Ovenden Moor Repower
Non Technical Summary
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Yorkshire Wind Power Ltd

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1 Introduction

1.1 Introduction

1.1.1 Yorkshire Wind Power Ltd (YWPL) is seeking planning permission from Calderdale Council to construct, operate and decommission nine wind turbines in order to repower Ovenden Moor Wind Farm, 2.5km west of Ogden in West Yorkshire; replacing the existing 23 turbines at the site.

1.1.2 Throughout this document the proposed Ovenden Moor Repower is referred to as the ‘proposed development’.

1.1.3 The Town and Country Planning (Environmental Impact Assessment Regulations) 2011 require an Environmental Impact Assessment (EIA) to be carried out; and the results of the EIA to be included in an Environmental Statement (ES) to accompany the planning application to Calderdale Council.

1.1.4 EIA is an assessment process applied to developments that potentially have significant effects on the environment. A helpful introduction is provided by the Institute of Environmental Management and Assessment (IEMA): “the EIA process ensures that potential effects on the environment are considered, including natural resources such as water, air and soil; conservation of species and habitats; and community issues such as visual effects and impacts on the population. EIA provides a mechanism by which the interaction of environmental effects resulting from development can be predicted, allowing them to be avoided or reduced through the development of mitigation measures. As such, it is a critical part of the decision-making process.”

1.1.5 This document is the Non Technical summary of the ES. The ES comprises:

- Volume 1 - Environmental Statement - Main Text
- Volume 2 - Environmental Statement - Figures
- Volume 3 - Environmental Statement - Appendices
- Non Technical Summary (this document)

1.1.6 Consultation responses should be provided to Calderdale Council planning department at http://www.calderdale.gov.uk/environment/ or telephone 0845 245 6000.

1.1.7 Electronic copies of all documents can be made available at a fee of £10 per DVD. Cheques should be made payable to AECOM Ltd, with your name and address on the back. Please contact the following:

Ovenden Moor Repower

c/o AECOM, Portwall Place, Portwall Lane, Bristol BS1 6NA

Contact: Sarah Milne or Sophie Collins 0117 901 7000.

1.1.8 The ES can also be downloaded from http://www.eon-uk.com/generation/ovendenmoorrepower.aspx
2 Site Context and Scheme Description

2.1 Site Context

2.1.1 The proposed development is located approximately 2.5km west of Ogden, in Yorkshire. The land available for development is indicated by the green line boundary in Figure 2.1.

2.2 Background to the Proposed Development

2.2.1 Investigations into the proposed repowering have been ongoing for a number of years. YWPL first considered repowering Ovenden Moor in 2002/3 and undertook a number of environmental and technical studies but did not submit a planning application at that stage.

2.2.2 In 2008 YWPL submitted an application to Calderdale Council to repower the existing Ovenden Moor Wind Farm. The application outlined plans to replace the existing 23 turbines (with a total capacity of 9.2MW) with ten turbines (with a total capacity of up to 23MW).

2.2.3 An EIA was undertaken to determine how the repowering would affect the environment. The findings of the EIA were published in the planning application which was submitted in 2008. As part of the planning application process, consultees reviewed the ES. During the review period, a request was made for further information associated with the Ornithology and Ground Condition EIA investigations. The collation of further information identified that the siting of nine turbines instead of the proposed ten, would be preferable when considering environmental impacts.

2.2.4 As a result of the change from a ten to a nine turbine layout, Calderdale Council requested that YWPL withdraw the 2008 planning application and resubmit a new application. This Non Technical Summary contains information on the nine turbine layout, which is referred to as the ‘proposed development.’

2.2.5 The baseline data (such as ecology field survey results) from the 2008 ES have informed this assessment, although desktop data searches have been updated.

2.3 Description of the Proposed Development

2.3.1 The land available for development amounts to approximately 267ha, however the proposed development itself will occupy a much smaller area for the operational phase, due to the relatively small footprint of the turbines and associated infrastructure. Existing land use will continue across the remainder of the development site.

2.3.2 The proposed development itself will occupy a much smaller area of approximately 31.59ha. This is shown as the red line boundary in Volume 2, Figure 1.4 of the Environmental Statement. This includes a micrositing allowance of 50m for turbines and related infrastructure, and 5m for the new access tracks; plus blade oversail for the turbines. The actual footprint of infrastructure (excluding micrositing and turbine blade oversail) is 6.15ha. Micrositing is required as it is possible that as the project progresses to a detailed design and construction stage, additional factors influencing layout may become apparent, for example unforeseen ground conditions following post-consent detailed site investigation works.

2.3.3 The proposed development comprises the construction, operation and decommissioning of nine 3-bladed wind turbines. The turbines will be limited to a maximum tip height of 115m above ground level. The turbine model selected will have a generating capacity of up to 2.5MW, giving a total capacity for the proposed development of up to 22.5MW.

2.3.4 The proposed development also includes the following:
   • Upgrade of the existing tracks;
   • Construction of new access tracks linking the onsite infrastructure together with passing places and turning areas;
   • Installation of an onsite underground cable network running alongside the new access tracks;
   • Construction of a new onsite control building and substation;
   • Upgraded watercourse crossings;
Capabilities on project:
Environment

- Upgraded entrance to the wind farm from Cold Edge Road;
- Construction of crane hardstandings next to each turbine position to facilitate installation;
- Erection of one permanent anemometry mast of up to 75m; and
- A temporary compound.

2.3.5 The proposed locations of the turbines, access tracks and other site infrastructure are shown on Figure 2.2.

2.3.6 The proposed development will be connected to the electricity distribution network via a new electrical connection. Electricity from the proposed development will be exported from the new onsite substation. The responsibility for the grid connection, including the design and type (underground or overground) lies with the local Distribution Network Operator (DNO).

2.3.7 The design team has followed good practice EIA guidance and employed an iterative approach to the design of the proposed development. The design evolved throughout the EIA process as different constraints and adverse and beneficial effects were identified and evaluated. This approach is considered best practice as, throughout the EIA process, mitigation measures were integrated into the design to reduce or remove adverse effects; additionally, measures were incorporated into the design to enhance positive effects. Figure 2.3 shows how constraints have influenced the layout design process.

2.4 Construction

2.4.1 The length of the construction programme will be subject to variation depending upon the date that planning permission is granted, to meet certain planning conditions (for example certain construction activities might be limited in particular areas of the site during particular times of the year) and due to prevailing weather conditions, but a construction programme of twelve months duration is typical for a scheme of this size.

2.4.2 The following enabling works will be undertaken in the post-consent/pre-construction period:
- Detailed site investigations;
- Consultation with regulatory authorities; and
- Obtaining any necessary consents (e.g. pipeline crossings, land drainage modifications).

2.4.3 The construction process will consist of the following principal activities:
- Establish site access;
- Formation of temporary construction compound;
- Upgrade and construction of on-site access tracks, passing places to inter-link the turbine locations and other site infrastructure;
- Construction of control building and substation;
- Excavation and construction of turbine foundations;
- Construction of hardstandings/crane pads;
- Erection of permanent anemometry mast;
- Excavation of trenches and cable laying adjacent to site tracks;
- Connection of on-site distribution and communication cables;
- Delivery and installation of turbines;
- Commissioning of site equipment; and
2.4.4 Construction activities have been assumed to take place between 07:00 and 19:00 hours Monday to Friday and between 07:00 and 13:00 on Saturdays. Work outside these hours may be necessary, in order to make the site safe or due to unforeseen circumstances, however the need for it will be agreed with the local authority prior to the commencement of any construction activities.

2.4.5 No permanent closure or diversion of any Public Rights of Way (PRoW) will occur within the site boundaries. PRoWs crossing the site may require temporary closure/diversion during construction and will be agreed with Calderdale Council and advertised prior to any closure. YWPL will upgrade a section of the footpath which is in poor condition to the east of Turbine 9, as part of the construction activity. It may be necessary to apply for temporary closures of the ‘Open Access’ land (under the Countryside and Rights of Way Act 2000) around the construction activity, for health and safety reasons.

2.5 Operation and Decommissioning

2.5.1 Planning permission is sought for 25 years, at the end of which the proposed development will be decommissioned. A plan for decommissioning will be agreed with Calderdale Council nearer the time.

2.5.2 Current best practice includes the removal of all above ground structures; the removal of all underground structures to at least one metre below ground level with structures beneath this level to remain in situ. This approach is considered less environmentally damaging than the complete removal of all above and below ground structures from the site. Regeneration of the moorland would be encouraged on a covering of topsoil.
Capabilities on project:
Environment

Figure 2.3 - Environmental Constraints Plan
3 Rationale for the Proposed Development

3.1 Combating Climate Change

3.1.1 Change in global and regional temperatures and precipitation patterns is a natural phenomenon and there have been a number of cooling and warming periods recorded over the last millennium. However in the late 1980s a growing concern emerged that climate change was being influenced by anthropogenic activity beyond the normal fluctuations. The main contributing activities include emissions of greenhouse gases (in particular carbon dioxide (CO2), sulphur dioxide (SO2) and oxides of nitrogen (NOx)) into the atmosphere and other effects such as land use changes which reduce the ability of the natural environment to recycle these gases. A significant proportion (56%) of the increased greenhouse gas emissions arise from the burning of traditional fossil fuels such as coal, oil and gas for energy generation, heat generation and transportation. Reducing the extent to which electricity is produced by burning fossil fuels will reduce the amount of harmful greenhouse gases released into the atmosphere.

3.1.2 One of the principal contributors to the build-up of greenhouse gases is the use of fossil fuels in electricity generation. In the UK, 66% of CO2 emissions are attributable to electricity and heat production (BERR, 2007). Reducing the extent to which electricity is produced by burning fossil fuels will reduce the amount of harmful greenhouse gases released into the atmosphere.

3.1.3 Power from the wind has been harnessed for centuries through the use of windmills. The use of wind turbines to generate electricity has expanded rapidly since the energy crises in the 1970s when it first became evident that reliance on fossil fuels was unsustainable. Wind turbines are the most established form of renewable energy technology, with other technologies (such as tidal, wave and solar) lagging behind in generating potential and commercial terms.

3.1.4 Wind farms offer other important advantages. Firstly, they contribute to a reduction in our dependence on the finite reserves of fossil fuels, which are being rapidly depleted and the costs of which are rapidly escalating. Secondly, they reduce our dependence on oil and gas imports and increase our self-sufficiency in energy production. Wind farm developments are also reversible. This key feature allows a site to be decommissioned to the extent that no visible trace of the wind farm is apparent, thus allowing a site to retain its environmental legacy. Existing land uses, such as livestock grazing, can also generally continue alongside an operational wind farm.

3.1.5 The UK is the windiest country in Europe, with over 40% of the available resource. Advances and improvements in technology have resulted in the financial cost of wind power falling close to those of conventional sources of electricity. In addition, the life cycle carbon cost of wind power is significantly smaller than that of other forms of conventional and renewable energy production (BWEA, 2008).

3.1.6 It is clear from international, European and UK policy, strategy and plans that there is a need to promote energy production from renewable sources and to cut CO2 emissions. The Climate Change Act 2008 creates legally binding targets of a reduction of at least 80% of greenhouse gas emissions by 2050, with a reduction in CO2 by at least 26% by 2020 against a 1990 baseline.

3.1.7 In July 2009 UK Renewable Energy Strategy was published which sets out the means by which the UK will meet its legally-binding targets under the EU Renewable Energy Directive. The UK’s contribution to the EU target is to increase the share of renewables in the energy mix to 15% by 2020, which represents a seven-fold increase in UK renewable energy production. The UK Low Carbon Transition Plan was also published in July 2009 and sets out how the UK will cut emissions, maintain secure energy supplies, maximise economic opportunities and protect the most vulnerable.

3.1.8 The Planning Statement, submitted with the planning application, outlines the guidance and policies directly related to the Ovenden Moor Repower.

3.2 The Local Challenge

3.2.1 Onshore wind farms above 50MW output are considered to be nationally significant and are considered in accordance with National Policy Statements (NPS). Whilst the Ovenden Moor Repower is smaller in scale, these NPSs are still a material consideration in decision making.
3.2.2 The NPS for Energy sets out Governmental policy on climate change, and how the energy sector can deliver new low carbon energy infrastructure. Potential benefits (e.g. job creation, contribution to energy infrastructure needs) should be considered alongside potential adverse impacts, whilst also considering long-term, cumulative impacts, and measures to avoid/reduce/compensate for such adverse effects. The National Policy Statements for Energy note that “wind is the most well established and currently the most economically viable source of renewable energy available in the UK.”

3.2.3 At the end of March 2012, the National Planning Policy Framework (‘NPPF’) was published by the Government (Department for Communities and Local Government). The NPPF took effect on publication and consolidated many of the previous policy documents in relation to planning decisions in England. The NPPF maintains the national policy support for the transition to a low carbon economy and encourages the use of renewable resources for instance by the development of renewable energy.

3.2.4 ‘Planning for Renewable Energy A Companion Guide to Planning Policy Statement 22 (ODPM, 2004) (‘Companion Guide’) remains relevant in the determination of this planning application. The Companion Guide is intended to assist planners, regional and local decision makers and other stakeholders to understand matters associated with renewable technology and their application in different environments.

3.2.5 The NPPF highlights the importance of the Development Plan when assessing planning applications. The Development Plan includes the following:

- Regional Spatial Strategy for Yorkshire and the Humber to 2026 (2008); and

3.2.6 The Regional Spatial Strategy notes that “the Region will maximise improvements to energy efficiency and increases in renewable energy capacity” with a target of installing at least 53MW of grid-connected renewable energy by 2021 in Calderdale. The Ovenden Moor Repower would contribute towards achieving this goal.

3.2.7 The Replacement Calderdale Unitary Development Plan (Calderdale UDP) was adopted in 2006, and amended in 2009, and forms part of the Development Plan against which development proposals must be assessed. In 2009 the Secretary of State issued a direction of the ‘extended policies’ in the Calderdale UDP that remain pertinent for the determination of development proposals, pending the transition to a new Local Plan.


3.2.9 In accordance with the requirements of the Localism Act 2011, and taking into account the NPPF, Calderdale Council is progressing a Local Plan for Calderdale. It expects to adopt the Core Strategy part of the Local Plan in early 2014 and the Land Allocations and Designations part of the plan in the latter part of 2015. In this respect, the emerging Calderdale Local Plan is in its relatively early stages of preparation and carries limited weight as a material consideration in relation to the determination of the Ovenden Moor Repower planning application.

3.2.10 Various other local policies exist, for example in relation to landscape character and environmental protection. These are addressed further in Chapter 5 of the ES and the Planning Statement.
4 Key Environmental Effects

4.1 Introduction

4.1.1 An Environmental Impact Assessment (EIA) was carried out to assess potential significant effects on key environmental receptors.

4.1.2 The following sections provide summaries of the findings of the technical investigations of the EIA.

4.2 Landscape and Visual Assessment

4.2.1 The final design of the proposed development has been optimised, taking account of the technical, economic and environmental constraints, and has achieved a turbine layout which relates to the scale and landform of the site and its surroundings. Viewpoints were selected as part of the design process including settlements and public rights of way.

4.2.2 The landscape character areas and potential visual receptors with predicted visibility from the 35km Zone of Theoretical Visibility (ZTVs) were assessed.

4.2.3 Landscape effects derive from changes in the physical landscape which may give rise to changes in its character and how this is experienced. Visual effects relate to changes that arise in the composition of available views as a result of changes to the landscape. It should be noted that any significant effects are reversible upon decommissioning.

4.2.4 The proposed development would introduce a smaller number of turbines than at the existing wind farm, which would present a more simple composition on the skyline, and the extent of visibility of the proposed development would be similar to that of the existing wind farm. The proposed development would not alter the topographical characteristics of the landscape and would not represent a wholly new feature in the landscape due to the presence of the existing Ovenden Moor Wind Farm as well as other wind farms visible within the study area.

4.2.5 The increased size of the turbines in relation to the existing wind farm would result in significant effects on landscape character and visual amenity. As the distance increases from the proposed development, the magnitude of change caused by the taller height of turbines would be reduced and it is anticipated that significant effects would be limited to distances up to approximately 9km from the proposed turbines.

4.2.6 Ovenden Moor Repower would have limited visibility from the rail network. Visibility and significance of effect from the A6033, A629 and A646 varies with distance from the site. Various recreational and tourist routes bisect the study area, including National Cycle Routes and National Trails. Visibility of the Ovenden Moor Repower from these routes depends on topography, presence of vegetation and built form. For example visibility would be confined to a 4km section on Burnley Way (total length in study area is 64km). Significant effects on visual amenity for walkers along parts of the Bronte and Pennine Way are predicted, particularly in combination with other wind farm proposals.

4.2.7 There would be significant effects on views from the smaller villages and towns to the immediate north, east and south of the proposed development due to their closer proximity to the proposed development. However, most views within these settlements would be restricted by intervening buildings and vegetation and generally, significant effects would only occur on the perimeter of the settlements.

4.2.8 No significant effects are predicted upon the Yorkshire Dales National Park, Peak District National Park, Nidderdale Area Of Natural Beauty (AONB), or Forest of Bowland AONB, although significant impacts are expected upon the Calderdale Council Special Landscape Area.

4.2.9 Significant effects upon landscape character would occur in the High Moor Plateaux Landscape Character Area (LCA) which would decline with distance. Similarly, significant effects which decline with distance are predicted for the Pennine Uplands (Gritstone Moorland), Worth & North Beck Valleys, and Wilsden LCAs. These LCAs would also experience significant effects when Ovenden Moor Repower is considered in combination with other proposed wind farms in the 35km study area.

4.2.10 When the proposed development is considered in relation to existing wind farms, those under construction and those with planning permission but not yet built, significant cumulative effects in relation to visual amenity and landscape character generally derive from the Ovenden Moor Repower with the existing turbine at Naylor Hill Quarry within the
Worth Valley to the north. The significant cumulative effects are localised to the Worth Valley to the north and surrounding ridgelines and plateau to the east and west of the proposed development. For locations at greater distances and away from this locality, no significant cumulative effects are predicted from Ovenden Moor Repower in relation to the existing wind farm, those under construction and consented.

4.2.11 It is also appropriate to consider Ovenden Moor Repower in relation to wind farms in very early stages of the planning process, e.g. undertaking consultation on the scope of the EIA, where such developments are proposed in close proximity to Ovenden Moor. Therefore, when considered in relation to wind farms which are operational, under construction, consented and also those in scoping, there would be significant cumulative effects on the visual amenity and landscape character of receptors surrounding Ovenden Moor from the Ovenden Moor Repower when viewed in conjunction with the existing turbine at Naylor Hill Quarry and the scoping stage development at Thornton Moor. These would be prominent features visible from the settlements present on the valley floor.

4.2.12 When considered in relation to other existing and consented wind farms, there is sufficient separation between the Ovenden Moor Repower and these developments to minimise any significant cumulative effects.

4.2.13 Significant cumulative effects on visual amenity and landscape character are also predicted of the Ovenden Moor Repower when combined with Thornton Moor alone. Thornton Moor wind farm is currently ‘in scoping’ and there can be limited weight attached to predicted effects of the Ovenden Moor Repower with this development due to the uncertainty regarding its progress through the planning system. Consequently the significant cumulative effects of Ovenden Moor Repower in relation to the existing wind energy developments (operational, under construction and consented) are restricted to locations with visibility of Naylor Hill Quarry located within the Worth Valley, to the north of Ovenden Moor.

4.2.14 The Ovenden Moor Repower would feature a group of turbines in a simple, open and large scale landscape. These characteristics are generally those associated with associated with a higher capacity to accommodate wind energy development, as acknowledged in the Landscape Capacity Study for Wind Energy Development in the South Pennines, (2010).

4.3 Noise

4.3.1 The EIA carried out an assessment of potential operational noise impacts associated with the proposed Ovenden Moor Repower on the residents of nearby occupied dwellings.

4.3.2 The assessment has been carried out with reference to existing Government guidance and the recommendations of the Department of Trade and Industry (DTI) Noise Working Group on Noise from Wind Turbines that are contained within ETSU-R-97 ‘The Assessment and Rating of Noise from Wind Farms’. Both the level of noise created by the turbines once operational and the background noise levels at nearby properties are dependent on wind speed.

4.3.3 The noise assessment study area encompassed the land surrounding the proposed development and considered the operational noise effect of the wind turbines on five noise sensitive receptors (NSRs), previously agreed with Calderdale Council and considered to be representative of noise impacts across the locality overall.

4.3.4 Quiet daytime and night-time criterion were established, following exclusion of data measured during periods of rain fall or when resident advised ‘atypical’ noisy activity took place, in accordance with ETSU-R-97.

4.3.5 Predictions of wind turbine noise have been made, based upon a sound power level for a Nordex N80 ‘noise optimised’ 2.5MW (75m hub height) wind turbine, which is representative of the type of turbine that could be installed at the development site. The noise prediction procedure can be considered to be worst case i.e. to overestimate the potential for wind farm noise.

4.3.6 The predicted wind turbine immission noise levels, for each integer wind speed from 3-12ms⁻¹ is predicted to be below the ETSU-R-97 daytime upper noise limit criterion for all receptors. Furthermore, the ETSU-R-97 daytime lower noise limit criterion is achieved at all receptors except Withens Head Farm and Old Withens Head where small exceedences of up to 1.9dB at Withens Head Farm in windspeeds between 5 and 9ms⁻¹, and up to 1.0dB at Old Withens Head in windspeeds of 6ms⁻¹.
4.3.7 The noise level from the Ovenden Moor Repower is predicted to be below the ETSU-R-97 derived noise limit for night time.

4.3.8 No significant residual noise impacts from the operation of the Ovenden Moor Repower are predicted.

4.3.9 An assessment of cumulative impacts arising from two nearby wind developments which are both approximately 5km from the proposed development, Thornton Moor (which does not yet have planning permission and is in EIA scoping stage) and Naylor Hill Quarry, concluded that the ETSU-R-97 noise criteria are achievable across the wind speed range 3 ms\(^{-1}\) to 12 ms\(^{-1}\) at all assessment locations. All other wind farms in the vicinity of the proposed development are considered to be separated by a sufficient distance as to not cause any cumulative noise effects.

4.3.10 It is proposed that construction and decommissioning noise for the Ovenden Moor Repower can be dealt with through the imposition of conditions requiring the submission and approval of management plans. As such, no construction and decommissioning noise assessment has been carried out.

4.4 Ecology

4.4.1 The ecological assessment comprised the following:

- Identification of statutory and non-statutory designated areas within or up to 30km of the centre of the development site;
- Identification of any rare, notable or protected species or habitats present within 10km from the centre of the development site;
- Consideration of the potential for adverse effects on valued ecological receptors arising from the proposed development including an assessment of likely significant effects upon the nearby Special Area of Conservation;
- Description of environmental measures which mitigate adverse effects within or adjacent to the site; and
- Identification of residual effects, including those considered to be significant, taking into account the above assessment.

4.4.2 The results of the desktop and habitat surveys informed the need for further reptile and amphibian surveys and the results of these have been used to identify any significant effects that may arise from the proposed development, and to develop mitigation measures to reduce the significance of any adverse effects. The significance of these effects has been reduced through amendments to the scheme design or by developing methodologies or general good practice principles to be followed during construction and operation.

4.4.3 The proposed development will not have an adverse effect on any designated wildlife sites, including the Special Area of Conservation.

4.4.4 There will be a small loss of blanket bog and heathland habitat as a result of the proposed development. A Habitat Management Plan will be implemented in consultation with stakeholders such as Natural England and secured by planning condition.

4.4.5 There will be temporary impacts upon reptiles and amphibians during construction but mitigation measures will avoid significant impacts.

4.4.6 The overall long-term residual effect of the proposed development on the identified ecological receptors, based upon the full adoption of all mitigation, compensation and enhancement measures proposed within the ES, is assessed as slight adverse and non significant.

5 Ornithology

5.1 This assessment was based upon a desk-based assessment and data search; supported by field work undertaken for the 2008 ES such as:
Capabilities on project:
Environment

- Breeding bird surveys of the proposed wind farm site and its surrounds;
- Wintering bird surveys to determine the birds that may be affected by the proposed development at that time of year;
- Vantage point counts to record the number of bird movements across the proposed wind farm site and its surrounds;
- Collision risk modelling for all key target species recorded in the collision risk zone at rotor height to predict the number of annual bird collisions as a result of the proposals;
- Evaluation of the ornithological importance of the study area, assessment of the likely effects of the proposed development on the ornithological features identified and recommended mitigation measures if necessary; and
- Evaluation of the residual effects of the proposed development after mitigation measures are incorporated.

4.5.2 A Special Protection Area lies within 200m of the site boundary. The site is designated for its internationally important breeding birds.

4.5.3 Collision risk modelling was carried out for golden plover, curlew, snipe, peregrine and oystercatcher (other species were not recorded at the site in sufficient numbers to construct a model).

4.5.4 No significant adverse effects were predicted with all species experiencing collisions of less than or equal to one per year with curlew being most at risk with one predicted collision per year. The next worst potential collision rate was less than one per year for golden plover.

4.5.5 Displacement through construction was also considered for those species nesting close to the site boundary. Small numbers of breeding pairs would be affected for a small period of time and the populations locally would be able to re-establish post construction.

4.5.6 No significant cumulative impacts are predicted owing to the distance of close to 5km between the two nearest neighbouring proposed or actual wind farms.

4.5.7 Overall, there are not likely to be any significant impacts on ornithology. A Construction Management Plan will be implemented, which would be likely to include guidance on environmental protection and procedures for working in close proximity to sensitive habitat.

4.6 Cultural Heritage

4.6.1 The archaeological and cultural heritage assessment chapter examines the known archaeology and built heritage for the proposed development.

4.6.2 The scope of assessment was to:
- Determine the presence of known archaeology and built heritage sites that may be affected by the proposed development;
- Assess the likely potential of finding previously unrecorded archaeological remains during the construction programme;
- Identify potential impacts upon the setting of known archaeological sites in the surrounding area;
- Assessment of the likely significant effects of the development on the historic environment; and
- Suggest mitigation measures based upon the results of the above research.

4.6.3 The study found 45 heritage assets within the immediate study area although no World Heritage Sites, Scheduled Monuments, Listed Buildings, Registered Parks and Gardens or Battlefields were noted. The known assets mainly consist of early prehistoric find spots and industrial mineral extraction sites of 19th Century date.
4.6.4 During construction activities there are no anticipated direct effects on any known heritage assets or archaeological sites, with the exception of potential impacts which may occur upon a short length of a former quarry tramway associated with the upgrade to the existing site entrance. This impact is not considered significant.

4.6.5 The visible remains of the tramway will be recorded through drawn and photographic record.

4.6.6 The assessment of impact on setting included three Scheduled Monuments, six listed buildings and two Conservation Areas. The assessment concluded that there will be an impact on the setting of the Scheduled Monuments but this is not considered to be greater than the current extant wind farm. No significant impacts are anticipated for the designated built heritage. Consequently, the impacts are considered to be no more than slight adverse.

4.6.7 Due to the potential for previously unrecorded archaeological features to be present within the site boundary, a programme of pre-construction archaeological investigations will be agreed.

4.7 Geology, Hydrology and Hydrogeology

4.7.1 This assessment is conducted in order to describe the baseline conditions on geology, hydrology, hydrogeology, soils, minerals and potential ground contamination of the proposed development, highlighting the potential effects, proposed mitigation measures, residual effects and their likely significance.

4.7.2 The development site is underlain by Winter Hill peat. It is managed moorland comprised of Grade 5 agricultural land (land with severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops).

4.7.3 The proposed development has been designed to minimise impacts on watercourses and peat. The design of the layout has located the turbines away from areas of deeper peat, and minimised the length of new access track by re-using the existing access track where possible. Five of the nine turbines have been sited on areas where the peat is predicted to be less than 1m deep. Others are adjacent to the existing track, reflecting outcomes of consultation with Natural England. The new access track will be located on areas where the peat is predicted to be less than 2m deep, with the majority of track located in areas where the peat is less than 1m deep.

4.7.4 A Flood Risk Assessment was not considered necessary for the proposed development as none of the development infrastructure is located within the flood risk areas.

4.7.5 Potential water quality impacts resulting from the proposed development during the construction phase have been identified. After mitigation, including implementation of a Construction Management Plan, the significance of the residual effect is considered to be neutral and therefore not significant.

4.7.6 In conclusion, no significant residual adverse effects are predicted on the hydrological, hydrogeological and geological environment as a result of the proposed development.

4.8 Traffic, Transport and Access

4.8.1 The proposed access route for the abnormal delivery vehicles and HGVs is via the M62 at Junction 24, northbound on the A629 at the Ainley Top Roundabout; in Halifax, vehicles would turn off the A629 onto Pellon Lane heading northwest, turning right onto Cold Edge Road northbound.

4.8.2 The primary traffic impacts associated with the proposed development are along Cold Edge Road and Pellon Lane from the centre of Halifax and will occur only during the construction stage of the proposed development. At the peak of the construction traffic, there are expected to be a maximum anticipated frequency of six vehicles an hour, which will occur on days when concrete is to be delivered to the site for the turbine foundations. Outside of the concrete delivery days, the maximum traffic flow is anticipated to be 60 vehicles a day, which is equivalent to five vehicles an hour, and this occurs in month six of the construction programme.

4.8.3 Due to the rural nature of Cold Edge Road, these proposed traffic flows are classed as being significant during the construction programme, but are Not Significant when considered against the overall lifespan of the proposed
development. Any impacts associated with the traffic movements are temporary, and where appropriate, measures have been identified to reduce and/or mitigate related effects.

4.8.4 Consideration has been given to the effects which this temporary increase in traffic would have on community severance, driver delay, pedestrian delay, pedestrian amenity, fear and intimidation and accidents and road safety. Any such effects are not considered to be significant over the lifespan over the proposed development. During the construction period, full consideration will be given to public safety and during the erection of any turbines and structures.

4.8.5 A Traffic Management Plan (TMP) will be developed and agreed in order to control and mitigate effects associated with the construction and abnormal vehicle movements along the route into the proposed development.

4.8.6 Once the proposed development is operational, it is envisaged that the amount of traffic associated with the maintenance and running of the scheme will be low and not significant. Vehicle movements during decommissioning should be less than the construction phase.

4.9 Electromagnetic Interference, Air Safeguarding Issues and Shadow Flicker

4.9.1 The assessment considered the potential impacts that the proposed development may have on existing communication systems, television reception and infrastructure.

4.9.2 In assessing the potential impacts, consultations were carried out to establish the presence of existing communication systems and infrastructure in the area and to ascertain whether, in the stakeholders’ professional opinion, the proposed development will impact on this equipment.

4.9.3 The turbine layout has evolved to take account of the infrastructure and communication links that cross the site resulting in no known residual impacts.

4.9.4 Use of the BBC Online Wind Farm assessment tool identified potential impacts upon television reception. In the event that concerns are raised regarding television reception, YWPL would carry out a pre-condition survey. A range of technical solutions are available in the event that television interference is identified as a result of the proposed development. These may include improvement of receiving aerials or provision of affected households with an alternative source of television signal.

4.9.5 Consultation is ongoing with Leeds Bradford International Airport to determine potential residual impacts upon aviation.

4.9.6 Under certain combinations of geographical position, time of day and year, wind speed and wind direction, the sun may pass behind the rotor and cast a shadow over nearby buildings’ windows. When the blades rotate, and the shadow passes a window to a person within that room, the shadow appears to flick on and off; this effect is known as shadow flicker. Shadow flicker only occurs inside buildings where the shadow passes across a window opening, and it can only affect buildings within 130 degrees either side of north relative to a turbine and within 10 rotor diameters of a turbine.

4.9.7 A shadow flicker study concluded that no properties were affected and therefore detailed assessment was not required.

4.10 Socio-economics

4.10.1 The following baseline data has been sourced and used for this assessment:

• Potential impacts to the local economy;
• The existing land-use of the site including public access i.e. public rights of way and recreation; and
• Public perception regarding wind farm developments.

4.10.2 A 5km study area was used to inform this assessment, except for public access which looked at the development site and immediate surrounding area. Settlements within the study area include Ogden, Oxenhope, Denholme, Haworth, Queensbury and Thornton.
4.10.3 Local businesses in the area include local farms, public houses, restaurants and a variety of accommodation providers such as hotels, guest houses and bed and breakfasts.

4.10.4 The current development site is predominantly managed moorland. The moorland is used predominantly for grazing by sheep, shooting and fell walking. There are a number of public rights of way within the site boundary and in the wider area surrounding the site, which include footpaths, bridleways and cycle routes.

4.10.5 There will be a local minor, beneficial impact on the local economy during the construction phase as a result of increased activity in the area. Local jobs may also be created through the sub-contracting of particular elements of some engineering tasks and delivery of materials.

4.10.6 During the operation phase, ongoing servicing and maintenance of the wind farm could support one to two full time employees. However, due to the size and number of jobs created this is considered to be of negligible significance. In addition, YWPL will be providing a Community Fund to the local area. Details about the initiation of this fund will be discussed with Calderdale Council. It is acknowledged that the Community Fund is not a material planning consideration.

4.10.7 During the construction, it is predicted that some disruption will occur to the current moorland and agricultural land use. Any livestock grazing within the site boundary will be moved so they are not impacted during the construction phase. PRoWs may need to be temporarily closed during the construction and decommissioning phases. Users of PRoWS and bridleways will be informed of any temporary closures which are necessary through appropriate signage and information boards. Details of any temporary closures will be discussed and agreed in advance with Calderdale Council.

4.10.8 YWPL has discussed with Calderdale Council about improving a footpath considered to be in ‘poor condition’ to the east of the turbines where it meets Withens End Road. This will result in a minor beneficial impact.

4.10.9 YWPL will liaise with Calderdale Council to ensure that any disruption to the local community is kept to a minimum during the construction and decommissioning phases. Residents and businesses in the local area will be informed of any diversions and warnings of road closures prior to the commencement of any work. The implementation of these mitigation measures will ensure that any impacts are temporary and will cause a localised, minor adverse impact in the short term.
5 Conclusion

5.1.1 The potential effects of the proposed development have been assessed in accordance with regulatory requirements and good practice. The ES incorporates technical assessments of the proposed development based on the requisite legislation and the relevant planning policy framework. The EIA has demonstrated that environmental effects associated with the construction and operation of the proposed development have been avoided or minimised through the use of the iterative design process and with the application of mitigation measures.

5.1.2 The proposed development will provide a number of benefits. The scheme will result in a reduction in greenhouse gas emissions from the electricity generating industry by harnessing wind as an alternative to the burning of fossil fuels in line with the Government’s national energy goals. It will provide a significant contribution to the regional targets for the provision of renewable electricity generation.

5.1.3 The ES concludes the proposed Ovenden Moor Wind Farm Repower will have few residual adverse effects particularly when balanced against its compatibility with national, regional and local planning policy and renewable energy generation.