LANDSCAPE AND VISUAL IMPACT ASSESSMENT ON BEHALF OF QUIET REVOLUTION LTD

PROPOSED WIND ENERGY DEVELOPMENT, LAND AT STONE RAKES BARN, BRIERCLIFFE, LANCASHIRE

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1. INTRODUCTION

1.1 This Landscape and Visual Impact Assessment (LVIA) describes and evaluates the landscape character and visual amenity of the proposed Stone Rakes Farm wind energy development on the physical landscape characteristics and visual amenity of the study area. The assessment is undertaken to determine the potential effects of the proposed development on the landscape and visual resource of the site and the surrounding area. The assessment considers the effect on the landscape resource (both direct effects and effects on how the landscape character is perceived) and the effect on visual amenity (views). Cumulative effects arising from the effect of the proposed development in conjunction with other wind farms, where applicable, are also considered.

1.2 The main objectives of the LVIA are as follows:

- To identify, evaluate and describe the current landscape character of the site and its surroundings and also any notable individual landscape features within the site;
- To determine the sensitivity of the landscape to the type of development proposed;
- To identify potential visual receptors (i.e. people who would be able to see the development) and evaluate their sensitivity to the type of changes proposed; and
- To identify and describe any effects of the development in so far as they affect the landscape and/or views of it and to evaluate the magnitude of change due to these effects.

1.3 Quiet Revolution Ltd has commissioned Pegasus Environmental, part of the Pegasus Group, to undertake the Landscape and Visual Impact Assessment of the proposed Stone Rakes development. Pegasus Environmental has considerable experience in undertaking Landscape and Visual Impact Assessments (LVIA)s and in the preparation of Environmental Statements (ES)s for major development proposals including renewable energy projects.

1.4 The LVIA is arranged into the following Sections:

- **Section 2 Assessment Methodology**: describes how the LVIA has been carried out and what criteria have been used to determine the assessment of effects.
- **Section 3 Summary of the Proposed Development**: provides information on the physical appearance of the turbines and layout.
- **Section 4 Planning Policy Context**: provides detailed review of current planning policy context on a national and local level.
Section 5 Baseline Assessment: includes background information on existing landscape, character and visual elements within the study area, which has been used as a basis for the assessment of effects.

Section 6 Assessment of Effects: identifies potential ways in which the landscape and visual elements of the study area may be affected by the proposed development.

Section 7 Summary & Conclusions: summarises the findings for the assessment and draws conclusions on the acceptability of the proposed development based on the significance of landscape and visual effects.
2. ASSESSMENT METHODOLOGY

Introduction

2.1 This LVIA methodology has been specifically developed for wind energy developments in accordance with best practice guidance. It makes reference to mapped information, planning policy and existing landscape character assessment documents, and uses photographs and field survey work, together with the professional judgement of experienced landscape assessors. It draws together existing desktop information (such as maps, aerial photographs and documents), which is verified and supplemented by site survey.

2.2 The desktop study includes a review of relevant planning policies in order to identify any elements or parts of the study area which are recognised for their landscape or visual qualities and any preferred locations for wind energy developments that may already have been identified. The desk study also evaluates likely levels of acceptable change for various parts of the study area by defining landscape and visual sensitivity.

2.3 This assessment draws from the best practice guidance listed in section 8. A detailed assessment methodology is outlined in Appendix 2.

2.4 The Scottish Natural Heritage guidance suggests that turbines below 50 metre blade tip should be assessed based on a 15 kilometre study area. However, this guidance is aimed at large scale developments and does not make any reference to small scale or horizontal axis turbines. Considering the scale and design of the proposed turbine, it is concluded that a study area of 5 kilometres radius would be more appropriate and any potential significant effects would be limited to 2 kilometres. The study area is illustrated in Appendix 3.
3. SUMMARY DESCRIPTION OF THE PROPOSED DEVELOPMENT

General Description

3.1 The design of the project has been developed by the client based on environmental information and wind speed. The proposed development is located on land known as Stone Rakes Farm.

3.2 Quiet Revolution Ltd proposes to erect 2 (two) horizontal axis wind turbines with a maximum height to blade tip of 32m.

3.3 The turbine blades and hub will be to standard manufacturer white finish. The tower will be made of white galvanised steel.

Site Construction

3.4 The construction works would be short-term. It is envisaged that the construction of access tracks will not be necessary, as existing access routes will be used. Any disruption of the site during the construction period will be minimised and reinstated to the previous state after the construction period is completed.

3.5 The existing landscape features and vegetation along the delivery route and on site will be retained. At this stage it is considered that they will not be altered.

Decommissioning

3.6 At the end of the development’s operational life Quiet Revolution Ltd propose to decommission the development in accordance with best practice and/or in compliance with any planning conditions.
4. PLANNING POLICY CONTEXT

National Planning Policy

National Planning Policy Framework (March 2012)

4.1 The National Planning Policy Framework (NPPF) set out the Government’s economic, environmental and social planning policies for England, and their vision for sustainable development. At the heart of the NPPF is a presumption in favour of sustainable development. The PPS22 companion guide for renewable energy remains a material consideration under the new NPPF.

4.2 NPPF Section 10 entitled ‘Meeting the challenge of climate change, flooding and coastal change’ (page 22) states that planning plays a vital role ‘in supporting the delivery of renewable and low carbon energy and associated infrastructure. This is central to the economic, social and environmental dimensions of sustainable development.’

4.3 NPPF Section 10, paragraph 97, notes that ‘to help increase the use and supply of renewable and low carbon energy, local planning authorities should recognise the responsibility on all communities to contribute to energy generation from renewable or low carbon sources. They should:

- Have a positive strategy to promote energy from renewable and low carbon sources;
- 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.’

4.4 NPPF Section 10, paragraph 98, goes on to note that ‘when determining planning applications, local planning authorities should:

- Not require applicants for energy development to demonstrate the overall need for renewable or low carbon energy and also recognise that even small scale projects provide valuable contribution to cutting greenhouse gas emissions;
- Approve the application if its impacts are (or can be) acceptable. Once suitable areas for renewable or low carbon energy have been identified in plans, local planning authorities should also expect subsequent applications for commercial scale projects outside these areas to demonstrate that proposed location meets the criteria used in identifying suitable areas.’

4.5 NPPF Section 11 entitled ‘Conserving and enhancing the natural environment’ states within paragraph 109 that ‘the planning system should contribute to and enhance the natural and local environment by:’
• Protecting and enhancing valued landscapes, geological conservation interests and soils.’

PPS22: A Companion Guide

4.6 PPS22: A Companion Guide offers further guidance on the weight to be afforded to national landscape designations being applied at the regional level. Whilst this sets out considerations on how to assess matters such as impact on the wider landscape, the landscape character and landscape sensitivity, it does not rule out renewable energy projects in such areas. Rather, it seeks to set out best practice in assessing their potential impact.

Regional Planning Policy

4.7 The Regional Spatial Strategy (North West of England Plan) will be revoked on the 20th May 2013. Therefore, for the purposes of this assessment it is not used as material consideration for the application.

Local Planning Policy

4.8 The relevant plan for the site and immediate surroundings is Burnley Local Plan, adopted in April 2006. Burnley’s emerging Local Plan is being developed and is currently subject to consultation. The following policies within the Burnley Local Plan, adopted in April 2006 considered relevant to this development are listed below:

4.9 Policy E31 – Wind Farms, states that “The development of wind farms and related development will be approved, provided that:

• there is no unacceptable impact on the character of the landscape or on the visual amenity of the area by reason of the siting, number, design, colour or layout of the wind turbines;
• there is no unacceptable effect on the setting of buildings and sites of architectural and historic interest and sites of archaeological importance;
• there is no unacceptable effect on sites of nature conservation value or biodiversity action plan priority habitats or species;
• there is no unacceptable effect on the amenity of local residents
• the proposal is close to the electricity distribution network and the length of any overhead electricity connection cables is minimised;
• it does not adversely affect any recreational facilities and routes;
• any electromagnetic disturbance on existing transmitting or receiving systems is minimised; and
• applications are accompanied by a scheme for removal of any associated structures, and reinstatement of the site to its former use in the event of the site becoming non-operational.

4.10 This policy goes on to add that “Development that would have a negative cumulative impact in relation to existing wind turbines or extant approvals for these, will not be permitted.”

4.11 The nearest large-scale wind farm is located at Coal Clough Farm which is approximately 7km to the south of the site.

4.12 Policy GP2 – Development in Rural Areas, relates to development in general, rather than specifically to renewable energy infrastructure, but does state that planning permission will be granted for the following purpose; “agriculture, forestry, and outdoor recreation uses not requiring large buildings, and proposals which contribute to the solution of a particular local housing, social, community or employment problem within named rural settlements.” Also the policy states that: “other uses appropriate to a rural, including those which help diversify the rural economy, while being in keeping with the rural environment.” It is considered that renewable energy developments would fall into this category.

4.13 Policy E27 - Landscape Character and Local Distinctiveness in Rural Area and Green Belt, relates to protection, enhancement and restoration of the Borough’s distinctive landscape character. This is to be achieved with a list of considerations including;

• maintaining views and avoiding skyline development
• protecting the setting of rural and urban settlements
• protecting farmsteads, barns, mills and other prominent buildings, and man-made features such as ponds, lodges, and bridges;
• protecting and enhancing historic field patterns, including walls and hedgerows;

4.14 Policy E12 – Development in, or adjacent to, conservation areas. This policy states that permission for new proposals in or adjacent to Conservation
Areas will only be considered when: “Significant views into and out of the Conservation Area are safeguarded.”

4.15 The proposed small scale turbines would accord with the aims of the policies in that there would be no compromise to the agricultural function of the field and the boundaries, which would contain the development. It is also considered that the Conservation Area at Harle Syke (E12/8) will not be affected detrimentally by the proposed development, due to the intervening built form, vegetation and distance. Section 6 of this landscape assessment evaluates the potential effects the turbines would have upon the landscape character of the farm holding and the wider surrounding area.

Summary

4.16 The review of the Burnley Local Plan established a number of policies relating to the environment. It is judged that the proposed development is unlikely to cause any unacceptable harm to any of these policies due to its small scale and distance.

4.17 Relevant environmental designations are described below in section 5 and assessed in section 6 to establish whether the proposed development is likely to cause any effect.
5. **BASELINE ASSESSMENT**

**Introduction**

5.1 This section of the LVIA establishes the baseline landscape and visual character of the study area by drawing together existing desktop information such as maps, planning designations and historic references and verifying and expanding it via site survey.

5.2 The study area covers a 5 kilometre radius, measured from the centre of the proposed development. The study area falls within Lancashire. It is recognised that the extent of the study area is smaller than the SNH guidance and is deliberately reduced, to focus on the area that may potentially be affected by such small scale development.

5.3 The site lies within four small irregular shaped fields that are gently sloping down to the northwest. The fields within which the site is located are pasture, bounded by hedgerows and wire fence on the southern and western sides, fence line on the northern side and stone walls on the eastern side. Vegetation is limited to low native hedgerows.

5.4 The Catlow Brook runs east to west, flanked by woodland that is adjacent to the northern boundary of the site. Catlow Brook feeds into Walverden Reservoir approximately 1km to the west of the site.

5.5 The surrounding area is largely formed by pastoral landscape with irregular field sizes and shapes, with linear swathes of woodland, mainly deciduous following stream and river valleys, and isolated woodland blocks. The surrounding area forms part of a ridge between two river valleys. (The Catlow Brook valley to the north and Thursden Brook to the south.)

5.6 Networks of local roads are delineated by a mix of hedgerows and dry stone walls. The A56 and the M65 runs in a northeast-southwest direction approximately 2.5km and 3km to the northwest of the site respectively. The A6068 lies approximately 4km to the north of the site.

5.7 High voltage power lines and pylons run from north to south, across the ridge between the Catlow and Thursden Brook Valleys, to within approximately 1km east of the site.
5.8 Within the wider study area, views are often expansive and far reaching, although in places the undulating topography and presence of woodland shelter belts and copses restrict views.

5.9 The settlement pattern within 1.3km of the site is mostly of small villages and individual farmsteads scattered throughout the study area. This pattern continues to the south and east. To the west the urban development south of the M65 corridor extends from Burnley (5km to the southwest), through to Reedley and Brierfield (3km to the west), and Nelson and Colne (3km to the northwest and 4km to the north respectively. To the north of the M65 the more rural pattern of small villages and isolated farmsteads.

**Statutory Landscape Designations and Policies**

5.10 A review of relevant key statutory and non-statutory landscape classifications and policies has been carried out as part of this LVIA. Landscape designations are one of the criteria that are considered when assessing the significance of an effect on the landscape resource and visual amenity. All landscapes have some importance, particularly to those people who live and work in them or use them for leisure activities so the qualitative evaluation of landscape is essentially a subjective matter.

5.11 Landscapes can be designated by statute and are included in policies within development plans, usually following a consultation process (which seeks to reach a consensus of opinion, thereby reducing the subjective element), in order to protect them from any development that may be to their detriment. Landscape classifications identify landscapes or elements within the landscape that are still recognised as being important by virtue of being marketed as attractions, or identified in non-statutory documentation in the public realm but have no protection in law.

5.12 Within the study area there are very few national and local designations that have been identified as the key designations relevant to the landscape and visual character of this study area. These are described below and are illustrated in Appendix 3.

**Areas of Outstanding Natural Beauty (AONB)**

5.13 The Forest of Bowland AONB is located to the north of the M65. The southeast edge of the AONB is approximately 5.2km from the site.
Non-statutory Classifications

5.14 The following classifications have limited weight but may be taken into consideration when formulating planning policy or considering proposed developments.

Public Access

5.15 The study area contains a number of Public Rights of Way (PRoW), and three long distance recreational paths.

5.16 The closest public footpath runs adjacent to the southern boundary of the site. It is part of a network of PRoWs within the vicinity of the site linking Catlow, Lane Bottom and Brierfield. The matrix of PRoWs extends towards Burnley in the southwest, Nelson in the northwest and the hills and moors to the east.

5.17 The long distance trails are: The Pendle Way that runs from west of Reedley and connects with the Bronte Way. It runs to within approximately 500m to the northeast of the site and 800m to the west. The Burnley Way runs east to west, to within approximately 1.3km of the south of the site. The Bronte Way runs southwest to northeast to within 2.5km east of the site.

5.18 National Cycle Route 68 runs north to south along the unclassified road from Hebdon Bridge to Colne, running to within 2.4km east of the site. Regional Cycle Route 91 runs east to west along the unclassified road from Thursden to Haggate on the urban fringe of Burnley.

Non-landscape designations (including planning, environmental and cultural heritage designations) within the assessment area that are considered within this report.

Conservation Areas

5.19 There are no conservation areas within close proximity of the proposed development. The only conservation area within the study area is at Harle Syke (E12/8) which is approximately 2km to the southwest. It is anticipated that this will not be affected detrimentally by the proposed development, due to the intervening built form, vegetation and distance.
5.20 It is considered that only close proximity to a Scheduled Monument may potentially effect upon the designation or its settings. There are no Scheduled Monuments (SM) within 1.5km of the site. The nearest SM is south of Harle Syke at approximately 1.6km.

Listed Buildings

5.21 Similarly to Scheduled Monuments, it is considered that only close proximity to a listed building may potentially affect the designation or its settings. There are two Grade II* listed buildings within 2 km of the proposed development. These are Lower Town House, Newchurch (1.5km to the north) and Burwains Farmhouse (750m to the southeast), both of which are outside the ZTV.

Register of Parks and Gardens of Special Historic Interest

5.22 The inclusion of an historic park or garden on the Register in itself brings no additional statutory controls. However, local authorities are required by central government to make provision for the protection of the historic environment in their policies and their allocation of resources.

5.23 There are no Registered Parks and Gardens within 5km of the site.

Special Protection Areas (SPA)

5.24 The South Pennine Moors SPA is located approximately 2km to the southeast of the site.

Baseline Assessment of Landscape Character

National Landscape Character

5.25 The Countryside Agency (now Natural England) has documented the character of England’s landscape in a series of documents. The site and its immediate environs fall within The Lancashire Valleys Landscape Character Area 35 (refer to Appendix 5). However the adjacent character area (The South Pennines Character Area 36) is located less than 1km to the east. The relevant key selected characteristics of the character areas are set out below for reference.

Natural England Character Area 35 Lancashire Valleys

5.26 The key characteristics are:
• The broad valley of the River Calder and its tributaries running northeast/southwest between natural backdrops of the Pendle Hill and the Southern Pennines;

• Intensely urban character derived from main towns of Blackburn, Accrington and Burnley which have developed rapidly since the industrial revolution;

• A strong industrial heritage, associated with cotton weaving and textile industries. Redundant or underutilised mill buildings, mill lodges and ponds;

• Profusion of communication routes along the valley bottom including the Leeds and Liverpool Canal, the Preston-Colne rail link and M65 motorway.

• Victorian stone buildings well-integrated into the landscape.

• Numerous large country houses with associated parklands particularly on northern valley sides away from major urban areas.

• Remnants of agricultural land fragmented by industry and scattered development.

• Field boundaries, regular to the west and irregular to the east are degraded around the urban areas, formed of hedges with few hedgerow trees and, at higher elevations, of stone walls and post and wire fences.

• Small woodlands are limited to cloughs on valley sides.

(Underlining is authors emphasis)

5.27 For the ‘shaping the future’ section of this document certain points were highlighted including “the restoration of field boundaries, especially those adjacent to urban areas.”, and “The conservation of remaining hay meadows is important.” The retention of the rural character of the open countryside between settlements is highlighted as being important.

Natural England Character Area 36 South Pennines

5.28 The key characteristics for this area are:

• Large-scale sweeping landform with an open character created by exposed gritstone moors at an altitude of 400 m - 450 m, deeply trenched by narrow valleys and wooded cloughs.
• Mosaic of mixed moorland and blanket bog with enclosed pasture of varying qualities at lower elevations, largely defined by dry stone walls.
• Valuable wildlife habitats on the open moorland and the moorland fringe including semi-natural boggy mires, acid flashes and wooded cloughs.
• Reservoirs common throughout the area.
• Densely populated valley bottoms with stone buildings extending along valley sides set against the backdrop of the moorland tops.
• Gritstone towns centred around key features of industrial heritage such as textile mills and other industrial development mainly in the valleys but with a group of older settlements on the moorland fringe.
• Main road, rail and canal routes located along valley bottoms. Historic packhorse trails traversing the exposed moorland tops.
• Intrusive features, including wind farm developments, numerous transmission masts, overhead power lines and sandstone, gritstone and clay quarries, mainly on the fringe of the area.
• Extensive views from elevated locations in all directions.

Lancashire Landscape Character Types and Landscape Character Areas

5.29 Lancashire County Council undertook their own assessment of the county landscape in 1999 (by ERM Environmental Consultants). The timescale of the Landscape Strategy is to be concurrent with and reviewed during the review period of the next Joint Lancashire Structure Plan 2001-2016. The site and surroundings lie within the Character Type ‘Industrial Foothills and Valleys. The Character area is 6a Calder Valley.

5.30 The Industrial Foothills and Valleys landscape type occurs in four distinct character areas, each located on the Lancashire Coalfield in the south of the study area. The relevant key selected characteristics of the Calder Valley character area are set out below for reference.

• Encompasses the landscape of the broad valley of the River Calder outside the urban settlements;
• Agricultural activity is productive with lush, improved pastures utilised for dairy farming as well as sheep grazing.
• Stone walls remain the predominant boundary type on higher ground, although there are
frequently hedgerows and post and wire fencing on the lower slopes and valley bottom;

• The landscape is well populated; there are many houses, footpaths and large farms;

• Stone walls and farm buildings are important remnants of earlier land uses, particularly where modern developments threaten to obscure the visual and cultural appeal of the area. Modern houses are conspicuous for their rendering or use of alien materials and their gardens and ornamental plants.;

• The urban fringes of Colne, Nelson and Burnley exert an influence over the landscape; close to the urban edge there are pockets of neglected land and urban fringe land uses such as horse paddocks, garden centres and retail or industrial buildings.

(Underlining is authors emphasis)

5.31 The character of the landscape is described as “a complex transitional landscape of relatively small scale with intensive settlement. The area has a gentler landform and varied vegetation cover than that of the nearby higher ground”. It goes on to add that “Settlement is heavily influenced by a history of industrial development in the villages themselves and the neighbouring urban areas. Thus the landscape character shows a mixture of rural agricultural and industrial land uses.”

5.32 The character assessment makes no reference to wind turbines; however, there are several existing large scale turbines in the wider surrounding area, mainly to the south of Burnley, with the closest being Coal Clough Farm 7km to the south of the site. Although there is no intervisibility between the proposed turbines and the Coal Clough Farm site, the wider landscape is informed and characterised by the presence of turbines, as receptors move throughout the local area.

The Zone of Theoretical Visibility (ZTV)

5.33 A diagram has been produced to show a ZTV at a radius of 5km from the central turbine of the proposed development (Appendix 4). It is based on the proposed turbine dimensions described in section 3 of this report. The ZTV figure was first produced at the baseline assessment stage to identify preliminary viewpoint locations.

Viewpoints
5.34 As part of the baseline assessment nine representative viewpoints were identified to assess the potential effects upon the key receptor groups and from key parts of the study area. These are shown in Appendices 5 and 6. A detailed description of each viewpoint is included in section 6 of this report.
6. ASSESSMENT OF EFFECTS

Introduction

6.1 This section of the LVIA establishes the potential effects on landscape elements, character and visual amenity during the construction, operation and decommissioning phases of the proposed wind energy development. Assessment of the magnitude of these effects and their significance is made on the basis of the criteria set out in the Methodology and the Baseline Assessment of landscape sensitivity.

6.2 The assessment of effects takes consideration of the following issues:

- Direct physical change to the landscape;
- Indirect effects on landscape character and experience of the landscape including effects on designated landscapes;
- Effects on the visual amenity of the study area from the selected viewpoints including changes to the composition of views and the perception and response by receptor groups to these changes;
- Potential cumulative visual effects resulting from the intervisibility and sequential visibility with other existing and consented wind energy developments within the study area; and
- The magnitude, duration and level of permanence of effects.

Effects on Statutory Landscape Designations and Policies

Forest of Bowland Area of Outstanding Natural Beauty (AONB)

6.3 The southeast edge of Forest of Bowland AONB lies approximately 5.2km to the northwest of the site. The urban areas, in and around Burnley, and the undulating topography that lie between the edge of the AONB and the site, limit opportunities to view the proposed development. Also the impact of the urban area would far outweigh any impact from the proposals. Given this and the distance between the edge of the AONB and the small scale of the proposed turbines, the presence of the proposed development is unlikely to have any effect upon this designation.

Effects on non-landscape Designations and Policies

Conservation Areas

6.4 The only conservation area within the study area is at Harle Syke (E12/8) which is approximately 2km to the southwest. It is anticipated that this will not be
affected detrimentally by the proposed development, due to the intervening built form, vegetation and distance.

**Scheduled Monuments**

6.5 It is considered that only close proximity to a Scheduled Monument may potentially effect upon the designation or its settings. There are no Scheduled Monuments (SM) within 1.5km of the site. The nearest SM is south of Harle Syke at approximately 1.6km. Due to the distance and the intervening built form, there will be no effect on this designation.

**Listed Buildings**

6.6 Similarly to Scheduled Monuments, it is considered that only close proximity to a listed building may potentially affect the designation or its settings. There are two Grade II* listed buildings within 2 km of the proposed development. These are Lower Town House, Newchurch (1.5km to the north) and Burwains Farmhouse (750m to the southeast). It is considered that both of these buildings are far enough from the site so as to negate any detrimental effect to their designation.

**Special Protection Areas (SPA)**

6.7 The South Pennine Moors SPA is located approximately 2km to the southeast of the site. It is anticipated that the small scale turbines proposed for this development will have little or no impact on this designation. This is because of the distance, and much of the SPA is outside the ZTV.

**Effects on Character**

**Natural England Character Areas 35 (Lancashire Valleys) and 36 (Southern Pennines)**

6.8 The proposed wind turbines would not result in the loss of key characteristics such as dry stone walls and hedges, or the rural open countryside. The proposals would not cause agricultural intensification or the expansion of settlement. The field boundaries and adjacent and surrounding woodland would be retained unharmed with the proposals in place.

6.9 There would be **no unacceptable harm** to the key characteristics of each of the Landscape Character Areas.
The proposed wind turbines would introduce small scale vertical elements into the site; however, these would be consistent with the recognised characteristic of man-made influence provided by the settlements and industrial elements (including the high voltage cables and pylons within the vicinity of the site to the north, east and south, and low voltage electricity poles and cables.

The character assessment makes no reference to wind turbines; however, there are three existing small scale turbines in the wider surrounding area, with the closest being two small turbines (approximately 20-30m) near Long Hey Farm, south of the Halifax Rd, 1.5km to the south west of the site. There is another turbine of similar size, further west, nearer to Haggate. The turbines near Long Hey Farm do break the skyline when viewed from the north. The proposed turbines at Stone Rakes Farm would be much less prominent and in a location lower down the valley, with more likelihood of being screened or partially screened by landform and vegetation. It is anticipated that due to the small size of the turbines it is unlikely that they will make a significant cumulative impact. With the amount of man-made structures in the vicinity of the proposed site, any impact is tempered by the M65 transport corridor including the residential and industrial edge of Nelson and neighbouring human intervention.

There would be no unacceptable harm to the key characteristics of the Calder Valley Landscape Character Area with the proposed development in place.

### Effects on Viewpoints

Nine viewpoints have been selected to represent typical and/or particularly sensitive views and receptors throughout the study area. Detailed field assessment of these views is described in the following paragraphs. Photoviews showing the landscape settings from those viewpoints have been used to aid this assessment and are provided in Appendix 7.

**Viewpoint 1: View from the tumulus adjacent to Bronte Way Long Distance Trail, South east of Monk Hall Farm. 2.3km from the site.**

**Nature and Sensitivity of Baseline View:**

This viewpoint is located southeast of the site on a tumulus highpoint adjacent to The Bronte Way Long Distance Trail. Key visual receptors are users of the PRoW.
and highway as they move through the landscape. Users of PRoW sensitivity is considered to be high.

Nature and Magnitude of Visual Effect:

6.15 The open nature of the landscape and wide views are evident from this viewpoint, with far reaching views towards the north. The landscape undulates to the far distance, to the ridgeline to the north of the M65 corridor. Isolated farms with a matrix of mainly pasture fields with dry stone wall boundaries make up the foreground, continuing in the far distance to the moors on the horizon. The two turbines near Long Hey Farm are visible in the centre right of the panorama. It is anticipated that the proposed turbines may be partially visible, but would be very difficult to discern, appearing as part of a wider panorama. The development would bring about very little change to the landscape that would not be prominent in the view. The magnitude of change is judged to be negligible.

Significance of Effects on View:

6.16 The significance based on the methodology is assessed as being minor/moderate. However due to the distance it is considered that the overall significance is minor.

**Viewpoint 2: View from the PRoW northeast of Lower Coldwell Reservoir. Looking west. 2.5km from the site.**

Nature and Sensitivity of Baseline View:

6.17 This viewpoint is located on a PRoW to the east of the site, near Lower Coldwell Reservoir. This viewpoint has been selected to illustrate views likely to be obtained looking along the Catlow Brook valley (See ZTV). The sensitivity of receptors is high.

Nature and Magnitude of Visual Effect:

6.18 The proposed development would be partially screened by the undulating landform and intervening vegetation along the slope of the Catlow Brook Valley. Small blocks of woodland, and stone wall bounded pasture fields with isolated farm buildings make up the foreground and middle ground. Pylons and cables are visible on the middle horizon ridge. It is anticipated that the turbines will be
totally screened or very difficult to discern from this distance. The magnitude of change is assessed as being **low**.

**Significance of Effects on View:**

6.19 The significance of the effect according to the assessment methodology is **moderate/minor**, however there would effectively be no change resulting in an overall significance of **none**.

**Viewpoint 3: View from the junction of PRoWs to the northwest of All Souls, Barrowford Roman Catholic Cemetery. Looking southeast. 4.7km from the site.**

**Nature and Sensitivity of Baseline View:**

6.20 This viewpoint is taken from the PRoW junction to the north of the Roman Catholic Cemetery. It also represents the kind of panorama experienced from the south east edge of the Forest of Boland AONB, immediately to the northeast of the location. The sensitivity of receptors is **high**.

**Nature and Magnitude of Visual Effect:**

6.21 The turbines would not form notable elements within the view being some 4.7km distant and small in scale. The view is open and offers views of the towns of Nelson and Briercliffe, along the M65 transport corridor. The view extends beyond the urban area to the hills and moors on the far horizon. The site is located amongst farmland and trees to the south, and will be very difficult to discern within the landscape context of built form, pylons, and buildings. It is assessed that the proposed development would bring about a **negligible** magnitude of change.

**Significance of Effects on View:**

6.22 The significance is assessed as being **minor/moderate** according to the assessment methodology; however the distance of the view would change this to a **minor** significance.

**Viewpoint 4: View from Walverden Rd and PRoWs junction, adjacent to Pighole Farm. Looking east, 360m from the site.**

**Nature and Sensitivity of Baseline View:**
6.23 This viewpoint has been selected to represent views from the isolated residences and PRoWs close to (within 500m of) the western edge of the site. It is located along a private access road leading to Fenny Foot Farm, and PRoW. The sensitivity of receptors is **high**.

**Nature and Magnitude of Visual Effect:**

6.24 The foreground shows the agricultural fields rising steeply away from the viewpoint. seen breaking the skyline. It is anticipated that partial views of the proposed turbines’ rotors will be visible above the skyline. However, these will be amongst other man-made vertical structures also breaking the skyline such as electricity poles and cables, and farm buildings at Hollin Grove. The magnitude of change would therefore be **medium**.

**Significance of Effects on View:**

6.25 The significance of effects is **major/moderate** according to the assessment methodology. However it should be noted that many of the residences in this location are screened by intervening trees and/or are oriented away from the site.

**Viewpoint 5: View from the junction of PRoWs and Robin House Lane minor road, east of Hollin Grove Farm, adjacent to Robin Cottages. Looking northwest. 400m from the site.**

**Nature and Sensitivity of Baseline View:**

6.26 This viewpoint is taken to illustrate the view from this PRoW, residences at Robin Cottages and glimpsed views from Robin House Lane. The sensitivity of receptors of residences and PRoW are **high**.

**Nature and Magnitude of Visual Effect:**

6.27 There will be partial views of the proposed development visible from this location although the proposed turbines would not break the skyline. They would also be seen in the context of the low voltage electricity poles and cables, as well as the isolated buildings and large urban area of the M65 corridor within the locality of the panorama. Due to the prevalence of man-made vertical structures in the existing landscape, it is considered that the magnitude of change would be **low**.
as the turbines would not constitute a visually prominent feature in the landscape.

Significance of Effects on View:

6.28 The significance of effects is **moderate/minor** according to the assessment methodology.

**Viewpoint 6: View from the northeast corner of Lanebottom estate, north of Halifax Rd. Looking north. 420m from the site.**

Nature and Sensitivity of Baseline View:

6.29 This viewpoint is taken from the PRoW adjacent to the northeast corner of the Lanebottom estate. Views from PRoWs and residential buildings are considered to be **high** sensitivity.

Nature and Magnitude of Visual Effect:

6.30 The view from this location extends to the ridgeline beyond the M65 corridor. Within the agricultural pasture and dry stone walls typical of the area, there are noticeable man-made vertical structures such as electricity poles and isolated farm buildings. The proposed development would be partially visible, but restricted and filtered by intervening vegetation and landform from this location. The proposed turbines will be beyond the electricity poles and cables and have a backdrop of the trees and the northern slope of the Catlow Brook valley (They will not break the skyline). Therefore it is considered that the magnitude of change would be **low**.

Significance of Effects on View:

6.31 With a **high** sensitivity and **low** magnitude of effect, the significance of effects is **moderate/minor** according to the assessment methodology.

**Viewpoint 7: View from the minor road (Nelson Rd) junction with Pendle Way Long Distance Trail, northwest of Haggate.. Looking northeast. 1km from the site.**

Nature and Sensitivity of Baseline View:
6.32 This viewpoint has been selected to represent views from the unclassified road to the west of the site and the Pendle Way. Receptors on PRoWs have a *medium* sensitivity.

**Nature and Magnitude of Visual Effect:**

6.33 The proposed development would be visible from this location. Within the open panoramic view the turbines would not be a prominent feature in the landscape. The existing turbines near Long Hey Farm are visible in the middle distance as well as isolated farm buildings, with the hills and moors as a backdrop. The magnitude of change would be *negligible*.

**Significance of Effects on View:**

6.34 The significance of effects is *minor/moderate* according to the assessment methodology; however it is assessed that the magnitude of change would be *minor* due to the presence of existing isolated vertical structures within the panorama.

**Viewpoint 8: View from Pendle Way Long Distance Trail PRoW on the edge of Nelson Settlement, on the weir at Walverden Reservoir. Looking southeast, 960m from the site.**

**Nature and Sensitivity of Baseline View:**

6.35 This viewpoint is taken from the PRoW along the weir at the Walverden Reservoir. The sensitivity of receptors is *high*.

**Nature and Magnitude of Visual Effect:**

6.36 It is anticipated that the proposed turbines would be partially visible in the middle distance of the panorama. However the views would be restricted by the vegetation associated with the Catlow Brook Valley. The view includes numerous vertical structures such as electricity pylons, poles existing turbines and isolated buildings. The existing turbines near Long Hey Farm are just discernible, breaking the skyline in the far distance of the panorama. The proposed development would not form a notable element within the landscape context. The turbines would not break the skyline and form a small part of the wider view. The magnitude of change would be *low*.

**Significance of Effects on View:**
6.37 The significance of effects is moderate/minor according to the assessment methodology.

**Viewpoint 9: View from Pendle Way Long Distance Trail adjacent to Southfield Lane, north of Catlow. Looking southwest, 660m from the site.**

*Nature and Sensitivity of Baseline View:*

6.38 This viewpoint is taken to illustrate the view from the Pendle Way to the northeast of the site. It also provides an indication of views from properties within Catlow that are oriented towards the site. The undulating nature of the topography is a notable element of the view. As the wide panorama stretches far south to the horizon. The sensitivity of receptors is high.

*Nature and Magnitude of Visual Effect:*

6.39 The main focus of the view is the ridgeline to the south and west of the site, seen in the far distance. Lanebottom and Catlow are visible to the left of the panorama. It is anticipated that the turbines will be partially visible, but views are restricted by intervening landform and vegetation along the Catlow Brook Valley. Any visible sections of the turbines will appear as another vertical man-made element as part of a wider panorama. Other vertical elements include the electricity poles and isolated buildings. The development would bring about some change to the landscape that would not be prominent in the view. The magnitude of change is judged to be low.

**Significance of Effects on View:**

6.40 The significance of effects is moderate/minor according to the assessment methodology

**Summary of Significance of Effects on Visual Amenity**

6.41 The proposed wind energy development would not have any effect on landscape designations or any other sensitive location associated with conservation designations.

6.42 The development will be primarily visible from close range views from PRoWs, isolated residences, and glimpsed views from local roads within an area of approximately 2km from the site. It is anticipated that there may be partial and restricted views towards the site from properties within surrounding villages such
as Lanebottom and Catlow. However with the turbine locations set lower than both of these villages, vegetation surrounding the villages tends to screen or filter views towards the site.

6.43 The Forest of Bowland AONB would not be affected due to the distance, high level of existing human intervention, screening and small scale of the development.

Cumulative Effects

6.44 The cumulative effects will be limited, as existing turbines in the vicinity include only small scale turbines located to the south of the site, south of the Halifax Rd near Long Hey Farm and Haggate. Views that include both the proposed turbines and the existing turbines in the same panorama, will include numerous other vertical structures, such as farm buildings, isolated houses and possibly the urban area of the M65 corridor. Consequently the overall effect will not be prominent.

6.45 Assessment of Effects of the Proposed Layout on the Physical Landscape and its Elements

6.46 Any construction activity will potentially have a direct effect on the physical landscape, either temporarily or permanently. However, if managed correctly effects can be minimised or avoided.

6.47 The small scale of towers and horizontal design of the rotor means that there is no need for any new or improved access to the site field. It is envisaged that the existing field gateway will be sufficient.

6.48 It is envisaged that fields will remain under current agricultural regime and the proposed development will not have any effect on any landscape features, namely hedgerows.
7. **SUMMARY AND CONCLUSIONS**

7.1 The assessment process has sought to establish the full extent of the likely landscape and visual effects arising from the proposed wind energy development at all stages. Following detailed baseline assessment and field survey, where the nature of the existing landscape and visual character was established and the potential effects of the development analysed, conclusions on landscape and visual effects have been reached.

**Summary of Effects on Landscape Character**

7.2 It is judged that the Lancashire landscape is able to accommodate this type of development without any unacceptable harm to its character or qualities.

**Summary of Effects on Visual Character**

7.3 Only one viewpoint is assessed to be majorly/moderately affected by the proposed development. This is from a very close range view, from the PRoW adjacent to Pighole Farm. This PRoW runs through the field within which the turbines will be located. Elsewhere the proposed turbines may be perceived as vertical elements in the wider landscape; however, they will be a part of a wider view and opportunities to appreciate the surrounding landscape will not be diminished by the development.

7.4 The scope for mitigation measures in close range views is reduced due to the close proximity and nature of the development and the open and expansive nature of the landscape. The wider area would not experience any significant effects from the proposed wind energy development.

**Acceptability of the proposed development**

7.5 The LVIA report concludes that the significant effects of this proposed development are limited to one location within the immediate proximity to the turbines. In the wider study area overall visibility levels are low. Most notably, the proposed development is not highly visible and will have a very limited landscape and no cumulative effects on any of the designations that are located within the study area.
8. REFERENCES

8.1 This assessment draws from the following best practice guidance:


8.2 The aim of the guidelines is to encourage high standards for the scope and content of landscape and visual effect assessments, based on the collegiate opinion and practice of members of the Landscape Institute and the Institute of Environmental Management and Assessment. The guidelines establish principles to assist in achieving consistency, credibility and effectiveness in LVIA, when carried out as part of an EIA. The aims are achieved through the use of a ‘non-specific’ methodology for the assessment of effects on the landscape as a result of development.

- ‘Siting and Designing wind farms in the landscape. Version 1’ (December 2009) Scottish Natural Heritage

8.3 This guidance provides principles for the design and location of wind farms with the aim of ensuring that wind farm developments appear appropriate within the landscape. The guidance supersedes the landscape Sections within SNH’s 2001 ‘Guidelines on the Environmental Effects of Wind farms and Small Scale Hydroelectric Schemes’ and reflects a development in the understanding of issues such as appropriate layouts for different locations, turbine size and design, wind farm extensions and cumulative development. The guidance acknowledges that understanding of these issues is constantly evolving and this guidance will be regularly reviewed and updated to reflect this.

- ‘Siting and Designing single and groups of small turbines in the landscape’ Draft for Consultation (March 2011) Scottish Natural Heritage

8.4 It is envisaged that this guidance will form an annex to the already published SNH ‘Siting and Designing wind farms in the landscape. Version 1’ guidance. It deals specifically with the siting and design aspects for small turbines between 15 and 20 metres in height to blade tip.


8.5 Derived from research undertaken by University of Newcastle (2002), entitled ‘Visual Assessment of Wind farms: Best Practice’. The Good Practice Guidance is designed to summarise and explain what is feasible, available and reasonable in
terms of current good practice in the production of illustrations such as photomontages, wirelines and zone of theoretical visibility (ZTV) figures for use within a Landscape and Visual Effect Assessment. As per the guidance above, it is acknowledged that understanding of these topics is constantly evolving and this guidance will be regularly reviewed and updated to reflect this.


8.6 The topic paper provides an overview of current thinking about landscape sensitivity and landscape capacity in terms of the concept involved and the practical techniques that are being used. Its aim is to set out some of the key principles, clarifying some of the issues, helping with definitions of key terms and providing examples of the approaches that are currently being used.
APPENDIX 1
SITE LOCATION PLAN
APPENDIX 2

METHODOLOGY
The LVIA has been undertaken in accordance with best practice, as outlined in the following published guidance:


It should be noted that some of the above documents and those listed in Section 8 set out specific guidance for appraising wind farms in Scotland. Whilst some of this guidance can be applied to England it is acknowledged that the guidance was essentially designed to enable consideration of the effects on the landscape types found in Scotland which are different to those found in England. For this reason certain elements of the Scottish guidance have been adapted for use in this assessment.

In accordance with published guidance, landscape (elements and character) and visual effects are assessed separately, although the procedure for assessing each is closely linked. A clear distinction has been drawn between landscape and visual effects as described below:

- Landscape effects relate to the effects of the proposal on the physical and other characteristics of the landscape and its resulting character and quality.
- Visual effects relate to the effects on views experienced by visual receptors (e.g. residents, footpath users, tourists etc.) and on the visual amenity experienced by those people.

The LVIA assesses both the long term effects relating to the operational lifetime of the proposed development and also the short term effects associated with its construction.

The study area for the LVIA was taken to be a 5 kilometres radius from the central turbine. However, the main focus of the assessment was taken as a radius of 3 kilometres from the site as it is considered that beyond this distance, even with good visibility, the proposed development would not be perceptible in the composite landscape.

The proposed scheme was assessed for the purposes of the landscape and visual analysis.

**Landscape Elements and Character Assessment Methodology**

A baseline landscape assessment was carried out to determine the current elements and character of the landscape within and surrounding the site. This involved an initial desktop study of:

- Ordnance survey maps at 1:50,000, 1:25,000 scales,
- Aerial photographs of the site and surrounding area,
- LANDMAP on-line mapping facilities
- Relevant planning policy,

Following the desk top study, field and photographic surveys were undertaken in February 2012.

**Visual Assessment Methodology**

The assessment of visual effects was undertaken on the basis of viewpoint analysis as recommended in best practice guidelines. The viewpoints which are in different directions from the site and are at varying distances and locations were selected to represent a range of views and visual receptor types.
The viewpoints are representational and not exhaustive. They are taken from publically accessible land and not from any third party, private, land.

The viewpoints were used as the basis for determining the effects of visual receptors within the entire study area. The viewpoints were photographed at 1.7 metres above ground level.

Assessment Criteria

In accordance with the Landscape and Visual Effect Assessment Guidelines, 2nd edition (2002) the significance of effects is ascertained by cross referencing the sensitivity of the baseline landscape or visual receptor and the magnitude of change as a result of the development.

Sensitivity of landscape elements

The sensitivity of an individual landscape element reflects factors such as its quality, value, contribution to landscape character and the degree to which the particular element can be replaced. A particular element or feature may be more sensitive in one location than in another. It is therefore not possible to simply place different elements into sensitivity bands. Professional judgement has been used to determine the magnitude of direct physical effects on individual existing landscape elements as follows:

<table>
<thead>
<tr>
<th>Table 1 Levels of sensitivity for landscape elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
</tr>
<tr>
<td>Medium</td>
</tr>
<tr>
<td>High</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 2 Criteria for magnitude of change for landscape elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negligible</td>
</tr>
<tr>
<td>Low</td>
</tr>
<tr>
<td>Medium</td>
</tr>
<tr>
<td>High</td>
</tr>
</tbody>
</table>

Sensitivity of Landscape Character

The sensitivity of landscape character is an expression of a landscapes capacity to accommodate change. It varies depending on factors such as the scale and form of the landscape, landscape pattern, sense of enclosure, sense of tranquillity and remoteness, the settlement pattern and transport network etc. The sensitivity of landscape character is described as high, medium or low and the judgement about how sensitive the character areas are has been made by extrapolating this information from the relevant regional and local landscape character studies. Professional judgement has been used to determine the magnitude change on landscape character as follows:
Table 3 Criteria for magnitude of change for landscape character

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negligible</td>
<td>No notable introduction of new elements into the landscape or change to the scale, landform, land cover or pattern of landscape</td>
</tr>
<tr>
<td>Low</td>
<td>Introduction of minor new elements into the landscape or some minor change to the scale, landform, land cover or pattern of landscape</td>
</tr>
<tr>
<td>Medium</td>
<td>Introduction of some notable elements into the landscape or some notable change to the scale, landform, land cover or pattern of landscape</td>
</tr>
<tr>
<td>High</td>
<td>Introduction of major elements into the landscape or some major change to the scale, landform, land cover or pattern of landscape</td>
</tr>
</tbody>
</table>

A level of sensitivity for landscape character is based on the overall evaluation of each aspect areas and judged against the criteria in Table 3 above.

Sensitivity of Visual Receptors

Representative viewpoints have been used in the assessment to represent different visual receptor groups at various distances and directions from the site. In general it is recognised that residential receptors, recreational users of public rights of way or people at recognised vantage points have a higher sensitivity to change than people travelling along roads or conducting their daily business e.g. at their place of work.

Table 4 Levels of sensitivity for visual receptors

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Includes people at place of work e.g. industrial and commercial premises</td>
</tr>
<tr>
<td>Medium</td>
<td>Includes people engaged in outdoor sporting facilities and people travelling through the landscape on roads and trains</td>
</tr>
<tr>
<td>High</td>
<td>Includes occupiers of residential properties and users of public rights of way and POS</td>
</tr>
</tbody>
</table>

Table 5 Criteria for magnitude of change for visual receptors

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negligible</td>
<td>No notable change in the view</td>
</tr>
<tr>
<td>Low</td>
<td>Some change in the view that is not prominent / few visual receptors affected</td>
</tr>
<tr>
<td>Medium</td>
<td>Some change in the view that is clearly visible and forms an important but not defining element in the view</td>
</tr>
<tr>
<td>High</td>
<td>Major change in the view that has a defining influence on the overall view / many visual receptors affected</td>
</tr>
</tbody>
</table>

Effect Significance
The significance of the landscape and visual effects is determined by cross referencing the sensitivity of the landscape element, landscape character or view with the magnitude of change. The significance of effects is described as substantial, moderate or slight. Those effects identified as being of substantial, and substantial/moderate significance may be regarded as significant when discussed in terms of the Town and Country Planning Regulations (England) 2011.

Table 6 Degree of significance thresholds for landscape character, landscape elements and visual receptors

<table>
<thead>
<tr>
<th>Magnitude of Change</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
<th>Negligible/None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscape and Visual Sensitivity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>Major</td>
<td>Major/Moderate</td>
<td>Moderate/Minor</td>
<td>Minor/Moderate</td>
</tr>
<tr>
<td>Medium</td>
<td>Major/Moderate</td>
<td>Moderate</td>
<td>Minor/Moderate</td>
<td>Minor</td>
</tr>
<tr>
<td>Low</td>
<td>Moderate/Miner</td>
<td>Minor/Moderate</td>
<td>Minor</td>
<td>Negligible/None</td>
</tr>
</tbody>
</table>

Nature of Effects

Guidance provided by the Landscape Institute on the Nature of Effect, in its publication ‘Guidelines for Landscape and Visual Impact Assessment’, is limited to a single entry which states that “Effects can be negative (adverse) or positive (beneficial)” but it does not provide guidance as to how that may be established in practice. The nature of effect is therefore one that requires subjective interpretation and, where applied, this involves reasoned professional opinion.

In relation to many forms of development, the LVIA will identify ‘positive’ and ‘negative’ effects by assessing these under the term ‘Nature of Effect’. The landscape and visual effects of wind farms are difficult to categorise in either of these as, unlike other disciplines, there are no definitive criteria by which the effects of wind farms can be measured as being categorically ‘positive’ or ‘negative’. In some disciplines, such as Noise or Ecology, it is possible to quantify the effect of a wind farm in numeric terms, by objectively identifying/quantifying the proportion of a receptor that is affected by the development, and assessing the nature of that effect in justifiable terms. However, this is not the case in relation to landscape and visual effects where a subjective based approach is inevitably needed.

The nature of the effect, insofar as positive and negative effects are concerned, is a term that is used inconsistently by Landscape Professionals when preparing landscape and visual assessments for wind farms, as evidenced in many appeal documents on this topic, and there is not a consensus of opinion that supports its use for wind farm assessments. The magnitude of change takes account of such considerations as scale
comparisons and the appearance of the wind farm in relation to its setting, which can be important to the assessment of significance. In this way positive and negative aspects of the effect are incorporated into the assessment of significance, but not individually expressed as positive or negative.

**Graphic Techniques**

The viewpoint assessment is illustrated by a range of tools including photographs and photomontages. The photographs used to produce the photomontages have been taken using a Canon EOS 500D Digital SLR camera with a 50mm lens (35mm film size) and a 70/75mm lens (35mm film size).

The photographs are digitally joined using Adobe Photoshop software. The series of connected images is then projected in a number of facets that approximate to a cylindrical projection. This process avoids the wide-angle effect that would result should these frames be arranged in a perspective projection, whereby the image is not faceted to allow for the cylindrical nature of the full 360-degree view but appears essentially as a flat plane. For this reason the most representative image of the appearance of the wind energy development is obtained by curving the images in order to maintain the correct viewing distance for all parts of the view.

Computer modelling is used to assist in the assessment process and to illustrate the effects of the wind energy development through the production of zone of theoretical visibility diagrams (ZTVs), wireframes, and photomontages. The ZTVs have been produced using ArcGIS 10.1 and generated using Landform Panorama 50m Digital Terrain Modelling (DTM) data.

The ZTV illustrates the ‘bare earth’ situation, not taking into account the screening effects of vegetation, buildings, or other local features that may prevent or reduce visibility. It is based on a terrain data with 50m grid, so there may therefore be local, small-scale landform that is not reflected on the ZTV, but will alter the real visibility of the wind energy development, either by screening theoretical visibility or revealing parts of the wind energy development that are not theoretically visible. It is important to remember that while the ZTV does indicate the band of turbine numbers that is visible, there is still potentially a wide range of variation within these groupings.

The photographs and other graphic material used in this assessment are for illustrative purposes only and, whilst useful tools in the assessment, are not considered to be completely representative of what will be apparent to the human eye. The assessments are carried out from observations in the field rather than from photographs.
APPENDIX 3
LANDSCAPE DESIGNATIONS
APPENDIX 4

EXTRACTS FROM CHARACTER ASSESSMENTS
The Industrial Foothills and Valleys are a complex transitional landscape of relatively small scale with intensive settlement. The area has a more gentle landform and varied vegetation cover than that of the nearby higher ground. Trees thrive around farmsteads, along stone wall boundaries and in small-medium sized woodlands. Fields are enclosed by gritstone walls or hedgerows. There is a dense network of narrow winding lanes in the rural areas and major roads link settlements along the valley floor. Settlement is heavily influenced by a history of industrial development in the villages themselves and the neighbouring urban areas. Thus the landscape character shows a mixture of rural agricultural and industrial land uses. Gritstone is the characteristic material of farm houses, laithe houses, mills, and cottages. The frequent mill terraces, industrial buildings and more modern housing developments (often built of brick), reflect the proximity to large industrial and commercial centres and lowland clay lands. Typical view - photo 20 below.
Physical Influences

South east Lancashire is predominantly underlain by Millstone Grits and sandstones with coal measures. These measures survived because they were downfaulted or deformed into basin structures during Carboniferous/Permian times. Where increasingly thick layers of drift deposits overlie the coal, along the eastern fringes of this landscape type, extraction is limited and the landscape character is more agricultural. Where coal deposits lie closer to the surface, more extensive coal extraction has been possible and large scale exploitation, dating from the first phases of the Industrial Revolution has substantially altered the pre-industrial landscape in places.

The Industrial Foothills and Valleys are typically found between 100 and 250 m above sea level; the higher limits form the transition to the moorland fringe. The lower slopes are generally less steep with even gradients. On the whole the Industrial Foothills are gentler and more sheltered compared to the more exposed Moorland Fringes.

Nature conservation value is limited although important habitats are found in the stream valleys. The main concentrations of semi natural woodland are found within the valleys of the Calder, Sabden, Hyndburn and Pendle Water between Nelson and Accrington. Occasional private estates and designed parklands are significant locally.

Human Influences

Within the Industrial Foothills and Valleys, extraction and industry has to some extent masked the evidence of early development of the area, although in places the origins of field patterns and boundaries can be discerned. Some early sites survive, such as the Iron Age hillfort at Castercliffe, along with the intricate network of fields, tracks, lanes, scattered hamlets and villages which combine to give evidence of the historic landscape.

The origins of industrialisation of the area date to before the 16th century as a cottage industry based on a dual economy of agriculture and industry. It was dominated by weaving, with some small scale mining and manufacturing activity. Wool came from the South Pennine hillsides and flax from the Lancashire and Amounderness Plain. The textile industry grew rapidly and factories appeared, which gradually replaced the domestic system. The weaving communities continued to grow and the proliferation of mills and residential development created a fragmented landscape.

Since the 1920s the textile industry has been in decline but the remains of mills and workers’ houses are distinctive landscape features.

Coal mining activity increased in the mid 16th century and a number of small mines were sunk around Burnley. During the 18th and 19th centuries the shallower, more easily worked seams were being mined on an industrial scale and were employing large numbers of men. Industry required good transport links. Roads, railways and canals are conspicuous elements of the landscape and reflect the industrial age. Whilst some routes have become disused, many are still important transport routes today for commuting, commerce, industry and recreation. Evidence of coal extraction is frequently minimal due to subsequent reclamation and natural regeneration.

## CHARACTER AREAS - INDUSTRIAL FOOTHILLS AND VALLEYS

The Industrial Foothills and Valleys landscape type occurs in two distinct character areas, both located on the Lancashire Coalfield in the south of the study area.

<table>
<thead>
<tr>
<th>Local</th>
<th>Character Areas</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6a</td>
<td>Calder Valley</td>
<td>This landscape character area encompasses the landscape of the broad valley of the River Calder outside the urban settlements. It extends from the moorland fringes of the South and West Pennines (to the south) and Pendle Hill and Mellor Ridge (to the north) to the urban fringes of Blackburn, Darwen, Accrington, Burnley, Nelson and Colne. Agricultural activity is productive with lush, improved pastures utilised for dairy farming as well as sheep grazing. Stone walls remain the predominant boundary type on higher ground, although there are frequently hedgerows and post and wire fencing on the lower slopes and valley bottom. The landscape is well populated; there are many houses, footpaths and large farms. Stone walls and farm buildings are important remnants of earlier landuses, particularly where modern developments threaten to obscure the visual and cultural appeal of the area. Modern houses are conspicuous for their rendering or use of alien materials and their gardens and ornamental plants. Designed landscapes, such as Huntroyde and Read Park, are important locally to the visual and cultural qualities of this character area; they also contribute an important wooded element to the landscape. Mills, mill terraces and handloom weavers houses are reminders of a very different lifestyle and are usually located closer to the centres of urban areas. The urban fringes of Colne, Nelson and Burnley exert an influence over the landscape; close to the urban edge there are pockets of neglected land and urban fringe land uses such as horse paddocks, garden centres and retail or industrial buildings.</td>
</tr>
<tr>
<td>6b</td>
<td>West Pennine Foothills</td>
<td>This rural area forms the rolling foothills to the West Pennine Moors. Although it has the same undulating landform, underlying geology and industrial influences as the Calder Valley, it is more rural in character. It is dominated by sheep grazed pastures and includes a number of designed landscapes, with associated country houses. The villages reflect their industrial basis with rows of terraces, and sandstone quarries are present. Urban influences include allotments, horse paddocks, street lighting and kerbs, electricity pylons, communication masts, golf courses, suburban housing and road signs. Evidence of past quarrying can be seen in the numerous remnant spoil heaps which are common landscape features, for example near Withnell. The many public footpaths are an important recreational resource from which walkers may experience distant views of the urban conurbations stretching out below them.</td>
</tr>
<tr>
<td>6c</td>
<td>Cliviger Gorge</td>
<td>The Cliviger Gorge is a dramatic feature which was carved out by glacial meltwaters and is significantly different to the other character areas included within this type, and indeed to any other landscape in Lancashire. It is one of the most spectacular examples of a glacially over-deepened valley in the Central Pennines and a well-loved local landscape which has affinities with other similar valleys in the Hebden Bridge area of West Yorkshire. The incision of a glacial meltwater channel along the valley has caused the tributary streams to be left 'hanging' and these are now actively cutting down into the bedrock, producing natural exposures of Carboniferous rocks which are of great geological interest and which have in the past been exploited for coal. The steep slopes also have extensive landslips with a very distinctive landform. Rocky outcrops may be seen</td>
</tr>
</tbody>
</table>
Southern Pennines

Key Characteristics

- Large-scale sweeping landform with an open character created by exposed gritstone moors at an altitude of 400 m - 450 m, deeply trenched by narrow valleys and wooded cloughs.
- Mosaic of mixed moorland and blanket bog with enclosed pasture of varying qualities at lower elevations, largely defined by dry stone walls.
- Valuable wildlife habitats on the open moorland and the moorland fringe including semi-natural boggy mires, acid flashes and wooded cloughs.
- Reservoirs common throughout the area.
- Densely populated valley bottoms with stone buildings extending along valley sides set against the backdrop of the moorland tops.
- Gritstone towns centred around key features of industrial heritage such as textile mills and other industrial development mainly in the valleys but with a group of older settlements on the moorland fringe.
- Main road, rail and canal routes located along valley bottoms. Historic packhorse trails traversing the exposed moorland tops.
- Intrusive features, including windfarm developments, numerous transmission masts, overhead power lines and sandstone, gritstone and clay quarries, mainly on the fringe of the area.
- Extensive views from elevated locations in all directions.

Landscape Character

The area lies between the northern boundary of the Peak District National Park and the southern boundary of the Yorkshire Dales National Park. It lies between the great conurbations of Lancashire and Greater Manchester to the west and West Yorkshire to the East. Over seven million people live within an hour’s drive of its centre and the conurbations generate increasing demands for transport, mineral extraction, power transmission and generation and urban encroachment as well as an intense pressure for recreation, sport and tourism.

Dense settlements, such as Haslingden, extend up the valleys. The proximity of the population to the surrounding uplands is a distinctive feature of the area, putting it under heavy recreational pressure.

This is a large-scale sweeping landscape of exposed upland moorland and pasture. The area shares many characteristics with the Bowland Fells and the Dark Peak but the evidence of man’s intrusion into this landscape has removed the sense of unspoilt wilderness which distinguishes the other regions.

Agriculture in the majority of this area is limited to sheep grazing on upland pasture with some beef and a little small-scale dairy farming in the valley bottoms. The production of eggs, chicken meat and pig products is also of considerable importance in some areas. The farming economy in the area is unique - the majority of the holdings are small and are worked on a part-time basis. In landscape terms this is reflected in small fields defined by stone walls and post and wire fencing often in poor condition which suggests marginal economic viability. There is a dynamic relationship between different types of moorland vegetation with areas of heather and grassland fluctuating in response to changing management regimes. In the north east, the valleys of the Aire and the Wharfe are bounded in places by steeply sloping sides with extensive areas of landslip.
which support permanent grassland, sheep grazing and some dairying - examples include Ilkley which is between Keighley and Bingley.

This area is a valuable water catchment area and, as such, contains a large number of reservoirs which form a major contribution to the overall landscape character.

The moorland plateau is dissected by three main river systems which drain eastward - the Aire, the Colne and the Calder. The valleys of the Roach and the Thame drain the western and south-western parts of the area. The valleys themselves are heavily populated and contain the major communication routes with the exception of the main trans-Pennine route, the M62, which crosses the tops between Huddersfield and Rochdale. In general, settlements have been contained by the harsh topography of the steep valley sides. However, the confluence of the Worth and Aire valleys is associated with a gently sloping alluvial fan, raised above the level of the floodplain, which has allowed the town of Keighley to expand rapidly and become a large sprawling conurbation. The moorland plateau affords extensive views across these valleys and towards the plains of Lancashire and the low-lying conurbations of the woollen towns in Yorkshire. This further reduces the sense of isolation associated with other upland moorland locations. There are many other man-made influences which detract from the natural beauty of this area. Quarrying is, in the main, restricted to the moorland fringe with the exception of the heavily quarried valley at Whitworth. Other intrusions include wind farms, transmitter masts and, in several places particularly to the west of Bradford and above Bacup, large spats of 400KV overhead power lines which become prominent features visible from long distances. Despite this there is a sense of grandeur and spaciousness to be found in these moorland tops.

**Character Area 36: Southern Pennines**

![Character Area 36: Southern Pennines Diagram](image-url)
The area has a strong industrial heritage associated with the textile, engineering and manufacturing industries. It is, in fact, the seat of the woollen and cotton textile industry and the landscape reflects the transformation from cottage industries to much larger commercial industries. Indeed, the central feature of the majority of the towns and villages which line the valley floors are the textile mills which dominate the urban skyline and dwarf the stone terraces which radiate from them. The smoke blackened terraces with their sloping rooflines extend up the valley sides to the moorland edge.

**Physical Influences**

In the middle of the region, around Haslingden and Ramsbottom, thick, coarse-grained sandstones (‘gritstone’) are generally horizontal and separated by softer mudstone and siltstone beds. This creates a terraced landscape of plateaux and interlocking escarpments corresponding to the layers of sandstone and mudstone. Isolated beds of sandstone also form mesa-shaped hills across the area. The region is cut by numerous faults and has several deeply-trenched glacial erosion features such as Cliviger Gorge. To the south of the area, as it passes between Rochdale and Huddersfield, the Pennines are at their narrowest. The slopes to the west are steeper than those to the east. Accordingly, the scarps on the west are less populated and elevated. One of the most prominent of these escarpments is Blackstone Edge, west of Huddersfield. The escarpment is formed by Kinderscout Grit and was referred to by Defoe as the English Andes. Between here and the western edge of the Yorkshire coalfields there is a succession of similar crag-capped edges running parallel to the main valleys such as the Colne and Calder Valleys.

To the north-east of the area the distinctive long ridge of Millstone Grit, Rombalds Moor, is separated from the core of the Southern Pennines by the valley of the river Aire. Glacial till occurs within the Aire Valley but is largely absent on the upland areas of Rombalds Moor and Skipton Moor. The valley is relatively wide and flat and the bottom is enriched with alluvium. During the last ice-age glacial moraine ridges blocked drainage of the valley forming a series of glacial lakes, the deposits of which are preserved beneath the alluvium.

Familiar features of this region are waterfalls. The alternate bedding of the hard grit and the softer shales promote their development - examples include Lumb Falls near Hebden Bridge.
Bridge and the falls in Marsden Clough at Holmbridge. Other waterfalls, such as Dolly Folly near Meltham, are created where a fault line crosses the valley bringing grit against shale and resulting in massive gritstone walls over 30 feet high.

The sweeping landform of Worsthorne Moor is characteristic of the uplands of the South Pennines.

**Historical and Cultural Influences**

The transformation of the landscape in the 18th and 19th centuries, as a result of the switch from handloom weaving to the factory system, has left a legacy in the area. Villages, enclosures, commons, packhorse trails and canals are preserved in a landscape where convincing glimpses of a much older, prehistoric past can also be discerned.

Historically, access to the area was poor with little more than packhorse routes traversing the moorland tops. However, there is evidence that a Roman road cuts across the moors, west of Haslingden, linking Manchester to Ribchester. The Wharfedale and Airedale valleys have served as important routeways across the Pennines from the earliest times.

Agriculture based on sheep and cattle has always been an important activity. Sheep grazing on the moorland commons was ad hoc and fluctuated, in response to climatic and economic changes, resulting in abandoned stone farmsteads and irregular, degraded stone wall enclosures dotted across the plateaux. Many of the abandoned homesteads were also the result of deliberate depopulation by the early water companies. In contrast, the relatively better quality land to the north-east gave rise to extensive Parliamentary enclosure which has resulted in strong regular patterns of medium-sized walled fields on the lower plateaux and slopes. The dramatic landscape of the region has attracted the attention of several literary figures. The most notable of these were the Bronte sisters who lived in Haworth and used the surrounding landscape as a setting for many of their novels such as *Jane Eyre* and *Wuthering Heights*. Earlier it impressed Daniel Defoe and, more recently, Ted Hughes. The association with the Brontes is a major tourist attraction of the area and many of the road signs are in several languages.

The steep-sided valleys are now densely populated as a result of the rapid expansion of small villages involved in the textile industry. The growth of the textile industry concentrated people into the industrial valleys. Evidence of this changing society is seen by the ruins of isolated farmsteads and cottages on surrounding hillsides. The population of these valleys steadily increased and the expansion of home weaving led to the building of stone cottages with large ‘weavers’ windows’. The introduction of water power caused the industry to prosper still further in these valleys. The rapid streams provided such power and later supplied the lime-free water needed for other stages in textile manufacture. These settlements are dominated by large mill buildings with chimneys and extensive rows of terraces clinging onto the hillsides. The greatest expansion of the industry took the bulk of the population onto the lower ground further to the east where the valleys open out onto the Coal Measures. The decline of the Lancashire textile industry followed the slump of 1920. Today some mills have found alternative uses but many remain derelict.

The valley sides also bear the scars of extractive industries such as stone quarrying and coal mining at Bacup, Haslingden, Edenfield, Cliviger and in the Aire Valley between Keighley and Bingley. Many have been in operation from the early 18th century.

A result of this industrial expansion has been the establishment of an improved communication network including the East Lancashire Railway, Rochdale Canal and upgraded ‘A’ roads and bypasses.

**Buildings and Settlement**

Settlement in the South Pennines is either peripheral to the upland core or strung out along the major valleys that penetrate it. Nodal points at valley junctions are especially important, as at Littleborough, Todmorden, Hebden Bridge and Keighley. There is a fringe of smaller, intermediate settlements at mid height between this outer fringe and the central core. It spreads up the slopes from the major settlements. This mid-height zone is wider in the east of the area than it is in the west thus conforming to the physiography of the area. Construction is predominantly out of local gritstone and in a vernacular style that complements the natural features and contributes to the
overall aesthetic quality of the landscape. The settlement pattern has evolved from a dual economy in which textiles predominated. As textile manufacturing was mechanised, settlements evolved and expanded at sites where power, water at first and then coal, became available.

Small towns, such as Haslingden, Rawtenstall, Bacup, Todmorden and Hebden Bridge, line the deeply incised valleys forming linear bands of development along valley bottoms. These towns are often industrial in origin deriving power from the rivers for the textile industry and exploiting the natural resources for quarrying and mining. The skyline of these settlements is often dominated by the mill chimneys which tower above the small stone terraces. Easily the most dominating tower in the central area of the Southern Pennines is Stoodley Pike. The town of Keighley in the Aire Valley underwent rapid expansion during the 19th and early 20th centuries based on engineering and manufacturing. Because of the gentler topography the town has been able to sprawl out in contrast to the previously mentioned settlements.

**Land Cover**

This area is predominantly upland heather moorland, acid grassland and rough pasture although some of the heather moor has been lost to grassland in many areas due to changes in management. The effects of enclosure, over-grazing, uncontrolled burning and atmospheric pollution have reduced the once varied vegetation to one dominated by purple moor-grass (*Molinia caerulea*), mat-grass (*Nardus stricta*) and cotton grass (*Eriophorum spp.*). The core of the area however supports the mosaic of natural upland habitats which include blanket bogs, heather moor and wet heath which are rare enough to be of European importance.

The main agricultural land use is sheep grazing. The field pattern is small to medium and defined by stone walls and post and wire fencing. These are often degraded in many areas. To the east, in Airedale, trees become more frequent than on the uplands and birch and oak are abundant. Much of the land on these lower slopes is improved pasture with well-maintained field boundaries.

The area is an important water catchment area with numerous reservoirs in the head streams of the major river valleys. It is crossed by many drainage channels which feed into these reservoirs, such as at Rivington, Haslingden, Edenfield, towards Cliviger and in the vicinity of Haworth.

The area contains several transmission masts, a 24 turbine windfarm at Cliviger and the 22 turbine windfarm at Ovenden Moor. There are also several country parks at lower elevations developed near reservoirs for example at Lever Park, Jumbles and Ogden.

Reservoirs such as Hurstwood, commonly surrounded by coniferous plantations, occur throughout the area. The former coal workings, shown to the left of the photograph, are further evidence of the area’s strong historical links with industry.

**The Changing Countryside**

- Fluctuating transitional moorland edge due to conversion and reversion of rough grazing and pasture.
- Over-grazing of areas of common land by large operators.
- Major shifts in land ownership as farms are taken over by non-farmers.
- Conversion of barns and derelict farmsteads.
- Introduction of windfarms and cellular phone/radio transmitter masts.
- Decline in the textile industry and the evolution and transformation of the industrial base in the valley settlement.
- Dereliction or conversion of many mills for alternative use.
- Urban fringe pressure around larger conurbations resulting in erosion of paths, fly-tipping and disturbance to wildlife.
● Growth of recreation as a major land use bringing a potential for erosion and increased car borne traffic.

● Development of a by-pass network which is incomplete and results in bottlenecks on unimproved roads.

● The significant pressure for improved access to this area has resulted in proposals for the M65 cross-Pennine link. However this proposal is on hold but would have a considerable impact upon the landscape character and future development of the area.

Shaping the Future

● The reduction in sheep grazing on open moorlands would increase biodiversity, contribute to landscape character and encourage traditional management of heather moorland.

● The sympathetic conversion of redundant farm and mill buildings should be considered on the edge of urban areas. The retention and reuse of industrial heritage features, particularly mill buildings in valley bottoms, is important.

● The management of marginal farmland, subject to pressures from its urban fringe location, should be addressed.

● The appropriate treatment of redundant quarries should be considered. This might include restoration in sensitive locations or ecological enhancement. These sites may be of geological importance and of scientific or educational value.

● There are opportunities to retain and manage ecologically-rich acid flushes, wooded cloughs and existing woodlands. There is scope for the creation of native woodland.

● The retention and restoration of traditional stone wall field boundaries and fences is important.

The north east of the character area, such as the area around Whitley Head, has relatively better quality land which gave rise to extensive Parliamentary enclosure. This has resulted in strong regular patterns of medium-sized, walled fields on the lower plateaux and slopes.

Selected References


Lancashire County Council (c 1990), *Lancashire A Green Audit*.


Glossary

clooughs: ravines; steep valleys
Lancashire Valleys

Key Characteristics

- The broad valley of the river Calder and its tributaries running northeast/southwest between natural backdrops of Pendle Hill and the Southern Pennines.
- Intensely urban character derived from main towns of Blackburn, Accrington and Burnley which have developed rapidly since the industrial revolution.
- A strong industrial heritage, associated with cotton weaving and textile industries. Redundant or under-utilised mill buildings, mill lodges and ponds.
- Profusion of communication routes along the valley bottom including the Leeds and Liverpool Canal, the Preston-Colne rail link and M65 motorway.
- Victorian stone buildings well-integrated into the landscape.
- Numerous large country houses with associated parklands particularly on northern valley sides away from major urban areas.
- Remnants of agricultural land fragmented by industry and scattered development.
- Field boundaries, regular to the west and irregular to the east are degraded around the urban areas, formed of hedges with few hedgerow trees and, at higher elevations, of stone walls and post and wire fences.
- Small woodlands are limited to cloughs on valley sides.

Landscape Character

This area is located mainly in the east of Lancashire. It is bounded in the north-west by the rural valley of the river Ribble and the Millstone Grit outcrop of Pendle Hill in the Bowland Fringe. The southern boundary is formed by the Southern Pennines. The Lancashire Valleys are concentrated in a broad trough which runs north-eastwards from Mellor Brook just outside Blackburn.

This is a visually contained landscape which would have once shared many characteristics with the rural valley of the river Ribble in the north. However, the development of industry and settlements has created a landscape with an intensely urban character. The remnants of agricultural land are now fragmented by industry and scattered development which severely disrupt the continuity of the field pattern. Field boundaries on the urban fringe are hedgerows that are generally degraded with an overall absence of hedgerow trees. At higher elevations, the field boundaries are stone walls and post and wire fences many of which are ineffective and in poor condition.

The main towns in the area are Blackburn, Accrington, Burnley, Nelson and Colne which have developed rapidly since the industrial revolution. The expansion of these towns has also been aided by the dense transport network which lines the valley bottoms. These include the Leeds and Liverpool Canal, the Preston-Colne rail link and the M65 motorway. The buildings are predominantly Victorian stone terraces generally in good condition. There are substantial areas of contemporary industrial development which have replaced the traditional textile industries. However, there are numerous examples of industrial heritage which remain. These act as reminders of the historical importance of local industrial development to the character of the landscape.

Developments in industry, housing and communication routes give the valleys a strongly urban character, as seen here at Huncoat near Accrington.
The extensive surface exposure of bedrock has given rise to many extractive industries in the area, including stone quarrying and coal mining. These areas are now generally well-vegetated and grazed by sheep. Most of the more conspicuous dereliction has undergone land reclamation schemes with some reclamation by domestic waste landfill.

The surrounding fells of Pendle and the South Pennines are an important natural backdrop which dwarf the settlements in the valley bottom. The moorland tops are linked to the valleys by small wooded cloughs which extend up the steep slopes.

**Physical Influences**

The character of the Lancashire Valleys is dominated by the key towns of Blackburn, Accrington and Burnley, which occupy a broad trough underlain by Coal Measures. The presence of the coal accounts for the early industrialisation of the area. Coal has been worked at depth and by open-casting at the surface. The bottom of the trough is covered in glacial deposits, mostly till. In the Feniscowles/Pleasington area, west of Blackburn, extensive sand deposits impart a special landscape character. Bedrock resources have been quarried where the draft cover is thin. The main materials extracted were sandstone, worked on a small scale for local building, and mudstone, worked for brick-making in large pits at Accrington. The Millstone Grit outcrop of Pendle Hill forms part of the northern boundary to this area and, when combined with the fells of the South Pennines, creates enclosure and serves as an important backdrop which dwarfs the scale of the settlement in the valley bottom.
The main river is the Calder which cuts out of the trough through a gorge in the gritstone ridge at Whalley. It joins the river Ribble at the edge of the area to the north-west of the town.

The hills of the Southern Pennines and the Forest of Bowland provide a scenic backdrop to the valley bottoms. Woodland in the area is scarce, but some clough woodlands have been retained on the valley sides.

Historical and Cultural Influences

Prior to the expansion of settlement and industry during the 19th century, this area would have been used predominantly for agriculture and would have had a similar rural character to that of the river Ribble further north.

The development which lines these valleys began as a cottage industry during the 16th century and was predominantly an area of weaving rather than spinning. Traditionally wool came from the South Pennine hillsides and flax from the low-lying country of the Lancashire and Amounderness Plain around Ruford and Croston. By 1700 each district was specialising in the production of one type of cloth. Blackburn was a centre for fustians and most woollens and worsteds were manufactured in Burnley and Colne. The textile industry grew rapidly and, with new machines, the domestic system was replaced by factory systems which further accelerated the growth of these weaving communities. The proliferation of mills and associated residential development has created a fragmented landscape with a heavily industrialised character. Since the 1920s the textile industry has been in steady decline with many mills becoming derelict or converted to other uses.

Buildings and Settlement

Settlement within the Lancashire Valleys is extensive. There is a high proportion of built up land which includes the towns of Blackburn, Darwen, Accrington, Burnley, Nelson and Colne. Buildings are predominantly constructed from stone and are generally in good repair. There is substantial new industry in the area as well as many artefacts of the area’s industrial heritage.

Scattered settlements on valley sides are comprised of older stone buildings, often of the Longhouse type, and isolated blocks of stone terraced houses perched at precarious angles on the steep slopes. There are also several large country houses along the Calder valley including those at Read Park, Huntroyde Demesne and Gawthorpe, Dunkenhalgh and Towneley Halls.

Land Cover

This is predominantly an area of built-up land with major towns such as Blackburn, Accrington and Burnley spreading across the valley bottom. In addition to these urban developments the remaining land cover is a mix of pasture with areas of acid and neutral grassland and areas of semi-natural woodland/scrub. The field boundaries in this area are hedgerows with few hedgerow trees which give way to stone walls and fencing on higher ground. Field boundaries adjacent to urban/industrialised areas are frequently degraded indicating low economic viability.

Woodland is limited to small woods with areas of grassland flushes and wetland comprising of oak, alder and sycamore which extend along steep-sided narrow cloughs, such as Priestly Clough, Accrington; Spurn Clough, Burnley; and Darwen Valley. There are also small areas of woodland/scrub associated with abandoned industrial land.

There are several areas of parkland connected to large country houses. This area also bears the scars of extractive industries. Some of the quarries have undergone land reclamation schemes by domestic waste landfill such as Rowley and Brandwood and at Accrington Whinney Hill.

The Changing Countryside

- Development pressures in the valley bottom particularly associated with junctions on the M65.
- Rationalising farming operations leading to the conversion of traditional farm buildings to alternative uses.
Pressures on remnant farmland adjoining urban areas causing degradation of field boundaries and alternative uses such as golf courses.

- Loss of hay meadows and reduction in biodiversity.
- Loss of industrial heritage features along the Leeds and Liverpool Canal.

### Shaping the Future

- The restoration of field boundaries especially those adjacent to urban areas needs to be addressed.
- The conservation of remaining hay meadows is important as wildlife and landscape features.
- Opportunities are available for areas of new woodland especially on degraded farmland and derelict industrial sites surplus to current needs.
- The retention of valuable, industrial, heritage features should be considered especially along Leeds and Liverpool Canal.

The river Calder running through agricultural land at Padiham. In the valleys, grazing land – commonly with poorly maintained field boundaries – is found on the fringes of the urban areas.

Selected References


Lancashire County Council (c 1990), *Lancashire A Green Audit*.


### Glossary

clooughs: ravines; steep valleys
APPENDIX 5
ZTV AND PHOTOVIEW LOCATION PLAN
KEY

Location of Proposed Turbine
Zone of Theoretical Visibility - Hub (26m) & Tip (32m) Visible
Zone of Theoretical Visibility - Tip (32m) Visible
Photo-recon Location

Wind Turbine Co-ordinates -
T1 - E387901, N436117
T2 - E387900, N436092

ZTV Production Information -
- 5m for data used is Landform Panorama 50m
- Viewer set at 1.7m
- Calculations include earth curvature and light refraction

N.B. This Zone of Theoretical Visibility (ZTV) image illustrates the theoretical extent of where turbines will be visible from, assuming 100% visibility. It is generated using terrain data only and does not account for air screening that vegetation of the ground and built environment may cause. This is only a worst case ZTV and the actual extent of visibility are likely to be much less extensive.

Stone Rakes Barn, Burnley
Zone of Theoretical Visibility Plan

quietrevolution

Drawn by: AD
Checked by: SH
Date: 05.04.13
Q.0140_03-A
1: 40,000 @ A3

Pegasus Environmental
APPENDIX 6

PHOTOVIEWS
Photoview 1

View from the tumulus adjacent to Bronte Way Long Distance Trail, South east of Monk Hall Farm.

Photoview Location

- Camera make & model: Canon EOS 5D
- Date & time of photograph: 29/04/2013 @ 17:44
- OS grid reference: 389448, 434233
- Viewpoint height (AOD): 318m
- Distance to site: 2.3km

Pendle Hill

Site obscured by intervening landform and vegetation

Existing small wind turbines near Long Hey Farm

Brierfield

Stone Rakes Farm, Burnley

Quiet Revolution

Q.0140_04-A Photoviews
View from the PRoW northeast of Lower Coldwell Reservoir. Looking west.

**Photoview Location**

- **Camera make & model**: Canon EOS 5D
- **Date & time of photograph**: 29/04/2013 @ 14:09
- **OS grid reference**: 390300, 436665
- **Viewpoint height (AOD)**: 300m
- **Distance to site**: 2.5km
View from the junction of PRoWs to the northwest of All Souls, Barrowford Roman Catholic Cemetery. Looking southeast.

**Photoview Location**

- **Camera make & model**: Canon EOS 5D
- **Date & time of photograph**: 29/04/2013 @ 16:54
- **OS grid reference**: 384365, 439143
- **Viewpoint height (AOD)**: 210m
- **Distance to site**: 4.7km

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Pegasus Environmental is part of Pegasus Planning Group Ltd. Drawing prepared for planning. Any queries to be reported to Pegasus for clarification.
Photoview Location

- **Camera make & model**: Canon EOS 5D
- **Date & time of photograph**: 29/04/2013 @ 15:13
- **OS grid reference**: 387572, 436141
- **Viewpoint height (AOD)**: 193m
- **Distance to site**: 360m

View from Walverden Rd and PRoWs junction, adjacent to Pighole Farm. Looking east.

Electricity poles and cables just breaking the skyline

Site partially obscured by intervening landform

PRoW

Hollin Grove
View from the junction of PRoWs and Robin House Lane minor road, east of Hollin Grove Farm, adjacent to Robin Cottages. Looking northwest.

**Photoview Location**

- **Camera make & model**: Canon EOS 5D
- **Date & time of photograph**: 29/04/2013 @ 13:13
- **OS grid reference**: 388258, 435797
- **Viewpoint height (AOD)**: 246m
- **Distance to site**: 400m

Stone Rakes Farm, Burnley

Quiet Revolution

Q.0140_04-A Photoviews
View from the northeast corner of Lanebottom estate, north of Halifax Rd. Looking north.

Photoview Location

- **Camera make & model**: Canon EOS 5D
- **Date & time of photograph**: 29/04/2013 @ 13:21
- **OS grid reference**: 387973-435645
- **Viewpoint height (AOD)**: 234m
- **Distance to site**: 420m

North East corner of Lane Bottom Estate

Site partially obscured by intervening landform and vegetation

Hollin Grove

Stone Rakes Farm, Burnley

Quiet Revolution

Q.0140_04-A Photoviews
Photoview Location

Camera make & model       - Canon EOS 5D
Date & time of photograph - 29/04/2013 @ 14:45
OS grid reference        - 386967, 435795
Viewpoint height (AOD)   - 257m
Distance to site         - 1km

View from the minor road (Nelson Rd) junction with Pendle Way Long Distance Trail, northwest of Haggate. Looking northeast.
View from Pendle Way Long Distance Trail PRoW on the edge of Nelson Settlement, on the weir at Walverden Reservoir. Looking southeast.

**Photoview Location**

- **Camera make & model**: Canon EOS 5D
- **Date & time of photograph**: 29/04/2013 @ 16:09
- **OS grid reference**: 387110, 436595
- **Viewpoint height (AOD)**: 173m
- **Distance to site**: 960m
View from Pendle Way Long Distance Trail adjacent to Southfield Lane, north of Catlow. Looking southwest.

Photoview Location

Camera make & model - Canon EOS 5D
Date & time of photograph - 29/04/2013 @ 13:46
OS grid reference - 388272, 436641
Viewpoint height (AOD) - 257m
Distance to site - 660m