
Medieval fort / castle	Mining heritage	Church	Parliamentary fields
Medieval domestic	Agricultural heritage	Chapel	Estate landscapes
Medieval manorial		Vernacular building	Parkland
Medieval ecclesiastic		Country house	Water meadow system
20th Century military		Windmill	Common land
		Bridge	Lynchets
			Formal Ponds

3b. Boundaries

Stone wall	Hedge - hawthorn	Tall (>2m)	Fields – regular	Ditches - regular
Copings	Hedge - species rich	Medium (1.5m-2m)	Fields – irregular	Ditches - irregular
Brick wall	Hedge - gappy	Low (<1.5m)	Fields – enclosure	
Fences	Overgrown		Fields - open	
Post and wire	Hedge tree - species			
Post and rail	Stagheaded oak			
Field gate	Hedge bank			
Metal parkland fencing				

3c. Communications and Infrastructure

Motorway	Occurrence of historic routes -	Railway - active	Footpath	High Voltage Pylons
Principal road (A)	Dense	Railway - disused	Bridleway	Transmission lines
Secondary road (B)	Frequent	Tramway	Byway	Wind turbine
Country lane	Occasional	Airport	Wide verges	Telecom mast >30m
Track	None	Canal	Road signage	Telecom mast <30m
Green lane		Bridge	Lighting (road)	
Enclosure road		Lighting (feature)		
Winding lane				

3d. Recreation

National Trail	Country park	Prehistoric monument	Sports (formal)
Long Distance Footpath	Park	Historic house	Sports (informal)
Forest trail	Picnic site	Historic garden	Water recreation – river/canal
	Viewpoint	Industrial heritage	Water recreation – lake
	Car park		Motor racing
			Golf Course

4. AESTHETIC AND PERCEPTUAL QUALITIES

4a. Aesthetic Qualities

Pattern	Scale	Texture	Colour	Variety
Dominant	Intimate	Smooth	Monochrome	Uniform
Strong	Small	Textured	Muted	Simple
Broken	Large	Rough	Colourful	Diverse
Weak	Vast	Very rough	Garish	Complex

Unity	Form	Enclosure	Visual Dynamic	
Unified	Straight	Expansive	Panoramic	
Interrupted	Angular	Open	Framed	
Fragmented	Curved	Enclosed	Intermittent	
Chaotic	Sinuous	Confined	Channelled	

4b. Perceptual Qualities

Security	Stimulus	Tranquillity	Naturalness	Noise
Intimate	Monotonous	Inaccessible	Natural	Loud
Safe	Interesting	Remote	Tamed	Intermittent
Unsettling	Challenging	Vacant	Managed	Distant
Threatening	Inspiring	Busy	Man-made	Quiet

4b. Local Distinctiveness

Scenic Quality	Rarity	Visibility	Associations	
Outstanding	Single example	Open	Writers	
High	Rare	Overlooked	Artists	
Moderate	Frequent	Sheltered	Musicians	
Low	Common	Screened	Historic figures	

4c. Landmarks

Church spire	Hill	Woodland	Positive
Church tower	Ridge	Tree	Neutral
Church spire & tower	Cliff	Copse	Negative
Prominent building(s)	Valley		
Telecoms mast	Escarpment		
Pylons			
Bridge			
Country house			
Cathedral			
Water tower	Note: Landmarks are particularly prominent or eye-catching elements in the landscape, such as distinctive hill top tree clumps, church towers or wooded skylines (Lincoln Cathedral is an example of a prominent landmark).		
Settlement			
Windmill			
Wind turbine			
Chimney			
Silo			
Agricultural building			
Folly			

5. LANDSCAPE CONDITION AND LANDSCAPE CHANGE

5a. Landscape Condition

Farmland	Stone walls	Heritage features		
Villages	Brick walls			
Buildings	Fences			
Woodland	Hedges			
Watercourses	Post and wire			
Water bodies	Post and rail			
Transport routes				

5b. Landscape Change

Farming	Industry / mining	Infrastructure	Settlement	Tourism and Recreation
Field amalgamation	Light industry	Road improvements	Infill	Honey pot
Large agri sheds	Heavy industry	Rural traffic	Expansion	Car parking
Farm amalgamation	Quarrying	Pylons	Ribbon development	Erosion
Reversion to arable	Waste – landfill	Telecoms masts	Suburbanisation	Littering
Diversification	Waste - fly tipping	Turbines	Barn conversions	Golf Courses
Specialisation			Out of town development	Caravan Parks
Intensive management				
Under management				
Grant schemes				
Renewable (biofuel) initiatives				
Soil erosion				
Setaside				
Loss of hedgerows				
Inappropriate tree and woodland planting				

APPENDIX 3C

FIELD SURVEY MAPPING PROMPTS



Well wooded rolling farmland is a feature of the Woodland Village Farmlands (© Derbyshire County Council)

1a. Housekeeping

<p>SP01</p> 	<p>Survey Point: Minimum of three per RLCT. Digital survey record sheet completed, survey point and view direction marked up on the base map and photographs taken at each survey point. Landmarks, and main landform features recorded along with any boundary changes.</p>
<p>PV01</p> 	<p>Photo Viewpoint: Incidental. Photographs will be taken to record specific landscape features, elements or landmarks. If required boundary changes will be marked on the base map. Hand written notes taken to record only basic information.</p>
	<p>Proposed change to boundary line</p>

2b. Landform

	<p>Ridge line</p>
	<p>Valley bottom</p>
	<p>Isolated Hill</p>

4c. Landmarks

	<p>Prominent local landmark (positive)</p>
	<p>Prominent local landmark (neutral)</p>
	<p>Prominent local landmark (negative)</p>

APPENDIX 3D

FIELD SURVEY GLOSSARY



Escarpment at Froggat Edge near Calver, Derbyshire (© English Heritage/Humble)

2. PHYSICAL INFLUENCES

2a. Geology and Soils

Alluvium	Sedimentary deposits resulting from the action of rivers including those laid down in river channels, floodplains, estuaries and lakes. Generally flat or very gently undulating and prone to seasonal flooding. Often used as permanent pasture.
Clay	Clay varies in properties; however, as a general rule it constitutes a weathered mudstone and abraded coarser material which develops plastic qualities with the addition of water. Particle sizes are small and this leads to its poor draining qualities. Soils deriving from clay are almost totally impermeable when wet, heavy and sticky. Clods form when wet and cracking is evident after prolonged dry spells.
Loam	An easily worked permeable soil. It constitutes an almost equal mix of sand and silt but has less than 30% clay. It is a medium textured soil and can be regarded as sitting between clay soil and sandy soil.
Sandy Soil	Sandy soils are free-draining and not prone to clod formation or cracking.
Gravel	A general term used to apply to an accumulation of loosely compacted coarse, stony material. Gravel represents unconsolidated deposits of fluviially or glaciofluviially derived water worn stones. They are often commercially quarried. Gravel deposits may often be found forming 'terraces' above the main channel of a large river. The well drained nature of soils on gravel led to them being heavily settled during the prehistoric period.
Exposure	A location where bare rock can be seen at the surface either naturally or by artificial excavation.
Diagnostic feature	A landscape feature that is a clear surface expression of the underlying geology or physical processes that have shaped the landscape. Examples of a diagnostic feature might include drumlins in areas where glaciers were active or reef-knolls in limestone areas.

2a. Landform

Gently undulating	Landform that is characterized by gentle topography of shallow hills and valleys. As a general rule undulations are not greater than 5 m in height.
Undulating	Landform that is characterized by more dramatic topography of soft hills and valleys that could be described as 'gently undulating' and which cannot be described as 'rolling'. As a general rule undulations are between 5 and 10 m in height.
Rolling	Landform that is characterized by pronounced topography of soft hills and valleys. As a general rule, rolling landform shows vertical variations greater than 10 m in height.
Combe	A topographical term often used in place-names. In the chalklands of southern England it refers to a dry valley which terminates in a steep sided amphitheatre.

Dry valley	A valley that exhibits the attributes of a normal valley with the exception of the stream itself for lengthy periods of the year. Some dry valleys may be occupied by ephemeral streams during periods of prolonged rainfall especially in winter. While dry valleys often occur on chalk or limestone, they can occur on all rock types.
Basin	A large depression enclosed by higher land with or without an outlet. The term can also be used to describe the catchment of a river system.
Plateau	An elevated tract of relatively flat land usually limited on at least one side by a steep slope falling abruptly to lower land.
Scarp	The steep slope terminating in a plateau or any level upland surface. Also called an escarpment.
Dip Slope	A sloping area of flat ground formed by the upper surface of more resistant rock or rocks within softer rocks. They are generally formed by limestones and sandstones but sometimes siltstones.
Terrace	A flat or gently inclined land surface bounded by a steeper ascending slope on its inner margin and a steeper descending slope on its outer margin. Often visible bordering rivers as a 'gravel or river terrace'.
Watershed	Area of land from which head-streams flow into separate river systems.
Clough	Small deep valley (often wooded) associated with the Dark Peak area.
Dale	Narrow upland valley associated with limestone of the White Peak area.

2b. Hydrology

Mill leat	An open watercourse built to conduct water for use specifically in a mill. Leats were also constructed to carry water to reservoirs, mines and to service household purposes.
Drainage ditch	A deep ditch, typically 1.5 m deep, bordering fields and roads used to drain agricultural land. Many are bordered by hedges and follow geometric patterns that dictate field boundaries.

2b. Land Use and Land Cover

Orchard	Collection of fruit bearing trees (pears, apples), often arranged in straight avenues.
Glasshouses	A building fabricated largely of glass or transparent plastic supported by metal or wooden struts providing a controlled environment for the commercial growth of horticultural crops, soft fruit, salad vegetables and flowers. They usually form part of a large complex of buildings arranged on a formal grid system. Due to cost considerations, glasshouses may be replaced by plastic tunnels.

Horticulture	Term used to describe every form of gardening but here applied to intensive agriculture. It includes the production of fruit, vegetables and flowers and the raising of plants in nurseries. Market gardening is a form of horticulture.
Improved pasture	Meadows and pastures that have been affected by heavy grazing, drainage or the application of herbicides, fertilizers or slurry. Limited range of grasses present and often distinguishable by a uniform, bright green, lush and even sward.
Unimproved pasture	These are likely to be rare. They may be rank and neglected, mown or grazed. Species diversity is often high.
Permanent pasture	Land that has been grazed for a significant period of time. Differentiate between improved and unimproved as both management regimes possible. Features such as ridge and furrow or archaeological sites such as round barrows indicate that an area has not been ploughed for arable production for a significant period of time.
Short term ley	Land that has been temporarily taken out of arable production and seeded to grass. Often identifiable as land that is within a wider arable context and which may be used for silage production.
Meadow	Pasture land that is associated with flat alluvial plains bordering a river channel and prone to seasonal flooding. Differentiate between improved and unimproved as both management regimes possible. Unimproved meadows are often identifiable by a diverse and floristically rich sward. Water Meadow Systems may be preserved beneath permanent pasture and appear as ditches and banks. Meadows are often cropped for hay.
Rough grazing	Marginal unimproved land which is often steeply sloping and used for grazing sheep. Rough grazing is often rush dominated and sometimes shows signs of scrub encroachment.
Grazing marsh	Permanently wet grazing land which is often rush dominated. Differentiate between improved and unimproved as both management regimes possible. Unimproved areas may be floristically diverse. Managed grazing marshes may be drained by ditches. Here, grazed areas resemble improved pasture. However, the ditches are often species rich.
Set aside	Land that has been taken out of production and left to regenerate naturally. Depending on length of time as set aside, different land cover elements may be evident. Generally, however, an uneven cover of weeds and stubble are characteristic.
Poached pasture	Areas of pasture that have been heavily grazed causing significant areas of bare earth to be exposed. These become dusty in prolonged dry spells and become muddy pools after heavy rain.
Horsiculture	Often a feature of farmland in close proximity to towns and villages. Fields are taken out of arable production or stock grazing for horse paddocks. 'Ranch' style landscape and features such as stables, jumps, white ribbon fencing and wooden post and rail fencing are characteristic.

Designed parkland	Landscaped park containing characteristic elements of idealized nature such as areas of pasture, woodland and lakes. May or may not be associated with a large house. Other characteristic features include a boundary wall, parkland trees, lodges, drives, avenues, follies, ha-ha ditch, exotic tree species and designed vistas.
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2b. Woodland and Trees

Semi natural	Woodland that does not obviously originate from planting. Species distribution will generally reflect natural variations in the site and its soil.
Plantations	Obviously planted woodlands of any age. Differentiate between commercial and non commercial. Woodlands planted and managed for commercial gain are often identifiable as single species stands in geometric plots with trees planted in rows. Non commercial plantations may be planted as part of designed parklands, shelterbelts or as game coverts.
Shelter Belt	Woodland / trees planted to provide shelter from prevalent winds. Often associated with hilltop farms but also orchards, and exposed areas of grazing land. Generally rectilinear / linear except when in proximity to farm complex.
Linear woodland	Woodland with a distinct linear form. May be associated with a stream or other linear feature such as a road.
Game covert	Woodland with low undergrowth managed as cover for foxes in hunting country or game birds and deer. Evidence of shooting, game pens or grain stores may help identify them in the field.
Arboretum	Collection of often exotic tree species that are grown for study or display.
Ancient Woodland	Land continuously wooded since 1600 AD. May be difficult to differentiate in the field although may be identified by a high diversity of flora and fauna.
Coppice	A traditional method of woodland management in which broadleaved trees are cut near to the ground to encourage the production of long straight shoots that can be harvested. Coppiced woodlands are often identifiable by the presence of trees without a single trunk. Hazel and sweet chestnut are most commonly used for coppicing.
Pollards	A broadleaved tree whose trunk is cut across about 2m from the ground to produce a crown of young branches. As the shoots are clear of the ground they are safe from grazing cattle or deer. Pollarded willows are often a feature of riverbanks.

3. HUMAN INFLUENCES

3a. Buildings and Settlement

Suburban	Outer residential areas of a continuously built up (urban) area. Suburbanisation is the process by which characteristically urban land uses or features encroach into and erode the rural character of landscapes and settlements.
(Market) town	Any town that has a weekly or periodic market and serves as the place of trade for the surrounding area. Many are characterized by a central market square.
Village	A characteristic form of nucleated rural settlement usually containing a church and other local functions for which there is constant demand. It may be distinguished from a town or hamlet on the basis of its size and range of functions. Villages have a population range of 500 to 2,500.
Estate village	A purpose-built model village for the workers on a country house estate. It may be distinguished by its proximity to a large country house and the use of particular materials and architectural detailing in older properties.
Hamlet	A cluster of farmhouses, cottages and outbuildings in a rural area. It is generally too small to have a church.
Farmstead	A single agricultural holding centered around a farmhouse, yard and outbuildings.
Linear	Settlement in which buildings are typically arranged in a linear form such as along a road, ridgeline or river. Physical constraints often dictate the linear form of a settlement.
Radial	A settlement that has grown along two or more main routes that converge at its centre. Its shape is generally asymmetric, the result of one route being more dominant than the others or topography restricting development in a particular direction.
Nucleated	Settlement where buildings are typically arranged in a tight formation around a central feature such as a village green, road junction, common or church.
Dispersed	Collection of loosely associated properties connected by a series of tracks and roads and interspersed with open areas such as greens, fields and orchards. There is no specific centre.
Planned	Can apply to new or old settlements but its form and layout indicate a degree of centralized planning and development control. During the medieval period many market towns were planned, or at least extensions were planned as an addition to existing settlements.
Organic	Settlements which have evolved 'naturally' without planning. Characteristic features might include winding lanes and a great range in the age and design of older village properties.
Roof pitch	Angle of the roof. In older properties, a steep pitch may relate to the type of roofing material that was being used or a particular requirement (such as the need for an attic space for weaving). A steep pitch indicates the use of thatch or stone slates. Modern materials (Welsh slate and pantile) increasingly replaced traditional, vernacular materials when railways made them freely available for widespread use.

Wall copings	Large and hard-wearing stones, placed at the top of walls, in order to take the brunt of the weather and protect the more delicate stone work below. Vernacular styles are often evident in wall copings.
Render	An applied finish of mortar or plaster which entirely hides the backing material and is often poor quality building stone.
Ashlar	Carefully sawn or dressed blocks of stone often with tight, thin joints. They are often associated with high status residences and civic buildings. Chiselled stone is similar but is less well worked as the stonemasons chisel marks are still visible.
Rubble	Blocks of stone that may or may not have been dressed or sawn square and which are laid with thick beds of mortar. Sometimes brought to courses and sometimes random.

3a. Heritage Features

Prehistoric defensive	Fort or defensive enclosure dating to before the arrival of the Romans. This term will most commonly apply to Iron Age hill forts.
Prehistoric ritual	Ritual monument dating to before the arrival of the Romans. Will most commonly apply to Neolithic and Bronze Age barrows. Various forms exist and are on the whole sited on prominent hill and ridge top locations overlooking valleys and lowland areas.
20th Century military	Can apply to defensive features such as pill boxes and strategic sites such as airfields and barracks that are associated with the defence of Britain in the First, Second and Cold Wars.
Vernacular building	Term used to describe buildings in the local style and using local materials.
Folly	Ornamental building often sited within a landscape (usually designed parkland) to catch the eye and act as a focal point in designed vistas. Many had artistic or philosophical meanings associated with their form or detailing.
Assarts	Fields that were created as a result of assarting; the process of clearing woodland or waste for cultivation. The process is often associated with the 12th and 13th centuries. It may be recognized by place name evidence (leigh/assarts) and by the patterns created by different sized fields in close association with woodland.
Ridge and furrow	Pattern of parallel ridges evident in many areas of pasture. They were formed by the up and down ploughing of strips and it is a remnant of the 'Open Field System' that was common throughout the Midlands in the medieval period. It survives where open fields were converted to pasture after they were 'enclosed'.
Parliamentary fields	Parliamentary enclosures were planned and executed largely during 18th and 19th centuries. The process of enclosing former open fields and common land generally led to a geometric layout of fields defined either by dry stone walls or hedges. Hedged boundaries are often bordered by a shallow ditch on one or both sides.

Estate landscapes	Ensemble of country house, pleasure and productive gardens, landscaped park and tenanted farmlands. Whilst difficult to discern in the landscape, typical features of an estate might include a number of farms and villages, sporting woodlands and mill possibly linked by a consistent building style or use of materials. Central to the estate was the park and house.
Common land	An area of land where a number of people have legal rights which they exercise in common. Common rights can date back as far as the Saxon period. Much common land is evident as unimproved pasture and is generally unfenced. Many areas of common land are now treated as a recreational resource.
Lynchets	Terraces on a hillside created unintentionally by the action of ploughing or intentionally to create flat areas for cultivation. Many were formed in areas where there was pressure to use all available land for farming.
Delve	A shallow surface quarry often used to obtain stone locally for a particular building or wall.

3b. Boundaries

Stagheaded	Oak, often within a hedge displaying die-back in the crown. One or more main branches rise above the remaining canopy and appear like a stags antlers.
Open Fields	A common means of land management during the medieval period. The unit of cultivation was the strip (see ridge and furrow) and many strips of the same orientation were grouped together to form a furlong. A number of furlongs formed the field. Two or more fields were located around a village and villagers often had a strip or a number of strips in each of the fields. Fields were generally open although some units may have been separated by a hedge or grass balk / strip. Open fields were divided up by hedges following enclosure although remnant ridge and furrow indicates where open fields were once located.

3c. Communications and Infrastructure

Green lane	Ancient trackways which can in places date back to prehistoric times. Many mark the boundaries of estates or parishes. Most are characterized by being enclosed by tall species rich hedges and are not, on the whole, surfaced.
Enclosure road	Often direct roads linking villages through an enclosure landscape. Many actually do not link villages directly and run through open country, reaching villages by means of side roads. Many are conspicuous by their wide grass verges and the presence of drainage ditches either side of them.

APPENDIX 3E

SCOPE OF FIELD SURVEY



SCOPE

- Confirm and refine Regional Landscape Character Types boundaries and descriptions identified at desk study stage;
- Identify and describe perceptual qualities of Regional Landscape Character Types; and
- Compile photographic record.

TASKS

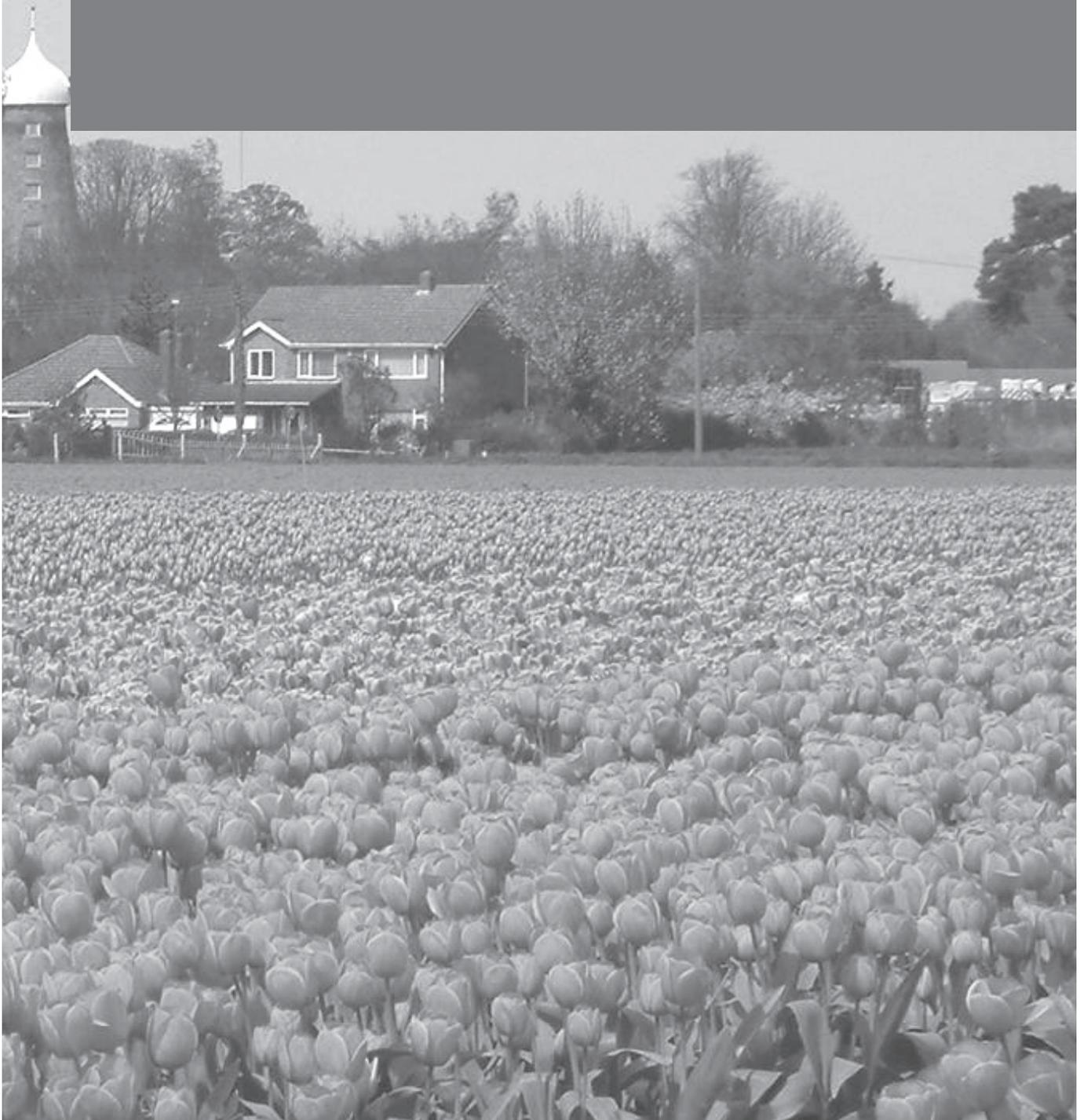
- Identify broad landscape patterns;
- Identify the degree of local distinctiveness;
- Refine draft boundaries from desk study stage;
- Describe Landscape Character;
- Record key characteristics / attributes of the landscape;
- Record aesthetic qualities;
- Record perceptual qualities;
- Record physical state of the landscape;
- Record the condition of the landscape;
- Record evidence of landscape change;
- Describe impact of recent land use and development trends; and
- Take representative photographs of the landscape (panoramas where possible, and single photographs of characteristic elements and features).

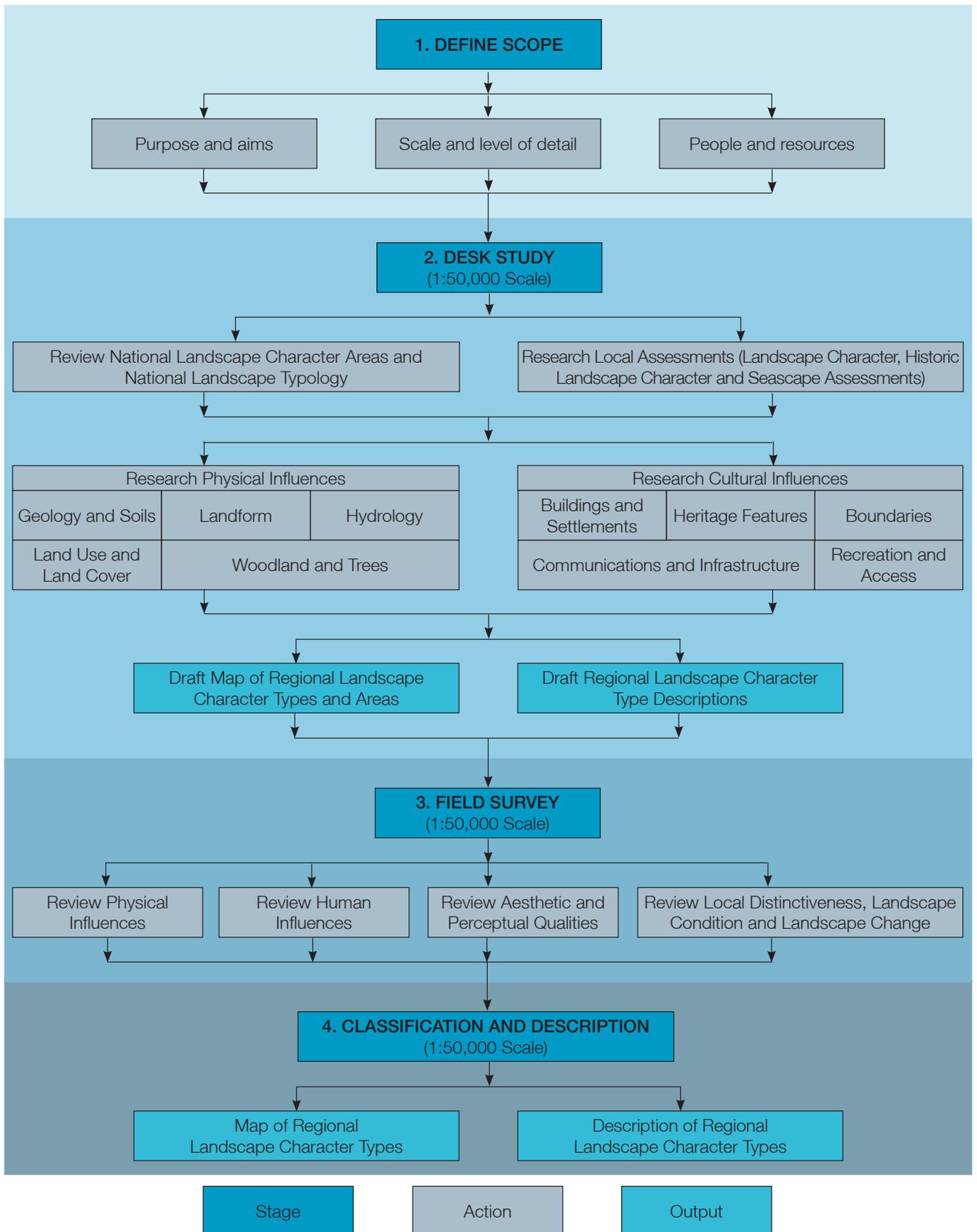
METHODS

- Map based work (1:50,000);
 - Structured survey forms at representative locations; and
 - Photographic record.
-

APPENDIX 4

PROJECT FLOW DIAGRAM



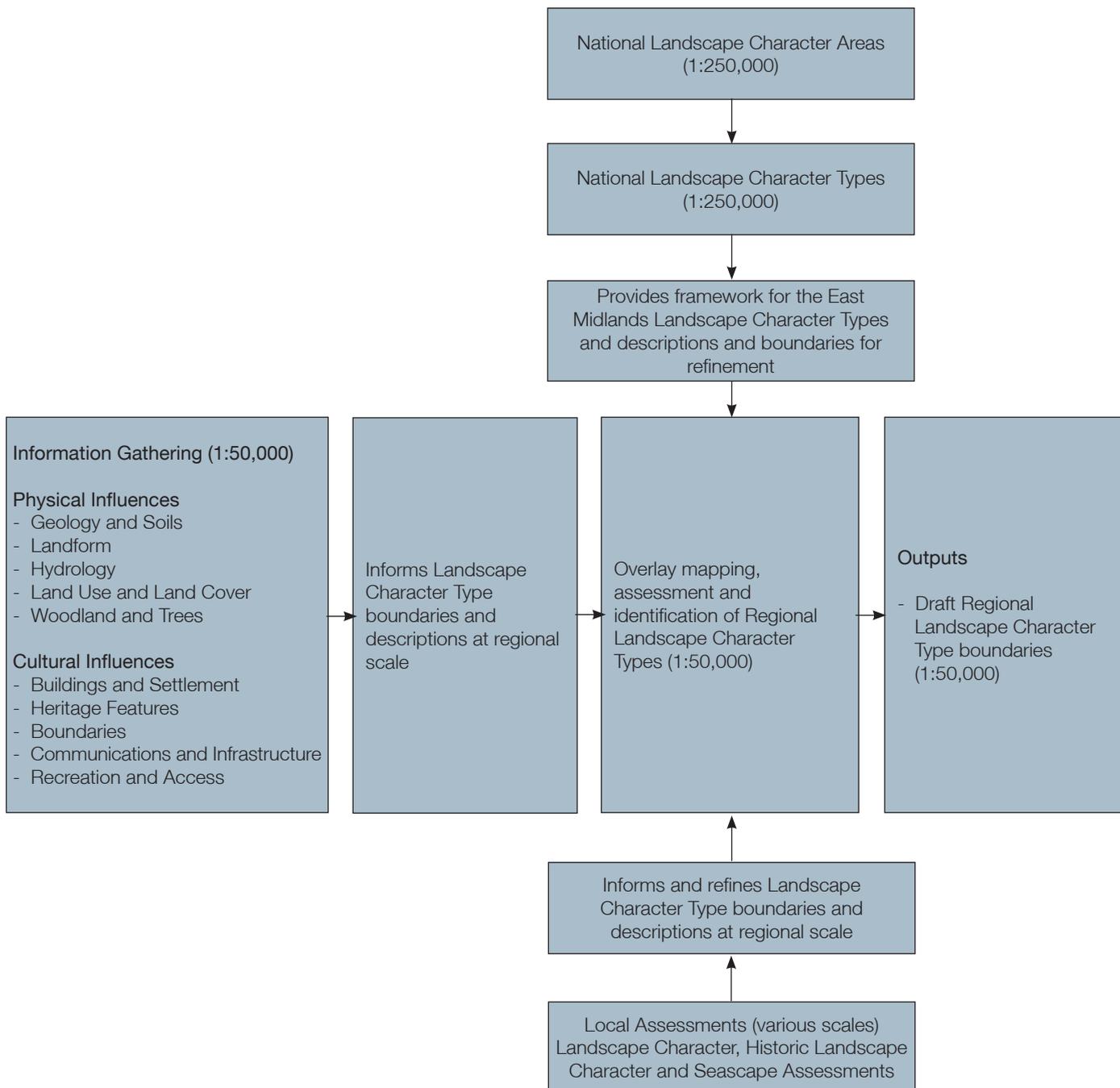


APPENDIX 5

FLOW DIAGRAM OF LANDSCAPE ASSESSMENT METHODOLOGY - DESK BASED REFINEMENT OF THE NATIONAL TYPOLOGY



Fishing boats in Boston Harbour, Lincolnshire (© Wash Estuary Strategy Group/P Smith)



APPENDIX 6

NATIONAL LANDSCAPE TYPOLOGY DEFINITIVE ATTRIBUTES



Stream passes through moorland below Stanage Edge, Peak District, Derbyshire (© P Glendell)

NATIONAL CHARACTER AREAS AND NATIONAL LANDSCAPE TYPOLOGY

NATIONAL LANDSCAPE TYPOLOGY DEFINITIVE ATTRIBUTES

Attribute		Definition
Physiography		The underlying structure and physical form of the land surface. Derived from interpretation of the relationship between geological and contour data.
H	High hills	High land, mainly over 1000 ft, including descriptive landform classes 'high hills & ridges' and 'mountains' (see below) - associated with Palaeozoic (Permian, Carboniferous, Devonian, Ordovician, Silurian & Cambrian) and earlier Pre-Cambrian rocks of sedimentary, or igneous origin.
U	Low hills	Upstanding areas, mainly below 1000 ft, including descriptive landform class 'low hills - sloping' (see below) - associated with Palaeozoic (Permian, Carboniferous, Devonian, Ordovician, Silurian & Cambrian) and Mesozoic rocks (mainly sandstones and limestones) of sedimentary origin.
V	Upland vales & valleys	Low-lying areas including descriptive landform classes 'upland vales & valleys' and 'rolling lowland' (see below) - associated mainly with Palaeozoic (Permian, Carboniferous, Devonian, Ordovician, Silurian & Cambrian) and earlier Pre-Cambrian rocks of sedimentary origin.
R	Intermediate	Rolling/undulating areas, below 1000 ft, including descriptive landform classes 'low hills - plateau' and 'rolling lowland' (see below) - associated mainly with Mesozoic (Cretaceous, Jurassic, Triassic & Permian) or Tertiary rocks of sedimentary origin and glacial till.
L	Lowlands	Low-lying areas, mainly below 300 ft, including descriptive landform classes 'levels' and 'lowland vales & valleys' (see below) - associated with Mesozoic (Cretaceous, Jurassic, Triassic & Permian) or Tertiary rocks of sedimentary origin, and glacial or fluvial (marine, riverine, lacustrine, or wind blown) drift.
Landcover		The nature of the ground in which terrestrial plants (natural and cultivated) grow. Derived from interpretation of geological, soils and agricultural census data.
W	Wetland	Low-lying land associated with fluvial (marine/riverine) drift and supporting wetland (wet pasture, marsh, fen or relic wetland vegetation characterised by lines of willow, reeds in ditches, etc. Land may be seasonally or perennially wet; often associated with ditches.
D	Heath & Moorland	Land associated with nutrient-poor mineral and/or peaty soils supporting dwarf shrub heath, acidic grassland and bog habitats, or relic heathy/moorland vegetation (bracken, gorse, etc.). This ground type is normally associated with sandstone, or sandy drift in the lowlands, but it is widespread on mixed sedimentary and igneous rocks in upland/hard rock areas. Often marginal in agricultural terms.
L	Chalk & Limestone	Light land associated with shallow, free-draining soils developed directly on chalk; or limestone bedrock – typically distinguished by stoney soils with relic calcareous grassland on steeper slopes in soft rock areas and rock outcrops/limestone pavement with dry species-rich pasture/hay meadow in hard rock areas.
B	Other Light Land	sandy drift at elevations below about 300 metres. Within the soft rock zone, where there are few constraints to agricultural production, this ground type is strongly associated with arable cultivation. Mixed farming predominates on the shallower soils found in western hard rock areas.
C	Clayland	Heavy, often poorly draining land associated with base-rich, clayey and loamy soils developed on soft (Mesozoic & Tertiary) clay and chalky till. Seasonal waterlogging is the main constraint to agricultural production and, although utilized extensively for cereal growing in Eastern England, this ground type is mainly under permanent grassland in central and western areas where neutral grassland is the characteristic associated habitat.
P	Other Heavy Land	and mixed till/plateau drift. Seasonal waterlogging is the main constraint to agricultural production and this ground type is mainly under permanent grassland – patches of wet heath are the characteristic associated habitat, grading into wet moorland at higher elevations in the north and west.
Cultural pattern		The structural component of the cultural landscape as expressed through the historic pattern of settlement and land use.
A	Wooded - ancient woods	Settled agricultural landscapes (dispersed or nucleated settlement) characterised by an assorted pattern of ancient woodlands which pre-date the surrounding enclosure pattern - in places associated with densely scattered hedgerow trees (typically oak).
E	Wooded - estateland	Settled agricultural landscapes characterised by estate plantations, parkland and belts of trees. Settlement is usually restricted to scattered farmsteads and small estate villages.
S	Wooded - secondary	Marginal agricultural landscapes (sparsely settled/unsettled) characterised by patches of secondary woodland and/or recent forestry plantation - usually associated with a large scale rectilinear enclosure pattern.
D	Dispersed unwooded	Settled agricultural landscapes characterised by a moderate to high level of dispersal, comprising scattered farmsteads and frequent clusters of wayside dwellings. Although typically unwooded, hedgerow, streamside and other trees are often a prominent feature.
N	Nucleated unwooded	Settled agricultural landscapes characterised by discrete settlement nuclei (villages and/or hamlets) associated with a low to moderate scattering of farms and outlying dwellings. Tree cover is usually fairly sparse and restricted to thinly scattered trees and/or small covers/tree groups.
W	Wetland/waste unwooded	Open, sparsely settled agricultural landscapes characterised by a surveyor enclosed pattern of large rectilinear fields and isolated farmsteads. Tree cover is usually restricted to watercourses, or groups of trees around buildings.
O	Unsettled/open land	Extensive areas of uncultivated, mainly unenclosed land (including moorland, heath and coastal grazing marsh) characterised by the virtual absence of human habitation.
C	Coalfields	Semi-rural areas (eg. the coalfields of Derbyshire) that have been significantly altered by large-scale industrial activity.
Ur	Urban	Extensive areas of predominantly built land where the rural settlement pattern has been completely subsumed by urban development (see urban land use).

APPENDIX 7

CONSULTATION



Stream passes through moorland below Stanage Edge, Peak District, Derbyshire (© P Glendell)

PHASE I STAKEHOLDER WORKSHOP

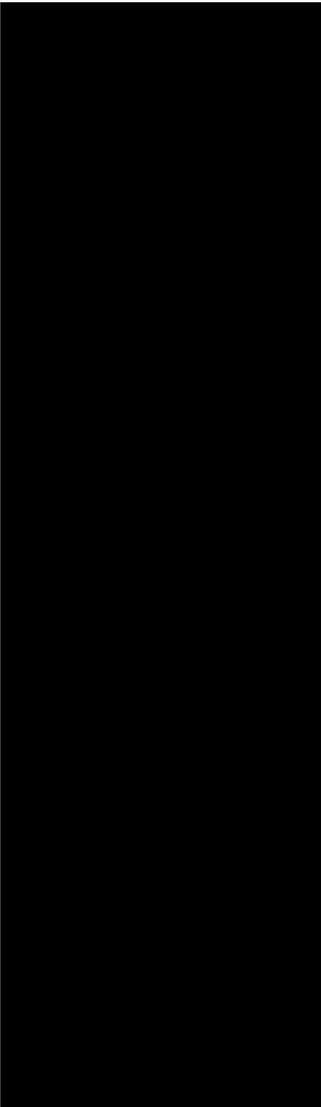
In developing the EMRLCA, Natural England and the Project Steering Group wanted to engage stakeholders. A broad range of stakeholders with an interest in, and knowledge of the East Midlands Region landscape were invited to attend a workshop. The workshop was held on 4 February 2009 at Natural England's Nottingham office.

The workshop provided an opportunity to present information on the emerging regional landscape character assessment. However, the main focus of the workshop was to identify Regional Forces for Change and the implications that these will have on different types of landscape in the Region.

Prior to the event stakeholders were divided into four mixed groups of 8-10 with each group containing a cross section of environmental expertise, such as cultural heritage, landscape, biodiversity, planning and development to ensure a lively debate cutting across several themes. Each group, facilitated by a member of the LDA Design team or Project Steering Group, was encouraged to describe the key characteristics of landscape types they were familiar with, describe the Regional Forces for Change acting upon that landscape, and identify any mechanisms for shaping the future of the landscape.

At the end of the workshop each group presented their findings to the wider group in a final reporting session.

A list of all delegates in attendance at the workshop is provided below:



British Geological Survey
 British Geological Survey
 CPRE
 Derby City Council
 Derbyshire County Council
 Derbyshire County Council
 Derbyshire County Council
 EMDA
 EMRA
 English Heritage
 LDA Design
 LDA Design
 LDA Design
 Leicestershire County Council
 Lincolnshire County Council
 Natural England
 Nottinghamshire County Council
 Peak District National Park Authority
 South Derbyshire District Council
 The Wildlife Trusts
 3 Cs Growth Point Representative

PHASE 2 CONSULTATION

Following the completion of the Consultation Draft of the EMRLCA in August 2009, the document was made available on Natural England's East Midlands Region website for wider consultation and comments. The Consultation period ran from 2 November to 11 December 2009.

For ease of review, the EMRLCA was divided into a set of PDF documents that corresponded with each of the main sections of the report, together with the accompanying Figures. The Consultation introduction invited both specific and general comments, for completion either on a Consultation Form that was available to download from the website, or as a separate submission statement from the consultees.

A wide range of responses was received from the following organisations and from members of the public who, for purposes of privacy, are not listed:

British Geological Survey
Campaign to Protect Rural England
Derby City Council
Derbyshire County Council
English Heritage
Environment Agency
FPCR Environment and Design Ltd
Gelding Borough Council
Hinckley and Bosworth Borough Council
Leicestershire County Council
Lincolnshire County Council
National Forest Company
Natural England
Nottinghamshire County Council
Peak District National Park Authority
Rutland County Council
South Kesteven District Council
West Northamptonshire Joint Planning Unit

The comments received were carefully examined by the Project Steering Group, and taken into account and incorporated where appropriate into the final version of the EMRLCA. A full schedule of the responses to the comments received are available on request from Natural England's East Midlands Regional Landscape Team.



Contributors to the document:

