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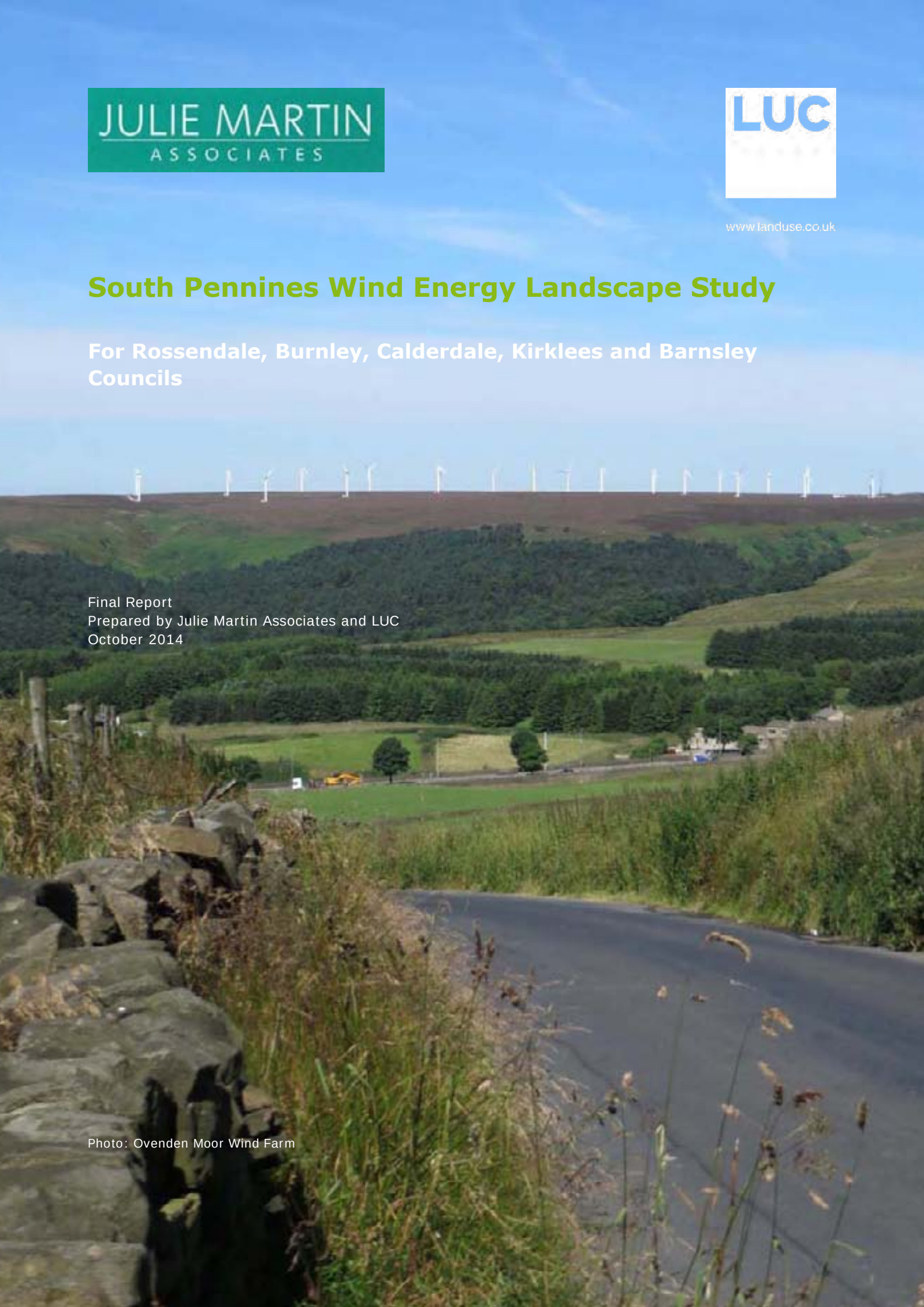
South Pennines Wind Energy Landscape Study

For Rossendale, Burnley, Calderdale, Kirklees and Barnsley Councils



Final Report
Prepared by Julie Martin Associates and LUC
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Photo: Ovenden Moor Wind Farm

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1 Introduction

National Planning Policy Context

1.1 The South Pennines are faced with a wide range of challenges arising from a changing climate. One of these challenges is to balance the need to support the transition to a low carbon future (a core planning principle of the National Planning Policy Framework (NPPF)[1]) and the need for energy security (as recognised in the National Policy Statement for Renewable Energy Infrastructure, EN-3[2]) with the management of the area's distinctive and valued landscapes.

1.2 The NPPF states within its core planning principles that planning should "take account of the different roles and character of different areas, promoting the vitality of our main urban areas, protecting the Green Belts around them, recognising the intrinsic character and beauty of the countryside and supporting thriving rural communities within it".

1.3 The NPPF calls for valued landscapes to be protected and enhanced (para 109), with the greatest weight being given to conserving landscape and scenic beauty in National Parks and Areas of Outstanding Natural Beauty (AONBs) (para 115). It also promotes good design and suggests (para 64) that "Permission should be refused for development of poor design that fails to take the opportunities available for improving the character and quality of an area and the way it functions".

1.4 The NPPF (para 97) calls on local planning authorities to design their policies to maximise renewable and low carbon energy development while ensuring that adverse impacts are addressed satisfactorily, including cumulative landscape and visual impacts. It requires local planning authorities to approve applications for renewable energy if its impacts are (or can be made) acceptable (para 98); and suggests that they take a positive approach by identifying suitable areas for renewable energy generation and its supporting infrastructure (para 97), making clear what criteria have determined their selection.

1.5 Planning Practice Guidance on Renewable and Low Carbon Energy[3] refers to the role of landscape character assessment in considering "which technologies at which scale may be appropriate in in different types of location". It also states that in shaping Local Plans and considering planning applications "cumulative impacts require particular attention, especially the increasing impact that wind turbines… can have on landscape and local amenity as the number of turbines… in an area increases."

Purpose and Scope of the Study

1.6 This study, which updates and extends the 2010 *Landscape Capacity Study for Wind Energy Developments in the South Pennines*[4,5], directly responds to the planning and policy context outlined above and to the growing number of planning applications for wind energy development in the South Pennines. The last few years have seen a considerable increase in the number of operational and consented wind energy schemes – the full results of which are still not visible – and this has raised growing concerns about the potential effects of wind energy development on the character and quality of the landscapes of the South Pennines, especially cumulatively.

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[1] Department for Communities and Local Government (March 2012) *National Planning Policy Framework*.

[2] Department of Energy and Climate Change (July 2011) *National Policy Statement for Renewable Energy Infrastructure, EN-3*.

[3] Department for Communities and Local Government, *Planning Practice Guidance on Renewable and Low Carbon Energy*.

[4] Julie Martin Associates (2010) *Landscape Capacity Study for Wind Energy Developments in the South Pennines*, report to Burnley, Bury, Calderdale, Kirklees, Rochdale and Rossendale Councils.

[5] This study replaces and supersedes the previous study for the Burnley, Calderdale, Kirklees and Rossendale council areas; and extends coverage into the Barnsley council area for the first time. The previous study remains relevant in the Bury and Rochdale council areas.

1.7 The study has been commissioned by five local planning authorities whose council areas lie wholly or partly within the South Pennines – namely Burnley, Calderdale, Kirklees, Rossendale and Barnsley. It aims to identify, at a strategic level, areas that are of lower landscape sensitivity to wind energy development of different scales, and at the same time to identify any known cumulative impacts.

1.8 It is intended to provide clear evidence to inform and support Local Plans – helping to manage and prevent unacceptable landscape, visual and cumulative impacts associated with wind energy development. Additionally, it should guide and inform intending wind energy developers and assist on a day-to-day basis in the consideration of planning applications.

1.9 The study responds to the requirements of the NPPF and Planning Practice Guidance for Renewable and Low Carbon Energy by facilitating a positive approach to wind energy development that takes account of cumulative landscape and visual impacts and indicating areas that may be more or less sensitive – in landscape and visual terms – for wind energy development of different scales.

1.10 It is important to note that this is a strategic study and does not replace individual site assessments. While the study provides an initial indication of landscape sensitivity, and guidance on wind energy development in the landscape, it should not be interpreted as a definitive statement on the suitability in landscape terms of an individual site for a particular development. Each development still needs to be assessed on its own merits with detailed consideration of its specific landscape and visual (including cumulative) impacts and its siting, layout and design.

1.11 Key tasks have been to:

- Develop a bespoke GIS-linked database that allows the participating authorities easily to view, update and interrogate information about wind turbines (≥18m in height to blade tip) in the landscape, intended in future to be a key tool for development management;
- Use the database to review and assess the growing cumulative landscape and visual effects of operational and consented wind energy development across the region and in the surrounding area;
- Provide, for the first time, an assessment and maps that show the specific sensitivity of the different landscape character types across the South Pennines to turbines of different heights;
- Prepare written guidance for accommodating wind energy development in each of the region's landscapes character types, taking account of existing development types, patterns and cumulative effects to date[6];
- Extend the wind energy landscape sensitivity and guidance seamlessly eastwards into the Barnsley council area, which has no existing coverage.

The Study Area

1.12 The study area comprises the local planning authority areas (west to east) of Rossendale, Burnley, Calderdale, Kirklees and Barnsley, as shown in **Figure 1 (Appendix 1)**, but excludes the parts of Kirklees and Barnsley that lie within the Peak District National Park (where the local planning authority is the Peak District National Park Authority). This study area straddles Lancashire, West Yorkshire and South Yorkshire.

1.13 The five planning authorities – and others in the wider South Pennines area – have been working together – increasingly closely – on renewable energy issues since work on the original wind energy landscape study began in 2009. It is of key importance that wind energy development in the South Pennines should, as far as possible, be developed in a way that is consistent across local authority boundaries. This requires shared information on the location and scale of operational and consented developments; and on landscape sensitivity to wind energy development. This has been an impetus for the present study.

[6] This material replaces and supersedes the 'capacity assessments' that were contained in the original (2010) study.

1.14 A central purpose of this study is to help promote a common understanding of and approach to wind energy development in the landscape across the South Pennines. This is especially so because the South Pennines is a unified and highly valued landscape, important scenically as an upland link between the Peak District and Yorkshire Dales National Parks, and recreationally for the countryside experience that it offers to the large nearby urban populations of West and South Yorkshire, Greater Manchester and East Lancashire. The area is also nationally and internationally important for its habitats (including extensive peat moorland and blanket bog) and for its historical and cultural influence as the seat of the industrial revolution.

1.15 The local planning authorities recognise that that decisions on specific wind energy applications should be taken in a holistic manner, acknowledging wind energy effects on the wider landscape of the South Pennines (and beyond) as well as on their individual local authority areas.

Wind Energy Development in the South Pennines

1.16 Despite its many important landscape resources the South Pennines has no statutory national landscape designation. As one of the few upland areas in England without such designation, it is under great pressure for wind energy development. Since the previous study was completed the area has experienced very considerable new wind energy development. As well as the large scale wind farms envisaged in the 2010 study, there has been a particular expansion of smaller turbines due to changes in feed-in tariffs[7].

1.17 The broad patterns of wind energy development within the study area and a 30km radius can be seen in **Figure 2 (Appendix 1)** and are examined in more detail in Sections 4 and 5 of this report. As at June 2014 the total number of operational wind energy schemes within the study area stood at 69, with a further 94 schemes having been consented but not yet built. These schemes included a total of 134 operational turbines and a further 132 consented turbines.

1.18 Frequently turbines of a range of sizes are now seen together in the South Pennines landscape, sometimes giving rise to landscape and visual conflicts. In addition, in many areas, the turbines' combined landscape, visual and cumulative effects are of growing significance, regularly raising questions of whether, and how, the landscape can accommodate any further such changes. These issues are explored further within this study.

1.19 An especially innovative part of the study has been to develop an updateable cross-authority database of wind energy developments, linked to an online GIS map that can be used by all the planning authorities and can also be accessed by the public without the need for GIS on their computers. The online maps will update automatically when turbines/schemes are added to the database, making them a useful tool for future planning, especially in relation to the cumulative and cross-boundary landscape and visual impacts of wind energy development.

Content of This Report

1.20 The report is structured as follows:

- **Section 2: The Landscape of the South Pennines** introduces the South Pennines landscape, providing a brief overview of landscape character, landscape designations and landscape values, and outlining the landscape framework that has been used in this study.

  Section 3: Assessment Approach and Methodology sets out the approach and principles used to prepare the wind energy landscape sensitivity assessments and guidance, including key terms and definitions, sensitivity criteria, wind energy development typology, sensitivity levels, the approach to developing guidance and considering cumulative impacts, and limitations of the assessment.

[7] The specific siting, design and cumulative landscape issues associated with smaller turbines are considered in Julie Martin Associates (2013) *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*, report to Blackburn with Darwen, Burnley, Calderdale, Hyndburn, Kirklees, Pendle, Rochdale and Rossendale Councils.

- **Section 4: Landscape Sensitivity Assessments and Guidance** sets out for each of the study area's landscape character types (LCTs) a sensitivity assessment and guidance for wind energy development, including consideration of existing (and potential future) cumulative landscape and visual issues.
- **Section 5: Key Findings and Recommendations** explains how the study outputs can be used in development planning and development management, and presents a short 'user guide'. It also summarises the sensitivity assessment results and considers strategic landscape issues arising from wind energy development across the study area as a whole.

1.21 A series of appendices provides further information as follows:

- **Appendix 1** presents all the maps that are referred to in the text (see list on contents page).
- **Appendix 2** provides further information (summary descriptions) on each of the landscape character areas (i.e. the separate units of each LCT) that occurs in each of the council areas.
- **Appendix 3** presents generic guidance on siting, layout and design of wind energy developments.
- **Appendix 4** presents guidance on assessing the landscape, visual and cumulative impacts of wind energy developments.
- **Appendix 5** gives further details of the wind energy database and web mapping tool that have been developed as part of the study.
- **Appendix 6** is a bibliography, giving details of various background reports and good practice guidance on wind energy development in the landscape.
- **Appendix 7** provides a list of acronyms.

2 The Landscape of the South Pennines

The South Pennines Landscape: Overview

Landscape and Visual Character

2.1 The landscape of the South Pennines is characterised by wide open moorland plateaux with sharp gritstone edges and tors, deeply trenched by narrow valleys and wooded cloughs. There is a mosaic of moorland and blanket bog with enclosed walled pastures on broad terraces at lower elevations around the fringes of the moors. Reservoirs are common throughout the area. The valley bottoms are densely settled, with gritstone towns centred around key features of industrial heritage such as textile mills. Stone buildings extend along the valley sides, with older vernacular settlements and some coalfield settlements, particularly on the moorland fringes in the east of the area) and in Barnsley. Historic packhorse trails traverse the exposed moorland tops and in parts the landscape is affected by wind farm development, overhead power lines and quarrying, mainly on the fringes of the area.

2.2 There are extensive views from elevated locations in all directions. The open and broadly level plateau tops provide uninterrupted visibility over long distances, with wide horizons, big skies and a strong sense of relative isolation and remoteness. The plateau tops are characteristically open and largely undeveloped, although there are a number of important landmarks, including the monuments of Peel Tower (39m) above Ramsbottom in the west, Stoodley Pike (35m) on the south side of the Calder valley near Todmorden, as well as Emley Moor Tower (330m) east of Huddersfield.

2.3 Perhaps the most dramatic and striking views are from the sharp gritstone plateau edges where the contrast with the adjoining, intimate valley landscapes can be most clearly seen. This type of landscape and visual experience is most characteristic of the central part of the study area, which forms the Pennine watershed and has been most deeply incised. Here the Pennine Way and Pennine Bridleway National Trails run north-south across the study area and there are many other long distance paths.

2.4 In contrast, the incised valleys themselves have a more settled character and are often strongly influenced by large industrial structures such as historically important textile mills and chimneys. Above the valleys, the sharp plateau edges form short-range skylines that tightly frame the settlements below, forming distinctive scarps that lend physical and visual enclosure, are the focus of many distinctive and dramatic views, and bring a sense of open countryside close to the heart of the built up areas and their urban populations.

2.5 These complex patterns mean that the landscape of the South Pennines is viewed and perceived in diverse ways by different groups of viewers. It is seen from surrounding urban areas as a distant countryside backdrop; from the trans-Pennine M62 as an apparently vast expanse of semi-natural moorland; from the area's many recreational routes as scenic, relatively wild and easily accessible countryside; and from the settled valleys of Rossendale, Calderdale and Kirklees as an immediate landscape setting. These differing experiences and perceptions need to be taken into account when assessing the landscape's sensitivity to wind energy development.

Landscape Designations

2.6 The South Pennines is the only upland landscape in England that is not statutorily designated. Forming the central part of the Pennine 'spine' which runs up the middle of northern England, it separates the major industrial conurbations of Greater Manchester and East Lancashire to the west and West and South Yorkshire to the east. At the same time it provides both a physical and a visual link between landscapes that are statutorily designated, to north and south, namely the Yorkshire Dales National Park and the Nidderdale and Forest of Bowland Areas of Outstanding Natural Beauty (AONBs) close to the north, and the Peak District National Park to the south. This regional landscape context can be seen in **Figure 3**.

2.7 Despite its lack of statutory designation, the natural beauty of the South Pennines landscape has long been recognised. The main upland spine was identified in 1947 by the National Parks Committee, chaired by Sir Arthur Hobhouse, as a Conservation Area, that is a potential Area of Outstanding Natural Beauty (AONB). In selecting the South Pennines as a potential AONB, it seems that the Committee not only sought to highlight the area's great natural beauty, but also aimed to connect the National Parks to north and south and make recreational provision for the urban populations adjoining the South Pennines, in recognition of the strategic planning and recreational role of this area of countryside, as well as its natural beauty.

2.8 Although recognised as being of national landscape importance at this time, ultimately the South Pennines area was not designated as an AONB. However its landscape importance has continued to be acknowledged in other ways. It remains a highly valued landscape resource, important scenically as an upland link between the Peak District and Yorkshire Dales National Parks, and recreationally for the countryside experience that it offers to the large nearby urban populations of Greater Manchester, East Lancashire and West and South Yorkshire. It is also nationally and internationally important for its habitats (including extensive peat moorland and blanket bog designated as SSSI, SAC and SPA) and its historical and cultural influence as the seat of the industrial revolution.

2.9 These interests have been recognised in the non-statutory designation of the South Pennines Heritage Area and the West Pennine Moors (see **Figure 3**). The South Pennines Heritage Area, which covers large parts of the study area, was designated by the Standing Conference of South Pennines Authorities (SCOSPA) (now Pennine Prospects); while the West Pennine Moors, which lies on the western edge of and largely outside the study area, was designated by the West Pennine Moors Partnership. Both designations were made in the 1990s and were supported by the then Countryside Commission, English Heritage and English Nature.

2.10 Recently the central part of the study area, the so-called 'Watershed Landscape' (see Figure 3) has received further recognition, in the form of £2 million of Heritage Lottery funding for Pennine Prospects. This project was intended to raise the profile of the area and the public's appreciation and enjoyment of its value and qualities, through a series of programmes focused on: access to the watershed landscape; the history and geology of the moorlands; enhancement of characteristic habitats; the moorlands as inspiration; understanding and enjoying the landscape; and training in aspects of countryside management. This narrow band of landscape, which includes the ridge between Crook Hill and Heald Moor, is especially important to the continuity of the Pennine backbone, as well as for the upland experience that it offers in a compact area between major conurbations.

Landscape Values

2.11 The *Landscape Character Assessment Guidance for England and Scotland*[8] identifies a number of criteria or reasons why stakeholders may attach value or importance to different landscapes. Briefly, these include landscape quality (the condition and intactness of a landscape and its features); scenic quality (visual appeal); rarity (the presence of rare landscape types or features); conservation interests (the presence of features of particular wildlife, earth science, archaeological, historical or cultural interest); wildness (the presence of wild or relatively wild character in the landscape); associations (with particular people, artists, writers or events in history); tranquillity (reflecting perceived links to nature and natural features and relative lack of detractors such as built development, traffic and noise); and recreational opportunities (for enjoyment of the landscape).

2.12 The core landscapes of the South Pennines, despite their lack of statutory designation, rate highly against most if not all of these criteria. Among the 'special qualities' or values that can be ascribed to the landscape are:

- the distinctive and recognisable moorland plateau landform, which is a dramatic physical feature created by hard Millstone Grit;
- the rich variety and diversity of landscape types, including many rural landscapes that are relatively intact and unspoilt given their location sandwiched between urban conurbations;

[8] Countryside Agency and Scottish Natural Heritage (2002) *Landscape Character Assessment Guidance for England and Scotland*. Countryside Agency and Scottish Natural Heritage.

- the very close juxtaposition of industrial and dramatic 'wild' landscapes, which together create a harsh, wild beauty and strong visual contrasts;
- the area's unique cultural heritage, which includes a fascinating mix of industrial and prehistoric landscapes;
- the important semi-natural habitats, including moorland, in-bye land, remnant ancient woodland, and waterbodies and wetlands;
- the isolation, remoteness and relatively wild character of the moorland summits and cloughs – qualities that are increasingly rare, especially close to large urban populations;
- the important cultural associations with, among others, the Brontës, who lived at Haworth north of Hebden Bridge; the former poet laureate, Ted Hughes, whose work was inspired by his early years at Mytholmroyd in the Calder Valley; and the access movement of the 1930s;
- the relative tranquillity of the moorland plateaux landscapes in particular, which offer a chance to 'get away from it all';
- the access and recreation opportunities offered by the area's vast tracts of urban common, reclaimed industrial land and other open access land;
- the extensive networks of public paths, including the Pennine Way and Pennine Bridleway, which are of national importance, having been funded by central government through Natural England.

Landscape Framework for the Study

2.13 The study area includes a number of National Character Areas (NCAs, see **Figure 4**), further details of which can be found on Natural England's website[9]. These are:

- 35 Lancashire Valleys
- 36 Southern Pennines
- 37 Yorkshire Southern Pennine Fringe
- 38 Nottinghamshire, Derbyshire and Yorkshire Coalfield
- 51 Dark Peak

2.14 However for the purposes of this study the principal focus has been on the area's (more detailed) landscape character types (LCTs) and (to a lesser extent) their constituent landscape character areas (LCAs), listed in Table 2.1 and shown in **Figures 5 and 6**. These form the landscape character baseline against which the landscape impacts of wind energy development can be judged.

2.15 A single landscape character framework was compiled for the whole study area. This framework took as its starting point, in Burnley, Rossendale, Calderdale and Kirklees, the landscape character framework that was compiled for the 2010 *Landscape Capacity Study for Wind Energy Development in the South Pennines* referenced above; while in Barnsley the landscape character framework contained within the 2002 *Barnsley Borough Landscape Character Assessment*[10] was used.

2.16 The two landscape character assessments were reviewed and streamlined following initial desk study and field work, to create a suite of LCTs and LCAs that would provide logical coverage for the whole study area, running seamlessly across local planning authority boundaries. Where very similar LCTs and LCAs were found to occur in both Barnsley and the previous South Pennines study area the Barnsley LCTs and LCAs were renamed, *for the purposes of this study only*, so that a single consistent landscape framework emerged.

[9] http://www.naturalengland.org.uk/publications/nca/

[10] ECUS and Land Use Consultants (2002) *Barnsley Borough Landscape Character Assessment*, report to Barnsley Council.

Table 2.1: The Landscape Framework for the Study

Landscape Character Type* See **Section 4** for summary descriptions	**Constituent Landscape Character Areas** See **Appendix 2** for summary descriptions	**Corresponding Landscape Character Area Names in Barnsley Landscape Character Assessment**
A: High Moorland Plateaux (corresponds to A: Unenclosed Moorland in Barnsley)	A1: South Pennine Moors A2: North Peak (Wessenden & Meltham Moors) A3: Wharncliffe Unenclosed Moorland	A1: Thurlstone & Langsett Unenclosed Moorland A2: Wharncliffe Unenclosed Moorland
B: Moorland Hills	B2: West Pennine Moors	
C: Enclosed Uplands	C1: Rossendale Hills	
D: Moorland Fringes/ Upland Pastures (corresponds to F: Upland Farmland in Barnsley)	D1: Calder Terrace D2: Blackwood Common D3: Forest of Trawden - Worsthorne Moor Fringe D4: Scout Moor & Shore Moor Fringe D5: Hameldon, Oswaldtwistle & Darwen Moor Fringe D7: Peak Fringe Upland Pastures (formerly Wessenden & Meltham Moor Fringe) D9: Low Common, Royd Moor & Whitley Common D10: Penistone Upland Pastures	F1: Ingbirchworth Upland Farmland (west part) F1: Ingbirchworth Upland Farmland (east part) F2: Penistone Upland Farmland
E: Rural Fringes	E1: Holmfirth – Meltham E2: Barkisland - Holywell Green E3: Tockholes - Rivington - Edgeworth Fringe E4: Colne - Nelson - Burnley Fringe E6: Fenay Beck Valley Rural Fringes E7: Emley Moor Northern Fringes E8: Batley - Dewsbury Rural Fringes	
F: Settled Valleys	F1: Irwell (Ramsbottom, Rawtenstall, Bacup) F2: Calder (Todmorden, Hebden Bridge, Mytholmroyd) F3: Ryburn (Sowerby Bridge, Ripponden) F4: Colne (Slaithwaite, Marsden) F5: Holme & Hall Dike (Holmfirth, Meltham)	
G: Wooded Rural Valleys (corresponds to B: Upland River Valleys in Barnsley)	G1: Luddenden Dean G2: Hebden Dale & Crimsworth Dean G3: Cliviger Gorge G4: Cragg Vale G5: Don River Valley G6: River Roch & Tributaries	B2: Wooded Don River Valley

	G8: Holme River Valley G9: Fenay Beck Valley & Tributaries G10: River Dearne Valley G11: Batley Fringe Incised Valleys G12: Shibden Dale G13: Clifton Beck	
I: Reservoir Valleys	I3: Haslingden Grane	
K: Coalfield Edge Urban Fringe Farmland	K1: Thornton – Queensbury	
M: Industrial Lowland Valleys	M1: Calder Valley Floor	
N: Rolling Wooded Farmland **(corresponds to E: Settled Wooded Farmland in Barnsley)**	N1: Emley Moor N2: Cawthorne Park & West Barnsley Rolling Wooded Farmland N3: Grimethorpe Rolling Wooded Farmland N4: Hoyland Rolling Wooded Farmland	E1: West Barnsley Settled Wooded Farmland E3: Grimethorpe Settled Wooded Farmland E4: Hoyland Settled Wooded Farmland
O: Industrial/ Business Parks	No landscape character areas identified	
P: Lowland River Floors	P1: Elsecar Lowland River Floor P2: Lower Dearne Lowland River Floor P3: Upper Dearne Lowland River Floor P4: Dove Lowland River Floor	C1: Elsecar Lowland River Floor C2: Lower Dearne Lowland River Floor C3: Upper Dearne Lowland River Floor C4: Dove Lowland River Floor
Q: Settled Arable Slopes	Q1: North East Barnsley Settled Arable Slopes Q2: East Dearne Settled Arable Slopes Q3: West Dearne Settled Arable Slopes	D1 - North East Barnsley Settled Arable Slopes D2: East Dearne Settled Arable Slopes D3: West Dearne Settled Arable Slopes
R: Upland River Valleys	R1: Upland Don River Valley	B1: Upland Don River Valley
U: Urban		E2: Barnsley Settled Wooded Farmland

***Note:** For the purposes of this study only, where landscape character types shown in the Barnsley Landscape Character Assessment *are very similar to* landscape character types occurring in the 2010 South Pennines study, the name that applied in that study has been used. Where the landscape character types shown in the Barnsley Landscape Character Assessment *do not occur elsewhere* in the study area, the Barnsley-specific name has been retained.

3 Assessment Approach and Methodology

Introduction

3.1 The 15 landscape character types (LCTs) and their accompanying descriptions provide the starting point for the assessment of landscape sensitivity to wind energy development and the development of guidance for accommodating wind energy development in the landscape.

3.2 There is currently no formally agreed methodology for assessing the sensitivity of different types of landscape to wind energy development. The approach taken in this study builds on current guidance on landscape character assessment[11] and landscape and visual impact assessment[12]; on review of recent similar studies of landscape sensitivity to wind energy development in other parts of England and Scotland; and on Julie Martin Associates' and LUC's own considerable relevant experience in this field.

3.3 The approach aims to be transparent, robust and defensible. This section of the report sets out key terms and definitions; and explains how the sensitivity assessment was undertaken and the development types that were considered. It also describes how guidance for wind energy development was prepared for each LCT, including the development and use of a database and web mapping tool that that allows the consideration of cumulative wind energy impacts (including cross-boundary impacts) to be undertaken much more easily than has been possible in the past.

Key Terms and Definitions

3.4 **Landscape** is about the relationship between people and place. It provides the setting for our day-to-day lives and influences our enjoyment of the natural environment. It results from the interaction between different components of the environment, both natural (the influences of geology, landform, soils, climate and habitats) and cultural (the impact of historical and current land uses, settlement patterns, enclosure and other human interventions). Landscapes are everywhere, not just in special or designated places. An important driver behind this approach is the government-ratified European Landscape Convention (ELC), which came into force on 1 March 2007[13]. People value landscapes for many different reasons, related not only to aesthetics and scenery but also to their contribution to recreation and health, wildlife and biodiversity, natural resources and geodiversity, and local culture and distinctiveness. Key terms relating to landscape resources are defined below.

Table 3.1: Key Terms Relating to Landscape Resources[14]

Landscape fabric – Physical landscape elements and features, such as landform, landcover, boundary features, trees and woodland, that make up the landscape we see, and that may be affected for example by recontouring, land use changes, or damage to vegetation in the course of development.
Landscape character – The distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape and how this is perceived by people. It reflects particular combinations of geology, landform, soils, vegetation, land use and human settlement. It creates the particular sense of place of different areas of the landscape.

[11] Countryside Agency and Scottish Natural Heritage (2002) *Landscape Character Assessment Guidance for England and Scotland*.

[12] Landscape Institute and Institute of Environmental Management and Assessment (2013) *Guidelines for Landscape and Visual Impact Assessment*, third edition, Routledge.

[13] *European Landscape Convention*, Florence, 20 October 2000, Treaty Series No. 36 (2012).

[14] Definitions are taken from (or closely based upon) the guidance listed above.

Landscape quality (or condition) – A term based on judgements about the physical state of the landscape, and about its intactness, from visual, functional and ecological perspectives. It also reflects the state of repair of individual features and elements which make up the character in any one place.

Landscape value – The intrinsic value that is attached to a landscape, often (but not always) reflected in designation or recognition. It expresses national or local consensus as to the (degree of) importance of a landscape, for reasons including landscape quality, scenic (or visual) quality, wildness and tranquillity, natural and cultural heritage interests, cultural associations and recreational opportunities.

Amenity – The benefits afforded to people by a particular area in terms of what is seen and experienced. Amenity includes not just visual amenity and views but also the experience of landscape in its widest sense. Different groups of people such as walkers, residents and motorists may have different amenity expectations.

3.5 **Landscape sensitivity** to wind energy development is the extent to which a landscape is susceptible to change (potentially affecting its fabric, character, quality, value or amenity) as a result of wind energy development. Sensitivity may relate to particular characteristics or features. For example, the wild character of a particular upland area may increase its sensitivity; so too may the presence of specific natural or cultural heritage features that contribute to landscape character and enjoyment.

3.6 Importantly, landscape sensitivity depends on both character and on the degree to which society values a particular place. A landscape that is highly valued and designated as such may nonetheless be able to accommodate wind energy development in the right location, if there is a good fit with character and the special qualities and features of the place can be conserved. Conversely, a landscape that has not been designated may still be highly sensitive to wind energy development, for example due to its particular visual prominence or its role as a recreational resource.

Assessing Landscape Sensitivity to Wind Energy Development

3.7 The first step in the assessment process is to assess the inherent sensitivity to wind energy development of each landscape using the criteria listed below, taking account of the landscape character and key environmental features of the LCT, as described in the relevant landscape character assessment and set out at the start of each sensitivity assessment.

3.8 The criteria are based on good practice in assessment of landscape sensitivity to wind energy development. They include criteria relating to landscape and visual character as well as others relating to valued landscape qualities and features. References to value do not imply a blanket presumption against development. Instead the intention is to highlight specific aspects of the landscape that are valued and hence may be vulnerable to change associated with wind energy development.

Table 3.2: Criteria for Assessing Landscape Sensitivity to Wind Energy Development

Sensitivity Criterion	Explanation of Criterion
Scale	A large scale landscape, such as extensive rolling uplands or expansive plains, where the turbines may be in proportion with the landscape, is likely to be less sensitive to wind energy development than a small scale landscape where turbines may appear to dominate local landform and landcover elements. A large height differential between valley floors and summits may also help reduce sensitivity in upland landscapes by diminishing the perceived height of turbines.
Landform	Landform that is smooth, convex and flowing, or flat and uniform, is likely to be less sensitive to wind energy development than dramatic or rugged landform. This is because the former types of landform tend to be less prominent and less distinctive in character. Convex landform may in addition provide partial screening for turbine structures.
Landcover	Simple, regular, uncluttered landscapes with extensive areas of consistent ground cover are likely to be less sensitive to wind energy development than areas with more complex, irregular or intimate landscape patterns (for example ancient, irregular field systems). The latter areas tend to be more

	vulnerable to physical disturbance, which is likely to have greater effects on landscape fabric and landscape condition (for example affecting the integrity of landscape patterns). Intensive farming or commercial forestry may also reduce sensitivity.
Built environment	Landscapes already affected by contemporary built structures such as masts, pylons, chimneys, major transport infrastructure (or by influences such as quarrying or landfill) may be less sensitive to wind energy development, provided care is taken to avoid visual conflicts where any existing structures are seen in close proximity to turbines. Conversely areas with a more established, traditional or historic built character, are likely to be more sensitive.
Skylines and settings	Landscapes with prominent, undeveloped skylines are likely to be more sensitive to wind energy development than landscapes with skylines that are less prominent or that have already been affected by built development. The presence of distinctive landscape features, such as hilltop monuments, church spires or designed landscapes, may also heighten sensitivity where turbines would be seen in the same view and/or would adversely affect the setting of the feature concerned.
Visibility and views	Landscapes that are visually contained by topography, buildings, trees or woodlands and hence have limited inward and outward views may be less sensitive than areas with extensive inward and outward views. Such features may give screening for the lower parts of turbines and for associated access and infrastructure. However trees and woodlands should be a long term feature if their screening effects are to be relied upon. Extensive close or middle range views from scenic routes, well-known vistas or tourist viewpoints may increase a landscape's sensitivity to wind energy development, as may close proximity to settlement.
Landscape quality (condition)	Areas of countryside where the condition and integrity of landscape patterns, elements and features are relatively good may be more sensitive to wind energy development than areas where condition is relatively poor. In such areas the fabric and character of the landscape are likely to be more highly valued and also more vulnerable to physical damage as a result of wind energy development.
Scenic quality	Scenic quality, that is visual appeal due to important views, visual interest and variety, contrasting landscape patterns, or dramatic topography, may increase landscape sensitivity to wind energy development. Land of high scenic quality occurs within designated landscapes (World Heritage Sites, National Parks, Areas of Outstanding Natural Beauty and Heritage Coasts) but also elsewhere. For example, the approaches to and settings of designated landscapes may be sensitive where they share or contribute to the scenic quality of those landscapes.
Wildness and tranquillity	The presence of a relatively wild and/or tranquil character (due to remoteness, freedom from human activity and disturbance, and factors such as openness and perceived naturalness) tends to make the landscape more sensitive to wind farm development. The introduction of wind turbines may alter perceptions of wildness and tranquillity, introducing movement, sound and light effects and possibly bringing a more industrial character to the affected landscapes.
Natural and cultural heritage features	The presence of natural and cultural heritage features such as interesting and valued habitats, wildlife, geological, archaeological, historical or built environment features that enhance the landscape experience may increase sensitivity to wind farms, particularly where these features may be directly affected by construction works and/or access tracks; or where enjoyment of these features may be diminished.
Cultural associations	Specific cultural (i.e. historical, folklore, literary or artistic) associations relating to the landscape may result in increased sensitivity to wind energy development if the character or perceptions of the landscape concerned are likely to be significantly altered.
Amenity and recreation	Areas offering access to high quality landscapes, memorable places, and special experiences and to a range of opportunities for open-air recreation may be more sensitive to wind energy development due to potential effects on accessibility and/or on the quality of the recreational experience that will be obtained. Sensitivity may be raised by proximity to important recreational features such as National Trails and other long distance routes.

3.9 For each LCT within the study area an assessment of sensitivity against each of these criteria is prepared, using a three point scale as below.

Lower sensitivity	▪▪▪▪▪▪▪▶	Higher sensitivity
Landscape is not very sensitive to change due to wind energy development based on an assessment of this criterion.	Landscape is of intermediate sensitivity to change due to wind energy development based on an assessment of this criterion.	Landscape is very sensitive to change due to wind energy development based on an assessment of this criterion.

3.10 Once the criteria have been assessed individually, the results are drawn together into a summary discussion on landscape sensitivity for that LCT. This discussion draws out any criteria or factors with an especially strong influence on sensitivity to wind energy development and also comments on any variations in sensitivity at different locations within the LCT and the reasons for this.

3.11 *The presence of existing wind energy developments within the study area has not influenced the results of the sensitivity assessments, which focus on inherent landscape sensitivity to wind turbines, i.e. on the sensitivity of the landscape as it would be without any wind turbines.* A later stage in the assessment process (see 'Considering Cumulative Impacts' below) takes account of the effects on the landscape of any existing wind energy developments that may be seen together with a proposed wind energy development scheme.

Judging Landscape Sensitivity to Different Sizes of Development

3.12 The next stage of the assessment process is to judge landscape sensitivity to different scales of wind energy development in terms of turbine height; and to provide commentary on landscape sensitivity to different turbine group sizes.

3.13 The assessment applies to all forms of turbines, although the most common type is the horizontal axis three-bladed turbine. It uses a range of turbine height classes and group classes as set out below.

Table 3.3: Wind Energy Development Typology

Height classes:
Very small turbine – ≤24m to blade tip (average power rating around 12kW)
Small turbine – 25-59m to blade tip (average power rating around 0.5MW)
Medium turbine – 60-89m to blade tip (average power rating around 1MW)
Large turbine – 90-129m to blade tip (average power rating around 2.5MW)
Very large turbine – ≥130m to blade tip (average power rating 3MW or more)
Group classes:
Single turbine
Small cluster (2-3 turbines)
Small wind farm (4-5 turbines)
Medium wind farm (6-10 turbines)
Large wind farm (11-20 turbines)
Very large wind farm (≥21 turbines)

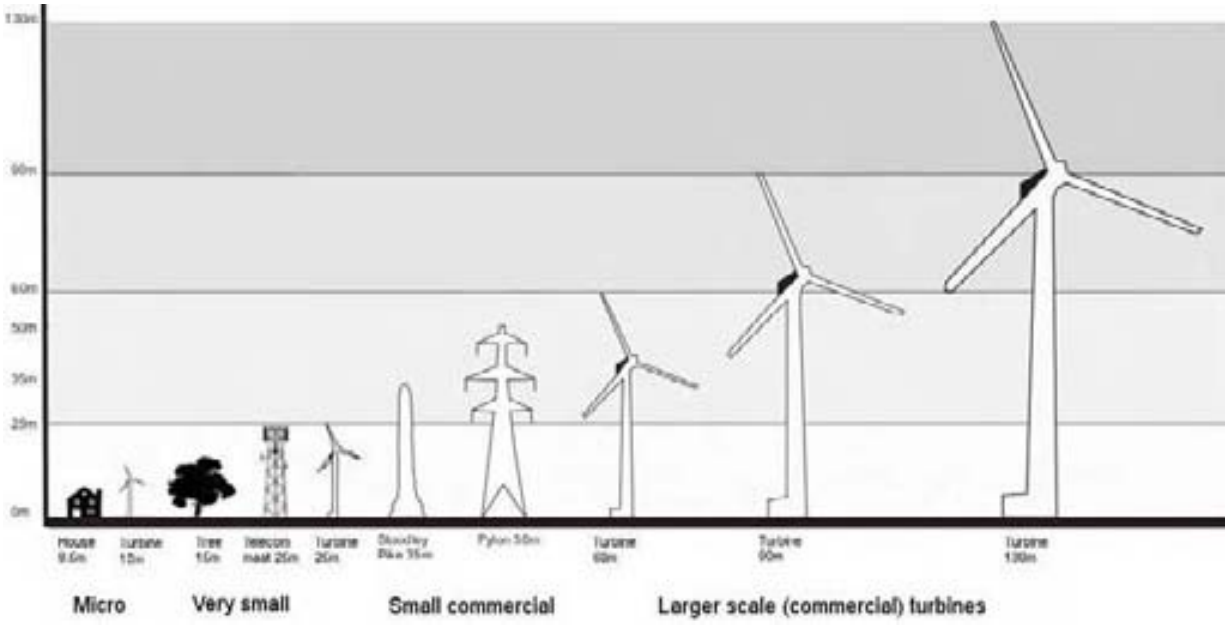
3.14 The descriptive titles given to each turbine height and group class are relative to the typical sizes of turbine developments at the time of writing. It is recognised that typical turbine heights could increase further in future and also that turbines of any size, even 'very small', can be significant structures in the landscape. A separate report prepared for a number of South Pennines planning authorities[15] provides good practice guidance on the siting, design and cumulative landscape

[15] Julie Martin Associates (2013) *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*, report to Blackburn with Darwen, Burnley, Calderdale, Hyndburn, Kirklees, Pendle, Rochdale and Rossendale Councils.

issues associated with turbines up to 60m high and where appropriate should be read in conjunction with this report. That guidance is particularly relevant in relation to domestic and micro turbines up to 12m high.

3.15 The turbine scale diagram below illustrates how turbines of different heights relate to typical features in the landscape such as houses, trees, telecommunications masts and pylons. A key point to note is that turbines above around 15-20m in height to blade tip are no longer in scale with domestic buildings and trees within the landscape.

Turbine scale diagram



3.16 Sensitivity to different turbine heights is assessed on a five-point scale as shown below.

Table 3.4: Sensitivity levels and definitions

Sensitivity Level	Definition
High (H)	The key characteristics and qualities of the landscape are highly sensitive to change from the height of wind turbine being assessed.
Moderate-High (M-H)	The key characteristics and qualities of the landscape are sensitive to change from the height of wind turbine being assessed.
Moderate (M)	Some of the key characteristics and qualities of the landscape are highly sensitive to change from the height of wind turbine being assessed.
Low-Moderate (L-M)	Few of the key characteristics and qualities of the landscape are highly sensitive to change from the height of wind turbine being assessed.
Low (L)	Key characteristics and qualities of the landscape are robust and are less likely to be adversely affected by the height of wind turbine being assessed.

3.17 The full sensitivity assessment results are presented in tabular format in **Section 4** and also include discussion of the LCT's specific landscape sensitivity to different turbine group sizes ranging from single turbines up to very large wind farms.

Developing Guidance for Wind Energy Development

3.18 The final part of the assessment process is to develop specific guidance for wind energy development within each LCT, exploring where and how such development may be accommodated in the landscape. The guidance is underpinned by a number of broad, overarching landscape principles (discussed further in **Section 5**), the most important of which is to avoid significant harm to the key characteristics of the landscape whilst accepting that some change may be required in order to accommodate wind energy development[16].

Guidance for Future Development

3.19 The guidance for future development covers:

- Constraints – The key landscape sensitivities that need to be recognised and respected when siting wind energy development in the LCT. These may include not only specific aspects of the area's landscape and visual character but also valued landscape qualities and features that might be adversely affected.
- Opportunities – Brief description of any broad areas of opportunity for wind energy development, taking account of landscape character and landscape values.
- Key considerations – Reasoned advice on more detailed issues of siting, layout and design that are specific to this LCT (see also **Appendix 3** for generic guidance on siting, layout and design of wind energy development).

3.20 This guidance is relevant not only to new wind energy development schemes but also to repowering of existing schemes of all sizes, which is likely to become increasingly common in future.

Considering Cumulative Impacts

3.21 As a separate exercise, account then needs to be taken of any cumulative landscape and visual impacts (in accordance with Planning Practice Guidance on Renewable and Low Carbon Energy[17]). These are the combined landscape and visual changes that may occur where multiple wind energy developments are seen simultaneously, in succession or in sequence in the landscape. Cumulative impacts are increasingly relevant in the South Pennines given the pace and scale of wind energy development that has occurred in recent years; and will influence the location and amount of additional wind energy development that can be accommodated in an LCT.

Current Patterns of Permitted Wind Energy Development

3.22 To assist in the consideration of cumulative impacts, the guidance therefore also includes an overview of current patterns of permitted wind energy development. This analysis has been prepared using the new cross-authority database of wind energy projects (see further details in **Appendix 5**) as well as maps of all operational and consented wind turbines across the five local planning authority areas (see **Figures 7-11**) together with larger wind energy schemes (≥0.5MW of generating capacity) within a 30km radius.

3.23 Note that the database and mapping only include wind turbines ≥18m in height to blade tip[18]; in addition there are many smaller operational and consented turbines. The effects of these smaller turbines are not specifically covered in this study but may nonetheless be relevant when considering applications for further wind energy development as they influence the existing visual environment.

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[16] "Landscape capacity refers to the degree to which a particular landscape character area is able to accommodate change without significant effects on its character, or overall change of landscape character type…" (Countryside Agency and Scottish Natural Heritage (2002) *Landscape Character Assessment Guidance for England and Scotland*).

[17] http://planningguidance.planningportal.gov.uk/blog/guidance/renewable-and-low-carbon-energy/

[18] This cut-off point was chosen to reflect the fact that turbines above around 15-20m in height to blade tip are no longer in scale with domestic buildings and trees within the landscape as noted earlier.

3.24 Further guidance on cumulative effects associated with small turbines can be found *in the Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*[19]*.*

3.25 Brief details are given of the number and type of operational and consented wind energy developments within each LCT (by local planning authority), as at June 2014. There is a relatively high degree of certainty that that these developments either are present or will shortly be present within the landscape. Application stage developments, by contrast, are relatively uncertain. In preparing the sensitivity assessment the study team has had access to information on application stage developments but has used this information as general background only.

3.26 Any significant wind energy development in adjoining LCTs or within 30km of the study area that might give rise to cumulative effects when seen together with turbines *within* the LCT is also mentioned. A web link is provided to the online wind energy database and web mapping tool so that the latest wind energy development position can be seen.

Cumulative Landscape and Visual Issues Arising

3.27 Any cumulative landscape or visual issues arising from these emerging patterns of wind energy development in the LCT are then identified and briefly discussed. Consideration is given to both scale and spatial patterns, flagging up existing and potential cumulative effects. Strong concentrations of sites in particular areas (including cross-boundary areas), which may in turn give rise to cumulative impacts on landscape character, or on the recreational amenity of the region's landscapes, are identified, as well as visual issues such as the close juxtaposition of turbines of different heights and designs.

Guidance for Siting Multiple Developments

3.28 Finally brief guidance is given on siting and designing multiple wind energy developments within the LCT in a way that will respect its specific character and sensitivities. This includes advice on how to present a simple image that relates clearly to the landscape character of the LCT, as recommended in best practice guidance on siting and design of wind turbines[20], together with suggestions for addressing the particular cumulative landscape and visual issues identified for that LCT.

Limitations of the Assessment

3.29 This sensitivity assessment focuses on landscape and visual (including cumulative) issues only and does not take account of the much wider range of technological and environmental issues that also need to be considered in relation to new wind energy development. It is unrelated to any Government targets for renewable energy development or studies of technical potential.

3.30 The assessment is based on an appraisal of a wide range of landscape information and evidence, using carefully defined criteria. As with all such appraisals, care is required in interpretation. In particular, the assessment of landscape sensitivity levels has required careful review of and professional judgements on the overall weight of evidence attached to a complex range of interrelated criteria.

3.31 While the assessment provides an initial indication of the relative landscape sensitivities of different areas to wind energy development of different types, and guidance on wind energy development in the landscape, it should not be interpreted as a definitive statement on the suitability in landscape terms of an individual site for a particular development. Each development still needs to be assessed on its own merits, with detailed consideration of its specific landscape and visual (including cumulative) impacts and its siting, layout and design.

[19] Julie Martin Associates (2013) *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*, report to Blackburn with Darwen, Burnley, Calderdale, Hyndburn, Kirklees, Pendle, Rochdale and Rossendale Councils.
[20] See Scottish Natural Heritage (2014) *Siting and Designing Wind Farms in the Landscape*.

4 Landscape Sensitivity Assessments and Guidance

Introduction to the Sensitivity Assessments and Guidance

4.1 This section presents the detailed results of the sensitivity assessments and guidance (as described above) for the study area's 15 landscape character types (LCTs). For each LCT the assessment comprises:

- A location map for the LCT;
- A list of its component landscape character areas (LCAs);
- A list of the local authorities in which the LCT is present;
- A landscape character summary description for the LCT;
- A list of the LCT's 'key environmental features', which closely reflect its most special, valued landscape qualities;
- An assessment of landscape sensitivity to wind energy development;
- Guidance for wind energy development, including consideration of cumulative impacts.

4.2 The LCT descriptions and 'key environmental features' have been taken from, or are very closely based on existing landscape character assessment coverage for the study area. Further information on the character of individual LCAs can be found in **Appendix 2**. In preparing the sensitivity assessments, every effort has been made to ensure consistency with any similar assessments for adjoining planning authorities such as the Peak District National Park[21].

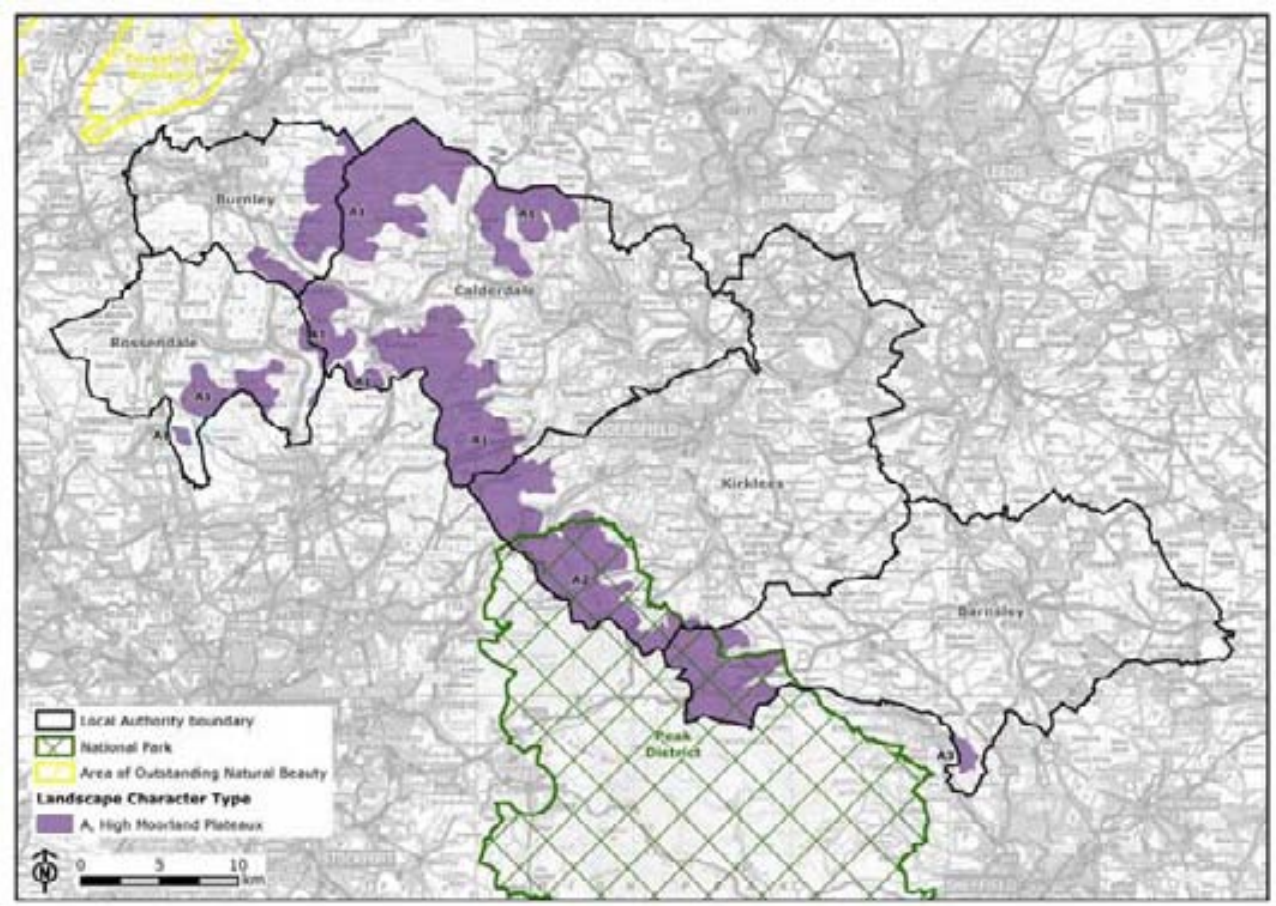
4.3 The assessments should be read in conjunction with **Figures 7-11** which show existing wind energy deployment within the LCTs in each of the five local planning authority areas.

4.4 The sensitivity assessment results are summarised in **Section 5** and illustrated in map form in **Figures 12-16**. Section 5 also provides an overview of strategic landscape issues associated with wind energy development across the South Pennines as a whole.

[21] Further details of the landscape character assessments and wind energy sensitivity assessments that were used and referred to in this study can be found in the bibliography in **Appendix 6**.

LCT A: High Moorland Plateaux

LCT Location Map



Component Landscape Character Areas

A1: South Pennine Moors

A2: North Peak (Wessenden & Meltham Moors)

A3: Wharncliffe Unenclosed Moorland

Local authorities where LCT is present

Rossendale, Burnley, Calderdale, Kirklees, Barnsley

Landscape character summary

The high moorland plateau rolls in a series of even, sweeping ridges across the central part of the area forming the heart and core of the South Pennines landscape. It is a windswept, exposed upland landscape raised above the dissecting valleys and is frequently enshrouded by mists and fog and possesses a strong sense of remoteness and 'wildness'. Distinctive physical features include the frost weathered tors and regoliths which crown some of the moorland summits and the characteristic stepped topography of interlocking terraces and edges corresponding to the interleaved layers of underlying Millstone Grit geology. The moorland is rich in history, culture and wildlife. The mosaic of upland habitats including heather moorland, blanket bog, acid grassland and wet and dry heathland are of great importance for key bird species as reflected in the designation of the South Pennines SPA. There is also good survival of prehistoric sites and the moorland landscapes represent a valuable resource for further archaeological research into the early stages of human exploitation. It is a landscape with strong cultural and literary associations forming a 'wild' backdrop to the novels of the Brontë sisters and an inspiration for the poetry of the former Poet Laureate Ted Hughes.

This is a 'remote' landscape very sparsely settled with only occasional isolated farmhouses, many now abandoned and in ruins and contributing to the sense of remoteness. Resource exploitation is visible in the form of power supply structures including pylons, transmission lines, wind turbine developments and communications masts, as well as reservoirs and mineral extraction sites. In some areas, intervisibility between these developments diminishes the sense of isolation.

Key environmental features

- A perception of remoteness, isolation and wildness provided by the altitude, absence of trees and settlement plus expansive views.
- Mosaic of upland habitats, including blanket bog habitat, wet heathland, dry heathland and acid grassland which support an internationally important range of bird species (South Pennines SPA).
- Blanket bog is of international importance, supporting a specialist flora and associated fauna and representing a habitat of which the UK has 7-13% of the global resource.
- Important archaeological landscape with much prehistoric interest. The blanket bog is a significant archaeological and palaeoenvironmental resource.
- Strong cultural associations – powerful influence on and inspiration for the writing of the Brontë sisters and Ted Hughes, among others.
- Distinctive landform of terraces and gritstone edges reflecting the underlying geology and process of weathering. Frost weathered tors and regoliths are prominent features.
- High geological interest including several geological SSSIs, at natural and quarried locations.
- Reservoirs provide water and recreational resources, as well as supporting wildfowl and wader species.
- Absence of settlement, with only isolated dwellings and abandoned farmsteads.

LCT A: Landscape Sensitivity to Wind Energy Development

Criteria	Lower sensitivity ▪▪▪▪▪▪▪▶ Higher sensitivity	
Scale	**M**	
	The high moorland plateau lies mainly between 300 and 500m AOD, and is relatively large in terms of vertical scale. However horizontal scale varies. The two main plateau blocks north and south of the Calder valley have an expansive character, but other areas such as the narrow ridge from Crook Hill to Heald Moor do not and hence are more sensitive. Infrequent human-scale features include stone walls, occasional farmsteads, sparse woodland clumps and conifer blocks.	
Landform	**M**	
	On the tops, this is a large scale sweeping landform. However the high ridges are narrow in places and are intersected by numerous deeply incised valleys; and alternating tough gritstones and softer shales have created a characteristic stepped profile with prominent tors and regoliths. These factors may heighten landscape sensitivity.	
Landcover	**M**	
	The characteristic semi-natural vegetation cover includes blanket bog, heather moor and extensive areas of grass moor and the landscape is generally unenclosed. Sensitivity is often fairly low, but on the edges of the plateau may be higher, due to the presence of walled, often historic, enclosures that are vulnerable to physical disturbance e.g. on the southern fringes of Crook Hill.	
Built environment	**M**	
	This LCT is highly sensitive in that it is characteristically open and undeveloped, in contrast to the adjoining valleys. However locally the landscape may be affected by quarries on plateau edges, transmission lines and other developments, reducing its sensitivity. This is particularly the case towards the west, around Scout Moor and in the area east of Bacup.	
Skylines and settings		**H**
	The sharp edges of the high moorland plateaux are highly sensitive because they are extremely prominent visually (particularly where narrow ridges or fingers of moorland extend outwards from the main ridgelines). They often form open, unspoilt and highly valued backdrops to the settlements in the valleys below. The presence of distinctive rock outcrops and landmark hilltop monuments such as Stoodley Pike may also heighten sensitivity locally.	
Visibility and views		**H**
	The moorland plateaux are characteristically open in character, with expansive views and wide areas of intervisibility, and in this sense they are highly sensitive. They are visible from many well-known vistas and tourist viewpoints, including Blackstone Edge, Stoodley Pike and the Pennine Way; such views tend to occur mainly on higher ground along the main South Pennine ridge. Visibility from the settled valleys below may be more limited where views are contained by steep enclosing hillsides. However there are also many more distant views into the LCT, notably from Pendle Hill (part of the Forest of Bowland AONB) to the north-west, Greater Manchester to the south-west and the Peak District National Park to the south.	
Landscape quality (condition)	**M**	
	The landscape quality of the moorland plateaux is generally good, but some areas have been adversely affected by lack of management, or by urban fringe pressures such as flytipping and scrambling. Again, this is particularly the case towards the west.	
Scenic quality		**H**
	The high scenic quality of the South Pennine Moors has long been recognised. The area links the Peak District and Yorkshire Dales National Parks and is important to the continuity of the Pennine backbone; it is also visible and accessible from many urban areas. This LCT lies at the heart of the area of the South Pennines that was identified in 1947 by the National Parks Committee as a potential AONB. Today, Pennine Prospects promotes the protection and regeneration of these landscapes, which are valued regionally as part of the non-statutory South Pennines Heritage Area. The southern section of this LCT around Huddersfield and Holmfirth directly abuts the Peak District National Park (and continues into the Park); all of the LCT in Calderdale also falls within the Calderdale Special Landscape Area (defined under Policy NE12 of the Replacement Calderdale UDP (2006)), which is valued for its very high visual quality and impressive landscape.	

Wildness and tranquillity			**H**
	This is a windswept, exposed upland landscape that possesses a strong sense of remoteness and relative 'wildness'. It is very sparsely settled and its perceived isolation and tranquillity are rare and highly valued, especially given the close proximity to large urban areas. The area of highest tranquillity lies in the north of the study area around Heptonstall, Widdop and Wadsworth Moors. Locally, views to development may diminish the sense of wildness and tranquillity.		
Natural and cultural heritage features			**H**
	A very high proportion of this LCT is covered by the South Pennine Moors SSSI, SAC and SPA, which extends both north and south of the Calder valley and is of international importance for its mosaic of upland habitats and bird life. Much of the LCT as a whole is covered in deep peat. Locally there are also areas of high geological interest, including several geological SSSIs. The area is an important archaeological landscape with much prehistoric interest, often associated with the blanket bog.		
Cultural associations			**H**
	This is a landscape with strong cultural and literary associations, forming a 'wild' backdrop to the novels of the Brontës and an inspiration for the poetry of the former Poet Laureate Ted Hughes. It is of high sensitivity in this regard.		
Amenity and recreation			**H**
	The southern section of this LCT lies within the Peak District National Park. The LCT as a whole is a key recreational resource for surrounding urban populations, with extensive areas of open access land and a strong concentration of National Trails (including substantial sections of the Pennine Way and Pennine Bridleway) and other long distance recreational routes. It provides access to open, relatively wild landscapes for 7 million people within an hour's drive.		
Discussion on landscape sensitivity[22]	The landscape's large scale and generally simple, sweeping landform with few human-scale features, large tracts of consistent landcover, as well as the presence of some existing development, suggest only moderate sensitivity to wind energy development. However, these factors are outweighed by the fact that the landscape is very highly valued as a backdrop to views from other areas (including settlements) and for its high scenic quality, levels of wildness and tranquillity, natural and cultural heritage features, cultural associations, and recreational interests and opportunities, which are often of national or even international importance. Land of highest sensitivity occurs where the moorlands narrow, as between Crook Hill and Heald Moor; on the edges of the plateaux where scale comparisons are most easily made and turbines are most prominent visually; in areas with particularly distinctive landform or field enclosure patterns; in areas where the sense of wildness and tranquillity remains strong, especially in the north; and at the northern and southern ends of the South Pennine ridge within the South Pennine Moors SSSI, SAC and SPA. Land which borders or forms an immediate setting to the Peak District National Park is particularly sensitive to the development of all scales of wind energy development, which could affect the National Park's special qualities (including its sense of wildness and remoteness and the flow of landscape character across and beyond its boundary). Locally there are areas of slightly lower sensitivity, notably around Scout Moor to the west. This area is detached from the main Pennine ridge and is also of lesser landscape quality, scenic quality and natural heritage interest than other parts of the LCT, although it remains highly sensitive in terms of skylines and settings, visibility and views.		
Sensitivity to different turbine heights	**Very Small (≤24m)**		**M-H**
	Small (25-59m)		**M-H**
	Medium (60-89m)		**H**
	Large (90-129m)		**H**
	Very large (≥130m)		**H**
	The landscape's wide visibility, the role of its elevated upland skylines as a backdrop to both immediate and long distance views, its strong remote and 'wild' character, and its function as a moorland 'extension' to the Peak District National Park to the south mean that it is highly sensitive to 'medium', 'large' and 'very large' wind turbines. It is somewhat less sensitive to smaller turbines although these are only likely to be appropriate on the lower, gentler, marginal slopes. Areas close to the Peak District National Park are highly sensitive to turbines of any height which could affect the Park's		

[22] Note that this refers to inherent landscape sensitivity i.e. the assessment has not been affected by any existing development.

	special qualities (although this will need to be judged on a case by case basis).
Commentary on turbine group size • Single turbine • Small cluster (2-3 turbines) • Small wind farm (4-5 turbines) • Medium wind farm (6-10 turbines) • Large wind farm (11-20 turbines) • Very large wind farm (≥21 turbines)	This landscape's many sensitive attributes mean that in most areas only 'single turbines' or 'small clusters' will be appropriate in the landscape. The landscape is highly sensitive to 'large wind farm' and 'very large wind farm' group sizes.

LCT A: Guidance for Wind Energy Development

Guidance for future development

This landscape is extremely sensitive and highly valued although it has seen several medium and large wind farm developments in the past (see below). Looking forward, there is a need to contain the landscape influence of wind energy development at existing locations, to prevent the landscape becoming dominated by wind turbines. At other locations, only very occasional 'very small' or 'small' single turbines or small clusters are likely to be appropriate in this landscape.

Constraints

- This LCT is very widely visible and its open upland character is critical to the visual continuity of the Pennine backbone. The ridgeline between Crook Hill and Heald Moor is especially vulnerable to change due to its narrowness and location at the head of both the Irwell and Calder valleys.
- The sharp edges of the moorland plateaux, often marked by gritstone tors and monuments, form distinctive skylines, settings and focal points in views from the surrounding valleys and valley settlements.
- The Pennine Way and Pennine Bridleway National Trails and many other long distance paths pass through the LCT, offering fine views into the Settled Valleys (LCT F) and across the moorland plateaux beyond; these panoramas may be interrupted by nearby turbines.
- The extensive open access land and commons provide rare opportunities for large nearby urban populations to enjoy relative wildness and tranquillity – qualities that wind energy development may damage.
- There is a particular need to maintain the integrity of the core areas of relatively wild, unspoilt character and north and south of the Calder valley.
- Further south, on the edge of the Peak District National Park, conservation of the Park's special qualities, including its sense of wildness and remoteness and the flow of landscape character across and beyond its boundary, is a key concern.
- Extensive areas are covered by deep peat and by national and international nature conservation designations and there are highly valued historic and cultural heritage interests and associations, as described in the sensitivity assessment above.

Opportunities

- Some limited repowering or extension of existing (operational and consented) wind farms may be acceptable in landscape terms, in the western part of A1 around Scout Moor only, subject to detailed consideration of landscape, visual and other environmental impacts (see guidance below).
- Some of the lower, gentler and less visually exposed plateau slopes may be able to accommodate small turbines. This applies in A1 only, away from the National Park.
- Otherwise opportunities for new wind energy development in the landscape of this LCT without serious detriment to its character and qualities are likely to be very limited.

Key considerations

When siting and designing wind energy developments in this LCT, the generic guidance in **Appendix 3** and in the small turbine guidance[23] and the wind energy landscape sensitivity assessment that covers the Peak District National Park[24] should also be taken into account where relevant. In addition, specific landscape considerations within this LCT are as follows:

- Minimise any further loss of accessible areas of relatively wild, unspoilt landscape to help contain impacts on this key landscape quality.
- When repowering or extending existing wind farm sites, ensure a compact turbine layout so as to minimise impacts on landscape character and on the visual amenity of nearby settled landscapes.
- When extending existing wind farms, choose turbines of consistent height and design to existing

[23] Julie Martin Associates (2013) *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*, report to Blackburn with Darwen, Burnley, Calderdale, Hyndburn, Kirklees, Pendle, Rochdale and Rossendale Councils.

[24] Land Use Consultants (2009) *Landscape Sensitivity Assessment for Renewables in the Peak Sub-Region*, report to the Peak District National Park Authority and others.

turbines so as to avoid visual discordance.

- Set large turbines well back from steep moorland edges, generally by at least 400m, to minimise visibility and avoid undue intrusion on skylines as perceived from valley settlements below.
- Choose turbine locations well away from the distinctive features such as gritstone tors and monuments that characterise this LCT; also avoid locations close to the prominent knolls that occur on some of the moorland summits, for example on Scout Moor.
- If possible, site any new 'very small' or 'small' turbines so that they are backclothed against higher ground and do not break the skyline when viewed from the farmland and valleys below.
- Avoid locating turbines where they will interrupt popular panoramic views from the escarpment edge and from National Trails or other long distance paths.
- Minimise any impacts on deep peat deposits (e.g. by siting turbines on quarried or brownfield land where present) and on other natural, cultural heritage and recreation interests as described above.
- Minimise the need for new infrastructure by utilising existing wind farm access points, on-site tracks, grid connections and other services where possible. Ensure that any new grid connections are underground.
- Avoid the use of structures that have an industrial character, such as lattice towers or masts; and limit any unnecessary disruption to the simple, open character of the moorland, for example due to access track cut and fill, fencing, other enclosures, or external turbine transformers.
- Put in place measures to minimise the impacts of recreational motor vehicles, which can cause erosion and loss of tranquillity.
- In the longer term, manage wind farm sites to restore and improve the condition of moorland landscapes and habitats.

Current patterns of permitted wind energy development

As at June 2014 there were 7 operational and consented wind energy sites with a total of 56 turbines in this LCT, as well as others in surrounding areas. The patterns were as follows:

- **Rossendale A1** – Part of one very large wind farm of 26 large turbines (Scout Moor, partly in Rochdale). One small cluster of 3 large turbines (Reaps Moss) on Crook Hill to Heald Moor ridge. Total of 5 small turbines (including a small wind farm of 4 turbines at Scar End Farm) just to the west within LCT D Moorland Fringes/ Upland Pastures near Bacup (D4) – seen in conjunction with Reaps Moss and Todmorden Moor wind farms (the latter in Calderdale).
- **Burnley A1** – One medium wind farm of 8 large turbines (repowered Coal Clough) on north side of Cliviger Gorge. Seen together with several very small turbines just to the east in Calderdale within LCT D Moorland Fringes/ Upland Pastures (D1).
- **Calderdale A1** – One medium wind farm of 9 large turbines (repowered Ovenden Moor) north-west of Halifax. One small wind farm of 5 large turbines (Todmorden Moor) south of Cliviger Gorge and a large wind farm of 12 large turbines (Crook Hill, partly in Rochdale) – both of these sites located on Crook Hill to Heald Moor ridge. One single very small turbine on moorland edge west of Cragg Vale. Numerous very small/ small turbines in LCT D Moorland Fringes/ Upland Pastures (D2) and LCT K (Coalfield Edge Urban Fringe Farmland) close by to east.
- **Kirklees A2** – None within the LCT but many very small and small turbines nearby in LCT D Moorland Fringe/ Upland Pastures, especially close to the M62 and south and east of Holmfirth (D7 and D9 respectively).
- **Barnsley A2** – None within the LCT but many very small and small turbines, as well as three small clusters of large turbines (Hazlehead, Spicer Hill, Blackstone Edge) and a large wind farm of small turbines (Royd Moor) nearby in LCT D Moorland Fringes/ Upland Pastures west of Penistone (D7 and D9).

Follow web link to database and web map to see the latest position.

Cumulative landscape and visual issues arising

Key cumulative issues arising in this LCT are:

- The considerable landscape and visual influence exerted by wind farms in the western part of the LCT, particularly around Scout Moor.

- The fact that many of the existing wind farms, although clearly separate developments, are sited relatively close together (typically 2-4km apart along the Crook Hill to Heald Moor ridgeline). This means that they do not present a coherent image and severely disrupt the continuity of the ridgeline.
- The cumulative impact of permitted wind energy development on views from, and the settings of, surrounding valleys and valley settlements (including a number of Conservation Areas), especially in the upper Irwell and upper Calder valleys (including Cliviger Gorge).
- Cumulative effects on recreational enjoyment of National Trails, other long distance paths, open access land and commons – including diminution and loss of remoteness and relative wildness – especially affecting Scout Moor and the Crook Hill to Heald Moor ridge.
- Siting of turbines in adjacent LCTs but close to larger turbines, notably in D4 near Bacup, D1 on the boundary of Burnley and Calderdale, K1 north of Halifax, and D7 and D9 on the boundary of Kirklees and Barnsley. Here the juxtaposition of turbines of very different sizes may be distracting and/or tend to heighten the perceived scale of the larger turbines.

These existing cumulative landscape and visual issues may limit wind energy development in the LCT.

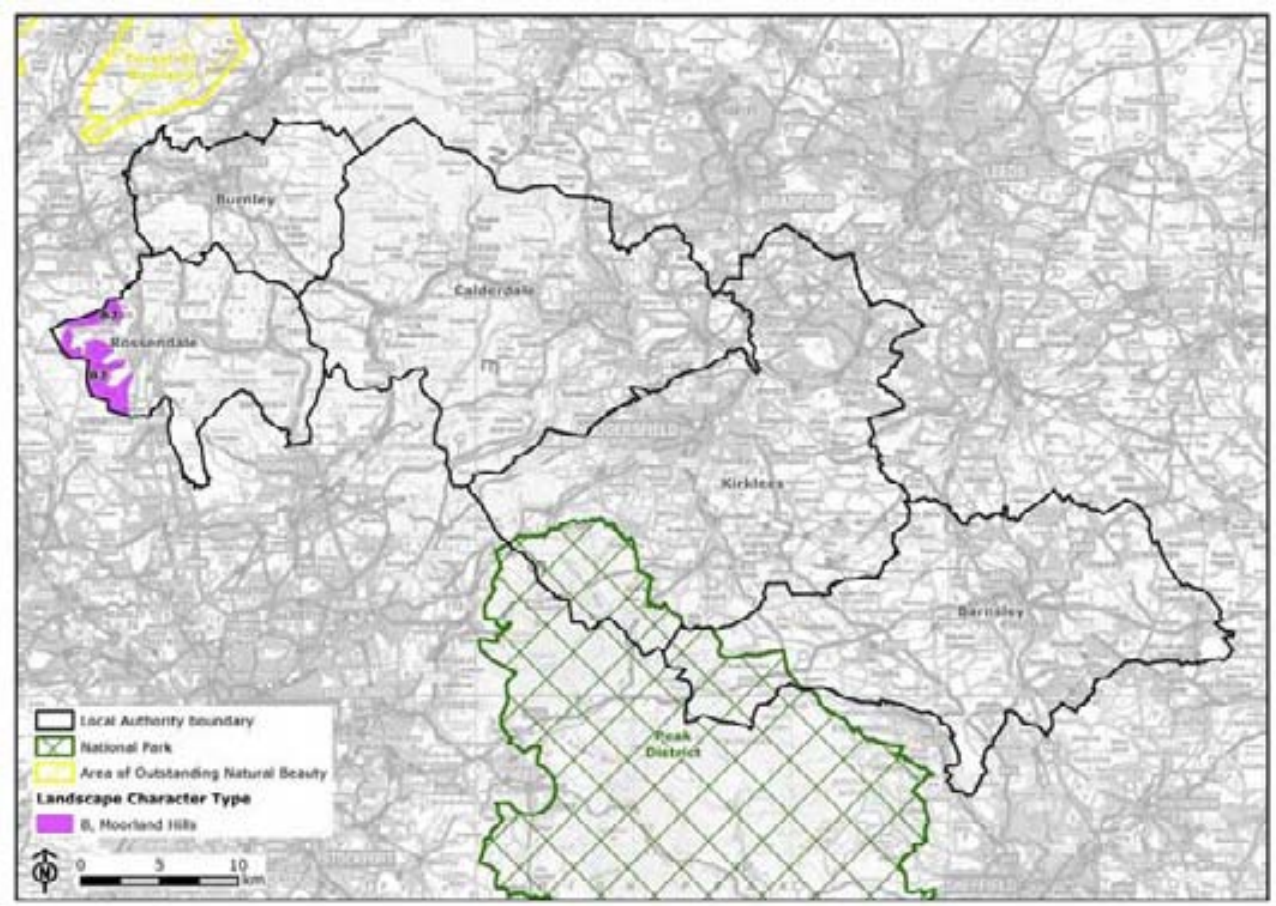
Guidance for siting multiple developments within this LCT

Within this LCT particular care will need to be taken to ensure that:

- New wind energy development does not extend a wind energy influence over a wider area than at present or visually 'connect' existing wind energy developments in the same or adjoining LCTs.
- In repowering existing wind energy sites or extending the existing Scout Moor wind farm, the surrounding landscape does not become 'a wind farm landscape' i.e. a landscape in which the influence of wind energy development dominates landscape character, effectively creating a new character.
- There is no further disruption to the continuity of the Crook Hill to Heald Moor ridgeline.
- Wind energy development presents a clear and coherent image that does not visually dominate or overwhelm a specific landform feature, skyline or settlement, especially in the upper Irwell valley and Calder valleys (F1, F2 and G3) adjacent to A1.
- Any wind energy development at new locations in the landscape is generally limited to very occasional 'very small' or 'small' single turbines of consistent height and design.
- Any new 'small' or 'very small' turbines are located well away from large turbines, so that the different turbine size classes are not seen together.

LCT B: Moorland Hills

LCT Location Map



Component Landscape Character Areas

B2: West Pennine Moors

Local authorities where LCT is present

Rossendale

Landscape character summary

Please note that this LCT only covers a small part of the study area in Rossendale, comprising Holcombe Moor, Musden Head Moor, Edgerton Moss and Haslingden Moor.

This landscape type comprises the lower, gentler outlying blocks of moorland to the north and west of the main Pennine ridge. They have a softer and more rounded profile compared to the sharp edges and ledges of the high moorland plateau and are surrounded by comparatively wide valleys. Only the high moorland tops retain a sense of remoteness and isolation, elsewhere there are views out across the surrounding wide valleys and urban areas. The presence of several large woodland blocks, both broadleaved and coniferous, also distinguishes these outlying areas from the high moorland core. The mosaic of upland habitats is of great nature conservation value, while the proximity to nearby urban centres means that these moors are very important for recreation.

Key environmental features

- Glaciated rounded hills, generally lower in altitude and less severe than the high moorland plateaux.
- Mosaic of upland habitats, including blanket bog habitat, heather moor, wet heath and acid grassland.
- Important archaeological landscape with considerable evidence of prehistoric settlement and land use.
- Peat and blanket bog on the summits is an important natural and archaeological resource.
- A sense of remoteness and wildness created by the altitude, absence of settlement and long wide views.
- Accessible recreational resource for the surrounding urban areas with a number of recreational facilities and an extensive rights of way network.
- Close relationship with the adjacent urban areas providing the landscape backdrop for surrounding towns.

LCT B: Landscape Sensitivity to Wind Energy Development

Criteria	Lower sensitivity ▪▪▪▪▪▪▪▶ Higher sensitivity
Scale	These moorland hills rise to around 350 to 400m AOD within the study area, rising above the valley settlement of Haslingden below. Both the vertical and horizontal scale of the hills is relatively modest, with the open moorland hill tops are generally only 1-2km wide in this area.
Landform	In general this landscape character LCT has a gentler and more rounded profile than the high moorland plateaux. However the land that lies within the study area is in transition from the moorland plateaux. Hence around the glaciated valley of Haslingden Grane and to the north of Ramsbottom the hills retain steep, sharp edges with distinctive tops such as Bull Hill as well as deep cloughs at the moorland edge, and this tends to increase landscape sensitivity.
Landcover	There is a mosaic of upland habitats, including blanket bog, heather moor, wet heath and acid grassland. However grass moor dominates and the landscape is generally unenclosed, so sensitivity is relatively low in this respect. Locally where there are walled enclosures, for example around High Moss and Musbury Brook, sensitivity is higher.
Built environment	This LCT, like the high moorland plateaux, is highly sensitive in that it is characteristically open and undeveloped, in contrast to the valleys below. Locally the landscape is affected by quarrying on the moorland edges, reducing sensitivity to some degree, but there are few other intrusive influences, so sensitivity overall is high.
Skylines and settings	The hills form a significant backdrop to the settlements of Haslingden and Helmshore. Within the study area the steep, undeveloped edges of the hills form the immediate western landscape setting for Haslingden and Ramsbottom and are highly sensitive for this reason. The prominent landmark of Peel Tower, although just outside the study area, features on the southern skyline of Holcombe Moor (the northern part of which lies within Rossendale). The tower is visible for many miles around.
Visibility and views	These hills are very widely visible from long distances, particularly from the east and south. At the edges of the hills the landform permits extensive views out across the surrounding hills, urban areas and lowland valleys. The Rossendale Way closely follows the edge of the hills, taking advantage of these views, particularly around Ogden Reservoir and Haslingden Grane.
Landscape quality (condition)	The landscape quality of the moorland hills is generally good, but some areas have been adversely affected by lack of management, peatland erosion, urban fringe pressures such as flytipping and scrambling, and infrastructure such access tracks. Sensitivity is medium.
Scenic quality	The West Pennine Moors landscape, the eastern edge of which lies within the study area (and the South Pennines Heritage Area), contains a rich variety of natural and industrial heritage. Although it lacks statutory landscape designation, it is widely recognised for its scenic quality. The West Pennine Moors Partnership works to conserve and enhance the area's landscape character and natural and historic assets, sustain rural communities and contribute to the well-being of adjoining urban communities. The area around Haslingden Grane, including Fairy Glen, is a local beauty spot, sometimes referred to as 'Little Scotland'.
Wildness and tranquillity	The high moorland tops have some sense of remoteness, isolation and wildness, created by the altitude, absence of settlement and long, wide views. However the sense of wildness is diminished to some extent by the fact that the individual moorland blocks are relatively small in extent and have panoramic views across adjacent urban areas, so overall the area is not of the highest sensitivity.

Natural and cultural heritage features			
	The deep peat and blanket bog on the summits are important natural and archaeological resources and are vulnerable to damage, some areas already being affected by erosion. A large part of the West Pennine Moors has recently been identified as a candidate SSSI. There is evidence of prehistoric settlement and a rich concentration of prehistoric sites, including Mesolithic flints, evidence of Neolithic activity on Holcombe Moor and extensive Bronze Age remains.		
Cultural associations			
	The Peel Tower on Holcombe Moor, just to the south of the Study Area (within Bury), commemorates Sir Robert Peel, Prime Minister of Britain between 1841 and 1846 and founder of the modern Police Force. This is a famous and highly visible local landmark.		
Amenity and recreation			
	The moorland hills, as part of the West Pennine Moors, provide a 'wild space' for urban populations in Greater Manchester and many of the Lancashire towns. The proximity to these nearby urban centres means that these moors are very important for recreation, with an extensive rights of way network and many opportunities for quiet enjoyment such as walking, cycling, and horse-riding, promoted by the Partnership. There is extensive open access land, much under National Trust ownership, and the Rossendale Way runs the length of the area.		
Discussion on landscape sensitivity[25]	This LCT is of a relatively open and undeveloped character with some important skylines, settings and views; areas of recognised scenic quality; natural and cultural heritage interest; and regional recreational importance as part of the West Pennine Moors. All of these attributes heighten sensitivity to wind energy development, despite its large scale and tracts of consistent landcover (which would lessen sensitivity). Areas of highest sensitivity are around Haslingden Grane and Holcombe Moor, where there are important skylines, settings and views, as well as notable cultural heritage and recreational features. The open moorland hill tops on the western edges of the study area may be somewhat less sensitive than other areas due to their rounded profiles and positions set back from the steep moorland edges and valley settlements.		
Sensitivity to different turbine heights	**Very Small (≤24m)**	**M-H**	
	Small (25-59m)	**M-H**	
	Medium (60-89m)	**H**	
	Large (90-129m)	**H**	
	Very large (≥130m)	**H**	
	The landscape's undeveloped character and recreational role, as well as its complex scarp slopes and cloughs, important elevated skylines, and role as a valued backdrop to views from valley settlements, mean that it is highly sensitive to 'medium', 'large' and 'very large' wind turbines. It is somewhat less sensitive to smaller turbines, especially in areas away from the key skylines.		
Commentary on turbine group size • Single turbine • Small cluster (2-3 turbines) • Small wind farm (4-5 turbines) • Medium wind farm (6-10 turbines) • Large wind farm (11-20 turbines) • Very large wind farm (≥21 turbines)	This landscape's many sensitive attributes and its limited spatial extent mean that it is highly sensitive to all group sizes apart from 'single turbine'.		

[25] Note that this refers to inherent landscape sensitivity i.e. the assessment has not been affected by any existing development.

LCT B: Guidance for Wind Energy Development

Guidance for future development

This LCT is highly sensitive to larger scale wind energy development (although it is already influenced by one such development just outside the study area to the north). Given its high sensitivity, limited spatial extent, and the fact that further large scale development would give rise to significant cumulative impacts, the LCT is suited only to very occasional 'very small' or 'small' single turbines.

Constraints

- The prominent gritstone scarps and deep cloughs are distinctive and highly exposed to view from nearby settlements, also forming the setting to Ogden Reservoir, Haslingden Grane and the Peel Tower, a key landmark to the south.
- The extensive open access land and National Trust land have an important recreational role as part of the West Pennine Moors, offering opportunities for nearby urban populations to enjoy relative wildness and tranquillity.
- The Rossendale Way runs the length of the LCT and offers panoramic views over the Irwell valley and Haslingden Grane; these panoramas are vulnerable to interruption by nearby turbines.
- Deep peat and blanket bog on the summits are important natural and archaeological resources and are vulnerable to damage.

Opportunities

- Some of the gentler and less visually exposed hill slopes may be able to accommodate 'very small' or 'small' turbines, provided these are either set well back from the skyline or sited below the skyline on lower land fringing LCT I.
- Otherwise opportunities for new wind energy development in the landscape of this LCT without serious detriment to its character and qualities are likely to be very limited.

Key considerations

When siting and designing wind energy developments in this LCT, the generic guidance in **Appendix 3** and in the small turbine guidance[26] (where relevant) should be taken into account. In addition, specific landscape considerations within this LCT are as follows:

- Avoid locations close to complex scarp slopes and cloughs; and set turbines well back from, or below, skylines to avoid visual intrusion on recreational areas and valley settlements below.
- Minimise any impact on the settings of distinctive scarps, cloughs and landmark features such as the Peel Tower.
- Site turbines in locations where they will not interrupt key panoramic views from the escarpment edge and Rossendale Way.
- Any very small turbines should generally be associated with farm or other building groups, generally limited to the lower fringes of this open upland landscape.
- Minimise the need for new infrastructure by utilising existing access tracks where possible (provided these are not historic features); and ensure that any new grid connections are underground.
- Avoid the use of structures with an industrial character, such as lattice towers or masts; and minimise the use of fencing or other enclosures that would disrupt the simple, open character of the moorland.

Current patterns of permitted wind energy development

As at June 2014 there were no operational or consented wind energy sites in this LCT but some in surrounding areas. The patterns were as follows:

- **Rossendale B2** – None within the part of the LCT that lies within the study area. However there is one large wind farm of 12 large turbines immediately to the north in a similar landscape (Hyndburn, in Hyndburn council area). The surrounding area to the north and east is also affected by very small and small turbines within 1-2km in the Hyndburn council area and near Haslingden and Rising Bridge

[26] Julie Martin Associates (2013) *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*, report to Blackburn with Darwen, Burnley, Calderdale, Hyndburn, Kirklees, Pendle, Rochdale and Rossendale Councils.

in LCT C Enclosed Uplands, as well as by the very large Scout Moor wind farm, with 26 large turbines, in LCT A High Moorland Plateaux (A1) around 4km away.

Follow web link to database and web map to see the latest position.

Cumulative landscape and visual issues arising

Key cumulative issues arising in this LCT are:

- The cumulative impacts of existing wind farm development outside the LCT, especially at Hyndburn to the north and Scout Moor to the east, on views to and from the exposed skylines above Haslingden and Helmshore, and on recreational enjoyment of Haslingden Grane and the Rossendale Way.

These existing cumulative landscape and visual issues may limit wind energy development in the LCT.

Guidance for siting multiple developments within this LCT

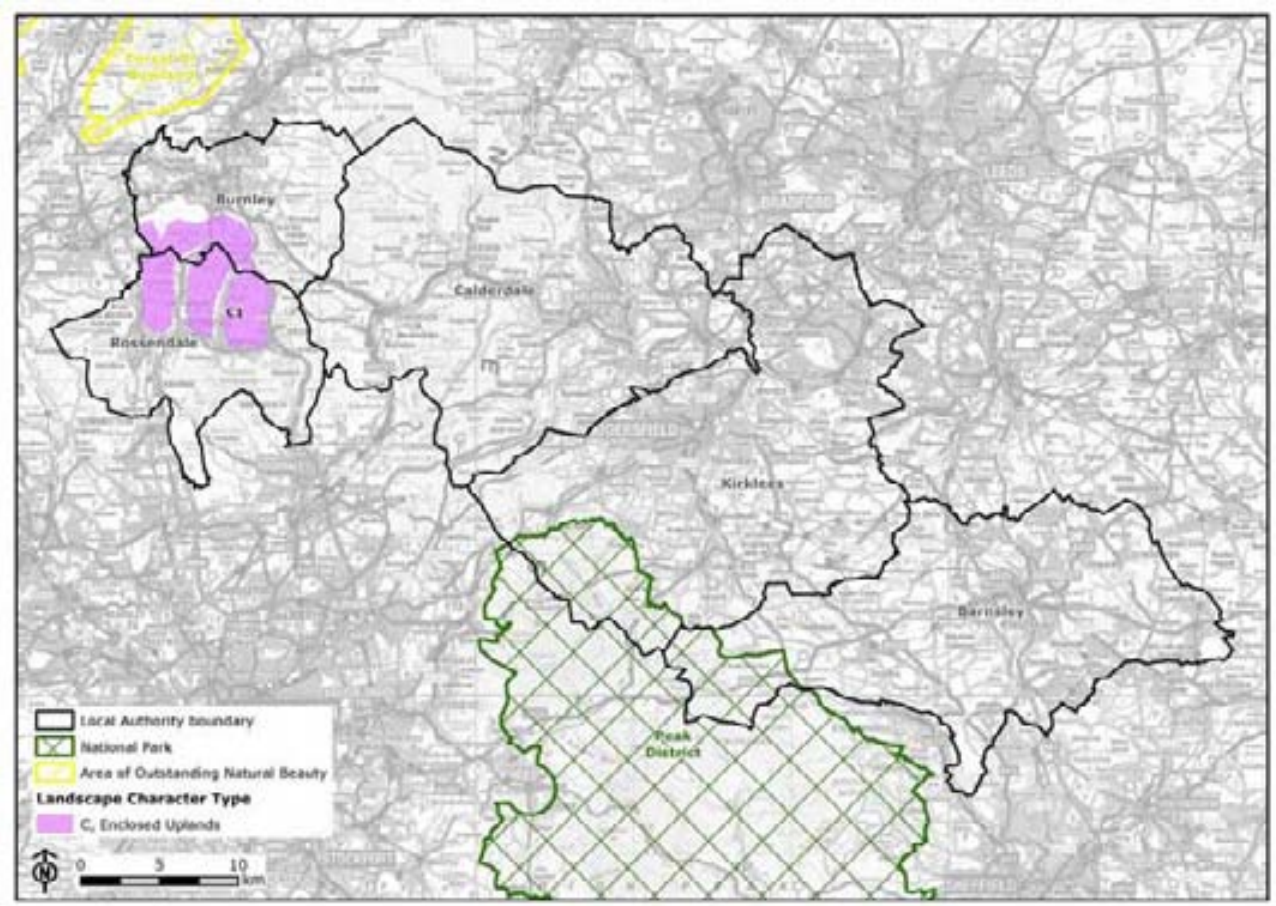
If there are multiple wind energy developments in this LCT in future, these should:

- Be consistent in their relationship to key landscape characteristics[27] – in particular in this LCT siting turbines well back from, or below, skylines.
- When locating 'very small' or 'small' turbines, choose sites away from views to existing larger turbines, so that the different turbine size classes are not seen together.
- Also avoid close juxtaposition of different small turbine heights and designs, aiming instead for a consistent height and design in a given area.

[27] See Scottish Natural Heritage (2014) *Siting and Designing Wind Farms in the Landscape*.

LCT C: Enclosed Uplands

LCT Location Map



Component Landscape Character Areas

C1: Rossendale Hills

Local authorities where LCT is present

Rossendale, Burnley

Landscape character summary

The upland plateau of the Rossendale Hills is distinguished by the geology with outcrops of Lower Coal Measures in combination with the Millstone Grit and a mantling of glacial boulder clay. It is generally a flat landform with only the peat capped ridges and summits providing pattern and diversity in the landscape. The distinctive character of these bleak uplands is derived from the history of colonisation and human attempts to conquer the moors. A network of gritstone walls encloses virtually the whole of the upland area, and the landscape is dotted with small isolated farms. Many of these are now abandoned and in ruins as farming has retreated downslope. The area's industrial history is reflected by the landscape of miner-farmer small holdings and squatter settlements, and a legacy of abandoned coal and lead mines and associated spoil heaps. The overall impression is of a somewhat derelict landscape with rush infested pastures-and tumbled stone walls. Views of prominent high tension power lines which cross the plateau top reinforce the sense of bleakness.

Key environmental features

- Undulating high plateau divided into three by intersecting valleys.
- Distinct cultural landscape and an unusual land use history (Forest of Rossendale) represented by the high altitude enclosure, the industrial and mining remnants, and the settlement pattern of small scattered dwellings and urban terraces.
- Different geology distinguished by presence of Coal Measures and lead veins. The legacy of abandoned lead and coal mines and spoil heaps, along with day holes and bell pits from the Middle Ages represent important cultural artefacts.
- Enclosure landscape with eighteenth and nineteenth century gritstone walls climbing to a high altitude enclosing the upland. Many fields are now abandoned and walls are in a state of disrepair.
- Blanket bog crowns the high summits providing both landscape diversity, biodiversity and an important archaeological resource.
- Distinctive settlement pattern with isolated houses and small scattered dwellings at a high altitude.

LCT C: Landscape Sensitivity to Wind Energy Development

Criteria	Lower sensitivity ▪▪▪▪▪▪▪▶ Higher sensitivity
Scale	The LCT forms a raised upland plateau at approximately 300m AOD, rising to summits and ridges at about 400m especially in the north; it is somewhat lower in altitude than the main South Pennines ridge to the east. This is a relatively large scale landscape topographically, the open, elevated topography creating a feeling of space. There is a relatively small height differential between the plateau top and the valley floors, particularly in the north. Features bringing a human scale to the landscape include stone walls, occasional farm buildings and small conifer plantations.
Landform	This is an undulating, generally undramatic landform of Lower Coal Measures capped by Millstone Grit and glacial boulder clay. The distinctive gritstone edges are mainly confined to the terraces above the Irwell valley, for example at Cribden Hill. Further north the landform becomes more regular and rounded although some tops, such as Great Hameldon in the north-east, are more distinctive. Other topographic variations include the hummocky forms of former coal and lead workings.
Landcover	Vegetation is dominated in the south by improved grassland and in the north by grass moor, with isolated peat-covered moors at Cribden Hill, Swinshaw Moor and Small Shaw Heights as well as more extensive areas of moor on the area's northern edge where a number of reservoirs and some commercial forestry also occur. Trees are generally absent on higher ground. The landcover variety and presence of field enclosures (although these are generally fairly large) mean that the area is of medium sensitivity.
Built environment	The landscape is dotted with small isolated farms, many now abandoned. The area's industrial history is evident in small miner-farmer smallholdings; former coal and lead mines and associated spoil heaps; and more extensive areas of former quarrying, e.g. on Hameldon Moor. Transmission lines also cross the north-east edge of the area. These human influences tend to reduce sensitivity.
Skylines and settings	The skyline scarps in the southern part of this area are relatively sensitive as they closely overlook the settlements of the Irwell valley, providing a countryside setting for towns including Haslingden, Rawtenstall and Bacup. The northern edge of the LCT also forms a sensitive (albeit more distant) skyline that is part of the eastern setting to Accrington and the southern setting to Burnley. The weather station and telecommunications masts on Hameldon Hill form prominent man-made structures on the skyline.
Visibility and views	This landscape is widely visible from Burnley, Pendle Hill and the Forest of Bowland AONB to the north. It is less visible from the west, south and east, where views are contained by steep valley sides and adjoining hills and moors. The main north-south road routes and the east-west Rossendale and Burnley Ways (which connect southwards to the Pennine Bridleway) offer panoramic views, as do several nearby viewpoints on the area's northern edge, notably Hameldon Hill and the Singing Ringing Tree.
Landscape quality (condition)	The overall impression is of a landscape in decline, with rush infested pastures, abandoned farm buildings and derelict stone walls. Most of the hill areas remain in agricultural use and are still grazed by sheep, but it is clear that farming here is at the margins of economic viability. Many boundaries are poorly maintained and contribute to a bleak, neglected appearance. Landscape sensitivity to this criterion is therefore relatively low.
Scenic quality	Although this area is part of the non-statutory South Pennines Heritage Area, it is not part of the Pennine watershed and its scenic quality is not as high as that of areas further east. Protection and regeneration of its landscapes, like those of the rest of the Heritage Area, are promoted by Pennine Prospects.

Wildness and tranquillity	There is some sense of relative wildness and tranquillity within this landscape, particularly on areas of moorland and other high ground. However perceptions of remoteness are often diminished by views towards urban areas and the presence of human artefacts.
Natural and cultural heritage features	Deep peat and blanket bog on the higher summits provide upland bird habitat and archaeological interest. Medieval bell pits and industrial age relicts of the coal and lead mining industries are of cultural heritage importance.
Cultural associations	In the medieval period the area was part of the feudal Forest of Rossendale hunting forest, which was subsequently enclosed in the eighteenth and nineteenth centuries. The enclosed uplands remain a distinct and unusual cultural landscape, characterised by high altitude enclosure, industrial and lead mining remnants, and a settlement pattern of small scattered dwellings and urban terraces.
Amenity and recreation	A particular feature of this LCT is the dense network of public footpaths, which may relate to early industrial activity and continue to provide recreational access to the countryside for urban populations, especially in the southern part of this area. The Burnley Way and Rossendale Way long distance recreational routes connect nearby urban centres with open access land and small reservoirs in the northern part of the LCT; while the route of the Pennine Bridleway National Trail runs north-south across enclosed uplands. Important recreational viewpoints include Hameldon Hill and the Singing Ringing Tree.
Discussion on landscape sensitivity[28]	The area's open, expansive scale, relatively low landscape quality, and reduced sense of wildness and tranquillity compared to other South Pennines upland areas tend to lessen its sensitivity to wind energy development, although locally key sensitivities remain, especially in terms of skylines, views, cultural associations and recreational interests. The most sensitive parts of the landscape are the lower, enclosed, southern fringes overlooking the Irwell valley; and the prominent northern and western moorland tops which are open to view from the north, including parts of the Forest of Bowland AONB. The least sensitive areas are the central parts of each of the upland blocks, where there tend to be fewer constraints in terms of skylines, visibility, landscape quality, deep peat and other biodiversity interests.
Sensitivity to different turbine heights	**Very Small (≤24m)** — **L** **Small (25-59m)** — **M** **Medium (60-89m)** — **M-H** **Large (90-129m)** — **M-H** **Very large (≥130m)** — **H** This LCT is highly sensitive to turbines in the 'very large' category and also of moderate to high sensitivity to 'large' and 'medium' turbines due to its enclosed landscape pattern and role as an elevated upland backdrop to views from valley settlements. It may be less sensitive to smaller turbine classes, given appropriate siting and design (see guidance below).
Commentary on turbine group size • Single turbine • Small cluster (2-3 turbines) • Small wind farm (4-5 turbines) • Medium wind farm (6-10 turbines) • Large wind farm (11-20 turbines) • Very large wind farm (≥21 turbines)	This LCT is highly sensitive to the development of 'large wind farm' and 'very large wind farm' group sizes. It may occasionally be less sensitive to smaller turbine group sizes such as 'small wind farm' and 'small cluster'.

[28] Note that this refers to inherent landscape sensitivity i.e. the assessment has not been affected by any existing development.

LCT C: Guidance for Wind Energy Development

Guidance for future development

This LCT is sensitive to larger scales of wind energy development. The enclosed landscapes of the LCT may offer some scope for scattered 'very small' or 'small' single turbines or small clusters that are in keeping with the relatively small scale landscape patterns and features. The open moorland areas to the north may, in some very limited locations, be able to accommodate larger turbines or groups of turbines.

Constraints

- The slopes on the southern edges of the area, above the Irwell and its tributary valleys, are visually very exposed, the lower, steeper slopes in particular forming sensitive skylines.
- It also acts as the landscape and visual setting for the Settled Valleys (LCT F) below, which often include historic mill towns and Conservation Areas.
- The higher tops and escarpments on the area's northern edge around Great Hameldon, Hameldon Hill and Nutshaw Hill, also form distinctive skyline features when viewed from Pendle Hill and the Forest of Bowland AONB to the north.
- The routes of the Pennine Bridleway, Rossendale Way and Burnley Way, as well as recreational areas and viewpoints at Hameldon Hill, the Singing Ringing Tree and elsewhere, are sensitive to any further intrusion from nearby turbines.
- There are some areas of deep peat and features of natural and cultural heritage on the upland summits, especially in the north, that would be sensitive to disturbance.

Opportunities

- Small scale wind energy development that is visually associated with settlements or farms, and sited away from sensitive skylines and settings, will be most suited to this landscape.
- Locally, where the landscape is somewhat larger in scale (more expansive, with large enclosures or open moorland and sparser settlement) there may be some limited scope for larger turbines or turbine clusters, subject to detailed consideration of landscape, visual and other environmental impacts.

Key considerations

When siting and designing wind energy developments in this LCT, the generic guidance in **Appendix 3** and in the small turbine guidance[29] (where relevant) should be taken into account. In addition, specific landscape considerations within this LCT are as follows:

- Avoid siting wind turbines where they will interrupt key views, especially those to and from the Irwell valley and tributary valleys in the south, and Pendle Hill and the Forest of Bowland in the north.
- Avoid locations on steep or craggy valley sides above settlements, especially above the Irwell and tributary valleys (F1). Turbines in such locations may be very prominent, adversely affecting distinctive skylines and settings.
- Sometimes turbines may sit well on the gentle side-slopes of an upland area where they can be backclothed against the hill behind; here the use of a darker turbine colour may be appropriate.
- Give special consideration to the effects of turbines on the approaches to and settings of historic buildings, villages and settlements.
- The impacts of access tracks on characteristic gritstone field enclosure patterns should be minimised and any damage should be carefully restored.
- Where larger turbines are proposed, ensure that they do not overwhelm smaller scale features including landform features, farmsteads, woodlands and stone walls.

Current patterns of permitted wind energy development

As at June 2014 there were 8 operational and consented wind energy sites with a total of 12 turbines in this LCT, as well as others in surrounding areas. The patterns were as follows:

[29] Julie Martin Associates (2013) *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*, report to Blackburn with Darwen, Burnley, Calderdale, Hyndburn, Kirklees, Pendle, Rochdale and Rossendale Councils.

- **Rossendale C1** – Around six schemes, mainly very small single turbines on the hillsides north of the Irwell valley. However, some of these schemes comprise two turbines; two schemes have small (34m high) turbines. Also a few very small turbines in adjacent LCT F Settled Valleys (F1). Total of 5 small turbines (including a small wind farm of 4 at Scar End Farm) close by to the west in LCT D Moorland Fringes/ Upland Pastures near Bacup (D4).
- **Burnley C1 –** One medium wind farm of 6 large turbines of differing heights (extended Hameldon Hill), partly in LCT E Rural Fringes (E4). One single medium turbine (Higher Micklehurst Farm), 1.5km east of extended Hameldon Hill wind farm.

Follow web link to database and web map to see the latest position.

Cumulative landscape and visual issues arising

Key cumulative issues arising in this LCT are:

- Visual connections between wind farms. Even small scale wind energy development within this LCT may intensify wind energy influence on the landscape in this part of the South Pennines because the LCT forms a visual link between existing wind farms at Hameldon Hill to the north, Scout Moor to the south and Coal Clough, Todmorden Moor and Reaps Moss to the east.
- The growing cumulative effect of smaller turbines. These now affect all three sections of undulating plateau in the southern part of the LCT. The impact is heightened by the range of different turbine sizes and groupings, and by the fact that some of the schemes are adjacent to one another, creating the appearance of a small wind farm.
- The fact that very similar wind energy developments are taking place in adjoining landscapes (especially D4) which tends to blur the landscape character distinctions between different LCTs.

These existing cumulative landscape and visual issues may be a constraint on further wind energy development in the LCT.

Guidance for siting multiple developments within this LCT

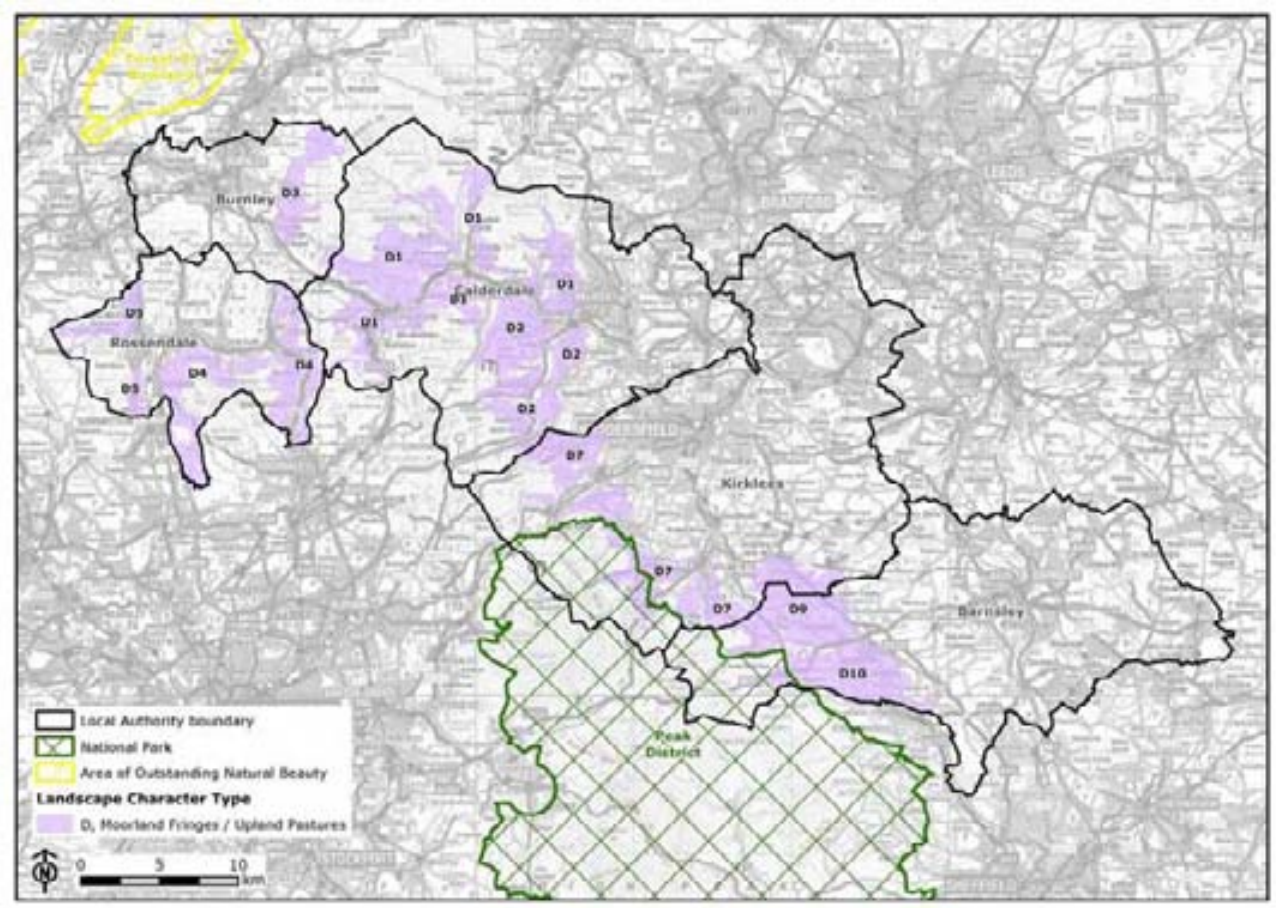
Multiple wind energy developments in this LCT should:

- Avoid visually 'connecting' existing wind energy developments (in the same or adjoining LCTs) or dominating the landscape character of the LCT to the extent that its overall character changes.
- Be consistent in their relationship to key landscape characteristics, so as to present a simple image that relates clearly to landscape character[30] – e.g. in this LCT locating turbines on gentle upland side-slopes.
- When locating 'very small ' and 'small' turbines, choose sites that are well away from medium or large turbines, so that the different size classes are not seen together, and avoid strong concentrations of turbines in a given area.
- Also avoid close juxtaposition of different small turbine heights and designs, aiming instead for a consistent height and design in a given area.

[30] See Scottish Natural Heritage (2014) *Siting and Designing Wind Farms in the Landscape*.

LCT D: Moorland Fringes / Upland Pastures

LCT Location Map



Component Landscape Character Areas

D1: Calder Terrace
D2: Blackwood Common
D3: Forest of Trawden - Worsthorne Moor Fringe
D4: Scout Moor & Shore Moor Fringe
D5: Hameldon, Oswaldtwistle & Darwen Moor Fringe
D7: Peak Fringe Upland Pastures
D9: Low Common, Royd Moor & Whitley Common
D10: Penistone Upland Pastures

Local authorities where LCT is present

Rossendale, Burnley, Calderdale, Kirklees, Barnsley

Landscape character summary

The enclosed landscape of the moorland fringe and upland pastures are typically found between 250 and 300 metres altitude on the broad terrace flanking some of the main valleys and slopes fringing the open moors. These elevated areas have strong moorland connections both visually and economically, with the moors forming an integral part of the upland farming system. The land is divided into a patchwork of small fields enclosed by gritstone walls with areas of larger intake relating to later moorland enclosures. The land remains almost entirely grazing pasture and the remaining unimproved areas of in-bye hay meadows and damp pastures are extremely valuable for nature conservation and support a rich and distinctive flora and important bird species including twite, curlew, lapwing and snipe. Other enclosures are intensively farmed and the bright green improved sward forms a sharp distinction with the more subdued tones of the moors. Much of the moorland fringe is in a state of transition; with some areas being farmed intensively and others where farming is in decline and a variety of other, non-agricultural land uses are becoming common. Both can have a significant visual impact and this landscape type particularly sensitive and vulnerable to change. The area nevertheless retains an 'upland' character and sense of remoteness. Settlement comprises isolated scattered farmhouses and their associated buildings with occasional clusters of buildings and short terraces of weavers' cottages. There is a general absence of trees except where the summits of the steep wooded cloughs penetrate these upland areas and occasionally tree clumps around farmsteads. The whole area has an open character often with long views out across the valleys and, on the edges of the area, across the extensive urban conurbations beyond.

Key environmental features

- Open, 'upland' landscape character created by the altitude, absence of trees and long views, often with a sense of remoteness and isolation.
- A characteristic patchwork of upland pastures including small irregular fields and larger rectangular fields representing a later phase of moorland enclosure.
- A dense network of gritstone walls creates the field enclosures. The stone walls provide shelter and habitat for wildlife and are also of considerable historical/ cultural interest.
- Remnant unimproved upland pastures including colourful species-rich hay meadows and damp pastures are an integral part of the mosaic of upland habitats and are of great importance for nature conservation. Flushed meadows are of special interest.
- Numerous paved packhorse routes linking with an extensive public rights of way network, providing not only distinctive features but evidence of the historic strategic importance of the moorland fringes.
- Dispersed settlement pattern comprising scattered farmsteads (sometimes in fairly close proximity) and occasional short terraces of houses.
- A network of narrow winding lanes connects the farmsteads and settlements. Stone walls without grass verges often bound the lanes.
- Distinctive vernacular architecture dominated by the millstone grit building stone and including laithe houses and weavers' cottages.
- Frequent long views across the intersecting valleys and/or out over the urban conurbations that surround the South Pennines uplands.

LCT D: Landscape Sensitivity to Wind Energy Development

Criteria	Lower sensitivity ▪▪▪▪▪▪▪▶ Higher sensitivity		
Scale			H
	These landscapes are relatively small in scale. They are transitional, contained uphill by the high moorland plateaux and downhill by the settled valleys and rural fringes, so their horizontal extent is often quite limited (typically 2-3km). In addition, the subdivision of the land into a patchwork of small fields and larger intakes enclosed by gritstone walls heightens sensitivity. Features which bring a human scale to the landscape include the walls, scattered farmsteads and cottages, occasional tree clumps and cloughs on hill summits.		
Landform		M	
	This LCT occupies the high land fringing the main moorland blocks at between 250 and 300m AOD. It includes the immediate slopes to either side of the main upland ridge as well as the terraces that occur above the main South Pennine valleys such as the Irwell, Calder and Colne. The distinctive terraced landform is often relatively flat, steepening both above and below. These marked landform changes mean that it is of at least moderate sensitivity.		
Landcover			H
	The land is almost entirely grazed pasture, most farms also having rights for summer grazing on the moorland above. The lower gentler slopes comprise older enclosures distinguished by their small size and irregular patterns; while higher and steeper slopes tend to have larger more regular parliamentary enclosures and intake land. The strong, often ancient, enclosure patterns and networks of narrow winding lanes are very vulnerable to physical disturbance.		
Built environment		M	
	Much of the area has an established historic built character and is of high sensitivity in this respect. Locally certain areas are affected by other influences e.g. quarrying on the moorland edges above the Irwell valley; urban fringe uses such as riding stables; and commercial development on the south-western outskirts of Huddersfield. The landscape is also affected in parts e.g. around Bacup by transmission lines, routed to avoid the open moorland tops.		
Skylines and settings		M	
	These landscapes often form an immediate skyline when seen at close range from the valley settlements below and in this context will be highly sensitive. Where slopes are gentler and views slightly longer they may not always form part of the skyline but nonetheless provide the foreground and setting to the high moorland plateaux and are sensitive in this respect; their green patchwork of fields contrasting with the more subdued tones of the moors above.		
Visibility and views			H
	At the main upland edges, e.g. south-west of Huddersfield, these landscapes are widely visible over long distances. Where these landscapes occur within the upland area, e.g. near Todmorden, visibility may be somewhat more limited. The landscape generally has an open character often with long views out across the valleys; and views may be spectacular where walking routes traverse the valley sides, e.g. north and south of the Calder valley (LCA D1). Sensitivity to this criterion is therefore assessed as high.		
Landscape quality (condition)		M	
	Landscape quality is mainly fairly high, although locally the landscape may be affected by farm decline and abandonment and by the introduction of non-agricultural uses, particularly in the western parts of the LCT, where farming is more marginal and urban fringe influences stronger.		
Scenic quality			H
	The high scenic quality of the South Pennine Moors has long been recognised. The southern section of this LCT around Huddersfield and Holmfirth directly abuts the Peak District National Park (and the LCT continues into the protected landscape). Most of the LCT, apart from areas within Barnsley Borough, lies within the part of the South Pennines that was identified in 1947 by the National Parks Committee as a potential AONB. Today, Pennine Prospects promotes the protection and regeneration of these landscapes, which are valued regionally as part of the non-statutory South Pennines Heritage Area. The majority of the LCT in Calderdale also falls within the Calderdale Special Landscape Area (defined under Policy NE12 of the Replacement Calderdale UDP (2006)) which is valued for its very high		

Criteria	Lower sensitivity ▪▪▪▪▪▪▪▶ Higher sensitivity
	visual quality and impressive landscape. In many places, this landscape is visible and accessible from urban areas and forms an important part of the Southern Pennines, linking the Peak District and Yorkshire Dales National Parks.
Wildness and tranquillity	Much of the area retains a relatively wild and tranquil upland character, due to its altitude, dispersed settlement pattern, general absence of modern development and close associations with open, remote moorland above (LCT A). Perceptions of wildness and tranquillity are eroded locally in those parts of the LCT that lie in close proximity to, or have views dominated by, nearby urban areas. In some localised areas the landscape is also affected by influences such as former mining activity, quarrying, transmission lines and urban fringe land uses.
Natural and cultural heritage features	There is extensive deep peat, and remaining unimproved areas of in-bye hay meadows and damp pastures are very valuable for nature conservation, supporting a rich and distinctive flora and fauna and important bird species including twite, curlew, lapwing and snipe. Some upper edges of the LCT are within the South Pennine Moors SSSI, SAC and SPA and there are SSSIs at Broadhead Clough (Calderdale) and Spring Meadows, Alderman's Head and Cow Croft Meadows (Barnsley). Numerous scheduled features relating to ancient settlement and religion are found across the area (e.g. prehistoric settlement remains above Denby Dale, cairns on Ringstone Edge Moor and Romano-British farmsteads near Worsthorne). In addition, Conservation Areas (e.g. Lumbutts and Mankinholes, Warley, Millbank and Cottonstones, Penistone and Ingbirchworth) underline the historic importance of the settlements on the fringes of the moor, displaying fine vernacular architecture including laithe houses and weavers' cottages of Millstone Grit.
Cultural associations	The terraces provided the route for many ancient trackways including much of the Long Causeway from Burnley to Halifax and other routes for the transport of lime and salt as well as later packhorse ways associated with the expansion of the woollen trade. This landscape, in conjunction with that of the high moorland plateaux, was an inspiration for the poetry of the former Poet Laureate Ted Hughes. The Brontë Way passes through the northern fringes of Worsthorne Moor, commemorating the wider area's strong associations with the famous writers from Haworth. The LCT is therefore of high sensitivity in this regard.
Amenity and recreation	Like the High Moorland Plateaux (LCT A), this LCT is of considerable recreational value to nearby urban populations, its many panoramic views offering an outstanding landscape experience. The extensive rights of way network includes the route of much of the Pennine Bridleway, dramatic sections of the Pennine Way where it crosses the Calder valley, and other long distance recreational routes, including the Burnley Way, Todmorden Centenary Way, Calderdale Way, Brontë Way, Kirklees Way and Barnsley Boundary Walk. Popular recreational destinations include Scout Dike Reservoir near Penistone and part of the National Trust's Holcombe Moor estate above Ramsbottom.
Discussion on landscape sensitivity[31]	The aspects of this LCT that increase sensitivity to wind energy development include its close relationship to the adjoining open moorland plateaux, as well as its small scale, complex landcover patterns with human-scale features, wide visibility including from settlements, high scenic quality, valued natural and cultural heritage features, and nationally or regionally important recreational interests. Land of highest sensitivity generally occurs where the moorland fringes are associated with the main South Pennine ridge, the Calder Valley and the Peak District National Park. Land which borders or forms an immediate setting to the Peak District National Park would be particularly sensitive to the development of wind turbines, which could affect its special qualities (including its sense of wildness and remoteness and the flow of landscape character across and beyond its boundary). This land would be highly sensitive to all scales of wind turbine development in locations on the fringes of the protected landscape. Locally there are areas of lower sensitivity where the landscape is somewhat larger in scale (more expansive, with larger enclosures) than elsewhere or is already affected by influences such as quarrying e.g. south of Lane Head close to the boundary between Kirklees and Barnsley (LCAs D9 and D10).

[31] Note that this refers to inherent landscape sensitivity i.e. the assessment has not been affected by any existing development.

Sensitivity to different turbine heights	**Very Small (≤24m)**	**M**
	Small (25-59m)	**M-H**
	Medium (60-89m)	**H**
	Large (90-129m)	**H**
	Very large (≥130m)	**H**
	The landscape's tranquil character, strong associations with the open moor, elevated rural skylines which form a setting to valley settlements, many human-scale features (walls, trees, farmsteads) and its function as a setting to the Peak District National Park to the south mean that it is generally highly sensitive to 'medium', 'large' and 'very large' wind turbines. Locations immediately adjacent to the National Park are likely to be highly sensitive to the development of turbines of any height (although this will need to be judged on a case by case basis).	
Commentary on turbine group size • Single turbine • Small cluster (2-3 turbines) • Small wind farm (4-5 turbines) • Medium wind farm (6-10 turbines) • Large wind farm (11-20 turbines) • Very large wind farm (≥21 turbines)	The lower slopes of this LCT, defined by small-scale historic enclosures, are highly sensitive to any developments larger than 'single turbines'. Larger scale, regular enclosures on higher land may be less sensitive to groups of turbines, but the many sensitive landscape attributes mean that even here the landscape will remain highly sensitive to 'large wind farm' and 'very large wind farm' group sizes.	

LCT D: Guidance for Wind Energy Development

Guidance for future development

This LCT is highly sensitive to larger scale wind energy development. In general it is suited only to scattered 'very small' (or occasionally small) single turbines that will relate well to the many human scale features that characterise its landscape. Only in exceptional cases may this LCT be able to accommodate larger turbines or groups of turbines.

Constraints

- This complex, small scale and highly scenic LCT forms a narrow band fringing the higher ground of the South Pennine Moors and the Peak District National Park and offers very limited space for any significant wind energy development.
- The LCT provides the foreground to views from the High Moorland Plateaux (LCT A) and many national and recreational routes.
- It also acts as the landscape and visual setting for the Settled Valleys (LCT F) and the Wooded Rural Valleys (LCT G) below, which often include historic mill towns and Conservation Areas.
- Protection of these views and settings – including the northern setting of the National Park – are key constraints on wind energy development within the LCT.
- Other constraints locally include the many natural and cultural heritage features, cultural associations and recreational interests outlined in the sensitivity assessment above.

Opportunities

- Small scale wind energy development that is visually associated with settlements or farms, and evenly spread across the landscape rather than concentrated in one particular area, will be most suited to this landscape.
- Locally, where the landscape is somewhat larger in scale (more expansive, with larger enclosures and sparser settlement) there may very occasionally be scope for small turbine groups or single larger turbines, subject to consideration of cumulative impacts. This applies in D9 and D10 only.

Key considerations

When siting and designing wind energy developments in this LCT, the generic guidance in **Appendix 3** and in the small turbine guidance[32] and the wind energy landscape sensitivity assessment that covers the Peak District National Park[33] should also be taken into account where relevant. In addition, specific landscape considerations within this LCT are as follows:

- Avoid siting turbines within key views, especially those to and from the main South Pennine ridge, the Calder valley and the Peak District National Park.
- Avoid locations close to the lower edge of the moorland fringe terrace, because such locations are very prominent from the settled valleys below and conflict with the strong horizontal form of the terrace edge.
- Where development is located just below the open moorland above (LCTs A and B), seek to backcloth the turbine(s) against the hillsides above and consider the use of a darker turbine colour.
- Give special consideration to the effects of turbines on the approaches to and settings of historic buildings, villages and settlements.
- Look to retain the landscape's relatively tranquil, remote, rural character, locally valued due to the close proximity of urban development.
- Minimise the impacts of access tracks on field enclosure patterns and carefully restore any damage.
- Where larger turbines are proposed, ensure that they do not overwhelm the human scale of the landscape features, including farmsteads, trees and stone walls.

[32] Julie Martin Associates (2013) *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*, report to Blackburn with Darwen, Burnley, Calderdale, Hyndburn, Kirklees, Pendle, Rochdale and Rossendale Councils.

[33] Land Use Consultants (2009) *Landscape Sensitivity Assessment for Renewables in the Peak Sub-Region*, report to the Peak District National Park Authority and others.

Current patterns of permitted wind energy development

As at June 2014 there were 61 operational and consented wind energy sites with a total of 95 turbines in this LCT, as well as others in surrounding areas. The patterns were as follows:

- **Rossendale D4 and D5** – Scattered single very small or small turbines plus, in area east of Bacup, a total of 5 small turbines (including a small wind farm of 4 at Scar End Farm) seen in very close conjunction with Reaps Moss and Todmorden Moor wind farms (the latter in Calderdale).
- **Burnley D1 and D3** – Three very small single turbines in northern part of D3, seen together with numerous small turbines just to the west in Calderdale within LCT E Rural Fringes (E4). Repowered Coal Clough wind farm within LCT A High Moorland Plateaux abuts southern end of D3.
- **Calderdale D1 and D2** – Single turbines and small clusters of very small and occasional small turbines. Concentrations in several areas, notably in west near Coal Clough (D1) where seen together with large turbines; and around Ripponden (D2) where there are cumulative effects on landscape character.
- **Kirklees D7 and D9** – Concentrations of very small and small turbines (single turbines and small clusters) close to the M62 and south and east of Holmfirth (D7 and D9), also extending south-eastwards into Barnsley. Cumulative effects on landscape character in these areas.
- **Barnsley D7, D9 and D10** – Many very small and small turbines south of Holmfirth (D7) and in scattered locations on the eastern fringes of D9 and D10. Also three small groups of large turbines (Hazlehead, Spicer Hill, Blackstone Edge) and a large wind farm of small turbines (Royd Moor). Complex cumulative effects due to range of turbine heights and designs in close proximity.

Follow web link to database and web map to see the latest position.

Cumulative landscape and visual issues arising

Key cumulative issues arising in this LCT are:

- Siting of small turbine classes very close to larger turbines, notably in D4 near Bacup, D1 on the boundary of Burnley and Calderdale, and D9 on the boundary of Kirklees and Barnsley. Here the juxtaposition of turbines of different heights and designs may be distracting and/or tends to heighten the perceived scale of the larger turbines.
- Concentrations of smaller turbines, notably in D1 near Todmorden, D2 west of Ripponden, D7 south of the M62 and near Holmfirth, and D9 on the boundary of Kirklees and Barnsley. In these areas turbines are collectively becoming a defining influence on the landscape and there are frequent variations in turbine height and design.

In the locations indicated, these existing cumulative landscape and visual issues may be a constraint on further wind energy development.

Guidance for siting multiple developments within this LCT

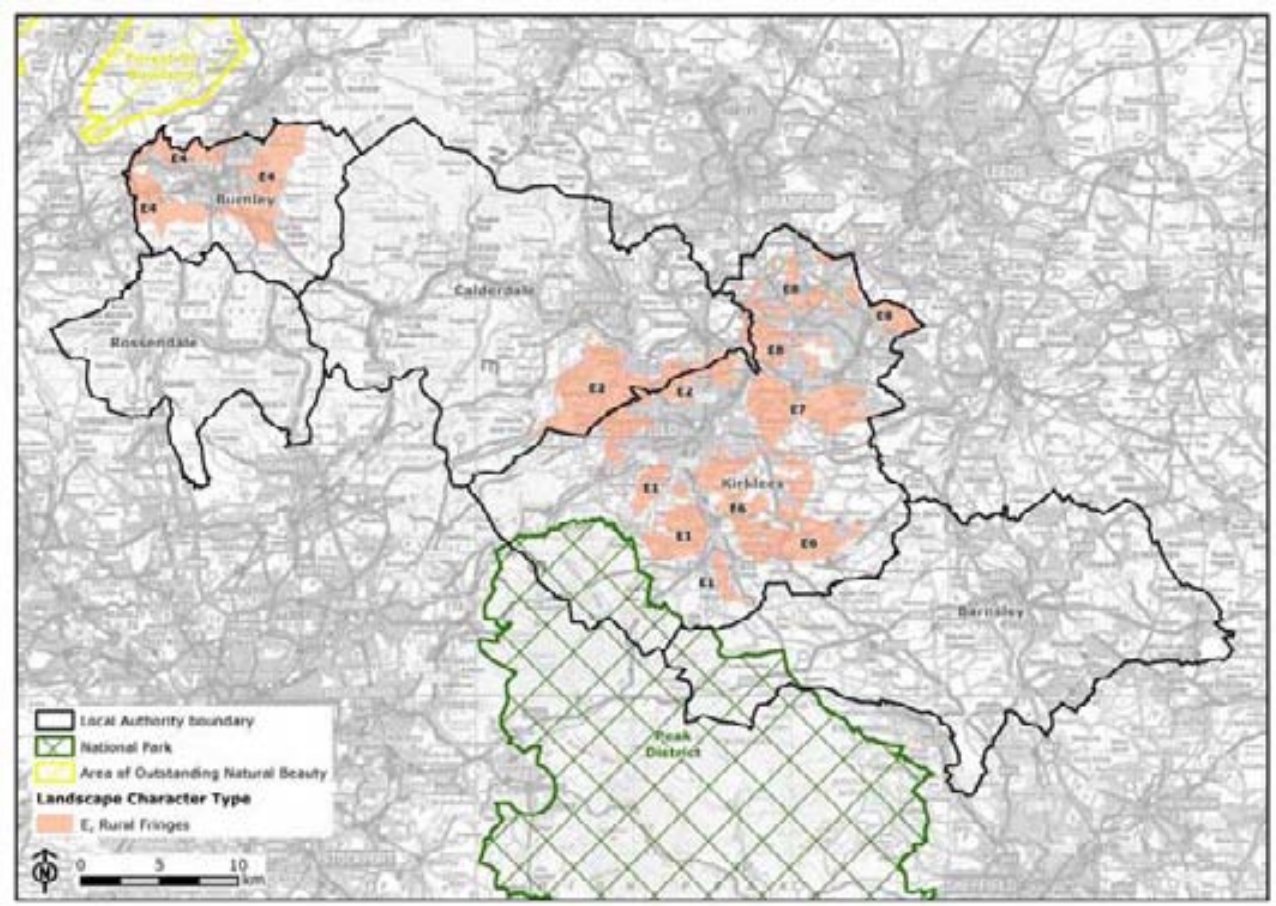
Multiple wind energy developments in this LCT should:

- Be similar in terms of siting, layout, form and relationship to key landscape characteristics, so as to present a simple image that relates clearly to landscape character[34] – for example through a clear association of 'very small' turbines with the regular clusters of farm buildings that occur in this LCT.
- When locating 'very small ' and 'small' turbines, choose sites that are well away from medium or large turbines (in the same or adjoining LCTs), so that the different size classes are not seen together, and avoid strong concentrations of turbines in a given area.
- Also avoid close juxtaposition of different small turbine designs and heights, aiming instead for a consistent height and design in a given area.
- Identify and take account of possible cross-boundary cumulative impacts associated with small turbines in adjoining local authorities inside and outside the study area.

[34] See Scottish Natural Heritage (2014) *Siting and Designing Wind Farms in the Landscape*.

LCT E: Rural Fringes

LCT Location Map



Component Landscape Character Areas

E1: Holmfirth - Meltham
E2: Barkisland - Holywell Green
E4: Colne - Nelson - Burnley Fringe
E6: Fenay Beck Valley Rural Fringes
E7: Emley Moor Northern Fringes
E8: Batley - Dewsbury Rural Fringes

Local authorities where LCT is present

Burnley, Calderdale, Kirklees

Landscape character summary

The rural fringes form a lower lying domesticated landscape surrounding the uplands. Rarely more than 200 metres above sea level the conditions are less harsh with gentler slopes and a milder climate. These sheltered, more hospitable fringes are settled and intensively farmed creating a small scale, complex landscape, of more varied landform and vegetation cover than is typical of the higher areas. Trees thrive and are a distinguishing feature of this landscape type occurring around farmsteads, along stone wall boundaries and in small - medium sized woodland blocks. Farming appears more profitable and the majority of the fields are improved grassland grazed by a mix of both cattle and sheep and managed for a silage crop. Settlement includes scattered farmhouses, which often include a range of modern outbuildings, dispersed rural dwellings as well as numerous small groups of houses/villages frequently with newer suburban infill and edge developments. An intricate network of lanes and roads crosses the area and links to the adjacent towns and cities which surround the South Pennines. The proximity of the urban centres exerts an influence on landscape character with urban fringe land uses evident in many areas and pressures for development.

Key environmental features

- A sheltered, settled `domestic' landscape on the gentle lower slopes fringing the South Pennine uplands.
- Pattern of grassland pastures enclosed by gritstone walls as well as some hedgerow boundaries.
- Considerable tree and woodland cover with trees in shelterbelts and along field boundaries, numerous broadleaved woodlands - many of ancient origin, as well as small scale coniferous plantations.
- Isolated remnants of species-rich grasslands (hay meadow and wet pastures) exist within the improved grassland. Flushed meadows are of special nature conservation interest.
- Dense network of narrow winding lanes, with some roads, which link the area to the urban centres on the periphery of the South Pennines.
- Distinctive settlement character of scattered farms, individual rural houses and groups of dwellings clustered into small villages sheltering below the uplands.
- Vernacular building style and consistency in building material and design visually connects the rural fringes to the core of the South Pennine area.

LCT E: Landscape Sensitivity to Wind Energy Development

Criteria	Lower sensitivity ▪▪▪▪▪▪▪▶ Higher sensitivity		
Scale			**H**
	This is a relatively low-lying landscape surrounding the uplands at an elevation generally less than 250m and hence is small in terms of vertical scale. Forming a band around the edge of the uplands, the horizontal scale of this landscape is also limited due to its containment by the adjoining hills and urban edges and this tends to increase landscape sensitivity. Frequent human-scale features include hedgerows, stone walls, trees and numerous farmsteads, dwellings and settlements.		
Landform		**M**	
	The landform is gently sloping with relatively even gradients although local variations in topography create some areas of more complicated and hence more sensitive landform, for example in areas where the slopes are deeply incised by wooded valleys.		
Landcover			**H**
	These sheltered fringes are settled and farmed. Landcover patterns are small scale and relatively complex, and vegetation cover is varied. Small pastures are enclosed by gritstone walls or locally by hedgerows, and there is considerable tree and woodland cover. All these features tend to increase sensitivity.		
Built environment		**M**	
	Settlements include scattered farmhouses with large modern outbuildings, dispersed rural dwellings, and numerous hamlets and villages often with newer suburban infill and edge development. Vernacular styles and building materials characterise some areas, for example south of Huddersfield, but other areas are affected by out of town development associated with nearby urban centres, so landscape sensitivity is medium overall.		
Skylines and settings		**M**	
	These peripheral landscapes tend not to form prominent skylines. Seen from settled valleys nearby, they are generally backclothed against the surrounding hills, reducing their sensitivity. However there are also some prominent landmarks, such as Castle Hill Fort and Tower south of Huddersfield, whose settings are highly vulnerable to any visual change.		
Visibility and views			**H**
	These landscapes, although often well-treed, are visible to large populations as they are fairly densely settled and close to major urban areas and important transport routes. In some areas they form key approaches to popular recreational areas, for example on the eastern edge of the Peak District National Park south-west of Huddersfield. Around Burnley the LCT lies very close to Pendle Hill, part of the Forest of Bowland AONB, and may form part of views to and from that area.		
Landscape quality (condition)		**M**	
	This LCT is a transition zone between the uplands and the urban edge. In recent years it has gradually become more urban in character through gradual encroachment of development and unsympathetic land uses. It is therefore of medium sensitivity.		
Scenic quality		**M**	
	Much of this LCT has been recognised as being of scenic quality through inclusion in the South Pennines Heritage Area, a non-statutory designation. In Calderdale, the area around Ringstone Edge Moor east of Rishworth, also falls within the Special Landscape Area (defined under Policy NE12 of the Replacement Calderdale UDP (2006)), which is valued for its very high visual quality and impressive landscape.		
Wildness and tranquillity		**M**	
	This is a sheltered, settled, 'domestic' landscape and therefore does not have a wild character. However large parts of the area – which is characterised by a dense network of narrow winding lanes – retain some relative tranquillity compared to the busy urban areas adjacent.		

Natural and cultural heritage features		**M**	
	There are some substantial areas of ancient woodland, particularly south of Huddersfield; and isolated remnants of species-rich grassland. Much of the land has a strong historic landscape character and there are some sites of note, such as Castle Hill Fort and sections of Roman road, plus historic parks and gardens and Conservation Areas in many areas.		
Cultural associations	**L**		
	There are no known cultural associations of note.		
Amenity and recreation		**M**	
	This LCT is characterised by a dense network of public rights of way, including lengths of the Burnley Way, Kirklees Way and Pennine Bridleway, providing direct access to the countryside for nearby urban populations. Recreational use of countryside around towns is strongly promoted in the South Pennines Heritage Area.		
Discussion on landscape sensitivity[35]	Key constraints to wind energy development within this LCT are its relatively small scale and extent; the intimacy and complexity of its landcover; and its densely settled character which makes it highly sensitive in visual and recreational amenity terms. Locally there may be pockets of higher sensitivity associated with specific natural and cultural heritage interests; and areas of lower sensitivity, for example where the landscape has been affected by major out of town or industrial development.		
Sensitivity to different turbine heights	**Very Small (≤24m)**	**M**	
	Small (25-59m)	**M-H**	
	Medium (60-89m)	**M-H**	
	Large (90-129m)	**H**	
	Very large (≥130m)	**H**	
	This LCT is highly sensitive to turbines in the 'very large' and 'large' categories and also of moderate to high sensitivity to 'medium' and 'small' turbines due to its varied landform, the presence of frequent human-scale features, widespread visibility to nearby urban populations as well, in the south, its proximity to the Peak District National. It may be less sensitive to smaller turbine classes, given appropriate siting and design (see guidance below).		
Commentary on turbine group size • Single turbine • Small cluster (2-3 turbines) • Small wind farm (4-5 turbines) • Medium wind farm (6-10 turbines) • Large wind farm (11-20 turbines) • Very large wind farm (≥21 turbines)	The small-scale field and landcover patterns that characterise this LCT mean that it is best suited to 'single turbines' and 'small clusters'. It is highly sensitive to any larger turbine group size.		

[35] Note that this refers to inherent landscape sensitivity i.e. the assessment has not been affected by any existing development.

LCT E: Guidance for Wind Energy Development

Guidance for future development

This LCT is sensitive to larger scales of wind energy development. Its enclosed and settled landscapes are inherently more suited to scattered 'very small' (or occasionally 'small') single turbines or small clusters, reflecting the relatively small scale landscape patterns and features and the proximity of residential areas.

Constraints

- The LCT often fulfils a strategic landscape and recreational role, providing a green wedge of open countryside around several of the study area's major towns, including Burnley, Dewsbury and Huddersfield.
- The settled character of the LCT means that there may be limited space for wind energy development.
- Around Burnley, the LCT forms part of the setting of Pendle Hill, part of the Forest of Bowland AONB.
- Although relatively low-lying, the LCT may be prominent visually as it tends to occupy rising ground or ridgelines around valley settlements, sometimes including landmark features, notably Castle Hill Fort and Tower south of Huddersfield.
- Frequent historic parks and gardens and Conservation Areas, both within the LCT and in adjoining valley landscapes, may be vulnerable to changes in their settings as a result of wind energy development.
- There is dense network of public rights of way, including long distance walking routes, and in the area south of Huddersfield parts of the LCT lie very close to the Peak District National Park.

Opportunities

- Small scale wind energy development that is visually associated with settlements or farms, and evenly spread across the landscape rather than concentrated in one particular area, will be most suited to this landscape.
- Locations close to industry, business parks, major transport corridors such as the M62 and quarried or other brownfield sites may be less sensitive.

Key considerations

When siting and designing wind energy developments in this LCT, the generic guidance in **Appendix 3** and in the small turbine guidance[36] (where relevant) should be taken into account. In addition, specific landscape considerations within this LCT are as follows:

- Ensure that turbines do not overwhelm the human scale of landscape features, including farmsteads, trees and stone walls
- Where possible site turbines so that they do not break the skyline and are backclothed by land, also considering the use of a darker turbine colour in such locations.
- Avoid siting turbines within key views, especially those to and from Pendle Hill in the Forest of Bowland AONB, and the Peak District National Park around Huddersfield and Holmfirth.
- Give special consideration to the effects of turbines on the approaches to and settings of the many historic buildings, villages and parks and gardens.
- Look to retain areas of relatively tranquil, rural character, locally valued due to the close proximity of urban development.
- Minimise the impacts of access tracks on field enclosure patterns and carefully restore any damage .

Current patterns of permitted wind energy development

As at June 2014 there were 28 operational and consented wind energy sites with a total of 32 turbines in this LCT, as well as others in surrounding areas. The patterns were as follows:

- **Burnley E4** – One medium wind farm of 6 large turbines of differing heights (extended Hameldon

[36] Julie Martin Associates (2013) *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*, report to Blackburn with Darwen, Burnley, Calderdale, Hyndburn, Kirklees, Pendle, Rochdale and Rossendale Councils.

Hill), partly in LCT C Enclosed Uplands. One very small turbine on the southern outskirts of Burnley town. Concentration of sites of one or two very small or small turbines north-east of town, now giving rise to cumulative impacts together with similar sites in adjoining LCT D Moorland Fringes/ Upland Pastures (D3) and in Pendle council area to the north.

- **Calderdale E2** –Concentration of single small turbines along the M62 corridor, also extending into Kirklees.
- **Kirklees E1, E2, E6, E7 and E8** – Very limited development in E1, which lies closest to the Peak District National Park. Many single and small clusters of small turbines along M62 corridor in E2 (also extending into Calderdale). Scattered single very small and small turbines in E6 and E7 in eastern part of council area. Around Dewsbury, in E8, scatter of mainly very small turbines around much of urban edge.

Follow web link to database and web map to see the latest position.

Cumulative landscape and visual issues arising

Key cumulative issues arising in this LCT are:

- Concentrations of smaller turbines, notably in E4 north-east of Burnley, in E2 along the M62 corridor and in E8 on the outskirts of Dewsbury, now giving rise to cumulative landscape and (especially) visual impacts, exacerbated by the use of different turbine heights and designs.
- Juxtaposition of smaller turbines in the landscape with the extended Hameldon Hill wind farm risks creating a sense of visual clutter and discordance.

In the locations indicated, these existing cumulative landscape and visual issues may be a constraint on further wind energy development in the surrounding area.

Guidance for siting multiple developments within this LCT

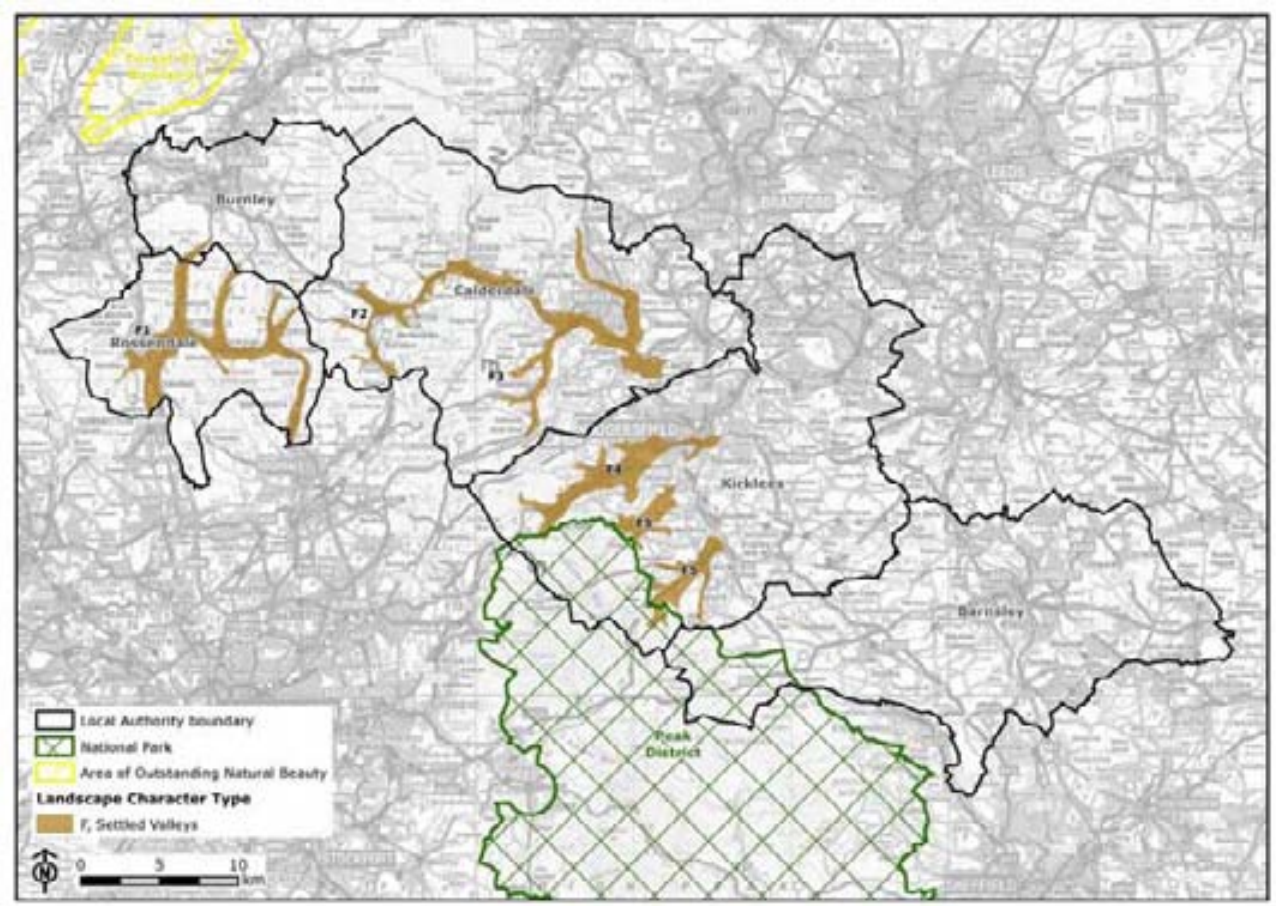
Multiple wind energy developments in this LCT should:

- Be similar in terms of siting, layout, form and relationship to key landscape characteristics, so as to present a simple image that relates clearly to landscape character[37] – for example through a clear association with the regular clusters of farm buildings that occur in this LCT.
- When locating 'very small ' and 'small' turbines, choose sites that are well away from medium or large turbines, so that the different size classes are not seen together, and avoid strong concentrations of turbines in a given area.
- Also avoid close juxtaposition of different turbine heights and designs, aiming instead for a consistent height and design in a given area.
- Identify and take account of possible cross-boundary cumulative impacts associated with small turbines in adjoining local authorities inside and outside the study area.

[37] See Scottish Natural Heritage (2014) *Siting and Designing Wind Farms in the Landscape*.

LCT F: Settled Valleys

LCT Location Map



Component Landscape Character Areas

F1: Irwell (Ramsbottom, Rawtenstall, Bacup)
F2: Calder (Walsden, Todmorden, Hebden Bridge, Mytholmroyd)
F3: Ryburn (Sowerby Bridge, Ripponden)
F4: Colne (Slaithwaite, Marsden)
F5: Holme and Hall Dike (Holmfirth, Meltham)

Local authorities where LCT is present

Rossendale, Burnley, Calderdale, Kirklees

Landscape character summary

The deeply incised narrow valleys that dissect the high moorland plateau are one of the most distinctive landscape types of the South Pennines. Parts of many of the main valleys are crowded by towns and urban areas, which originated at the point of a river crossing and expanded during the early industrial age. The textile mills, with their distinctive chimneys, dominate the urban skyline and are a hallmark of the South Pennines landscape. The tall gritstone terraces of weavers' cottages are a characteristic feature of the hillsides and canals, rail and roads often line the narrow valley floor. Settlements are generally concentrated on the south-facing slopes and along the narrow valley floor. North facing slopes usually remain free of development so that even within urban areas there are frequently views towards woodlands, the patchwork of in-bye pastures and the moorland edge. Broadleaved woodlands, many of ancient origin, cling to the steep slopes and fill the valley side cloughs, reinforcing the sense of enclosure within the valleys. The deep `hidden' side ravines with their fast flowing becks and dense woodland cover are also a distinctive feature.

Key environmental features

- Deep incised valley profile with steps and terraces and deep side cloughs reflecting the underlying geology and weathering processes.
- Sense of enclosure provided by the steep-sided profile and presence of woodland, emphasising contrast with the open moorland.
- Broadleaved woodland, much of ancient origin, on the valley sides and in the side cloughs supporting important fern, bryophyte and bird species.
- Characteristic linear pattern of urban settlement on the valley floor and the lower south-facing slopes, from which there are frequently views out to the woodland, pastures and the moorland edges.
- Distinctive vernacular architecture including mills, packhorse bridges and terraces of weavers' cottages providing evidence of the important role that these valleys played in our industrial history.
- Rivers and canals creating green corridors and a valuable recreational resource as well as important wetland habitats, supporting a number of notable rarities.
- Valley wetland habitats including fens and wet pastures.
- Wealth of historical and archaeological interest, reflecting the historic evolution of the area.
- In-bye pastures and hay meadows on the valley sides form an important element of the upland habitat mosaic.
- Gritstone walls create the distinctive field pattern which is highly visible on the sloping valley sides. The stone walls provide shelter and habitat for wildlife, and are also of considerable historical/cultural interest.

LCT F: Landscape Sensitivity to Wind Energy Development

Criteria	Lower sensitivity ▪▪▪▪▪▪▪▶ Higher sensitivity	
Scale		H
	The deeply incised, narrow valleys that dissect the moors are one of the most distinctive LCTs of the South Pennines. Parts of many of the main valleys are crowded by towns and urban areas, which originated at the point of a river crossing and expanded during the industrial age. The valleys are of limited width and small scale, with frequent human-scale features including trees, buildings and field boundaries.	
Landform		H
	The deep valleys are cut by rivers generally flowing in an easterly direction in Yorkshire and a southerly direction in Lancashire. The steep valley sides are typically 200m in height with a narrow valley floor; in some areas e.g. east of Todmorden the valley has been over-deepened and forms a gorge within and below the original U-shaped valley. This dramatic, distinctive landform is highly sensitive.	
Landcover		H
	Landcover comprises urban land and under-utilised farmland enclosed by gritstone walls as well as broadleaved woodlands, many of ancient origin, clinging to the steep valley sides and cloughs, particularly in the eastern parts of the area. There is considerable diversity and high sensitivity to disturbance.	
Built environment	M	
	Dense ribbons of urban and industrial development line the valley floors and sides. There are tightly-knit town centres with grand nineteenth century buildings, gritstone terraces of weavers' cottages, and mills whose distinctive chimneys dominate the urban skyline, as well as some more recent industrial and commercial development, the latter tending to reduce the sensitivity of the built environment in places.	
Skylines and settings		H
	Settlements are generally concentrated on south-facing slopes and along the valley floor; north-facing slopes tend to remain free of development. Skylines to the north therefore often feature settlement while those to the south, even within urban areas, may be clothed by in-bye pastures and woodlands. Both are highly complex and sensitive. The dramatic slopes and gorges often provide very attractive settings for the towns.	
Visibility and views	M	
	These landscapes are contained and are usually not widely visible, except from the hillsides immediately above or from facing valley slopes. From within the area, views are often contained by buildings and other structures but there may also be fine outward views to the pastures, woodlands and moorland edge above.	
Landscape quality (condition)	M	
	Landscape quality is mixed. The distinctive pattern of settlement and valley side woodland is often relatively intact but the characteristic field patterns on the valley sides, as well as industrial heritage features such as millponds and races, may be in need of repair and maintenance, or may be disrupted or fragmented by more recent urban development.	
Scenic quality	M	
	These distinctive landscapes have a dramatic and appealing landscape setting and an important industrial heritage. The upper reaches of some of the valleys (the Colne, Holme and Hall Dike) extend into the Peak District National Park. Much of the area has also been recognised as being of scenic quality through inclusion in the non-statutory South Pennines Heritage Area. In addition, stretches of the Calder Valley around Hebden Bridge and Todmorden fall within the Calderdale Special Landscape Area (defined under Policy NE12 of the Replacement Calderdale UDP (2006)), which is valued for its very high visual quality and impressive landscape.	
Wildness and tranquillity	M	
	There is little sense of wildness, with most of the valleys being occupied by urban development and transport corridors. However the valley sides, with their wooded character, often retain a sense of tranquillity and timelessness.	

Natural and cultural heritage features			**H**
	Key natural and cultural heritage features include broadleaved woodland, much of ancient origin; valley wetland habitats including rivers, fens and wet pastures; in-bye pastures and hay meadows on the valley sides; distinctive vernacular architecture including mills, packhorse bridges and weavers' cottages; and a wealth of historical and archaeological interest. There is a special concentration of listed building and structures and Conservation Areas within the valleys.		
Cultural associations			**H**
	The South Pennines is generally seen as the seat of the Industrial Revolution. The landscapes generated by the process of industrialisation are one of the special and significant features of the South Pennines, and are focused within the settled valleys. They include the railways and canals; the very distinctive architecture of the textile industry; and the grand civic buildings of towns such as Hebden Bridge, built on the wealth generated by the textile industry. The historic town of Holmfirth, south of Huddersfield, was the setting for the popular television series 'Last of the Summer Wine'.		
Amenity and recreation		**M**	
	Within the settled valleys, amenity and recreational interest is generally associated with the area's industrial heritage, canals, and canal and riverside walkways such as those along the Rochdale Canal and the Holme valley.		
Discussion on landscape sensitivity[38]	The key constraints to wind energy development are the valleys' limited width and extent, its tight enclosure by landform (which also adversely affects the wind resource), the diverse landcover and skylines; and the wealth of cultural heritage interest associated with the early industrialisation. Sensitivity is especially high within and close to the Peak District National Park and the many Conservation Areas and important built heritage features. Locally there are pockets of somewhat lower sensitivity associated with recent industrial and commercial development, particularly in the larger towns.		
Sensitivity to different turbine heights	**Very Small (≤24m)**		**M-H**
	Small (25-59m)		**H**
	Medium (60-89m)		**H**
	Large (90-129m)		**H**
	Very large (≥130m)		**H**
	The constrained and often dramatic nature of the steep valley landforms, areas of sensitive landcover (including ancient woodlands), small-scale and diverse landscape patterns and frequent human-scale features mean that this LCT is highly sensitive to any turbines larger than 'very small' in height. Locations immediately adjacent to the National Park are likely to be highly sensitive to the development of turbines of any height (although this will need to be judged on a case by case basis).		
Commentary on turbine group size • Single turbine • Small cluster (2-3 turbines) • Small wind farm (4-5 turbines) • Medium wind farm (6-10 turbines) • Large wind farm (11-20 turbines) • Very large wind farm (≥21 turbines)	The small-scale nature of the settled valleys means that they are highly sensitive to any turbine group size other than 'single turbine'.		

[38] Note that this refers to inherent landscape sensitivity i.e. the assessment has not been affected by any existing development.

LCT F: Guidance for Wind Energy Development

Guidance for future development

Due to space constraints and the presence of many sensitive landscape character, natural and cultural heritage features, the landscape of this LCT is unlikely to be able to accommodate any wind energy development other than very occasional 'very small' single turbines.

Constraints

- These deeply incised, narrow valleys are one of the most distinctive LCTs of the South Pennines and are very densely settled.
- Any significant wind energy development could significantly affect the immediate skylines of settlements, as well as the settings of the many historic mill towns and Conservation Areas.
- The physical fabric of the steep enclosing hillsides, which in some areas also has valley side woodlands, designed parklands and other sensitive features, is vulnerable to disturbance.
- Other constraints locally include the many natural and cultural heritage features, cultural associations and recreational interests outlined in the sensitivity assessment above.

Opportunities

- Opportunities are likely to be very limited, but a single turbine that shows clear visual and functional relationships with the building, business or farm that it serves may fit best within the landscape and townscape of the settled valleys.
- The upper valley reaches, which are slightly larger scale and more open, may be somewhat less sensitive than the lower parts of the valleys.

Key considerations

When siting and designing wind energy developments in this LCT, the generic guidance in **Appendix 3** and in the small turbine guidance[39] and the wind energy landscape sensitivity assessment that covers the Peak District National Park[40] should also be taken into account where relevant. In addition, specific landscape considerations within this LCT are as follows:

- Site and design turbines very carefully relative to existing (especially historic) buildings and structures, paying particular attention to relative heights and proportions.
- Respect the scale of existing landscape features, including buildings, trees and stone walls – this may necessitate the use of micro-turbines in some locations.
- Give special consideration to the effects of turbines on the approaches to and settings of settlements.
- Choose sites that are backclothed by higher ground and minimise effects on skylines; consider the use of darker turbine colours in such situations.
- Where possible, take advantage of any existing woodland screening and/or site turbines in dips and hollows in the landform.
- Avoid new access tracks on steep slopes where they may scar the hillside and be visible from facing valley sides; minimise any damage to existing hedges and walls.

Current patterns of permitted wind energy development

As at June 2014 there were 10 operational and consented wind energy sites with a total of 11 turbines in this LCT, as well as others in surrounding areas. The patterns were as follows:

- **Rossendale F1** – Scattered very small turbines in the upper reaches of Irwell tributary valleys. In the area east of Bacup the LCT is surrounded by other, taller wind turbines in LCT D Moorland Fringes/ Upland Pastures (D4) and A High Moorland Plateau (A1), with cumulative impacts there.
- **Burnley F1** – One very small turbine in the upper reaches of a valley.
- **Calderdale F2 and F3** – Scattered very small or small turbines, mainly in upper valley reaches next

[39] Julie Martin Associates (2013) *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*, report to Blackburn with Darwen, Burnley, Calderdale, Hyndburn, Kirklees, Pendle, Rochdale and Rossendale Councils.

[40] Land Use Consultants (2009) *Landscape Sensitivity Assessment for Renewables in the Peak Sub-Region*, report to the Peak District National Park Authority and others.

to LCT D Moorland Fringes/ Upland Pastures around Ripponden and Rishworth (D2), where there are already strong concentrations of small turbines giving rise to cumulative landscape and visual issues.

- **Kirklees F4 and F5** – One very small turbine at the head of the Holme valley where it is seen with several small turbines in LCT D Moorland Fringes/ Upland Pasture (D7) in an area very close to the edge of the Peak District National Park and contributes to cumulative impacts in that area.

Follow web link to database and web map to see the latest position.

Cumulative landscape and visual issues arising

Key cumulative issues arising in this LCT are:

- The growing cumulative effects of existing turbines in the upper valley reaches next to LCT D Moorland Fringes/ Upland Pastures, especially in the areas east of Bacup (D4), around Ripponden (D2), and in the upper Holme valley (D7) adjacent to the Peak District National Park.

In the locations indicated, these existing cumulative landscape and visual issues may be a constraint on further wind energy development in the surrounding area.

Guidance for siting multiple developments within this LCT

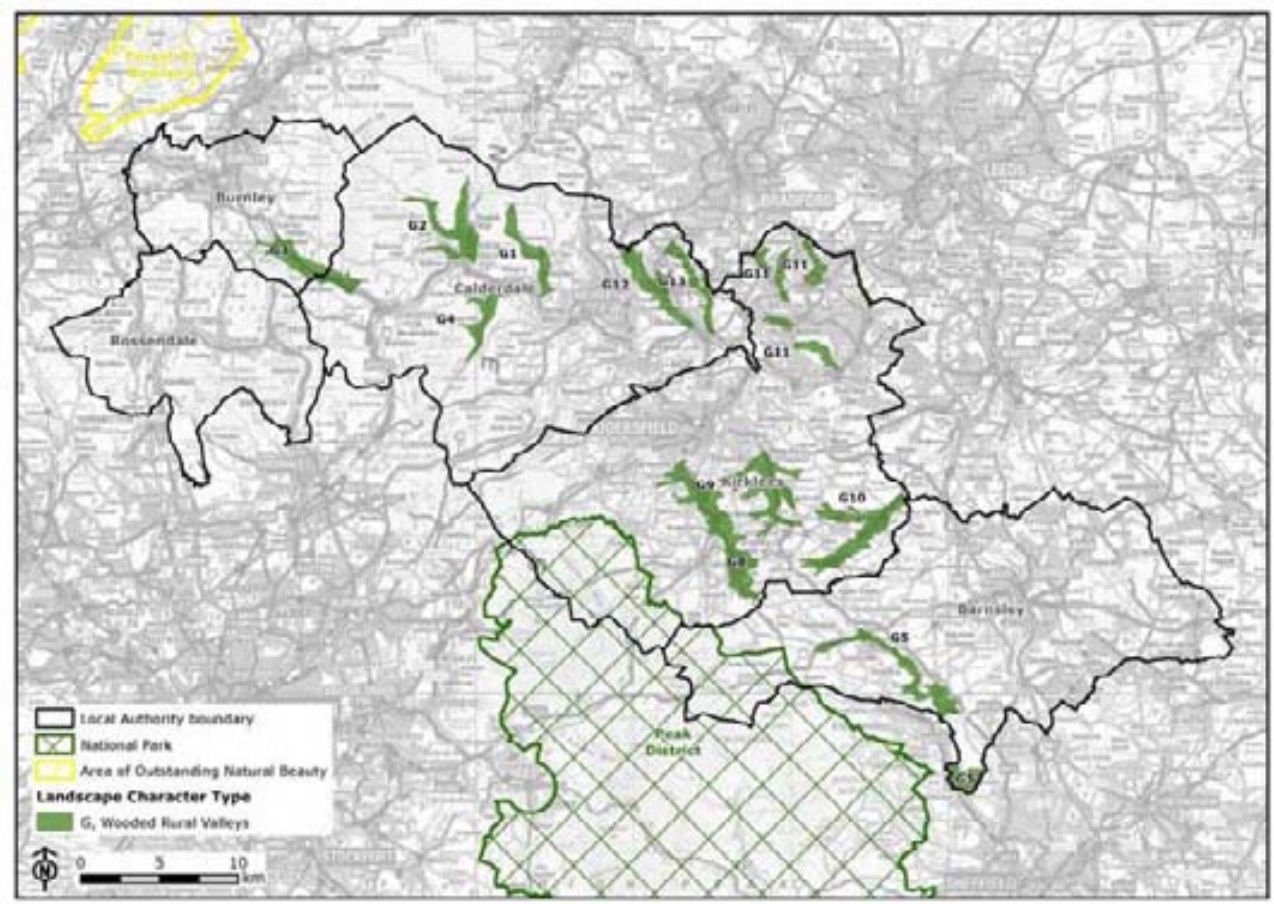
Multiple wind energy developments in this LCT should:

- Be similar in terms of siting, layout, form and relationship to key landscape characteristics, so as to present a simple image that relates clearly to landscape character[41] – for example through siting mainly in the upper valley reaches of this LCT.
- When locating 'very small' turbines, choose sites that are well away from larger turbines in adjacent LCTs, so that different size classes are not seen together; and avoid strong concentrations of turbines in a given area.
- Avoid close juxtaposition of different turbine heights and designs, aiming instead for a consistent height and design in a given area.

[41] See Scottish Natural Heritage (2014) *Siting and Designing Wind Farms in the Landscape*.

LCT G: Wooded Rural Valleys

LCT Location Map



Component Character Areas

G1: Luddenden Dean

G2: Hebden Dale & Crimsworth Dean

G3: Cliviger Gorge

G4: Cragg Vale

G5: Don River Valley

G8: Holme River Valley

G9: Fenay Beck Valley & Tributaries

G10: River Dearne Valley

G11: Batley Fringe Incised Valleys

G12: Shibden Dale

G13: Clifton Beck

Local authorities where LCT is present

Burnley, Calderdale, Kirklees, Barnsley

Landscape character summary

The steep-sided wooded valleys, which dissect the high South Pennine moorland, are a special feature of the area. They have a secluded, intimate character derived from the deeply incised topography and abundant woodland which clothes the valley sides often blocking the sky from view. Although they exist in close proximity to the densely urbanised and industrial valleys, these side valleys are largely hidden and inaccessible except by foot. Their depth and extent is surprising and creates the sense of a hidden, secret landscape. The swift-flowing streams which tumble over the hard gritstone rocks are edged with a luxuriant carpet of mosses and ferns. These waters once provided the power for the early industrialisation of the region and the side valleys are lined with the remains of former mill sites.

Key environmental features

- A secluded, `hidden' intimate and tranquil character created by the incised landform, densely wooded slopes and absence of modern development.
- Distinctive incised landform with stepped terraces and a narrow valley floor.
- Fast flowing, moss and fern edged, streams cut down into the bedrock.
- Waterfalls are a characteristic feature where the streams cut alternating hard and soft layers of the underlying Millstone Grit geology.
- A mosaic of wetland habitats including freshwater streams, damp pasture and meadows, marsh and millponds on the valley floor.
- Thick broadleaved woodland including ancient woodland of high nature conservation value, clothes the valley sides.
- Patchwork of light and shade created by the juxtaposition of woodland and pastures.
- Local areas of landslip on the steep valley sides expose important geological sites and create a distinctive landscape feature.
- Strings of now derelict water-powered mills with associated features including mill ponds and races occur along the valley floor and reflect the emergence of early industrialisation.
- Archaeological features related to woodland management, such as charcoal hearths are common.

LCT G: Landscape Sensitivity to Wind Energy Development

Criteria	Lower sensitivity ▪▪▪▪▪▪▪▶ Higher sensitivity	
Scale		H
	These steep-sided, wooded valleys have a secluded, intimate character derived from abundant woodland which clothes the valley sides, often blocking the sky from view. Although some areas are relatively large in extent, the experience is of a small scale, enclosed landscape. Dense woodland cover also brings a human scale to the valleys.	
Landform		H
	The valleys are incised, with distinctive stepped terraces and narrow valley floors. The swift-flowing streams often tumble over hard gritstone rocks. Local areas of landslip on the valley sides may create a distinctive hummocky topography, and waterfalls are a characteristic feature, especially in the Calder valley, where overdeepening has occurred.	
Landcover		H
	The main landcover elements are meadows and marsh in the valley floors; thick broadleaved woodland (often ancient in origin) on the steep valley bluffs; and small enclosed pastures enclosed by gritstone walls on the flatter land above. This diverse landcover pattern is very sensitive to physical disturbance.	
Built environment		H
	The main built environment features of this LCT are remnant industrial features such as derelict water mills, ponds and races along the valley floor, reflecting the emergence of early industrialisation, and settlements often have a strong vernacular character. Although modern built development occurs nearby, it tends to have a limited influence on these wooded, enclosed landscapes, so sensitivity is often high.	
Skylines and settings	M	
	Locally the wooded rural valleys may provide a key part of the landscape settings of towns such as Hebden Bridge, Halifax, Huddersfield and Penistone, their woodlands contributing a distinctive landscape framework and skyline.	
Visibility and views	M	
	These landscapes tend to be visually contained by woodland and topography and hence not widely visible, although they can be seen from facing valley slopes. There are also relatively few outward views due to the steep enclosing topography and dense woodlands.	
Landscape quality (condition)	M	
	The landscape quality of this LCT is relatively good, although there are issues relating to woodland management and regeneration, conservation of historic built features and urban fringe pressures such as flytipping in some areas.	
Scenic quality	M	
	Scenic quality is relatively high, much of the area being included in the non-statutory South Pennines Heritage Area. All of the LCT in Calderdale also falls within the Calderdale Special Landscape Area (defined under Policy NE12 of the Replacement Calderdale UDP (2006)), which is valued for its very high visual quality and impressive landscape. Elsewhere the LCT typically provides pockets of unspoilt, dramatic, riverside landscape, with a woodland structure and historical continuity that are highly valued locally.	
Wildness and tranquillity	M	
	This landscape is not wild but is often relatively tranquil due to its rural character, strong woodland cover, and that fact that many parts of the valleys are largely hidden and accessible only on foot.	
Natural and cultural heritage features		H
	Most of the woodlands within this LCT are ancient in origin and on the valley floors there is a valuable mosaic of wetland habitats including freshwater streams and springs, damp pasture, meadows and marsh. Archaeological features related to woodland management, such as charcoal hearths, are common and the many water mill sites are of historic interest. Shibden Dale includes the Grade II parkland of Shibden Hall. There are two Scheduled forges within the Don Valley, and the Holme valley includes nationally important cairnfields sited within ancient woodland. In the more settled valleys (mainly in Kirklees and Barnsley) there are many listed buildings and Conservation Areas.	

Cultural associations	**M**	
	This area has a particular association with early industrial activity, as evidenced by remnants of charcoal burning, forges and water mills, the swift streams having provided a source of water power.	
Amenity and recreation	**M**	
	The valleys are important local landscapes and are well used for recreation, providing attractive footpath routes linking the valley settlements to the upland pastures and high moorland, particularly in the Calder valley. Some of the woodlands are also Country Parks, such as Oakwell Hall in Kirklees.	
Discussion on landscape sensitivity[42]	In practice wind energy development would be very difficult to accommodate in this LCT due to the landscape's enclosure by topography and woodland (and its limited wind resource). The landscape's considerable scenic quality, natural and cultural heritage interest and amenity and recreation value also heighten sensitivity to wind turbines. Almost all of the landscape is of relatively high sensitivity, although there may be very small pockets of lower sensitivity associated with existing development or infrastructure.	
Sensitivity to different turbine heights	**Very Small (18-24m)**	**M-H**
	Small (25-59m)	**H**
	Medium (60-89m)	**H**
	Large (90-129m)	**H**
	Very large (>130m)	**H**
	The often secluded nature of the steep valley landforms, areas of sensitive landcover (including ancient woodlands) and heritage features, small-scale and diverse landscape patterns and frequent human-scale features mean that this LCT would be highly sensitive to any turbines larger than 'very small' in height.	
Commentary on turbine group size • Single turbine • Small cluster (2-3 turbines) • Small wind farm (4-5 turbines) • Medium wind farm (6-10 turbines) • Large wind farm (11-20 turbines) • Very large wind farm (≥21 turbines)	The small-scale nature of the wooded rural valleys means that they are highly sensitive to any turbine group size other than 'single turbine'.	

[42] Note that this refers to inherent landscape sensitivity i.e. the assessment has not been affected by any existing development.

LCT G: Guidance for Wind Energy Development

Guidance for future development

Due to space constraints and the presence of many sensitive landscape character, natural and cultural heritage features, the landscape of this LCT is unlikely to be able to accommodate any wind energy development other than very occasional 'very small' single turbines.

Constraints

- These deeply incised, narrow, wooded valleys are highly distinctive in character and form a key part of the landscape settings of towns such as Halifax, Hebden Bridge, Huddersfield and Penistone.
- Their dramatic, wooded slopes are important contributors to scenic quality, especially in Calderdale and Kirklees; they are also highly valued for their secluded and tranquil character.
- The physical fabric of the steep enclosing hillsides, with their woodland and wetlands, designed parklands and many historic features, is vulnerable to disturbance.

Opportunities

- Opportunities are likely to be very limited, but a single turbine that shows clear visual and functional relationships with the building, business or farm that it serves may fit best within the settled rural valleys.
- Locally existing woodland may screen and help to accommodate turbines in the landscape.

Key considerations

When siting and designing wind energy developments in this LCT, the generic guidance in **Appendix 3** and in the small turbine guidance[43] (where relevant) should be taken into account. In addition, specific landscape considerations within this LCT are as follows:

- Site and design turbines very carefully relative to existing (especially historic) buildings and structures, paying particular attention to relative heights and proportions.
- Respect the scale of existing landscape features, including buildings, trees and stone walls – this may necessitate the use of micro-turbines in some locations.
- Give special consideration to the effects of turbines on the approaches to and settings of settlements.
- Choose sites that are backclothed by higher ground and minimise effects on skylines; consider the use of darker turbine colours in such situations.
- Where possible, take advantage of any existing woodland screening and/or site turbines in dips and hollows in the landform.
- Avoid new access tracks on steep slopes where they may scar the hillside and be visible from facing valley sides; minimise any damage to existing hedges and walls.

Current patterns of permitted wind energy development

As at June 2014 there were 5 operational and consented wind energy sites with a total of 6 turbines in this LCT, as well as others in surrounding areas. The patterns were as follows:

- **Burnley G3** – None within the LCT but the landscape is increasingly influenced by wind energy development to north and south in LCT A High Moorland Plateaux (A1) as well as in LCT D Moorland Fringes/ Upland Pastures (D1) to north, giving rise to cumulative effects on the setting of the Cliviger Gorge.
- **Calderdale G1, G2, G3, G4, G12, G13** – A few very small turbines mainly on the upper edges of these landscapes, affecting G2 and G4 so far. Scattered similar development on land in other LCTs directly above – G4 affected by development in LCT D Moorland Fringes/Upland Pastures (D2); and G13 by development in LCT K Coalfield Edge Urban Fringe Farmland (K1).
- **Kirklees G8, G9, G10, G11** – A few very small turbines mainly on the upper edges of these landscapes, affecting G8 and G11 so far. Scattered similar development on land in other LCTs directly above – G10 affected by development in LCT N Rolling Wooded Farmland (N2) and G11 by

[43] Julie Martin Associates (2013) *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*, report to Blackburn with Darwen, Burnley, Calderdale, Hyndburn, Kirklees, Pendle, Rochdale and Rossendale Councils.

development in LCTE Rural Fringes (E8).

- **Barnsley G5 –** One small turbine near Penistone. Several sites on slopes above in LCT D Moorland Fringes/ Upland Pastures (D10) and LCT N Rolling Wooded Farmland (N2) contribute to cumulative impacts in this area.

Follow web link to database and web map to see the latest position.

Cumulative landscape and visual issues arising

Key cumulative issues arising in this LCT are:

- The growing cumulative effects of existing turbines within and around the LCT on these sensitive, scenic and highly valued landscapes – especially those of Cliviger Gorge (G3), Cragg Vale (G4) and the Holme (G8) and Don (G5) valleys.

In the locations indicated, these existing cumulative landscape and visual issues may be a constraint on further wind energy development in the surrounding area.

Guidance for siting multiple developments within this LCT

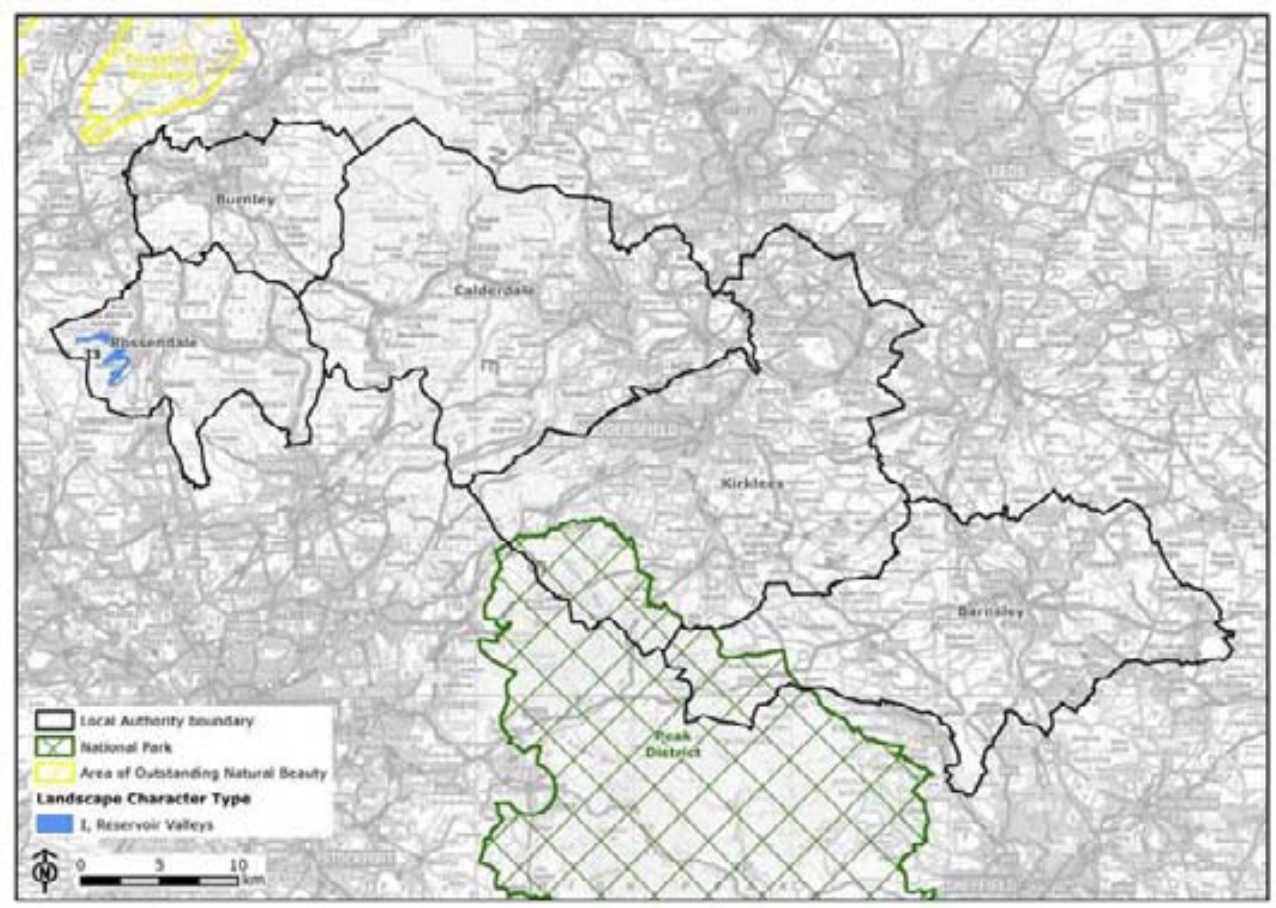
Multiple wind energy developments in this LCT should:

- Be similar in terms of siting, layout, form and relationship to key landscape characteristics, so as to present a simple image that relates clearly to landscape character[44] – for example through siting close to woodland in this LCT.
- When locating 'very small' turbines, choose sites that are well away from larger turbines in adjacent LCTs, so that different size classes are not seen together; and avoid strong concentrations of turbines in a given area.
- Avoid close juxtaposition of different turbine heights and designs, aiming instead for a consistent height and design in a given area.

[44] See Scottish Natural Heritage (2014) *Siting and Designing Wind Farms in the Landscape*.

LCT I: Reservoir Valleys

LCT Location Map



Component Landscape Character Areas

I3: Haslingden Grane

Local authorities where LCT is present

Rossendale

Landscape character summary

Please note that this LCT only covers one reservoir valley in Kirklees – containing the Ogden, Holden Wood and Calf Hey reservoirs.

The valley reservoirs, constructed in the mid-late nineteenth century to supply water for Lancashire's growing urban population, create a distinctive landscape type. The valleys are dominated by a series of large level expanses of water and associated engineered landforms of bunds and embankments. The Victorian landscape is evident in the form of the coniferous plantations, gothic detailing and ornamentation, and sturdy dressed stone walls. Today, the valleys are predominantly rural in character with attractive areas of pasture and broadleaved woodland surrounding and linking the waterbodies. The valleys with their extensive woodlands and plantations have the capacity to absorb relatively high numbers of people (for recreation) from the surrounding urban areas, without becoming overcrowded and recreational use is now an important influence on landscape character.

Key environmental features

- Open valley profile with gently sloping sides, influenced by glacial activity.
- Dominated by numerous large reservoirs with characteristic ornate Victorian detailing. The reservoirs provide water resources, support important populations of wintering wildfowl and waders, and are a focus for recreation.
- Broadleaved and coniferous plantations bordering and linking reservoirs, giving the area a high capacity for visitors.
- A sparsely settled, strongly rural landscape.
- Evidence of historic industry at Higher Mill, located in the valley floor at Helmshore.

LCT I: Landscape Sensitivity to Wind Energy Development

Criteria	Lower sensitivity ▪▪▪▪▪▪▪▶		Higher sensitivity
Scale		**M**	
	This valley landscape has an open profile and large expanses of open water. The valley bottom lies at around 200m AOD while the surrounding hills rise to around 350m AOD. Areas of woodland, stone walls, occasional farmsteads and the reservoirs themselves bring a human scale to the landscape.		
Landform		**M**	
	The reservoir valleys have a more open topography than the deeply incised valleys of the central part of the Pennines. The glaciated valley form is relatively smooth and flowing. The engineered dams and embankments are distinctive features.		
Landcover		**M**	
	Large water bodies dominate the valley floor of Haslingden Grane, surrounded by substantial areas of coniferous and mixed plantation. Elsewhere the land use is pastoral, in small, strongly patterned, walled enclosures.		
Built environment		**M**	
	There is generally little settlement today, and few contemporary built structures. The reservoirs themselves represent an important historic landscape element and engineering feat, with features such as gothic towers and crenellations, bridges, spillways, embankments and tunnels that are of historic interest.		
Skylines and settings		**M**	
	The LCT is generally contained within the valley, so there are few important skylines. The eastern end of the valley forms part of the landscape setting of Haslingden, which lies immediately to the east.		
Visibility and views			**H**
	The valley is the focal point of views from the surrounding moors and from the Rossendale Way and is highly sensitive in this respect. Clough Head visitor centre is an important viewing point within the valley, and the Grane as a whole is a popular walking destination.		
Landscape quality (condition)		**M**	
	Landscape condition is relatively good although locally there are issues associated with the repair of stone walls, felling and replanting of plantations, and restoration of former quarrying sites.		
Scenic quality			**H**
	The area around Haslingden Grane, including Fairy Glen, is a local beauty spot, sometimes referred to as 'Little Scotland'. The area is part of the West Pennine Moors, which are recognised for their scenic quality. The West Pennine Moors Partnership works to conserve and enhance the area's landscape character and natural and historic assets, sustain rural communities, and contribute to the well-being of adjoining urban communities.		
Wildness and tranquillity		**M**	
	The entire valley was depopulated when the reservoirs were constructed. Today it has a sense of desolation, due to the presence of abandoned farmsteads and ruined cottages. The valley's relative remoteness and absence of settlement and the presence of woodlands and bird life associated with the reservoirs lend some sense of wildness and tranquillity.		
Natural and cultural heritage features		**M**	
	The reservoirs support important populations of wintering wildfowl and waders. There are a number of historic features of interest, associated with the area's history of farming, quarrying and milling.		
Cultural associations	**L**		
	The principal cultural association is with the building of the reservoirs, which involved flooding of settlements within the valley.		

Amenity and recreation			**H**
	This LCT includes Clough Head Visitor Centre and the Helmshore Mill Textile Museum lies on its eastern edge. The Grane is gradually being discovered by visitors and is increasingly used for recreation with car parks and footpath links being established (including the Rossendale Way), especially around Calf Hey Reservoir.		
Discussion on landscape sensitivity[45]	In practice significant wind energy development is likely to be difficult to accommodate due to the landscape's limited extent and valley character. Other key sensitivities are the landscape's small-scale field patterns, locally high visibility, scenic quality and strongly rural character, as well as the locality's popularity as a recreational resource. There may be small pockets of lower sensitivity to wind energy development associated with existing development or infrastructure, including around the reservoirs and the fringes of Haslingden.		
Sensitivity to different turbine heights	**Very Small (≤24m)**		**M**
	Small (25-59m)		**M-H**
	Medium (60-89m)		**H**
	Large (90-129m)		**H**
	Very large (≥130m)		**H**
	The landscape's small-scale field patterns, presence of human-scale features including woodland and historic farmsteads, complex valley landform and role as a rural backdrop to the urban area of Haslingden mean that it would be highly sensitive to 'medium', 'large' and 'very large' turbines.		
Commentary on turbine group size • Single turbine • Small cluster (2-3 turbines) • Small wind farm (4-5 turbines) • Medium wind farm (6-10 turbines) • Large wind farm (11-20 turbines) • Very large wind farm (≥21 turbines)	The constrained nature of the valley landform means that this LCT is highly sensitive to all turbine group sizes other than 'single turbine'.		

[45] Note that this refers to inherent landscape sensitivity i.e. the assessment has not been affected by any existing development.

LCT I: Guidance for Wind Energy Development

Guidance for future development

Due to space constraints and the presence of many sensitive landscape character, natural and cultural heritage features, the landscape of this LCT is unlikely to be able to accommodate any wind energy development other than very occasional 'very small' single turbines.

Constraints

- The historic engineered reservoir structures are very distinctive and their settings are vulnerable to change; as is the setting of Helmshore Mill on the eastern edge of the area.
- The LCT forms the foreground to LCT B Moorland Hills beyond. Its slopes are visually very exposed to view, especially above Helmshore.
- The valleys and reservoirs are the focus of views from the surrounding moors and especially from Rossendale Way; there are also open views across the LCT from the adjoining uplands to the east at Scout Moor and Cribden Hill.
- The area is recognised as being of high scenic quality and some tranquillity, especially around Haslingden Grane and Fairy Glen, and forms a key access point to the West Pennine Moors.

Opportunities

- Opportunities are likely to be very limited, but a single turbine that shows clear visual and functional relationships with the building or farm that it serves may fit best within the reservoir valleys.
- Locally existing woodland may screen and help to accommodate turbines in the landscape.

Key considerations

When siting and designing wind energy developments in this LCT, the generic guidance in **Appendix 3** and in the small turbine guidance[46] (where relevant) should be taken into account. In addition, specific landscape considerations within this LCT are as follows:

- Site and design turbines very carefully relative to existing (especially historic) buildings and structures, paying particular attention to relative heights and proportions.
- Respect the scale of existing landscape features, including buildings, trees and stone walls – this may necessitate the use of micro-turbines in some locations.
- Give special consideration to the effects of turbines on the approaches to and settings of Haslingden and Helmshore.
- Choose sites that are backclothed by higher ground and consider the use of a darker turbine colour.
- Where possible, take advantage of any existing woodland screening and/or site turbines in dips and hollows in the landform.
- Avoid new access tracks on steep slopes where they may scar the hillside and be visible from facing valley sides; minimise any damage to existing hedges and walls.

Current patterns of permitted wind energy development

As at June 2014 there were no operational or consented wind energy sites in this LCT but some in surrounding areas. The patterns were as follows:

- **Rossendale I3** – None within the LCT. However one large wind farm of 12 large turbines just over 1km to the north (Hyndburn, in Hyndburn council area). In the wider surrounding area to the east the landscape is also influenced by a few very small or small turbines in other LCTs within 1-3km, and by the very large Scout Moor wind farm, with 26 large turbines, in LCT A High Moorland Plateaux (A1), around 4km away.

Follow web link to database and web map to see the latest position.

[46] Julie Martin Associates (2013) *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*, report to Blackburn with Darwen, Burnley, Calderdale, Hyndburn, Kirklees, Pendle, Rochdale and Rossendale Councils.

Cumulative landscape and visual issues arising

Key cumulative issues arising in this LCT are:

- The growing cumulative effects of existing turbines within and around the LCT on the landscape setting of the reservoir valleys and recreational enjoyment of Haslingden Grane.

These existing cumulative landscape and visual issues may limit wind energy development in the LCT.

Guidance for siting multiple developments within this LCT

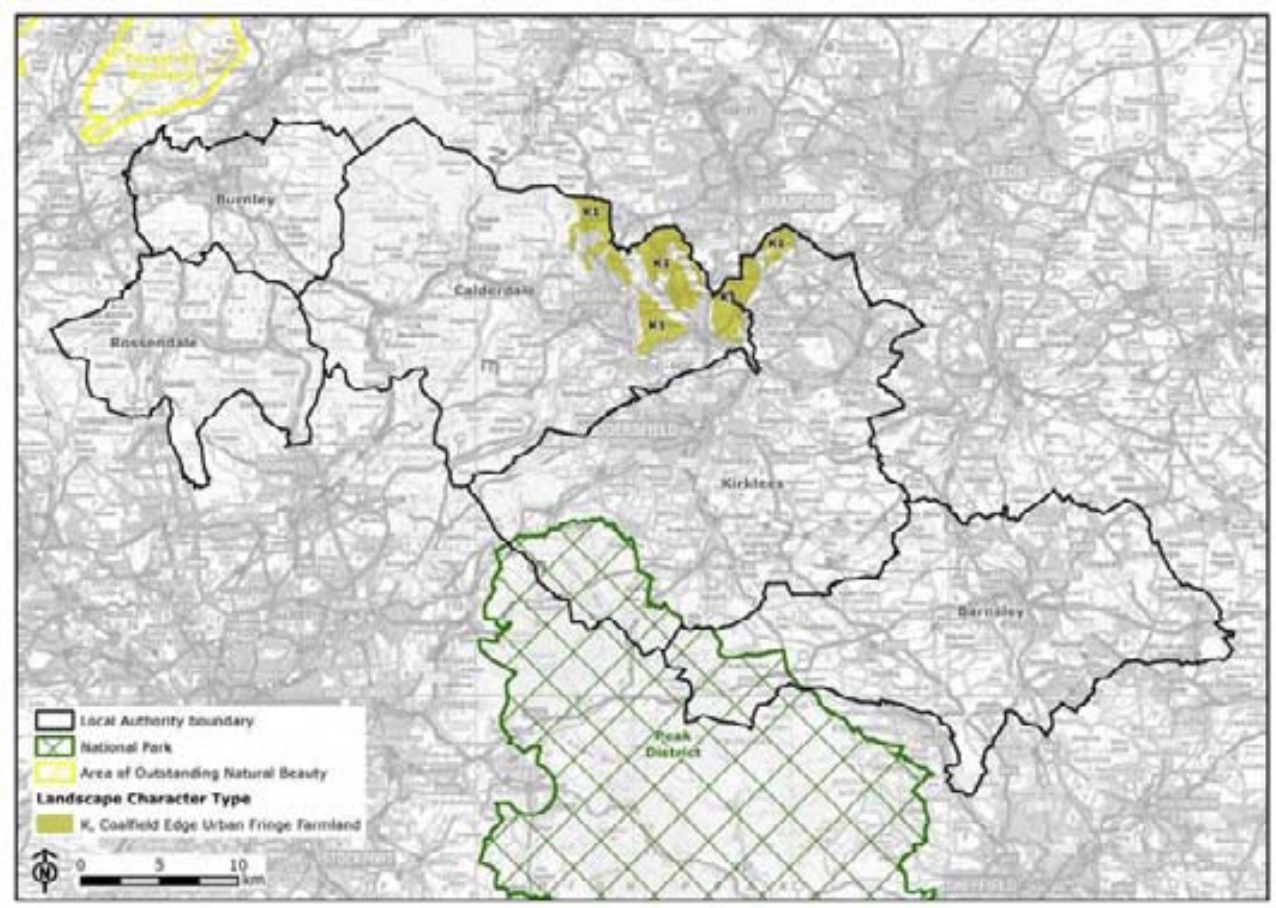
If there are multiple wind energy developments in this LCT in future, these should:

- Be consistent in their relationship to key landscape characteristics[47] – for example through clear association with farm buildings in this landscape.
- When locating 'very small' turbines, choose sites away from views to existing larger turbines in adjacent LCTs, so that the different turbine size classes are not seen together.
- Avoid close juxtaposition of different turbine heights and designs, aiming instead for a consistent height and design in a given area.

[47] See Scottish Natural Heritage (2014) *Siting and Designing Wind Farms in the Landscape*.

LCT K: Coalfield Edge Urban Fringe Farmland

LCT Location Map



Component Landscape Character Areas

K1: Thornton - Queensbury

Local authorities where LCT is present

Calderdale, Kirklees

Landscape character summary

The farmland of the coalfield edge forms part of the long eastern dip slope of the Pennines, which slopes gently from the high moorland towards the extensive urban conurbations of West Yorkshire. The slope is divided into a series of undulating ridges by small streams. The ridge top summits provide the location for a number of settlements including Northowram, Southowram and Shelf. Outward expansion of these settlements, which are not constrained by topography, has imposed a more suburban landscape. This 'urban fringe character' is reinforced by the dense network of roads that connect areas of development, as well as the long views to the industrial areas of Leeds and Bradford. The gritstone walls that subdivide the intervening farmland into medium/large pasture fields provide one of the few unifying characteristics with the wider South Pennines area. Elsewhere the countryside character of this eastern edge is being eroded by a combination of modern housing, pylons, communications infrastructure, mineral extraction, landfill sites and other non-agricultural and urban fringe land uses.

Key environmental features

- Long gentle eastern dip slope divided into a series of ridges.
- Streams and reservoirs provide important freshwater habitats.
- Fragments of species-rich grassland remain within the improved agricultural land.
- The pattern of fields enclosed by gritstone walls provides a unifying feature with the rural fringes of the South Pennines.
- Scattered remnants of ancient woodland in combination with newer areas of woodland planting plus coniferous plantations.
- Distinctive settlement pattern with the small towns and villages of Northowram, Southowram and Shelf situated in hilltop locations. Some retain their historic village cores and vernacular architecture relating to the textile industry.
- Long views out from the South Pennines and across the urban areas of Bradford and beyond are a characteristic feature and strengthen the connections with the city.

LCT K: Landscape Sensitivity to Wind Energy Development

Criteria	Lower sensitivity ▪▪▪▪▪▪▪▶ Higher sensitivity
Scale	**M** This is a series of fairly broad intermediate ridges, descending from around 400m AOD in the north-west to around 100m AOD near the Calder valley in the south-east. The landscape is expansive in scale and gently domed on the higher ground. On lower ground the landscape becomes smaller in scale and extent, as it is subdivided by river valleys. Built development throughout provides a human scale to the landscape.
Landform	**M** The long eastern dip slope of the South Pennines descends from the high moorland of Ovenden Moor, situated to the north west of this LCT. The geology is dominated by Coal Measures rather than Millstone Grit, creating a lower, more undulating landform than areas to the west, dissected by relatively shallow valleys. Otherwise there are few notable landform features. Sensitivity is medium.
Landcover	**M** Fields of pasture, often larger and more regular than is typical elsewhere in the South Pennines, are enclosed by stone walls and represent relatively recent parliamentary enclosures. However, as these walls are one of the few unifying characteristics with the wider South Pennines landscape, sensitivity is medium.
Built environment	**L** Human influence is considerable and includes a high density and visibility of pylons, roads and scattered piecemeal development along the ridgelines. Landfill and other urban fringe land uses such as horse paddocks, plant hire, salvage and storage, are often evident. In contrast with other parts of the South Pennines, settlement occurs in hilltop locations and may include extensive, relatively recent suburban development around more historic cores.
Skylines and settings	**M** The landscape forms part of the northern and eastern skyline of Halifax and the southern and western skyline of Bradford, but is of only moderate sensitivity, given its relatively developed character.
Visibility and views	**M** This landscape is widely visible from settlements within the area and from surrounding countryside and towns, particularly to the north, east and south. There are long views across the wooded rural valleys, but also longer views across the urban and industrial areas of Bradford, Halifax, Brighouse and the M62. This tends to strengthen the urban and industrial influence on this landscape and reduce visual sensitivity, which might otherwise be high.
Landscape quality (condition)	**M** In many areas the walls are in a poor state of repair and in places they have been replaced by post and wire fencing. This sense of decline is compounded by the presence of urban fringe influences as described above. However there are also intact pockets of higher quality rural parkland landscape, for example around East Bierley. These are locally valued due to the close proximity of urban development.
Scenic quality	**L** Scenic quality is not exceptional, any local scenic interest being focused in the adjoining wooded rural valleys. Most of the area lies outside the South Pennines Heritage Area.
Wildness and tranquillity	**L** There is relatively little sense of either wildness or tranquillity, except perhaps on the highest ground to the north, which has an expansive character and may offer long, windswept views.
Natural and cultural heritage features	**M** Some of the higher ground in the north-west is underlain by deep peat; fragments of species-rich grassland remain within the mainly improved agricultural land; and there are scattered remnants of ancient woodland. The intensive use and management of this area, through both farming and development, has largely obliterated early archaeological and

	historical evidence. Nonetheless, the area retains some vernacular buildings of interest, a significant number of which are listed, and the historic cores of some villages are Conservation Areas. In addition, part of the Shibden Hall Grade II parkland estate lies within this LCT, together with a number of other historic parks and gardens of local importance on the outskirts of Halifax and Brighouse.		
Cultural associations	**L**		
	There are no known cultural associations of note.		
Amenity and recreation			**H**
	A number of long distance recreational routes including the Calderdale Way, Brontë Way and Kirklees Way take advantage of the high level views that this area affords; and there is a relatively dense network of public rights of way providing countryside access for nearby urban populations. Recreational sensitivity is therefore fairly high.		
Discussion on landscape sensitivity[48]	Aspects that reduce the landscape's sensitivity to wind energy development include its relatively large scale landform and the presence of existing intrusive influences that have eroded countryside character and quality. Locally there are areas of higher sensitivity, particularly where there are intact enclosure patterns or parkland; where the landscape is viewed at close range from settlements; and where there are high levels of recreational use of public rights of way. Land of lower sensitivity is most likely to occur in the more sparsely settled parts of the area.		
Sensitivity to different turbine heights	**Very Small (≤24m)**		**L**
	Small (25-59m)		**M**
	Medium (60-89m)		**M-H**
	Large (90-129m)		**H**
	Very large (≥130m)		**H**
	The immediate proximity of urban development to much of this landscape (which provides a human scale), the presence of significant settlement within it, and its elevated ridgelines which form a backdrop to views mean that the LCT is highly sensitivity to 'large and 'very large' turbines. Much of the landscape is also highly sensitive to 'medium' turbines.		
Commentary on turbine group size • Single turbine • Small cluster (2-3 turbines) • Small wind farm (4-5 turbines) • Medium wind farm (6-10 turbines) • Large wind farm (11-20 turbines) • Very large wind farm (≥21 turbines)	This LCT is highly sensitive to the development of 'medium wind farm', 'large wind farm' and 'very large wind farm' group sizes. It may be less sensitive to smaller turbine group sizes such as 'small wind farm' and 'small cluster'.		

[48] Note that this refers to inherent landscape sensitivity i.e. the assessment has not been affected by any existing development.

LCT K: Guidance for Wind Energy Development

Guidance for future development

This LCT is sensitive to larger scales of wind energy development. Its enclosed and settled landscapes are inherently more suited to scattered 'very small' (or occasionally 'small') single turbines or small clusters, reflecting the relatively small scale landscape patterns and proximity of residential areas.

Constraints

- A key constraint is the lack of space for any significant wind energy development, given the densely settled urban and suburban character of most of the area.
- The relatively few pockets of undeveloped land often represent areas of higher quality, intact landscape that are highly valued as a recreational resource by nearby urban populations and accessed via a dense network of public rights of way.
- Sites on the crest of narrow ridges that directly overlook settled or wooded rural valleys (LCTs F and G), for example on the eastern outskirts of Halifax, are unsuited to development due to their extreme visual prominence.

Opportunities

- Small scale wind energy development that shows clear visual and functional relationships with the building, business or farm that it serves may fit best in the landscape.
- Locally, where the landscape is somewhat larger in scale (more expansive, with larger enclosures and sparser settlement) there may very occasionally be scope for small turbine groups or single larger turbines, subject to consideration of cumulative impacts.
- Locations close to industry, business parks, major transport corridors such as the M62 and quarried or other brownfield sites may be less sensitive.

Key considerations

When siting and designing wind energy developments in this LCT, the generic guidance in **Appendix 3** and in the small turbine guidance[49] (where relevant) should be taken into account. In addition, specific landscape considerations within this LCT are as follows:

- Give special consideration to the effects of turbines on the approaches to and settings of historic buildings, villages and settlements.
- Look to retain the localised pockets of intact, higher quality rural parkland landscape, such as that around East Bierley.
- Avoid locations on the crests of narrow ridges because such locations are likely to be very prominent from the settled or wooded rural valleys (LCTs F and G) below and conflict with the strong horizontal form of the terrace edge.
- Avoid exacerbating skyline clutter in areas where existing telecommunications masts, pylons and other all structures are already present.
- Where larger turbines are proposed, ensure that they do not overwhelm the human scale of the landscape features, including farmsteads, trees and stone walls.

Current patterns of permitted wind energy development

As at June 2014 there were 12 operational and consented wind energy sites with a total of 13 turbines in this LCT, as well as others in surrounding areas. The patterns were as follows:

- **Calderdale K1** – Around ten very small or small turbines, many on the northern fringes of the LCT, adjacent to the Bradford council area (which also has numerous very small turbines) but also others further south near Southowram, close to built-up and industrial areas. Just to the west lies Ovenden Moor wind farm (in LCT A High Moorland Plateaux), which when repowered will have 9 large turbines.
- **Kirklees K1** – Two small turbines, again close to the northern edge of the LCT and next to the Bradford council area.

[49] Julie Martin Associates (2013) *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*, report to Blackburn with Darwen, Burnley, Calderdale, Hyndburn, Kirklees, Pendle, Rochdale and Rossendale Councils.

Follow web link to database and web map to see the latest position.

Cumulative landscape and visual issues arising

Key cumulative issues arising in this LCT are:

- The concentration of small turbines just west of Queensbury, where there is a growing cluster of sites. Here a range of different turbines heights and designs is beginning to have a significant cumulative impact over a wider cross-boundary area that is shared with Bradford.
- The combined impact of the numerous smaller turbines near Queensbury together with the Ovenden Moor wind farm (in LCT A High Moorland Plateaux to the west) which is shortly to be repowered with much taller turbines.

These existing cumulative landscape and visual issues may limit wind energy development in the LCT.

Guidance for siting multiple developments within this LCT

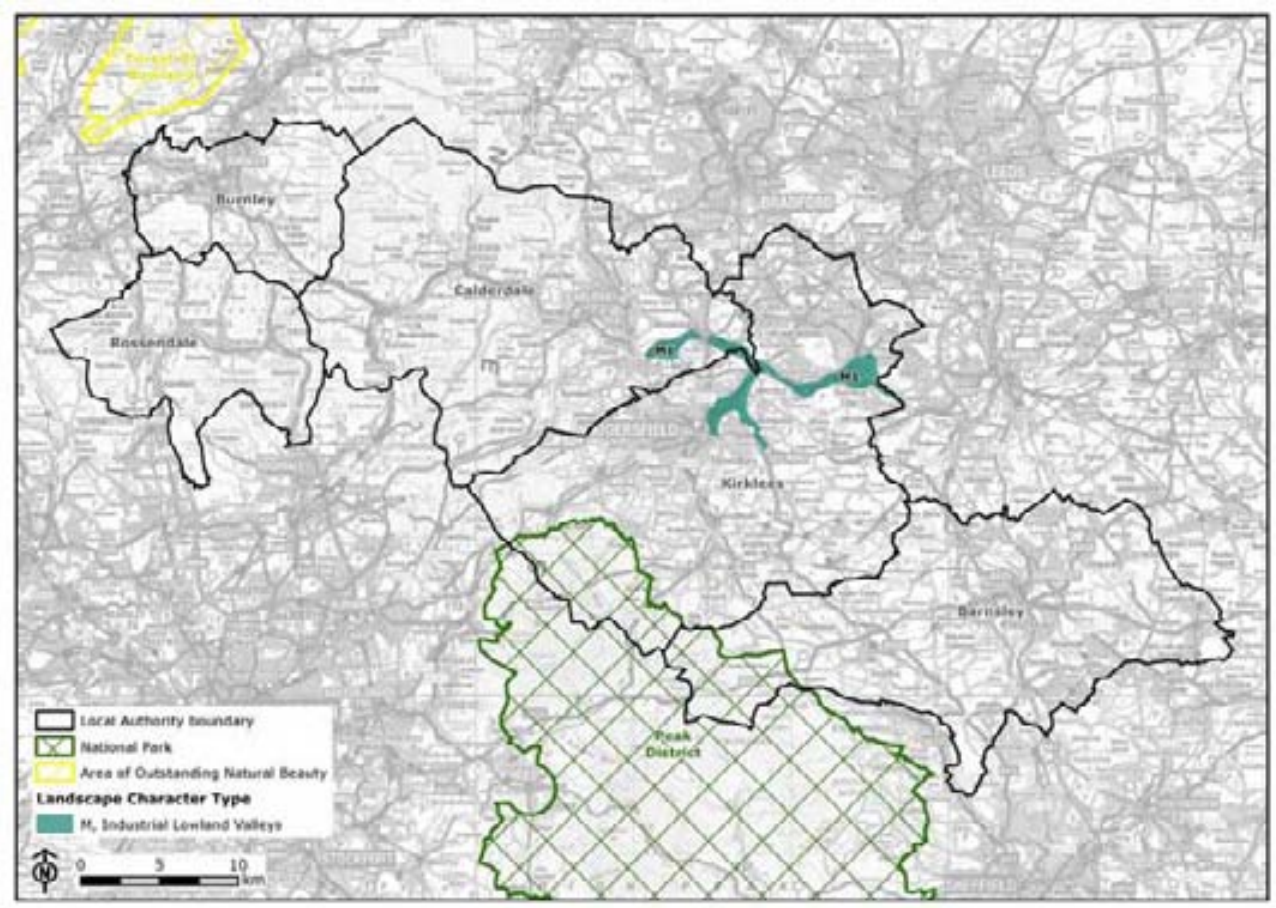
Multiple wind energy developments in this LCT should:

- Be similar in terms of siting, layout, form and relationship to key landscape characteristics, so as to present a simple image that relates clearly to landscape character[50] – for example through a clear association with scattered farm buildings and/or brownfield land.
- When locating 'very small ' and 'small' turbines, avoid strong concentrations of turbines in a given area, and choose sites away from views to existing larger turbines, so that the different turbine size classes are not seen together.
- Avoid close juxtaposition of different turbine heights and designs, aiming instead for a consistent height and design in a given area.
- Identify and take account of possible cross-boundary cumulative impacts associated with small turbines in adjoining local authorities inside and outside the study area.

[50] See Scottish Natural Heritage (2014) *Siting and Designing Wind Farms in the Landscape*.

LCT M: Industrial Lowland Valleys

LCT Location Map



Component Landscape Character Areas

M1: Calder Valley Floor

Local authorities where LCT is present

Calderdale, Kirklees

Landscape character summary

These valley landscapes are located on the outer fringes of the South Pennines where the river valleys broaden, a distinctive floodplain emerges and the surrounding land is lower lying. The edges of the floodplains may be defined by low but steep bluffs which are often cloaked in woodland. Within the valley floor the course of the river may meander or become braided and the river may be paralleled by other transport infrastructure such as roads, railways and canals. In many areas the valley floor has been developed, frequently by industrial units which are often large in scale and may obscure the valley floor and course of the river. Elsewhere there may be remnant patches of open space, agriculture, woodland, scrub, or more extensive areas of active or disused quarrying or landfill. Overall this landscape has an urban industrial lowland character.

Key environmental features

- Pronounced flat valley floor with meandering/braided river channel.
- Low valleys sides with steep wooded bluffs in places.
- Broadleaved woodland and scrub areas of some value for nature conservation.
- Distinctive vernacular in the form of old mill buildings, canals and bridges – industrial heritage.
- Green corridor created by river and woodland penetrating built up areas.

LCT M: Landscape Sensitivity to Wind Energy Development

Criteria	Lower sensitivity ▪▪▪▪▪▪▪▶		Higher sensitivity
Scale		**M**	
	This is a relatively small scale landscape in terms of extent. It is generally contained within the river corridor and frequently enclosed by wooded bluffs or built development, which may heighten sensitivity to wind energy development. However where existing industry is large scale, sensitivity may be reduced.		
Landform		**M**	
	These landscapes are located beyond the upland edge, where the river valleys broaden, a distinct floodplain emerges, and the surrounding land is lower-lying. The edges of the floodplain may be defined by distinctive, low, steep bluffs. In some areas landform has been extensively modified.		
Landcover	**L**		
	In many areas the valley floor has been developed, frequently by industry which may obscure the valley floor and the course of the river. Elsewhere there may be remnants patches of open space, agriculture, woodland, scrub, or more extensive areas of active or disused quarrying or landfill. In general landcover is not sensitive to change.		
Built environment	**L**		
	Large industrial units, quarrying and landfill and major transport infrastructure including roads, railways and canals, have extensively modified this landscape, so sensitivity to this criterion is assessed as low.		
Skylines and settings		**M**	
	This landscape is seldom seen as a skyline feature. However some of the built structures within it, including mills, industrial plant and large warehouses, as well as surrounding urban development, may form distinctive skyline features. Skyline sensitivity is rarely high (except where buildings are of historic importance), but the 'fit' of turbines with existing structures may be a key issue.		
Visibility and views	**L**		
	These river valley landscapes are generally highly visible from surrounding areas, particularly from higher ground. Views are seldom sensitive given their existing developed character, the exception being in some localised areas (notably at Dewsbury), where the LCT includes some residential land.		
Landscape quality (condition)	**L**		
	Landscape quality within these areas has improved immensely in recent years as a result of urban and industrial regeneration and environmental improvement. However there are relatively few original landscape patterns or features that are sensitive to disturbance or require conservation.		
Scenic quality	**L**		
	This landscape is seldom of any special scenic quality although locally the river corridor may have some scenic interest, for example where there are wooded bluffs or water features with visual appeal.		
Wildness and tranquillity	**L**		
	This landscape generally has little or no wildness or tranquillity, retaining few natural features and being located within busy industrial and urban areas.		
Natural and cultural heritage features		**M**	
	Locally broadleaved woodland and scrub are of nature conservation interest; with some valley-side woodlands in the Calder valley near Brighouse are ancient in origin. Parts of this landscape also have a distinctive vernacular in the form of old mill buildings, canals and bridges, and other industrial heritage – with a significant number of listed buildings. Part of the Grade II registered Kirklees Park falls within the LCT and includes a Scheduled Monument overlooking the valley below.		

Cultural associations		**M**	
	Like the settled valleys, this LCT has strong associations with industrialisation, but early industrial influences have frequently been overlain here by more recent large scale heavy industry and major infrastructure, reducing sensitivity.		
Amenity and recreation	**L**		
	This LCT tends to have limited recreational interest or appeal although it includes part of the Calder and Hebble Navigation and there are watersports facilities within the Calder valley at Brighouse. Riverside access is generally limited apart from some sections of the Calderdale Way, Kirklees Way and Brighouse Boundary Walk.		
Discussion on landscape sensitivity[51]	Aspects that reduce the LCT's sensitivity to wind energy development include its heavy modification by human influence (including the presence of large industrial and transport structures), its general absence of original landscape patterns or features, its low levels of tranquillity, and its limited amenity and recreation interests. The areas of lowest sensitivity are those that have been most heavily modified or influenced by contemporary development. Locally there are areas of higher sensitivity associated with industrial and civic buildings of historic importance; the Kirklees Park estate, natural heritage features such as ancient woodlands; and specific recreational interests. For example, the Calder river corridor west of Brighouse is more sensitive for these reasons.		
Sensitivity to different turbine heights	**Very Small (≤24m)**	**L**	
	Small (25-59m)	**L-M**	
	Medium (60-89m)	**M-H**	
	Large (90-129m)	**H**	
	Very large (≥130m)	**H**	
	The frequent presence of major industrial and infrastructure features means that this LCT may be less sensitive to suitably-located 'very small', 'small' and 'medium' turbines. However it remains highly sensitive to ''large' and 'very large' wind turbines, which would be out of scale with other landscape features.		
Commentary on turbine group size • Single turbine • Small cluster (2-3 turbines) • Small wind farm (4-5 turbines) • Medium wind farm (6-10 turbines) • Large wind farm (11-20 turbines) • Very large wind farm (≥21 turbines)	The constrained nature of the valleys, both in terms of landform and presence of existing development (restricting available space), means that this LCT is likely to be sensitive to any turbine group size larger than 'small cluster'.		

[51] Note that this refers to inherent landscape sensitivity i.e. the assessment has not been affected by any existing development.

LCT M: Guidance for Wind Energy Development

Guidance for future development

The presence of existing major industry and infrastructure and the relatively low landscape sensitivities of this LCT mean that it is potentially suited to scattered or more frequent single 'small' or 'medium' turbines, or occasionally small clusters in the right location.

Constraints

- Existing buildings and wooded bluffs often enclose the river corridor and may provide scale comparators.
- Existing built structures, including mill buildings, canals and bridges some of which are of historic interest, may form distinctive features whose settings are vulnerable to change.
- Locally parkland and monuments may overlook the valleys at close range; and the presence of residential areas or recreational routes (as described above) may heighten visual sensitivity.

Opportunities

- Areas that are heavily influenced by transport corridors, industry or quarrying activity may have lower sensitivity to wind energy development.
- Turbines that show a clear visual and/or functional relationship with such uses may be more easily accommodated in the landscape.

Key considerations

When siting and designing wind energy developments in this LCT, the generic guidance in **Appendix 3** and in the small turbine guidance[52] (where relevant) should be taken into account. In addition, specific landscape considerations within this LCT are as follows:

- Consider visual relationships to route corridors and effects on settlement approaches when siting turbines.
- Take account of the scale and design of existing buildings and structures; respect their relative heights and proportions, as well as those of nearby landform features such as wooded bluffs.
- In particular, avoid visual conflict with any landmark features such as historic textile mills.
- Consider the scope to create a new visual focus or design statement in appropriate locations.
- Avoid siting turbines where they might exacerbate any existing visual clutter such as pylons and communications masts.

Current patterns of permitted wind energy development

As at June 2014 there were no operational or consented wind energy sites in this LCT but some in surrounding areas. The patterns were as follows:

- **Calderdale M1** – None within this LCT although there are various very small and small turbines within 1km in adjoining LCTs to north and south.
- **Kirklees M1 –** None within this LCT although there are two very small turbines 1-2km on the valley slopes to the south.

Follow web link to database and web map to see the latest position.

Cumulative landscape and visual issues arising

Key cumulative issues arising in this LCT are:

- The cumulative impacts of existing wind energy development on the valley slopes outside the LCT on the settings of the lowland industrial valleys.

This is not a significant issue at present but could become one in future, at which point it could potentially constrain wind energy development in the LCT.

[52] Julie Martin Associates (2013) *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*, report to Blackburn with Darwen, Burnley, Calderdale, Hyndburn, Kirklees, Pendle, Rochdale and Rossendale Councils.

Guidance for siting multiple developments within this LCT

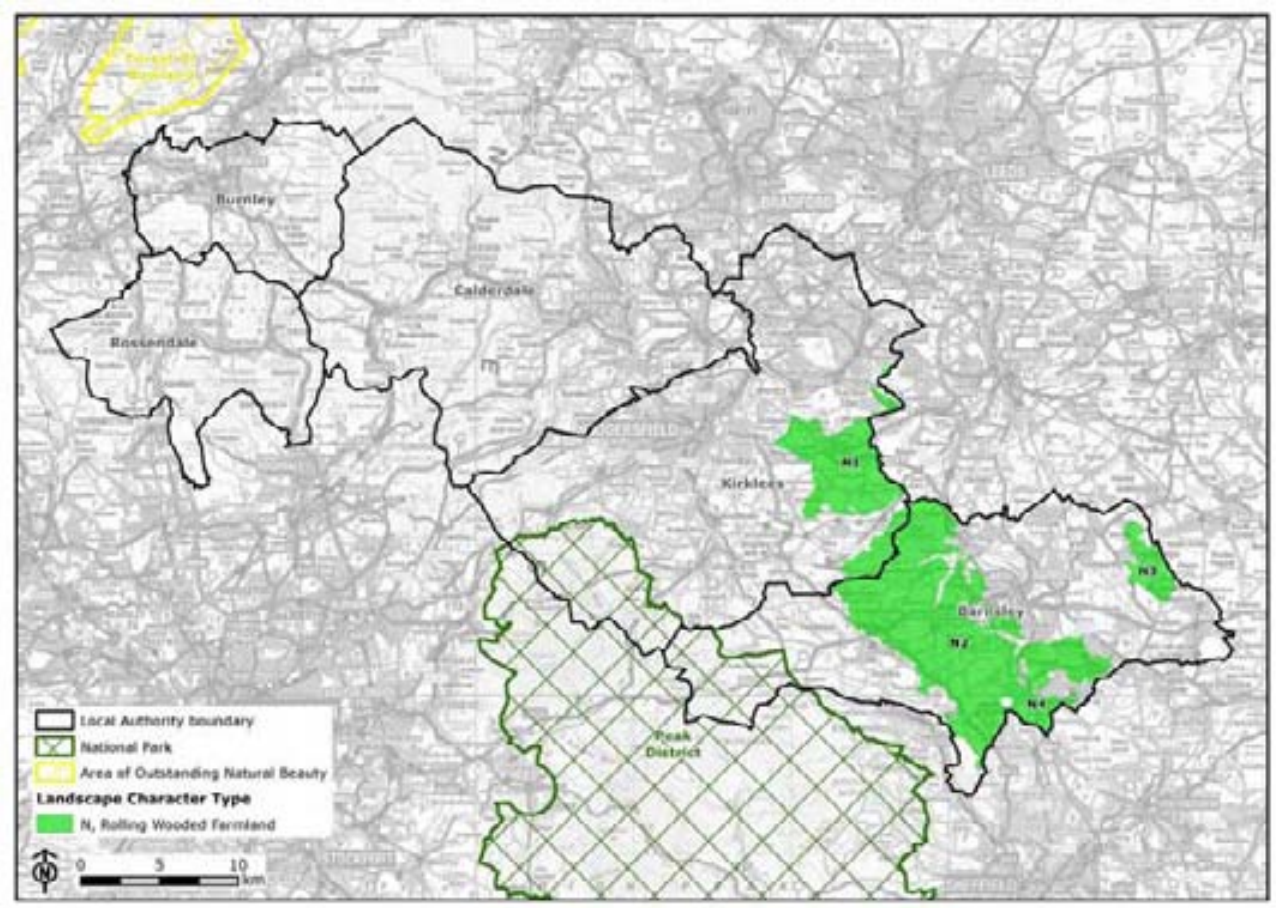
If there are multiple wind energy developments in this LCT in future, these should:

- Be consistent in their relationship to key landscape characteristics[53] – in particular in this LCT siting turbines so that they show a close association with major industrial and/or infrastructure elements.
- When locating turbines, choose sites away from views to existing turbines in adjoining LCTs, so as not to blur the distinctions between LCTs.
- Avoid close juxtaposition of different turbine heights and designs, aiming instead for a consistent height and design in a given area.

[53] See Scottish Natural Heritage (2014) *Siting and Designing Wind Farms in the Landscape*.

LCT N: Rolling Wooded Farmland

LCT Location Map



Component Landscape Character Areas

N1: Emley Moor

N2: Cawthorne Park & West Barnsley Rolling Wooded Farmland

N3: Grimethorpe Rolling Wooded Farmland

N4: Hoyland Rolling Wooded Farmland

Local authorities where LCT is present

Kirklees, Barnsley

Landscape character summary

Elevated, gently rolling, mixed farmland located in the east of the South Pennines. Underlying geology comprises alternating bands of shales and sandstones with frequent coal seams. This gives rise to rolling landform and mixed soils, some of which are relatively light and sandy and support arable land as well as pasture. Field patterns are medium to large scale, defined by hedgerows. Smaller, earlier enclosures occur on valley sides and around settlements while higher ground has larger, later and more regular enclosures of former moorland commons e.g. at Emley Moor. The landscape contains significant blocks of woodland (deciduous and coniferous) as well as shelterbelts of sycamore. Hedgerow trees add to the well-wooded character although they become less prevalent on higher ground. There is a dispersed pattern of isolated farmsteads, with some larger settlements such as Emley, Hoylandswaine and Great Houghton. The northern part of the LCT in Kirklees is dominated by the Emley Moor TV Tower (330m) which is a notable landmark from all directions.

Key environmental features

- Hedgerows and trees and blocks of woodland give rise to a well-treed and wooded character.
- Woodland areas are of ecological value.
- Roadside verges are species-rich and may contain areas of bracken and gorse reflecting patches of more acidic soil.
- Attractive patterns of woodland and undulating topography give this area a scenic quality.
- Significant views from elevated locations.
- Historic settlements centred around a church but with more recent housing on the outskirts.

LCT N: Landscape Sensitivity to Wind Energy Development

Criteria	Lower sensitivity ▪▪▪▪▪▪▪▶ Higher sensitivity	
Scale	M	
	This is a relatively large scale landscape in terms of landform, with an extensive rolling character and some more complex undulations reducing perceptions of scale. Scale is reduced somewhat by the fact that the area is enclosed and with frequent tree and woodland cover (the trees forming human-scale features), but the field patterns tend to be medium or large in scale.	
Landform	L	
	The rolling landform of this area rises to around 270m AOD at Emley Moor, with a second somewhat lower summit at Pool Hill near Denby Dale. It has a gently domed, convex form overall, suggesting relatively low sensitivity. Slopes are generally steeper on the west and gentler on the east.	
Landcover	M	
	Landcover is fairly diverse, comprising medium to large fields of arable land and pasture, enclosed by thick hedgerows. Smaller, earlier enclosures occur on valley sides and around settlements, while higher ground has larger, later, more regular enclosures of former moorland commons. There are also significant blocks of woodland, shelterbelts and hedgerow trees, creating a well-wooded character in parts.	
Built environment	L	
	There is a dispersed pattern of farmsteads, with some larger (former colliery) settlements such as Emley and Great Houghton. Although these have historic cores, today they include modern suburbs and housing estates. Away from the settlements and urban edges of Barnsley, a contrasting rural character pervades.	
Skylines and settings		H
	In Kirklees, these domed uplands form an important skyline east of Huddersfield. The area in this part of the landscape is dominated by the Emley Moor TV Tower (330m, listed Grade II) which is a notable landmark from all directions. Its presence makes the skyline highly sensitive to any new structures which might conflict visually. The wooded skylines of the LCT in Barnsley form a rural backdrop to Barnsley itself, as well as its numerous satellite towns and villages.	
Visibility and views	M	
	This area is widely visible, particularly from Huddersfield and the moorland fringes to the west (including the north-east edge of the Peak District National Park), but also from other directions. Views tend to focus on Emley Moor TV tower, which draws the eye. The area is less visible from the adjoining valleys, where the incised, wooded valley sides and the convex form of the slopes above tend to block views to the elevated land above. The northern part of the LCT offers westward views to Castle Hill Fort and Tower, an important landmark on the southern outskirts of Huddersfield.	
Landscape quality (condition)	M	
	Landscape quality is mixed. Some areas are in relatively good condition, but in other areas landscape patterns are affected by hedgerow removal, large farm buildings, urban fringe and industrial influences.	
Scenic quality	M	
	Attractive patterns of woodland and undulating topography give parts of this area some scenic quality, often associated with the relatively numerous parklands and designed landscapes. The fine panoramic views from high ground also lend some visual appeal in parts.	
Wildness and tranquillity	M	
	This landscape has some wildness on its open, exposed tops. It is also relatively tranquil in parts. However neither quality is particularly strongly expressed, as the landscape is enclosed and settled, and other human influences such as the TV tower are widely visible.	
Natural and cultural heritage features	M	
	Roadside verges are species-rich and some woodlands are ancient in origin. Remnant commons (e.g. Houghton Common) and meadows (e.g. Pye Flatts Meadows SSSI in	

	Barnsley) are also important natural heritage features within the LCT. There are early iron workings nearby in the vicinity of Emley Woodhouse and these form distinctive landscape features. Parkland estates also convey an historic sense of place to large parts of the area, including the Grade I registered parkland of Wentworth Castle, and the Grade II estates of Cannon Hall and Wortley Hall – all in Barnsley. The scheduled remains of Hallsteads moated site are also found on the slopes above Grimethorpe.
Cultural associations	**L**
	The area has a strong cultural identity related to its history of coal mining and iron-working, as well as the development of historic parkland estates; but otherwise there are no known cultural associations of note.
Amenity and recreation	**M**
	The landscape is crossed by a network of paths and bridleways, and includes lengths of the Kirklees Way, Penistone Boundary Walk and Barnsley Boundary Walk. Cannon Hall Country Park is a popular visitor attraction and amenity resource for local communities.
Discussion on landscape sensitivity[54]	Although this LCT contains areas of human influence and modern development (including on the fringes of Barnsley), its variety of landform with some elevated and undeveloped ridgelines forming a backdrop to views, strong estate and rural character and frequent human-scale features all increase sensitivity. The steeper, more complex slopes such as those above the Dearne Valley and surrounding Great Houghton, and those which form a rural backdrop to views from urban areas, are particularly sensitive to wind energy developments. The wooded estate landscapes are also highly sensitive to the development of wind turbines, which would detract from their strong historic sense of place and the human scale of their woodlands, historic farmsteads, estate buildings and specimen trees. Areas of lower sensitivity may include the open hillsides (except those near Emley Moor TV Tower), where slopes are gentler and enclosures larger, with fewer human-scale features.
Sensitivity to different turbine heights	**Very Small (≤24m)** — **L-M** **Small (25-59m)** — **M** **Medium (60-89m)** — **M-H** **Large (90-129m)** — **H** **Very large (≥130m)** — **H**
	The medium scale of much of the landform, its often strongly undulating character, proximity to settlements and presence of frequent human-scale features mean this LCT is of high sensitivity to 'large' and 'very large' turbines.
Commentary on turbine group size • Single turbine • Small cluster (2-3 turbines) • Small wind farm (4-5 turbines) • Medium wind farm (6-10 turbines) • Large wind farm (11-20 turbines) • Very large wind farm (≥21 turbines)	The complex landcover patterns and varied landform mean that this LCT is highly sensitive to any turbine group size larger than 'medium wind farm'.

[54] Note that this refers to inherent landscape sensitivity i.e. the assessment has not been affected by any existing development.

LCT N: Guidance for Wind Energy Development

Guidance for future development

This LCT is sensitive to larger scales of wind energy development. It is most suited to scattered 'very small' or 'small' turbines, comprising single turbines, small clusters or very occasional small or medium wind farms. Some limited locations away from settlements and in the larger scale and more intensively farmed parts of the LCT may, exceptionally, be less sensitive to larger turbines.

Constraints

- Areas of complex, undulating landform and intimate valley landscape, most common around the edges of LCT, tend to be sensitive in terms of scale.
- The steeper slopes on the western and southern edges of the LCT often form distinctive skylines above the Wooded Rural Valleys (LCT G) and may also be visible from the north-eastern edges of the Peak District National Park, only 2-4km away.
- There is scope for visual conflict with Emley Moor TV Tower; turbines sited very close to the tower would create visual clutter and detract from its setting.
- The LCT provides a rural setting and foreground to views from adjacent settlements, including Barnsley, Hoyland and Chapeltown (the latter in the Sheffield council area).
- The many natural and cultural heritage features and recreation sites, including the many historic parklands, may be key constraints to wind energy development in some areas.

Opportunities

- Small scale wind energy development that is visually associated with settlements or farms, and evenly spread across the landscape rather than concentrated in one particular area, will be most easily accommodated in the landscape.
- Locally, where the landscape is somewhat larger in scale (more expansive, with larger enclosures and more intensive farming) there may be scope to accommodate larger turbines or turbine clusters, subject to other constraints.

Key considerations

When siting and designing wind energy developments in this LCT, the generic guidance in **Appendix 3** and in the small turbine guidance[55] (where relevant) should be taken into account. In addition, specific landscape considerations within this LCT are as follows:

- Avoid locations close to the relatively steep, prominent western and southern slopes of the LCT, in particular ensuring that turbines are set back from the skylines above the Wooded Rural Valleys (LCT G).
- Choose sites away from key views, especially those to and from the adjoining valleys, settlements, landmarks such as Castle Hill (in E6), and the Peak District National Park.
- Consider siting turbines in locations that are screened by woodland or slight dips within the rolling landform.
- Ensure that any wind energy development is well-separated visually from Emley Moor TV Tower and any other landmark features such as prominent church towers.
- Avoid siting larger turbines close to settlements, attractive, intimate wooded valleys and historic parklands such as Wentworth.
- Where larger turbines are proposed, ensure that they do not overwhelm the human scale of nearby landscape features, including trees and farm buildings.

Current patterns of permitted wind energy development

As at June 2014 there were 21 operational and consented wind energy sites with a total of 23 turbines in this LCT, as well as others in surrounding areas. The patterns were as follows:

- **Kirklees N1 and N2** – Concentration of around 15 very small and small mainly single turbines in N1

[55] Julie Martin Associates (2013) *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*, report to Blackburn with Darwen, Burnley, Calderdale, Hyndburn, Kirklees, Pendle, Rochdale and Rossendale Councils.

west of Emley Moor and south of Clayton West. Cumulative effects on landscape character in these areas, and some visual conflict with Emley Moor TV Tower.

- **Barnsley N2, N3 and N4** – Three very small and small turbines in N2 west of Barnsley; two further small turbines in N3 south of Grimethorpe. In LCT D Moorland Fringes/ Upland Pastures, 2-3km to the west of N2, there are also three small clusters of large turbines (Hazlehead, Spicer Hill, Blackstone Edge) and a large wind farm of small turbines (Royd Moor). Around 7km east of N3, in the Doncaster council area, are two small wind farms of large turbines (Hampole and Marr).

Follow web link to database and web map to see the latest position.

Cumulative landscape and visual issues arising

Key cumulative issues arising in this LCT are:

- Concentrations of smaller turbines, notably in N1 where turbines are collectively becoming a defining influence on the landscape of the slopes above Kirkburton and Shelley, with frequent variations in turbine height and design.
- Proximity to large turbines at Hazlehead, Spicer Hill and Blackstone Edge in D7 and D9 to the west. This means that any further wind energy development in adjoining areas of N2 could give rise to complex cumulative effects due to range of turbine heights and designs in close proximity.

In these locations, existing cumulative landscape and visual issues may be a constraint on further wind energy development in the surrounding area.

Guidance for siting multiple developments within this LCT

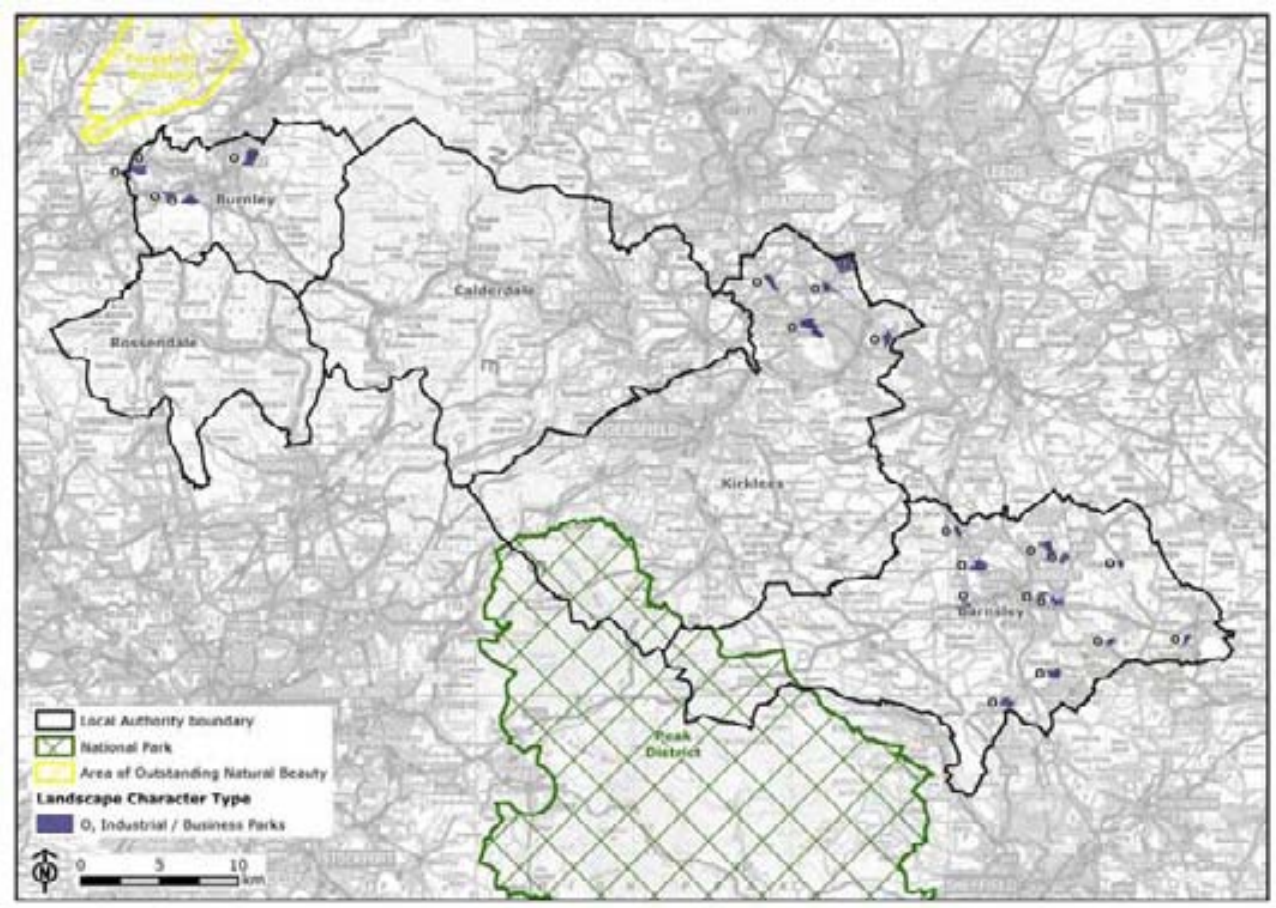
Multiple wind energy developments in this LCT should:

- Be similar in terms of siting, layout, form and relationship to key landscape characteristics, so as to present a simple image that relates clearly to landscape character[56] – for example in this LCT by associating smaller turbine classes with settlements or farms; and larger turbine classes with areas of more expansive landform and larger enclosures.
- When locating 'very small ' and 'small' turbines, avoid strong concentrations of turbines in a given area, and choose sites away from views to existing larger turbines (both inside and outside the study area), so that the different turbine size classes are not seen together.
- Also avoid close juxtaposition of different small turbine heights and designs, aiming instead for a consistent height and design in a given area.

[56] See Scottish Natural Heritage (2014) *Siting and Designing Wind Farms in the Landscape*.

LCT O: Industrial/Business Parks

LCT Location Map



Component Landscape Character Areas

No landscape character areas identified

Local authorities where LCT is present

Burnley, Kirklees, Barnsley

Landscape character summary

This urban type comprises the more extensive areas of industrial and business park land, generally located in the urban fringe. It includes Victorian industrial development associated with coal mining and woollen mills as well as more recent large scale commercial sheds, distribution buildings and business or retail parks. The former developments are often built of local stone or brick and have a unity of design and scale. The latter are built of a range of materials and may form discrete and sometimes extensive areas of development on the outskirts of major settlements or along river valleys. Occasionally they may be located in isolated elevated locations or along motorway corridors where communications are good. Buildings are large in scale and development as a whole may also cover an extensive area.

LCT O: Landscape Sensitivity to Wind Energy Development

Criteria	Lower sensitivity ▪▪▪▪▪▪▪▶		Higher sensitivity
Scale		**M**	
	This LCT comprises relatively small, intensively developed areas of land, usually in an urban or urban fringe location. Space is limited in urban areas but at the urban fringe there may be a greater sense of space. Buildings are often large in scale.		
Landform	**L**		
	Landform varies and is often heavily modified but generally fairly flat. Where this LCT occurs at the urban fringe it may be set on rising ground e.g. south of Burnley and on the outer edges of Barnsley.		
Landcover	**L**		
	Built form and hard standing are the principal form of landcover and sensitivity is generally low.		
Built environment	**L**		
	Most of these areas comprise large modern industrial, business or commercial sheds or distribution buildings, although there are also some older stone or brick-built works and mills. Many areas abut major road or rail corridors. Sensitivity tends to be low unless buildings are of historic interest.		
Skylines and settings		**M**	
	Buildings and structures in these areas may form existing skyline features. Skyline sensitivity is rarely high (except where buildings are of historic importance or form key landmarks), but the 'fit' of turbines with existing structures may be a key issue.		
Visibility and views		**M**	
	These areas are often widely visible, their visibility heightened by the presence of existing large buildings and structures and urban fringe or elevated locations. However they tend not to form part of valued countryside views.		
Landscape quality (condition)	**L**		
	Landscape quality may be good where industrial or business parks have been well-designed and maintained. However there are relatively few original landscape patterns or features that are sensitive to disturbance or require conservation.		
Scenic quality	**L**		
	Scenic quality is generally low.		
Wildness and tranquillity	**L**		
	These areas have little or no wildness or tranquillity.		
Natural and cultural heritage features	**L**		
	In general these areas do not contain natural or cultural heritage features.		
Cultural associations	**L**		
	There are no known cultural associations of note.		
Amenity and recreation	**L**		
	These areas are of little or no amenity or recreation interest.		
Discussion on landscape sensitivity[57]	The industrial/ business park landscapes are of generally of low sensitivity to wind energy development, being mainly built up and already characterised by large, modern, man-made structures. Landscape constraints on wind energy development will generally relate to the impacts on adjoining LCTs. Although almost all areas are of relatively low sensitivity, locally sensitivity may be heightened by specific issues, particularly impacts on skylines, historic built environment and the visual amenity of nearby residents.		

[57] Note that this refers to inherent landscape sensitivity i.e. the assessment has not been affected by any existing development.

Sensitivity to different turbine heights	**Very Small (≤24m)**	**L**
	Small (25-59m)	**L-M**
	Medium (60-89m)	**M-H**
	Large (90-129m)	**H**
	Very large (≥130m)	**H**
	The presence of existing built development within and surrounding this LCT means that this LCT would be highly sensitive to 'large' and 'very large' turbines; many locations would also be highly sensitive to 'medium' turbines. However the LCT may be less sensitive to suitably-located 'very small' and 'small' turbines.	
Commentary on turbine group size • Single turbine • Small cluster (2-3 turbines) • Small wind farm (4-5 turbines) • Medium wind farm (6-10 turbines) • Large wind farm (11-20 turbines) • Very large wind farm (≥21 turbines)	Space constraints and the dense built form of this LCT means that it is likely to be sensitive to any turbine group size other than 'single turbine'.	

LCT O: Guidance for Wind Energy Development

Guidance for future development

The presence of existing large scale industrial or business uses and the relatively low landscape sensitivities of this LCT mean that it is potentially suited to scattered or more frequent single 'small' or 'medium' turbines in the right location. However space constraints and the dense built form of this LCT will often be key limitations.

Constraints

- Existing buildings and structures may provide scale comparators with any proposed turbine development.
- Older structures, including industrial works and mills, some of which are of historic interest, may form distinctive features whose settings are vulnerable to change.
- Locally residential areas may overlook the LCT at very close range, heightening visual sensitivity.

Opportunities

- Areas that are heavily influenced by major transport corridors or industrial or business activity may have lower sensitivity to wind energy development.
- Turbines that show a clear visual and/or functional relationship with such land uses may be more easily accommodated in the landscape.

Key considerations

When siting and designing wind energy developments in this LCT, the generic guidance in **Appendix 3** and in the small turbine guidance[58] (where relevant) should be taken into account. In addition, specific landscape considerations within this LCT are as follows:

- Consider visual relationships to route corridors and effects on settlement approaches when siting turbines.
- Take account of the scale and design of existing buildings and structures; respect their relative heights and proportions, as well as those of nearby landform features such as river bluffs.
- In particular, avoid visual conflict with any landmark features such as historic textile mills.
- Consider the scope to create a new visual focus or design statement in appropriate locations.
- Avoid siting turbines where they might exacerbate any existing visual clutter such as pylons and communications masts.

Current patterns of permitted wind energy development

As at June 2014 there were 2 operational and consented wind energy sites with a total of 2 turbines in this LCT, as well as others in surrounding areas. The patterns were as follows:

- **Burnley** – None within this LCT although there is a single small turbine just to the south of LCT O (in LCT E Rural Fringes) on the southern outskirts of Burnley.
- **Kirklees –** One site of two large turbines at Birstall north of Batley, on the edge of the Bradford council area; otherwise only one very small turbine east of Dewsbury.
- **Barnsley –** None within this LCT.

Follow web link to database and web map to see the latest position.

Cumulative landscape and visual issues arising

There are no significant cumulative issues in this LCT at present.

Guidance for siting multiple developments within this LCT

If there are multiple wind energy developments in this LCT in future, these should:

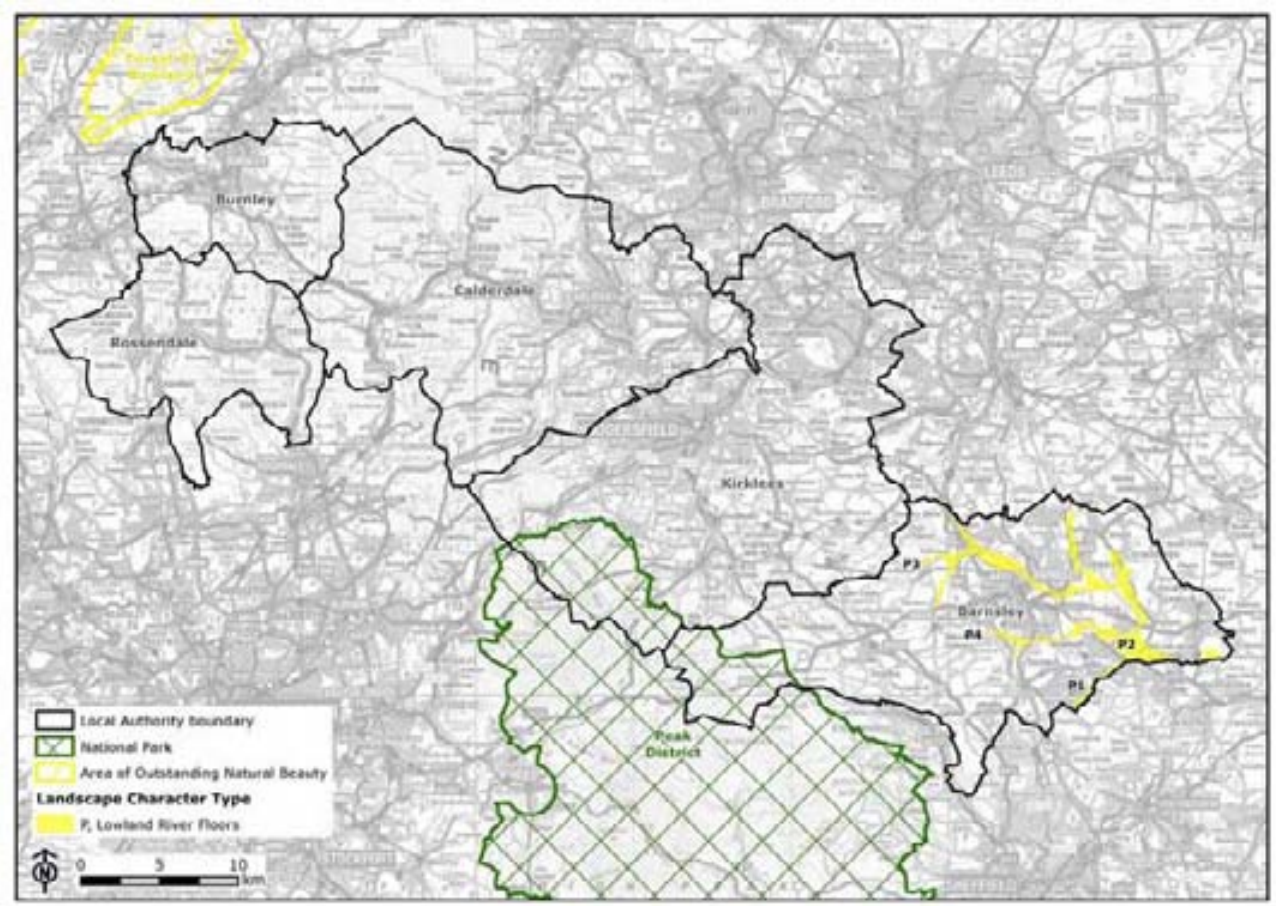
[58] Julie Martin Associates (2013) *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*, report to Blackburn with Darwen, Burnley, Calderdale, Hyndburn, Kirklees, Pendle, Rochdale and Rossendale Councils.

- Be consistent in their relationship to key landscape characteristics[59] – in particular in this LCT siting turbines so that they show a close association with major industrial and/or infrastructure elements.
- When locating turbines, choose sites away from views to existing turbines in adjoining LCTs, so as not to blur the distinctions between LCTs.
- Avoid close juxtaposition of different turbine heights and designs, aiming instead for a consistent height and design in a given area.

[59] See Scottish Natural Heritage (2014) *Siting and Designing Wind Farms in the Landscape*.

LCT P: Lowland River Floors

LCT Location Map



Component Landscape Character Areas

P1: Elsecar Lowland River Floor
P2: Lower Dearne Lowland River Floor
P3: Upper Dearne Lowland River Floor
P4: Dove Lowland River Floor

Local authorities where LCT is present

Barnsley

Landscape character summary

The *Lowland River Floor* landscape type is mainly defined by landform, consisting of flat valley floors, and by the presence of water in the forms of rivers, lakes, reservoirs and canals. The valley floors can be narrow or broad and are enclosed by sloping valley sides that are part of adjacent character areas, or land outside the Borough. Residential settlement on the valley floor is scarce, but frequent on the valley sides immediately outside the landscape type. Commercial or industrial development is quite common, particularly next to roads that cross the valleys, or on reclaimed land. Other characteristic features include dismantled and active railway lines, evidence of past industrial development (e.g. old industrial stone buildings, reclaimed land, disused canals and railway lines), and trees, woodland and scrub which are often dominated by species associated with wet ground (such as willow and alder).

Key environmental features

- Flat valley floor of varying width and degrees of enclosure, framed by sloping valley sides.
- Substantial areas of agricultural land both in arable and pastoral use, intermixed and surrounded by other land uses and linear features.
- General absence of built development except for old stone walls, bridges and occasional buildings associated with industrial heritage which are scattered throughout the landscape.
- Immature, newly created landscapes in the form of open grass areas and young tree planting, associated with reclaimed industrial areas and the A6195.
- Open water in the form of the sinuous River Dearne and its tributaries, small lakes and a short length of disused canals (Dearne and Dove Canal), as well as streams, dikes, flashes and man-made lakes (Elsecar Reservoir)
- Strips of mature trees, scrub including areas of dense cover, particularly willow, ash and alder are found adjacent to watercourses, lakes and dismantled railway lines.
- Sections of the Dearne Way, Barnsley Boundary Walk and Trans Pennine Trail follow disused lengths of railway and canal, providing valued recreational resources.

LCT P: Landscape Sensitivity to Wind Energy Development

Criteria	Lower sensitivity ▪▪▪▪▪▪▪▶ Higher sensitivity		
Scale			**H**
	The constrained nature of the valleys creates a small scale landscape across much of the LCT, with scale increasing where the floodplains broaden. The overall small landscape scale is emphasised by frequent human-scale features in the form of trees, woodland and industrial/urban development.		
Landform		**M**	
	Flat valley floors – narrow in places – are enclosed by sloping valley sides. These range from relatively steep-sided slopes creating a sense of enclosure within the valley bottoms, to more gentle undulations providing a gradual transition from the flat floodplains. Elevation across the LCT rarely passes above 50m AOD.		
Landcover		**M**	
	Diverse land use patterns including mixed farmland, reclaimed industrial land, transport corridors, recent industrial and commercial developments, recreational land uses (e.g. fishing lakes and Waterfront Golf Course) along with significant areas of wetland habitats, watercourses (rivers, canals and open water bodies), woodland and scrub.		
Built environment	**L**		
	This LCT includes localised clusters of recent warehouse style buildings bringing large scale structures into the relatively open landscape. It also includes major road and railway infrastructure (including parts of the M1 corridor), pylon lines, sewerage works and some housing developments on the fringes of the main settlements. Other parts of the valleys are free of development, bringing a contrasting sense of ruralness to the landscape.		
Skylines and settings	**L**		
	Due to their low-lying character, the valley floors themselves do not form prominent skylines. However, they do provide a contrasting rural, naturalistic setting to the dense urban, industrial and commercial development that surrounds them. Large-scale industrial warehouses form prominent features both within and adjacent to the LCT.		
Visibility and views		**M**	
	Views from the LCT are frequently dominated by adjacent urban, industrial and commercial development related to Barnsley and its satellite settlements. The valley floors themselves are frequently overlooked by this development, along with the transport lines that pass over and through the valley floors. The upper courses of the valleys afford more open views out to the surrounding countryside.		
Landscape quality (condition)	**L**		
	The valley floors are encroached upon by development both from surrounding settlements and along the road corridors that pass through the landscape. Areas of degraded farmland and field boundaries, along with fields used for horse grazing, bring an urban fringe feel to the landscape. Positive landscape enhancements have, however, brought significant ecological benefits to the valley floors following industrial decline, including through the restoration of former colliery tips to wetlands and nature reserves (e.g. Old Moor RSPB reserve).		
Scenic quality	**L**		
	None of the LCT is formally recognised for its scenic quality. However, the small areas of largely undeveloped valley floor, often with ecological interest in the form of woodland and wetland habitats, provide a valued scenic contrast to the surrounding dense urban development and transport infrastructure.		
Wildness and tranquillity	**L**		
	The proximity of urban development and the presence of busy transport routes crossing through and alongside this LCT mean that levels of tranquillity are generally low. There are some pockets of more rural character to the west of the area – Cawthorne Dike and Silkstone Beck – where pockets of relative tranquillity are found.		

Natural and cultural heritage features		**M**	
	Although modern influences and development are dominant along the valley floors, areas of natural and cultural heritage remain. These include the nationally important remains of a 17th century glassworks at Silkstone, SSSI-designated geological exposures at Carlton Main Brickworks, a heavy anti-aircraft gunsite near Bolton upon Dearne and the remains of a Benedictine monastery at Monk Bretton Priory (both Scheduled Monuments). Areas of reclaimed industrial land have been transformed into havens for wildlife – including the RSPB reserves at Old Moor, Bolton Ings and Wombwell Ings, and Dearne Valley Country Park (LNR).		
Cultural associations	**L**		
	There are no known cultural associations of note within this LCT, apart from the area's wider associations with coal mining and other historic industrial activities (as reflected in the sites/features mentioned above).		
Amenity and recreation		**M**	
	Lengths of the Dearne Way, Barnsley Boundary Walk and Trans Pennine Trail follow disused sections of railway and canal, providing valued recreational resources for local communities. The Dearne Valley Country Park and Visitor Centre at Old Moor RSPB Reserve are also popular amenity sites within the LCT.		
Discussion on landscape sensitivity[60]	Although this LCT is strongly influenced by existing urban and industrial development, including large modern warehouse-style buildings, its small landform scale, frequent human-scale features, pockets of locally valued ecological and recreational assets and function as a more naturalistic backdrop to settlements, all increase its sensitivity, particularly to large wind turbine developments. The more tranquil, predominantly undeveloped sections of the valley floors have the highest sensitivity to wind energy development (e.g. Cawthorne Dike and Silkstone Beck).		
Sensitivity to different turbine heights	**Very Small (≤24m)**		**L**
	Small (25-59m)		**M**
	Medium (60-89m)		**M-H**
	Large (90-129m)		**H**
	Very large (≥130m)		**H**
	This LCT is highly sensitive to 'large' and 'very large' wind turbines due to the small scale of the valley floors, the presence of frequent human-scale features, and the LCT's location on the doorstep of major settlements.		
Commentary on turbine group size • Single turbine • Small cluster (2-3 turbines) • Small wind farm (4-5 turbines) • Medium wind farm (6-10 turbines) • Large wind farm (11-20 turbines) • Very large wind farm (≥21 turbines)	The constrained nature of the valley floors means that they will be highly sensitive to any turbine group size other than 'single turbine' or – in limited locations where the valley floors are wider – 'small cluster'.		

[60] Note that this refers to inherent landscape sensitivity i.e. the assessment has not been affected by any existing development.

LCT P: Guidance for Wind Energy Development

Guidance for future development

This LCT is of high sensitivity to any larger scale wind energy development. It is more suited to scattered 'very small', 'small' (or occasionally 'medium') single turbines because these relate best to the small-scale valley landform and the many human scale features present. Only exceptionally may this LCT be able to accommodate anything larger than single wind turbine developments.

Constraints

- The small scale, often narrow, nature of the river floors is a physical constraint to wind energy development.
- The LCT provides a naturalistic and contrasting rural setting to the dense urban and industrial development that surrounds it.
- Cawthorne Dike and Silkstone Beck provide pockets of relative tranquillity that are valued in an urban context.
- There are nationally important heritage remains and wetland habitats on former industrial land, as described above.
- Recreational assets of significant value to local communities include lengths of the Dearne Way, Barnsley Boundary Walk and Trans Pennine Trail; and the Dearne Valley Country Park.

Opportunities

- There may be some limited scope for single, small-scale turbines (or in locations where landscape scale is larger, medium turbines), associated with existing buildings.
- Industrial/ commercial developments – including large-scale warehouses – may provide opportunities for appropriately siting turbines within this LCT.

Key considerations

When siting and designing wind energy developments in this LCT, the generic guidance in **Appendix 3** and in the small turbine guidance[61] (where relevant) should be taken into account. In addition, specific landscape considerations within this LCT are as follows:

- Avoid siting turbines within key views from surrounding urban development and infrastructure into the undeveloped parts of the LCT, and in locations within the upper valley courses where views to the surrounding countryside could be affected.
- Protect the integrity and settings of designated heritage assets and the pockets of nationally and locally important wetland, woodland and scrub habitats which form a naturalistic green edge to development.
- Avoid areas of undeveloped valley floor, including within Cawthorne Dike and Silkstone Beck – which provide important contrasting areas of relative tranquillity within a busy landscape; aim for any future developments to be sited on brownfield land.

Current patterns of permitted wind energy development

As at June 2014 there were no operational or consented wind energy sites in this LCT but some in surrounding areas. The patterns were as follows:

- **Barnsley –** None within this LCT, but several schemes within Q1 (see LCT Q Settled Arable Slopes) and N3 (see LCT N Rolling Wooded Farmland) likely to be visible from the Lower Dearne near Grimethorpe, including a total of five small, medium and large turbines.

Follow web link to database and web map to see the latest position.

Cumulative landscape and visual issues arising

Key cumulative issues arising in this LCT are:

- The cumulative impacts of permitted wind energy development on the valley slopes outside the LCT

[61] Julie Martin Associates (2013) *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*, report to Blackburn with Darwen, Burnley, Calderdale, Hyndburn, Kirklees, Pendle, Rochdale and Rossendale Councils.

(in Q1 and N3) on the settings of the lowland valley floors.

This could potentially constrain wind energy development in at least parts of the LCT in future.

Guidance for siting multiple developments within this LCT

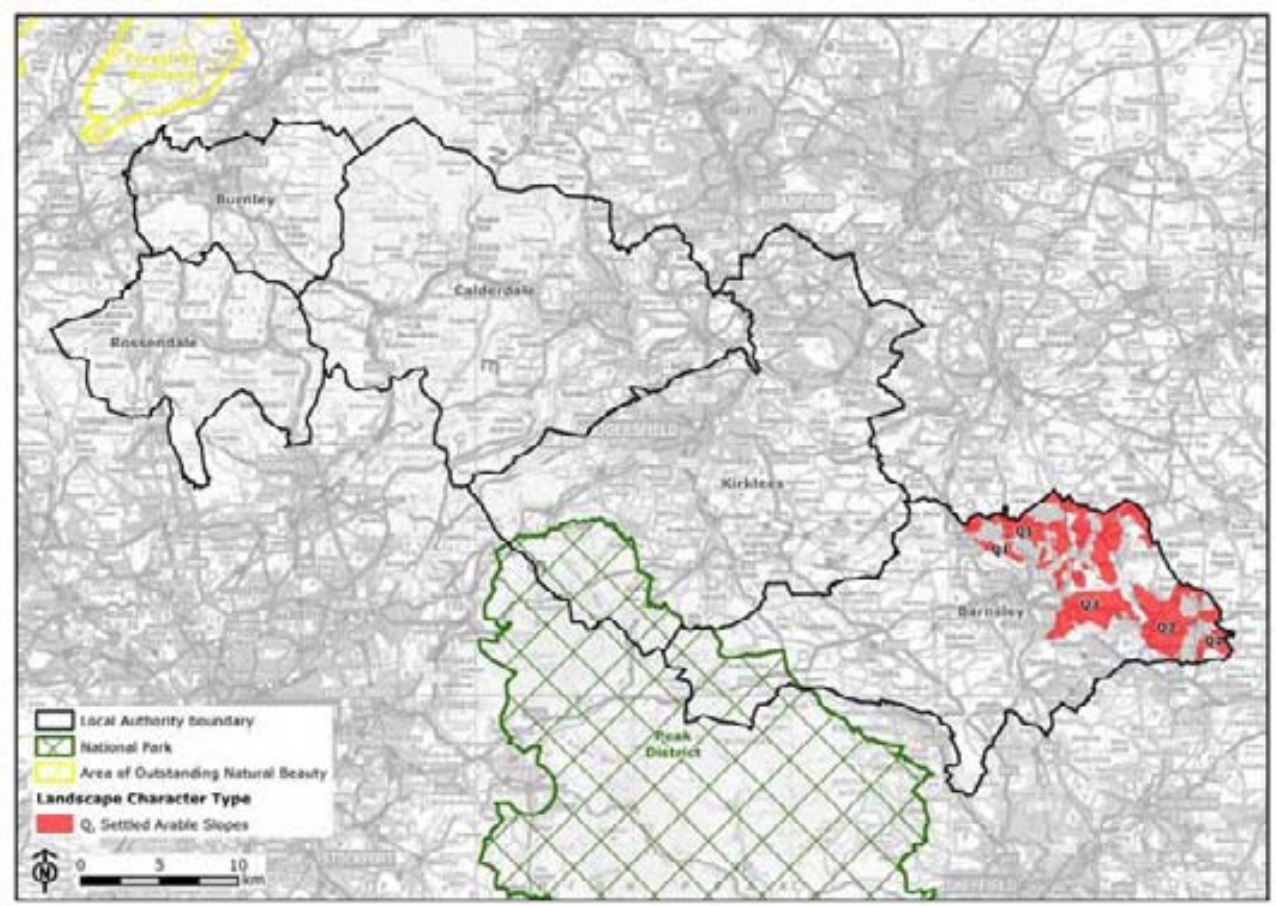
If there are multiple wind energy developments in this LCT in future, these should:

- Be consistent in their relationship to key landscape characteristics[62] – for example through a clear association with the regular clusters of farm buildings that occur in this LCT.
- When locating 'very small ' and 'small' turbines, avoid strong concentrations of turbines in a given area, and choose sites away from views to existing larger turbines, so that the different turbine size classes are not seen together.
- Avoid close juxtaposition of different turbine designs and heights, aiming instead for a consistent height and design in a given area.

[62] See Scottish Natural Heritage (2014) *Siting and Designing Wind Farms in the Landscape*.

LCT Q: Settled Arable Slopes

LCT Location Map



Component Landscape Character Areas

Q1: North East Barnsley Settled Arable Slopes

Q2: East Dearne Settled Arable Slopes

Q3: West Dearne Settled Arable Slopes

Local authorities where LCT is present

Barnsley

Landscape character summary

The Settled Arable Slopes landscape type is largely characterised by its landform and land use patterns. The landform varies from stronger undulations to areas of gentle, even slopes with the latter particularly evident at lowland elevations close to the adjacent river valleys, and at higher elevations on the broader ridge tops. Land use activity is largely characterised by large scale arable farming and residential settlement. There are significant tracts of relatively intact arable farmland but many areas on the urban-rural interface exhibit signs of landscape decline. Settlements are typically former colliery villages or towns and are predominantly residential although recent light industrial estates are a feature. The settlements indicate the area's heavy industrial past, further emphasised by the presence of disused spoil heaps, workings, and railway lines found across the landscape. Field boundaries or divisions are inconsistent varying from stone walls, and short flailed and overgrown hedgerows, to post and rail fencing or none at all. Low tree cover results in a sense of exposure. The dominance of infrastructure and built development, commonly located on ridge or hilltops, but often spreading down valley sides, compound a striking sense of urbanisation across much of the landscape.

Key environmental features

- Sloping/undulating landform with small valleys and ridges providing localised variation in terms of views and sense of enclosure.
- Land use dominated by open arable farmland in medium to large fields, with some areas of short-term ley and horse grazing.
- Occasional small blocks of woodland are found on valley slopes and occasional mature trees on higher ground.
- There is a number of fragmented yet locally important wildlife sites scattered across the LCT including ancient woodlands, flood meadows and wetlands.
- Disused industrial quarries, tips and spoil heaps provide strong visual cues to industrial heritage and present day regeneration initiatives. Some exposures are defined as RIGS.
- Significant number of primary and secondary vehicular routes gives an active pace to the landscape.
- Disused railway lines are strong linear features of ecological significance.
- Far-reaching views, including to the uplands and Barnsley – including industrial and residential settlement and working warehouses, bringing an additional urban influence to the overall character of the landscape.
- Away from the main towns, settlement includes scattered stone farmsteads, modern farm buildings and traditional mining settlements.
- The villages of Brierley, Darfield and Billingley include Conservation Areas reflecting their range of vernacular styles and listed buildings, including former farm cottages and mining workers' terraces.

LCT Q: Landscape Sensitivity to Wind Energy Development

Criteria	Lower sensitivity ▪▪▪▪▪▪▪▶ Higher sensitivity		
Scale	L		
	Generally large scale with broad ridges, crossed by small valleys which provide a contrasting sense of scale. The landscape is dominated by medium-large size arable fields and this emphasises its simple character. Away from the main settlements, occasional human-scale features include scattered trees and farm buildings.		
Landform		M	
	Undulating open landform with small valleys and broad ridges, generally rising to around 70m AOD and reaching a maximum of 140m AOD above Bloomhouse. The landform comprises gentle, even slopes in lowland elevations and on ridgetops, with more complex undulations found in localised parts of the LCT, particularly in the north (e.g. land sloping up from Staincross and Shafton). Reclaimed colliery waste tips form more distinctive landform features, such as at Rabbit Ings Country Park.		
Landcover		M	
	Landcover is dominated by arable cultivation in medium to large scale, open fields often with weak field boundaries. Limited variation is provided by other land uses, including active and former industrial workings, residential development, small ponds and reservoirs and golf courses. Tree cover is limited to occasional copses on valley slopes and individual mature specimens on ridgelines.		
Built environment		M	
	Much of this landscape is dominated by views of urban, residential and industrial development – including Barnsley itself, and various smaller settlements such as Royston and Goldthorpe. Away from the main settlements scattered stone-built farmsteads, modern farm buildings and prominent pylon lines comprise the main built elements within the farmed landscape.		
Skylines and settings		M	
	The undulating ridgelines rise up from the valleys and form the immediate settings to the settlements within and fringing this LCT, including Barnsley. Although not particularly prominent, they are important locally in providing a rural backdrop to often dense urban development.		
Visibility and views		M	
	This is an open landscape, with a general absence of tree and woodland cover. Views are frequently dominated by urban, industrial and residential development associated with Barnsley and its satellite former mining towns. However, these settlements in turn often have open outward views across the Settled Arable Slopes LCT.		
Landscape quality (condition)	L		
	This landscape is frequently fragmented by development pressures and urban/industrial land uses, resulting in a marginalisation of agriculture and decline in the condition of landscape features. Hedgerows and stone walls have suffered from removal due to intensification or lack of management, diluting field patterns. Derelict former mining areas and degraded land at the urban-rural interface contribute to a sense of neglect and provide a poor setting to the remaining pockets of intact farmed landscape.		
Scenic quality	L		
	None of this landscape is designated at a national or local level for its scenic quality. However, large parts are designated as Green Belt and are thus valued as a rural setting to development around Barnsley itself and its associated former mining towns – helping to protect against further coalescence.		
Wildness and tranquillity	L		
	This landscape is strongly influenced by human activity, with pockets of relative tranquillity provided locally away from the main settlements on the higher ridgelines.		
Natural and cultural heritage features		M	
	There are a number of fragmented yet locally important wildlife sites scattered across the LCT, which are particularly valued due to the intensively farmed and developed nature of much of the landscape. These include ancient woodlands at Husband Wood near Darton		

	and Horse Carr Wood near Ardsley, as well as valued flood meadows and wetlands at Brierley, Swaithe and Bolton upon Dearne. Former quarry exposures are now defined as RIGS, including Burton Bank Quarry, Stairfoot Brickpit and Worsbrough Dale; and a greenway is provided along the disused Stairfoot railway. The villages of Brierley, Darfield and Billingley include Conservation Areas reflecting their range of vernacular styles and listed buildings, including former farm cottages and mining workers' terraces.
Cultural associations	The strongest association is with the coal mining heritage. There are no other known cultural associations of note.
Amenity and recreation	M There are a number of recreational opportunities of importance to local communities within this LCT, including former collieries/spoil heaps transformed into Country Parks at Rabbit Ings and Phoenix Parks. The countryside surrounding the settlements is crossed by a network of public rights of way, including lengths of the Barnsley Boundary Walk and Dearne Way long distance trails. Disused railway lines also form valued greenways within the landscape.
Discussion on landscape sensitivity[63]	The landscape's generally large-scale and simple landform with tracts of consistent landcover in intensively farmed, large-scale fields are likely to reduce the LCT's sensitivity to wind energy development. The presence of existing urban development, industrial activity and vertical structures such as pylon lines also lessens landscape sensitivity. However, the close proximity of settlements (which provide a human-scale to the landscape); complex, undulating ridgelines and small-scale tributary valleys; as well as the LCT's role as a valued rural backdrop to urban areas, all increase sensitivity. Land of highest sensitivity generally occurs close to the settlement edges and valleys and in areas that have notable natural or cultural heritage features or recreation interests. The broad tracts of arable ridgeland tend to be of lower sensitivity.
Sensitivity to different turbine heights	**Very Small (≤24m)** — **L** **Small (25-59m)** — **L-M** **Medium (60-89m)** — **M** **Large (90-129m)** — **M-H** **Very large (≥130m)** — **H** The immediate proximity of urban development to much of this landscape (which provides a human scale), the location of complex and elevated ridgelines, and the landscape's role as a rural backdrop to views from settlements mean that the LCT is highly sensitive to 'very large' turbines. Much of the LCT is also highly sensitive to 'large' turbines.
Commentary on turbine group size • Single turbine • Small cluster (2-3 turbines) • Small wind farm (4-5 turbines) • Medium wind farm (6-10 turbines) • Large wind farm (11-20 turbines) • Very large wind farm (≥21 turbines)	This LCT is highly sensitive to the development of 'large wind farms' and 'very large wind farms'. It may be less sensitive to smaller turbine group sizes such as 'small wind farm' and 'small cluster'.

[63] Note that this refers to inherent landscape sensitivity i.e. the assessment has not been affected by any existing development.

LCT Q: Guidance for Wind Energy Development

Guidance for future development

This LCT is sensitive to larger scales of wind energy development. It is more suited to scattered 'very small' or 'small' turbines, comprising single turbines, small clusters or very occasional small or medium wind farms. Some limited locations away from settlements and in the larger scale and more intensively farmed parts of the LCT may, exceptionally, be less sensitive to larger turbines.

Constraints

- The LCT provides a rural setting and foreground to views from adjacent settlements and development, including the urban area of Barnsley.
- Areas of complex, undulating ridgelines and small-scale valleys may be highly sensitive to wind energy development.
- Locally important natural assets include ancient woodlands, flood meadows and wetlands, and regionally significant geological exposures in former quarries.
- The LCT includes recreational resources of value to local communities, including Rabbit Ings and Phoenix Park Country Parks, sections of the Barnsley Boundary Walk and Dearne Way and greenways along disused railway lines.
- The settled character of the landscape brings both a human scale and physical constraint to wind energy schemes.

Opportunities

- Small scale wind energy development that is visually associated with existing development or farms, and evenly spread across the landscape rather than concentrated in one particular area, will be most appropriately accommodated in the landscape.
- Locally, where the landscape is somewhat larger in scale (particularly in the intensively farmed arable areas furthest away from settlements) there may be scope to accommodate larger turbines or turbine clusters, subject to other constraints.

Key considerations

When siting and designing wind energy developments in this LCT, the generic guidance in **Appendix 3** and in the small turbine guidance[64] (where relevant) should be taken into account. In addition, specific landscape considerations within this LCT are as follows:

- Avoid siting turbines in locations that form a valued rural backdrop to views from settlements and the urban area of Barnsley.
- Give special consideration to the effects of turbines on the approaches to and settings of historic buildings and Conservation Areas.
- Avoid elevated, exposed locations on more complex, undulating ridgelines (for example, east of Brierley, on the edge of the Barnsley council area), as these will be highly visible from nearby centres of population.
- Look to retain the LCT's locally valued levels of relative remoteness in the context of its urban setting, particularly its open ridgelines.
- Where larger turbines are proposed, ensure that they do not overwhelm the human scale of the landscape features, including trees and farm buildings.

Current patterns of permitted wind energy development

As at June 2014 there were 4 operational and consented wind energy sites with a total of 7 turbines in this LCT, as well as others in surrounding areas. The patterns were as follows:

- **Barnsley Q1 and Q2** – Three consented schemes lie east of Cudworth (Q1). Two are single small and medium turbines; and one is a small cluster of large turbines (Park Spring wind farm). There are also two very small turbines just to the east of Bolton upon Dearne (Q2). Around 3-5km east of Q2,

[64] Julie Martin Associates (2013) *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*, report to Blackburn with Darwen, Burnley, Calderdale, Hyndburn, Kirklees, Pendle, Rochdale and Rossendale Councils.

in the Doncaster council area, are two small wind farms of large turbines (Hampole and Marr).

Follow web link to database and web map to see the latest position.

Cumulative landscape and visual issues arising

Key cumulative issues arising in this LCT are:

- Siting of single small and medium turbines in close visual proximity to a group of three turbines at the highest end of the 'large' turbine height class, all located east of the village of Cudworth. Here the juxtaposition of turbines of different sizes may be distracting and/or tend to heighten the perceived scale of the larger turbines.
- Potential cumulative visual impacts when turbines are viewed together with turbines in the adjacent Doncaster council area.

These cumulative landscape and visual issues may be a constraint on further wind energy development in the surrounding area.

Guidance for siting multiple developments within this LCT

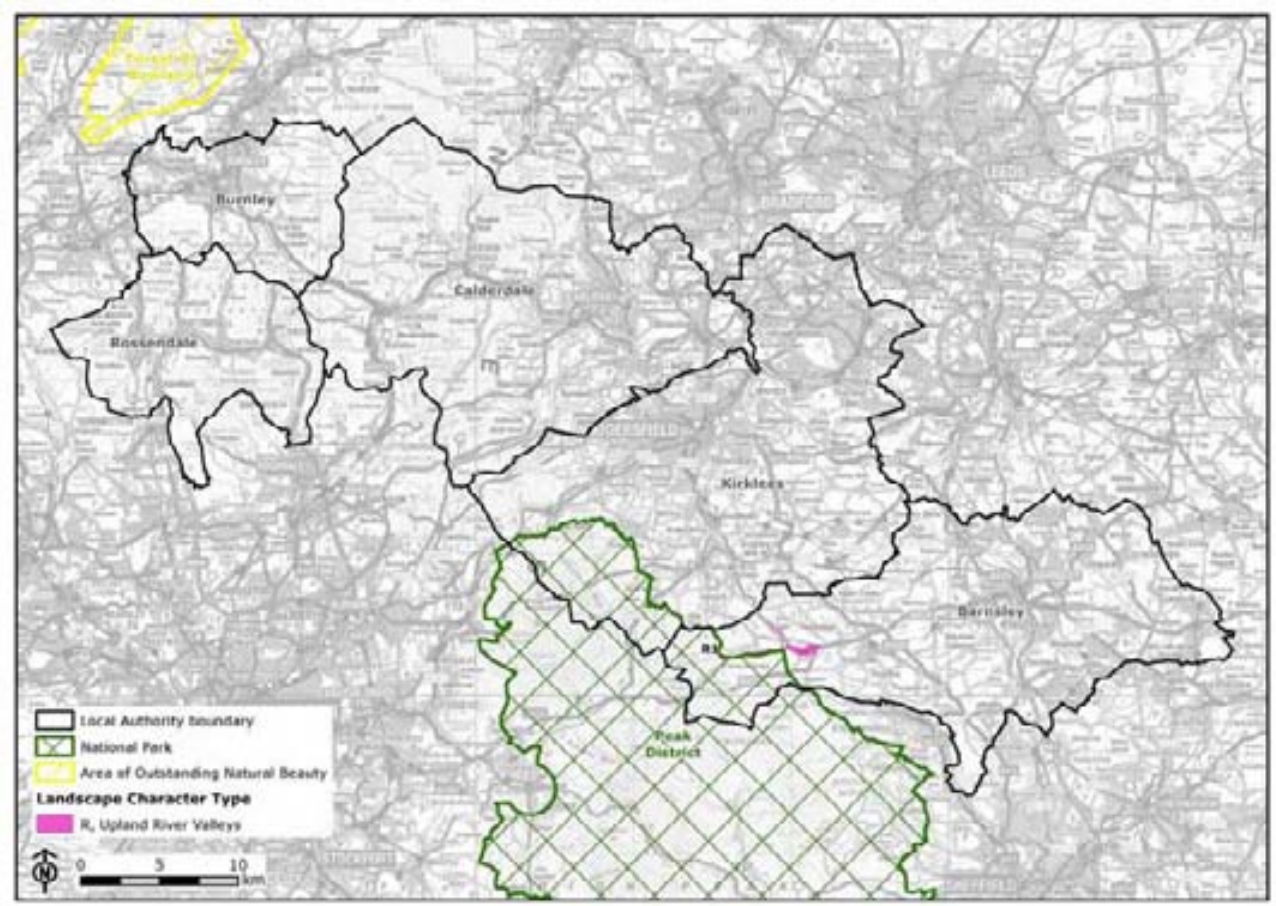
Multiple wind energy developments in this LCT should:

- Be similar in terms of siting, layout, form and relationship to key landscape characteristics, so as to present a simple image that relates clearly to landscape character[65] – for example in this LCT by associating smaller turbine classes with settlements or farms; and larger turbine classes with areas of intensively farmed arable land.
- When locating 'very small ' and 'small' turbines, avoid strong concentrations of turbines in a given area, and choose sites away from views to existing larger turbines, so that the different turbine size classes are not seen together.
- Also avoid close juxtaposition of different turbine designs and heights, aiming instead for a consistent design and height in a given area.

[65] See Scottish Natural Heritage (2014) *Siting and Designing Wind Farms in the Landscape*.

LCT R: Upland River Valleys

LCT Location Map



Component Landscape Character Areas

R1: Upland Don River Valley

Local authorities where LCT is present

Barnsley

Landscape character summary

The Upland River Valley landscape type is defined by a distinctive valley landform containing the upper reaches of the River Don. The upland river valley can be steep or shallow-sided, but is always enclosed by sloping valley sides that provide a sense of enclosure and human scale that often contrast with adjacent large scale open upland landscapes. This is a rural upland landscape where pastures, bounded by stone walls, reach down to the water side and unimproved waterside meadows are important wildlife habitats. Generally the fields are smaller where they abut the water, increasing in size as they ascend the valley sides. The upland river valley contains fast running rivers that have been exploited for their power. Mill races, sluices, weirs and old mill buildings are features of the valley floor.

Key environmental features

- Faster flowing upper reaches of the River Don extending into the open moorland.
- Meandering river set within a valley that is of varying width and depth, and which provides enclosure.
- Deciduous belts located on the steeper valley sides and alongside the course of the river.
- Largely undeveloped character with pasture occurring on the valley sides and floor up to the water's edge.
- A dismantled railway line defines the edge of the valley to the south (now part of the Trans Pennine Trail).
- Weirs, sluices and mills are indications of the former wool weaving industry.
- Stone bridges and stone walls are attractive man-made elements.

LCT R: Landscape Sensitivity to Wind Energy Development

Criteria	Lower sensitivity ▪▪▪▪▪▪▪▶ Higher sensitivity
Scale	H This LCT comprises the lower slopes and valley floor of the Upper Don and Sledbrook Dike (a tributary of the Don), forming a narrow, small-scale landscape contrasting with the expansive moorland of Thurlstone Moors which lies immediately adjacent to the south. Dense woodland cover along the valley floor and sides also provides a contrasting sense of enclosure and intimacy. The valley opens out around Bullhouse Bridge, becoming of a medium-scale, but here it is defined by small-medium size fields divided by stone walls, with mill buildings and individual properties bringing a human scale to the landscape.
Landform	M The valley (and Sledbrook Dike) is steeply incised in the west as it cuts dramatically through the surrounding moorland. It then opens out into a broader floodplain of undulating farmland around Bullhouse Bridge – of lower sensitivity.
Landcover	H Landcover is a mixture of bands of deciduous woodland, upland fringe pastures and unimproved riverside meadows forming a strong pattern of walled enclosures. The river is fast-flowing in the west as it cuts through the surrounding moorland, becoming more meandering across a wider floodplain in the east of the LCT.
Built environment	M This is a sparsely settled landscape, with very occasional farmsteads on valley sides and clusters of buildings associated with Bullhouse Bridge in the east and Dunford Bridge in the west. Stone as a building material unifies built character in the landscape with buildings, bridges and walls constructed out of the same local stone.
Skylines and settings	H Due to its valley character, skylines are not particularly prominent, but the LCT plays an important role as part of the setting to the adjoining moorland of the Peak District National Park.
Visibility and views	M This LCT tends to be visually contained by woodland and topography and hence not very widely visible, although it is overlooked from facing valley slopes, the settlement of Millhouse Green and the moorland of the National Park to the south.
Landscape quality (condition)	M The most significant intrusion into this landscape is the large-scale pylon line, which cuts through an otherwise remote and naturalistic landscape. There has been some decline in the condition of individual features such as stone walls and traditional buildings, but overall this is an intact landscape.
Scenic quality	M The southern edge of the upper valley directly abuts the Peak District National Park, designated as the first National Park in Britain in 1951. Its special qualities, which may be affected by wind energy development, include its sense of wildness and remoteness and the flow of landscape character across and beyond the National Park boundary.
Wildness and tranquillity	M This landscape is not wild but is often relatively tranquil due to its rural character, strong woodland cover, and that fact that many parts of the valleys are largely hidden and accessible only on foot. A sense of wildness is conveyed in views out of the LCT towards the remote uplands of the National Park.
Natural and cultural heritage features	M In terms of natural heritage, the former railway sidings of Wogden Foot are locally recognised as important for biodiversity, supporting wildflower-rich grasslands (owned and managed by the council). Parts of the LCT also fall within the wider Western Moors local wildlife site. Mill races, sluices, weirs and old fulling mills are all features of this part of the Don Valley today (e.g. Bullhouse Mill). A dismantled railway follows the valley along its length (now part of the Trans Pennine Trail) also providing a visual clue to the historic importance of the valley as a transport corridor. The Grade II* Bullhouse Hall and chapel

	and Grade II listed Hazlehead Hall are legacies of the wealth generated in the area during the 17th to 19th centuries. The presence of disused mines and shafts on the valley sides is also evidence of historic land use activity.	
Cultural associations	**M**	
	This area has a particular association with early industrial activity in the South Pennines, as evidenced by remnants of shafts, mines and water mills, the swift streams having provided a source of water power.	
Amenity and recreation	**M**	
	The entire length of the valley is followed by the Trans Pennine Way (and National Cycle Route 62), following a dismantled railway line. Access to other parts of the LCT is more limited.	
Discussion on landscape sensitivity[66]	In practice wind energy development would be very difficult to accommodate due to the landscape's enclosure by topography and woodland. In addition, its role as an immediate setting to the Peak District National Park, natural and cultural heritage interest and amenity and recreation value also heighten sensitivity to wind turbines.	
Sensitivity to different turbine heights	**Very Small (18-24m)**	**M-H**
	Small (25-59m)	**M-H**
	Medium (60-89m)	**H**
	Large (90-129m)	**H**
	Very large (>130m)	**H**
	The small, confined nature of the valley means that this LCT would be highly sensitive to any turbines larger than 'small' in height. Locations immediately adjacent to the National Park are likely to be highly sensitive to the development of turbines of any height (although this will need to be judged on a case by case basis).	
Commentary on turbine group size • Single turbine • Small cluster (2-3 turbines) • Small wind farm (4-5 turbines) • Medium wind farm (6-10 turbines) • Large wind farm (11-20 turbines) • Very large wind farm (≥21 turbines)	The small-scale and sensitive nature of the valley means that it is highly sensitive to any turbine group size other than 'single turbine'.	

[66] Note that this refers to inherent landscape sensitivity i.e. the assessment has not been affected by any existing development.

LCT R: Guidance for Wind Energy Development

Guidance for future development

This LCT is generally of high sensitivity to all scales of wind energy development. There may be very occasional opportunities to accommodate single, 'very small' (or in some cases 'small') turbines where visually linked to existing farmsteads or buildings. However, the constrained and small scale nature of the valley means that potential sites are limited.

Constraints

- This narrow, small scale valley forms a transitional landscape bordering the Peak District National Park and offers very limited space for any significant wind energy development.
- The LCT provides the foreground to views from Barnsley district to Thurlstone Moors in the National Park, and features in views from the National Park towards the moorland pastures of LCT D (including Royd Moor and Spicer Hill which contain existing wind energy development).
- Protection of these views and settings – particularly the northern setting of the National Park – are key constraints on wind energy development within the LCT.
- Other constraints locally include the many natural and cultural heritage features, cultural associations and the presence of a key recreational route following the valley – as outlined in the sensitivity assessment above.

Opportunities

- Small scale single wind energy developments that are visually associated with settlements or farms, and evenly spread across the landscape rather than concentrated in one particular area, will be most easily accommodated in the landscape.

Key considerations

When siting and designing wind energy developments in this LCT, the generic guidance in **Appendix 3** and in the small turbine guidance[67] and the wind energy landscape sensitivity assessment that covers the Peak District National Park[68] should also be taken into account where relevant. In addition, specific landscape considerations within this LCT are as follows:

- Avoid siting turbines within key views, especially those to and from the Peak District National Park.
- Avoid locations adjacent to the large-scale pylon line running through the valley, which will lead to confusing visual clutter owing to differences in scale.
- Give special consideration to the effects of turbines on the approaches to and settings of historic buildings, particularly those that are listed.
- Aim to protect the landscape's relatively tranquil and remote character, particularly where these characteristics are associated with the surrounding moorlands of the National Park.

Current patterns of permitted wind energy development

As at June 2014 there were 4 operational and consented wind energy sites with a total of 7 turbines in this LCT, as well as others in surrounding areas. The patterns were as follows:

- **Barnsley R1** – There is a small cluster of three 'small' turbines associated with Bullhouse Mill. In LCT D Moorland Fringes/ Upland Pastures, immediately to the north of R1, there are also three small clusters of large turbines (Hazlehead, Spicer Hill, Blackstone Edge) and a large wind farm of small turbines (Royd Moor).

Follow web link to database and web map to see the latest position.

Cumulative landscape and visual issues arising

Key cumulative issues arising in this LCT are:

- Proximity to large turbines at Hazlehead, Spicer Hill and Blackstone Edge in D7 and D9 to the north.

[67] Julie Martin Associates (2013) *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*, report to Blackburn with Darwen, Burnley, Calderdale, Hyndburn, Kirklees, Pendle, Rochdale and Rossendale Councils.

[68] Land Use Consultants (2009) *Landscape Sensitivity Assessment for Renewables in the Peak Sub-Region*, report to the Peak District National Park Authority and others.

The juxtaposition of these turbines with much smaller turbines in this LCT may be distracting and/or tend to heighten the perceived scale of the larger turbines.

This may be a constraint on further wind energy development in this LCT.

Guidance for siting multiple developments within this LCT

If there are multiple wind energy developments in this LCT in future, these should:

- Be consistent in their relationship to key landscape characteristics[69] – for example through a clear association with the regular clusters of farm buildings that occur in this LCT.
- When locating 'very small' and 'small' turbines, choose sites away from views to existing turbines in adjoining LCTs, so as not to blur the distinctions between LCTs.
- Also avoid close juxtaposition of different turbine designs and heights, aiming instead for a consistent design and height in a given area.

[69] See Scottish Natural Heritage (2014) *Siting and Designing Wind Farms in the Landscape*.

5 Key Findings and Recommendations

Introduction

5.1 This final section of the report explains how the study outputs can be used in development planning and development management, and presents a short 'user guide' describing how to use the information in this report for decision-making. It also summarises the sensitivity assessment results and considers strategic landscape issues arising from wind energy development across the study area as a whole.

Using the Results in Development Planning and Development Management

A Proactive Approach

5.2 The NPPF[70] recognises that the landscape is changing, particularly as a result of climate change, and paragraph 94 encourages local planning authorities to adopt proactive strategies to mitigate and adapt to climate change while paragraph 97 encourages local planning authorities to "have a positive strategy to promote energy from renewable and low carbon sources".

5.3 The Planning and Climate Change Coalition's guidance for local authorities[71] recommends that local authorities "identify the most and least environmentally sensitive areas for deployment of different renewable energy technologies and communicate this to developers and communities, making explicit what criteria have been applied." (para 3.4 a ii).

5.4 Criteria linked to the landscape character assessment and the findings of this study will assist, as part of the evidence base used by local planning authorities, to fulfil this recommendation. This study provides information, at a strategic level, on the relative levels of landscape sensitivity to wind turbine development found across the study area. This information, set out in the LCT sensitivity assessments in ***Section 4*** *of this report and summarised in the landscape sensitivity maps in* ***Appendix 1 (Figures 12-16)****, may assist the local planning authorities when they consider identifying 'suitable' areas for wind energy development, as recommended in NPPF para 97 – areas of ''High' landscape sensitivity generally being more constrained and areas of 'Low' sensitivity generally being less constrained in landscape terms.*

5.5 However landscape is only one of a number of technological and environmental considerations that need to be taken into account in identifying suitable areas for wind energy development, and, as explained earlier in this report, the landscape sensitivity assessment should not be interpreted as a definitive statement on the suitability in landscape terms of an individual site for a particular development. Each development still needs to be assessed on its own merits.

Reviewing Applications

5.6 When determining planning applications for renewable and low carbon energy, the NPPF encourages local planning authorities to "approve the application if its impacts are (or can be made) acceptable" and refers to the need for commercial scale projects to demonstrate that they meet the criteria used in identifying suitable areas for wind energy development (para 98).

5.7 It is important to note that a significant effect is not the same as an unacceptable one and the judgement on acceptability will need to balance the adverse effects of a project against its benefits (and is not a landscape judgement alone). However, in considering whether a development can be accommodated in the landscape, the following criteria may be considered:

[70] Department for Communities and Local Government (March 2012) *National Planning Policy Framework*.
[71] Planning & Climate Change Coalition (April 2012) *Planning for Climate Change – guidance for local authorities*.

i. **Landscape character**: Does the development respond to landscape character (as set out in the landscape character descriptions for the relevant LCTs and LCAs)? Would any distinctive characteristics or landscape perceptions be affected by the proposals?

ii. **Potential for landscape or visual harm**: Would the development harm the 'key environmental features', which closely reflect its most special, valued landscape qualities? Does the proposed scheme respect the landscape constraints to wind energy development that have been identified in the sensitivity assessment?

iii. **Sensitive siting**: Is the development in line with the sensitivity assessment and guidance? Has it been sensitively sited, or could it be better sited within land under the applicant's control?

iv. **Sensitive design**: Has the scheme been designed to firstly avoid harm, and secondly minimise any unavoidable harm? Have the 'key considerations' set out in the guidance for the relevant LCT been recognised and respected?

v. **Additional mitigation/ landscape enhancement**: Have opportunities been taken to mitigate significant adverse effects and have any opportunities for landscape enhancement been taken?

vi. **Cumulative impact**: Where there are multiple wind energy developments in the landscape, do these raise or worsen any cumulative landscape and visual issues that exist? Has the guidance for siting multiple developments been observed?

5.8 Although ultimately each application has to be decided on its own merits, taking account of its specific landscape, visual and cumulative effects, planning applications should demonstrate how development proposals respond to landscape character and minimise harm to valued characteristics, features and qualities.

5.9 Generic guidance on good practice in siting, layout and design of wind energy developments in the landscape, and on assessing the landscape, visual and cumulative impacts of wind energy developments, can be found in **Appendix 3** and **Appendix 4** respectively. This guidance may also be a useful reference source during the preparation and review of planning applications for wind energy development.

User Guide

5.10 The following brief User Guide is designed for developers, planners and decision-makers and is intended to help them use this report to consider landscape character and sensitivity in relation to proposals for wind energy developments. It is arranged under three key stages, and sets out a series of questions as prompts to assist in using available information to shape proposals and make decisions on wind energy applications.

Stage 1 – Landscape sensitivity

- What size of development is proposed (height and number of wind turbines)?
- Which landscape character type (LCT) does the proposed development lie within?
- Is the site characteristic of the wider LCT (as per the key characteristics provided at the beginning of each LCT assessment in Section 4)? If not how does it differ?
- What is the sensitivity rating for the LCT and the height of turbine(s) being proposed?

Stage 2 – Siting and design considerations

- Are the height and number of turbines proposed consistent with the sensitivity assessment for the relevant LCT, as set out in Section 4? If not how does the proposed development differ?
- Do the siting and design of the scheme accord with the 'Guidance for future development' for the relevant LCT, as set out in Section 4? If not, which aspects of the proposed development conflict with which parts of the guidance?
- Does the development accord with the generic guidance on siting, layout and design included in Appendix 3? If not, which aspects of the proposed development conflict with which parts of the guidance?
- Has adequate information been provided on landscape, visual and cumulative impacts, as indicated in Appendix 4?
- Have opportunities been taken to mitigate significant adverse effects, and opportunities for landscape enhancement, been included as part of the proposal?

Stage 3 – Cumulative impact

- Would the proposed development further contribute to the 'Cumulative landscape issues' already identified for the relevant LCT (as set out in Section 4)?
- Have current patterns of permitted wind energy development changed since this report was prepared (consult the database and web mapping tool, see Appendix 5)?
- Are there any nearby turbines less than 18m in height (and therefore not included in the database) that might contribute to the cumulative landscape effects of the scheme?
- Is the proposed development in line with the 'Guidance for siting multiple developments' for the relevant LCT, included in Section 4? If not, how does it conflict with this guidance?

Summary of Assessment Results

5.11 The table below summarises the sensitivity assessment for each LCT. The results should be read in conjunction with the landscape sensitivity maps in **Appendix 1 (Figures 12-16)**.

Table 5.1: Summary of Assessment Results

Landscape Character Type (LCT)	Sensitivity to Different Turbine Heights		Commentary on Sensitivity
A: High Moorland Plateaux	**Very Small (≤24m)**	**M-H**	The landscape's wide visibility, the role of its elevated upland skylines as a backdrop to both immediate and long distance views, its strong remote and 'wild' character, and its function as a moorland 'extension' to the Peak District National Park to the south mean that it is highly sensitive to 'medium', 'large' and 'very large' wind turbines. It is somewhat less sensitive to smaller turbines although these are only likely to be appropriate on the lower, gentler, marginal slopes. Areas close to the Peak District National Park are highly sensitive to turbines of any height which could affect the Park's special qualities (although this will need to be judged on a case by case basis).
	Small (25-59m)	**M-H**	
	Medium (60-89m)	**H**	
	Large (90-129m)	**H**	
	Very large (≥130m)	**H**	
B: Moorland Hills	**Very Small (≤24m)**	**M-H**	The landscape's undeveloped character and recreational role, as well as its important elevated skylines which form a valued backdrop to views from valley settlements, mean that it is highly sensitive to 'medium', 'large' and 'very large' wind turbines. It is somewhat less sensitive to smaller turbines, especially in areas away from the key skylines.
	Small (25-59m)	**M-H**	
	Medium (60-89m)	**H**	
	Large (90-129m)	**H**	
	Very large (≥130m)	**H**	
C: Enclosed Uplands	**Very Small (≤24m)**	**L**	This LCT is highly sensitive to turbines in the 'very large' category and also of moderate to high sensitivity to 'large' and 'medium' turbines due to its enclosed landscape pattern and role as an elevated upland backdrop to views from valley settlements. It may be less sensitive to smaller turbine classes, given appropriate siting and design.
	Small (25-59m)	**M**	
	Medium (60-89m)	**M-H**	
	Large (90-129m)	**M-H**	
	Very large (≥130m)	**H**	
D: Moorland Fringes/ Upland Pastures	**Very Small (≤24m)**	**M**	The landscape's tranquil character, strong associations with the open moor, elevated rural skylines which form a setting to valley settlements, many human-scale features (walls, trees, farmsteads) and its function as a setting to the Peak District National Park to the south mean that it is generally highly sensitive to 'medium', 'large' and 'very large' wind turbines. Locations immediately adjacent to the National Park are likely to be highly sensitive to the development of turbines of any height (although this will need to be judged on a case by case basis).
	Small (25-59m)	**M-H**	
	Medium (60-89m)	**H**	
	Large (90-129m)	**H**	
	Very large (≥130m)	**H**	

E: Rural Fringes	**Very Small (≤24m)** — **M** **Small (25-59m)** — **M-H** **Medium (60-89m)** — **M-H** **Large (90-129m)** — **H** **Very large (≥130m)** — **H**	This LCT is highly sensitive to turbines in the 'very large' and 'large' categories and also of moderate to high sensitivity to 'medium' and 'small' turbines due to its varied landform, the presence of frequent human-scale features, widespread visibility to nearby urban populations as well, in the south, its proximity to the Peak District National. It may be less sensitive to smaller turbine classes, given appropriate siting and design.
F: Settled Valleys	**Very Small (≤24m)** — **M-H** **Small (25-59m)** — **H** **Medium (60-89m)** — **H** **Large (90-129m)** — **H** **Very large (≥130m)** — **H**	The constrained and often dramatic nature of the steep valley landforms, areas of sensitive landcover (including ancient woodlands), small-scale and diverse landscape patterns and frequent human-scale features mean that this LCT is highly sensitive to any turbines larger than 'very small' in height. Locations immediately adjacent to the National Park are likely to be highly sensitive to the development of turbines of any height (although this will need to be judged on a case by case basis).
G: Wooded Rural Valleys	**Very Small (18-24m)** — **M-H** **Small (25-59m)** — **H** **Medium (60-89m)** — **H** **Large (90-129m)** — **H** **Very large (>130m)** — **H**	The often secluded nature of the steep valley landforms, areas of sensitive landcover (including ancient woodlands) and heritage features, small-scale and diverse landscape patterns and frequent human-scale features mean that this LCT would be highly sensitive to any turbines larger than 'very small' in height.
I: Reservoir Valleys	**Very Small (≤24m)** — **M** **Small (25-59m)** — **M-H** **Medium (60-89m)** — **H** **Large (90-129m)** — **H** **Very large (≥130m)** — **H**	The landscape's small-scale field patterns, presence of human-scale features including woodland and historic farmsteads, complex valley landform and role as a rural backdrop to the urban area of Haslingden mean that it would be highly sensitive to 'medium', 'large' and 'very large' turbines.
K: Coalfield Edge Urban Fringe Farmland	**Very Small (≤24m)** — **L** **Small (25-59m)** — **M** **Medium (60-89m)** — **M-H** **Large (90-129m)** — **H** **Very large (≥130m)** — **H**	The immediate proximity of urban development to much of this landscape (which provides a human scale), the presence of significant settlement within it, and its elevated ridgelines which form a backdrop to views mean that the LCT is highly sensitivity to 'large and 'very large' turbines. Much of the landscape is also highly sensitive to 'medium' turbines.
M: Industrial Lowland Valleys	**Very Small (≤24m)** — **L** **Small (25-59m)** — **L-M** **Medium (60-89m)** — **M-H** **Large (90-129m)** — **H** **Very large (≥130m)** — **H**	The frequent presence of major industrial and infrastructure features means that this LCT may be less sensitive to suitably-located 'very small', 'small' and 'medium' turbines. However it remains highly sensitive to ''large' and 'very large' wind turbines, which would be out of scale with other landscape features.

N: Rolling Wooded Farmland	**Very Small (≤24m)**	**L-M**
	Small (25-59m)	**M**
	Medium (60-89m)	**M-H**
	Large (90-129m)	**H**
	Very large (≥130m)	**H**
	The medium scale of much of the landform, its often strongly undulating character, proximity to settlements and presence of frequent human-scale features mean this LCT is of high sensitivity to 'large' and 'very large' turbines.	
O: Industrial/ Business Parks	**Very Small (≤24m)**	**L**
	Small (25-59m)	**L-M**
	Medium (60-89m)	**M-H**
	Large (90-129m)	**H**
	Very large (≥130m)	**H**
	The presence of existing built development within and surrounding this LCT means that this LCT would be highly sensitive to 'large' and 'very large' turbines; many locations would also be highly sensitive to 'medium' turbines. However the LCT may be less sensitive to suitably-located 'very small' and 'small' turbines.	
P: Lowland River Floors	**Very Small (≤24m)**	**L**
	Small (25-59m)	**M**
	Medium (60-89m)	**M-H**
	Large (90-129m)	**H**
	Very large (≥130m)	**H**
	This LCT is highly sensitive to 'large' and 'very large' wind turbines due to the small scale of the valley floors, the presence of frequent human-scale features, and the LCT's location on the doorstep of major settlements.	
Q: Settled Arable Slopes	**Very Small (≤24m)**	**L**
	Small (25-59m)	**L-M**
	Medium (60-89m)	**M**
	Large (90-129m)	**M-H**
	Very large (≥130m)	**H**
	The immediate proximity of urban development to much of this landscape (which provides a human scale), the location of complex and elevated ridgelines, and the landscape's role as a rural backdrop to views from settlements mean that the LCT is highly sensitive to 'very large' turbines. Much of the LCT is also highly sensitive to 'large' turbines.	
R: Upland River Valleys	**Very Small (18-24m)**	**M-H**
	Small (25-59m)	**M-H**
	Medium (60-89m)	**H**
	Large (90-129m)	**H**
	Very large (>130m)	**H**
	The small, confined nature of the valley means that this LCT would be highly sensitive to any turbines larger than 'small' in height. Locations immediately adjacent to the National Park are likely to be highly sensitive to the development of turbines of any height (although this will need to be judged on a case by case basis).	

Strategic Landscape Issues

Principles for Managing Wind Energy Development in the Landscape

5.12 The guidance on wind energy development in the landscape character types (LCTs) of the South Pennines is underpinned by a number of broad, overarching landscape management principles. These are to:

- Avoid significant harm to the key characteristics of the LCT whilst accepting that some change may be required in order to accommodate wind energy development;
- Respond to locations where new wind energy infrastructure may fit better or worse within the landscape (as assessed using the landscape sensitivity criteria);
- Maintain the diversity of landscapes across the South Pennines;
- Retain areas of undeveloped landscape in the most undeveloped parts of the study area;
- Maintain the natural beauty and special qualities of the nearby National Parks and AONBs.

5.13 In addition, new wind energy developments in each LCT – including repowering of any existing schemes – should:

- Be sited and designed so that they relate well to the scale and form of the underlying landscape character of the LCT (see landscape character summary for the LCT);
- Collectively not become a key characteristic or defining influence on the character of the landscape (with reference to the definition of 'landscape capacity'[72]);
- Show clear and consistent associations with particular landscape characteristics and features[73].

Broad Spatial Patterns of Wind Energy Development

5.14 Key trends in wind energy development in the study area in recent years have included:

- A strong expansion in single 'very small' and 'small' turbines, with new single turbines in the 25-45m height range being especially common;
- Demand for repowering or extension of existing wind farm sites using 'large' turbines (90-129m high) – several such schemes have recently been consented and others are expected in future.
- Applications for further wind farm development at Scout Moor and also on the Crook Hill to Heald Moor ridge.

5.15 As noted earlier, in June 2014 the total number of operational wind energy schemes within the study area stood at 69, with a further 94 schemes having been consented but not yet built. These schemes included a total of 134 operational turbines and a further 132 consented turbines, (as well as many turbines under 18m in height that are not specifically covered in this study). The following paragraphs give an overview of the existing broad spatial patterns of wind energy development within and around each of the five local planning authorities within the study area (see **Figures 7-11** in Appendix 1), as at June 2014. They also highlight some of the main strategic level landscape, visual and cumulative issues associated with wind energy development in each council area at the present time.

5.16 **Rossendale** has 16 operational and consented wind energy sites with a total of 33 turbines. The western, southern and eastern parts of the district are affected by a number of wind farm developments of varying sizes (Hyndburn, Scout Moor, Scar End, Todmorden Moor and Reaps Moss), mainly comprising 'large' turbines and often with limited visual separation between sites. This is likely to be a key constraint on any further development of 'large' wind turbines in Rossendale. The extensive Scout Moor wind farm, in particular, already exerts a strong influence

[72] "Landscape capacity refers to the degree to which a particular landscape character area is able to accommodate change without significant effects on its character, or overall change of landscape character type…" (Countryside Agency and Scottish Natural Heritage (2002) *Landscape Character Assessment Guidance for England and Scotland*).

[73] See Scottish Natural Heritage (2014) *Siting and Designing Wind Farms in the Landscape*.

on the landscape character of the Irwell valley, which is also affected by wind energy development in the adjoining Hyndburn council area. It is important that any future wind energy development at Scout Moor should not overwhelm either landscape character or the perceptions of local communities. Further north, in the Forest of Rossendale, the landscape is also increasingly affected by wind energy development – mainly comprising 'small' turbines. Where the influence of 'small' and 'large' turbines overlaps in the landscape, as it does in the area east of Bacup, turbines have begun not only to dominate landscape character but also to blur the distinctions between different LCTs.

5.17 **Burnley** has 13 operational and consented wind energy sites with a total of 26 turbines. There is a growing concentration of 'very small' and 'small' turbines in the north-eastern part of the council area, in LCT E Rural Fringes, with localised cumulative impacts that could be exacerbated in future by further wind energy development in adjoining LCTs or in the Pendle council area just to the north. Burnley also includes two existing wind farms, at Coal Clough and Hameldon Hill; and the landscape is very sensitive to further wind energy development, including development of smaller turbines, within their immediate settings – as is already occurring at Coal Clough, whose eastern setting is affected by the growing number of small turbines along the Long Causeway, in the Calderdale council area. Throughout Burnley but especially in the north-west, a key consideration in planning for new wind energy development is the likely effect on views to and from Pendle Hill (part of the Forest of Bowland AONB), just to the north.

5.18 **Calderdale** has 49 operational and consented wind energy sites with a total of 90 turbines. The landscape has been affected by wind farm development at three locations on the Crook Hill to Heald Moor ridgeline on the western edge of the council area (Crook Hill, Reaps Moss and Todmorden Moor), as well as by the Coal Clough wind farm, a short distance to the west in Burnley, all these sites having 'large' turbines. These developments cumulatively affect the sensitive skylines around the head of the Calder valley, which form a key part of the Pennine backbone. In addition, there is a growing wind energy influence on the northern edge of Calderdale, where the 'large' turbines of Ovenden Moor are seen together with many 'very small' and 'small' turbines of varying designs, including cross-boundary development in the adjoining Bradford council area. Elsewhere there are marked concentrations of 'very small' and 'small' turbines to the west of Ripponden and on the southern fringes of the Calderdale, along the M62.

5.19 **Kirklees** has 61 operational and consented wind energy sites with a total of 68 turbines. Most schemes comprise 'very small' or 'small' turbines. In some areas these are beginning to impinge visually on the fringes of the Peak District National Park. In particular, turbines of varying heights and designs are coming to dominate parts of LCT D Moorland Fringes/ Upland Pastures both west and south of Huddersfield on the boundary with the Barnsley council area. They are also exerting a strong influence on land east of Huddersfield in LCT N Rolling Wooded Farmland. In these areas the landscape may be nearing capacity for wind energy development. There may, however, be greater scope for wind energy development in some of the industrial landscapes of the Kirklees council area (notably LCT M Industrial Lowland Valleys), which have little or no wind energy development at present.

5.20 **Barnsley** has 24 operational and consented wind energy sites with a total of 49 turbines. There are four existing wind farms in the west of the council area, at Hazlehead, Blackstone Edge, Spicer Hill ('large' turbines) and Royd Moor ('small' turbines) in an area that is also characterised by many 'very small' and 'small' turbines of varying designs within both the Barnsley and the adjoining Kirklees council areas. Wind energy development here, very close to the edge of the Peak District National Park, now presents a complex and cluttered picture and there is little scope for further development. Further east only scattered single 'very small' or 'small' turbines occur and there may be locations where further wind energy schemes could be accommodated with little detriment to the landscape. Near Grimethorpe, close to the eastern edge of the Barnsley council area, there is a small cluster of consented 'large' turbines (Park Spring); and the wider landscape is also influenced by two small wind farms of large turbines (Hampole and Marr) about 3-5km outside Barnsley, in the Doncaster council area.

5.21 There is clear pattern, visible throughout the study area, for development to be concentrated towards the edges of the different council areas. This may be partly due to topography (as local authority boundaries often follow high ground) but may also reflect a historical lack of awareness of patterns of wind energy development in adjacent council areas.

Cumulative cross-boundary impacts in the area adjoining Bradford

Sequential impacts, here affecting the landscape of Cragg Vale (Ovenden Moor in background)

Varying turbine heights on adjacent schemes seen together near Penistone

Proliferation of small turbine designs in a small area

Fast-moving two-bladed turbines (larger turbines at Hameldon Hill beyond)

Visual conflict with other structures (pylons)

Common Strategic Landscape Issues

5.22 Across the study area as a whole, there are a number of common strategic landscape issues that are of growing concern. These include:

- Cumulative, cross-boundary landscape impacts, particularly evident in locations such as the western and southern edges of Rossendale, the Crook Hill to Heald Moor ridge, the Long Causeway near Coal Clough, the northern edge of the study area next Bradford, along the M62 west of Huddersfield, and in the area between Holmfirth and Penistone where there are strong concentrations of turbines, often of varying heights.
- Sequential landscape and visual impacts on key transport and recreational routes such as the A56 in Rossendale and Burnley, the A646 through the Calder Valley and Cliviger Gorge, the M62 trans-Pennine route, the A629 north of Halifax and again near Penistone, together with the Pennine Way, the Pennine Bridleway and long distance walking routes such as the Rossendale, Burnley, Calderdale and Kirklees Ways and the Barnsley Boundary Walk.
- Visual conflicts where turbines of differing height and appearance are seen in close conjunction with one another, or in combination with pylons or other built structures. This s becoming increasingly common due to the sheer numbers of turbines that are present in the landscape in some areas, and as a result of repowering of some wind farms with larger turbines.
- Design issues associated with a proliferation of smaller turbine designs, which in places have created a sense of visual clutter and introduced distracting elements with an industrial character (such as relatively fast blade movements and lattice tower structures[74]) into unspoilt rural landscapes. These issues are discussed more fully in the *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*[75]*.*

Managing Future Change: Some Strategic Priorities

5.23 In managing future landscape change associated with wind energy development, the local planning authorities will need to keep these wind energy development patterns, and their associated landscape, visual and cumulative issues, under regular review. The wind energy database and web mapping tool described in **Appendix 5** should help the authorities to monitor changing development patterns; and hence should support the management of future landscape change.

5.24 Based on our knowledge of the landscapes of the area and the ways in which they are being affected by wind energy development at the present time, we suggest that key strategic priorities for managing wind energy development in landscapes of the area should be to:

- Prevent any significant further harm to the landscapes of the South Pennines Heritage Area and the West Pennine Moors, which are highly valued at a regional level for their many special landscape qualities – including their relative wildness and tranquillity – and their important recreational role;
- Conserve significant areas of open, less modified moorland and moorland fringe landscape– especially the parts of the South Pennine Moors that lie north and south of the scenic Calder valley (in A1, A2 and D1) and are presently largely untouched by wind energy development;
- Ensure that the northern fringes and settings of the Peak District National Park and the southern fringes and settings of the Forest of Bowland AONB (including Pendle Hill) are not significantly affected by wind energy development in adjoining landscapes;
- In the medium to longer term, reinstate open moorland skylines on the Crook Hill to Heald Moor ridge line (part of A1), which is important to the continuity of the Pennine backbone and also fulfils a strategic visual role at the head of the Irwell and Calder valleys;

[74] Commonly associated with two-bladed turbines.

[75] Julie Martin Associates (2013) *Landscape Guidance for Wind Turbines up to 60m high in the South and West Pennines*, report to Blackburn with Darwen, Burnley, Calderdale, Hyndburn, Kirklees, Pendle, Rochdale and Rossendale Councils.

- Limit any further visual intrusion by large scale wind energy development on adjacent settled valley landscapes, especially those of the upper Irwell and Calder valleys (F1 and F2), whose settings are already significantly affected by 'large' turbines;
- Promote clear patterns of turbines of different heights in the landscape – in particular focusing any future development of 'large' commercial turbines on areas of landscape identified as being less sensitive to turbines of that height (and relatively free of smaller turbines) – and give careful consideration to cumulative, cross-boundary and sequential impacts;
- Avoid the close juxtaposition in the landscape of turbines of different heights and designs, which can give rise to both landscape and visual impacts – for example affecting perceptions of landscape scale, blurring distinctions between different types of landscape, and creating a sense of visual clutter;
- Regularly monitor the cumulative landscape and visual effects of smaller turbines in the landscape, to identify when particular landscape character areas (LCAs) may be nearing capacity in landscape and visual terms[76], paying particular attention to cross-boundary areas both inside and outside the study area.

[76] This is the case, for example, in LCAs D2, E2, D7 and D9 at present.

Appendix 1: Maps Referred to in the Text

South Pennines Wind Energy Landscape Study

Figure 1: The Study Area

Study area

Local Authority boundaries

Burnley

Calderdale

Rossendale

Kirklees

Barnsley

Manchester

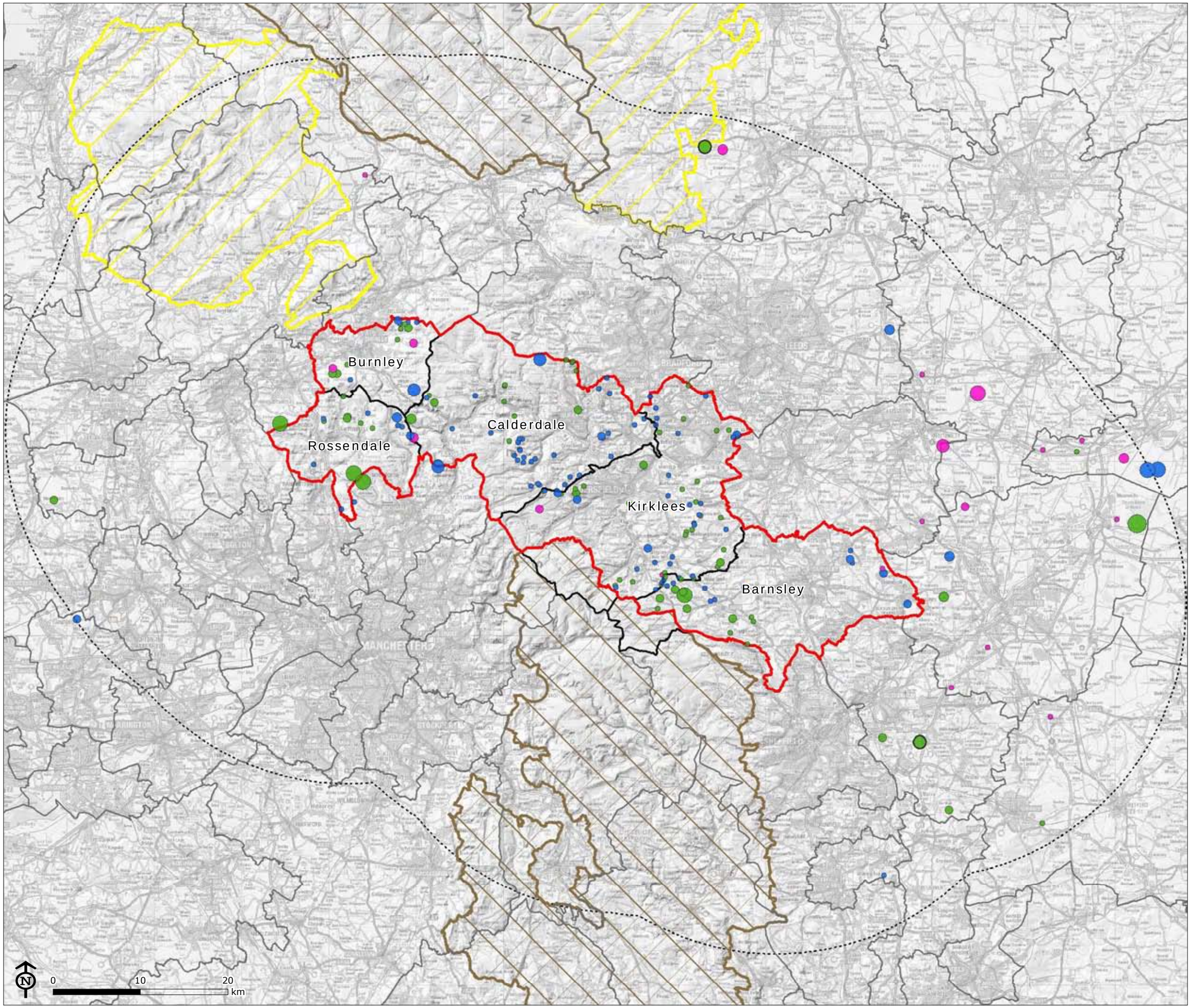
Map Scale @ A3:1:250,000

LUC

JULIE MARTIN ASSOCIATES

CB:DM EB:Manson D LUCLON 6014-01_018_Rpt_Study_area 22/10/2014

Source: Ordnance Survey



South Pennines Wind Energy Landscape Study

Figure 2: Existing Wind Energy Deployment in South Pennines

- Study area
- Local Authority boundaries
- Local Authorities 30km buffer
- Surrounding Local Authorities
- National Parks
- Areas of Outstanding Natural Beauty

Group class (symbol size)

- Single turbine
- Small cluster (2-3 turbines)
- Small wind farm (4-5 turbines)
- Medium wind farm (6-10 turbines)
- Large wind farm (11-20 turbines)
- Very large wind farm (21+ turbines)

Planning status (symbol colour)

- Operational
- Consented
- Not determined

Notes on scheme data:

Included schemes within study area:
- Operational and consented schemes with a tip height ≥18m
- Schemes at application stage with a capacity ≥0.5MW

Included schemes within 30km buffer:
- Operational and consented schemes with a capacity ≥0.5MW
- Schemes at application stage with a capacity ≥0.5MW

Where there are operational and consented repowering schemes on the same site, the map shows the consented scheme only.

Data last updated June 2014
Data source: Local Authorities and RESTATS

Map Scale @ A3:1:425,000

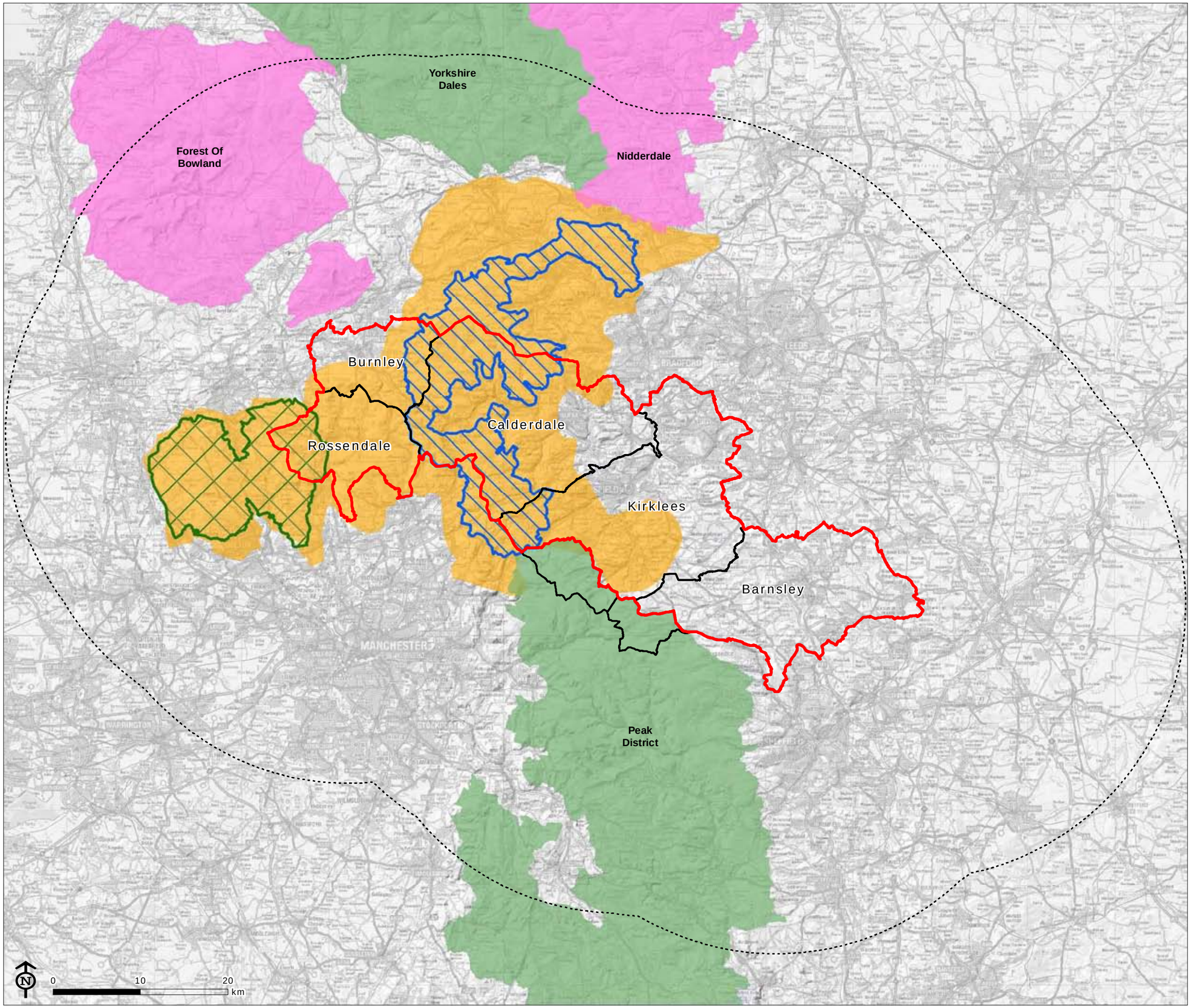
LUC JULIE MARTIN ASSOCIATES

CB:DM EB:Manson D LUCLON 6014-01_019_Rpt_Existing_deployment 22/10/2014

Source: Ordnance Survey, Natural England
RESTATS, Local Authorities

South Pennines Wind Energy Landscape Study

Figure 3: Regional Landscape Context



- Study area
- Local Authority boundaries
- Local Authorities 30km buffer
- National Parks
- Areas of Outstanding Natural Beauty
- West Pennine Moors
- Watershed Landscape
- South Pennines Heritage Area

Map Scale @ A3:1:425,000

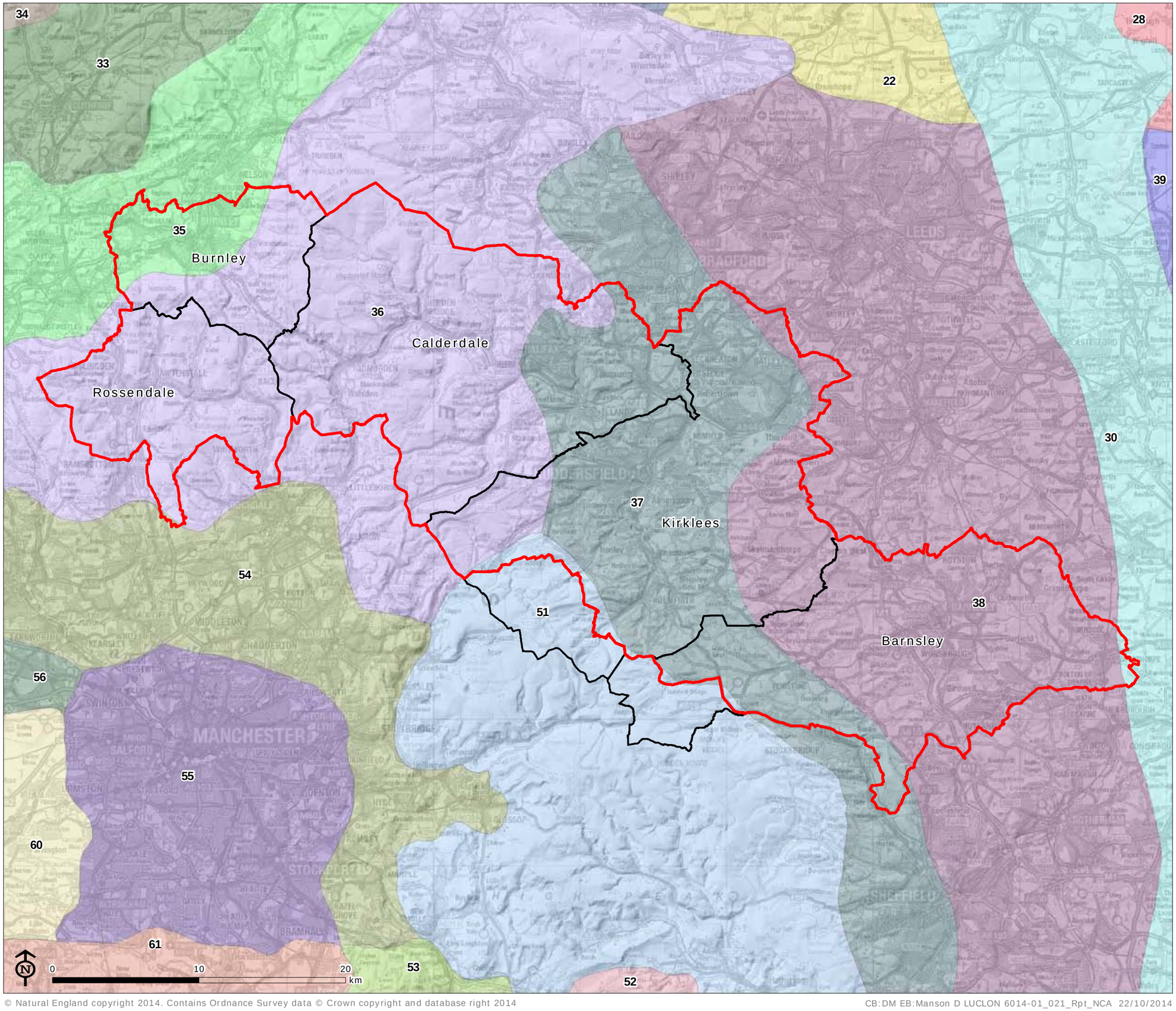
LUC JULIE MARTIN ASSOCIATES

CB:DM EB:Manson D LUCLON 6014-01_020_Rpt_Landscape_context 22/10/2014

Source: Ordnance Survey, Natural England, Rossendale, Barnsley

South Pennines Wind Energy Landscape Study

Figure 4: National Character Areas



- Study area
- Local Authority boundaries

National Character Areas

- 21: Yorkshire Dales
- 22: Pennine Dales Fringe
- 28: Vale of York
- 30: Southern Magnesian Limestone
- 33: Bowland Fringe and Pendle Hills
- 34: Bowland Fells
- 35: Lancashire Valleys
- 36: South Pennines
- 37: Yorkshire Southern Pennine Fringe
- 38: Nottinghamshire Derbyshire and Yorkshire Coalfields
- 39: Humberhead Levels
- 51: Dark Peak
- 52: White Peak
- 53: South West Peak
- 54: Manchester Pennine Fringe
- 55: Manchester Conurbation
- 56: Lancashire Coal Measures
- 60: Mersey Valley
- 61: Shropshire Cheshire and Staffordshire Plain

Map Scale @ A3:1:250,000

LUC JULIE MARTIN ASSOCIATES

CB:DM EB:Manson D LUCLON 6014-01_021_Rpt_NCA 22/10/2014

Source: Ordnance Survey, Natural England

South Pennines Wind Energy Landscape Study

Figure 5: Landscape Character Types

Study area

Local Authority boundaries

Landscape Character Type

- A - High Moorland Plateaux
- B - Moorland Hills
- C - Enclosed Uplands
- D - Moorland Fringes / Upland Pastures
- E - Rural Fringes
- F - Settled Valleys
- G - Wooded Rural Valleys
- I - Reservoir Valleys
- K - Coalfield Edge Urban Fringe Farmland
- M - Industrial Lowland Valleys
- N - Rolling Wooded Farmland
- O - Industrial / Business Parks
- P - Lowland River Floors
- Q - Settled Arable Slopes
- R - Upland River Valleys
- U - Urban

Note: For the purposes of this study only, some landscape character types in Barnsley have been renamed for consistency with other parts of the study area. See Table 2.1 of report for details.

Map Scale @ A3:1:250,000

LUC

JULIE MARTIN ASSOCIATES

CB:DM EB:Manson D LUCLON 6014-01_022_Rpt_LCT 22/10/2014

Source: Ordnance Survey

Note: For the purposes of this study only, some landscape character areas in Barnsley have been renamed for consistency with other parts of the study area. See Table 2.1 of report for details.

South Pennines Wind Energy Landscape Study

Figure 6: Landscape Character Areas

Study area

Local Authority boundaries

Landscape Character Types and Areas

- A - High Moorland Plateaux
  - A1: South Pennine Moors
  - A2: North Peak (Wessenden & Meltham Moors)
  - A3: Wharncliffe Unenclosed Moorland
- B - Moorland Hills
  - B2: West Pennine Moors
- C - Enclosed Uplands
  - C1: Rossendale Hills
- D - Moorland Fringes / Upland Pastures
  - D1: Calder Terrace
  - D2: Blackwood Common
  - D3: Forest of Trawden - Worsthorne Moor Fringe
  - D4: Scout Moor & Shore Moor Fringe
  - D5: Hameldon, Oswaldtwistle & Darwen Moor Fringe
  - D7: Peak Fringe Upland Pastures (formerly Wessenden & Meltham Moor Fringe)
  - D9: Low Common, Royd Moor & Whitley Common
  - D10: Penistone Upland Pastures
- E - Rural Fringes
  - E1: Holmfirth - Meltham
  - E2: Barkisland - Holywell Green
  - E3: Tockholes - Rivington - Edgeworth Fringe
  - E4: Colne - Nelson - Burnley Fringe
  - E6: Fenay Beck Valley Rural Fringes
  - E7: Emley Moor Northern Fringes
  - E8: Batley - Dewsbury Rural Fringes
- F - Settled Valleys
  - F1: Irwell (Ramsbottom, Rawtenstall, Bacup)
  - F2: Calder (Todmorden, Hebden Bridge, Mytholmroyd)
  - F3: Ryburn (Sowerby Bridge, Ripponden)
  - F4: Colne (Slaithwaite, Marsden)
  - F5: Holme & Hall Dike (Holmfirth, Meltham)
- G - Wooded Rural Valleys
  - G1: Luddenden Dean
  - G2: Hebden Dale & Crimsworth Dean
  - G3: Cliviger Gorge
  - G4: Cragg Vale
  - G5: Don River Valley
  - G6: River Roch & Tributaries
  - G8: Holme River Valley
  - G9: Fenay Beck Valley & Tributaries
  - G10: River Dearne Valley
  - G11: Batley Fringe Incised Valleys
  - G12: Shibden Dale
  - G13: Clifton Beck
- I - Reservoir Valleys
  - I3: Haslingden Grane
- K - Coalfield Edge Urban Fringe Farmland
  - K1: Thornton - Queensbury
- M - Industrial Lowland Valleys
  - M1: Calder Valley Floor
- N - Rolling Wooded Farmland
  - N1: Emley Moor
  - N2: Cawthorne Park & West Barnsley Rolling Wooded Farmland
  - N3: Grimethorpe Rolling Wooded Farmland
  - N4: Hoyland Rolling Wooded Farmland
- O - Industrial / Business Parks
- P - Lowland River Floors
  - P1: Elsecar Lowland River Floor
  - P2: Lower Dearne Lowland River Floor
  - P3: Upper Dearne Lowland River Floor
  - P4: Dove Lowland River Floor
- Q - Settled Arable Slopes
  - Q1: North East Barnsley Settled Arable Slopes
  - Q2: East Dearne Settled Arable Slopes
  - Q3: West Dearne Settled Arable Slopes
- R - Upland River Valleys
  - R1: Upland Don River Valley
- U - Urban

Map Scale @ A3:1:250,000

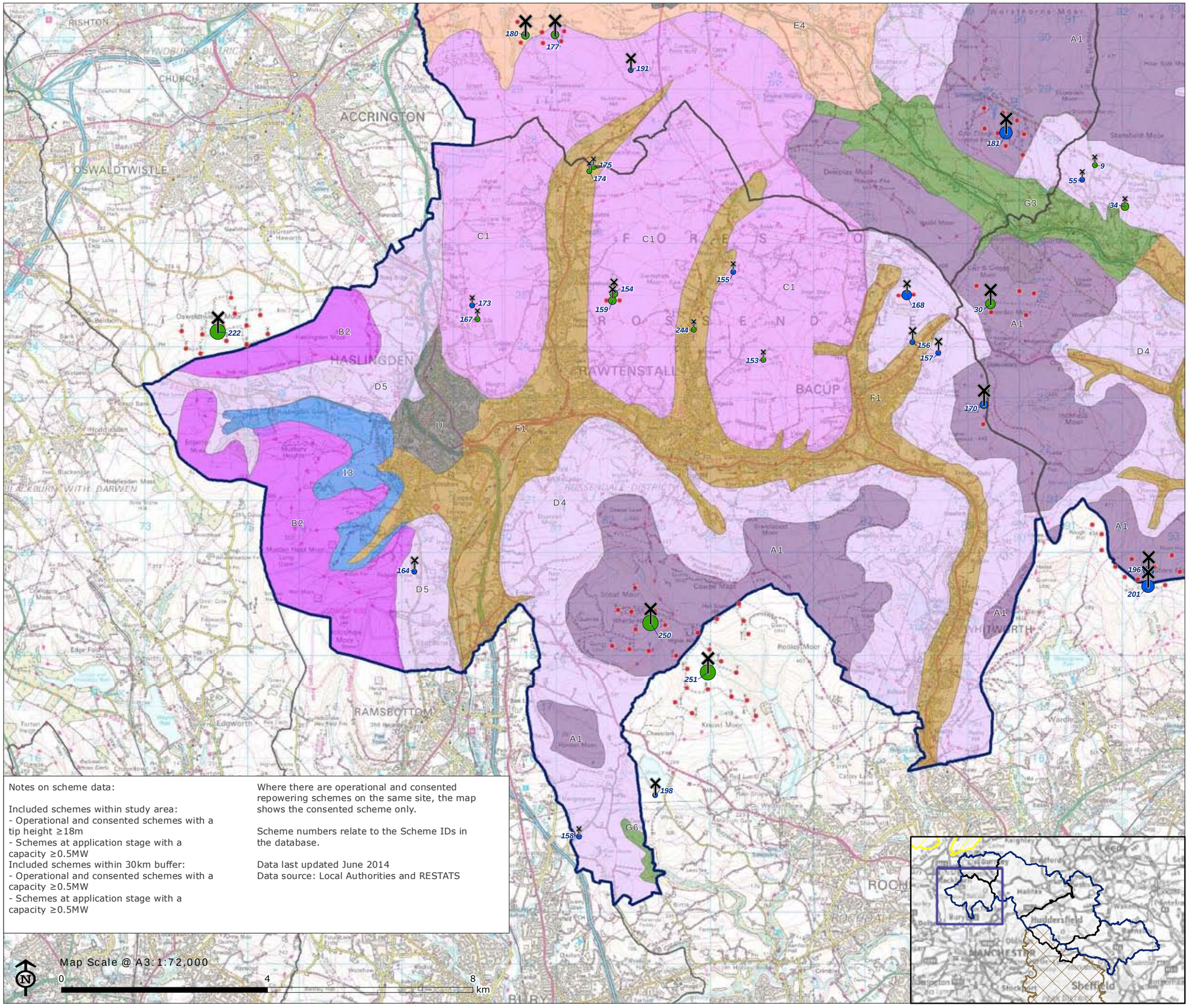
0 10 20 km

CB:DM EB:Manson D LUCLON 6014-01_023_Rpt_LCA 22/10/2014

Source: Ordnance Survey

South Pennines Wind Energy Landscape Study

Figure 7: Existing Wind Energy Deployment in Rossendale



Study area
Local Authority boundaries
Surrounding Local Authorities
National Park
Area of Outstanding Natural Beauty
LCA boundaries (with labels)

Landscape Character Type

- A - High Moorland Plateaux
- B - Moorland Hills
- C - Enclosed Uplands
- D - Moorland Fringes / Upland Pastures
- E - Rural Fringes
- F - Settled Valleys
- G - Wooded Rural Valleys
- I - Reservoir Valleys
- U - Urban

Group class (symbol size)

- Single turbine
- Small cluster (2-3 turbines)
- Small wind farm (4-5 turbines)
- Medium wind farm (6-10 turbines)
- Large wind farm (11-20 turbines)
- Very large wind farm (21+ turbines)
- Turbines for multi-turbine schemes

Height class

- Very small turbine (≤24m to blade tip)
- Small turbine (25-59m to blade tip)
- Medium turbine (60-89m to blade tip)
- Large turbine (90-129m to blade tip)
- Very large turbine (≥130m to blade tip)
- Unknown height class

Planning status (symbol colour)

- Operational
- Consented

Scheme numbers relate to the Scheme IDs in the database.

Notes on scheme data:

Included schemes within study area:
- Operational and consented schemes with a tip height ≥18m
- Schemes at application stage with a capacity ≥0.5MW

Included schemes within 30km buffer:
- Operational and consented schemes with a capacity ≥0.5MW
- Schemes at application stage with a capacity ≥0.5MW

Where there are operational and consented repowering schemes on the same site, the map shows the consented scheme only.

Scheme numbers relate to the Scheme IDs in the database.

Data last updated June 2014
Data source: Local Authorities and RESTATS

Map Scale @ A3: 1:72,000
0 4 8 km

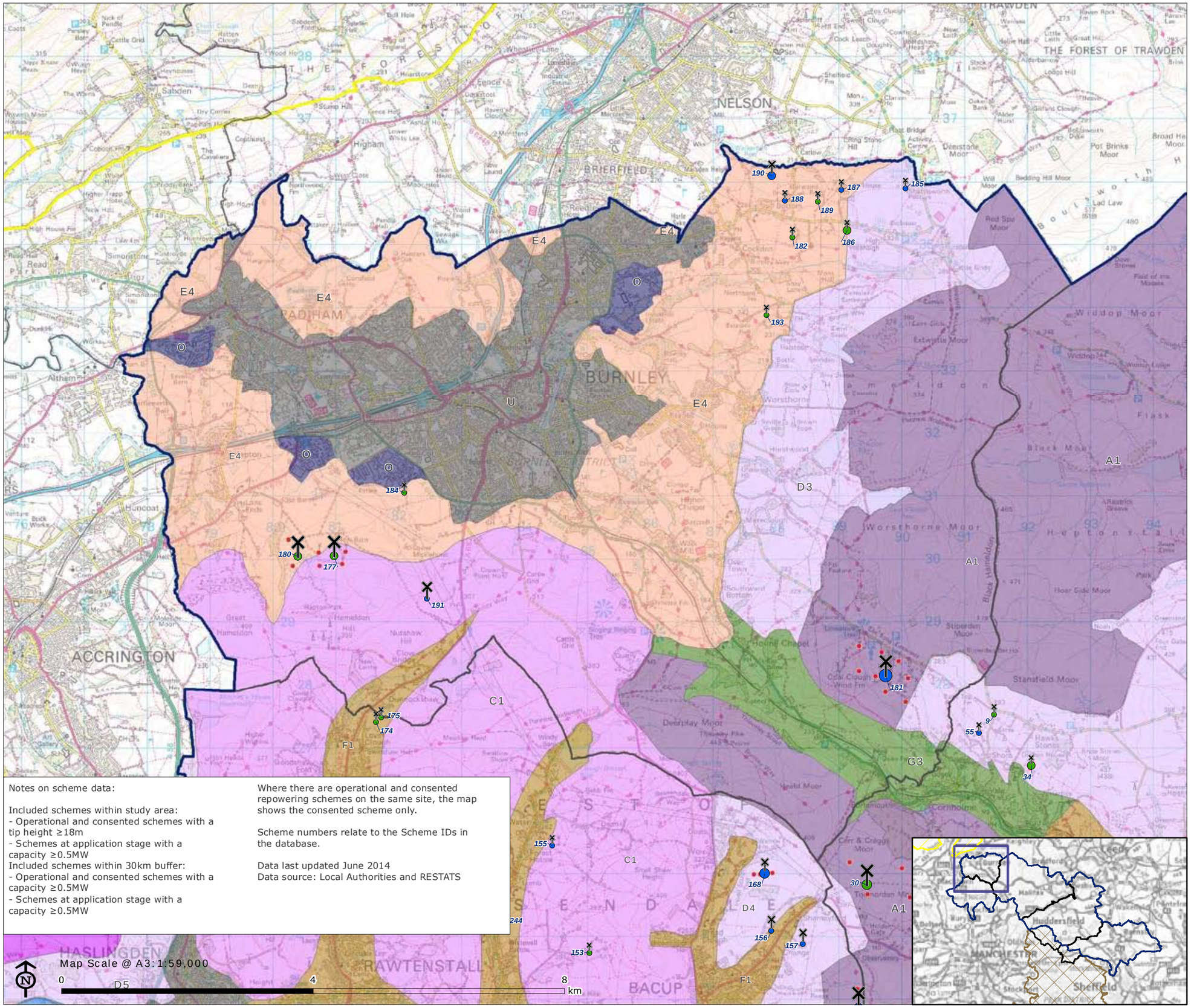
LUC
JULIE MARTIN ASSOCIATES

CB:DM EB:Manson D LUCGLA 6014-01_024_Rpt_Deployment_by_district_Maplex_v2 23/10/2014

Source: RESTATS, Councils, Natural England, Ordnance Survey

South Pennines Wind Energy Landscape Study

Figure 8: Existing Wind Energy Deployment in Burnley



Notes on scheme data:

Included schemes within study area:
- Operational and consented schemes with a tip height ≥18m
- Schemes at application stage with a capacity ≥0.5MW

Included schemes within 30km buffer:
- Operational and consented schemes with a capacity ≥0.5MW
- Schemes at application stage with a capacity ≥0.5MW

Where there are operational and consented repowering schemes on the same site, the map shows the consented scheme only.

Scheme numbers relate to the Scheme IDs in the database.

Data last updated June 2014
Data source: Local Authorities and RESTATS

Study area
Local Authority boundaries
Surrounding Local Authorities
National Park
Area of Outstanding Natural Beauty
LCA boundaries (with labels)

Landscape Character Type

A - High Moorland Plateaux
B - Moorland Hills
C - Enclosed Uplands
D - Moorland Fringes / Upland Pastures
E - Rural Fringes
F - Settled Valleys
G - Wooded Rural Valleys
I - Reservoir Valleys
O - Industrial / Business Parks
U - Urban

Group class (symbol size)

Single turbine
Small cluster (2-3 turbines)
Small wind farm (4-5 turbines)
Medium wind farm (6-10 turbines)
Large wind farm (11-20 turbines)
Very large wind farm (21+ turbines)
Turbines for multi-turbine schemes

Height class

Very small turbine (≤24m to blade tip)
Small turbine (25-59m to blade tip)
Medium turbine (60-89m to blade tip)
Large turbine (90-129m to blade tip)
Very large turbine (≥130m to blade tip)
Unknown height class

Planning status (symbol colour)

Operational
Consented

Scheme numbers relate to the Scheme IDs in the database.

LUC
JULIE MARTIN ASSOCIATES

CB:DM EB:Manson D LUCGLA 6014-01_024_Rpt_Deployment_by_district_Maplex_v2 23/10/2014
Source: RESTATS, Councils, Natural England, Ordnance Survey

Notes on scheme data:

Included schemes within study area:
- Operational and consented schemes with a tip height ≥18m
- Schemes at application stage with a capacity ≥0.5MW

Included schemes within 30km buffer:
- Operational and consented schemes with a capacity ≥0.5MW
- Schemes at application stage with a capacity ≥0.5MW

Where there are operational and consented repowering schemes on the same site, the map shows the consented scheme only.

Scheme numbers relate to the Scheme IDs in the database.

Data last updated June 2014
Data source: Local Authorities and RESTATS

Map Scale @ A3: 1:115,000
0 4 8 km

South Pennines Wind Energy Landscape Study

Figure 9: Existing Wind Energy Deployment in Calderdale

- Study area
- Local Authority boundaries
- Surrounding Local Authorities
- National Park
- Area of Outstanding Natural Beauty
- LCA boundaries (with labels)

Landscape Character Type

- A - High Moorland Plateaux
- C - Enclosed Uplands
- D - Moorland Fringes / Upland Pastures
- E - Rural Fringes
- F - Settled Valleys
- G - Wooded Rural Valleys
- K - Coalfield Edge Urban Fringe Farmland
- M - Industrial Lowland Valleys
- N - Rolling Wooded Farmland
- O - Industrial / Business Parks
- U - Urban

Group class (symbol size)

- Single turbine
- Small cluster (2-3 turbines)
- Small wind farm (4-5 turbines)
- Medium wind farm (6-10 turbines)
- Large wind farm (11-20 turbines)
- Very large wind farm (21+ turbines)
- Turbines for multi-turbine schemes

Height class

- Very small turbine (≤24m to blade tip)
- Small turbine (25-59m to blade tip)
- Medium turbine (60-89m to blade tip)
- Large turbine (90-129m to blade tip)
- Very large turbine (≥130m to blade tip)
- Unknown height class

Planning status (symbol colour)

- Operational
- Consented

Scheme numbers relate to the Scheme IDs in the database.

LUC | JULIE MARTIN ASSOCIATES

CB:DM EB:Manson D LUCGLA 6014-01_024_Rpt_Deployment_by_district_Maplex_v3 23/10/2014

Source: RESTATS, Councils, Natural England, Ordnance Survey

Notes on scheme data:

Included schemes within study area:
- Operational and consented schemes with a tip height ≥18m
- Schemes at application stage with a capacity ≥0.5MW

Included schemes within 30km buffer:
- Operational and consented schemes with a capacity ≥0.5MW
- Schemes at application stage with a capacity ≥0.5MW

Where there are operational and consented repowering schemes on the same site, the map shows the consented scheme only.

Scheme numbers relate to the Scheme IDs in the database.

Data last updated June 2014
Data source: Local Authorities and RESTATS

South Pennines Wind Energy Landscape Study

Figure 10: Existing Wind Energy Deployment in Kirklees

Study area
Local Authority boundaries
Surrounding Local Authorities
National Park
Area of Outstanding Natural Beauty
LCA boundaries (with labels)

Landscape Character Type

A - High Moorland Plateaux
D - Moorland Fringes / Upland Pastures
E - Rural Fringes
F - Settled Valleys
G - Wooded Rural Valleys
K - Coalfield Edge Urban Fringe Farmland
M - Industrial Lowland Valleys
N - Rolling Wooded Farmland
O - Industrial / Business Parks
P - Lowland River Floors
Q - Settled Arable Slopes
R - Upland River Valleys
U - Urban

Group class (symbol size)

Single turbine
Small cluster (2-3 turbines)
Small wind farm (4-5 turbines)
Medium wind farm (6-10 turbines)
Large wind farm (11-20 turbines)
Very large wind farm (21+ turbines)
Turbines for multi-turbine schemes

Height class

Very small turbine (≤24m to blade tip)
Small turbine (25-59m to blade tip)
Medium turbine (60-89m to blade tip)
Large turbine (90-129m to blade tip)
Very large turbine (≥130m to blade tip)
Unknown height class

Planning status (symbol colour)

Operational
Consented

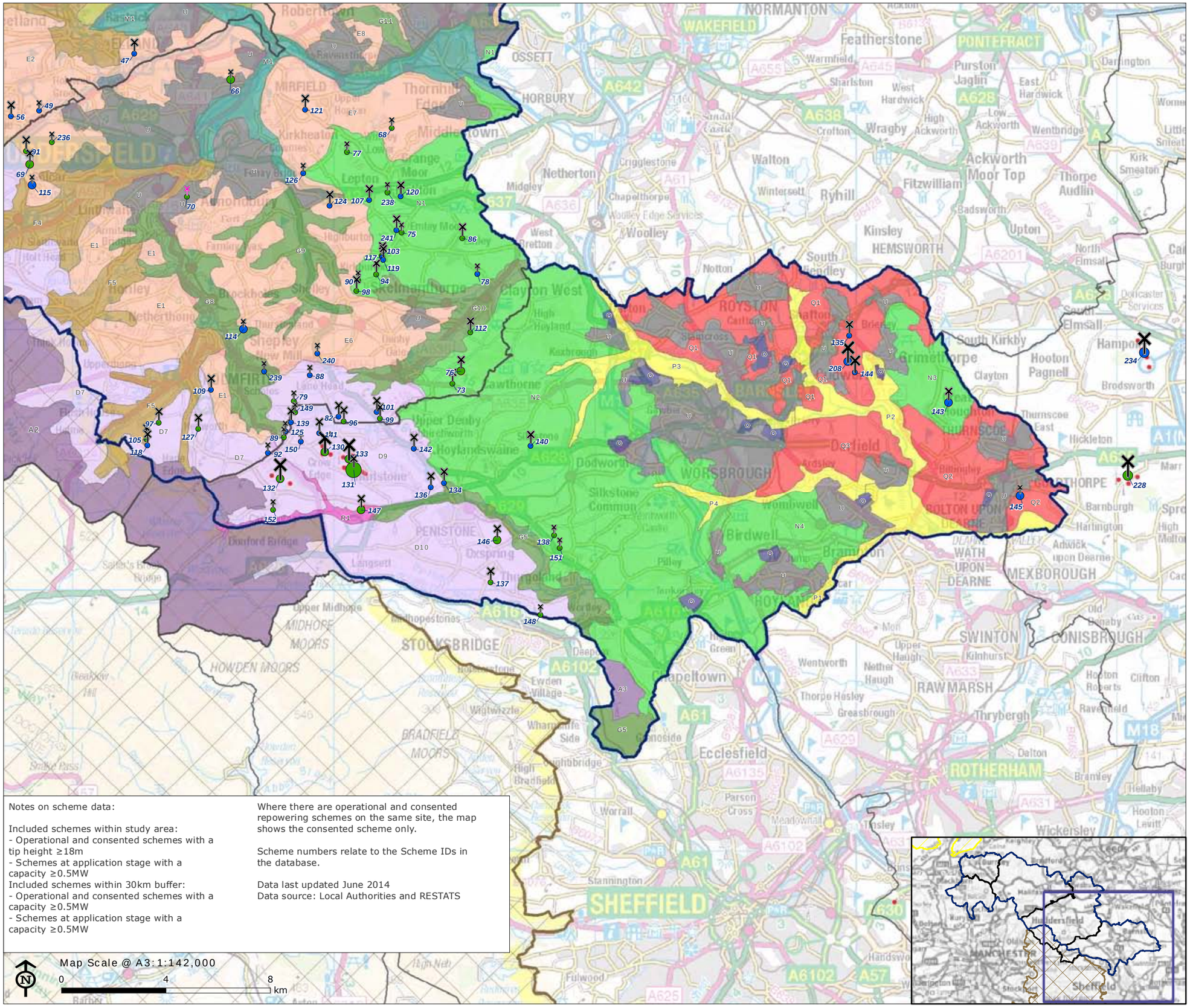
Scheme numbers relate to the Scheme IDs in the database.

Map Scale @ A3: 1:127,000
0 4 8 km

Source: RESTATS, Councils, Natural England, Ordnance Survey

South Pennines Wind Energy Landscape Study

Figure 11: Existing Wind Energy Deployment in Barnsley



Notes on scheme data:

Included schemes within study area:
- Operational and consented schemes with a tip height ≥18m
- Schemes at application stage with a capacity ≥0.5MW

Included schemes within 30km buffer:
- Operational and consented schemes with a capacity ≥0.5MW
- Schemes at application stage with a capacity ≥0.5MW

Where there are operational and consented repowering schemes on the same site, the map shows the consented scheme only.

Scheme numbers relate to the Scheme IDs in the database.

Data last updated June 2014
Data source: Local Authorities and RESTATS

Map Scale @ A3: 1:142,000

0 4 8 km

Study area
Local Authority boundaries
Surrounding Local Authorities
National Park
Area of Outstanding Natural Beauty
LCA boundaries (with labels)

Landscape Character Type

- A - High Moorland Plateaux
- D - Moorland Fringes / Upland Pastures
- E - Rural Fringes
- F - Settled Valleys
- G - Wooded Rural Valleys
- K - Coalfield Edge Urban Fringe Farmland
- M - Industrial Lowland Valleys
- N - Rolling Wooded Farmland
- O - Industrial / Business Parks
- P - Lowland River Floors
- Q - Settled Arable Slopes
- R - Upland River Valleys
- U - Urban

Group class (symbol size)

- Single turbine
- Small cluster (2-3 turbines)
- Small wind farm (4-5 turbines)
- Medium wind farm (6-10 turbines)
- Large wind farm (11-20 turbines)
- Very large wind farm (21+ turbines)
- Turbines for multi-turbine schemes

Height class

- Very small turbine (≤24m to blade tip)
- Small turbine (25-59m to blade tip)
- Medium turbine (60-89m to blade tip)
- Large turbine (90-129m to blade tip)
- Very large turbine (≥130m to blade tip)
- Unknown height class

Planning status (symbol colour)

- Operational
- Consented

Scheme numbers relate to the Scheme IDs in the database.

LUC

JULIE MARTIN ASSOCIATES

Source: RESTATS, Councils, Natural England, Ordnance Survey

South Pennines Wind Energy Landscape Study

Figure 12: Landscape Sensitivity to Very Small Turbines (≤24m)

Study area

Local Authority boundaries

Landscape sensitivity to very small wind energy developments

Low

Low - Moderate

Moderate

Moderate - High

Urban areas

Map Scale @ A3: 1:250,000

LUC

JULIE MARTIN ASSOCIATES

CB:DM EB:Manson D LUCLON 6014-01_025_Rpt_Sensitivity_vsmall 17/07/2014

Source: Ordnance Survey, LUC, JMA

South Pennines Wind Energy Landscape Study

Figure 13: Landscape Sensitivity to Small Turbines (25-59m)

Study area

Local Authority boundaries

Landscape sensitivity to small wind energy developments

Low - Moderate

Moderate

Moderate - High

High

Urban areas

Map Scale @ A3: 1:250,000

0 10 20 km

CB:DM EB:Manson D LUCLON 6014-01_026_Rpt_Sensitivity_small 17/07/2014

Source: Ordnance Survey, LUC, JMA

South Pennines Wind Energy Landscape Study

Figure 14: Landscape Sensitivity to Medium Turbines (60-89m)

Study area

Local Authority boundaries

Landscape sensitivity to medium wind energy developments

Moderate

Moderate - High

High

Urban areas

Map Scale @ A3: 1:250,000

LUC

JULIE MARTIN ASSOCIATES

CB:DM EB:Manson D LUCLON 6014-01_027_Rpt_Sensitivity_medium 17/07/2014

Source: Ordnance Survey, LUC, JMA

South Pennines Wind Energy Landscape Study

Figure 15: Landscape Sensitivity to Large Turbines (90-129m)

Study area

Local Authority boundaries

Landscape sensitivity to large wind energy developments

Moderate - High

High

Urban areas

Map Scale @ A3: 1:250,000

0 10 20 km

CB:DM EB:Manson D LUCLON 6014-01_028_Rpt_Sensitivity_large 17/07/2014

Source: Ordnance Survey, LUC, JMA

South Pennines Wind Energy Landscape Study

Figure 16: Landscape Sensitivity to Very Large Turbines (≥130m)

Study area

Local Authority boundaries

Landscape sensitivity to very large wind energy developments

High

Urban areas

Map Scale @ A3: 1:250,000

LUC

JULIE MARTIN ASSOCIATES

CB:DM EB:Manson D LUCLON 6014-01_029_Rpt_Sensitivity_very_large 17/07/2014

Source: Ordnance Survey, LUC, JMA

Appendix 2: Landscape Character Area Summary Descriptions

Landscape Character Areas in Rossendale

A1: South Pennine Moors

The South Pennine Moors are the core of the study area and form a long high plateau extending from Rishworth Moor in the south to the vast expansive sweep of high uninhabited moorland around Oxenhope Moor and Boulsworth Hill in the north. The plateau is subdivided into two main blocks, to the north and south, by the valley of the Calder, while to the west there are three smaller isolated, fragmented moors at Scout Moor, Shore Moor and Heald Moor. It is a large scale sweeping open landscape with strong skyline ridges and expansive views offering a sense of remoteness, isolation and wildness. These special perceptual qualities are reinforced by the proximity to the surrounding urban areas and intersecting industrial valleys. The moorland contains a wealth of natural and cultural -features and forms the- -main part- of the SPA supporting internationally important bird populations. The wild landscape has been a powerful influence and inspiration on the writings of the Brontë sisters. The novels of Wuthering Heights and Jane Eyre, among others, create an extraordinary literary landscape with a strong image in the minds of people worldwide. The South Pennine Moors have a special quality of rugged enduring grandeur, although the landscape is nevertheless very vulnerable.

B2: West Pennine Moors

The West Pennine Moors are aligned perpendicularly to the main Pennine ridge. The moorland occurs in number of discrete blocks at Withnell Moor, Smithills Moor, Turton Moor, Anglezarke and Rivington Moors, Oswaldtwistle Moor and Holcombe Moor. They are generally slightly lower in altitude than those of the main South Pennine spine, although include some notable high points, for example at Winter Hill on Rivington Moor. The hills can be seen from long distances and form a significant backdrop to the surrounding towns of Bury, Bolton and Blackburn. The area is of considerable archaeological importance reflecting past land use and settlement history and has been subject of considerable archaeological research. On the West Pennines the sense of remoteness and wildness is diminished as a result of the relatively small area of the individual moorland blocks and the dramatic and panoramic views across the adjacent urban areas of the Lancashire Plain and the Greater Manchester conurbation. The accessibility of the moorlands to the surrounding towns means that they are a very important recreational resource.

C1: Rossendale Hills

The upland plateau of the Rossendale Hills is distinguished by the geology with outcrops of Lower Coal Measures in combination with the Milestone Grit and a mantling of glacial boulder clay. It is generally a flat landform with only the peat capped ridges and summits providing pattern and diversity in the landscape. The distinctive character of these bleak uplands is derived from the history of colonisation and human attempts to conquer the moors. A network of gritstone walls encloses virtually the whole of the upland area, and the landscape is dotted with small isolated farms. Many of these are now abandoned and in ruins as farming has retreated downslope. The area's industrial history is reflected by the landscape of miner-farmer small holdings and squatter settlements, a legacy of abandoned coal and lead mines and associated spoil heaps. The overall impression is of a, somewhat, derelict landscape with rush infested pastures and tumbled stone walls. Views of prominent high tension power lines which cross the plateau top, reinforce the sense of bleakness.

D4: Scout Moor & Shore Moor Fringe

This character area occurs largely within Rossendale and Rochdale, edging the smaller, fragmented moorland blocks of Scout Moor and Knowl Moor, Shore Moor and Inch field Moor and flanking the valleys containing the Irwell and the Rochdale Canal. Much of the land is at a high altitude (350m) and appears to represent a late stage of enclosure with large regular fields and robust farmhouses high up on the moor edge. In comparison, the gentler slopes down from the moors in the southern part of the area contain a number of secluded valleys such as at Cheesenden Brook and Greenbooth Reservoir. The land remains in agricultural use with both sheep and cattle grazing, although it is clear that many of these are

part time holdings and the existence of the dual economy remains essential to the viability of the farms. There are strong links with the urban/industrial economy and diversification into activities such as haulage and scrap metal recycling can be found on farms in some of the highest and inaccessible parts of the area. Much of the grassland is improved and intensively managed; only fragments of the semi-natural habitats of acid grassland/damp grassland and moorland cover remain. Some small scale areas of conifer planting are also evident. The traditional stone walls are often in a poor state of repair and are supplemented by post and barbed wire fencing. Settlement comprises scattered isolated farmhouses often built at the end of long narrow lanes terminating at the moorland edge. These farm complexes frequently include large sheds/barns and makeshift structures associated with diversification activities. High quality stone underlies much of the area and quarrying has long been an important land use with a large number of both active and disused quarries at the junction with the moor. The area is characterised by a very dense network of footpaths which cross the belt of high land between the valleys and the moorland summits.

F1: Irwell (Ramsbottom, Rawtenstall, Bacup)

The River Irwell arises from moorland springs on the moorland above Bacup and flows within a narrow, high-sided valley in a westward direction to Rawtenstall and then south to Ramsbottom. Tributary streams flow southwards through Lumb and Crawshawbooth cutting the high land of the Forest of Rossendale before joining the main valley. The character area also includes the separate wider valley of the river Spodden which runs south through Whitworth. On the steepest sides of the Irwell there are outcrops of Millstone Grit creating a gorge-like landform, and in the deepest parts of the valley the north facing slopes remain in almost permanent shade. Along the valley bottom the towns of Rawtenstall, Bacup and Waterfoot merge to form a dense ribbon of urban and industrial development. The urban areas contain many fine buildings representing some of the South Pennines most important industrial - heritage. The Irwell valley is distinctive for the relatively small amount of woodland compared, for example, to the valleys to the west. Within the dense urban centres there is always an awareness of the proximity of wilder countryside with views up to the moorland edge, although in many areas extensive quarrying has disfigured the skyline view. The essential landscape character of the area is created by the juxtaposition of the deep river valley with its important areas of industrial heritage and the wild moorland.

I3: Haslingden Grane

The Grane valley is a somewhat remote wide valley to the west of the town of Haslingden. The valley floor is occupied by three large reservoirs; Calf Hey, Ogden and Holden Wood, while the valley sides contain a mix of coniferous and broadleaved plantations and open pastures. Quarried crags and edges overlook the valley and border the surrounding high moorland. This was once a well-populated valley with farmers, quarryworkers and a number of mills. The entire valley was depopulated in association with the reservoir construction in an effort to reduce the risk of waterborne diseases. Today, the valley has an overwhelming air of desolation with many abandoned farmsteads and ruined cottages dotting the valley sides. The Grane is gradually being rediscovered by visitors and is increasingly used for informal recreation with car parks and footpath links established.

Landscape Character Areas in Burnley

A1: South Pennine Moors

The South Pennine Moors are the core of the study area and form a long high plateau extending from Rishworth Moor in the south to the vast expansive sweep of high uninhabited moorland around Oxenhope Moor and Boulsworth Hill in the north. The plateau is subdivided into two main blocks, to the north and south, by the valley of the Calder, while to the west there are three smaller isolated, fragmented moors at Scout Moor, Shore Moor and Heald Moor. It is a large scale sweeping open landscape with strong skyline ridges and expansive views offering a sense of remoteness, isolation and wildness. These special perceptual qualities are reinforced by the proximity to the surrounding urban areas and intersecting industrial valleys. The moorland contains a wealth of natural and cultural -features and forms the- -main part- of the SPA supporting internationally important bird populations. The wild landscape has been a powerful influence and inspiration on the writings of the Brontë sisters. The novels of Wuthering Heights and Jane Eyre, among others, create an extraordinary literary landscape with a strong image in the minds of people worldwide. The South Pennine Moors have a special quality of rugged enduring grandeur, although the landscape is nevertheless very vulnerable.

D1: Calder Terrace

The character area comprises the broad shelf of land that lies above the incised valley of the river Calder. It forms part of the 'internal' landscape of the South Pennines and differs from the moorland fringes on the edges of the upland, which are characterised by their extensive views out across the surrounding urban areas and flat plains beyond. The land is enclosed into small pastures by regular gritstone walls and traditional farmhouses are scattered across the area. In views across the terraces the valley of the River Calder is virtually hidden from view – only occasional glimpses of the dense woodland which fills the deep cleft provide a clue to its existence. Apart from the points where upper wooded cloughs penetrate the terrace, and the small clumps of trees sheltering individual farmsteads, the whole area is open and virtually treeless and has a 'remote' upland character. The patchwork pattern of fields is the dominant feature of the landscape and there is a clear and sharp division with the high unenclosed moorland. The farms include important areas of in-bye land including some that are still managed as traditional hay meadows. At least visually, the upland pastures of the Calder terrace retains an intact character, although it is nevertheless very vulnerable, particularly to changes in farming practice and the pressures induced by its proximity to Halifax and Huddersfield. A large number of historic routes and packhorse trails, such as the Long Causeway, which originated as high level routes between the valleys cross this area and now provide an important part of the public Right of Way network. The stone lined tracks are an important historic artefact and a locally distinctive feature.

D3: Forest of Trawden - Worsthorne Moor Fringe

The moorland fringe along the Burnley-Colne edge forms a relatively narrow band along the steeper western escarpment edge of the South Pennine ridge. It is the transition between high moorland summits of Boulsworth Hill and the lower agricultural landscapes which form part of the wide Lancashire Valley containing the industrial towns of Colne, Nelson and Burnley. Landcover is characterised by improved and acidic grassland enclosed by stone walls into small to medium sizes regular fields. Post and wire fences supplement the walls as a stockproofing measure. The short steep slopes of this area of moorland are cut by many tributary streams of the Ribble which form shallow valley cloughs such as Gilford Clough, Wycoller, Callow Brook and Thursden Brook. At the junction with the moorland edge several of the valley heads have been dammed to create small water storage reservoirs as at Swindon, Hurstwood, Cant Clough and Coldwell. These shallow valleys contain vestiges of the semi-natural woodland cover with wooded areas at Thursden Valley and around Hurstwood forming habitats of considerable nature conservation importance. Other characteristic features include the small stone quarries which have to a large extent revegetated and also provide areas of diversity. Settlements are characterised by isolated stone farmsteads sheltering in clefts on the slope, with villages such as Mereclough, Worsthorne and Trawden occurring at the junction with the lower agricultural land (E4).

E4: Colne - Nelson - Burnley Fringe

The area comprises a linear fringe of low lying, gently sloping farmland which flanks the uplands and separates them from the urban areas of Burnley, Nelson and Colne. On this western edge where the land

climbs steeply to the moor summits the division between the lower farmland and moorland fringe is often sharp and clear. Tree cover is more plentiful with hedges and tree lining the lanes that cross the area as well as a number of small copses and woodlands. Agricultural activity appears to be productive with lush improved pastures utilised for dairy farming as well as sheep grazing. Stone walls remain the predominant boundary type although these are frequently supplemented with hedges and post and wire fences. The area generally appears well managed although close to the urban edge there are neglected pockets of land with a more urban fringe character. Settlements includes the nucleated village at Worsthorne and mill town or Trawden which shelter in the lee of the moor, with fingers of more modern suburban expansion projecting from the surrounding urban areas. Throughout the area farmhouses and associated buildings are common. The area has an intact 'rural' character although it is vulnerable to change particularly with increasing pressure for development and land use change from the urban areas.

G3: Cliviger Gorge

The Cliviger Valley straddles the Lancashire/Yorkshire borders. This dramatic gorge was carved out by melt waters from the ice sheet covering the Lancashire Plain. It is one of the most spectacular examples of a glacially over-deepened valley in the Central Pennines and a well-loved local landscape. The incision of a glacial meltwater channel down the valley has caused the tributary streams to be left 'hanging' and these are currently actively cutting down into the bedrock, producing numerous natural exposures of Carboniferous rocks which are of great geological interest and have in the past been exploited for coal. The steep slopes also contain extensive areas of landslip which create a very distinctive landform. Towards Burnley the valley becomes narrower and more steep-sided with rocky outcrops and crags such as at Thieveley Scout exposed on either side. Cliviger, unlike the other side valleys of the Calder, contains relatively little woodland, although there are important small blocks around the settlements of Holme Chapel and Cornholme. There is a scattered settlement along the valley floor following the line of the Burnley-Todmorden Road.

Landscape Character Areas in Calderdale

A1: South Pennine Moors

The South Pennine Moors are the core of the study area and form a long high plateau extending from Rishworth Moor in the south to the vast expansive sweep of high uninhabited moorland around Oxenhope Moor and Boulsworth Hill in the north. The plateau is subdivided into two main blocks, to the north and south, by the valley of the Calder, while to the west there are three smaller isolated, fragmented moors at Scout Moor, Shore Moor and Heald Moor. It is a large scale sweeping open landscape with strong skyline ridges and expansive views offering a sense of remoteness, isolation and wildness. These special perceptual qualities are reinforced by the proximity to the surrounding urban areas and intersecting industrial valleys. The moorland contains a wealth of natural and cultural -features and forms the- -main part- of the SPA supporting internationally important bird populations. The wild landscape has been a powerful influence and inspiration on the writings of the Brontë sisters. The novels of Wuthering Heights and Jane Eyre, among others, create an extraordinary literary landscape with a strong image in the minds of people worldwide. The South Pennine Moors have a special quality of rugged enduring grandeur, although the landscape is nevertheless very vulnerable.

D1: Calder Terrace

The character area comprises the broad shelf of land that lies above the incised valley of the river Calder. It forms part of the 'internal' landscape of the South Pennines and differs from the moorland fringes on the edges of the upland, which are characterised by their extensive views out across the surrounding urban areas and flat plains beyond. The land is enclosed into small pastures by regular gritstone walls and traditional farmhouses are scattered across the area. In views across the terraces the valley of the River Calder is virtually hidden from view – only occasional glimpses of the dense woodland which fills the deep cleft provide a clue to its existence. Apart from the points where upper wooded cloughs penetrate the terrace, and the small clumps of trees sheltering individual farmsteads, the whole area is open and virtually treeless and has a 'remote' upland character. The patchwork pattern of fields is the dominant feature of the landscape and there is a clear and sharp division with the high unenclosed moorland. The farms include important areas of in-bye land including some that are still managed as traditional hay meadows. At least visually, the upland pastures of the Calder terrace retains an intact character, although it is nevertheless very vulnerable, particularly to changes in farming practice and the pressures induced by its proximity to Halifax and Huddersfield. A large number of historic routes and packhorse trails, such as the Long Causeway, which originated as high level routes between the valleys cross this area and now provide an important part of the public Right of Way network. The stone lined tracks are an important historic artefact and a locally distinctive feature.

D2 Blackwood Common

This area lies on the spur of high land between the two tributary valleys of Cragg Vale and the Ryburn. In terms of landform and landcover this area is essentially similar to the upland pastures of the Calder terraces described above (DI). It is distinguished by the greater degree of development, with small land holdings and numerous individual farmhouses scattered across the area. The reason for this difference is not entirely clear. The dense network of footpaths, rights of way and packhorse routes indicate the strategic importance of the area as a route between the two valleys and to the urban centres of West Yorkshire and some of the farmhouses are known to have their origins as early coaching inns on these historic routeways. Another distinction is the views towards the urban areas; the high rise developments of Sowerby Bridge and Halifax form the focus for the view along the Calder Valley.

D4: Scout Moor & Shore Moor Fringe

This character area occurs largely within Rossendale and Rochdale, edging the smaller, fragmented moorland blocks of Scout Moor and Knowl Moor, Shore Moor and Inch field Moor and flanking the valleys containing the Irwell and the Rochdale Canal. Much of the land is at a high altitude (350m) and appears to represent a late stage of enclosure with large regular fields and robust farmhouses high up on the moor edge. In comparison, the gentler slopes down from the moors in the southern part of the area contain a number of secluded valleys such as at Cheesenden Brook and Greenbooth Reservoir. The land remains in agricultural use with both sheep and cattle grazing, although it is clear that many of these are part time holdings and the existence of the dual economy remains essential to the viability of the farms.

There are strong links with the urban/industrial economy and diversification into activities such as haulage and scrap metal recycling can be found on farms in some of the highest and inaccessible parts of the area. Much of the grassland is improved and intensively managed; only fragments of the semi-natural habitats of acid grassland/damp grassland and moorland cover remain. Some small scale areas of conifer planting are also evident. The traditional stone walls are often in a poor state of repair and are supplemented by post and barbed wire fencing. Settlement comprises scattered isolated farmhouses often built at the end of long narrow lanes terminating at the moorland edge. These farm complexes frequently include large sheds/barns and makeshift structures associated with diversification activities. High quality stone underlies much of the area and quarrying has long been an important land use with a large number of both active and disused quarries at the junction with the moor. The area is characterised by a very dense network of footpaths which cross the belt of high land between the valleys and the moorland summits.

D7: Peak Fringe Upland Pastures

This area includes improved moorland with a pattern of planned rectangular fields enclosed by stone walls and straight roads are found for example around Blackmoor, Holme and Thick Hollins Moor. By comparison more rugged farmland can be found around the valley heads and along the steep upper valley sides, where the stone walls divide the land into a patchwork of small to medium sized, often irregular, fields. The moorland fringe area is predominantly managed by sheep grazing, with some areas of in bye land still providing a hay crop although silaging is increasingly common as a means of grassland management. In contrast, some of the higher large enclosures are beginning to revert back to their former 'moorland' character with grass moorland and patches of heather. Settlement includes some scattered farms and dwellings on the exposed higher levels. Agriculture remains the dominant land use and there is little evidence of diversification into unsympathetic land uses. Overall, this area retains an intact upland character with few of the urban influences that characterise some other moorland edges.

E2: Barkisland - Holywell Green

This area forms the rural farmed edge to the south of Halifax and west of Huddersfield. It has a fairly complex undulating landform comprising a series of ridges, summits, steep slopes and valleys. The field pattern also varies considerably and includes a small irregular, patchwork pattern as well as later rectangular upland enclosures on the high areas such as around Norland Moor and Pole Moor. There is substantial tree cover with thin woodland strips along the stream sides on the valley floors, steeper slopes and along boundaries, with sycamores, ash, willow and conifer species particularly common. A dense network of narrow lanes cross the area and these are connected by a series of main roads. It is a well-populated landscape with a high density of settlement including small clusters of buildings and hamlets, linear developments along the roads as well as scattered farm buildings. The area is obviously subject to pressures emanating from the adjacent urban areas, although the valleys and folds frequently conceal pockets of attractive, secluded rural landscape.

F2: Calder (Todmorden, Hebden Bridge, Mytholmroyd)

The valley of the Calder runs from Todmorden, in the west to Sowerby Bridge and beyond in the east. It is a deep, steep sided densely wooded valley, which from its floor feels particularly enclosed. The action of glacial meltwater has deepened the Calder, forming the characteristic steep sided `valley within a valley profile', with the river flowing in a deep gorge. Such is the depth of the valley and sense of confinement, compounded by the dense woodland cover, that from the top of the slopes most of the valley remains hidden. The river and its tributaries played a central role in the development of industry in the area, providing an important transport route and a powerful influence in the location of the settlements. The valley's importance as a transport corridor has endured, with routes parallel to the river in the form of a major road (A6033), the Rochdale Canal and the railway. The market towns of Todmorden and Hebden Bridge, are attractive thriving centres, exhibiting their industrial past and former wealth through the mills, grand buildings, and the characteristic architecture, such as the 'double decker' houses. To the eastern end of the valley around Mytholmroyd and Sowerby Bridge extensive postwar development gives the valley a more urban character. The upper Calder valley is distinctive in that the settlement centres are clearly defined and separated by important areas of intact countryside with areas of in-bye pasture, enclosed by gritstone walls and extensive blocks of ancient woodland filling the side cloughs.

F3: Ryburn (Sowerby Bridge, Ripponden)

The River Ryburn drains the high land of Rishworth Moor and flows in a northerly direction to join the Calder Valley at Sowerby Bridge. It is a narrow thickly wooded valley and forms an important transport corridor creating the route for the main A58 road and a railway line (now dismantled). The road is lined by a narrow band of linear development, and small settlement centres at Rishworth, Ripponden, Kebroyd and Triangle which retain elements of their industrial heritage including a number of disused mill buildings and chimney stacks. The character of the Ryburn valley is still predominantly rural with the valley slopes covered by thick bands of broadleaved woodland and the distinctive patchwork of pastures. Generally, settlements are confined to the valley floor and do not climb the side slopes, unlike those of the Irwell and Calder Valleys. The rural character is reinforced by the avenues of beech trees that line the road corridor.

G1: Luddenden Dean

Luddenden Dean is a secluded side valley of the Calder. The deep wooded ravine runs north-south from Dean Head reservoirs on Worley moor to Luddenden Foot in the Calder Valley. It is an unspoilt valley with the extensive woodland of Jerusalem Woods along the valley bottom, small pasture fields and scattered cottages and farmsteads. The banks of the fast flowing stream contain evidence of former water powered mill sites.

G2: Hebden Dale & Crimsworth Dean

This network of densely wooded valleys and tributaries of the swift flowing Hebden Water cut through the high moorland and valley terraces to the north-west of Hebden Bridge. They are lush tree-filled valleys and contain important chains of wet pastures along the valley floors. The woodland frequently extends to the skyline and creates an enclosed intimate valley character which is reinforced by the exposed rock/crag edges along the top of the valley. In addition to the ancient upland oak woods the valley also contains plantings of oak, Scots pine and beech which relate to a nineteenth century ornamental scheme. The valleys are an important refuge for a population of red squirrel. Gibson Mill, in the heart of Hebden Dale, one of the few remaining cotton mills, has been restored by the National Trust as a visitor centre. The valleys are an important local landscape and are well used for recreation providing attractive footpath routes linking the settlements of the Calder Valley to the upland pasture and high moorland.

G3: Cliviger Gorge

The Cliviger Valley straddles the Lancashire/Yorkshire borders. This dramatic gorge was carved out by melt waters from the ice sheet covering the Lancashire Plain. It is one of the most spectacular examples of a glacially over-deepened valley in the Central Pennines and a well-loved local landscape. The incision of a glacial meltwater channel down the valley has caused the tributary streams to be left 'hanging' and these are currently actively cutting down into the bedrock, producing numerous natural exposures of Carboniferous rocks which are of great geological interest and have in the past been exploited for coal. The steep slopes also contain extensive areas of landslip which create a very distinctive landform. Towards Burnley the valley becomes narrower and more steep-sided with rocky outcrops and crags such as at Thieveley Scout exposed on either side. Cliviger, unlike the other side valleys of the Calder, contains relatively little woodland, although there are important small blocks around the settlements of Holme Chapel and Cornholme. There is a scattered settlement along the valley floor following the line of the Burnley-Todmorden Road.

G4: Cragg Vale

The fast flowing water of Cragg Brook has its origins on Soyland Moor and has carved out Cragg Vale which cuts down to join the River Calder at Mytholmroyd. The valley has a relatively wide floor and steep sides and the landform widens and opens out towards the valley head. It is densely wooded, predominantly with deciduous trees although lines of mature beech originating from the last century and occasional conifer plantations are also evident. Landcover also includes heather moorland at the valley head and pastures on the lower valley sides. A transport route has developed adjacent to the watercourse, and is lined with scattered development. A number of disused mill structures suggest an industrial history for this valley. In spite of the presence of the road and modern development the vale retains its quiet and secluded character.

G12: Shibden Dale

Shibden Dale a deeply incised valley which is orientated north-south through which Red Beck flows. This valley is narrow defined by steep valley sides which are wooded and widening to contain a narrow valley floor in the lower reaches. Although settled with small villages and dispersed farms on the valley sides it is generally deeply rural. On the valley sides there is a patchwork of small to medium scaled fields defined by stone walls and hedges and supporting pastoral land uses. Road infrastructure and pylons traverse this landscape but the dramatic topography and rural character remains dominant.

G13: Clifton Beck

Clifton Beck is a north-south orientated river valley which drains the upland Coalfield Edge to the north. It comprises steep wooded valley sides with areas of wooded pasture and pasture fields defined by stonewalls and hedges. Overall it is a small scale landscape which feels deeply historic. To the south of Bailiff Bridge settlements becomes more prevalent.

K1: Thornton - Queensbury

The farmland of the coalfield edge forms part of the long eastern dip slope of the Pennines, which slopes gently from the high moorland towards the extensive urban conurbations of West Yorkshire. The slope is divided into a series of undulating ridges by small streams. The ridge top summits provide the location for a number of settlements including Northowram, Southowram and Shelf. Outward expansion of these settlements, which are not constrained by topography, has imposed a more suburban landscape. This 'urban fringe character' is reinforced by the dense network of roads that connect areas of development, as well as the long views to the industrial areas of Leeds and Bradford. The gritstone walls that subdivide the intervening farmland into medium/large pasture fields provide one of the few unifying characteristics with the wider South Pennines area. Elsewhere the countryside character of this eastern edge is being eroded by a combination of modern housing, pylons, communications infrastructure, mineral extraction, landfill sites and other non-agricultural and urban fringe land uses.

M1: Calder Valley Floor

The Calder Valley Floor runs between Elland and Huddersfield eastwards to Horbury and beyond the study area boundary. This area comprises the flat to gently undulating valley floor of the River Calder which sits within a well-defined valley that broadens and widens in places where there are confluences with tributary rivers and valleys. This landscape has been significantly developed containing extensive areas of industrial 'sheds' which block views across the valley and create a strong horizontal pattern broken in places by occasional chimneys. In some areas where there are views of the valley sides above they form a wooded backdrop and provide a setting to the development and areas of housing. Within the valley floor there are various numerous railway lines and road corridors. From elevated areas there are views across this development. The river itself is not visually dominant in this landscape.

Landscape Character Areas in Kirklees

A1: South Pennine Moors

The South Pennine Moors are the core of the study area and form a long high plateau extending from Rishworth Moor in the south to the vast expansive sweep of high uninhabited moorland around Oxenhope Moor and Boulsworth Hill in the north. The plateau is subdivided into two main blocks, to the north and south, by the valley of the Calder, while to the west there are three smaller isolated, fragmented moors at Scout Moor, Shore Moor and Heald Moor. It is a large scale sweeping open landscape with strong skyline ridges and expansive views offering a sense of remoteness, isolation and wildness. These special perceptual qualities are reinforced by the proximity to the surrounding urban areas and intersecting industrial valleys. The moorland contains a wealth of natural and cultural -features and forms the- -main part- of the SPA supporting internationally important bird populations. The wild landscape has been a powerful influence and inspiration on the writings of the Brontë sisters. The novels of Wuthering Heights and Jane Eyre, among others, create an extraordinary literary landscape with a strong image in the minds of people worldwide. The South Pennine Moors have a special quality of rugged enduring grandeur, although the landscape is nevertheless very vulnerable.

A2: North Peak

The North Peak Character Area forms the southern part of the South Pennines ridge and extends into the Peak District National Park. It comprises an area of wild, open and more or less continuous moorland including Wessenden Moor, Meltham Moor. The open plateau is composed of a series of wide ridges, subdued by a deep layer of blanket peat and rising into a series weathered gritstone tors. The area includes a number of key geological sites, with the hard rib of gritstone that forms Blackstone Edge forming a particularly distinctive landscape feature. The sweeping heather covered ridges create the sense of a landscape on a vast scale with expansive views and a strong sense of remoteness. Small water storage and canal feeder reservoirs are common at the junction of the moorland edge and the enclosed fringes. Otherwise, the landscape is devoid of large scale developments.

D7: Peak Fringe Upland Pastures

This area includes improved moorland with a pattern of planned rectangular fields enclosed by stone walls and straight roads are found for example around Blackmoor, Holme and Thick Hollins Moor. By comparison more rugged farmland can be found around the valley heads and along the steep upper valley sides, where the stone walls divide the land into a patchwork of small to medium sized, often irregular, fields. The moorland fringe area is predominantly managed by sheep grazing, with some areas of in bye land still providing a hay crop although silaging is increasingly common as a means of grassland management. In contrast, some of the higher large enclosures are beginning to revert back to their former 'moorland' character with grass moorland and patches of heather. Settlement includes some scattered farms and dwellings on the exposed higher levels. Agriculture remains the dominant land use and there is little evidence of diversification into unsympathetic land uses. Overall, this area retains an intact upland character with few of the urban influences that characterise some other moorland edges.

D9: Low Common, Royd Moor & Whitley Common

This is an expansive moorland fringe area above Hepworth and Denby Dale which extends southwards beyond Kirklees District into Barnsley Borough. The area includes improved moorland used for grazing with a visually strong and intact pattern of medium to large scale stone wall enclosures. It differs from other moorland fringe landscapes to the west in that it does not form an immediate foreground to the higher moorland plateaux of the Dark Peak, which lie further away to the southwest. Nevertheless it sits above adjacent valleys forming distinct stepped ridges in the west and lends an important backdrop to settlement. Away from the edges this landscape is open and simple and contains wind farm development, masts and reservoirs.

E1 Holmfirth - Meltham

The gentle dip slope on the eastern side of the South Pennines creates a relatively broad band of rural fringe within Kirklees. This edge of the Pennines is composed of a series of sloping ridges intersected by the settled valleys of the Colne, Holme and Hall Dike. The land shelters in the lee of Saddleworth and Wessenden Moors and abundant woodland thrives in the hollows and folds in the landform. There are also

several shelterbelts, small plantations and areas of natural regeneration which all contribute to a more enclosed character. Views are generally controlled by rolling landform. Farming is the dominant land use with grazed pasture contained by an intricate network of stone walls creating the distinctive `patchwork' field pattern. Between the valleys parts of the plateau, such as Hanley Moor and Netherton Moor, are characterised by divisions of long rectangular fields and a network of straight planned roads which contrast with the older irregular fields and winding lanes. The stone walls, throughout, are generally in a good condition. This is a settled, domestic landscape - most of the development is concentrated in the valley settlements, although there are some areas where the development edge has encroached out onto the higher slopes, for example at Meltham, Honley and villages such as Netherthong. Scattered farms, individual dwellings and hamlets cover the slopes. The area retains an intact and attractive rural character although is nevertheless vulnerable, particularly to changes in farming practice. Some areas are no longer farmed and are now managed as horse paddocks, while in others agricultural management has intensified with a switch to intensive grassland management for silage. Proximity to Huddersfield also creates pressures for development.

E2: Barkisland – Holywell Green

This area forms the rural farmed edge to the south of Halifax and west of Huddersfield. It has a fairly complex undulating landform comprising a series of ridges, summits, steep slopes and valleys. The field pattern also varies considerably and includes a small irregular, patchwork pattern as well as later rectangular upland enclosures on the high areas such as around Norland Moor and Pole Moor. There is substantial tree cover with thin woodland strips along the stream sides on the valley floors, steeper slopes and along boundaries, with sycamores, ash, willow and conifer species particularly common. A dense network of narrow lanes cross the area and these are connected by a series of main roads. It is a well-populated landscape with a high density of settlement including small clusters of buildings and hamlets, linear developments along the roads as well as scattered farm buildings. The area is obviously subject to pressures emanating from the adjacent urban areas, although the valleys and folds frequently conceal pockets of attractive, secluded rural landscape.

E6: Fenay Beck Valley Rural Fringes

This area surrounds the incised wooded valley of Fenay Beck and forms an intact elevated fringe farmland between this valley and Holme Valley. As such it forms a ridge of higher ground as well as a foreground to Emley Moor to the east. This pastoral farmland slopes towards the valleys and the most elevated areas are open and visually prominent and are often associated with landmark features such as Castle Hill Tower which looks over Huddersfield and the folly at Green Side. This landscape may appear well wooded with shelterbelt and plantations as a result of parkland influences and intervisibility with the adjoining wooded valleys. Rural villages sit within this landscape overlooking the valleys and church towers e.g. Thurstonland and Farnley Tyas can act as local landmarks. The landscape is traversed by a dense pattern of winding rural lanes and is generally in good condition.

E7: Emley Moor Northern Fringes

This area forms the northern pastoral fringes to Emley Moor and comprises a relatively complex topography incised by small streams although broadly it slopes in a northerly direction. Its elevation and often open character afford views northwards over the conurbations of Mirfield, Batley and Dewsbury. This landscape has a settled character containing small historic villages some of which have grown substantially with recent development e.g. Kirkheaton. Church towers can act as local landmarks e.g. Hillside and Whitley Lower as does the dominance of the Emley Moor TV tower which hovers above this landscape. Around Upper Hopton the influence of Hopton Hall and parkland makes a particular contribution to the area resulting in a higher incidence of broadleaved woodland. Pylons traverse this landscape and are a reoccurring feature.

E8: Batley - Dewsbury Rural Fringes

This area comprises elevated farmland which forms a fringe to the urban area of Batley and Dewsbury. The area has a fragmented character including land uses such as country parks, golf courses, landfill and past mining, pony paddocks and pasture fields defined by stone wall enclosures creating a medium scaled pattern. The area is traversed by minor lanes as well as major roads and rail corridors. Overall it has a settled character and the most elevated areas can be open and afford views over adjoining developed areas.

F4 Colne (Slaithwaite, Marsden)

The river Colne runs through a rugged, fairly broad valley in a north-easterly direction towards Huddersfield. At the head of the valley, to the west, the landform opens out to form a wide moorland basin, which receives numerous tributaries draining the heights of Wessenden and Marsden Moors. The moorland encloses the town of Marsden, and there are strong connections between the valley settlements and the moors. Along the valley sides the steep rugged slopes support upland farming with a patchwork of small pasture fields enclosed with gritstone walls. Heather fringes the steepest edges and areas of landslip contributing to the rugged, moorland character of this valley. In the lower parts of the valley, towards Huddersfield, urban fringe elements are more common with hobby farms and horse paddocks apparent. Only remnants of the former woodland cover remain in this valley, with trees limited to the sheltered hollows and creases in the valley sides and around individual farmsteads (the extensive blocks of woodlands that characterise the valleys in the central part of the South Pennines are absent). Scattered farmhouses are dotted along the valley sides while the valley floor contains substantial development in centres at Slaithwaite and Marsden. The historic cores of these towns have been surrounded by considerable post-war development, which extends up the valley sides. Outside these centres the valley has a very rural nature which distinguishes it from many of the other South Pennines valleys. At the eastern end of the valley, development related to the post-war expansion of Huddersfield is dominant and includes substantial new blocks of development such as Linthwaite on the valley side. By comparison, to the west the valley retains a more remote 'moorland' character. The valley is an important communications route and carries road, rail and water links into Lancashire with the viaduct at Slaithwaite forming a particularly dramatic feature. The landscape of the Colne Valley and the surrounding moorland is evocatively described in the writings of the poet Simon Armitage, including his most recent book, 'All Points North'.

F5: Holme and Hall Dike (Holmfirth, Meltham)

The Holme and its tributary the Hall Dike form steep sided valleys to the south of Huddersfield. Both are more sheltered, 'softer' and lacking the strong moorland influence associated with the Colne. The valley of the Hall Dike is characterised by generously wooded slopes and farmland on the lower slopes and valley floor. The lowland oak woods including Honley Wood and Spring Wood represent an important ancient woodland resource. The Holme Valley, by comparison, has less woodland although planting along the roadside perpetuates a wooded feel. The valley slopes support upland sheep farming with improved grassland on the lower slopes and unimproved grassland in the steeper areas. The condition of the stone wall boundaries varies although the farmland in this area generally has an intact well maintained appearance. Both valleys are characterised by fairly extensive development although this is masked by the steep contours and thick woodland that serve to contain views. The small towns include Holmfirth, Holmbridge, Thongsbridge along the valley floor and the valley settlements of Netherthong and Upperthong in the side valleys. There are frequent buildings between settlement centres and in some areas development has extended out from the valley setting and up onto the surrounding hillslopes, such as at Meltham. The landscape of the Holme Valley has been epitomised in popular culture as 'Summer Wine Country'.

G8: Holme River Valley

The Holme River Valley is a secluded incised wooded valley orientated north-south and extends a green corridor into the southern fringes of Huddersfield. Its eastern valley sides are particularly steep and this along with the predominance of woodland gives rise to an inward looking and confined character. Settlement nestles on the valley floor and lower valley slopes and is historic e.g. Hepworth and Thongbridge. Transport corridors also run within the valley bottom although the dramatic valley sides and woodland remain dominant despite the development.

G9: Fenay Beck Valley & Tributaries

This river valley forms a distinctive dendritic pattern, the main valley orientated north-south with tributary valley arms to the east and west. This is a deeply incised, densely wooded and dramatic valley that extends into the southern fringes of Huddersfield. Although settled with historic villages e.g. Kirkheaton and Highburton much of it is free from development with the valley sides either being inaccessible or accessed by narrow rural lanes. The wooded steep slopes comprise a mix of both broadleaved and conifer plantation.

G11: Batley Fringe Incised Valleys

This area comprises the small stream valleys which penetrate the urban fringes of Batley forming shallow depressions in the surrounding fringe farmland. These valleys support a mixture of pasture and woodland and can have an enclosed, rural, secluded character despite their proximity to urban areas. They are generally unsettled and often inaccessible by road but particularly valued for recreation and contain numerous footpaths and the Oakwell Country Park.

K1: Thornton - Queensbury

The farmland of the coalfield edge forms part of the long eastern dip slope of the Pennines, which slopes gently from the high moorland towards the extensive urban conurbations of West Yorkshire. The slope is divided into a series of undulating ridges by small streams. The ridge top summits provide the location for a number of settlements including Northowram, Southowram and Shelf. Outward expansion of these settlements, which are not constrained by topography, has imposed a more suburban landscape. This 'urban fringe character' is reinforced by the dense network of roads that connect areas of development, as well as the long views to the industrial areas of Leeds and Bradford. The gritstone walls that subdivide the intervening farmland into medium/large pasture fields provide one of the few unifying characteristics with the wider South Pennines area. Elsewhere the countryside character of this eastern edge is being eroded by a combination of modern housing, pylons, communications infrastructure, mineral extraction, landfill sites and other non-agricultural and urban fringe land uses.

M1: Calder Valley Floor

The Calder Valley Floor runs between Elland and Huddersfield eastwards to Horbury and beyond the study area boundary. This area comprises the flat to gently undulating valley floor of the River Calder which sits within a well-defined valley that broadens and widens in places where there are confluences with tributary rivers and valleys. This landscape has been significantly developed containing extensive areas of industrial 'sheds' which block views across the valley and create a strong horizontal pattern broken in places by occasional chimneys. In some areas where there are views of the valley sides above they form a wooded backdrop and provide a setting to the development and areas of housing. Within the valley floor there are various numerous railway lines and road corridors. From elevated areas there are views across this development. The river itself is not visually dominant in this landscape.

N1: Emley Moor

This area forms an elevated landscape comprising Grange Moor, Flockton Moor and Emley Moor. Although rising above surrounding landscapes, the moors have lost their moorland character and have been enclosed by a regular, medium scale, pattern of stone walls and hedges. The area supports pasture and arable land use. Woodland cover is scarce, comprising shelterbelts or small copses; and overall the area has an open and exposed character. The land is gently undulating with steeper slopes to the west and south. Mining influences are reflected in the settlement pattern – villages often occurring in open elevated locations e.g. Emley. There are notable areas of former iron workings to the east. The TV tower on Emley Moor is a dominant and defining vertical feature, its considerable scale diminishing the apparent size of adjacent landscape and built features.

N2: Cawthorne Park & West Barnsley Rolling Wooded Farmland

This area forms gently rolling wooded farmland to the south-west of the River Dearne Valley and extends beyond the Kirklees District into Barnsley Borough. It has a strongly wooded (broadleaved and coniferous) and historic estate character with medium scale fields supporting mixed farming. The combination of these elements and patterns gives rise to a visually balanced and 'blocky' character which contrasts with other upland fringe farmland areas. A dispersed pattern of farms and granges is the predominant settlement pattern along with occasional historic villages.

Landscape Character Areas in Barnsley

A2: North Peak

(NB this includes LCA A1: Thurlstone & Langsett Unenclosed Moorland from the Barnsley Landscape Character Assessment, 2002)

The North Peak Character Area forms the southern part of the South Pennines ridge and extends into the Peak District National Park. It comprises an area of wild, open and more or less continuous moorland including Wessenden Moor, Meltham Moor. The open plateau is composed of a series of wide ridges, subdued by a deep layer of blanket peat and rising into a series weathered gritstone tors. The area includes a number of key geological sites, with the hard rib of gritstone that forms Blackstone Edge forming a particularly distinctive landscape feature. The sweeping heather covered ridges create the sense of a landscape on a vast scale with expansive views and a strong sense of remoteness. Small water storage and canal feeder reservoirs are common at the junction of the moorland edge and the enclosed fringes. Otherwise, the landscape is devoid of large scale developments.

D7: Peak Fringe Upland Pastures

(NB this includes the western part of LCA F1: Ingbirchworth Upland Farmland from the Barnsley Landscape Character Assessment, 2002)

This area includes improved moorland with a pattern of planned rectangular fields enclosed by stone walls and straight roads are found for example around Blackmoor, Holme and Thick Hollins Moor. By comparison more rugged farmland can be found around the valley heads and along the steep upper valley sides, where the stone walls divide the land into a patchwork of small to medium sized, often irregular, fields. The moorland fringe area is predominantly managed by sheep grazing, with some areas of in bye land still providing a hay crop although silaging is increasingly common as a means of grassland management. In contrast, some of the higher large enclosures are beginning to revert back to their former 'moorland' character with grass moorland and patches of heather. Settlement includes some scattered farms and dwellings on the exposed higher levels. Agriculture remains the dominant land use and there is little evidence of diversification into unsympathetic land uses. Overall, this area retains an intact upland character with few of the urban influences that characterise some other moorland edges.

D9: Low Common, Royd Moor & Whitley Common

(NB this includes the eastern part of LCA F1: Ingbirchworth Upland Farmland from the Barnsley Landscape Character Assessment, 2002)

This is an expansive moorland fringe area above Hepworth and Denby Dale which extends southwards beyond Kirklees District into Barnsley Borough. The area includes improved moorland used for grazing with a visually strong and intact pattern of medium to large scale stone wall enclosures. It differs from other moorland fringe landscapes to the west in that it does not form an immediate foreground to the higher moorland plateaux of the Dark Peak, which lie further away to the southwest. Nevertheless it sits above adjacent valleys forming distinct stepped ridges in the west and lends an important backdrop to settlement. Away from the edges this landscape is open and simple and contains wind farm development, masts and reservoirs.

D10: Penistone Upland Pastures

(NB this encompasses D10: Penistone Upland Pastures from the Barnsley Landscape Character Assessment, 2002)

This discrete area has a distinctly upland character, enhanced by its proximity to, and views across, unenclosed moorland. The network of intact stone walls is a dominant and unifying feature of the landscape, resulting in an extremely strong, and distinctive, geometric field pattern. Woodland cover is relatively low, although ribbons of deciduous woodland thrive in the shelter of the incised valleys of the dikes that drain into the River Don. There are also some large deciduous woodlands in the shelter of the slopes that descend into the valley of the Little Don River. Beech trees are a feature of the area, either growing in a stunted form on the steeper, ungrazed slopes, or as isolated stands silhouetted on the skyline. Power lines and pylons are also prominent elements of the skyline.

The land remains almost entirely grazed pasture and is famous for its former wool industry and the `Penistone' wool. Remaining unimproved areas on the steeper or more elevated slopes, and damp pastures alongside dikes and springs, are valuable for nature conservation. The only built elements are the stone farmsteads and agricultural barns that are scattered at low density throughout the area, although Penistone, located on the edge of the Don Valley, is a notable centre of population. The presence of disused quarries and shafts indicate the former piecemeal mining activities in the area. Views are panoramic, stretching over the valley of the River Don to the north and over the valley of the Little Don River to the adjacent open moorland the south.

G5: Don River Valley

(NB this includes the eastern part of B2: Wooded Don River Valley from the Barnsley Landscape Character Assessment, 2002, and is extended to cover Wharncliffe Wood)

The river valley is defined by steep sides and a narrow valley floor along its length. The river has carved its course through the complex geology of the Lower Coal Measures from Thurgoland to Stocksbridge, reaching the more resistant Millstone Grit south of Stocksbridge. The Millstone Grit produces some dramatic scenery, the valley sides rising to some 150m above the valley floor at Wharncliffe Crags. The valley is a detailed interplay of natural features and human infrastructure. Where the river changes its course, deep cutting meanders are apparent as the water traverses across the landscape. In conjunction with the winding pattern of the river, weirs, dams and areas of open water (used for fishing) are key landscape elements.

The river has deposited alluvium along the valley floor and this is visible as fertile pastures along the valley bottom. The narrow valley evokes a strong sense of enclosure and this is made particularly evident where woodland is a prominent feature such as at Todwick Wood, Redmires Wood and Oughtibridge Hagg. Here extensive wooded areas clothe the valley sides as a continuous block. These woodlands extend to meet Wharncliffe Wood on the ridge, which defines the skyline.

To the north of the character area woodland areas are smaller, more sporadic and interspersed with areas of open farmland that sweep down to the water side. The valley sides are also less steep here, but the sense of enclosure provided by the valley remains strong. Roads follow the valley side, usually running parallel to the river. At junctions, the roads cross over the water and, at these points, stone bridges are characteristic features. Stone as a building material unifies built character in the landscape, with buildings and stone walls of the same material. A dismantled railway provides a visual clue to the previous industrial workings in and around the valley. The presence of quarries both on and over the character area boundary is also an indicator of historic land use activity.

N2: Cawthorne Park & West Barnsley Rolling Wooded Farmland

(NB this includes LCA E1: West Barnsley Settled Wooded Farmland and non-urban parts of E2: Barnsley Settled Wooded Farmland from the Barnsley Landscape Character Assessment, 2002)

This area forms gently rolling wooded farmland to the south-west of the River Dearne Valley and extends beyond the Kirklees District into Barnsley Borough. It has a strongly wooded (broadleaved and coniferous) and historic estate character with medium scale fields supporting mixed farming. The combination of these elements and patterns gives rise to a visually balanced and 'blocky' character which contrasts with other upland fringe farmland areas. A dispersed pattern of farms and granges is the predominant settlement pattern along with occasional historic villages.

N3: Grimethorpe Rolling Wooded Farmland

(NB this encompasses the non-urban parts of LCA E3: Grimethorpe Settled Wooded Farmland from the Barnsley Landscape Character Assessment, 2002)

The majority of this character area consists of a west facing valley side and a smaller area covers part of the flat narrow ridge at the top of the slope. The valley side is interrupted at frequent intervals by steep narrow valleys that contain narrow watercourses flowing towards the valley floor in the west. Land use is a simple mixture of residential areas, agriculture and woodland. The overall south west aspect of the valley slopes provides very distant views to the west and south west, including views of the far western side of the Borough. Areas of woodland, built development and the steeper land alongside the watercourses give localised enclosure. Individual dwellings are scattered throughout the farmed land. Many are historic halls and lodges constructed in sandstone and others are more modern buildings.

N4: Hoyland Rolling Wooded Farmland

(NB this encompasses the non-urban parts of LCA E4: Hoyland Settled Wooded Farmland from the Barnsley Landscape Character Assessment, 2002)

This LCA is defined by a complex relationship of previous industrial activity, urban settlement, arable farming and woodland over varied landform. Evidence of the former predominance of industry in the area is strong, mainly as reclaimed tips, dismantled railways and canals. The different physical qualities associated with each land use gives rise to areas of land with different appearances. Large blocks of deciduous woodland as well as smaller woods occur frequently. Some are relicts of ancient woodland, most notably the large Wombwell Wood. There are many established geometric shaped plantations in the south of the character area, as well as more recent plantations on reclaimed spoil heaps.

The character area contains a network of major roads, including the M1 motorway, the A61 running from Junction 36 of the M1 to Barnsley and Sheffield, and the A6195 dual carriageway. The railway line from Barnsley to Sheffield runs through the character area.

P1: Elsecar Lowland River Floor

(NB this encompasses LCA C1: Elsecar Lowland River Floor from the Barnsley Landscape Character Assessment, 2002)

This LCA comprises is a long, narrow flat valley floor with water present along its length. Immediately outside the character area the land slopes up to form valley sides, giving a sense of enclosure. The valley floor is covered in a diverse range of land uses, which reflect the wide range of functions the valley has had over the years. These include agriculture, recreation, residential, industry, industrial heritage, communication, landscape renewal and nature conservation. Small pockets of land under permanent pasture and arable cultivation, isolated from the open countryside by urban and industrial development, sweep down the valley sides immediately outside the character area and flatten out to become part of the valley floor. The valley floor is largely free of settlement, except for the occasional isolated farm or pub, or where housing or industry protrudes into the open corridor adjacent to roads that cross the valley. Extensive areas of land alongside the disused canal and railway line are covered with naturally occurring herbaceous, scrub and tree vegetation, much of which is comprised of species associated with wet ground (such as willow and alder).

Minor roads cross the valley, passing over the canal by stone bridges in the central and south western sections of the character area. The busy A6195 dual carriageway runs across and along the valley at the north eastern end. Landscape character is influenced by the new road and by the proximity of large new retail buildings immediately outside the character area to the south east.

P2: Lower Dearne Lowland River Floor

(NB this encompasses LCA C2: Lower Dearne Lowland River Floor from the Barnsley Landscape Character Assessment, 2002)

This LCA comprises the extensive flat valley floor associated with the River Dearne and two small tributaries. The width of the valley floor varies; in some locations it is wide and in other areas, where it is pinched by sloping landform, it is narrow. Open water is present along the length of the character area in the form of the river itself, streams, dikes, subsidence flashes and man-made lakes. As well as being dominant features in the landscape, these large water bodies and surrounding washlands provide important habitats for wildlife, particularly for birds.

The flat landform bounded by gently sloping valley sides and scattered vegetation allows relatively open views both within and out of the character area. A diverse mixture of land uses, including housing, industry, reclaimed colliery spoil tips and farmland, can be seen outside the character area, close to the character area boundary, or higher up on the valley sides. The valley floor is covered in a diverse range of land uses, including agriculture, recreation, residential, commercial, industry, communication, landscape renewal and nature conservation. Small areas of scrub and trees are scattered throughout the character area, often associated with reclaimed or abandoned land, dismantled railway lines, watercourses and newly landscaped areas.

A key characteristic of the LCA is its open appearance, free of substantial areas of built development. It provides an undeveloped green frame and corridor that winds its way through the more developed valley

sides and hill tops in adjacent character areas. It is largely free of residential development, which is mainly located on valley sides outside the character area. Localised clusters of new, large warehouse style buildings are prominent features in the relatively open landscape. Linear development, mainly in the forms of roads, but also overhead power lines, is common.

P3: Upper Dearne Lowland River Floor

(NB this encompasses LCA C3: Upper Dearne Lowland River Floor from the Barnsley Landscape Character Assessment, 2002)

This LCA comprises the flat valley floor associated with the River Dearne and two small tributaries to the west. It is mostly narrow but it broadens where the tributaries meet each other, where they meet the River Dearne and where the disused Barnsley canal is still present. Immediately outside the character area the land slopes up to form valley sides. Open water is present along the entire length of the valley floor in the form of the River Dearne, Cawthorne Dike, Silkstone Beck, a short length of the disused Barnsley Canal and small man-made lakes. The River Dearne and its tributaries follow sinuous courses, with the exception of some short lengths that have been canalised.

Vegetation in the form of hedgerows, ornamental planting, scrub and trees gives intermittent and localised enclosure. Views are generally restricted to parts of the valley sides and to short distances along the valley floor. The LCA contains a mixture of land uses, with farmland and recreational land being most widespread. Smaller pockets of land have been developed for industrial and commercial purposes. The valley floor is crossed or followed by transportation and communication corridors. Visible remnants of past activity include Monk Bretton Priory, a short section of disused canal, and occasional industrial stone buildings.

Strips of land alongside the River Dearne and its tributaries, the disused canal and the railway line are covered with naturally occurring trees and scrub, often comprising species associated with wet ground such as willow and alder. As well as forming important characteristic elements of the landscape, this vegetation provides valuable habitat and corridors for wildlife.

P4: Dove Lowland River Floor

(NB this encompasses LCA C4: Dove Lowland River Floor from the Barnsley Landscape Character Assessment, 2002)

This LCA comprises the flat and narrow valley floor of the Dove with open water, in the forms of the river and its tributaries, a short length of disused canal, or reservoirs, present along its length. Immediately outside the character area the land slopes up to form valley sides. Trees and scrub, and the sloping valley sides that lie within adjacent character areas, provide a sense of enclosure and create an intimate character. Views are restricted to parts of the valley sides and to short distances along the valley floor.

The character area contains a mix of land uses, dominated by farmland, recreation and communication, but also including residential, landscape renewal and nature conservation. Although the valley floor is largely free of buildings, there are a few pockets of housing and commercial development that protrude into the open corridor adjacent to roads that cross the valley. There are also remnants of the industrial past of the area, including dismantled railway lines that run for almost the full length of the valley floor, a short section of disused canal, and stone buildings at Worsbrough Mill. Stone walls and bridges are found frequently along roads throughout the character area.

Strips of land alongside the River Dove and its tributaries, and the dismantled railway lines, are covered with naturally occurring trees and scrub. Trees close to water often comprise species associated with wet ground such as willow and alder. There are also some small isolated pockets of deciduous woodland. These areas of trees and scrub provide valuable habitat and corridors for wildlife.

Q1: North East Barnsley Settled Arable Slopes

(NB this encompasses the non-urban parts of LCA D1: North East Barnsley Settled Arable Slopes from the Barnsley Landscape Character Assessment, 2002)

This character area is defined by a complex relationship of previous and present day industrial activity, adjacent urban settlement and arable farming over varied landform. Landcover and land use greatly influence the overall character of the landscape due to the complex interplay between the rolling, sloping, uncomplicated character of arable land and the sprawling density of the adjacent urban areas. Clear

views are afforded across to the town of Barnsley, which ascends the slopes on the south valley side of the River Dearne.

Arable farmland is characterised by medium to large field units often extending without obvious change up to the urban edge. There is a strong sense that the arable land is intensively worked; made apparent by the loss and continued neglect of field boundaries. There has been significant loss of hedgerows from the landscape - evident by the occasional presence of oak standards marking historic field limits. Remaining hedgerows are often gappy, short flailed and mono-species (hawthorn) and sometimes increase in number and improve in condition where farmland and settlement meet. Evidence of previous historic industrial activity is found dotted across the wider landscape in the form of disused works, tips and spoil heaps. Some of these have been reclaimed (such as the spoil heap west of Carlton).

There are a significant number of primary and secondary roads running through the landscape and these give an overtly active pace reducing the sense of tranquillity even in the more rural areas.

Q2: East Dearne Settled Arable Slopes

(NB this encompasses the non-urban parts of LCA D2: East Dearne Settled Arable Slopes from the Barnsley Landscape Character Assessment, 2002)

The landform ranges from 70m AOD to 15m AOD traversing through sinuous undulations to subtle slopes that level out to an almost flat landscape in the areas of lowest elevation. This changing topography provides local variation in landscape character largely due to the varying degrees of intervisibility and sense of enclosure. Agriculture is predominantly intensive arable farming contained within a pattern of medium to large fields. There is often no obvious sense of enclosure due to loss of hedgerows and where intermittent boundaries occur they fragment rather than unify the farmland. Within the areas of arable farmland, dikes are a common occurrence in the south; running to meet the River Dearne on the southern boundary.

The industrial landscape is largely historic with spoil heaps, disused tips and old open cast workings providing strong visual clues to this previously thriving industrial core. Landscape renewal is evident through measures to mitigate the impacts of previous industrial activity. Reclaimed spoil heaps and large swathes of tree planting, such as those along the A6195, are all indicators of landscape restoration and provide opportunities for improved aesthetic and ecological value. This can be extended to include the disused railways cutting through the character area – providing important wildlife rides.

With the exception of pylons and some unmanaged, tall hedges, there are few vertical elements within the rural landscape. This equates to a seemingly simplistic and uniform character with little to break up the horizontal plane.

Q3: West Dearne Settled Arable Slopes

(NB this encompasses the non-urban parts of LCA D3: West Dearne Settled Arable Slopes from the Barnsley Landscape Character Assessment, 2002)

The topography consists of a broad, rounded ridge, with a maximum elevation of 105m AOD at Lees Hill to the west of Ardsley. The land gently slopes towards the valley floors of the Rivers Dearne and Dove to a low point of 35m AOD in the far east of the character area. Agriculture is predominantly arable with occasional fields of short term ley. There is a strong sense that the arable land is intensively worked; made apparent by the continued neglect of field boundaries.

Farmsteads are scattered throughout the rural parts of the landscape character area. Many have old stone buildings in various states of disrepair and some are undergoing renovation. Incongruous modern farm outbuildings and untidy areas of farm rubbish are often found next to these stone buildings. Large 20th Century warehouse style industrial or commercial buildings are found bordering the A633 at Stairfoot. These are mostly hidden from view by a depression in the landform, corresponding to a tributary of the River Dove. There are distant views from elevated ground, occasionally interrupted by vegetation and built form. Poles carrying overhead wires across open land occur throughout the landscape. Pylons are also dominant vertical elements in the east of the character area. Mature trees are limited to infrequent clumps of deciduous trees on the valley sides, and are absent on the exposed top of the broad ridge.

R1: Upland Don River Valley

(NB this encompasses the non-urban parts of LCA B1: Upland Don River Valley from the Barnsley Landscape Character Assessment, 2002)

This LCA is distinguished from the surrounding landscape by its strong landform, sense of enclosure and dominant presence of the River Don. These upper reaches of the river have carved its course through the hard Millstone Grit of the open moorland. Here the river runs its upland course along a narrow floodplain and the valley sides form part of the wider dramatic upland landscape.

This is an upland river valley where the river runs fast and as a result has been exploited in the past for its power. Fulling mills were established anywhere there was a stream of sufficient power to drive the water wheel and, because they were already mechanised, often became the nuclei of later woollen factories. Mill races, sluices, weirs and old fulling mills are all features of the wider Don Valley today, and the nearby settlements of Penistone, Thurlstone and Millhouse Green. A dismantled railway follows the valley along its length and provides a visual clue to the importance of the valley as a transport corridor. The presence of disused mines and shafts on the valley sides are also clues to historic land use activity.

The topography of the valley evokes a strong sense of enclosure, particularly where valley side woodlands have survived. These deciduous woodlands, and unimproved riverside meadows, are particularly important habitats for wildlife. This is a rural upland landscape where pastures, bounded by stone walls, reach down to the waterside. Generally the fields are smaller where they abut the water, increasing in size as they ascend the valley sides. Scattered stone farmsteads are familiar features of the valley sides. There are several crossing points of the river at these settlements, and distinctive stone bridges mark these. Stone as a building material unifies built character in the landscape with buildings and walls constructed out of the same local stone.

Appendix 3: Generic Guidance on Siting, Layout and Design of Wind Energy Developments

Introduction

This appendix provides some generic guidance on siting, layout and design of wind energy developments in the South Pennines, focusing on minimisation of landscape and visual effects. The guidance is relevant not only to new wind energy development schemes but also to repowering of existing schemes of all sizes, which is likely to become increasingly common in future. It is recognised that siting, layout and design also need to take into account a range of specific ecological, ornithological, archaeological, built heritage, recreational and other interests, each of which will require specific assessment.

Further information and guidance on siting, layout and design of wind energy development in the landscape can be found in the more detailed good practice guidance that is listed in the bibliography in **Appendix 6**. The *Landscape Guidance for Wind Turbine Developments up to 60m high in the South and West Pennines*, and the Scottish Natural Heritage document, *Siting and Designing Wind Farms in the Landscape*, are of particular relevance.

Good site selection and scheme development, that take careful account of landscape and visual issues from the outset, are the most effective ways of preventing and mitigating potential adverse landscape and visual effects and ultimately ensuring that a proposal will gain planning permission. Note that the NPPF[77] (para 66) expects applicants to work closely with those directly affected by their proposals to evolve designs that take account of the views of the community.

Siting

The following guidance should be followed when siting any wind energy development in the South Pennines, whether it comprises one small turbine or multiple large turbines:

- The height and group size of turbines should respond to landscape character, reinforcing the differences between distinct landscape character types, and should not span across marked changes in landscape character on the ground, as this might result in a blurring of landscape distinctions.
- Sites should relate well to the broad grain of the topography and should not distract from or obscure important character distinctions such as upland-lowland transitions.
- Siting should respect landscape settings and skylines, particularly the settings to distinctive landform features, settlements and historic landmarks such as hilltop monuments.
- Prominent and highly visible skylines, particularly those at the edge of upland areas, should generally be avoided. This is especially important in the South Pennines with its sharp and distinctive gritstone edges.
- Any wind energy development on the moorland plateau tops should generally be set back at least 400m from these gritstone edges to minimise impacts on views from the incised valleys below.
- When setting turbines back from the upland edge, try to avoid creating views of blade tips only, as these can be highly distracting.
- Significant impacts on key views from important viewpoints, popular tourist and scenic routes and settlements should be avoided wherever possible; at distances less than around 2km, wind turbines are likely to be prominent in the landscape and turbine movement will be clearly visible.
- Siting should identify and where possible avoid impacts on areas of wild character and on features of natural, cultural or recreational heritage interest that contribute to landscape character and landscape value.
- These may include important earth science features and habitats; deep peat; vulnerable bird species; areas of significant archaeological interest; historic monuments, designed landscapes, conservation areas and their settings; commons and other access land; and National Trails and other long distance paths.

[77] Department for Communities and Local Government (March 2012) *National Planning Policy Framework*.

Layout

The next stage in preparing a wind energy scheme is to plan the layout of turbines in the landscape:

- When developing schemes of more than one turbine, alternative site layouts should be investigated from an early stage to find the optimum response to character as seen from key viewpoints.
- It may be helpful for developers to prepare a design statement summarising the way in which scheme design has evolved and the reasons why particular decisions on site layout have been taken
- Careful layout and arrangement of turbines can help to ensure that turbines read as a coherent group in all the main views – aim for a composition that is visually balanced, simple and consistent in image as it is viewed from various directions.
- Turbines should be located on the most level part of the site or following contours to avoid discordant variation in perceived turbine heights.
- Significant turbine overlaps or 'stacking' of turbines when seen from one direction may catch the eye and should be avoided as far as possible.
- Layouts that reflect existing landscape patterns, such as regular field patterns or linear transport corridors, may allow the positive sculptural qualities of turbines to be seen to good effect.
- Screening afforded by existing woodland can sometimes be used to good effect through careful placement of turbines and adjustment of turbine base heights. However woodland or forestry screening should not be relied upon if felling is likely during the lifespan of the project.
- Adequate separation from walking, riding and other recreational routes is important to prevent adverse impacts on the landscape experience, amenity and safety of recreational landscape users.
- Where turbines are proposed to be sited near to trunk roads, safety issues and views from the road will also require consideration in accordance with Highways Agency advice.

Design

Important design considerations in relation to the turbines themselves are:

- The height of turbines should not overwhelm key landscape elements such as valleys, ridges, hills and woodlands and historic monuments.
- A good design will respect the hierarchy of elements in the landscape and will not compete with, or create clutter when seen together with, other man-made landscape elements such as pylons.
- In urban or industrial contexts, developments should respond to the scale of the built form and sit comfortably alongside large buildings or structures, providing a balanced composition.
- Any existing focal points (such as historic textile mills) should be respected and visual conflict avoided; but in more modern industrial or commercial areas it may sometimes be appropriate to create a new visual focus.
- It is important to ensure that the proportion of rotor diameter to tower height is balanced – short blades on a tall tower or long blades on a short tower may look unbalanced.
- Tubular steel towers tend to look simpler and less 'industrial' than lattice towers, a consideration which is especially important in rural areas.
- All turbines on a site should rotate at the same speed and in the same direction. Speed of blade rotations should be kept as low as possible, particularly on smaller turbines, to reduce visual impact.
- It may be useful to investigate a range of colour options for turbines, considering the background against which the turbines will usually be seen. Pale colours suit most sites in elevated locations where turbines will mainly be seen against the sky. Darker colours may be appropriate where turbines will be seen against a landscape background (more common for domestic and community turbines).

Infrastructure

The ancillary features associated with wind energy developments also need to be handled with great care:

- Use of existing farm or forestry tracks (provided these are not historic features in their own right) may help reduce the impacts of on-site access tracks.
- The length of new on-site access track should be minimised through efficient track layout, and tracks should be surfaced in a way that blends in with the surroundings. Where possible tracks should be re-vegetated (in full or in part) following construction.
- Access tracks should, wherever possible, avoid crossing or running along National Trails, long distance paths or other public rights of way.
- Measures should be put in place to minimise use of access tracks by recreational motor vehicles, which can cause erosion and loss of tranquillity.
- Minimise direct effects on existing landscape features such as stone bridges, walls, gateposts, hedges and trees that may be associated with the creation of site entrances and access tracks.
- Where such impacts cannot be avoided, ensure that there is appropriate mitigation, such as boundary reinstatement and replacement planting. Measures that would urbanise the character of rural lanes e.g. kerbing and fencing should be avoided.
- Opportunities should be taken to improve the management and condition of moorland habitats, but any fencing (especially on commons or other open access land) should be minimal and temporary, to maintain open character and recreational access.
- Access tracks on very steep slopes (where they may require zig-zag routes, cut and fill and drainage channels) or on blanket bog or wet marshy ground (where they may require extensive foundations) should be avoided wherever possible.
- Use of highly engineered solutions should be minimised as it may scar the landscape, and tracks should follow the contours (provided this does not entail excessive length).
- Where possible, transformers should be housed within the turbine tower to reduce their visual impacts, and on-site cables should be buried underground.
- Substation and control buildings should be carefully sited and should generally avoid high, exposed locations where they may be incongruous and provide a scale comparison with turbines.
- Use of local building materials and styles will help integrate such structures into the landscape. Hard surfacing, fencing and lighting around substations should be minimised.
- Grid connections should be underground wherever possible.

Guidance for Multiple Wind Energy Developments

Where multiple wind energy developments exist in a given area, siting, layout and design of further wind energy development requires particular care:

- When designing a wind energy development it is important to consider how the scheme fits with other operational, consented and proposed schemes (including any within neighbouring planning authorities) and to minimise cumulative effects.
- If wind energy development already exists (and is appropriate) in a particular type of landscape, further wind energy development should be similar in form, siting, layout and relationship to key landscape characteristics (e.g. single turbines associated with buildings).
- Turbines of similar height and design (including type of tower, number of blades, and proportion of rotor diameter to height) should be used where two or more wind energy developments are clearly visible in the same view and in the same type of landscape (unless the existing design is considered inappropriate) – the closer they are to each other the more important this is.

- Multiple wind energy developments should not obscure distinctive landform features and should be in scale with ridges and hills. They should not have a defining influence on the overall experience of the landscape and areas of landscape without wind energy development should be retained.
- As multiple wind energy developments are built they may 'compete' with the landscape's original focal points – it is important to maintain a hierarchy of focal points so that the original foci can still be appreciated in the landscape.
- Consider views from settlements when designing multiple wind energy developments – and in particular avoid 'surrounding' a settlement with wind turbines.
- Consider views from protected landscapes when designing multiple wind energy developments – avoid 'surrounding' a protected landscape with wind turbines.
- Individual wind energy developments should generally appear visually separate from each other unless specifically designed to create the appearance of a single combined wind farm.

More detailed guidance on landscape and visual issues associated with multiple wind energy developments can be found on pp 27-31 of the Scottish Natural Heritage document, *Siting and Designing Wind Farms in the Landscape.*

Appendix 4: Guidance on Assessing the Landscape, Visual and Cumulative Impacts of Wind Energy Developments

Introduction

A landscape and visual impact assessment (LVIA) is a key part of assessing the effects of proposed wind energy developments, including as part of the environmental impact assessment (EIA) process. EIA may not be required for all wind energy developments. Nevertheless, it is likely that a landscape and visual impact assessment or appraisal of some kind will be needed to accompany the planning application. The level of detail required will depend on the nature of the proposal and its potential effects as well as on the sensitivity of the site concerned.

Pre-application discussion with the local planning authority is strongly recommended for all wind energy applications. This will provide an opportunity to agree the scope, level of detail and presentation of the LVIA, and ensure that it is based on accurate and up to date information.

Full and detailed good practice guidance relevant to LVIA of wind energy development can be found in the Landscape Institute and Institute of Environmental Management and Assessment's *Guidelines for Landscape and Visual Impact Assessment*; and in the Scottish Natural Heritage document *Assessing the Cumulative Impact of Onshore Wind Energy Developments* (referenced in **Appendix 6)**.

The brief guidance below summarises the type of information that could be expected to be submitted as part of a LVIA for a wind energy development in the South Pennines. In addition, LVIAs for EIA developments should comply with the scoping opinion given by the local planning authority where this has been sought.

Guidance on Assessing Impacts

Description of alternatives

- Describe the alternative sites considered and their landscape constraints and opportunities.
- Indicate why the final choice of site was made and why it was considered suitable in terms of potential landscape and visual effects.
- Drawing on the design statement, describe the alternative conceptual design options considered, giving the reasons for choosing turbine numbers, height and the particular site, layout and design.
- Explain why the preferred solution represents the optimum landscape fit.
- Computer-generated wireline images may be helpful in illustrating this section of the EIA.

Project description

- Describe the project at each phase in its life cycle in sufficient detail to allow the assessment of landscape and visual effects.
- Include the location and dimensions or extent of all plant and structures, and describe the nature, scale and duration of project activities during construction, operation, and decommissioning.
- Construction phase information should include site access and haulage routes and construction details; turning circles and visibility splays; removal and protection of existing features; any cut and fill and drainage requirements; borrow pits and disposal areas; temporary lay down areas and crane hard standings; construction compound and materials storage; turbine foundations; temporary anemometer masts; site cable runs; and site reinstatement.
- Operational phase information should include details of number and type of turbines (including form, materials, colour etc); operational wind speeds and blade rotation speed; transformers; substation and control building; signage, lighting and fencing; landscape mitigation measures such as planting; grid connection; servicing and land management arrangements.

- Decommissioning phase information should include arrangements for removal of turbines and ancillary structures; proposals for restoration; and future land management.

Baseline assessment – landscape resources

- Agree with the local planning authority the size of the study area. For turbines of medium or large commercial height this should generally extend to a 30km radius around the site; for small turbines a 20km radius may be acceptable.
- Compile mapping and descriptions of the existing landscape within the study area, examining the broad landscape context (15-30km), landscape setting (5-15km), local landscape setting (2-5km) and immediate landscape setting (up to 2km).
- Cover landscape character, landscape values and landscape sensitivity throughout the study area, drawing on the relevant landscape character assessment reports, information on special landscape values (such as descriptions of landscape, natural and cultural heritage designations); and the landscape sensitivity and capacity assessment sheets.
- Describe how landscape character affects the sensitivity to wind energy development of the landscapes within the study area and define their level of sensitivity.
- In relation to valued landscape characteristics and features, explain the reasons why the characteristic or feature is important and its level of importance (i.e. national, regional, local).
- Describe the landscape of the site itself, including landform, landcover, features of natural and cultural heritage interest and access. Include details of the landscape fabric i.e. vegetation, trees, hedges and other boundary features and their condition.
- Confirm and expand this information through field survey.

Baseline assessment – visual resources

- Prepare mapping to show the area over which wind turbines may be seen (commonly referred to as the zone of theoretical visibility (ZTV)).
- Review the ZTV and consider the site's contribution to visual amenity within the distance bands indicated above. Consider in the field the degree to which buildings, trees and vegetation may reduce or contain visibility.
- Use the ZTV and field work to help identify viewpoints to be covered in the assessment through the preparation of wireline images and photomontages. These viewpoints should be discussed and agreed with the local planning authority and other stakeholders at the scoping stage.
- The number of viewpoints required will vary but 15-25 viewpoints are likely to be necessary for most commercial wind farms, particularly in areas of high landscape sensitivity.
- Include views referred to in the sensitivity assessment, e.g. views from settlements; transport corridors; tourist and walking routes; specific receptors such as historic parks; and also locations where cumulative effects will occur with other wind energy developments.
- Ensure that the range of views includes a representative range of views, including both views from distances of less than 5km and middle and longer range views.
- Include a range of receptors (viewer groups) and classify these in terms of their sensitivity. In general, those engaged in tourism and recreation e.g. walkers have higher amenity expectations and are more sensitive, while groups such as passing motorists and local workers have lower amenity expectations and are less sensitive.

Description of effects

- This section should systematically identify and describe the likely effects of the proposal; indicate the mitigation measures developed; estimate the magnitude of the changes that will occur; and consider whether they will be beneficial or adverse. It should cover effects at construction, operational and decommissioning phases.
- Effects should be separately assessed under headings of landscape fabric, landscape character, landscape values and visual amenity and for each of the distance bands described above.

- For *landscape fabric*, the scale of effects such as physical damage or loss and proposed mitigation should be given where possible, e.g. length of hedge lost, length of replacement hedging proposed.
- For *landscape character*, the assessment should briefly describe the changes that will occur to the character of each of the LCAs where wind turbines are visible (using the LCT and LCA frameworks provided in this report). It should consider how the wind farm will affect perceptions of character (e.g. landscape scale, patterns, focal points, skylines and settings etc) and how widespread and prominent the changes will be.
- For *landscape values*, the assessment should describe any changes in landscape quality, scenic quality, wildness, tranquillity, natural and cultural heritage features, cultural associations and amenity and recreation that will occur due to the development (given its distance and visibility).
- For *visual amenity*, the extent of visibility should be described by reference to ZTV mapping. Changes in views from the selected viewpoints should be assessed by reference to the wireline images and photomontages.
- Commentary and assessment should also be provided on effects on residential properties within 2km; effects on views from Historic Parks and Gardens and Conservation Areas within 5km; and effects on views from the principal routes in the area (including the main road routes, tourist routes, National Trails and other long distance paths where appropriate).

Cumulative effects

- Where there are any other operational, consented or application stage sites within a 30km radius of the site, cumulative effects should also be assessed (recognising that there are varying degrees of certainty associated with these different types of site).
- Prepare cumulative ZTV(s) for a radius of at least 30km around the proposed development (the local planning authority may request that this be extended in some cases, for example where a highly sensitive landscape lies midway between two wind farm sites).
- Analyse the pattern of combined effects and identify key viewpoints within areas of overlap between the ZTVs of different developments, including some short and middle range views. Again, these viewpoints should be selected in consultation with the local planning authority and other stakeholders. Prepare cumulative wireline images for each of these viewpoints.
- Assess cumulative effects under the same headings as site-specific effects. Pay particular attention to issues such as:
    - the combined effect of different site accesses on the landscape fabric of a single hillside or valley;
    - how developments relate to one another and to the underlying landscape in terms of scale and capacity;
    - the extent to which the setting of valued landscapes or features may be eroded by cumulative effects;
    - the combined visual effects of more than one wind farm on particular tourist routes or long distance walks when seen together or sequentially.
- In assessing the magnitude of cumulative effects it may be helpful to consider the extent of overlap between the ZTVs of different developments, and the extent to which the proposed development extends the horizontal field of view occupied by wind turbines.

Assessment of significance

- Finally the nature and *significance* of effects should be assessed by reference to the *sensitivity* of the landscape or viewer and the *magnitude* of the change that is expected to occur. The level of significance should be classified, for example on five or seven levels from negligible to major.
- The assessment of significance should be informed by the sensitivity assessment(s) for the relevant LCT(s), and should focus on the potentially significant impacts of the project, that is those adverse effects that will influence decision-making.

In addition to text covering all the topics listed above, appropriate, high quality illustrations will greatly assist the assessment process and help people to understand the assessment findings. The preparation of appropriate maps, ZTVs, wireline images and photomontages is a complex and specialist process and expert input will be required. The project landscape architect should be able to advise on the selection of a suitable specialist and supervise the preparation of the illustrations. Submission of presentation material (including maps and other illustrations) as set out below is recommended.

All ZTV maps and visualisations should be prepared in accordance with Scottish Natural Heritage's V*isual Representation of Wind Farms: Good Practice Guidance* (2014).

Checklist of Presentation Material for Wind Energy LVIA

Conceptual design options

Computer-generated wireline images to show conceptual design options that were considered. Images accompanied by map(s) to show the turbine layouts that are illustrated and the viewpoint location, viewing direction, included field of view and appropriate viewing distance for the wirelines.

Site layout

Site layout plan showing position of turbines, access and internal tracks, compounds, substation and all ancillary elements in the context of the physical landscape fabric, including contours, type and condition of landcover, boundaries and trees, existing access points, utilities and important environmental features. Scale 1:25,000 or greater.

Turbines and other elements

Scaled elevations showing technical detail of turbines, transformers, substation and ancillary elements, with key dimensions. Typical photographs of turbines proposed.

Landscape character

Map showing site location and LCTs and LCAs within the study area on a colour 1:50,000 OS base (this may be reduced as long as it is legible). Map should indicate concentric distance bands from the outer turbines of the site including those distance bands used in writeup (i.e. 2, 5, 15 and 30km). Viewpoint locations should also be shown.

Landscape designations and values

Map showing site location and location of valued landscape features within the study area on a 1: 50,000 OS base (as before), including as a minimum all the 'landscape values' information detailed in *Table 8* of this guidance. Concentric distance bands as above. Viewpoint locations.

Zones of theoretical visibility

Maps of theoretical visibility to hub height and to blade tip height on a 1:50,000 OS base (as before), with transparent colouring to indicate the number of hubs or blade tips that may be visible at a given point. Maps should cover the whole study area with enlargements at 1:25,000 or 1:50,000 to show visibility up to 5km in more detail. Concentric distance bands as above. Viewpoint locations.

Visualisations

Computer-generated wireline images and (where possible) colour photomontages for the selected viewpoint locations. Each visualisation should be accompanied by a photograph of the view as existing and by details of distance to nearest turbine, viewpoint grid reference and height AOD, viewing direction, included field of view and appropriate viewing distance.

Cumulative impacts

Location map (with individual turbine locations) for all operational, consented and application sites for commercial wind energy development within 30km. Presented on a 1:50,000 OS base (as before) with concentric distance bands. Overlain by transparent ZTVs of different sites in different colours, so that areas of cumulative visibility can be seen. Location of cumulative viewpoints. 180 or 360 degree computer-generated wireline images for these viewpoints, annotated with site name, status (operational, consented, application), and distance to nearest turbine.

Appendix 5: Further Details of Wind Energy Database and Web Mapping Tool

Development of an Online Wind Energy Database and Web Map

There is a need for the local planning authorities to work together very closely to address cross-boundary issues in development planning and development management. However this requires a common approach and shared information. While the authorities in the South Pennines do liaise very closely, a consistent, shared information base has been lacking and at times this has proved to be an obstacle to efficient planning casework.

In order to address this, one of the objectives of this study was to develop a bespoke GIS-linked database that allows the participating authorities easily to view, update and interrogate information about wind energy development in the landscape. This online database and linked web map are intended to provide a key tool for development management.

Data Sources and Parameters for Inclusion in the Database and Map

Data collation for the database was started in February 2014. Each local planning authority was sent a template for provision of data pertaining to wind energy development in their local authority area. The data collected included:

- Data source
- Scheme name
- Number of turbines
- X/Y coordinates
- Hub height (m)
- Tip height (m)
- Rotor diameter (m)
- Turbine model
- Turbine capacity (MW)
- Scheme status
- Local authority
- Planning reference
- Consent date
- Operational date
- Developer name
- Additional comments

In addition, for schemes that had more than one turbine, the X/Y coordinates were sought for each turbine.

The search parameters for wind energy schemes were the following:

Within the study area:

- All operational and consented schemes with a tip height ≥18m
- All submitted applications for schemes with a tip height ≥18m and a capacity of ≥0.5MW capacity

Within 30km of the study area:

- All operational and consented schemes with a capacity ≥0.5MW
- All submitted applications with a capacity ≥0.5MW

Data was collated over the period from February to the beginning of June 2014. In addition to the local authority data collection process, additional data on schemes within 30km of the five local authorities was obtained from the RESTATS Renewable Energy Planning Database (REPD)[78]. An extract from this database was downloaded at the end of March 2014. All duplicated schemes were eliminated and the other schemes were added to the long list of schemes. The REPD does not include information on the

[78] https://restats.decc.gov.uk/cms/planning-database/

height of turbines or the location of individual turbines for multi-turbine schemes, so this information was obtained via online planning applications wherever possible.

All schemes were assigned a height class and a group class in line with the categories being used in the sensitivity assessment.

All data were collated and mapped in GIS and issued as a set of maps and tables to each authority for final verification. A few amendments emerged from the verification process and these were incorporated into the final list.

The South Pennines Wind Energy Database (SPWED)

The web tool is accessed here: www.lucmaps.co.uk/SPWED/mainmenu.html

From this page, users can access either the database or the web map. There are two levels of access to the database:

- Guest users – freely accessible to the public for viewing records in the database, but there are no editing facilities; and
- ADMIN users – this access is password protected so that only certain users can maintain (update, add) the data in the database. ADMIN users are required to login.

A comprehensive set of instructions for use of the database and web map is available on the website.

The Online Database

Data from the final list of schemes and turbine locations were loaded into a bespoke SQLite database in order to make the data accessible, searchable and updateable online.

The database offers the user the following functionality:

- View all records or a filtered dataset based on any number of parameters (such as local authority, height class, group class, capacity etc)
- View linked turbine locations (X/Y coordinates) for multi-turbine schemes
- Add new records (as new schemes come online)
- Amend existing records (as the planning status of a scheme is changed or any details are amended)
- Export the dataset (as an Excel file, pdf, csv file etc)
- Print data

The online database is available here.

The Web Map

A bespoke web map has been developed in GIS to make all of the turbine data and contextual landscape information available via the internet. This allows access to all of the mapped data to users who do not have their own desktop GIS software. The map is built using ESRI GIS software with the Mappetizer extension.

The map is dynamically linked to the online database so that all changes effected in the database will update automatically in the map giving the user a current view of the turbine database within the web map.

In addition to the turbine data, the web map has the following contextual layers that can be toggled on and off:

- Landscape designations
- Landscape character types and landscape character areas
- Landscape sensitivity assessment
- Local authority boundaries
- OS basemaps

The web map is available here.

Maintaining the Database and Web Map

Upon completion of this study, the ongoing maintenance of the data in the database will become the responsibility of the local planning authorities. LUC will continue to host the web map and database on their server.

It is essential that an ongoing maintenance plan is put in place in order for the resource to remain current and effective as a planning tool. Options include:

- Assign responsibility for updates to a single council officer and all changes/additions are sent to this officer who will then make the updates in the database according to a set schedule;
- Assign responsibility for updates to a single council officer in each local authority and each authority is responsible for maintaining their own data to a set schedule;
- Assign responsibility for updates to a single council officer on a rotational basis so that responsibility is shared across the local authorities.

It is suggested that a standard template is made available to all local authorities so that when changes are suggested, the data can be submitted to the officer responsible for making updates in a consistent format to avoid gaps. In addition to collation of data for the five local authorities, it will be essential that someone or a group of individuals takes responsibility for doing a regular check of the REPD to pick up schemes that are outside of the five local authorities but within 30km. This will need to be done in a desktop GIS package.

Appendix 6: Bibliography

Relevant Good Practice Guidance

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Appendix 7: Glossary of Acronyms

AOD	Above Ordnance Datum
AONB	Area of Outstanding Natural Beauty
ELC	European Landscape Convention
GIS	Geographical Information Systems
LCA	Landscape Character Area
LCT	Landscape Character Type
LNR	Local Nature Reserve
LVIA	Landscape and Visual Impact Assessment
NCA	National Character Area
NE	Natural England
RIGS	Regionally Important Geological Site
SAC	Special Area of Conservation
SCOSPA	Standing Conference of South Pennine Authorities
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
ZTV	Zone of Theoretical Visibility