

- 1.192 ETSU-R-97 states that if turbine noise is limited to a level of 35 dB L_{A90} at wind speeds up to 10m/s at 10m height, then this is sufficiently low to protect amenity irrespective of the background noise. From **Table 6** it can be seen that predicted noise levels from the Shafton wind turbine do not exceed this level at any dwelling and are around 34 dB L_{A90} at the nearest residential locations. Therefore the simplified ETSU-R-97 limit is met at all residential locations.

Other Operational Noise Issues

Vibration

- 1.193 Vibration from wind farms has been measured by extremely sensitive measurement equipment such as seismic arrays but in terms of human perception, measured vibration levels are well below perception thresholds even on the actual wind farm sites. There is, therefore, no impact from vibration.

Low Frequency Noise and Infrasound

- 1.194 DEFRA commissioned a study to investigate complaints of infrasound and low frequency noise causing adverse health effects (DTI, 2006). Of the 126 operational wind farms (at the time of the study) there were five with reported complaints from low frequency noise. The Hayes McKenzie report concluded that measured wind turbine noise at infra-sound frequencies (<20 Hz) is well below recognized perception thresholds and that there is no evidence of infrasound below perception thresholds having any health effects. Low frequency noise (20 Hz – 250 Hz) from wind farms was measurable and sometimes just above audibility thresholds but was below the DEFRA night-time low frequency noise criterion and below other sources of low frequency noise such as traffic. There is no evidence of health effects arising from infrasound or low frequency noise generated by wind turbines. Of the five sites with low frequency noise complaints, the likely source of the noise was amplitude modulation (described below).
- 1.195 The Acoustics Bulletin from March/ April 2009 article also concludes: *'From examination of reports of the studies ... and other reports widely available on internet sites, we conclude that there is no robust evidence that low frequency noise (including 'infrasound') or ground-borne vibration from wind farms, generally has adverse effects on wind farm neighbours.'*

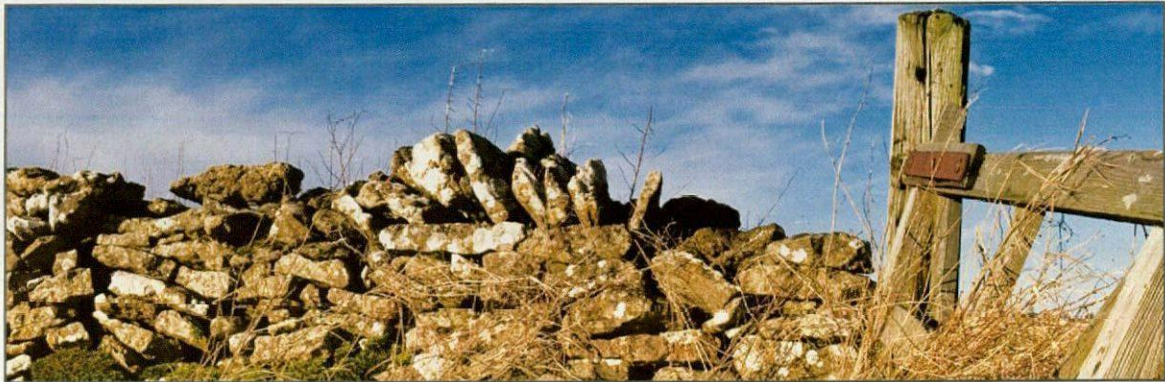
Amplitude Modulation

- 1.196 In July 2007 the Salford University Report on Amplitude Modulation (AM) was published. Amplitude Modulation is described as a low frequency sound which varies in amplitude at or above the blade passage frequency of the wind turbines, typically 1 Hz. The Salford study comprised a survey of local authorities to reveal the extent of the problem, a literature review and further detailed investigation of the complaint logs from four affected sites. The report concluded that the mechanism for amplitude modulation was not fully understood nor could it be predicted. However there were only four confirmed cases causing complaints and overall the level of complaints from wind farms was low compared to other noise sources. Following on from this report, the Government has stated it does

not consider there to be a need to assess this issue further at the present time and that ETSU-R-97 should continue to be used to assess the noise of wind farms.

Conclusions

- 1.197 An assessment has been made of noise from a proposed single 500kW wind turbine on former mining land between Shafton Two Gates, Grimethorpe and Cudworth, South Yorkshire. The assessment has been carried out according to ETSU-R-97 which is the assessment method recommended in English planning advice. Predictions of the turbine noise have been carried out according to the agreed calculation method ISO 9613-2 based on the candidate turbine, an EWT DW 54 500kW turbine.
- 1.198 ETSU-R-97 states that '*if the noise is limited to an L_{A90} 10min of 35dB(A) up to wind speeds of 10m/s at 10m height, then this condition alone would offer sufficient protection of amenity*'. Predicted noise levels from the wind turbine do not exceed this level at any dwelling and are around 34 dB L_{A90} at the nearest residential locations. Therefore the simplified ETSU-R-97 limit is met at all residential locations. Noise from the wind turbine complies with all relevant guidance on noise and there is no reason to refuse this application on grounds of noise.
- 1.199 FOR THE FULL NOISE REPORT PLEASE SEE **APPENDIX 5** OF THE CD APPENDIX.



Archaeology and Cultural Heritage

- 1.200 An assessment of the potential direct and indirect impacts of the proposal on the historic environment was undertaken by CgMs Consulting. This is a summary of the findings of the report which is included in full in **Appendix 6** of the CD appendix.
- 1.201 In accordance with government policy (National Planning Policy Framework [NPPF]) this assessment draws together the available archaeological, historic, topographic and land-use information in order to clarify the heritage significance and archaeological potential of the site.
- 1.202 This assessment is based on a consideration of evidence in the South Yorkshire Historic Environment Record (HER) and Wakefield Record Office. The proposed turbine is located within an area of former opencast mining and the assessment of undesignated assets within 500m of the turbine location has been scoped out, there being no surviving assets/archaeological potential.
- 1.203 Eight Scheduled Monuments, eight Grade I and II* Listed Buildings, four Conservation Areas within a radius of 5 km are considered; three Grade II Listed Buildings within a radius of 2 km are also considered.
- 1.204 Additionally, in accordance with the Standard and Guidance for Archaeological Desk-Based Assessments (Institute for Archaeologists, 1999 [revised 2012]), the assessment includes the results of a site inspection, an examination of published and unpublished records and charts historic land-use through a map regression exercise.

Planning Background and Development Plan Framework

- 1.205 The assessment considers National and Local Planning Policy documents including:
- The National Planning Policy Framework (NPPF) (DCLG, 2012a), which replaces national policy relating to heritage and archaeology (Planning Policy Statement 5: Planning for the Historic Environment (DCLG, 2010b)), - particularly section 12; and
 - Barnsley Council Core Strategy - Policy CSP 30 - The Historic Environment.

Archaeological and Historical Background

- 1.206 The study site is classified as an Artificial Deposit of Made Ground ie. reclaimed former opencast coal mine, which has since been backfilled and re-modelled.
- 1.207 The proposed turbine is located within an area of former opencast mining (Figures 6-10 of **Appendix 6**) and the assessment of undesignated assets within 500m of the turbine location has been scoped out, there being no surviving assets/archaeological potential. Site inspections were undertaken on 23rd April 2013.

Designated Heritage Asset Impact Assessment

- 1.208 All designated heritage assets are considered to be of high sensitivity regardless of their form and grading. 'Effects' are the predicted change to the baseline environment attributable to the project. The criteria for assessing the magnitude of change on heritage receptors are set out in **Appendix 6**.
- 1.209 The proposed turbine's impact is the consequences of effects on historic environment receptors (i.e. heritage assets). This is evaluated by taking into account both the sensitivity (heritage significance as defined in Section 12 and Annex 2 of the NPPF) of the receptor and the magnitude of the predicted change. Professional judgement is also applied.
- 1.210 There are eight scheduled monuments (SAM) within a 5 km radius of the proposed turbine (**Figure 14**). There are eight grade I and two grade II* listed buildings within 5 km radius of the proposed turbine (**Figure 15**). There are three Grade II Listed Buildings within 2 km radius of the proposed turbine (**Figure 16**). There are four Conservation Areas within 5 km radius of the proposed turbine (**Figure 17**).
- 1.211 This Environmental Report describes the assessment of the closest historic assets to the proposed turbine. The full assessment of all assets is contained in tabulated form at **Appendix 6**.

Hallsteads Moated Site, Grimethorpe [1012457] (SAM) - 2.3km east/ north-east

- 1.212 Hallsteads is an unusual site consisting of a flat-topped rise between two narrow valleys. A dam built to the west of the rise, across the confluence of the valleys, has created a moat to north and south while a bank and ditch encloses the site to the east. Within the enclosure, c.120m across, the hillside has been scarped to provide a roughly circular inner enclosure. In addition, running eastward off the north arm of the moat for c.150m is a line of three or four linear fishponds, divided by dams and created by embanking the natural stream line.
- 1.213 The significance derives from its archaeological interest. The setting of the monument is the open rural agricultural landscape within which the buildings on the moated island would have been deliberately built to be viewed as prestigious aristocratic and seigneurial residence with the provision of a moat intended as a status symbol.
- 1.214 Impact Assessment: Whilst the setting of the moat is not considered to extend as far as the turbine, the hub and turbine tips may be visible from the monument. However, these views are already compromised by the intervening settlement of Grimethorpe

and industrialised landscape in the vicinity of the turbine. Therefore it is considered that the setting and significance of the monument will not be materially impacted.

Monk Bretton Priory Cluniac and Benedictine Monastery: monastic precinct and two fishponds [1010057] (SAM) - 3.2km south-west

- 1.215 The standing remains and part of the precinct of the Cluniac priory of St.Mary Magdalene, which was later transferred to the Benedictine Order and includes two monastic fishponds. The visible remains at Monk Bretton Priory are of the church and domestic ranges arranged round a central cloister and occupying the south and west parts of the precinct.
- 1.216 The significance derives from its archaeological and architectural interest. Monk Bretton Priory is situated in what is now a residential area on the outskirts of Barnsley and its setting is restricted to the current boundaries of the monument ie. the precinct. The wider landscape setting is compromised on its north and west sides by residential development, to the east by sewage works, but surrounded to the south and south-east by green recreational space along the Dearne Valley.
- 1.217 Impact Assessment: The turbine will not fall within the setting of the monument and any views of the turbine will be blocked by the intervening, industrial and residential area of Lundwood, and the intervening ridge of Cudworth to the north-east. Therefore, there will be no effect on the significance or setting of the Priory nor of the appreciation of its significance.
- 1.218 The next closest SAM to the proposed turbine is Monk Bretton Standing Cross (3.8km W/SW) and the remaining five SAMs are over 4.1km from the proposed turbine. All Scheduled Monuments are assessed in **Appendix 6**.

Monk Bretton Priory Remains [1151178] and Gatehouse [1315023] (LBs GI) - 3.2km south-west

- 1.219 Grade I listed, the Priory remains are also a Scheduled Monument and have been assessed above.

Administration building at Monk Bretton Priory Remains [1151179] (LB GI) - 3.2km south-west

- 1.220 Part of Monk Bretton Priory remains. Late C13 or early C14, re-roofed in 1931. Squared, coursed rubble, Welsh slate roofs. Rectangular plan. Two storeys. This building is traditionally known as the guest house but, because of the lack of fireplaces and garderobes, this is thought unlikely and that it was used for the administration of the priory's estates, the upper floor perhaps being used as a manorial courtroom.
- 1.221 The significance of the building lies primarily from its architectural and archaeological interest. The Monk Bretton Priory remains are situated in what is now a residential area on the outskirts of Barnsley and its setting is restricted to the current boundaries of the monument ie. the precinct. The wider landscape setting is compromised on its north and west sides by residential development, to the east by sewage works, but surrounded to the south and south-east by green recreational space along the Dearne Valley.
- 1.222 Impact Assessment: The turbine will not fall within the setting of the monument and any

views of the turbine will be blocked by the intervening, industrial and residential area of Lundwood, and the intervening ridge of Cudworth to the north-east. Therefore, there will be no effect on the significance or setting of the building nor of the appreciation of its significance.

Grimethorpe Hall [1151202] (LB GII) - 1.7km north-east*

- 1.223 c1670 altered in C18, C19 and C20. Built for Robert Seaton. English-bond red brick with ashlar sandstone dressings, rear elevation has herringbone-punched coursed, squared sandstone. Welsh slate roofs. Square twin-roofed plan with central staircase, gabled at rear but roofs masked by a linking parapet to entrance front. 2 storeys with half-basement to rear, attic. 5-bay entrance front. The house has been derelict for many years and has suffered vandalism.
- 1.224 The significance of the hall lies primarily from its form and fabric. Therefore, its significance derives from its architectural interest but it also has socio-historic interest of the Seaton family. Although standing in its original grounds, the immediate surrounding area is a densely populated residential area. Located on the hillside it has extensive views to the north and west across the valley towards Upper Cudworth and Barnsley.
- 1.225 Impact Assessment: The wind turbine will lie to the south-west of the hall, within the wider landscape setting of the Hall. However, as this view is considerably compromised by the reclaimed and industrialised nature of the valley, combined with electricity pylons running along the valley, there is considered to be a very slight additional impact on the setting of the asset, but no material effect to its significance, particularly given the derelict nature of the Hall.

Freestanding chimney at Bleachcroft Farm [1192180] (LB GII) - 3.9km south-west

- 1.226 Freestanding Chimney at Bleachcroft Farm II Works chimney. Dated 1854. For the Midland Bleach Works. Dressed and ashlar sandstone. Square pedestal with moulded plinth and cornice surmounted by tall octagonal chimney with datestone on west side and entablature. Most impressive remnant of the bleach works built here by Barnsley Manufacturer Henry Jackson.
- 1.227 The significance of the building lies primarily from its industrial and socio-historic interest. The setting of the chimney is restricted to the boundaries of Bleachcroft Farm, the former Bleach works and associated upper reservoir, now largely colonised by marsh vegetation.
- 1.228 Impact Assessment: The buildings setting is associated with its industrial function as part of the bleach works, which are now a farm. The turbine will be located beyond this setting. Whilst the chimney forms a local landmark in its immediate vicinity, views of the turbine from the monument and its immediate surroundings will be blocked by the embankment of the A629 immediately to the east and intervening topography and the urban form of Cudworth. Therefore there will be no effect on its significance.

Brierley Conservation Area - 3km north/north-east

- 1.229 The Conservation Area incorporates the historic core of the village and has an open and semi-rural surrounding landscape of agricultural fields. The A628 does however run through the north-western part of the Area and the pit village of Grimethorpe And Brierley to the south of the Area are now connected by ribbon development.
- 1.230 The significance of Brierley Conservation Area derives from its archaeological, historic and architectural interest. The Conservation Area is surrounded by modern agricultural fields, hedges and residential development. Although views out over the countryside are possible from the edges of the Conservation Area, in general development on the edge of the Conservation Area prevent significant views out beyond the edges of the designated area to the south-west.
- 1.231 Impact Assessment: The wind turbine will lie to the south-west of the Conservation Area in an area that is not historically or visually connected to it. There are no important vistas out from the village toward the turbine, although the tower, hub and blades will be visible from the western corner of the Area where there are extensive views across to Cudworth Common and beyond, however the landscape has a neutral contribution to its significance. Therefore, there will be no effect on the significance of the Conservation Area.

Summary and Conclusions

- 1.232 There will be no direct impacts on any designated heritage assets. There will be no more than a negligible adverse impact on designated heritage assets. Therefore, mitigation measures are not considered to be required in relation to designated heritage assets.
- 1.233 The NPPF outlines that there is a presumption in favour of sustainable development (paragraph 14). Paragraphs 132 to 133 of the NPPF cover the balance between public benefits and harm to designated heritage assets. Paragraph 132 states that the greater the importance of an asset, the greater the weight given to its conservation should be. Development resulting in substantial harm to a Scheduled Monument, and Grade I and II* Listed Buildings should be wholly exceptional, and substantial harm to a Grade II Listed Building should be exceptional. Para 134 of the NPPF states that where the harm is less than substantial, the harm should be weighed against the public benefits of the proposed development.
- 1.234 In this case, the wind turbine will not result in substantial harm to any designated heritage assets within the surroundings of the site. Consequently, the test outlined in paragraph 132 of the NPPF does not apply (i.e. substantial harm) and instead, the test outlined in paragraph 134 (i.e. less than substantial harm) applies in this case. That is, where there is less than substantial harm, the harm should be weighed against the public benefits of the proposed development. Consequently, as there is less than substantial harm to the significance of heritage assets, the economic and public benefits of the planning application submission will need to weighed against the limited harm to designated heritage assets.
- 1.235 FOR THE FULL REPORT PLEASE SEE **APPENDIX 6** OF THE CD APPENDIX.



Landscape and Visual Effects

- 1.236 Optimised Environments Limited (OPEN) has been instructed by Engena Limited (Engena) to prepare this Landscape and Visual Appraisal (LVA) in respect of a single proposed wind turbine, located between the settlements of Cudworth and Grimethorpe, to the south of Shafton Two Gates. Two landscape architects have undertaken this LVA, with on-site and written appraisal carried out by Mark Swithenbank MLA and Simon Martin MA Hons CMLI. The following text summarises the LVA. The full copy can be found in **Appendix 7**.
- 1.237 The methodology used in this report has been specifically devised by OPEN and accords with the guidance contained in the Guidelines for Landscape and Visual Impact Assessment: Second Edition (Landscape Institute and IEMA, 2002). The report focuses on the key changes and effects that are likely to arise in the landscape and visual context of the site as a result of the development.
- 1.238 The approach follows best practice by describing, firstly, the sensitivity of various aspects of the landscape and visual environment before, secondly, considering the magnitude of change that would result from the proposed development. Sensitivity and magnitude are then assimilated to assess whether the effect is likely to be 'significant' or 'not significant'. A significant effect will occur where the combination of sensitivity and magnitude of change results in the proposed development having a material effect on an aspect of the landscape and visual resource, so that it becomes defined by the presence of the proposed development. A not significant effect will occur where the effect arising from the proposed development is not material, and the baseline characteristics of the landscape and visual resource continue to provide a definitive influence. In this instance the proposed development may have an influence but this influence will not be definitive.
- 1.239 Following consideration of the characteristics of the proposed development, including its scale, siting and context, a 10km radius study area, centred on the site was selected for the purposes of visual appraisal (**Figure 18**). Illustrations have been produced in relation to this study area, including visualisations from five representative viewpoints around the study area, to support the visual appraisal, which were selected during fieldwork and in consultation with the Council.
- 1.240 Cumulative landscape and visual effects are the incremental effects that arise

through the interaction of two or more developments, whether of the same type or not, within the landscape and visual baseline context. Cumulative effects arise where the study areas for two or more wind farms overlap so that both of the wind farms are experienced at proximity where they may have a greater incremental effect, or where wind energy developments may combine to have a sequential effect, irrespective of any overlap in study areas. It is the incremental effect of the addition of the proposed development to the cumulative situation that is assessed in the LVIA, not the overall effect of multiple wind energy developments. Two or more adjacent developments may complement one another, or may be discordant with one another, and it is the increased or reduced level of significance of effects which arises as a result of this change that is assessed in the cumulative assessment.

- 1.241 The Cumulative LVA (CLVA) includes operational, consented and application stage wind energy developments as identified in the field and on Barnsley, Wakefield, Doncaster and Rotherham County Council's planning portals as of 1st March 2013. Domestic scale wind turbines, with a height less than 20 metres to blade tip, have been scoped out of the assessment as it is considered that the proposed development will not have significant effects in addition to these turbines. The CLVA focuses on identifying cumulative effects which may be a key consideration in determining the application, rather than an assessment of every potential cumulative effect.
- 1.242 The proposed development is set within a reclaimed colliery site in a fragmented landscape with industrial, urban and semi-rural qualities. The colliery site has been restored in recent years and is a mixture of agricultural fields, vacant land for future development and scrub/mixed woodland planting with large wetland ponds such as 'Ferry Moor Flash' by the A6195. The proposed wind turbine would be situated within an open area of sloping reclaimed land with some recreational infrastructure. The reclaimed sloping land rises from vacant industrial land in the northeast to wooded, recreational land at Cudworth Common to the south. The Landscape elements around the site are shown on **Figure 19** at the A3 section of this Environmental Report.

Landscape Character

- 1.243 Landscape character has been appraised within the 10km radius study area, centred on the proposed wind turbine as shown in **Figure 20**. Landscape character information is based on a combination of the desk and site surveys carried out by OPEN and the relevant Landscape Character Assessment documentation as follows:
- Countryside Character: Yorkshire and the Humber, Natural England (Natural England, 2002);
 - Barnsley Borough Landscape Character Assessment, 2002 (ECUS/LUC);
 - Peak District Landscape Character Assessment, 2008, Peak District National Park Authority; and
 - Rotherham Landscape Character Assessment and Landscape Capacity Study, 2010 (The Landscape Partnership), Rotherham Metropolitan Borough Council.
- 1.244 The site lies within the boundary of the Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA.

- 1.245 The proposed development is located within the administrative boundaries of Barnsley County Council and the 10 km Study Area extends into the administrative boundaries of Rotherham District Council to the southwest, Wakefield District Council to the north and Doncaster Council to the east. The council boundaries are shown in **Figure 18**.
- 1.246 In 2002, Barnsley County Council commissioned Land Use Consultants (LUC) and Environmental Consultancy University of Sheffield (ECUS) to produce the Barnsley Borough Landscape Character Assessment (BBLCA) which sub-divides the landscape into Landscape Character Types (LCT) and Landscape Character Areas (LCA) within the broader NCAs identified above.
- 1.247 LCTs are groups of landscapes with broadly similar characteristics of geology, landform, vegetation, land use, and settlement patterns. LCAs are geographically discrete examples of a particular LCT. LCAs share the same elements as the LCT, but also have their own individual character and identity.
- 1.248 Within the 10km Study Area, a total of three LCTs are identified within the Barnsley administrative boundary of which there are eleven LCAs. The BBLCA places the proposed turbine at the edge of the Settled Arable Slope LCT; the North East Barnsley LCA, near to the adjoining Lowland River Floors LCT; Lower Dearne Lowland River Floor LCA. Due to the proximity of the proposed development to the boundary, descriptions of both have been included in the baseline assessment.
- 1.249 The extent of the North East Barnsley Settled Arable Slopes that will be affected visually by the proposed development is illustrated in the ZTV in **Figure 30**.
- 1.250 The North East Barnsley Settled Arable Slopes LCA, in which the proposed development is located, is generally assessed as having a medium sensitivity and capacity for development in the BBLCA.

Landscape Designations

- 1.251 There are no national landscape designations within the 10 km study area of the site. The nearest area of national designation is the Peak District National Park which is situated approximately 18 km to the southwest (**Figure 21**).
- 1.252 There are no regional landscape designations within the 10 km study area of the site. The nearest area of regional landscape designation are the Nidderdale AONB and the Lincolnshire Wolds AONB which are situated approximately 42 km northwest and 70 km to the east respectively.
- 1.253 Doncaster County Council has identified an Area of Special Landscape Value (SLV) that occurs to the east of the Study Area, approximately 3.4 km from the proposed single turbine. Policy ENV 17 within the saved UDP policy states:
- 1.254 *'... protection and enhancement of the landscape will be the overriding factor in considering proposals for development. Such deployment as is acceptable will only be permitted where it would not detract from the visual character of the area and where the highest standards of design and landscaping are employed.'*
- 1.255 Rotherham District Council has identified an Area of High Landscape Value that occurs to the south of the Study Area, approximately 3.4 km from the proposed single

turbine. Within the Local Plan, policy ENV 1.2 states: *'In Areas of High Landscape Value, development other than for agriculture will only be allowed where it will not result in a significant, and permanent adverse impact on the landscape.'*

- 1.256 In the proposed Core Strategy, policy CS21 states: *'Within Areas of High Landscape Value, development will only be permitted where it will not detract from the landscape or visual character of the area and where appropriate standards of design and landscape architecture are achieved.'*
- 1.257 Although there are several Conservation Areas within the 10 km Study Area. Those nearest to the proposed development are at Brierley approximately 2.4 km to the northeast and Carlton approximately 3.5 km to the northwest.
- 1.258 PolicyCSP 30 within the Local Development Framework states: *'..Development which affects the historic environment and Barnsley's heritage assets and their settings will be expected to protect or improve:*
 - *the character and/or appearance of Conservation Areas...*
- 1.259 There are four Registered Parks and Gardens (RPG) within the 10 km study area of the proposed development. These are Hickleton Hall, Nostell Priory, Wentworth Castle and Locke Park.

Visual Receptors

- 1.260 There are a number of visual receptors, consisting of residential properties, settlements, road and rail routes, footpaths and features in the study area that require consideration in the assessment, as views from them may be affected by the proposed development. These are shown in **Figures 22** and **23**.
- 1.261 There are a number of properties in the surrounding landscape. The nearest residential properties are located approximately 450m to the west and 940m to the south in Cudworth. Residential properties within 1km of the proposed wind turbine are listed in **Table 6** of **Appendix 7**, with their approximate distance to the turbine, and shown in **Figure 22**.
- 1.262 There are settlements located to the west north and east. These developed along a horseshoe ridge line and provided accommodation for workers at Grimethorpe Colliery. The lower lying Dearne Valley to the south and southeast remains free of urban settlement. The closest settlements to the proposed site are Cudworth to the west and Grimethorpe to the east. The closest dwellings in these settlements is outlined in the table above. To the north of the proposed development are the settlements of Shafon Two Gates and Shafon. These adjoin Cudworth and are approximately 1.8 km and 2.3 km from the proposed development at their closest points. Between Shafon Two Gates and Grimethorpe is the settlement of Brierley to the northeast of the proposed development. Brierley is situated on a high plateau and has extensive views over Cudworth and the Dearne Valley to the south and southwest.
- 1.263 Within the study area, the largest concentration of settlement is to the southwest with the largest single settlement being Barnsley. Barnsley is a large town that spreads out to the west and southwest beyond the settlement of Cudworth. Settlement in general has kept to the higher, undulating ground with the lower lying areas around the River Dearne remaining undeveloped.

- 1.264 Settlement in the wider study area focuses on the large cities to the south and northwest where Sheffield, Wakefield and Leeds form large urban elements in the landscape. Buffering these are the large towns of Rotherham to the southeast and Pontefract, Normanton and Castleford to the north and northeast. Smaller towns such as Hemsworth to the northeast and Hoyland to the southwest fill the intervening landscape alongside small villages and scattered semi-rural dwellings. Settlement to the east/northeast consists of mainly small towns and villages, with Doncaster being the main urban centre to the southeast.
- 1.265 There are numerous 'A' roads connecting the surrounding urban settlements across the intervening landscape and a network of 'B' roads that fan out from the settlements, often following historic routes.
- 1.266 The A6195 road corridor passes closest to the proposed wind turbine. It is located approximately 500m to the east at its closest point and has been constructed on the former colliery site, locally adjacent to a dismantled rail line. In the wider landscape, the A6195 runs from Shafon Two Gates in the north and follows the low lying Dearne Valley, eventually connecting to the M1 to the southwest at Hoyland. Other nearby routes include the A628 which originates in Pontefract and passes through Brierley, Shafon and Cudworth to the north and west of the proposed development, eventually connecting into the M1, the Peak District and the M67 to the far west.
- 1.267 The M1 is the largest arterial route through the study area and it's closest section is located approximately 8.2 km to the southwest of the proposed development.
- 1.268 There are several rail lines in the study area. Passenger lines run to the west at Barnsley (4.5 km at its closest point), to the east (Pontefract, Thurnscoe to Sheffield) (6 km at its closest point) and northeast (Wakefield, South Elmsall to Doncaster) (5.6 km at its closest point). The nearest line is a freight line that runs from Barnsley in a northerly direction, connecting into a line to the southeast of Wakefield (1.5 km at its closest point).
- 1.269 There are three long distance walks in the study area. These are the Barnsley Boundary Walk, the Dearne Way and the Trans Pennine Trail. The Barnsley Boundary Walk at its closest point passes approximately 2.6 km to the northeast of the proposed development to the east of the settlement of Grimethorpe.
- 1.270 The Dearne Valley Way passes to the south of the proposed development and is approximately 2.1 km away at its nearest point. The Trans Pennine Trail is a network of national routes linking Liverpool and Southport in the west to Hull and Hornsey in the east and includes routes from York and Leeds in the north to Sheffield and Chesterfield in the south. The nearest section of the route passes through the settlement of Lindwood approximately 2.6 km to the west of the proposed development.
- 1.271 The National Cycle Routes (NCR) within the study area generally combine with the Trans Pennine Trail. NCR 67 runs roughly north-south from Loughbrough to Northallerton. The nearest section of the route passes through the settlement of Lindwood approximately 2.6 km to the west of the proposed development.
- 1.272 NCR 62 runs roughly east-west from Lancaster via Liverpool to Selby. The nearest section of the route passes approximately 4.4 km to the southwest of the proposed development.

- 1.273 There are several Public Right of Way (PRoW) in the area near the proposed development. These mostly converge at Ferry Moor Lane approximately 510m to the north of the proposed turbine location. From here the footpaths fan out to the settlement of Cudworth to the west and to the settlement of Grimethorpe to the east and, it is assumed, would have historically been used by workers at the colliery. Further footpaths connect settlements to areas of open land and other settlements. Views from these are likely to be restricted by intervening buildings.
- 1.274 There are several country parks within the study area. The closest of these is Dearne Valley Park which lies approximately 2.3 km to the southwest of the proposed turbine. It incorporates part of the Trans Pennine Trail and offers facilities for walking, cycling, angling, children's play and wildlife. Worsbrough Mill country park is the nearest large country park which offers events, workshops and activities and incorporates a museum and extensive visitor facilities. It is situated approximately 6.5 km to the southwest.
- 1.275 Barnsley has several attractions including Monk Bretton Priory, Locke Park, and the Cooper art gallery as well as tourist information centres and hotels. Other tourist attractions include Cannon Hall Museum, Park and Gardens, and, Victoria Jubilee Museum approximately 11.5 km to the west, Elsecar Heritage Centre approximately 8.7 km to the south, Wentworth Castle approximately 8.7 km to the southwest, and Nostell Priory, 8.4 km to the north.

Visual Amenity and Viewpoints

- 1.276 The existing visual amenity varies between the heavily settled areas surrounding the proposed development and the lower lying river valleys that run throughout the study area and add a more rural context to views. Generally settlement is spread throughout the undulating landscape in the study area with the greatest concentration to the west and south. Transport infrastructure and industry are also widely visible as elements surrounding and between the settlements.
- 1.277 Views within settlements vary, with many settlements situated on hills and steeply rising landforms which offer views from both the elevated edges of the settlement and from within the rising slopes settlement over or between other buildings (VP2). Some settlements offer long range, elevated views over the surrounding undulating landscape (VP3 and 6). Conversely other settlements experience restricted views due to their position in lower lying areas or beyond the undulating landforms. This is illustrated in the ZTV in **Figure 26**.
- 1.278 The Lower Dearne Lowland River Floor LCA is characterised by landscape elements based on deep and opencast coal mining, with disused collieries and associated railway lines notable features in the area. Mining restoration has led to some sensitive landscape restoration for recreational use which coexist alongside the development of roads and warehouses. Arterial road routes, in particular the A6195 and traverse the study area as well as rail routes which connect the surrounding towns and cities.
- 1.279 Long distance walks criss-cross the study area, taking advantage of elevated views and semi-rural river valleys.
- 1.280 The assessment of landscape and visual effects is informed by 8 viewpoints which

were selected to cover locations with specific receptors of importance within the Zone of Theoretical Visibility (ZTV) for the proposed development.

- 1.281 These include local settlements, footpaths and road routes from which the proposed development may be visible. A variety of landscape character areas and locations from different directions and at varied distances have also been represented in the selected views. These viewpoints were selected through desk study, field work and consultation with Barnsley Metropolitan Council.
- 1.282 The viewpoint assessment is used to inform and illustrate the assessment of effects on visual receptors and landscape character. The viewpoints included in the visual assessment are listed in **Table 7** of **Appendix 7** on the CD of Appendices.

Cumulative Baseline

- 1.283 Operational, consented and application stage wind energy developments in the study area are listed in **Table 7** and shown in **Figure 28**.

Table 7 - Cumulative Wind Energy Developments

WIND ENERGY DEVELOPMENT	NUMBER OF TURBINES	BLADE TIP HEIGHT (M)	DISTANCE FROM PROPOSED DEVELOPMENT
Consented			
Royd Moor	2	71	6.5km

- 1.284 The theoretical cumulative visibility of the proposed development has been assessed using Cumulative Zone of Theoretical Visibility (CZTV) maps for each scenario (**Figure 29**).

Assessment of effects

- 1.285 An assessment of the landscape effects resulting from the proposed development has been undertaken for physical landscape resources within the application site, landscape character (types/areas) and landscape designations within the study area.
- 1.286 The assessment of visual effects resulting from the proposed development is assessed through an analysis of the Zone of Theoretical Visibility (ZTV) and a viewpoint assessment.
- 1.287 The principal physical effect that the proposed development will have on the landscape fabric of the site is the removal of small areas of reclaimed recreational land. The proposed development will result in a small removal of grass ground cover, but this is assessed as not significant because it is a relatively small area, which could be reinstated relatively easily following the decommissioning of the proposed development.
- 1.288 The North East Barnsley Settled Arable Slopes LCA, in which the proposed development is located, is generally assessed as having a medium sensitivity and

capacity for development in the BBLCA. The agricultural slopes which form the setting to the developed ridge lines are identified as having a higher sensitivity to development within the character area. The proposed development is located in a restored, former colliery site which still maintains engineered and modified elements on the lower slopes of former agricultural land. The former colliery site has been partly put into recreational use at Cudworth Common and partly zoned for light industrial use. The proposed turbine will be located in a transitional area between the two uses and is assessed as having a medium-low sensitivity to change to the proposed development due to the highly modified nature of the site.

- 1.289 The changes to the character of the landscape resulting from the proposed development are assessed as being of medium to low magnitude within the east, southeast and south facing slopes of the Cudworth/Shafton/Brierley/Grimethorpe ridge line encircling the Lower Dearne valley, and a low to negligible magnitude in the wider LCA. There are no significant effects on landscape character.
- 1.290 The ZTV of the proposed development (**Figures 24 - 27**) shows that it will be relatively contained within the ridge line encircling the proposed development, extending as far south as Darfield - with a further band of theoretical visibility along slopes to the north and northeast of Barnsley. Much of this area is along the sloping sides of the river valley and is agricultural land with a strong urban edge element.
- 1.291 There are a number of towns, transport and recreational routes within this area that will have visibility of the proposed development, which have been assessed in the visual assessment.
- 1.292 In general, the assessment of effects on views found that there will be many visual receptors within the study area that will have limited or no visibility of the proposed development, or receptors which are located at longer distances where there may be visibility, but where the proposed development will not re-define the view. The assessment found that the proposed development will have no significant effects on the majority of settlements (towns and villages) in the study area with the exception of the settlements immediately surrounding the proposed development at Cudworth and Grimethorpe. Significant effects will be experienced by a relatively small number of properties along the edges of the settlements facing the proposed development at Cudworth, with views possible on elevated ground from Grimethorpe. The assessment found that the proposed development will have a significant effect on the A6195 for a short section where views are channelled along the road as the viewer travels towards the proposed development from the southeast and as the viewer travels in close proximity to the proposed development around Ferrymoor Roundabout. There are no significant effects on other transport routes, including railway lines within the study area, the M1, A828, A635 and the B6273 road corridors.
- 1.293 The assessment of effects on views indicates that the proposed development will only have significant effects on views and visual receptors at relatively close range, within the immediate locality of the proposed development.
- 1.294 Significant effects on views were assessed at Viewpoints 1 (Ferrymoor Way), 2 (Grimethorpe, Taylor Crescent), 5 (Cudworth, Tippet Lane), 7 (A6195, Engine Lane) and 8 (A6195, Ferrymoor Flash) which are representative of the significant effect on views experienced locally by residents, walkers and road users in the areas

immediately surrounding the proposed development to the west, north and east.

- 1.295 Significant effects have been assessed on a number of properties within 1 km of the proposed development - predominantly along the western edge of the settlement of Cudworth, where the properties have elevations facing towards the proposed development. In some cases, garden boundary planting and outbuildings within these properties will provide some screening in views from ground level. There will be no effect on the visual amenity of these properties.
- 1.296 As well as assessing the effect of the proposed development itself on baseline conditions, the landscape and visual assessment also assessed the cumulative effect that the addition of the proposed development may have in conjunction with other operational, consented, and application stage wind energy developments. There are no operational or application stage wind energy developments within the study area, and one consented, small scale wind turbine development at Royd Moor to the northeast of the proposed development. The proposed development is the only wind turbine identified in the assessment within the North East Barnsley Settled Arable Slopes LCA and will be perceived as an individual development that will have no significant effect on the character or features of the LCA at either a local or wider scale.
- 1.297 The assessment of cumulative effects on views found that the proposed development will not have significant effects on the majority of settlements, villages and road corridors in the study area. Cumulative ZTV analysis showed that most of the theoretical cumulative effects were restricted to a narrow area along the ridge line at Brierley, with further, more distant potential cumulative effects along slopes to the western half of the study area where mainly Royd Moor blades are theoretically visible above intervening landform.
- 1.298 Actual views of the proposed development in conjunction, combination or succession with the Royd Moor turbines were assessed as being restricted by landform, vegetation and surrounding built development.
- 1.299 It is inevitable with the development of a tall and moving structure that some significant visual effects are likely to occur. The LVA has indicated that the visual effects of the proposed development will be of a localised nature and that they will only occur where a clear line of sight to the turbine can be achieved, and at a relatively close range. Beyond the immediate locality of the proposed development, it has been found that the proposed turbine, whilst remaining visible in some views, would not be a defining feature but would appear as a relatively small element within the wider composition.
- 1.300 The proposed development is located in a landscape in which small, sensitively sited wind energy developments can relate well to the existing landscape character and results in few significant landscape and visual effects.
- 1.301 FOR THE FULL LANDSCAPE ASSESSMENT REPORT PLEASE SEE **APPENDIX 7** OF THE CD APPENDIX.



Aviation

- 1.302 Wind turbines can have an impact on aviation operations, either as a result of being a physical hazard during the landing or take off of aircraft by interrupting an aerodrome's 'protected airspace' or as a result of being visible on a radar used for the guidance of aircraft when in flight.
- 1.303 Under NPS EN-1, developers are required to consult with Defence Estates (Ministry of Defence, MoD), Civil Aviation Authority (CAA), National Air Traffic Services (NATS) and any aerodrome likely to be affected by the proposed development, to determine whether or not the proposal will conflict with their activities.

Defence Estates

- 1.304 Formal consultation for a wind turbine at Shafton was initiated in October 2012. At the time of writing, no response was received from the MoD although it is known that the MoD are currently experiencing high levels of consultation and so prioritise responses to formal planning applications. Please see **Appendix 8** of the CD Appendix for copies of this correspondence.
- 1.305 The closest MoD base to the proposed turbine is RAF Church Fenton at approximately 33km to the north/north-east. However, Defence Estates recently confirmed that RAF Church Fenton is set to close at the end of 2013 as part of the government's strategic defence and no impacts are therefore anticipated.
- 1.306 The nearest active radar equipped MoD aerodrome is located at RAF Linton-on-Ouse, approximately 55km north of the proposed turbine. Initial line-of-sight investigations suggest that there are blocking points created by the terrain between the radar at RAF Linton-on-Ouse and the proposed turbine at Shafton. As such, and given the distance between the sites it is not anticipated that the proposed turbine will impact on operations of RAF Linton-on-Ouse or its infrastructure.