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FOR THE
ATTORNEY GENERAL

LANDSCAPE AND VISUAL IMPACT APPRAISAL

LVIA for the proposed development of three wind turbines 24.6m to hub, 19.2m blade diameter
on land at the Carr Hall Home and Garden Centre, Wilpshire, Ribble Valley, Lancashire, BB1 9PH

Grid Reference: SD 370042 432872

October 2012

CONTENTS

1.	INTRODUCTION	3
2.	PROPOSED DEVELOPMENT	3
3.	SITING OF THE TURBINE	3
4.	LVIA SCOPE	4
5.	METHODOLOGY	4
5.1	Baseline Conditions Assessment Methodology	4
5.2	Determination of Sensitivity, Magnitude and Significance of Effect on Landscape Character and Visual Amenity Receptors	4
6.	VISUALISATION METHODOLOGY	6
7.	LANDSCAPE AND VISUAL IMPACT ASSESSMENT	6
7.1	Landscape Assessment	6
7.2	Visual Assessment	7
8.	CONCLUSION	8

APPENDICES

- Appendix 1: Turbine Scale
 Appendix 2: 5km ZTV Drawing
 Appendix 3: Photomontages

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1. INTRODUCTION

This Landscape and Visual Impact Appraisal is intended to support the planning application for three wind turbines on land at the Carr Hall Home and Garden Centre. The location of the turbines is illustrated in Figure 1.

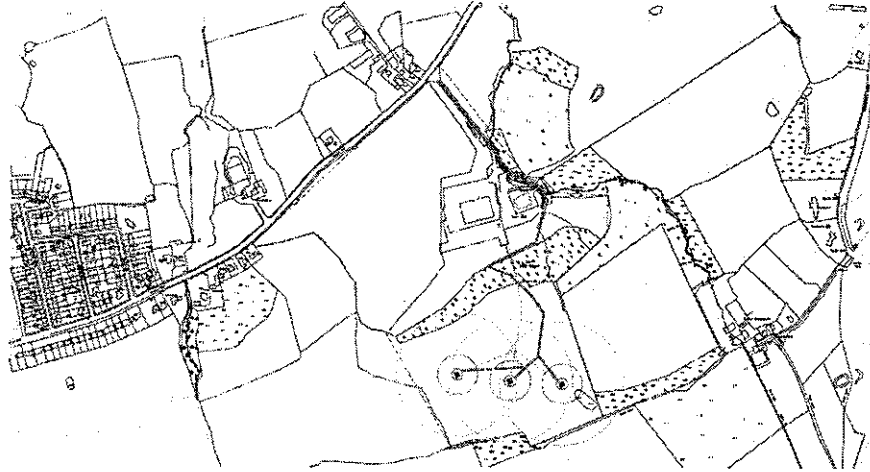


Figure 1: Location of Proposed Wind Turbines

2. PROPOSED DEVELOPMENT

The proposed development would consist of:

- Three, 3 bladed wind turbines classed as small/medium scale and of narrow construction; 36.4m to hub height, 46m to blade tip and with 19.2 blade diameters.
- The proposed wind turbine make and model is the Endurance E-3120 (50kW) turbine. This turbine is classed by the wind industry and landscape planning professionals as 'small' or 'small-medium' scale. This is evidenced in Appendix 1 of this document.
- The wind turbine would be white in colour. The coatings of the turbine blades, hub, nacelle and tower have been carried out to industry standards in order to minimise reflected light.
- A small control cabinet would be installed at the base of the turbine tower to house the turbine control system; this cabinet would be green in colour.
- All cables linking the proposed turbine to the National Grid would be buried.
- Temporary tracks would be created to support traffic access over the brief construction phase. These would then be removed with no resultant loss of or damage to land.
- The proposal would have a lifespan of 30 years after which the turbine can be removed, the foundations grubbed up and the land returned to its former use.

3. SITING OF THE TURBINE

- The turbines will be over 250m from the garden centre and sited on land currently used for grazing, which can continue after the installation.
- The precise siting of the proposed turbines has been carefully selected, balancing considerations such as visual impact, optimum exploitation of the wind resource, ease of grid connection and ease of access.

4. LVIA SCOPE

This document:

- Identifies and describes the character of the receiving landscape.
- Identifies and describes a series of visual amenity receptors within the receiving landscape from which the visual impact of the turbine will be assessed
- Describes the magnitude of impact and significance of effects on the existing landscape character and visual amenity receptors.
- Uses ZTV, photomontages and wire frame drawings to illustrate the potential impacts.
- Provides conclusions on the overall landscape and visual effects of the proposed development.

5. METHODOLOGY

This LVIA has been prepared in accordance with good practice guidance as set out within:

- *'Guidelines for Landscape and Visual Impact Assessment'* (Second Edition), 2002, Landscape Institute and Institute for Environmental Management and Assessment
- *Visual Representation of Wind Farms: Good Practice Guidance*, 2006, Horner+ MacLennan and Envision for Scottish National Heritage
- *Landscape Capacity Study for Wind Energy Developments in the South Pennines Final Report*, January 2010, Julie Martin Associates

5.1 Baseline Conditions Assessment Methodology

Desk top and site surveys have been undertaken in order to assess the existing condition of landscape character and of the visual amenity receptors to be assessed. A range of reference material has been reviewed in the process of preparing this LVIA including:

- The ZTV prepared for the site
- Ordnance Survey map data
- Lancashire County Council's, Landscape Strategy for Lancashire: Landscape Character Assessment, December 2009
- Lancashire County Council's, Landscape Sensitivity to Wind Energy Development in Lancashire (2005)
- The Ribble Valley Districtwide Local Plan Adopted 1998

5.2 Determination of Sensitivity, Magnitude and Significance of Effect on Landscape Character and Visual Amenity Receptors

The significance of the impact of the proposed development upon landscape and visual amenity receptors has been made via a process of systematic classification based on the matrices set out in the following tables. Significance of impact is determined by reference to the sensitivity of the landscape and the magnitude of change that is expected to occur as a result of the proposed development.

Table 1: Criteria for Determination of Sensitivity

LANDSCAPE CHARACTER DESCRIPTION	VISUAL AMENITY RECEPTOR DESCRIPTION	SENSITIVITY
Landscapes of high value and distinctive character. No/few detractors present. No/limited potential for change. Landscape of national or local value with corresponding designation ie AONB, National Park, AGLV	Residential properties and settlements within 1km of the proposed development. Users of national trails and named recreational routes/national cycle routes. Users of footpaths in designated landscapes. Users of recreational areas with high level of focus on surrounding landscape ie country parks. Environmentally sensitive features within 1km.	HIGH
Landscape of moderate value. Non-designated landscape but having some locally valued elements. Some detractors present. Reasonably tolerant of change.	Residential properties and settlements over 1km from the proposed development. Users of footpaths/open access land in non-designated landscapes. Users of outdoor sporting facilities. Environmentally sensitive features over 1km. Users of 'B' roads or unclassified roads.	MODERATE
Landscape with few features of value or interest. Generally developed landscape. Tolerate of substantial change. No landscape designations apply.	Workers in offices, commercial and industrial developments. Users of 'A' roads, trunk roads, motorways and railways.	LOW

Table 2: Criteria for Determination of Magnitude of Change for Landscape Character and Visual Amenity Receptors

LANDSCAPE CHARACTER DESCRIPTION	MAGNITUDE OF IMPACT
Total loss of or major alteration to key elements/features/characteristics of the baseline/pre-development landscape or field of view and/or introduction of elements considered to be totally uncharacteristic when set within the attributes of the receiving landscape.	SUBSTANTIAL
Partial loss of or alteration to one or more key elements/features/ characteristics of the baseline/pre-development landscape or field of view and/or the introduction of elements that may be prominent but may not necessarily be considered to be substantially uncharacteristic when set within the attributes of the receiving landscape.	MODERATE
Minor loss of or alteration to one or more key elements/features/characteristics of the baseline landscape or field of view and/or the introduction of elements that are visible but not uncharacteristic when set within the receiving landscape.	SLIGHT
Very minor loss of or alteration to one or more key elements/features/ characteristics of the baseline landscape or field of view and/or the introduction of elements that are visible but not uncharacteristic within the surrounding landscape.	NEGLECTIBLE
No loss or alteration to any key elements/features/ characteristics of the landscape or field of view.	ZERO

Table 3: Determination of Significance of Effect on Landscape Character and Visual Amenity Receptors

	LOW SENSITIVITY	MODERATE SENSITIVITY	HIGH SENSITIVITY
SUBSTANTIAL MAGNITUDE	MODERATE IMPACT	SUBSTANTIAL IMPACT	SUBSTANTIAL IMPACT
MODERATE MAGNITUDE	SLIGHT IMPACT	MODERATE IMPACT	SUBSTANTIAL IMPACT
SLIGHT MAGNITUDE	SLIGHT IMPACT	SLIGHT IMPACT	SLIGHT IMPACT
NEGLECTIBLE MAGNITUDE	NEUTRAL IMPACT	NEUTRAL IMPACT	SLIGHT IMPACT
ZERO MAGNITUDE	ZERO IMPACT	ZERO IMPACT	ZERO IMPACT

6. VISUALISATION METHODOLOGY

- A number of viewpoints from which the proposed turbines would be visible have been selected. Wireframe visualisations and/or photomontages have been generated from these viewpoints.
- All computer generated wireframe drawings have been produced using ReSoft Ltd's WindFarm software. This software uses a 3D DTM model of the existing landscape derived from OS Landform Panorama data based on a 50m grid and 10m contour intervals. The software was used to create a 3D model of the proposed wind turbine using turbine grid coordinates and specified turbine geometry. Specified viewpoint coordinates direction of view and horizontal field of view data were used to generate wireframe views of the proposed turbine within the existing landform.
- Photomontage material was produced using ReSoft WindFarm¹ software. Single images² on a flat plane projection were imported into the software and aligned to the corresponding wireframe drawing. To aid alignment, geographic features in the image were matched with the corresponding coordinates of those features on the base map.
- For all photomontages there is an element of judgement, the finished image is only intended as a representation of the likely appearance of the proposed development.
- Viewpoint photographs were taken in fine weather with good visibility in October 2012.
- A tripod mounted Nikon D700 Full Frame camera with a 50mm f/1.4 G lens is used for all field photography.
- Viewpoint coordinates and view direction have been fixed through reference to Google Earth.

7. LANDSCAPE AND VISUAL IMPACT ASSESSMENT

7.1 Landscape Assessment

The proposal site lies in an area of open countryside halfway between the settlements of Wilpshire and Langho. Wilpshire is part of the Blackburn urban area and along with Langho is marked by extensive modern residential development. The proposal falls within the Lancashire Plains and Valleys Natural Area which in itself is not a designation. It does not fall within the AONB or any other landscape of local or national designation.

The landscape character of the area is defined by the Council³ as one of Lowland Fringe Farmland. This landscape type is described as having a tamed and intensely managed character and one which has been strongly influenced by human habitation.

The landscape around the proposal site is open with far reaching views; the landform is smooth, regular and flowing with consistent landcover all of which make the landscape less sensitive to wind energy development. This assessment is supported by the physical criteria established to consider sensitivity within Lancashire County Council's report, Landscape Sensitivity to Wind Energy Development in Lancashire (2005).

Our interpretation of the maps provided within the LCC study shows that the proposal site falls within Landscape Character Area 7A (Mellor Ridge). This area is defined within the LCC report as having moderate sensitivity to wind energy development. The report states that this landscape is capable of accommodating small to medium scale wind energy developments. It defines small scale wind development as clusters of 2-5 wind turbines with a power rating upwards of 1.3MW. A typical 1.3MW wind turbine would be in the order of 100m high to blade tip with a blade length of around 31m. The proposal is for a cluster of 3 turbines with a power rating of 0.05MW. To blade tip these turbines will be 46m; the blade length is 9.6m. The turbines

¹ All outputs from WindFarm have been produced in collaboration with CWP Ltd (www.cwp-ltd.com)

² Multiple images stitched together to create a panoramic view have not been used.

³ DWLP, Appendix 2, The Ribble Valley Landscape Character

specified within this proposal then are significantly smaller than those considered appropriate by the LCC study.

The proposed turbines are defined by industry experts and landscape planning professionals as being of small or small-medium scale (See Appendix 1). Their tapered tower and compact nacelle assembly give them an elegant and non-industrial profile. The blades are also tapered presenting a less dominant rotor area and the downwind operation of this turbine does not require a tail fin which adds to the sleek and recessive appearance. Although visible within the surrounding landscape these turbines are unlikely to appear obtrusive or dominant and would not cause significant harm to the overall quality and character of the landscape. The proposed development would result in a SLIGHT impact on overall landscape character.

Taking all of the above into account:

- The overall sensitivity of the landscape is determined as being **Moderate**.
- The magnitude of impact on landscape character caused by the proposed development is determined as being **Slight**.
- The overall significance of effect is determined as being **Slight**.

7.2 Visual Assessment

The visual assessment for this proposed development has been based upon a 5km radius⁴ ZTV study area. The ZTV is presented in Appendix 2 of this report. Using the ZTV the following 5 visual receptors were identified for analysis.

- A666 Langho Roadside
- Snodworth Junction
- Golf Course footpath
- A59 Longsight Road
- Ribchester/Kenyon Lane

Viewpoints along these receptors have been selected and the corresponding views towards the proposal modelled in the WindFarm software. The software has been used to create a wire frame image of the view which was then superimposed over a photograph taken in the field to create a photomontage of the view. The photomontage material is presented in Appendix 3 of this report.

VP1 A666 Langho Roadside

- 667m from proposal
- See photomontage VP1

This roadside viewpoint offers a short distance view from the A666 leaving Langho towards Wilpshire. It illustrates potential views of the turbine from this A-road but also from neighbouring residential properties which lie within 1km of the proposed development. In light of this the sensitivity of the receptor is defined as being HIGH. The proposed turbines can be seen in the distance behind the Carr Hall Garden Centre buildings and in the context of other nearby development, including other vertical structures, in the receiving landscape. In this context the turbines although visible would not be uncharacteristic. The magnitude of impact has therefore been defined as SLIGHT and the overall significance of effect from this receptor is also assessed as SLIGHT.

VP2 Snodworth Road/York Road Junction

- 722m from proposal
- See photomontage VP2

This viewpoint is located on the junction between Snodworth Road/York Road/Old Whalley Road around 700m from the proposed site. The viewpoint looks over footpaths and a local cycle route forms part of York Road. As can be seen within the photomontage image, from this location the proposal is visible but not uncharacteristic in the context of nearby agricultural development and other vertical structures, including 11kV power lines. The significance of effect on this visual receptor is therefore SLIGHT.

VP3 Golf Course Footpath

- 382m from proposal
- See photomontages VP3

This viewpoint is located along a public footpath towards the North East corner of Wilpshire Golf Course. It is intended to illustrate views of the proposal from nearby footpaths. To some extent it also offers potential views from the North and Eastern edges of the golf course. As can be seen in the photomontage image, the turbines will be prominent in the field of view. As this is not a designated landscape and general views both from the golf course and local footpaths will include areas of residential and agricultural development, the overall significance of effect on this visual receptor is likely to be MODERATE.

VP4 A59 Longsight Roadside

- 2.4km from proposal
- See photomontage VP4

This is a roadside viewpoint taken from the A59 heading out east of Copster Green towards Langho. This viewpoint offers a far distance view of the proposal. As can be seen in the photomontage, views to the turbines from Longsight Road are likely to be minimal and screened by landcover. The overall significance of effect from this visual receptor is likely to be NEUTRAL.

VP6 Ribchester/Kenyon

- 2.9km from proposal
- See Wire Frame VP6

This viewpoint is located on the junction of Ribchester Road and Kenyon Lane almost 3km from the proposal location. As can be seen within the photomontage image the proposed turbines form only a very minor addition to the field of view. Given the presence of other development and vertical structures in the view the turbines are not uncharacteristic. The overall significance of effect on this receptor is likely to be NEUTRAL.

8. CONCLUSION

- The proposed development would add new vertical structures to the existing landscape.

- The proposed turbines would be of narrow construction and are classed as being small/medium scale⁵
- According to Lancashire County Council's, Landscape Sensitivity to Wind Energy Development in Lancashire (2005), the receiving landscape around Carr Hall Garden Centre is capable of accommodating medium scale wind energy developments in the form of clusters of 2-5 wind turbines with a power rating upwards of 1.3MW (utility scale). The proposal is for a cluster of significantly smaller turbines with a power rating of 0.05MW. These turbines are generally used for direct, on-site generation and are not utility scale machines.
- The baseline landscape is strongly defined by human habitation, contemporary development and agricultural land use. In the context of this receiving landscape the proposed turbines would appear incongruous or uncharacteristic.
- The overall significance of effect of the proposed development on the Landscape Character would be SLIGHT.
- The overall significance of effect of the proposed development on the assessed visual receptors would range from NEUTRAL to SLIGHT to MODERATE.

⁵ See Appendix 1.



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APPENDIX 1

TURBINE SCALE

TURBINE SCALE

The wind turbine proposed for deployment at Manor House Farm is the Endurance E-3120 (50kW). This turbine is part of a new generation of wind turbines being selected for direct generation and on-site applications on farms and rural dwellings across the UK. The product is defined by the UK wind energy industry and landscape planning professionals as being either small or small-medium scale. Evidence of these definitions is set out below.

i. Renewables UK.

Renewables UK, the trade association representing the UK wind industry, publishes an annual Small Wind Systems Market Report. Figure 1, extracted from the report, shows how this industry body categorises and defines 'small wind systems'.

Small wind systems				
	Power (kW)	Annual energy production (kWh)	Total height (m)	Total installed cost (£k)
Micro wind	0 - 1.5	Up to 1,000	10 - 18	0.5 - 5
Small wind	1.5 - 15	Up to 50,000	12 - 25	2 - 50
Small-medium wind	15 - 100	Up to 200,000	15 - 50	50 - 250

Figure 1: Extract from Small Wind Systems: Market Report 2010; Renewables UK

According to Renewables UK, the proposed development is considered small-medium scale.

ii. Julie Martin Associates Ltd

Wind energy developers and local authorities in the North of England make reference to the Julie Martin Associates 'Landscape Capacity Study for Wind Energy Developments in the South Pennines' (2010). Julie Martin is a geographer and landscape planner, she is one of the UK's leading experts in landscape and visual assessment. The JMA report provides good general guidance on a range of issues and on turbine typology it defines turbines of between 25m-60m as 'small'. Figure 2, extracted from the Julie Martin report illustrates this.

Figure 2: Comparative Turbine Heights
1:1020 @ 14

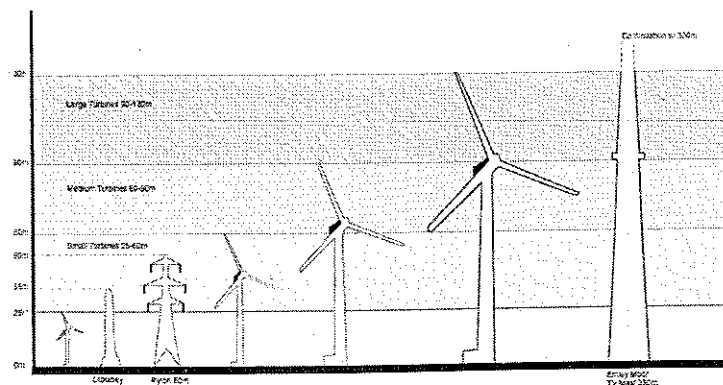
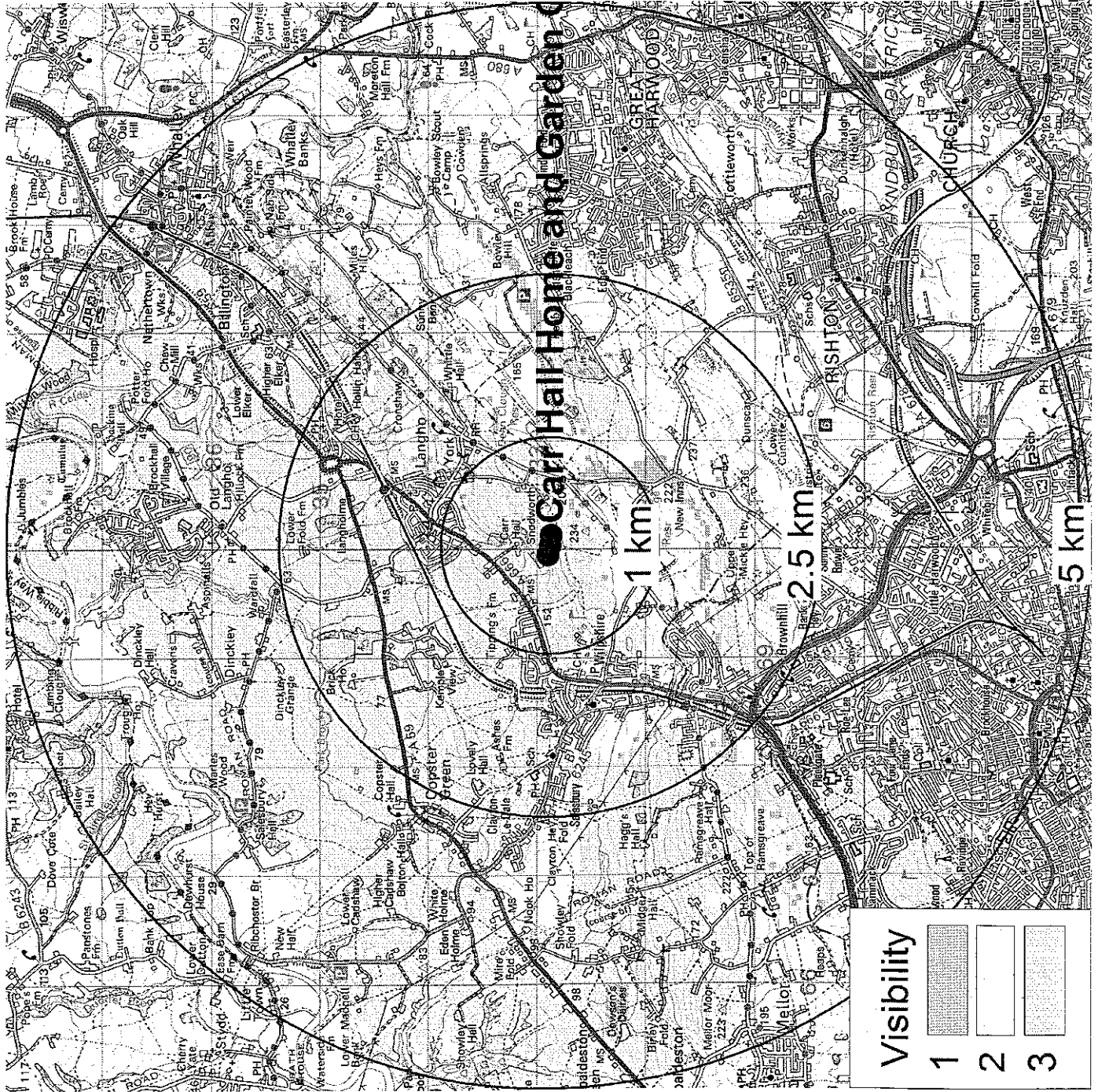


Figure 2: Extract from Landscape Capacity Study for Wind Energy Developments in the South Pennines; Julie Martin Associates, 2010.



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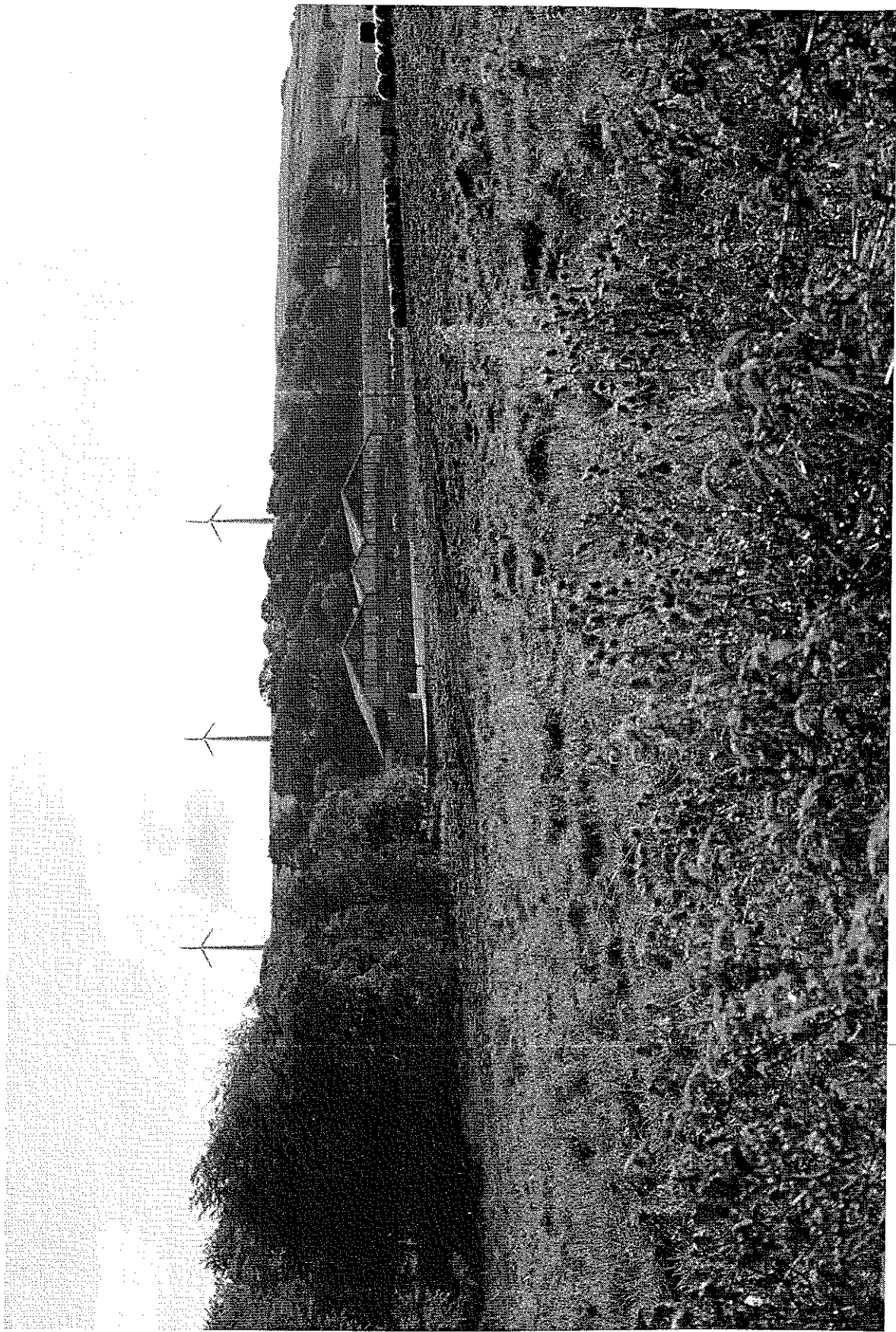
APPENDIX 2
5KM ZTV DRAWING





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APPENDIX3
PHOTOMONTAGES



Viewpoint Title:	View from A666 Langho Road	Distance from Proposal	667m	VP1
Viewpoint Coordinates:	369989/433519	Direction of View	178°	
Horizontal Field of View:	46.5°	Viewing Height:	2m	



Viewpoint Title:	View from Snodsworth Road/York Road Junction	Distance from Proposal	722m	VP2
Viewpoint Coordinates:	370727/433053	Direction of View	248°	
Horizontal Field of View:	46.5°	Viewing Height:	2m	



Viewpoint Title:	Footpath/Wilpshire Golf Course	Distance from Proposal	382m	VP3
Viewpoint Coordinates:	369688/432728	Direction of View	68°	
Horizontal Field of View:	45.5°	Viewing Height:	2m	

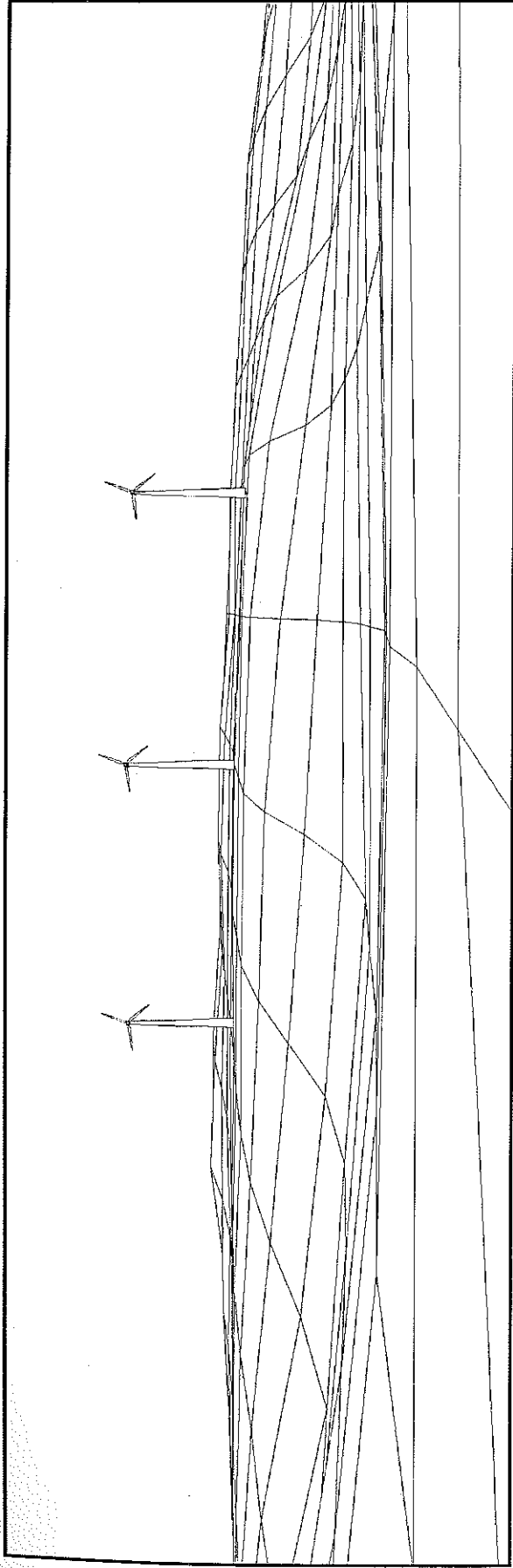


Viewpoint Title:	A59 Longsight Road	Distance from Proposal	2.4km	VP4
Viewpoint Coordinates:	368105/434201	Direction of View	118°	
Horizontal Field of View:	46.5°	Viewing Height:	2m	

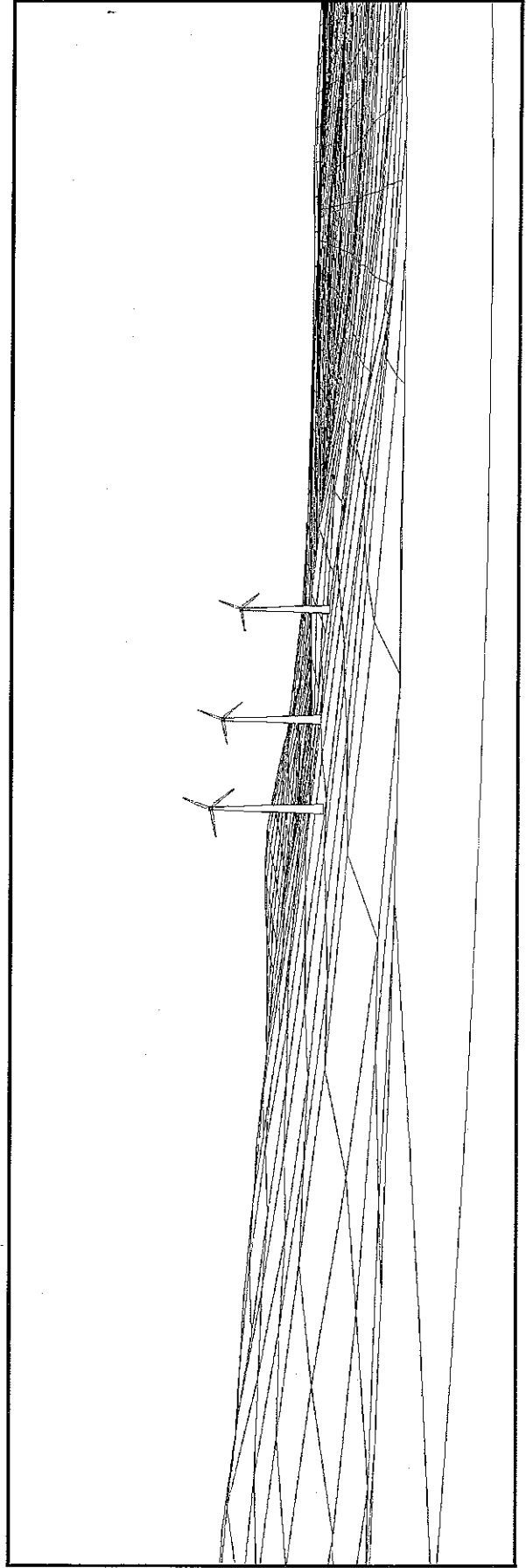


Viewpoint Title:	Kenyon Road at Ribchester Road Junction	Distance from Proposal	2.9km	VP5
Viewpoint Coordinates:	368871/435604	Direction of View	159°	
Horizontal Field of View:	46.5°	Viewing Height:	2m	

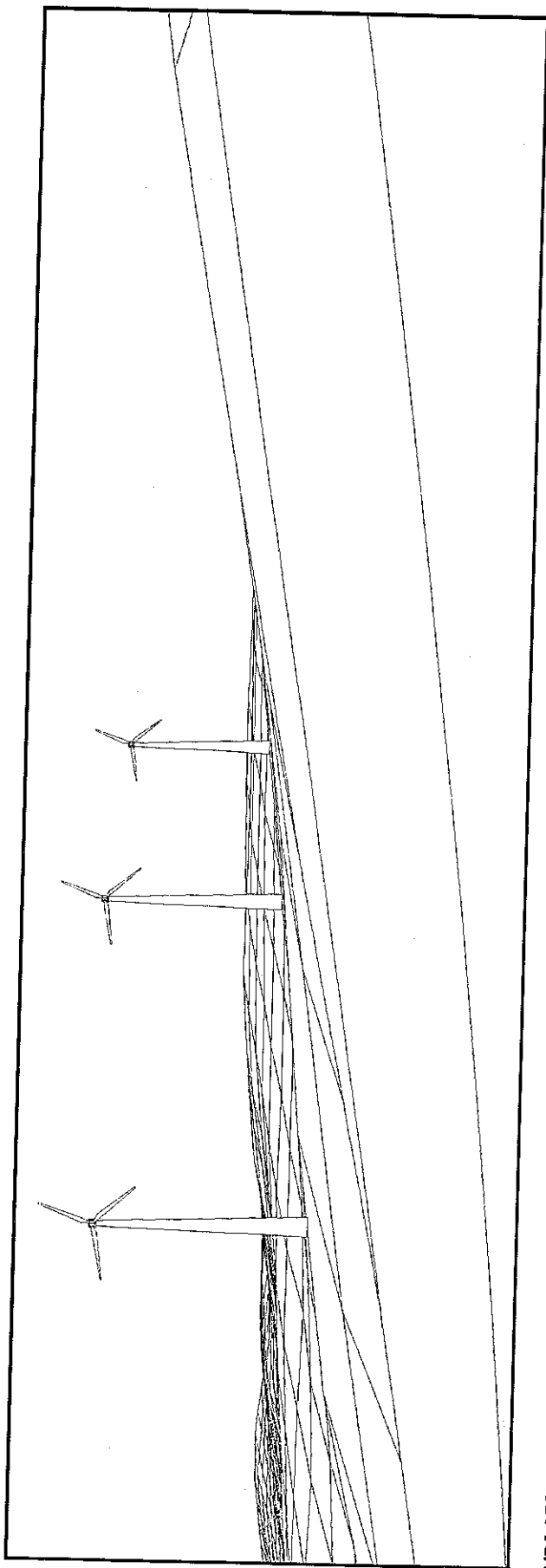
VP1 A66 Langho Road



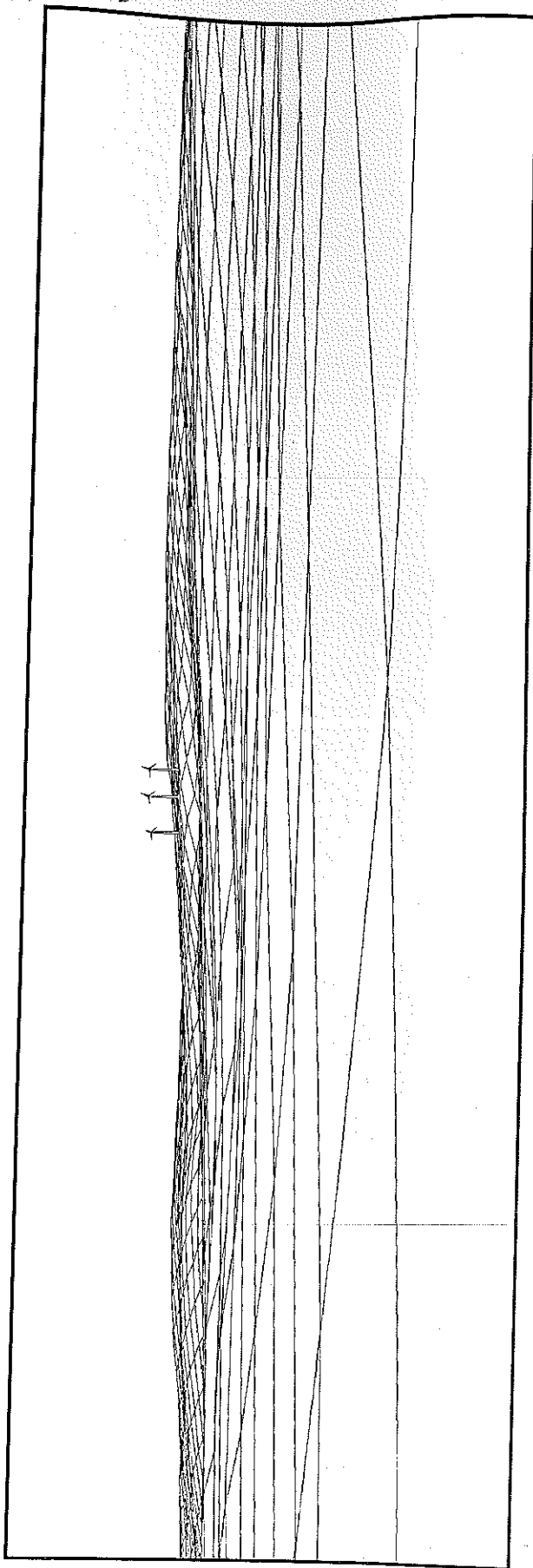
VP2 View from Snodworth Road/York Road Junction



VP3 Footpath/Wilpshire Golf Course



VP4 A59 Longsight Road



VP5 Kenyon Road at Junction with Ribchester Road

