Landscape and Visual Impact Assessment (LVIA)
for the siting of additional 11kW Gaia small-scale wind generator at:

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Lee Lane,
Millhouse Green,
Penistone,
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Landscape and Visual Impact

1 Introduction

The aim of this Landscape and Visual Impact Assessment is to identify and where possible quantify the likely significant effects of the proposed wind turbine at Bullhouse Mill, Millhouse Green, on the existing landscape and visual amenity within a 5km radius of the development site. A 5km radius Zone of Theoretical Visibility (ZTV) has been chosen because it is considered proportional to the scale of the development proposed and because the contours of the land are such that a larger ZTV would yield very similar results.

There are two main objectives to the Landscape and Visual Impact Assessment. Firstly to identify the effects of the development on the visual amenity of the area. This includes views from nearby properties and settlements and any areas of public access. This process requires the identification of the intrinsic visual characteristics of the existing landscape, its quality, and value. An impact of the development on views relates to the changes that arise in the composition of views as a result of changes to the landscape, to people's responses to the changes, and to the overall effects with respect to visual amenity.

The second objective is to identify the effects of the development on the landscape character of the area. This will involve the identification of the landscape characteristics of the site and its surrounds and an assessment of how the development will change the fabric, character and quality of the landscape.

2 Consultation

Although a landscape assessment was submitted with the original planning application, the request for this additional assessment has been made by Barnsley Metropolitan Borough Council, the determining Authority. The Authority have asked for a number of additional photomontages to be produced from a number of vantage points within the wider landscape in order to assess both the impact of the proposal within the wider landscape. The proposed photomontage location have been outlined by Ms. Elaine Ward in an email, dated 28th November 2013. Ms. Ward provided a Google Earth image of the proposed photomontage locations which is provided below:

Figure 1: Google Earth Image showing photomontage locations requested by Barnsley Metropolitan Borough Council (28th November 2013)

Following receipt of this information, a site visit was undertaken by a representative of Sustainable Energy Systems Ltd in order to attain the required images. Images were taken from locations as close to those requested (visibility and access dependant). Details of the exact photomontage location are provided as part of this document.

3 Guidance and Legislation

The assessment has been prepared after referencing a number of different sources and materials, including the following:

- Guidelines for Landscape and Visual Assessment (Landscape Institute and Institute of Environmental Management and Assessment 2013);
- The Yorkshire and Humber National Character Area (Natural England);
- Yorkshire Southern Pennine Fringe National Character Area (Natural England);
- Barnsley Borough Landscape Character Assessment (Barnsley MBC, 2002); and
- Visual Representations of Wind Farms – Good Practice Guide (Scottish Natural Heritage, 2006)

4 Assessment Methodology

4.1 General Approach

The assessment has utilised information in the Yorkshire and Humber National Character Area, Yorkshire Southern Pennine Fringe National Character Area, Barnsley MBC Landscape Character Assessment, Local Planning Policy and a MAGIC desktop study.

4.2 Significance Criteria

The aim of the landscape and visual assessment is to identify, predict and evaluate potential key effects arising from the proposed development. Wherever possible identified effects are quantified, but the nature of landscape and visual assessment requires interpretation by professional judgment. In order to provide a level of consistency to the assessment, the prediction of magnitude and assessment of significance of the residual landscape and visual effects have been based on pre-defined criteria.

4.3 Landscape Sensitivity

The sensitivity of the landscape to change is not absolute and varies according to the existing landscape, the nature of the proposed development and the type of change being proposed. Accordingly, the concept of 'sensitivity to change' is not part of the baseline description of the landscape of the study area, but is considered in relation to the assessment of the effects of the proposed development. In general terms, areas of high landscape quality and value are more sensitive to change than areas of lesser quality and value, and general guidance on the evaluation of sensitivity is provided in Figure 2. However, the actual sensitivity would depend on the attributes of the landscape receiving the proposals, and the nature of those proposals.

The assessment of sensitivity is based on consideration of the following parameters, together with the nature of the proposals, during the course of the assessment:

Landscape value: *the importance attached to a landscape, often as a basis for designation or recognition which expresses national or regional consensus, because of its quality, cultural associations, scenic or aesthetic qualities;*

Landscape quality: *the state of repair or condition of elements of a particular landscape, its integrity and intactness and the extent to which its distinctive character is apparent;*

Landscape capacity: *the capacity of a particular type of landscape to accommodate change brought about by wind farm development without unacceptable negative effects on its character, reflecting key aspects of landscape character including scale and complexity of the landscape and degree of 'wildness' or 'remoteness'.*

Parameters	***Sensitivity of Landscape***		
	High	***Medium***	***Low***
Landscape value (designations)	National (e.g. National Parks and AONBs)	Regional (e.g. Area of Great/High Landscape Value)	No designation

Landscape quality	A landscape in good condition, predominantly intact and with a clearly apparent distinctive character	A landscape in moderate condition, reasonable intact, retaining a distinctive character	A landscape in poor condition, lacking in integrity, where landscape character has been adversely affected
Landscape capacity	Landscapes of distinctive character susceptible to relatively small changes	Landscapes reasonably tolerant of changes	Landscapes potentially tolerant of substantial change

Figure 2: Landscape Sensitivity

Visual Sensitivity - The sensitivity of potential visual receptors will vary depending on the location and context of the viewpoint, the activity of the receptor and importance of the view. Visual receptor sensitivity is defined as high, medium, or low in accordance with the criteria in Figure 3.

High sensitivity	Residents experiencing principal views from dwellings, users of outdoor recreational facilities including strategic recreational footpaths and cycle ways, people experiencing views from important landscape features of physical, cultural or historic interest, beauty spots and picnic areas.
Medium sensitivity	Road users and travellers on trains experiencing views from transport routes. In addition, residents experiencing secondary views from dwellings, users of secondary footpaths experiencing views, and people engaged in outdoor sport (other than appreciation of the landscape) or recreation i.e. hunting, shooting, golf and water based activities.
Low sensitivity	Workers, users of facilities and commercial buildings (indoors) experiencing views from buildings.

Figure 3: Visual sensitivity criteria

Those receptors living within view of the scheme are usually regarded as the highest sensitivity group along with those engaged in outdoor pursuits for whom landscape experience is the primary objective. The threshold for significance of visual effects relies to a great extent on professional judgement. Criteria and local circumstances require close study and careful consideration to decide if the effect on a single property will warrant classification as a highly significant issue. Generally it will be rare for the impact on a single dwelling to be categorised as of high significance for the development overall. However it may combine with similar impacts on many properties to give rise to a more general impact of high significance.

The magnitude of change arising from the proposed development at any particular viewpoint is described as substantial, moderate, slight or negligible based on the interpretation of a combination of largely quantifiable parameters, as follows:

- distance of the viewpoint from the development;
- duration of effect;
- extent of the development in the view;
- angle of view in relation to main receptor activity;
- proportion of the field of view occupied by the development;
- background to the development;
- extent of other built development visible, particularly vertical elements.

In order to differentiate between different levels of magnitude the following definitions are provided:

- **Substantial** - total loss or major alteration to key landscape elements/features/characteristics such that post development the baseline landscape character or composition of the view will be fundamentally changed;
- **Moderate** - partial loss or alteration to one or more key landscape elements/ features or characteristics such that post development the baseline landscape character or composition of the view will be partially changed;
- **Slight** - minor loss or alteration to one or more key landscape elements/features or characteristics such that post development the change/loss will be discernible but the underlying landscape character or composition of the view will be similar to the baseline;
- **Negligible** - very minor loss or alteration to one or more key landscape elements / features/ characteristics of the baseline conditions. Change will be barely distinguishable approximating to no change.

The significance of any identified landscape or visual effect has been assessed in terms of major, moderate, minor or negligible. These categories are based on the juxtaposition of viewpoint or landscape sensitivity with the predicted magnitude of change. This matrix should not be used as a prescriptive tool but must allow for the exercise of professional judgement. These categories have been based on combining viewpoint or landscape sensitivity and predicted magnitude of change, to determine significance of effects:

	LANDSCAPE AND VISUAL SENSITIVITY	***Magnitude of Change***			
		Substantial	Moderate	Slight	Negligible
	High	**Major**	**Major/ Moderate**	Moderate	Moderate/ Minor
	Medium	**Major/ Moderate**	Moderate	Moderate / Minor	Minor
	Low	Moderate	Moderate/ Minor	Minor	Minor/ negligible

Figure 4 Significance of landscape and visual impact

The measure of significance of effects must not be taken to imply that they are necessarily adverse or should warrant refusal. As with many aspects of landscape and visual assessment, significance of effect also needs to be qualified with respect to the scale over which it is felt. An effect may be locally significant, or significant with respect to a small number of receptors, but not significant when judged in a wider context.

Any effect may be described as temporary or permanent, direct or indirect, positive or negative and these various types of effect have a bearing on the acceptability or otherwise of the type of effect. The various types of effect are described as follows:

Temporary/ Permanent Effects - If a proposal would result in an alteration to an environment whose attributes can be quickly recovered then judgements concerning the significance of effects should be tempered in that light. The wind energy application is for a 25 year operational period, and while this is not permanent it can properly be described as long term. Landscape and visual effects can be reversed and following decommissioning there would be no residual landscape and visual effects. A wind turbine should therefore be regarded as a long term reversible addition to the landscape preserving the choice for future generations whether or not to retain what might be regarded as the landscape fabric of today.

Direct and Indirect Effects - Direct and Indirect landscape and visual effects are defined in Guidelines for Landscape and Visual Impact Assessment (GLVIA, 2013). Direct effects may be *defined "… as an effect that is directly attributable to a defined element or characteristic of the proposed development, for example the loss or removal of an element or feature such as a hedgerow or a prominent group of trees…"*. 'An indirect (or secondary) effect is an effect that is not a direct result of the proposed development but is often produced away from the site of the proposed development or as a result of a complex pathway or secondary association'. The direct or physical effects are generally limited to an area around the base of the proposed turbine and cable. The main effects are often concerned with the visual effects (occasionally referred to as indirect effects) and relate to effects associated with the introduction of the wind turbine as seen in the context of the existing landscape and visual character of the view.

Positive/Negative (Beneficial and Adverse) - Positive effects upon landscape receptors may result from changes to a view involving positive enhancement measures or through the addition of well-designed elements, which add to the landscape experience or sense of place in a complementary manner. In the case of wind turbine development it is not a clear cut matter to determine whether or not a change in the view should necessarily be regarded as an adverse or positive effect, because of the widely varying responses of individuals to this form of development. The perception of the viewer influences whether a significant visual effect would constitute acceptable change to the landscape. Public attitude surveys in the vicinity of existing operational wind farms in England, Scotland and Wales have consistently found that more people view wind turbines positively than negatively and it appears to be the case that this proportion tends to increase post construction compared to pre-construction. The most recent study is the *'Public Attitude to Wind farms'* survey carried out for the Scottish Executive by MORI (August 2003). The factors influencing acceptability are considered in the conclusions of this chapter.

Visibility Maps - Computer generated Zone of Theoretical Visibility (ZTV) Maps have been prepared to assist in viewpoint selection and to indicate the potential influence of the development in the wider landscape. They have been prepared to indicate the extent of potential visibility on the basis of 'bare ground' only not taking the screening effects of the built form of settlements and main areas of woodland into account. Visibility Maps to turbine blade tip and hub height have been prepared to a radius of 5km from the proposed turbine. Visibility Maps illustrate potential visibility on the basis of 'bare ground'. The Visibility Maps indicate areas from which it might be possible to secure views of part, or parts, of the proposed turbine. However, use of the Visibility Maps needs to be qualified on the following basis:

- there are a number of areas within the Visibility Maps from which there is potential to view parts of the proposal, but which comprise open agricultural, or other land where the general public do not appear to exercise regular access;
- the Visibility Maps can indicate visibility in areas of significant tree and woodland cover where the landcover obscures the majority of views out with the vegetated area;
- the Visibility Maps do not account for the effects of screening and filtering of views as a result of intervening features, such as buildings, dense settlement, trees and hedgerows;
- the Visibility Maps do not account for the likely orientation of a viewer – for example when travelling in a vehicle.

Viewpoint Assessment and Visualisations - The combined effect of these limitations means that the Visibility Maps tend to over-estimate the extent of visibility – both in terms of the land area from which the turbine is visible and also possibly the extent of visibility of the turbine from a particular viewpoint.

The use of this type of Visibility Map is considered good practice and should be considered as a tool to assist in assessing the visibility of the project. The Visibility Maps do not present an absolute measure of visibility and do not represent the 'visual impact' of the proposed wind turbine.

The assessment of landscape and visual effects is carried out from what is considered the most appropriate representative selection of viewpoints. After undertaking a desktop and site survey a total of 4 viewpoints have been chosen at a range of locations from within the 5km radius of the site for the photomontages. The selected viewpoints are representative of the views experienced at different distances and directions from the site, as well as from the various landscape character types identified in the study area from which the proposed wind turbine would be visible. Detailed analysis of the viewpoints includes description of the existing and predicted view, analysis of magnitude of change and the effects on landscape character and visual amenity.

5 Baseline Description

The aim of the baseline analysis is to document, classify and appraise the existing landscape features in the vicinity of the development site. It also establishes the extent of the visibility of the site. Through this process, a better understanding of the key components or characteristics of the study area is gained, which is critical in identifying valued and potentially sensitive landscape and visual receptors against which the predicted landscape and visual impacts of the development can be assessed.

5.1 Landscape Context

The site is located within the land holding of Bullhouse Mill which is located approximately 0.9 km west of Millhouse Green. The general character of the application site and surrounding landscape is undulating and rural in nature with the proposed turbine site located within a valley. The proposed turbine would be located approximately 175m to the main built form of Bullhouse Mill.

5.2 National Landscape Character Area

Natural England's National Character Area Assessment identifies that the application site falls within the 'Yorkshire Southern Pennine Fringe National Character Area (NCA 37)' which is described below:

The Yorkshire Southern Pennine Fringe National Character Area (NCA) is a transitional landscape from the upland areas of the Southern Pennines NCA in the west through to the low-lying land of the Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA to the east.

The most striking aspect of the landscape is the mingling of predominantly 'gritstone' industrial towns and villages with the strong valley forms and pastoral agriculture of the Pennine foothills. The gritstone industrial buildings and settlements bring a sense of visual unity to the landscape. The landscape is dominated by industrial buildings and structures such as factories, chimneys, railways and canals. Travellers crossing the NCA from west to east experience a change from pastoral treeless hill tops, where drystone walls are the predominant field boundary, to wooded valleys, where large urban settlements such as Bradford, Huddersfield and Sheffield are focused in the valleys and were built up around the former industries such as coal mining, steelmaking and the woollen industry. The World Heritage Site of Saltaire stands as an example model town built with the wealth produced by the industries prevalent in this area. In the east, settlements are separated by areas of arable farming with hedgerows and lowland meadows.

The NCA is characterised by steep slopes that are cut through by narrow rivers, notably the Don, the Calder, the Hebble Brook and the Colne in the north and the Sheaf, the Rivelin and the Loxley in the south near Sheffield, which open up into valleys on lower land. The river corridors provide links through the NCA from the uplands into the towns and cities in the valleys, supplying not only water for the large population in these areas but also opportunities for people to access and enjoy the natural environment and for species movement through the landscape.

The presence of locally accessible minerals and materials and the fast-flowing water from the uplands attracted development of woollen towns in the north and iron ore and smelting in the south, notably around Sheffield. The presence of more than 5,000 listed buildings and 20 Registered Parks and Gardens reveals the industrial wealth that

was used to shape the area and still provides strong sense of place today. The consistent use of local sandstone helps to retain identity and links to the geology of the area.

There are many opportunities to provide increased access and recreation for the large populations living in the valleys of the NCA, encouraging them to engage with the wider countryside both between settlements and up into the more upland areas. The geology of the area has had such a strong influence on the development of the local history and sense of place that opportunities should be taken to recognise, maintain and engage people with these features.

Higher land provides opportunities for wind turbines and communications masts. These, along with pylon lines and other tall structures, can add to the visual clutter which tends to be characteristic of much of the area.

5.2.1 Key Characteristics

- Eastern slopes of the Pennines, dropping from upland in the west down to the east, dissected by numerous steep-sided valleys.
- Extensive urban influences from the matrix of large and small towns.
- Close conjunction of large scale industry, urban areas and transport routes with open countryside.
- Predominance of local sandstone and 'gritstone' as a building material notably in large and dominant industrial buildings.
- Urban development largely confined by valleys creating dramatic interplay of views between settlements and the surrounding hillsides.
- Predominantly pastoral faming with strong linear patterns of walled enclosures on plateaux.
- Predominantly broadleaved woodlands on steep valley sides forming important backdrops to industrialised areas.
- Impression of a well-wooded landscape even though tree cover is relatively sparse overall.
- Dense network of roads, canals and railways.

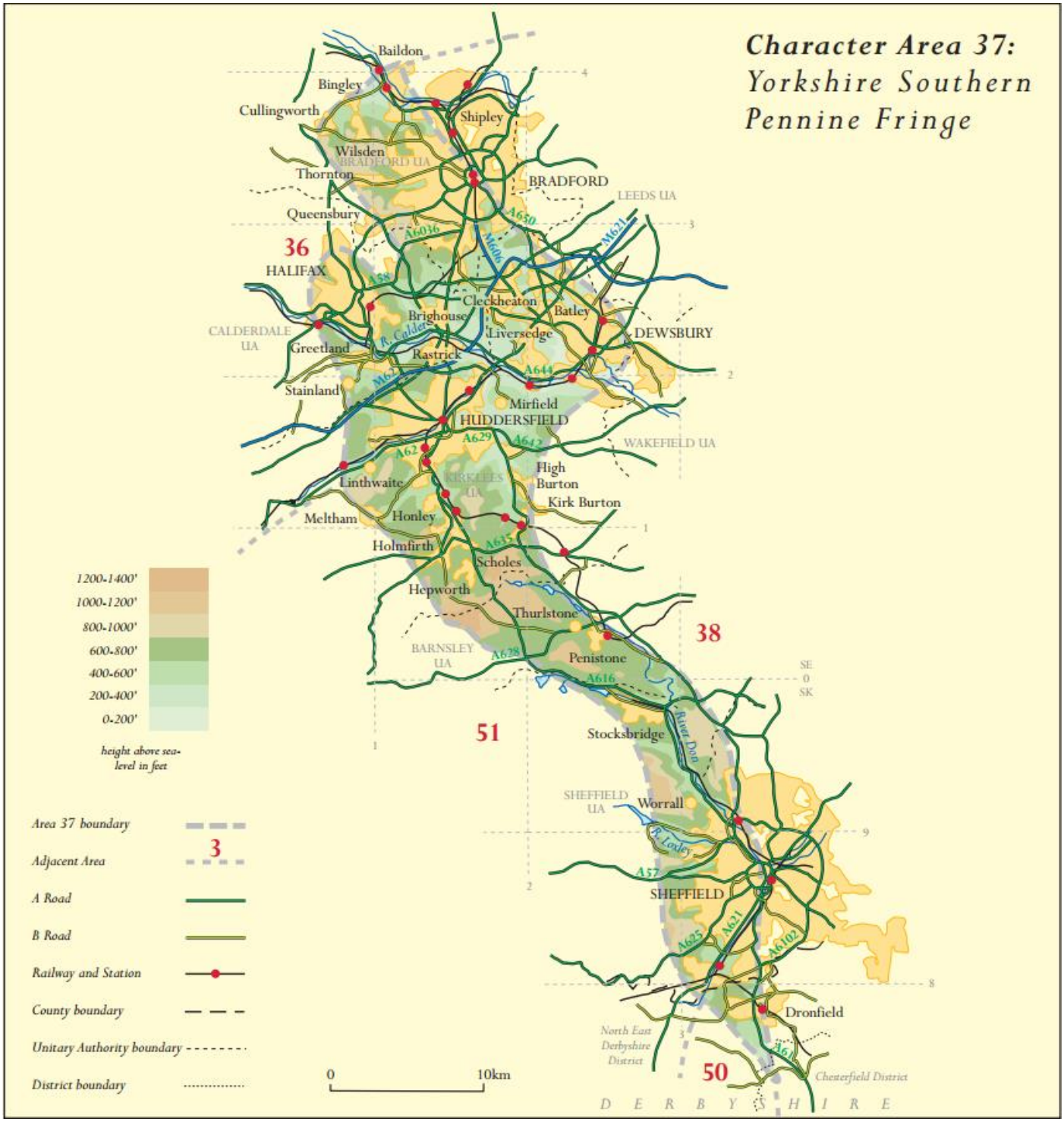

Figure 5: Yorkshire Southern Pennine Fringe National Character Area – NCA37 (Natural England)

5.3 Development Site Designation

The Barnsley Borough Landscape Character Assessment (2002) cvlassifies the application site as falling within the 'Upland Rolling Farmland' landscape – more specifically the 'Inchbirchworth Upland Rolling Farmland' landscape. The Upland Rolling Farmland landscape type is upland hill country defined by a distinctive undulting topography above 200m AOD.

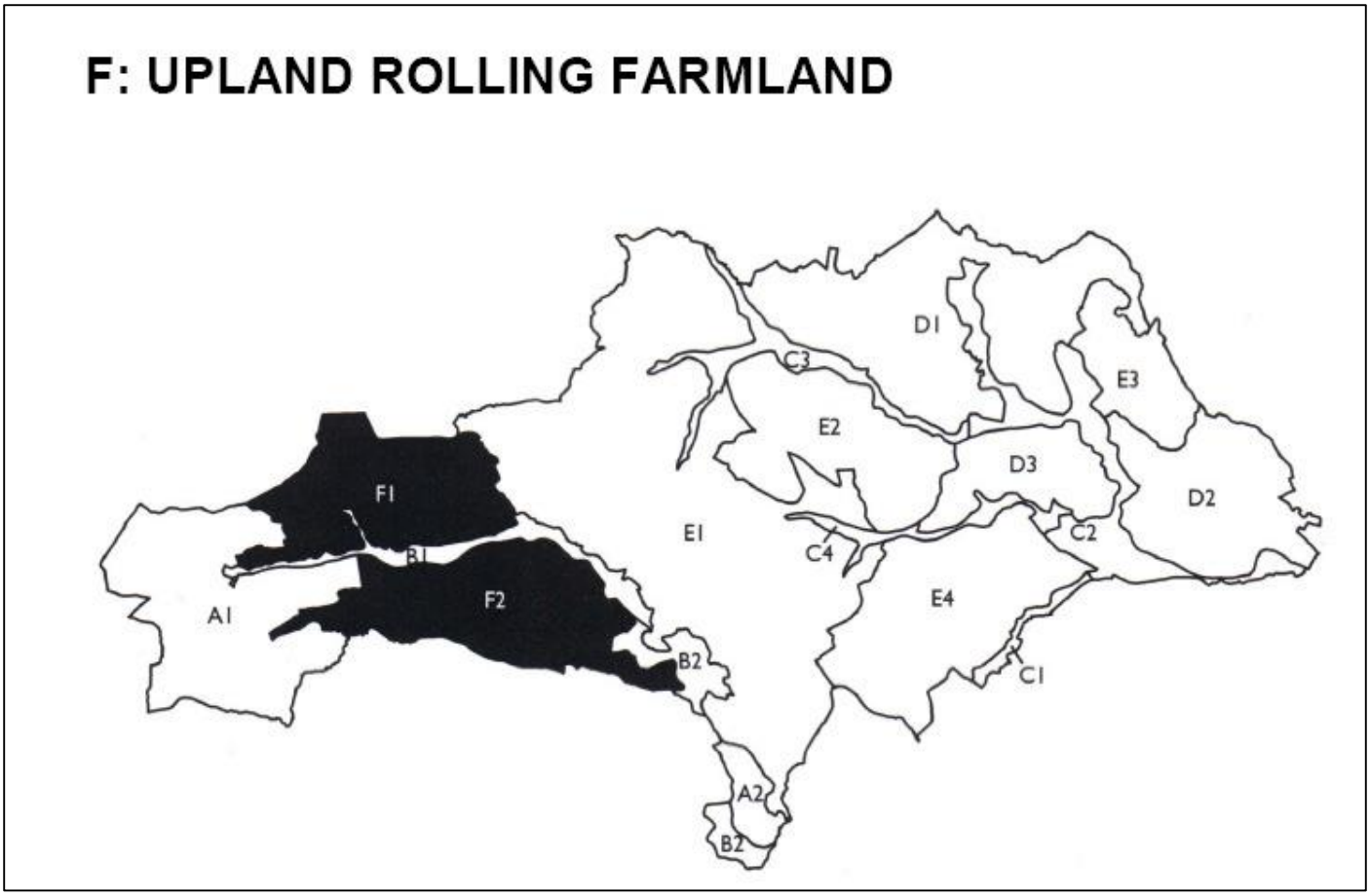

Figure 6: Upland Rolling Farmland Landscape Character Area (Barnsley Borough Landscape Character Area, 2002)

The 'Inchbirchworth Upland Rolling Farmland' landscape is a large area of upland hill country in the northwest of the borough. The area is characterised by a stepped landform, rising up to and above 350m in some parts. The pasture fields in the area comprise medium geometric field units strongly defined by distinctive stone walls and there is unimproved pasture with scrub on the steeper slopes. Farmsteads are scattered in the area and there are several disused industrial quarries, shafts and mines. The Royd Moor wind farm at Spicer Hill is visually prominent on the skyline.

The Barnsley Borough Landscape Character Assessment describes the landscape condition of this area as 'moderate'. Landscape sensitivity to built development is described as high and the landscape capacity is said to be low. Based on this, the most appropriate landscape strategy objective is to conserve and restore the landscape. In order to comply with this, new development should be well placed.

The Barnsley Unitary Developemnt Plan identifies that application site as falling within designated Green Belt land.

5.4 Alternative Sites

The turbine will provide green electricity for Bullhouse Mill and as such needs to be located in close proximity to it. The siting of turbines is often quite contentious, and there is sometimes a high level of opposition to their installation. It should be noted however that for every person who dislikes wind turbines, there is someone else who likes their appearance and considers them to be a positive introduction which add interest into a landscape.

Planning Policy places a strong emphasis on the encouragement of site-specific small-scale development and stress that the provision of clean sources of sustainable energy can override perceived landscape harm. Small-scale projects can provide a limited but valuable contribution to overall output of renewable energy and to meet energy needs both locally and nationally. Planning Authorities should not therefore reject planning applications simply because the level of output is small. The system , when combined with the current turbine already existing at site, has the potential to

generate electricity from a sustainable source to cover more than 90% of the property and businesses energy demands, which is extremely significant. The turbine will contribute directly to regional and national targets for energy produced from renewable sources.

The National Planning Policy Framework also states 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 a valuable contribution to cutting greenhouse gas emissions. This proposal is consistent with up-to-date policy guidance.

As most renewable energy resources can only be developed where the resource exists and where economically feasible, local planning authorities should not use a sequential approach in the consideration of renewable technology projects.

Wind turbines are generally linked with a property and as such are rarely in 'prime wind' sites as sought by commercial power generators. Nevertheless, if care is taken with regard to selection and positioning, a small scale wind turbine can make a significant contribution to greenhouse gas reduction as well as being an economically attractive proposition for the owner. The following rules of thumb apply:

- There should be no, or minimal, obstructions in the direction of the prevailing wind. For most sites in the UK the prevailing wind is South West.
- Obstacles such as buildings and trees degrade wind quality by producing turbulent zones in their vicinity. These can significantly reduce the output of a turbine. It is important, therefore to select a tower of sufficient height to allow the rotor to sit above any potentially turbulent zones.
- Wind speed tends to increase with height in most locations, a phenomenon known as wind shear. This variation in velocity with altitude is most dramatic near the surface. Further, the energy in wind is proportional to the cube of the wind speed. Consequently a small change in wind speed produces a much larger change in wind energy. For example: increasing the height of a turbine rotor, from 9m to 18m will increases the expected wind speeds by 10% and the expected power generated by 34%.
- Wind energy capture is related to the area swept by the rotor e.g. a 6m radius rotor sweeps an area 4 times greater than a 3m rotor. Bigger rotors generate more power.

Various sites within the land holding of were appraised for their suitability for siting of a wind turbine. The following siting criteria were used to determine the final turbine location:

- Required Energy Generation
- Carbon Reduction Targets
- Wind Resource
- Environmental Impact
- Land Take
- Site Access
- Grid Connection
- Aesthetic Considerations
- Ecology Considerations- set back distances from trees and hedgerow
- Relationship with existing turbine

5.4.1 Alternative Turbines, Layouts, Heights & Models

When assessing planning applications local authorities should recognise that the impact of turbines on the landscape will vary according to the size and number of turbine and the type of landscape involved, and that these impacts may

be temporary if conditions are attached to planning permissions which require the future decommissioning of turbines.

The 11kW Gaia turbine model on a monopole tower has been chosen as it is identical to the other two turbines located on site and it provides the applicant with the desired electrical output but it still considered to be of a form that is well suited this landscape setting and the purpose for which it is intended. The tower design, which tapers towards the top breaking down the mass of the tower, and the colour which is proven to blend in with the sky and surrounding landscape, result in reduced visibility over both mid and long range distances. In addition the proposal does not involve any ground based equipment housing or compound fencing; consequently the proposal would have a limited, material impact on the character of the landscape. The chosen mast height is considered the optimum height for energy generation whilst ensuring the low visual impact. A change in the design to a smaller mast may slightly reduce visual impact but at the expense of the viability of the project through a much depreciated generation of energy.

5.4.2 Access to Site

The current access to the site is of a sufficient standard to deliver the turbine, it is also considered to be the least disturbing access point in terms of environmental impact, for this reason no alternative access points have been considered. Access to the field for digging equipment, concrete dumpers etc. will be directly from the existing field access point from Bullhouse Mill.

5.4.3 Landscaping Arrangements

It is not proposed to incorporate any landscaping with this scheme for the following reasons:

- Turbines need clear turbulent free air to function correctly,
- The introduction of the turbine will not harm existing landscaping, and;
- The turbine is far enough away from neighbouring residential properties so as to prevent adverse impacts that may require mitigation in the form of screen planting.

6 Summary of Potential Effects

6.1 Visual Analysis

This section comprises the assessment of visual effects arising from the proposed wind turbine during the operational period. The potential landscape and visual effects arising during the operational phase of the turbines have been assessed in two ways:

- Analysis of the ZTV maps to provide a general overview of the visibility of the turbine from different distances within the study area;

- Assessment of the potential landscape and visual effects at the 8 representative LVIA viewpoints illustrated in the visualisations by both wireframes and photomontages.

6.1.1 Visibility Map Analysis

Visibility Mapping to turbine blade tip and hub height has been prepared to a radius of 5km from the proposed turbine, as illustrated in ZTV plan shown in Appendix 2. This ZTV analysis has been prepared on the basis of ‘bare ground’; not taking into account the screening effects of the built form of settlements or vegetation.

The Visibility Mapping illustrates the maximum overall visibility of the proposed turbine to the upper blade tip height of 24.5m and therefore presents a worst case scenario.

Due to the undultating topography of the landscape in the surrounding area, theoretical visibility of the turbine is relatively small, particularly to the north, south and west. To the east the turbine would be theortically visible within a 2km radius. A larger area of land to the southeast beyond 2km will will not experience theoretical visibility.

6.2 Receptors

6.2.1 Settlement

Potential visibility may be experienced by residents of settlements at the following locations:

- Scattered isolated dwellings within 1km of the proposed turbine
- Millhouse Green

6.2.2 Road Users

Potential visibility may be experienced by motorists on A, B and minor roads including:

- A628
- B6106
- Local roads in close proximity to site

6.2.3 Public Rights of Way/Footpaths

There are numerous public rights of way on the wider landscape, including the Pennistone Boundary Walk and Trans Pennine Way.

6.3 Viewpoint Analysis

A viewpoint assessment has been carried out on a selection of key viewpoint locations to assess the likely magnitude and significance of landscape and visual effects arising as a result of the proposed turbine. A total of 8 viewpoints have been selected in order to assess both the impact of the proposed turbine individually, as well as the impact of the development in accumulation to those turbine development already approved. These viewpoints are within 5km of the site. For these, both wireframes and photomontages have been produced.

The viewpoints are considered representative of the main landscape and visual receptors in the study area. The location of these 8 viewpoints are shown on the ZTV map in the submitted Appendix and in Figure 7 below.

The predicted views from the locations identified on the ZTV are also shown in the Visualisations 1-8 in the Appendix. On the basis of fieldwork observations and a number of measured parameters for each viewpoint, the sensitivity of the location for each of the landscape and visual receptors and magnitude of change has been assessed. These have been combined in accordance with the matrix in Figure 8 in the methodology to establish an overall effect and determine whether or not the effect is likely to be significant. The viewpoint assessment is presented in Figure 7 below:

Viewpoint No.	Viewpoint	Approximate distance from nearest turbine	Landscape Effects				Visual Effects			
			Landscape Sensitivity	Magnitude of change	Effect on landscape character	Significant Yes/no	Receptor sensitivity	Magnitude of change	Effect on visual amenity	Significant Yes/no
1	B6016 Lee Lane North of Hazelhead Hall	985m	High	Slight/Negligible	Moderate/Minor	No	Medium	Slight/Negligible	Moderate/Minor	No
2	Catshaw Lane, 170m south of Lee Lane	416m	High	Slight	Moderate	No	Medium	Slight	Moderate/Minor	No
3	B6106 Lee Lane to the North East of Catshaw	313m	High	Moderate	Major/Moderate	No	Medium	Moderate	Moderate	No
4	B6106 Lee Lane at outskirts of Millhouse Green	688m	High	Moderate	Major/Moderate	No	Medium	Moderate	Moderate	No
5	Bridleway north of Bullhouse Hall	341m	High	Negligible	Moderate/Minor	No	Medium	Negligible	Minor	No
6	Junction of footpath with Catshaw Lane	353m	High	Slight/Negligible	Moderate/Minor	No	Medium	Slight/Negligible	Moderate/Minor	No
7	Trans Pennine Trail 1km west of A628	684m	High	Slight	Moderate	No	High	Slight	Moderate	No
8	Trans Pennine Trail at its junction with A628	602	High	Slight	Moderate	No	High	Slight	Moderate	No

Figure 7: Table of Landscape and Visual Effects

6.3.1 Viewpoint Assessment

Viewpoint 1 – B6016 Lee Lane north of Hazelhead Hall: Medium range view, 985m from the turbine base. The photo is taken within an area designated as Green Belt where the proposed turbine is considered to have a Moderate/Minor effect on the landscape.

The blades of the proposed turbine is visible from the photo location. In terms of landscape sensitivity however it is not considered to have a major impact. The landscape itself is generally in good condition which retains a distinctive character open in nature with fields bounded by dry stone walls and belts of mature tree planting. However the landscape appears to be reasonably tolerant of changes due to proximity to man-made features. The turbine is considered to fit well as it is sited so as to avoid any skyline views.

The magnitude of change is considered slight/negligible in this instance. The blade of the proposed turbine would be visible from this location due to the screening afforded the development by a combination of trees and dry stone wall, as well as due to the topography of the landscape.

The visual effects of the proposed turbine at the location are considered to be similar to that of the impacts on the landscape. The viewpoint sensitivity is considered to be medium since this view would be from a road, albeit a minor road. For this reason it is considered that the overall potential impact on visual amenity is moderate/minor.

Viewpoint 2 – Catshaw Lane 170m south of Lee Lane: Short range view, 416m from the turbine base. The photo is taken within an area designated as Green Belt where the proposed turbine is considered to have a Moderate effect on the landscape.

From this vantage point the proposed turbine would be partially screened from view due to the tree planting that flanks Catshaw Lane. Where visible, the proposed turbine would be viewed in close relation to the southern turbine that currently is installed on site. For this reason, the impact of an additional turbine is not anticipated to be overbearing within the landscape. Indeed from this location, the visibility of the proposed and existing turbine shall reduce during the spring and summer months once the surrounding trees have foliage on them. Post development the baseline landscape character and view will be partially changed.

In terms of visual effects, the proposed turbine has been assessed as having a moderate/minor effect. The sensitivity of the viewpoint is medium as it is taken from a minor road. The distance of the turbine to the receptor ensures its prominence however it cannot be said to be detrimental to the overall setting. The turbine is partially screened from view (screening which shall increase in the spring and summer months), which in part assists in reducing the overall impact of the turbine.

Viewpoint 3 – B6106 Lee Lane to the North East of Catshaw**:** Short range view, 688m from the turbine base. The proposed turbine would be viewed in close relation to the existing wind turbine to the south of the site.

The area is of high significance in terms of landscape character due to its location within the Green Belt and it is considered that the proposed development will have a moderate effect on the overall landscape due to the short distance between the receptor and the turbine. From this location a line of large scale electricity pylons is visible in the distance adding to the vertical features within the wider landscape.

The magnitude of change has been assessed as moderate because of the close proximity of the vantage point. Post development it is considered that there will be only a moderate loss or alteration, such that the underlying landscape character or composition of the view will be similar to the baseline.

In terms of visual amenity implications the proposed development is considered to have a moderate impact. The viewpoint sensitivity is medium given the location along a road used predominantly by local traffic. It is considered that the proposed turbine is of sufficient scale to sit within the exiting landscape due to its close proximity of the existing 2 wind turbines on site. The visual impact of the proposed turbine shall be further minimised due to the

orientation of the B6106 (which runs east/west to the north of the application site). This orientation means that the users of the B6106 shall have minimal direct views of the proposed turbine.

Viewpoint 4 – B6106 Lee Lane at the outskirts of Millhouse Green**:** Short range view 688m away from the turbine base.

The effect on the landscape is considered high due to the sites location within the Green Belt. The landscape character typifies that of the rest of the area and is generally in good condition. Views of the scattered farms and tree planting contribute to the landscapes tolerance to change. The turbine blades and nacelle protrudes the tree planting in the foreground with the blade visible above the skyline to the east. A line of large scale electricity pylons are visible to the south and west of the proposed turbine location. These pylons are located on higher ground and are considered to dominate the wider landscape. The turbine is not considered to adversely impact the character of the landscape in these terms.

The magnitude of change is moderate in this instance such that post development there will be a major/moderate change to landscape character and visual amenity. In spite of this assessment it is considered that the turbine is such that it fits neatly within its landscape setting – between two turbines identical in size and scale helping to blend into the rural landscape in which it shall be located.

The effect of the turbine on visual amenity is considered to be moderate. Users of the road close to the viewpoint may experience indirect views of the turbine; however these will be limited due to the orientation of the turbine and the limited scale of the installation. The impact on visual amenity is therefore not considered to be significant.

Viewpoint 5 – Bridleway north of Bullhouse Mill: Short range view, 341m from the turbine base. The photo is taken within an area designated as Green Belt where the proposed turbine is considered to have a Moderate/Minor effect on the landscape.

From this location the proposed turbine would be screened from view in its entirety due to the mature tree planting in the foreground. For this reason it is considered that the magnitude of change shall be negligible.

The magnitude of change is considered slight/negligible in this instance. The blade of the proposed turbine would be visible from this location due to the screening afforded the development by a combination of trees and dry stone wall, as well as due to the topography of the landscape.

The visual effects of the proposed turbine at the location are considered to be similar to that of the impacts on the landscape. The viewpoint sensitivity is considered to be medium since this view would be from a bridleway. For this reason it is considered that the overall potential impact on visual amenity is moderate/minor. However, as the turbine shall be screened from view the impact is not considered to be significant.

Viewpoint 6 – Junction of footpath with Catshaw Lane: Short range view, 353m from the turbine base. The photo is taken within an area designated as Green Belt where the proposed turbine is considered to have a Moderate/Minor effect on the landscape.

From this vantage point the proposed turbine would be screened from view due to the tree planting between the vantage point and the turbine location. For this reason it is considered that the visual impact of the proposal along Catshaw lane shall be minimal. Users of the public right of way to the south of the vantage point shall have intermittent visibility of the turbine. Where visible along this route the turbine shall be viewed in relation to the existing turbines at Bullhouse Mill, minimising the impact on the landscape.

In terms of visual effects, the proposed turbine has been assessed as having a moderate/minor effect. The sensitivity of the viewpoint is medium as it is taken from a minor road. The distance of the turbine to the receptor ensures its prominence however it cannot be said to be detrimental to the overall setting. The turbine is screened from view (screening which shall increase in the spring and summer months), reducing the overall impact of the turbine.

Viewpoint 7 – Trans Pennine Trail 1km west of A628**:** Short range view, 684m from the turbine base. The proposed turbine would be viewed in close relation to the existing wind turbines at Bullhouse Mill, in particular the northern-most turbine.

The area is of high significance in terms of landscape character due to its location within the Green Belt and it is considered that the proposed development will have a moderate effect on the overall landscape due to the short distance between the receptor and the turbine. From this location the proposed turbine would be viewed against the backdrop of rising land to the north, further minimising the visual impact of the scheme.

In terms of visual amenity implications the proposed development is considered to have a moderate impact. The viewpoint sensitivity is high given the location along Trans Pennine Trail. However, it is considered that the proposed turbine is of sufficient scale to sit within the exiting landscape due to its close proximity of the existing 2 wind turbines on site. Indeed, the proposed turbine would be viewed in close relation to the northern-most turbine, minimising the visibility of the development in the wider landscape.

Visibility of the turbine along the Trans Pennine Trail are limited due to a combination of the tree and hedgerow planting that flanks the trail, or due to the steep banks that flank the trail, particularly further to the east of the proposed vantage point.

Viewpoint 4 – Trans Pennine Trail at its junction with A628**:** Short range view 602m away from the turbine base.

The effect on the landscape is considered high due to the sites location within the Green Belt. The proposed turbine shall be visible in close relation to the existing turbines at Bullhouse Mill. The bottom half of the proposed turbine shall be screened due to the tree planting in the wider landscape. The proposed turbine shall also be viewed against the backdrop of rising land to the west. To the north the landscape is dominated by the Royd Moor wind farm which adds further vertical elements to the wider landscape.

The effect of the turbine on visual amenity is considered to be moderate. Users of the Trans Pennine Trail close to the viewpoint may experience views of the turbine along a short stretch; however these will be limited due to the orientation of the turbine and the limited scale of the installation. The impact on users of this right of way is therefore not considered to be significant.

6.4 Other Landscape Effects

Landscape effects are defined by the Landscape Institute as a "*Change in the elements, characteristics, character, and qualities of the landscape as a result of development.*" These effects are assessed by considering the landscape sensitivity against the magnitude of change. The type of effect may also be described as temporary or permanent, direct or indirect, cumulative and positive, neutral, or negative.

6.4.1 Landscape Effect during Construction

Whilst it is the operational stage of the wind turbines which would give rise to prolonged landscape and visual effects, temporary effects at the construction stage would occur, however due to the modest scale of this turbine these effects are considerably lower than those associated with a large wind farm development. Construction of the wind turbine would involve the following operations:

- Excavation and construction of turbine base foundation;
- Excavations for underground cables;
- HGV deliveries to site and movement of vehicles on site;
- Erection of turbine;
- Reinstatement works

The works detailed above would give rise to some landscape and visual effects. These effects would however be temporary and would mainly arise through the erection of the turbine. The effects arising from other operations, including the vehicle movement, excavation of turbine foundations and cable runs would be localised, and would not be prominent in views from the surrounding areas. Construction operations would take place over a period of approximately 3 weeks. These effects would be limited in extent and duration and are not considered to be significant.

6.4.2 Potential Construction Effects on Landscape (Fabric and Character)

The construction of the wind turbine would take place on a limited part of the existing agricultural land to the northeast of the main farm complex. Direct effects on the landscape would be localised and indirect effects are assessed in section 6.4.4 below. Any disturbance of existing grassland areas to be retained on completion of construction would be reinstated accordingly. The effects of the construction phase of the turbine development on the fabric of the landscape are considered to be minor and not significant.

6.4.3 Potential Construction Effects on Visual Amenity

The visual effects of the activities during the construction phase would be temporary and intermittent and slight in magnitude. The visual effects of the turbine delivery vehicle movements would be of minor significance. Having regard to the assessment set out above and the temporary nature of the construction effects, it is considered that the proposal would result in minor landscape and visual effects during the construction stage, which are not considered to be significant.

6.4.4 Landscape Effects during Operation

Post construction the wind turbine site would gain a 'cleaner' and more 'settled' appearance as the construction area would be restored and the wind turbine operational stage would have commenced.

The wind turbine would be potentially visible over a 5km radius and potentially capable of indirect effects on the surrounding landscape resource, although this is restricted in the main to the east. These effects have been assessed under the operational effects as they would occur incrementally over the construction period, but would not exceed the final operational magnitude of effect.

6.4.5 Decommissioning Effects

Decommissioning would entail the removal of all above-ground structures including the wind turbine and grid connection. The wind turbine foundations and underground cables would be left in situ, but no visible part of these components would remain above ground.

There would be a short term temporary impact associated with the removal of structures during the decommissioning stage of the project; however this would have a minimal landscape and visual effect on the locality and has not been considered further as part of this assessment.

6.5 Visual Effects

Visual effects are recognised by the Landscape Institute as a subset of landscape effects and are concerned wholly with the effect of the development on views, and the general visual amenity as experienced by people.

Visual effects are assessed by considering the sensitivity of the receptor (people) against the proposed magnitude of change to determine a level of visual effect. In professional landscape terms, the acceptability of this effect largely relates to the activity and the experience of the viewer and the visual composition, character, context, and the overall ability of the landscape in that view to accommodate the development in design terms. Visual effects are assessed in relation to the agreed viewpoints, properties and settlements, tourist and recreational destinations and transport routes.

This section draws on the results of the landscape context, review of the development proposal, viewpoint assessment and field work observations. It considers the potential effects of the proposal on the visual amenity of the following groups of potential receptors:

- Residents and workers - in towns, villages and isolated dwellings;
- Motorists and other road users on A class, B class and minor roads;
- Recreational Receptors and tourist destinations.

6.5.1 Residents – Settlements

The following section of the assessment considers changes and consequent visual effects upon the views available to the residents residing in settlements**.** In accordance with the GLVIA, residential receptors with primary views in settlements are all considered to be of high visual sensitivity and residential receptors with secondary views are considered to be of medium sensitivity.

For residents of urban areas and scattered villages, the most likely places for visibility would be from the edges of the settlements nearest the proposed turbine. Within these settlements, most views would be partially screened by adjacent dwellings and intervening buildings combined with the screening effect of field boundary trees. There may however be places within these settlements where glimpsed views of the turbines may occur beyond intervening buildings. It is important to note that the magnitude of visual effects arising from the presence of the turbines in views from within the built up areas would be greatly reduced in comparison with those experienced in open views from the edges of settlements, as illustrated in the visualisations.

Millhouse Green is located to the east of the proposed turbine location at a distance of approximately 0.9km. According to the ZTV, visibility would widespread due to its location within the valley. The presence of the existing wind turbines at Bullhouse Mill minimise the impact of the additional turbine from Millhouse Green. Structures and features above ground level help limit views of the turbine from the settlements and it is considered that in terms of each settlement, the overall magnitude of change would be moderate with a moderate level of effect and is not considered significant.

On the whole for the above settlement and the settlements beyond the separation distances involved coupled with the limited scale of this installation means that only the outer edges of these settlements orientated towards to the turbine would have potential views. These are not considered to amount to more than a slight to negligible effect and are not considered significant.

6.5.2 Isolated Residential Properties

It is possible that views of the proposed development would be experienced from individual dwellings and farmsteads in the surrounding area, in particular along B6106 Lee Lane and Catshaw Lane. However, it has been observed that the orientation of these dwellings and intervening vegetation/structures/topography combine to reduce the potential visibility of the wind turbine. Whilst acknowledging that moderate effects may arise in the private context, it is considered that the overall change in visual amenity would not be unacceptable.

6.5.3 Motorists and other road users

Users of roads in the vicinity of the site would potentially view the turbine whilst using these routes. The majority of views would be available along the routes which surround the site including that of A628 and B6106, used mainly by local traffic travelling into and out of the surrounding villages.

The views from these routes would be experienced transiently by road users and the sensitivity of all of these receptors is considered to be medium. All visibility from roads would be subject to screening levels along routes and within

intervening farmland and the magnitude of change is considered moderate, giving an overall effect on these receptors of moderate, and not significant.

6.5.4 Public Rights of Way/Footpaths

There are a number of public rights of ways in the wider landscape, including the Pennine Way that runs to the east of the proposed development site. Due to the nature of the development, some PROWs shall experience views of the proposed turbine. Views from the Trans Pennine Trail have been shown within photomontages 7 and 8. The Penistone Boundary Walk runs to the northeast of the proposed site. However, proposed turbine is no closer than those already installed at Bullhouse Mill and it is considered that the visibility of the development does not make it harmful. Having regard to this it is not likely that the presence of the turbine will materially harm the enjoyment of any routes. For this reason, the magnitude of change is considered moderate, giving an overall effect on these receptors of moderate, and not significant.

7 Mitigation

By its nature, the proposed turbine would result in visual effects during its operational period that it would not be feasible to mitigate by adjusting the siting, or providing screening. The design of the turbine comprise simple tapering tubular tower with nacelle and three blades. The proposed colour of the upper parts of the turbines has been selected to blend with the predominant colour of the sky and have a semi matte finish to minimise reflectance.

The expected operational life of the turbines is approximately 25 years from the date of commissioning. When the wind turbine is decommissioned the turbine components would be removed. It is envisaged that conditions attached to any planning consent for the turbine would stipulate the work required for the reinstatement of the site.

The turbine can be decommissioned easily, rapidly dismantled and the land restored, decommissioning mitigation measures would constitute those required during the construction process.

8 Residual Effects

The turbine hard standing and underground grid connection are not anticipated to have any significant residual effects on the landscape and visual amenity of the area, as a result of appropriate siting and design.

Following the turbine's operation period any landscape and visual effects, whether regarded as positive or adverse, can be reversed and following decommissioning, there would be no residual effects.