Landscape Character and Visual Impact Assessment

Bullhouse Mill, Lee Lane, Millhouse Green

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1.0 Introduction

Further to the information contained within the supporting design and assess statement a detailed landscape character and visual impact assessment (LCVIA) has been carried out in order to support the planning submission which has concluded that the proposal has a minimal visual impact on the landscape character and visual amenity of the surrounding landscape.

1.1 Methodology

The LCVIA has been carried out in accordance with LI/IEMA Guidance which is a well recognised landscape assessment procedure. LI/EMA Guidelines state that; "*Landscape impacts and visual impacts are separate, but related. Landscape impacts are changes in the fabric, character and quality of the landscape. Visual impacts relate solely to changes in available views of the landscape, and the effects of those changes have on people. Landscape and visual impacts do not necessarily coincide*." Impacts can be beneficial as well as adverse.

The significance of the effects of development on the landscape and visual resource are based upon the prediction of the potential impact in relation to baseline conditions. In assessing the effects of the development proposals LI/IEMA guidelines recommend the development of thresholds of significance as a function of the sensitivity of the landscape and the magnitude of change in the baseline conditions (i.e. "impact") resulting from the development proposals. The assessment of significance of landscape and visual impacts relies upon common sense, experience and reasoned judgement, supported by substantiated evidence.

For the purposes of this assessment we have defined the landscape as Medium Quality and Low Sensitivity, due to the large amount of other vertical features visible across this landscape and the small scale of this proposal in comparison to these features.

The site has been analysed to identify key near and distant viewpoints in order to clearly demonstrate the visibility of the turbine in the countryside. The initial phase of this analysis comprised a desk based mapping exercise followed by an onsite analysis to finalise the zones of visibility. A temporary pole of a known height was erected at the site in order to identify a know height and to enable accurate scaling of photomontages where relevant (see Figure 1). A photographic survey from these identified receptors has been undertaken using a 50mm lens. The location and direction of all shots has been clearly mapped and conclusions about impact on the character and visual amenity of the landscape have been made. The photomontages will be generated using 'Wind Farm ZVI Version 4.1.2.3 - Copyright 1997-2009 ReSoft Ltd'.

The programme uses a 3D girded terrain height data obtained from Ordnance Survey to build a digital terrain model. Windfarm then renders the model using a square grid to show how each turbine will be visible at the centre of each 50m x 50m on a grid for a specified distance in every direction from the site.

Wire Frame Visualisations have also been provided in this landscape assessment. Wire frames are generally used in the field to ascertain potential levels of screening by vegetation and the built environment from specific viewpoints. A wireframe visualisation is a computer generated 3D outline of a wind turbine placed on top of a 3D ground terrain model. No rendering is given to any of the surfaces. The actual dimensions of the turbine are used to build a model which is then placed in position over a ground terrain model generated from Ordnance Survey Landform tiles. The coordinates of the viewpoints are taken from grid registered aerial photographs and these coordinates are used to set up viewpoints in Windfarm. The wire frame images are generated on a bare ground model and therefore are a worst case scenario which doesn't take into account vegetation.

1.2 Landscape Description

The application site is within the National Landscape Character Area of Yorkshire Southern Pennine Fringe, as identified by Natural England. The key characteristics of this landscape include the extensive urban influences from the matrix of large and small towns and the close conjunction of large scale industry, urban areas and transport routes located within the open countryside. The area has a dense network of roads, canals and railways and is home to predominantly pastoral farming with strong linear patterns of walled enclosures. The impression is given of a well-wooded landscape, even though tree cover is relatively sparse overall.

The impact of development is evident on the landscape where the network of roads, canals and railways is prominent, and skylines are often topped with pylon lines and communication masts.

The higher land in this area 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 a characteristic of much of this area.

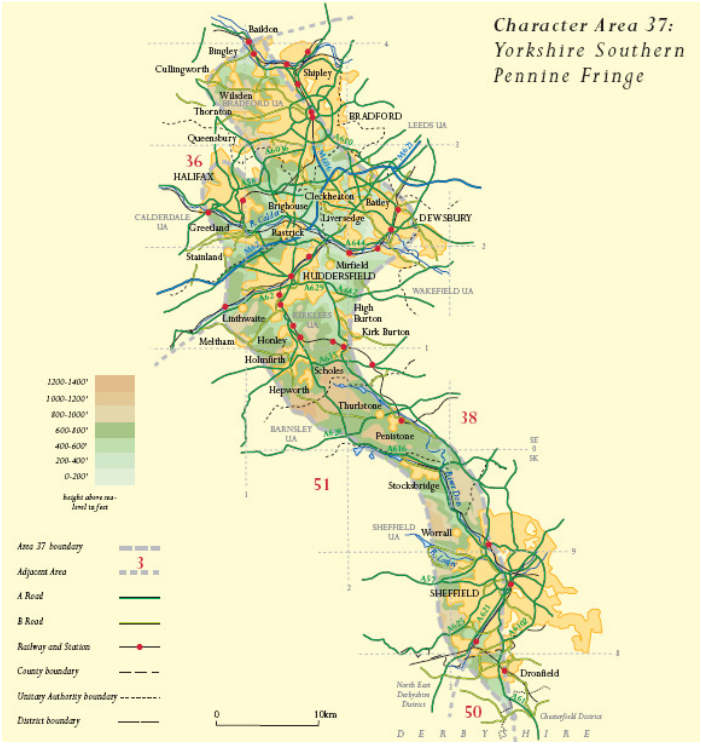

Figure 1: Yorkshire Southern Pennine Fringe National Landscape Character Area (Natural England)

The Barnsley Borough Landscape Character Assessment (2002) classifies 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 undulating topography above 200m AOD.

The Inchbirchworth Upland Rolling Farmland is a large area of upland hill country in the northwest of the borough. is characterised by a stepped landform, rising up to 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 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 Development Plan identifies the application site as falling within designated Green Belt land.

F: UPLAND ROLLING FARMLAND

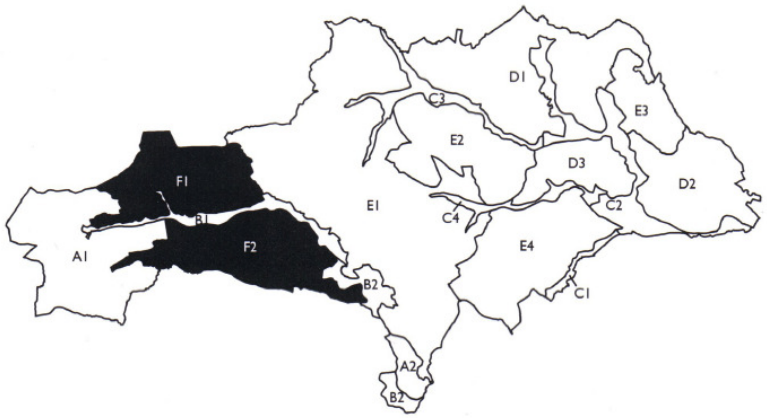

Figure 2: Upland Rolling Farmland Landscape Character Area (Barnsley Borough Landscape Character Assessment, 2002)

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1.3 Application Site

Figure 3: Application site (Google Earth, 2009)

Figure 4: Wider surrounds of application site (Google Earth)

The figures above show the application site and its immediate surroundings. The closest neighbouring property to the turbines is located approximately 160m to the northwest of Turbine C. To the north of this there are some industrial works and to the northwest is Catshaw Cross Farm. The closest main road to the site is the B6106 to the north of Turbine A, located approximately 150m away at its closest point. There are a number of public rights of way in the vicinity of the site, including footpaths and bridleways. The Penistone Boundary Walk and the Trans Pennine Trail run close to the application site. The River Don flows to the east of Bullhouse Mill.

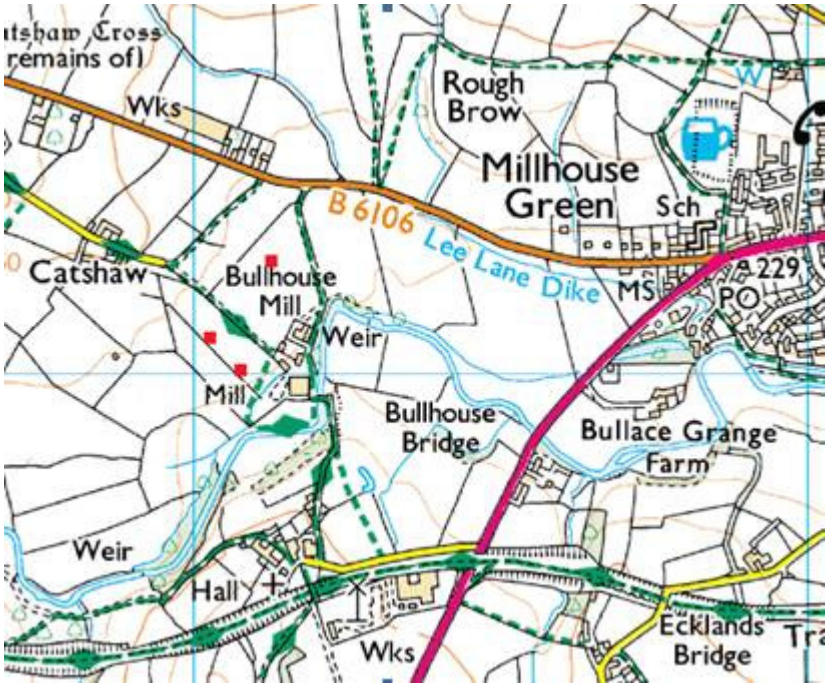

Figure 5: OS extract of area around application site

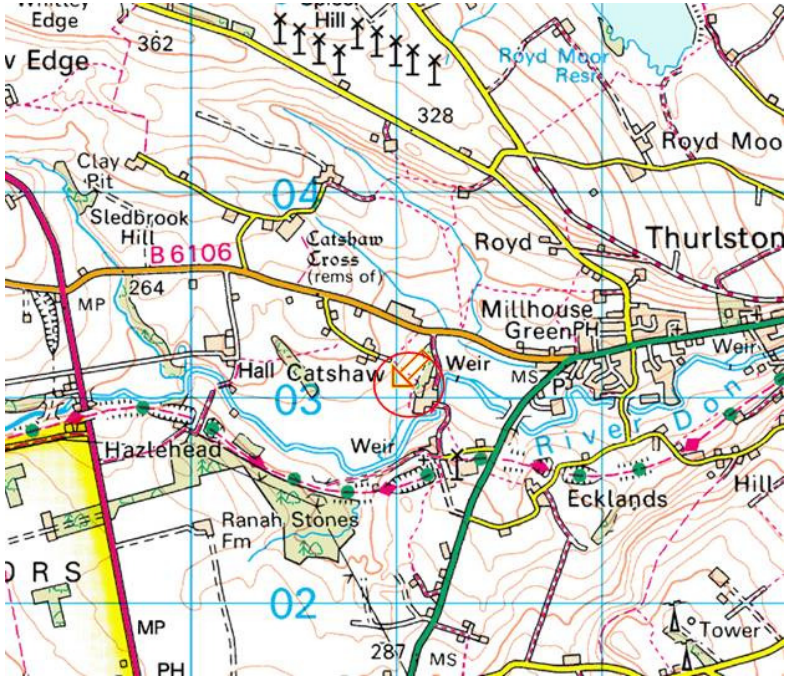

Figure 6: OS extract of wider surrounding area

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To the north of the site is a wind farm at Spicer Hill, Royd Moor Wind Farm which has 13 turbines, each of which has a hub height of 35m and a blade tip height of 54m. To the south east of the site there are two large communication towers, and to the southwest of the site there a number of electricity pylons. All of these features add an element of verticality into the landscape which will help to reduce the impact of the proposed turbines on views across the surrounding area.

2.1 Photographic survey looking from turbine site

Views from the proposed turbine location looking in all directions demonstrate the land form and landscape features in the immediate area. It is clear from these photographs that the site is afforded a great level of screening from many angles by existing mature trees and hedgerows and by the topography in the wider area.

2.2 Turbine A

Site Looking N

The view above from Turbine A looking north shows that there is screening around the application site in the form of mature trees. The landform rises in this direction and the Royd Moor wind farm can be seen clearly to the left of this picture interrupting the skyline and adding an element of verticality to views across the landscape

Site Looking NE

To the northeast of Turbine A, the land slope upwards quite steeply and there is screening in the form of mature trees along the field boundary.

Site Looking E

To the east of Turbine A there is screening along the field boundary and the hills of this undulating landscape can be seen in the distance.

Site Looking SE

The landform in this direction slopes upwards in this direction. The residential property at Bullhouse Mill is visible in this direction. There is screening in the form of mature trees which block views of the road from this position.

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Site Looking S

Looking south from Turbine A there is a large amount of screening including dense mature tree cover. To the right of the picture a small scale wind turbine is visible and there are electricity pylons to the right. The telegraph pole in the centre and other vertical features add a sense of verticality into the landscape.

Site Looking SW

Several large electricity pylons in this direction add a sense of verticality into the landscape from this position. In the distance, the landform slopes upwards and there are various features of vegetation evident.

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Site Looking W

The land appears to slope upwards in this direction and there are various features on the landscape such as electricity pylons, telegraph poles and vegetation which break up views across the landscape in this direction.

Site Looking NW

Vegetation and various vertical features are visible in this direction from Turbine A.

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2.3 Turbine B

Site Looking N

Looking north from Turbine B there are is vegetation cover in the form of mature trees to the left of the image above and several vertical features across the landscape.

Site Looking NE

The landform slopes upwards in this direction to the hills in the distance. Screening in the form of mature trees is visible from this spot.

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Site Looking E

Looking in this direction it is clear that there is a large amount of screening between the site and the nearby road. The topography of the land can be seen to slope upwards in the distance.

Site Looking SE

There is a large amount of mature tree screening in this direction, and the tip of another turbine can be seen over the top of these trees. Again the hills can be seen in the distance.

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Site Looking S

Dense tree screening is evident in the image above blocking the view of the landscape in this direction from this position. The land slopes upwards in this direction.

Site Looking SW

There is a small amount of vegetation in the near distance from this direction and more dense vegetation further away. The electricity pylons in this direction add an element of verticality in the landscape.

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Site Looking W

There is little screening in this direction however, this image shows the remoteness of the site from nearby properties in the area. Again the undulation topography is evident in the distance.

Site Looking NW

The land slopes up slightly from this position and there are various forms of vegetation in the view. The stone walls in the area break up the view meaning that this is by no means a flat and open landscape. In the distance Catshaw Cross farm is just visible.

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2.4 Turbine C

Site Looking N

Looking north from Turbine C there are various features which break up views across the landscape from this position. Vegetation in the foreground and distance provide a level of screening and the telegraph poles add verticality into the landscape.

Site Looking NE

There is mature screening to the right of the image above and the steep topography of the land in this direction can be seen clearly. Again there are vertical features visible in this direction.

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Site Looking E

Vegetation cover along the field boundary in this direction blocks views of the nearby buildings and roads. The sloping topography of the land is visible in this direction and vertical features can be seen.

Site Looking SE

The top of a nearby wind turbine can be seen to the right of the image above, although the mast is largely screened by mature tree planting. There is dense vegetation in this direction which provides the site with a level of screening.

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Site Looking S

Large telegraph poles are visible in this direction and it is clear that the landform to the south slopes upwards providing a backdrop of rising land for the proposed turbines. Again dense tree cover is evident from this view.

Site Looking SW

The image above shows the turbines' remoteness from nearby properties and buildings. Large telegraph poles add verticality to the landscape which will help to mitigate the impact of the proposed turbines. Again there is vegetation and rising land in this direction.

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Site Looking W

The topography of the land slopes upwards in this direction and the remoteness of the site for properties to the west is clear. The large electricity pylons which dominate many of the views around this site are once again visible, as are the hills in the distance.

Site Looking NW

Vegetation is scattered in this direction and Catshaw Cross Farm can be seen in the distance, which is the closest non-associated residential property. The land slopes upwards in this direction.

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3. Photographic survey demonstrating view points

3.1 Photographs were taken from a number of vantage points around the application site. Using the Windfarm software, photomontages have been created to show how the turbines will look when they are installed and the likely impact on the landscape. For each photomontage, a wireframe image has been provided to show how the turbines sit on the bare ground and a map of where the original photographs were taken from is also provided.

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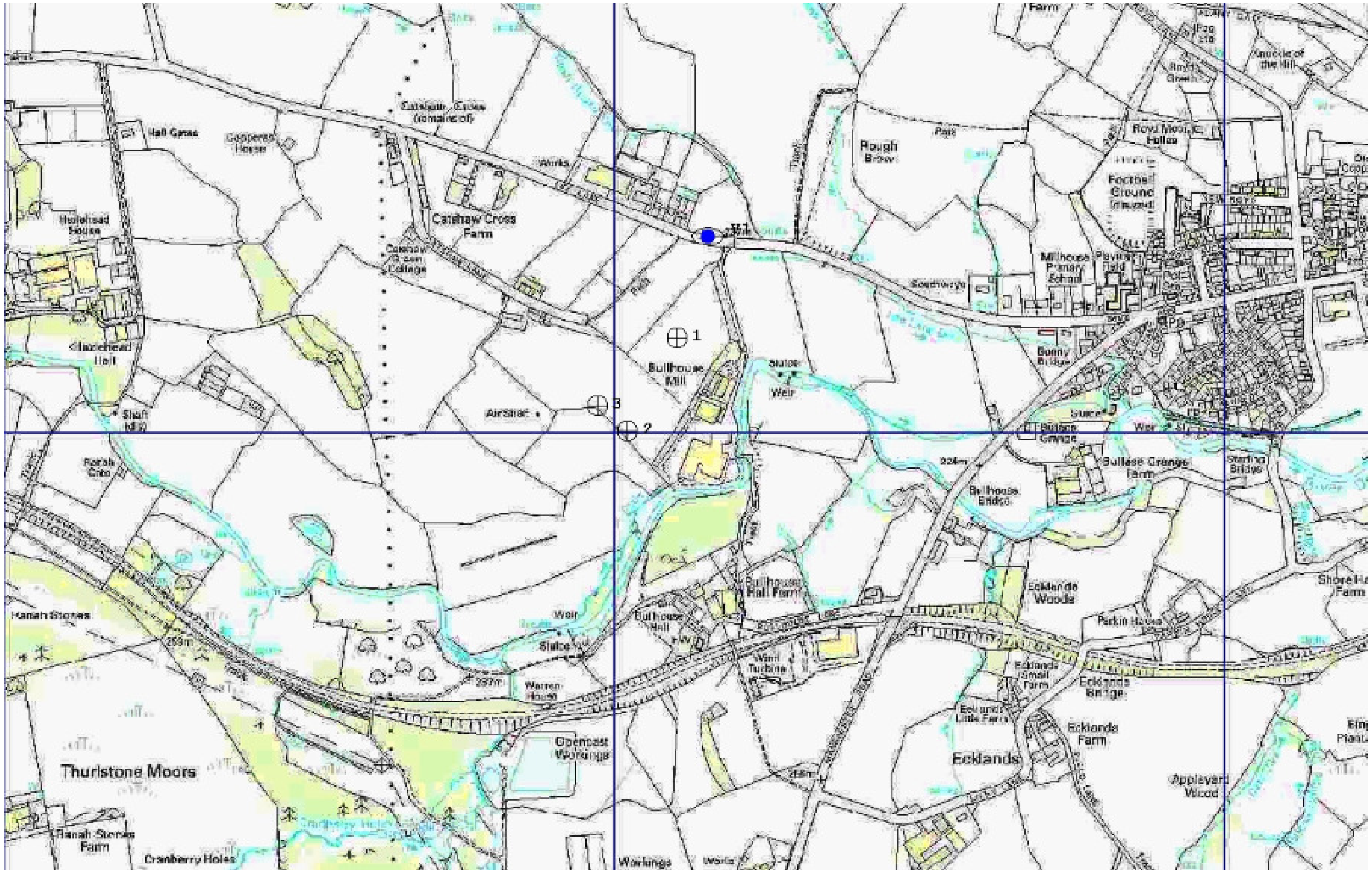
PM1 – Location map



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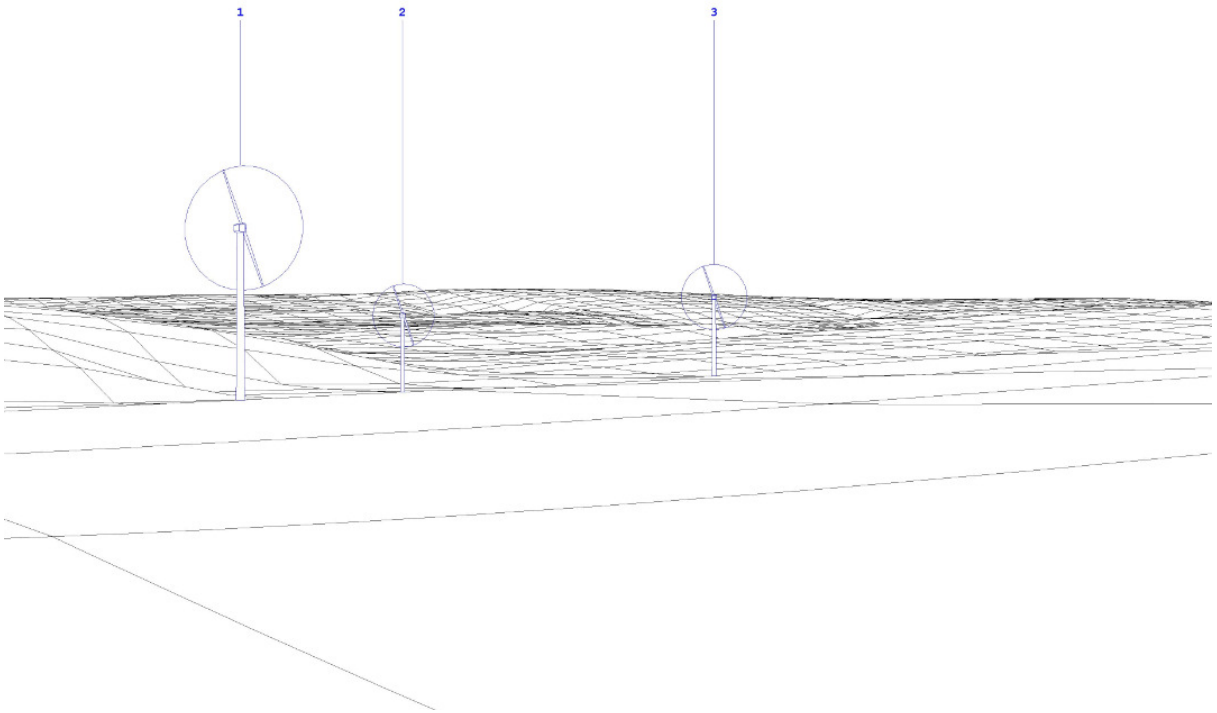
PM1 – Wireframe



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PM1 - Photomontage

PM1 – Photo taken from the north of the application site

From this vantage point to the north of the application site only the blades are visible in the case of Turbines B and C, whilst a little more of Turbine A is visible. The proposed turbines do not dominate the view from this position, and do not interrupt the skyline in the same way in which the larger electricity pylons in the distance do. These existing features add an element of verticality into the landscape and help to minimise the impact of the proposed turbines. The turbines are viewed against a backdrop of dense vegetation from this position. As stated in the Barnsley Borough Landscape Character Assessment, tall structures are common place in this area and the turbines do not materially alter the views across the landscape.

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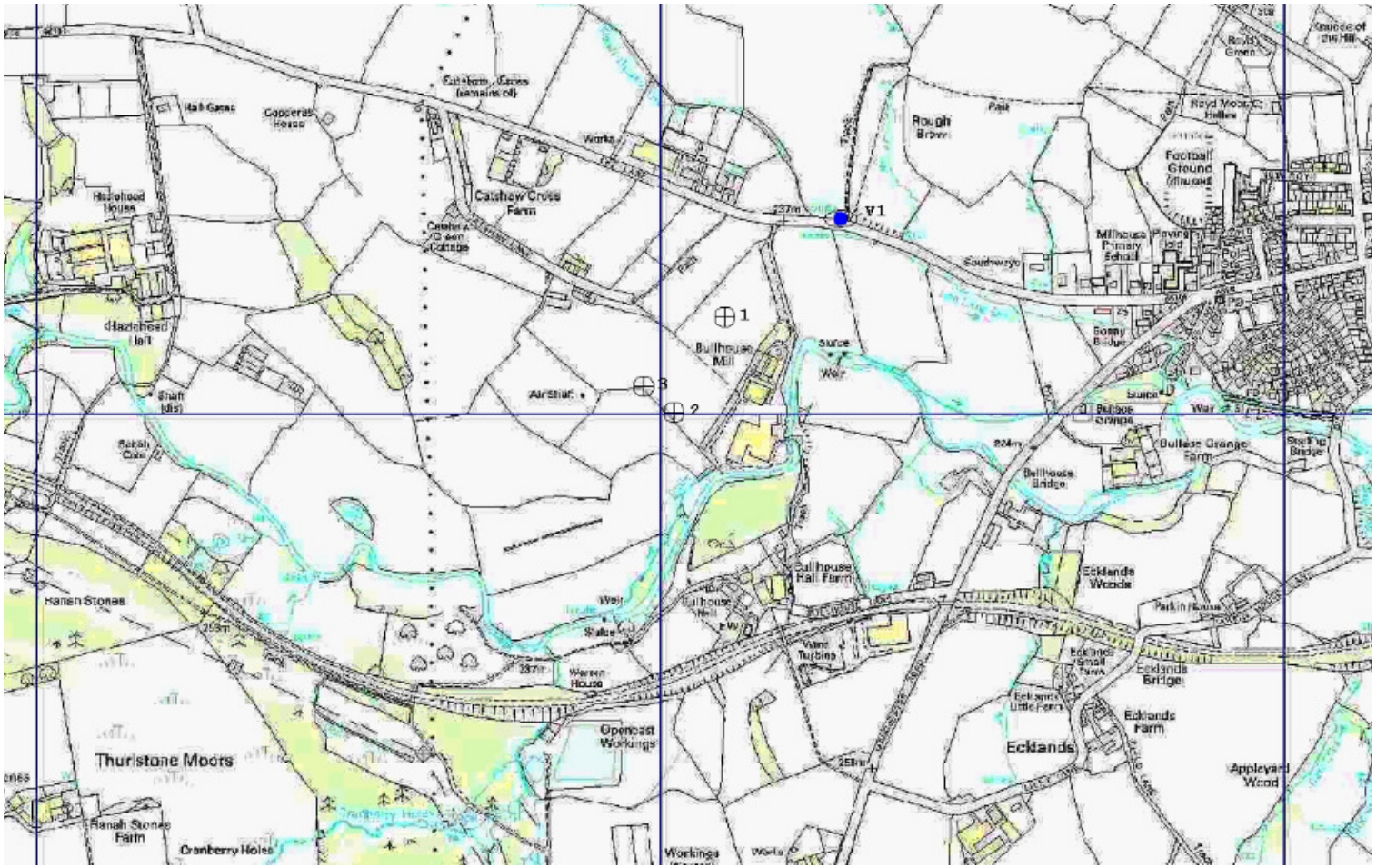
PM2 – Location map



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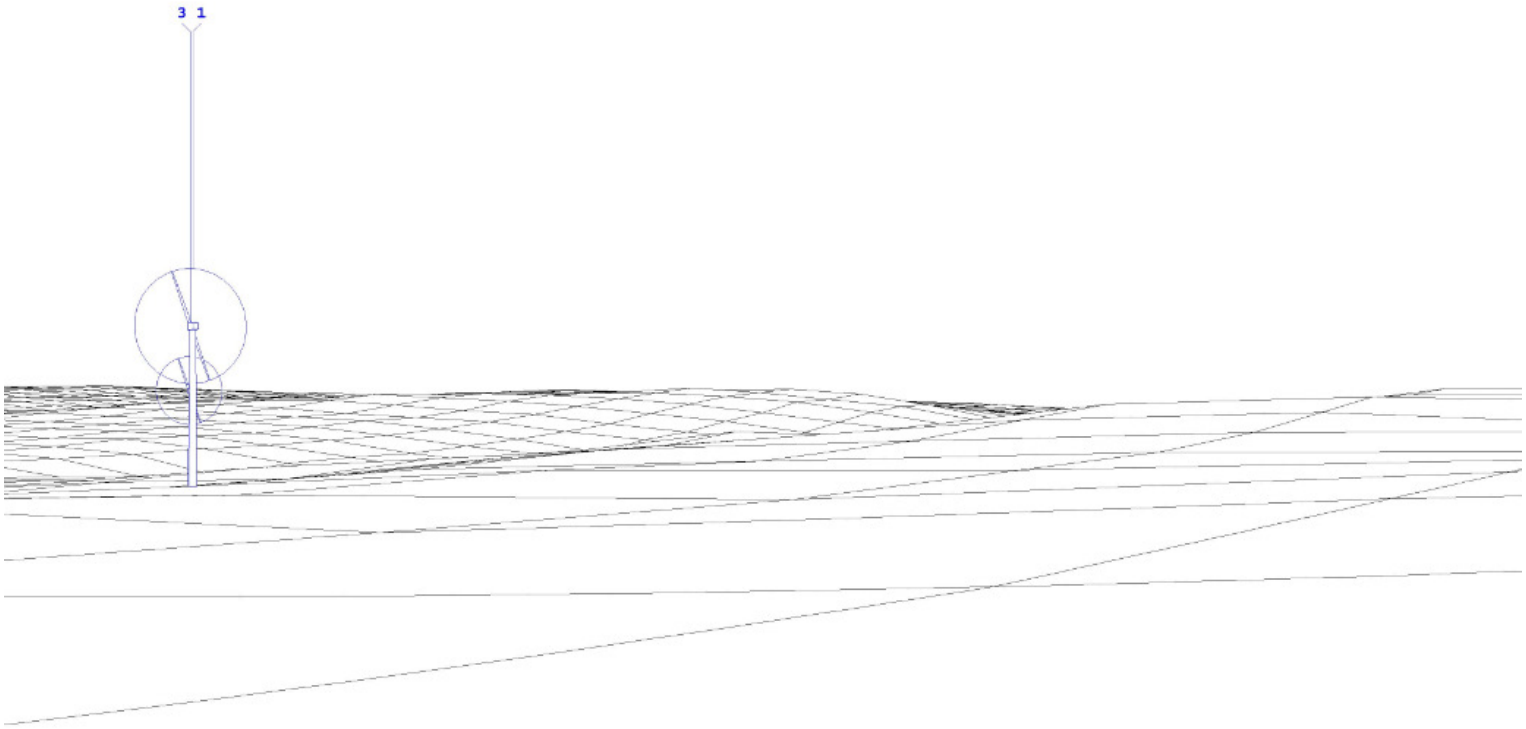
PM2 - Wireframe



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PM2 - Photomontage

PM2 – Photo taken from the northeast of the application site

From this vantage point to the northeast of the application site, only Turbine C is visible, and it is only the blade that can be seen over the surrounding vegetation. Where the blade breaks the skyline it will only result in a very small interruption and due to the slim nature of the turbine and the colour of the blades, the installations do not dominate views across this landscape. Vegetation features in the foreground and behind the turbine mean that this is by no means an open or exposed landscape. The visible turbine is viewed against a backdrop of rising topography in the distance which minimises the impact of the installation. Larger vertical structures such as the electricity pylons which break the skyline can be seen clearly from this position and present more dominant features on the landscape than the turbines.

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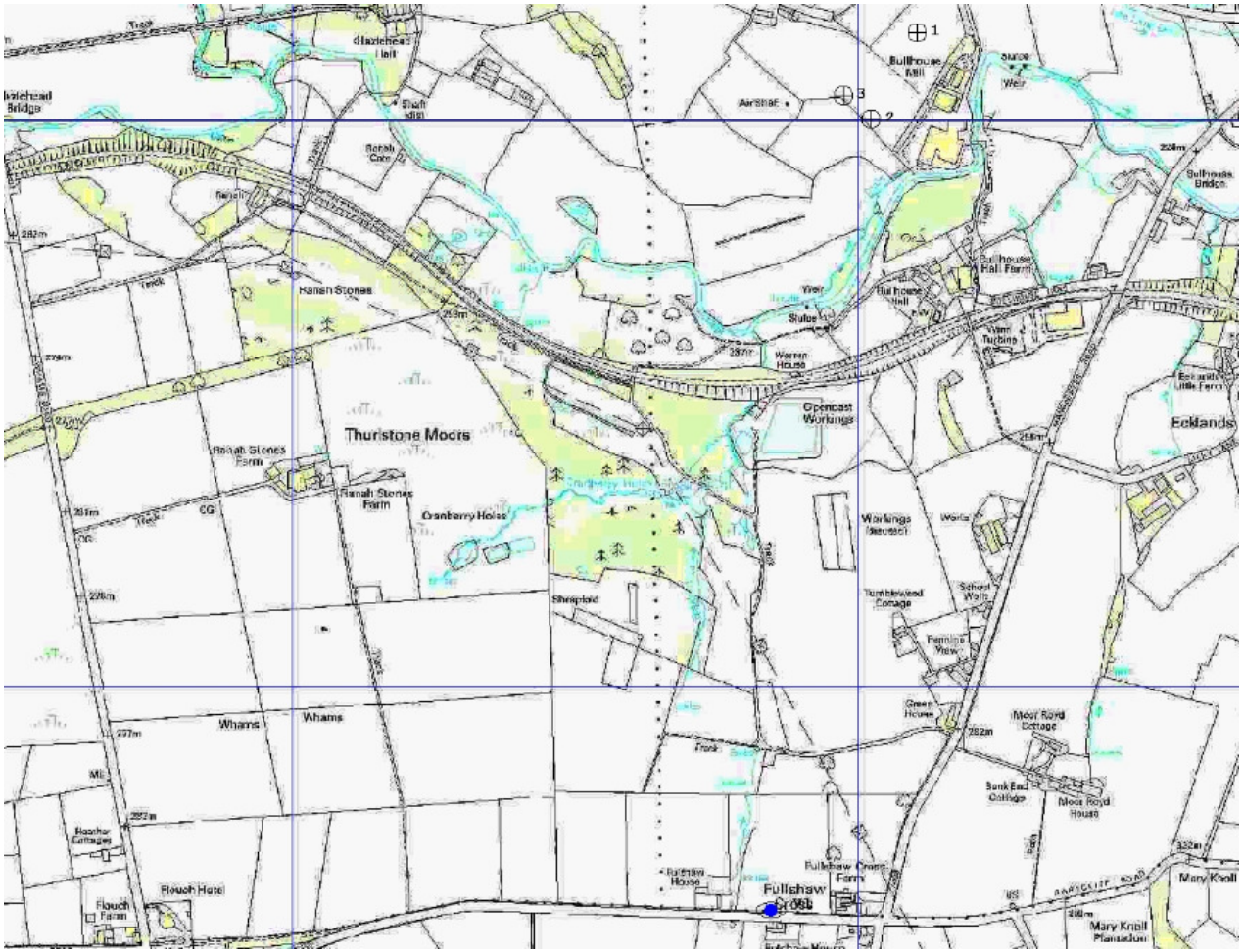
PM3 – Location map



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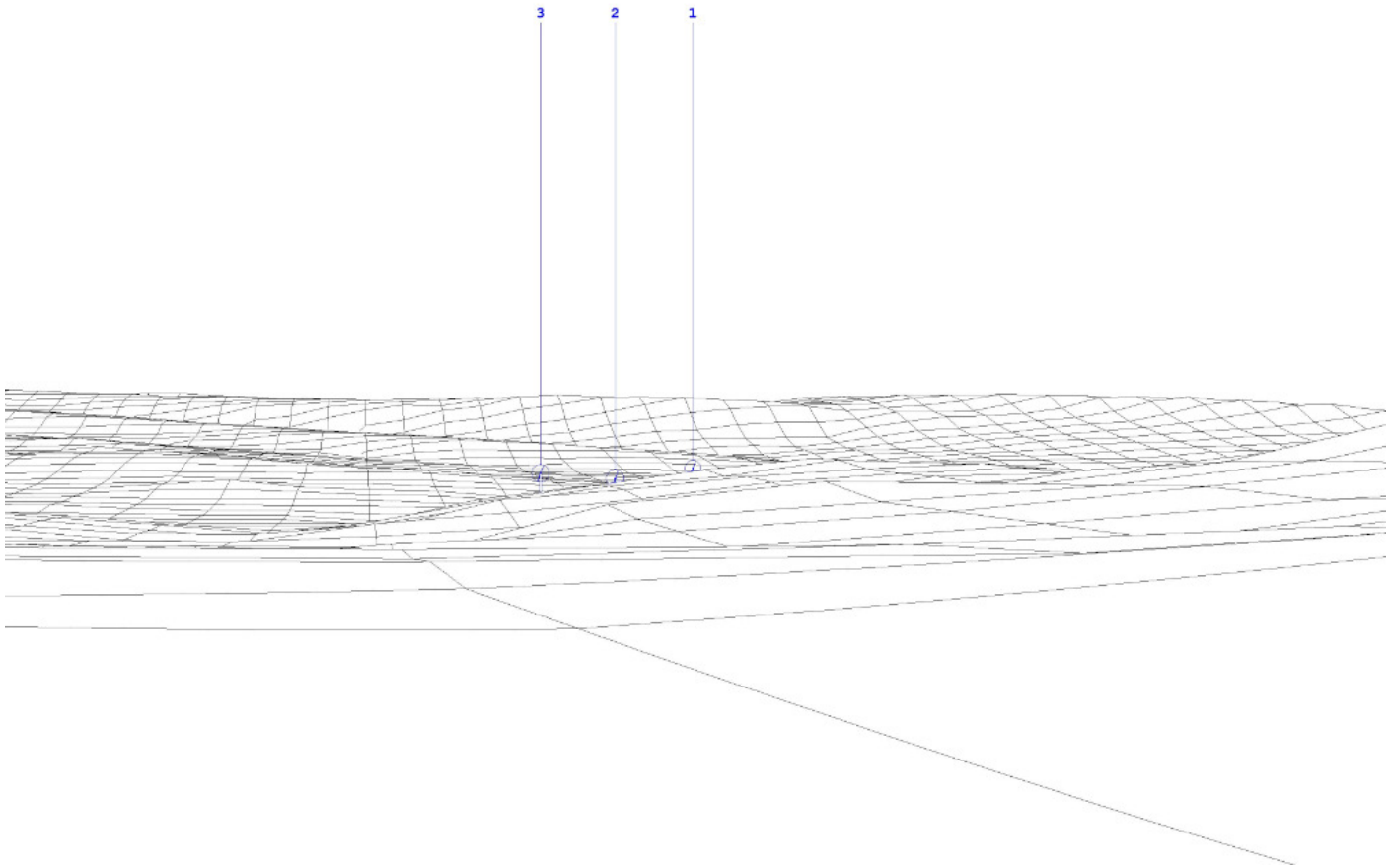
PM3 – Wireframe



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PM3 – Photomontage

PM3 – Photo taken from the south of the application site

This photograph was taken from the south of the site. From this vantage point, only one turbine, Turbine C, is visible, and only the blade can be seen. The visible turbine makes up only a tiny portion of the view and does not in any way dominate views across the landscape. Larger electricity pylons and wires in the foreground present a much more prominent feature of the landscape. The turbine that can be seen from this location is viewed against the backdrop of rising land which further mitigates its impact. The turbine does not materially alter the character or quality of the landscape from this position.

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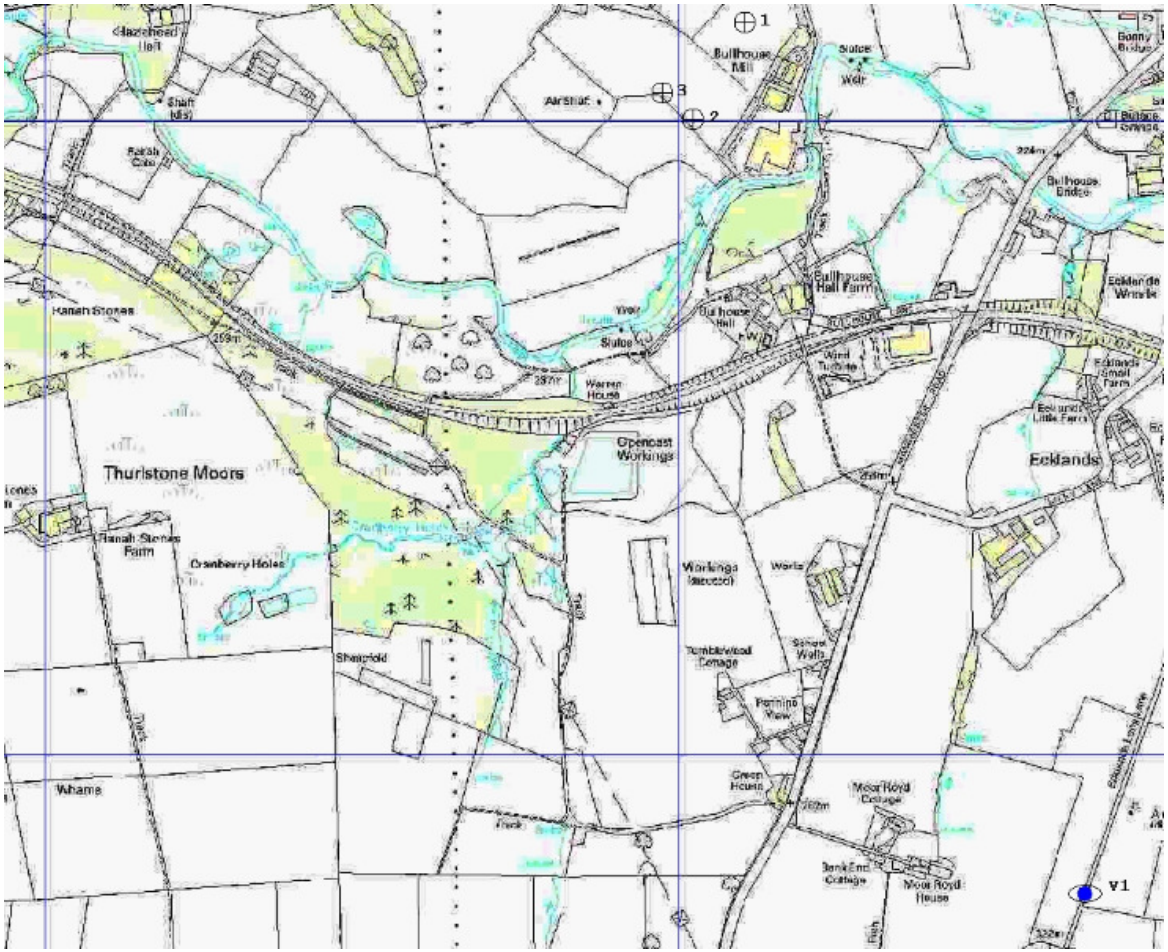
PM4 – Location map



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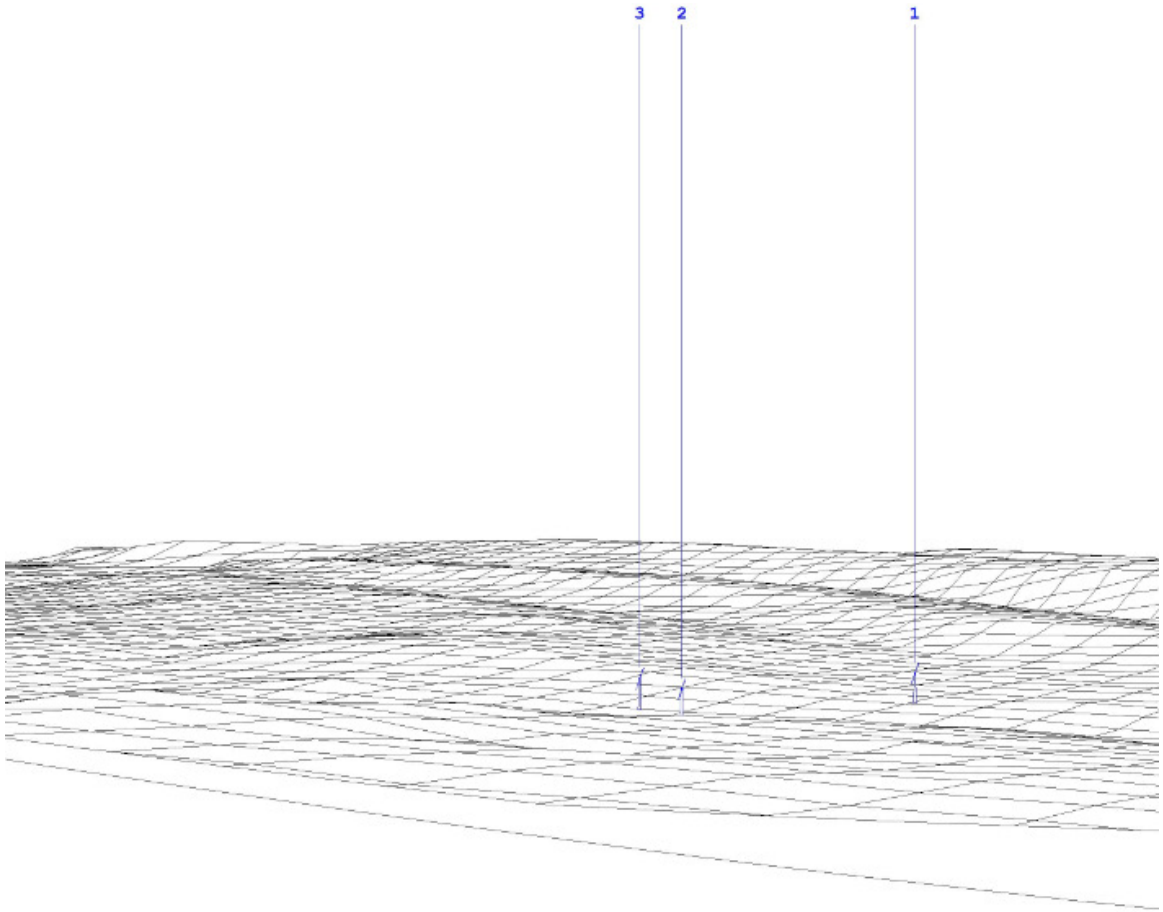
PM4 – Wireframe



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PM4 – Photomontage

PM4 – Photo taken from the southeast of the application site

From this vantage point to the southeast of the application site, only one of the turbines is visible, with the top of the mast and the blade visible above the tree line. Again this turbine is viewed against rising land and is partially screened by vegetation in the mid distance. To the top centre and right of the photograph, the Royd Moor wind farm turbines can be seen. These turbines interrupt the skyline and present a more prominent feature on the landscape than the proposed. The existing turbines add an element of verticality into the landscape and mean that the three small scale turbines will not present an alien feature on the landscape. The proposed turbines in no way dominate views from this position, and the character and quality of the landscape is not materially altered or harmed.

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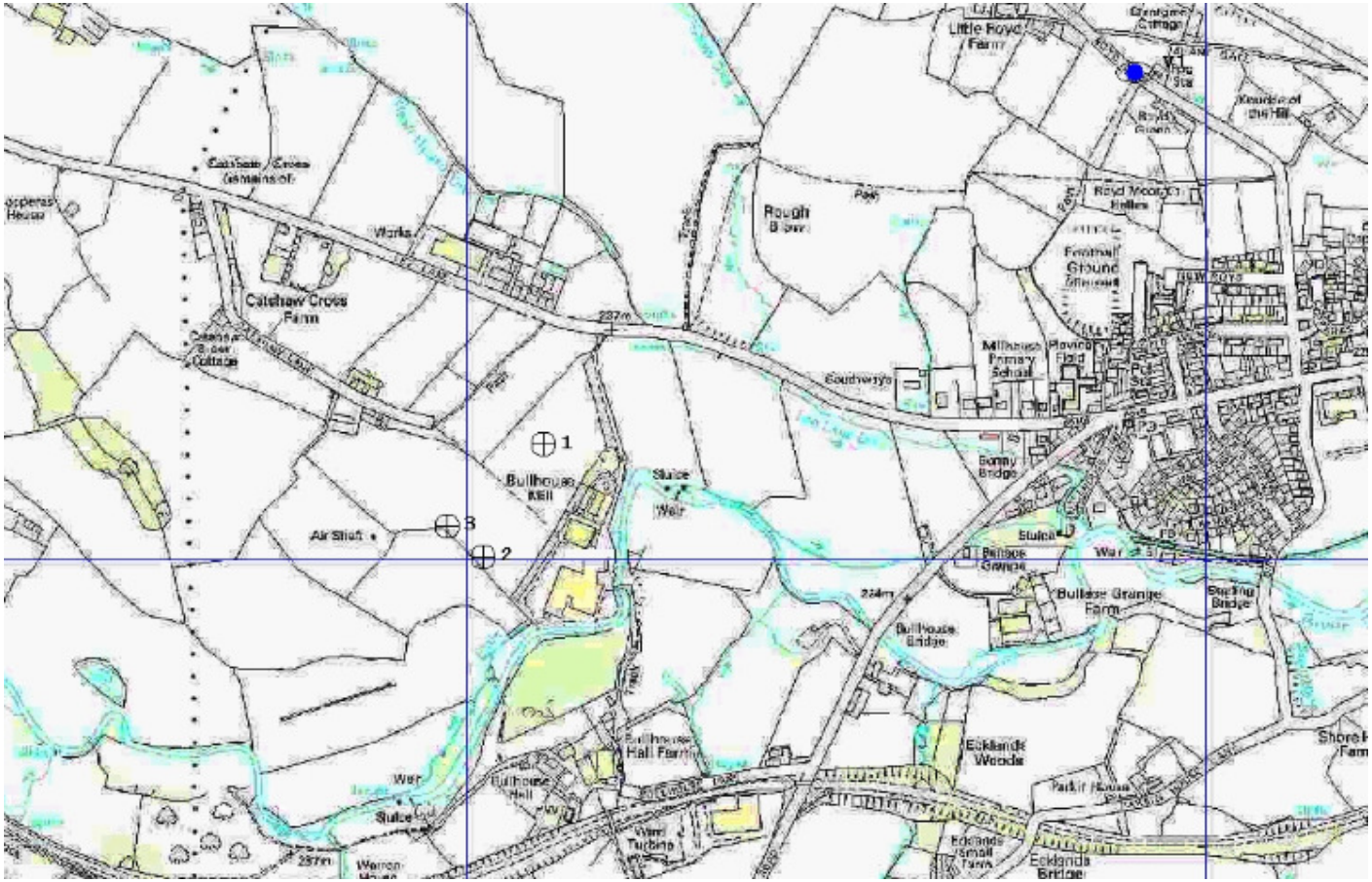

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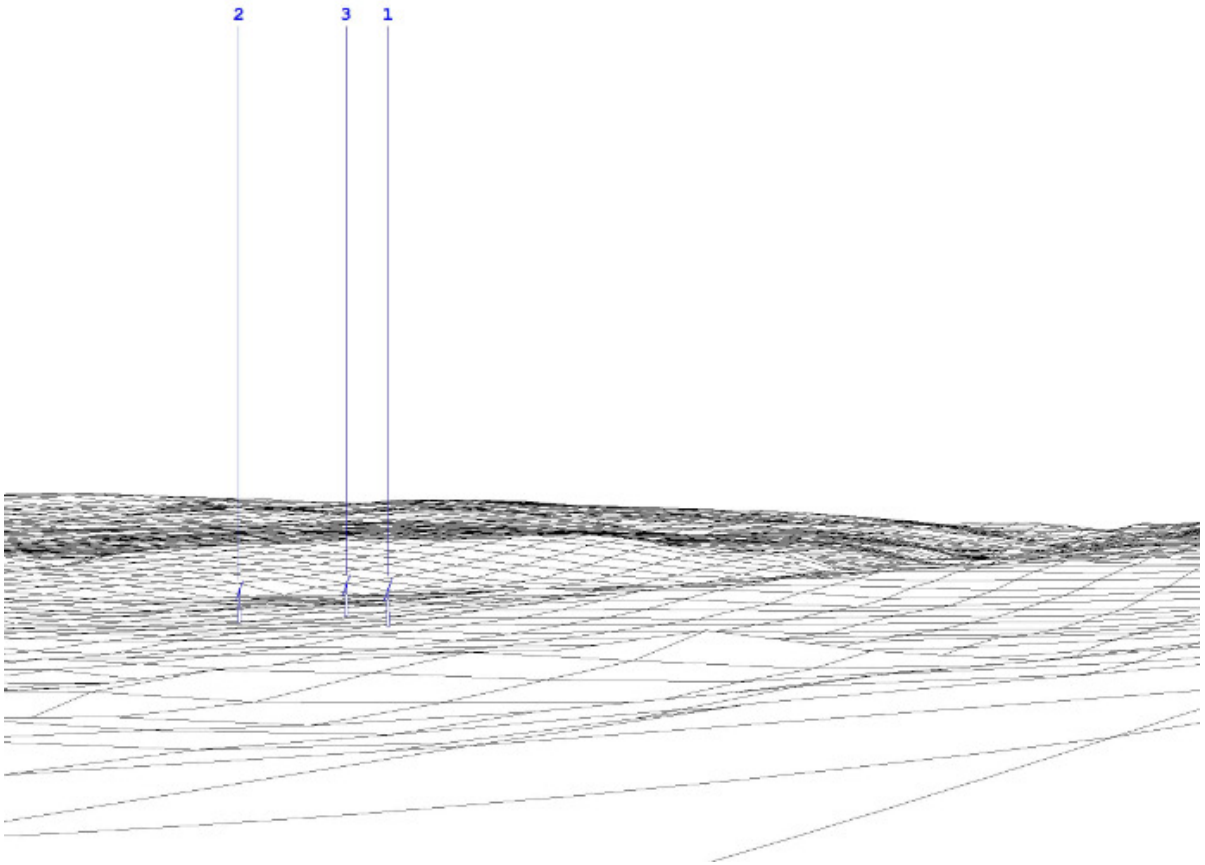
Registered in England Number: 5309114

PM5 - Wireframe



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PM5 – Photomontage

PM5 – Photo taken from northeast of the application site

This photograph was taken from the northeast of the application site. All three turbines are clearly visible from this vantage point. Larger electricity pylons in the distance dominate views from this position and break the skyline, adding an element of verticality in to the landscape which mitigates the impact of the proposed turbines. The rising and falling topography of the land limit views of the turbines from this vantage point. The turbines make up only a very small portion of the view and do not in any way materially alter or harm the landscape character of this area of views across it.

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3.3 Zone of Visual Impact

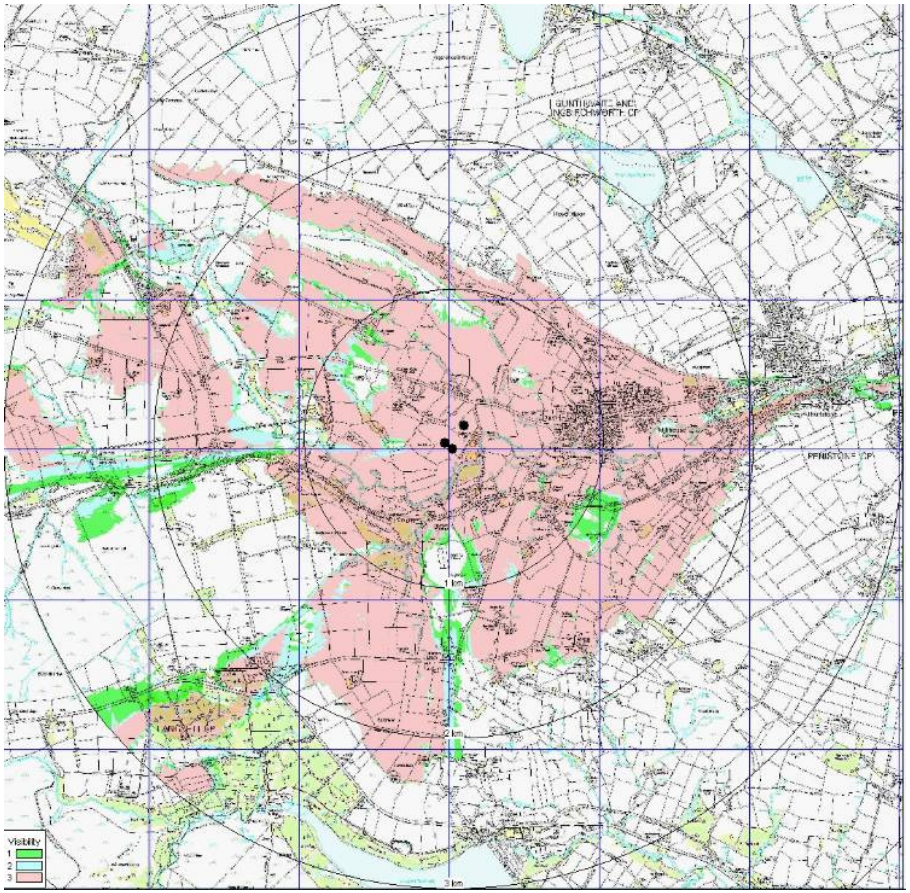

Figure 7: ZVI map showing where one, two and three proposed turbines can be seen from

The ZVI map to the left shows the locations around the application site from which one, two or three of the proposed turbines can be seen. The map shows that the turbines will be visible, at least in part from most short distance view points, that it, within 1km of the site. The ZVI obviously lessens in locations further away from the turbines. Due to the topography of the land, which rises in most directions around the site, there are few places between 2 and 3km where the turbines are visible. In many cases, as the photomontages have shown, it may just be the blade tips which can be seen. In line with PPS22, mere visibility of a turbine does not equate to landscape harm, and the photomontages have clearly shown that the turbines will have a minimal impact on landscape quality and character.

4. Cumulative Impact

4.1 Magnitude of Visual Change - The cumulative impact of this and other wind turbine projects is assessed by considering the magnitude of visual change. This involves considering views towards the proposed wind turbines from other similar features, in case the Royd Moor Wind Farm seen below, and from the proposed wind turbines up towards Royd Moor.

4.2 Views from Royd Moor Wind Farm - When viewed from Royd Moor Wind Farm on its Spicer Hill location, the proposed turbines are seen in the valley below. The proposed turbines are small scale and due to their twin bladed design and slim form, they do not dominate views from any one location. From Royd Moor, the proposed turbines will be viewed against much larger tall structures such as the electricity pylons which criss-cross the landscape in this area. From Royd Moor, the turbines impact on cumulative visual change is negligible.

4.3 Views from the application site - The Royd Moor Wind Farm can be clearly seen to the north of the application site. The turbines are large and interrupt the skyline against which they are seen. Since the Royd Moor Wind Farm is the most prominent hill top receptor in the area, it has clearly had a significant impact on the landscape in which it resides. The proposed wind turbines at Bullhouse are small in comparison and their impact on the landscape is negligible compared with that of Royd Moor. Although the proposed turbines are twin bladed, which differs from those at Royd Moor, the rotational speed of a Gaia turbine is akin to that of a large turbine, much slower than three bladed small scale wind turbines. The proposed turbines will not be viewed against the Royd Moor turbines since the topography of the land rises significantly, meaning the proposed turbines will be seen against a backdrop of rising land in this direction and not the skyline or Royd Moor. Therefore, the cumulative impact is negligible.

Figure 7: Royd Moor Wind Farm viewed from application site

5. Conclusion

The proposed wind turbines at Bullhouse Mill are small scale and occupy a low position compared to the rising topography of the surrounding landscape. The photographic survey which shows directional views from each of the turbines indicates that the topography of the land around the site undulates significantly. There is a large amount of mature tree cover and other vegetation features around the application site which will help to screen the turbines from view and mitigate their impact. In many directions around the site, there are other vertical structures, some much larger than the proposed turbines, including telegraph poles, electricity pylons and the Royd Moor Wind Farm. The image below shows how the proposed turbines relate in scale to the typical electricity pylon such as the ones located close to the application site. The pylons are much larger; both in height and width, and the turbines appear small in comparison. In many cases, the pylons are seen against the skyline due to their height, causing a visual interruption. The turbines however are viewed against the rising topography of the land and due to their location do not interrupt the skyline in any way.

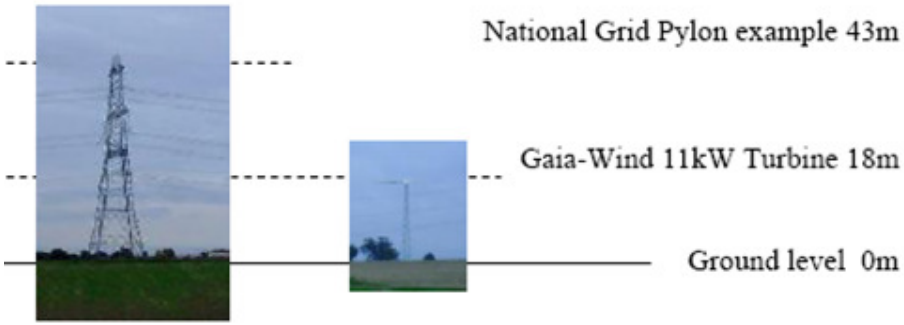

Figure 8: Comparative height of Gaia turbine to electricity pylon

The photomontages provided in the photographic assessment show that the proposed wind turbines can be incorporated easily into the existing landscape with minimal impact on their surrounds. From close vantage points, such as PM1 and PM2, the turbines are obviously visible, but do not in any way dominate views across the area. In these montages it is only the mast tops and blades that are visible in PM1 and only one turbine's blade in PM2. Due to their slim form and twin bladed design, they make up only a very small portion of the view. Since in most cases the turbines are viewed against rising land, their impact is mitigated to a large extent.

From longer range views, such as those shown in PM3 and PM4 the turbines are barely visible and are largely or entirely hidden by the topography of the landscape and screening in the form of vegetation. In all cases the turbines are viewed against larger electricity pylons which are widespread across this landscape and appear as much smaller in comparison. Again since the turbines are viewed against higher ground behind them, their impact on the landscape is mitigated. In PM5 where all three turbines are visible, their small scale is such that they do not present a dominant feature on the landscape and are clearly viewed in relation to other larger structures in the area.

It has been shown that the cumulative impact of these turbines is minimal. When viewed in relation to Royd Moor Wind Farm, the proposed are much smaller in scale and are viewed against rising land. In addition they do not interrupt the skyline in the same way that the larger turbines do. Although the twin bladed design of the proposed turbines differs from those at Royd Moor, the two sets of turbines will not be viewed in relation to one another since the proposed turbines are on much lower ground and have a backdrop of rising land and vegetation behind them. The solid masts of the proposed turbine are of a similar design to those at Royd Moor which mitigate their impact. The solid mast is considered to blend in the most effectively with the surrounding countryside.

When assessing planning applications, PPS22 advises that local authorities should recognise that the impact of turbines on the landscape will vary according to the size and number of turbines 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. As an engineered structure, where visible, the proposal would visually contrast with the more natural rural surroundings. However, this landscape assessment has clearly shown that tall vertical structures are common across this landscape, which is recognised in the Barnsley Borough Landscape Character Assessment mentioned earlier. Despite their overall height, the proposed turbines have a limited scale and a relatively minimal form (as demonstrated by the photographic survey and photomontages above) meaning its impact falls within acceptable limits.

The Gaia turbine model was chosen because the form of this turbine is considered to best suited to this sensitive landscape setting in that it is particularly slim-line in design, with only two blades, tapering mast top and small turbine head, which reduces the bulk of the turbine thus helping it to blend more effectively with the surroundings and providing reduced visibility over distance. Also the proposal does not involve any ground based equipment housing or compound fencing. As a consequence the proposal would have a limited, non-material impact on the character of the landscape.

As you will appreciate there are locational constraints for this type of development, including sites which are elevated or exposed, or both. It is often very difficult to completely screen mast mounted turbines from view. In this case the proposal is extremely well screened; however, the mere visibility of the turbine in some short and distance vantage points should not render the turbine demonstrably harmful as the landscape is by no means dominated by these installations.

Taking the above factors into account, based on a reasoned professional judgement the proposal as a kinetic development would not represent a prominent or visually intrusive feature in the surrounding rural landscape, the turbine's modest scale would only result in very modest impacts on the fabric, character and quality of the landscape resulting in no harmful change to its overall character.

Furthermore the turbines would not unduly interfere with the visual amenities enjoyed by neighbouring properties and the public realm, as the turbine would not dominate any one view and would only result in a very slight interruption without resulting in a serious deterioration in the existing view.

In conclusion as outlined above the proposed wind turbines will not cause unacceptable harm to the visual amenity of the locality nor will it have a detrimental effect on the character and function of this area. Indeed, the photomontages demonstrate that due to the careful positioning of these small scale wind turbines they have very little visual impact. The minimal and extremely localised effect of the installation will be sufficiently outweighed by the positive environmental effects associated with the proposal. These include the generation of a clean energy supply from a sustainable source that will help to reduce Bullhouse Mill's reliance on fossil fuels, and the lower green house gas emission, which will in turn help to conserve the quality of the landscape for the longer term.