



Coal Clough Windfarm Repowering

Non Technical Summary

December 2009



**SCOTTISHPOWER
RENEWABLES**

PREFACE

This document contains a Non Technical Summary of information presented in the Coal Clough Windfarm Repowering Environmental Statement which accompanies the application by ScottishPower Renewables (UK) Ltd to Burnley Borough Council (BBC) to decommission (i.e. dismantle and remove) and repower the existing Coal Clough Windfarm.

This Environmental Statement (ES) has been prepared by Arcus Renewable Energy Consulting Ltd on behalf of Scottish Power Renewables (UK) Ltd and comprises the following:

- Environmental Statement Volume I: Non-Technical Summary and Written Statement; and
- Environmental Statement Volume II: Technical Appendices.

The following documents do not form part of the ES but have been submitted to accompany this planning application:

- Design and Access Statement;
- Statement of Community Involvement; and
- Planning Statement.

Copies of the Environmental Statement can be viewed at:

Burnley Borough Council
Town Hall
Manchester Road
Burnley
BB11 1JA

The offices are open weekdays 9 am until 5 pm (except Wednesdays 10 am until 5 pm).

Copies of the Environmental Statement can be obtained free of charge from ScottishPower Renewables by calling 0141 614 0400

or emailing

coalclough@scottishpower.com

or writing to

ScottishPower Renewables
4th Floor
1 Atlantic Quay
Glasgow
G2 8SP

The full Environmental Statement can be purchased for £250.00 per copy. Alternatively full sets of the documents are available free of charge as Adobe Acrobat files on DVD ROM.

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1 NON-TECHNICAL SUMMARY

1.1 INTRODUCTION

This Non-Technical Summary (NTS) forms part of an Environmental Statement (ES) to accompany an application for planning permission under the Town and Country Planning Act 1990¹ by ScottishPower Renewables (UK) Ltd. (SPR) to decommission (i.e. dismantle and remove) and repower the existing Coal Clough Windfarm.

Coal Clough Windfarm is situated approximately 8 km south east of Burnley Town Centre and 5 km north east of Todmorden, within the County of Lancashire in the North West of England as shown in Figure 1.1. It currently comprises of 24 wind turbines with a hub height of 32 m and a blade length of 17 m and a height to blade tip of 49 m. The windfarm currently has an installed capacity of 9.6 MW. The proposed windfarm, to be known as Coal Clough Windfarm Repowering (hereafter referred as 'the Development'), will comprise:

- Eight wind turbines each with a maximum hub height of 70 m and a maximum rotor diameter of 80 m with an overall tip height not exceeding 110 m and an installed capacity of approximately 16 MW;
- Two borrow pits;
- Upgrading of existing and construction of new access tracks;
- Construction of crane hardstandings and component laydown areas;
- Construction of temporary construction compound and security office;
- Erection of power performance mast not exceeding 70 m in height;
- Upgrading of site access to the Long Causeway;
- Laying of underground cables; and
- Erection of control building.

The total installed capacity of the Development will be approximately 16 megawatts (MW) as shown on Figure 1.2.

The ES describes the environmental and socio-economic effects during each phase of the Development.

This NTS presents a summary of the principal findings reported in the ES.

1.2 UK OVERVIEW

Energy underpins virtually every aspect of the economy and society. However, the use of fossil fuels such as gas and coal, which currently provide the bulk of our energy, release greenhouse gases, such as carbon dioxide (CO₂) into the atmosphere which directly affects our climate. To help lessen the effects of climate change, greenhouse gas emissions must be reduced. One way of helping to achieve this is by generating energy from sources that emit low or even zero levels of greenhouse gases, such as renewable sources.

Renewable energy is derived from naturally and continuously occurring sources in the environment, such as energy from the wind, waves or tides. It has the potential to displace electricity generated from fossil fuels and consequently prevent CO₂ from being released.

The UK Government is committed to addressing the causes and consequences of climate change.

In 2002, the UK Government placed a 'Renewables Obligation' on all UK licensed electricity suppliers to provide 10% of their electricity from renewable sources by 2010 and 15% by 2015. Generators that fail to meet their targets will be forced to pay a 'buy-out price', which is effectively a financial penalty. The primary purpose of this obligation is to assist the UK in meeting its National and International targets for greenhouse gas reduction, which are the main causes of climate change. It also helps to promote a secure, diverse, competitive energy supply market, stimulates the UK renewable energy industry and makes a contribution to rural development.

The Climate Change Act 2008² seeks to create a low carbon environment in the UK whilst increasing the security of energy supply and demonstrating the strong commitment to

¹ Her Majesty's Stationery Office (HMSO) (1990) *The Town and Country Planning Act 1990*.

² *Climate Change Act 2008*. London: HMSO

alleviating climate change. This Act seeks to reduce the amount of UK CO₂ emissions and sets a legally binding commitment to cut the UK's carbon emissions by 80% by 2050. It requires that limits be set on the total amount of emissions in successive five year periods (carbon budgets), with a minimum 34% reduction by 2020, against a 1990 baseline.

This makes the UK the first country in the world to set such a long-term and significant carbon reduction target into law.

The Renewable Energy Strategy 2009 (part of the Government's Overall UK Low Carbon Transition Plan) sets out a path to achieving the UK's legally binding target to ensure 15% of energy comes from renewable sources by 2020. It predicts that in order to meet the targets, renewables could provide 30% of electricity by 2020, two-thirds of which is expected to be generated by onshore and offshore wind³.

1.3 WIND ENERGY IN LANCASHIRE AND NORTH-WEST

The Regional Spatial Strategy (RSS) for the North West⁴ was adopted in September 2008. It forms part of the Development Plan which aims to guide future development in the region. One of its overarching principles seeks to lower the CO₂ emissions of the region.

The RSS sets out regional energy generation targets for 2010, 2015 and 2020 for the amount of electricity generated from renewable sources, which should be 10%, 15% and 20% respectively. The document also establishes installed generation targets for Lancashire of 239 MW in 2010 rising to 297 MW in 2015. Of this it is anticipated that onshore wind will contribute 195 MW and 232.5 MW respectively.

At present, the operational windfarms within the Lancashire region generate approximately 95 MW of electricity.

The Development will respond to these requirements for renewable energy production, and is located on the site of an existing windfarm in an area with verified suitable wind speed.

2 ENVIRONMENTAL IMPACT ASSESSMENT

Environmental Impact Assessment (EIA) is a process intended to ensure that developments with potentially significant effects on the environment are granted permission only after full consideration of the likely environmental effects has been made and suitable prevention or management measures have been identified. This ES provides information to allow Burnley Borough Council to fully consider the environmental effects of the Development prior to determining the planning application.

2.1 CONSULTATION AND SCOPING

The aim of the Scoping process is to identify key environmental issues as early in the process as possible, to determine which elements of the proposal are likely to result in significant effects on the environment and to establish the extent of survey and assessment required for the EIA.

A Scoping Report was prepared by SPR which outlined the proposed scope of the EIA and the key issues to be addressed, along with a description of the Development. The Scoping Report was issued to Burnley Borough Council and was widely circulated to various statutory and non-statutory consultees, including Parish Councils and to other interested parties as a part of the scoping process, which in turn provided any relevant information in their possession.

As part of the wider consultation process, public exhibitions were held to inform the residents in the area surrounding the site about the proposal to repower the existing Coal Clough Windfarm and regarding the acceptability of the scale of the proposed turbines.

Initial public information days were held from 24th and 25th March 2009 at Cliviger Village Hall and Todmorden Town Hall and were attended by approximately 12 visitors. Follow up information days were held from 8th and 9th July 2009 and were attended by approximately 90 visitors.

³HM Government (2009) *The UK Renewable Energy Strategy 2009*, Surrey: OPSI.

⁴ Department of Communities and Local Government (DCLG) (2008) *The North West of England Plan Regional Spatial Strategy to 2021*; London: TSO.

The latter round of exhibitions presented the final design of the Development and provided information to members of the public regarding the EIA process and the timing of the planning application submission in order that members of the public were aware of when and how to make representations to the application.

2.2 SITE SELECTION AND LAYOUT DESIGN

This site was selected for repowering in accordance with its Windfarm Sustainable Development Policy⁵ for the following reasons.

- The presence of an existing productive asset on site;
- Suitability for a medium scale windfarm;
- The wind regime at site is well understood; and
- The availability of onsite electrical infrastructure with available export capacity.

The design of the windfarm layout is an essential part of the EIA process as it is the stage where the most contribution can be made to mitigate potential environmental effects. The design layout of the Development has been driven mainly by landscape and visual constraints, along with other environmental, technical and economic factors.

Several layouts were tested during the design process and as a result the final 8 turbine, 110 m to tip layout (shown in Figure 1.2) was considered the best fit within the local landscape as it had the least visual effects and avoided the main environmental constraints.

The following key factors were considered in the development of layout:

- Consideration of the likelihood of the development affecting the nearby South Pennine Moors Special Area of Conservation (SAC), Special Protection Area (SPA) and Site of Special Scientific Interest (SSSI) and ways in which that could be avoided;
- Landscape and visual impacts and opportunities of different layouts;
- Avoidance of areas of undermining and ground stability risk;
- Avoidance of direct effects on potentially sensitive habitat areas on site namely an area of modified degraded blanket bog;
- Noise considerations principally ensuring compliance with relevant guidelines regarding acceptable noise limits;
- Avoidance of unnecessary effects on the onsite hydrological environment including minimising water crossings; and
- Review of opportunities to minimise disruption to recreational routes on and around the site.

2.3 THE PROPOSED DEVELOPMENT

The four key phases of the Development are as follows:

- Decommissioning of the existing 24 turbines and ancillary development;
- Site preparation works and construction of the Development;
- Operation of the Development; and
- Decommissioning of the Development.

The decommissioning phase will involve the dismantling and removal of the existing turbines, external transformers and wind monitoring mast from the site. Site preparation works can be undertaken concurrently with the decommissioning phase.

Following decommissioning of the existing windfarm, the Development will comprise the erection of eight 3-bladed, horizontal axis, wind turbines with a maximum tower height of 70 m and an overall blade tip height of 110 m.

Turbines will be finished in a pale matt grey/off-white colour and the specific colour specification will be agreed with Burnley Borough Council.

A candidate turbine, the Gamesa G80 2 MW machine, has been selected for the purpose of the ES and assessment of effects, including the calculation of CO₂ emissions savings over the lifespan of the Development. It is possible, however, that other turbines available with similar physical dimensions may be available at the time of construction which could provide an alternative to the G80. The planning application has therefore been submitted on the

⁵ ScottishPower Renewables (no publication date) *Windfarm Sustainable Development Policy*

basis of a height envelope for the turbines of a maximum of 110 m to blade tip. Based on current technology this would give the Development an installed capacity of approximately 16 MW.

In addition to the turbines themselves, there will be a number of additional structures and associated infrastructure requirements of the Development, including a new control building, new access tracks, a power performance mast, underground power cables and a temporary construction compound and two borrow pits to be used during windfarm construction.

The operational life of the Development will be 25 years. Initially, an estimated 14 months will be required for the decommissioning of the existing site and construction phase of the Development, followed by a further 25-year operational period and further ten months for decommissioning of the Development. The latter will involve the removal of turbines, and other components of the windfarm, dependent on the level of natural regeneration of crane hardstandings and access tracks at this time. Alternatively, a fresh planning application may be made to extend the life of the windfarm.

The Development will require a connection to the grid. This work will be undertaken by the Distribution Network Operator, United Utilities, which owns and has responsibility for the grid connection. United Utilities is also responsible for the design of the grid connection. Although not part of this application, based on studies undertaken to date it is anticipated that the connection will simply involve minor upgrading of the existing connection between the current Coal Clough Windfarm and the existing connection point on the off-site pylon line between Rochdale and Burnley. The existing underground cable which connects the windfarm to the pylon line running to the west of the site has capacity to export the power generated by the Coal Clough Windfarm Repowering. The only works predicted comprise the installation of a transformer on the pylon line.

In addition to the off-site grid connection, the Development will also require some off-site works to roads associated with the transportation of turbine components.

Extensive consideration has been given to the options available for transporting turbine components to the site. All existing roadways have been considered and none have been proven to be capable of accommodating the larger and heavier components associated with the proposed turbines.

Having exhausted the options available via the existing highway network consideration was given to the construction of a new stretch of private highway, approximately 800 m in length, linking Red Lees Road and the Long Causeway and effectively by-passing the village of Mereclough. This new highway will be a private road constructed to the standard suitable for the delivery of turbine components and will not be of adoptable highway standard. The private highway will be the subject of a separate planning application which will be submitted in early 2010 in order that it may be determined alongside this application. Further environmental information relating to the new highway will be submitted to accompany the planning application.

2.4 PLANNING POLICY

Burnley Borough Council is required to determine the planning application for Coal Clough Windfarm Repowering in accordance with planning policy set out in the Development Plan which comprises a range of statutory planning documents. There may be other planning considerations that require to be taken into account in determining the application, such as Government Policy. The Council are then required to weigh the policy against these considerations to decide whether or not planning permission should be granted.

Currently, the Development Plan for this area comprises:

- North West Regional Spatial Strategy (RSS) to 2021, adopted September 2008;
- Burnley Local Plan Second Review (BLP) 2001-2016, adopted April 2006;
- Statement of Community Involvement (SCI), adopted September 2007; and
- Local Development Scheme (LDS), adopted December 2008.

Together these documents set out a range of policies covering issues such as climate change, renewable energy, the built and natural environment and development in

countryside. The most relevant policies relate to climate change and renewable energy which set out renewable energy generation targets for the Region, as detailed above, and provide guidance on the main issues Burnley Borough Council will consider when determining planning applications for windfarm developments. These generally relate to the issues addressed in the ES and will be taken into account during the determination process alongside the wider economic and environmental benefits of renewable energy.

2.5 LANDSCAPE AND VISUAL EFFECTS

The effects of the Development on the landscape and local views will arise mainly from the presence of the wind turbines, with additional effects likely to result from the access tracks, power performance mast, two borrow pits and new control building which will be present throughout the lifetime of the Development. The construction compound required during the construction stage will have temporary effects on the landscape and views. These components of the windfarm will also affect the landscape and local views in four ways:

- The physical effect on the structure of the site;
- The effect on the landscape character of the site and study area;
- The effect on views from throughout the local area; and
- The cumulative effects that may arise from the addition of the Development to the landscape with other windfarms in the area.

The assessment concludes that the significant effects of the Development are likely to be contained within the area immediately around the Development, within approximately 2-3 km of the nearest turbine. The siting and design of the Development, in relation to the landform of the site, and the presence of an existing windfarm at the site, has minimised the effect of the Development from the main landscape and visual receptors.

The Development will have significant effects on parts of the landscape character of the *Moorland Fringe: Trawden Fringe* character area which covers the site, with significant effects concentrated to the immediate area within approximately 2-3 km of the site. These significant effects on landscape character arise in the area immediately around the Development, where the windfarm will constitute an immediately conspicuous feature in the landscape and influence the landscape character. This results from both physical changes to the elements that constitute the landscape character and the way that the change in these elements is perceived.

The assessment also found that there will be significant changes to certain extents of three character areas from the Lancashire Landscape Character Assessment (LCA) and South Pennines LCA. The remaining landscape character areas included in the assessment were found to either have no effect or a not significant effect as a result of the Development.

Other site infrastructure will also have an effect on the landscape character of the site, but these effects will generally be limited, as there are previous examples of tracks, buildings and quarries of such a scale in this landscape, and these features will not be unfamiliar in this context.

The assessment has found that there will be no significant effects on designated landscapes within the study area, including:

- Forest of Bowland Area of Outstanding Natural Beauty (AONB);
- Peak District and Yorkshire Dales National Parks; and
- The Registered Parks and Gardens in the study area, including Towneley Hall.

The assessment of the effects on views indicates that the proposed windfarm will result in significant effects on four of the representative views that are covered in the assessment, namely:

- Maidens Cross Car Park, Long Causeway;
- Long Causeway, Junction with Shore Road;
- Shore; and
- A646 Ratten Clough Layby.

These viewpoints all lie within approximately 2 km of the nearest turbine and generally have either a medium-high or high sensitivity to change and a moderate-large or large magnitude

of change. The effects of the proposed windfarm on the remaining 15 viewpoints considered in the viewpoint assessment have been assessed as not significant.

Significant effects have also been identified over the following:

- The settlement of Shore;
- A small elevated part of Portsmouth;
- A short distance of the Long Causeway, National Cycle Route 68 and the Burnley Way as they pass at close proximity to the north of the Development;
- The A646 road between Portsmouth and Holme Chapel, where the route passes along the Cliviger Gorge and there will be views of the upper components of the turbines from a stretch of the road where there are currently no views of the operational windfarm;
- A stretch of the Burnley-Todmorden railway line between Towneley Hall/Walk Mill to Portsmouth; and
- The Pennine Bridleway over the 2.5 km stretch between Holme Chapel and the Lime Hushings, through Green Clough.

The significance of these effects is put into context somewhat by relatively long stretches of the routes that are not affected significantly, or at all by the Development.

The overall factors that result in significant effects were fairly consistent with the primary reasons considered to be the high sensitivity of the receptor, direct viewpoints, the proximity of the Development and the larger height and scale of the turbines compared to those of the existing windfarm.

The landscape and visual assessment also assessed the cumulative effect that the addition of the Development may have along with other existing, approved and proposed windfarms that lie in the vicinity of the site. This part of the assessment concluded that the addition of the Development would not result in a significant cumulative effect on any of the landscape and visual receptors within the study area, including the main landscape designations, landscape character area, principal visual receptors and the representative viewpoints.

Although, the large scale of the surrounding landscape features helped in containing the turbines, the layout was designed keeping in mind the following criteria:

- To rationalise the layout of the existing windfarm;
- To reduce the total number of turbines present; and
- To reduce the horizontal extent of the development in views.

The increased height of the turbines is considered to be more difficult to perceive with increasing distance and due to presence of other tall vertical features in the fringes of the South Pennine Moors, including electrical pylons and three existing windfarms (Coal Clough, Hameldon Hill and Scout Moor). The apparent slower rotation speed of the larger rotor blades is less visually apparent and distracting compared to the faster rotation speeds of the smaller rotor blades on the existing turbines. Overall, the exposed, windswept character of the moorland landscape which is exposed to strong winds which provides a constant rationale for this type of development in this type of location.

The presence of the existing windfarm ensures that the Development will not introduce a new influence into a currently undeveloped area. These aspects combine to make the Development acceptable in landscape and visual terms despite the presence of significant adverse effects that will occur in close proximity to the site.

2.6 ECOLOGY

An assessment of the potential effects of the proposed repowering on ecology was conducted using both desk and field study. Surveys were undertaken during May-June 2008 and October-November 2009 to assess the range of habitats and species that occur on site. The baseline of this assessment includes the presence of the existing wind turbines.

Habitat survey and assessment found that marshy grassland and semi-improved acid grassland constitute 80% of the land within the Development. These habitats were assessed as being of local importance and no significant effects on these receptors have been identified. The most notable habitat found within the Development is an area of modified degraded blanket bog towards the western part of the site. This has been taken

into account in the design (no turbines are proposed in this part of the site). Specific mitigation measures in the form of protection zones around this more sensitive habitat and habitat management during the lifetime of the development are proposed. Taking these factors into account, no significant effects are predicted. Two minor tributaries of Cartridge Clough will experience a minor effect due to the proposed new/upgraded crossing points. Taking mitigation into account, no significant effects on habitats are predicted.

The South Pennine Moors SAC, SPA and SSSI site lies to the north of the Development and has been taken into account at the design phase. No effects are considered likely for this receptor, primarily due to the presence of the Long Causeway, a road which forms a well-defined edge to the designated area.

The bat survey recorded three species of bats foraging within the study area. Bats are given a high level of protection under domestic and European legislation. The collision risk associated with the proposed turbines is considered likely to be lower than that posed by the existing turbines. No significant effects on bats are predicted.

The Habitat Suitability survey indicated that the Development site is a suitable habitat for amphibians and reptiles; however there were no records of Great crested newt or reptiles within the boundary, from desk study or from specific baseline surveys. Due to the low levels of amphibians and reptiles recorded, they are not considered further within the ES. Evidence of a badger sett was found within the Development site and has been avoided during the development of windfarm layout. No further effects are predicted.

There are unlikely to be any cumulative impacts in association with the Development due to the low number of turbines and their distance from the development site.

Overall the development site is of low sensitivity with respect to habitats and most protected species, and will benefit from the proposed habitat management plan.

2.7 ORNITHOLOGY

Windfarms can have an effect on bird populations as a result of construction, operation and decommissioning of the Development. Birds may be affected by:

- The loss or change of habitats to accommodate the Development;
- Disturbance due to construction/decommissioning of the presence and operation of the turbines; and
- Collision with the rotors.

Surveys were conducted at the site between March 2008 and March 2009 to assess the populations of breeding and wintering birds using the site, including an assessment of flight activity.

The closest statutory site related to birds is the South Pennine Moors SAC, SPA and SSSI which lies to the north of the development site. Two Annex I Species (EU Birds Directive) of high conservation importance that are associated with this designation were recorded during the surveys: golden plover and short-eared owl. These species were observed very infrequently within the Development area, and no likely significant effect is predicted for these species. Two additional Annex 1 species (EU Birds Directive) of high conservation importance were also observed infrequently: hen harrier and peregrine. The Development is not predicted to have a significant impact on any of these species.

Species of moderate conservation importance were recorded within the Development area, including lapwing, snipe, curlew, skylark, grasshopper warbler, starling and reed bunting. Other species of moderate conservation importance were observed within the study area, including herring gull, song thrush, house sparrow, linnet, twite and bull finch but they were recorded either very infrequently or sufficiently distant from the development site that their populations are highly unlikely to be affected. A low magnitude effect on breeding snipe and curlew is predicted during construction due to noise and visual disturbance associated with construction activities. This may temporarily displace breeding and foraging birds and disrupt their breeding attempt. Appropriate timings of heavy construction activities is proposed to minimise the disturbance to breeding birds.

Birds may be at risk of collision when flying near the operating rotors. The levels of flight activity recorded at the site during detailed surveys undertaken throughout the year indicate that there will be a negligible collision risk to all species during the operational phase of the windfarm.

A range of measures are proposed to improve the quality of habitats on site for breeding waders as part of a habitat management plan. These will benefit snipe, curlew and skylark through the provision of additional nesting habitat and insect-rich areas to benefit juvenile birds. To achieve these aims, the habitat management plan will include prescriptions related to grazing, drainage and vegetation management.

Overall, this site is not sensitive with respect to bird interest, and some species may benefit from the proposed habitat management plan.

2.8 HYDROLOGY

The assessment has been based on a detailed desk study, walkover, and consultations with a range of organisations, including Burnley Borough Council, The British Geological Survey and The Environment Agency.

The geology of the Development site is predominantly underlain by banded mudstones, siltstones and sandstones of the Pennine Lower Coal Measures Formation. Superficial deposits are absent within the application boundary, indicating bedrock is at or near to the surface. Willingate Wham watercourse starts in the western section of the development site and drains to the southeast before joining Cartridge Clough. Coal Clough watercourse starts in the east of the Development and drains from north to south. The three watercourses drain into the wider drainage network before converging with the River Calder, 4 km southeast of the development site. Smaller field drains to the north of the development site are blocked by sediment and do not convey water into the wider hydrological network and nearby South Pennine Moors SAC, SPA and SSSI.

Potential impacts on hydrology have been mitigated through "embedded" measures and through best practice.

A fundamental "embedded" mitigation measure is the use of interceptor drains, silt traps and balancing ponds in proximity to access tracks to avoid introducing silt to site watercourses.

There will also be a 50 metre buffer zone for all turbine bases around the watercourses on the site. This 50 metre buffer zone, in conjunction with a suitable Pollution Prevention Plan (PPP) should avoid potential impacts on surface watercourses.

Finally, the principles of Sustainable Urban Drainage (SUDS) will also be employed where appropriate within the Development.

A PPP will include measures that will be used to avoid or reduce potential impacts for all phases of the Development, and will also include an Incident Plan to be followed, if pollution occurs. An engineer will also be appointed who will have specific responsibility to ensure measures within the PPP are followed during construction.

Method statements will also be applied, which will follow the principles laid out in relevant Environment Agency Pollution Prevention Guidelines (PPGs).

With the proposed mitigation measures, the potential effects of the Development on hydrology and hydrogeology are not considered to be significant.

2.9 CULTURAL HERITAGE

This assessment has considered the potential for the Development to have impacts upon features of cultural heritage interest within and beyond the site boundary. It has considered both the potential for direct impacts (damage or destruction of archaeological features within the site) and indirect impacts (principally the potential for visual impacts upon the setting of cultural heritage features beyond the site boundary).

A desk based assessment was carried out, and data collected on cultural heritage features at various ranges beyond the site boundary, in consultation with Lancashire County Council Principal Archaeologist. A site visit and walkover by an experienced archaeologist was also

undertaken to confirm the data gathered as part of the desk-based assessment, and to identify (and if appropriate, record) any previously unrecorded cultural heritage features within the boundary.

The baseline work established that there is potential for unknown buried archaeological remains to survive from the prehistoric period onwards. The majority of records appear to relate to (post-medieval) agricultural and industrial exploitation of the area, with evidence of mining, quarrying, as well as enclosures. The archaeological potential of the site is considered to be moderate, and of local and possibly regional importance given the large number of features within the environs, as well as the evidence from within the site itself. Where possible, the design of the Development, has tried to avoid known archaeological remains, and uses existing infrastructure.

There is some limited potential for damage to occur from activities related to the decommissioning of the existing turbines, in the event that this involves groundworks on previously undisturbed land. The significance of these effects can be reduced to be a level that is not significant, by applying appropriate mitigation, such as allowing preservation of the site by record, where preservation in situ cannot be achieved.

No significant effects were identified upon the setting of cultural heritage features.

2.10 NOISE

Assessment of the noise effects of the Development has been carried out for construction (including decommissioning of the existing windfarm).

Noise during construction has been assessed as per BS 5228:2009 *Code of Practice for Noise and Vibration Control on Construction and Open Sites*. Noise levels from a range of indicative construction activities, considered to represent the potentially noisiest stages of construction have been predicted and assessed against pre-existing ambient noise levels using criteria defined in BS 5228. It has been concluded that the noise levels during construction would not be significant. Notwithstanding this a number of best practice measures for managing construction noise have been proposed as mitigation measures. It is likely that planning conditions will be applied to construction noise, which may include restrictions to the times that construction activities can take place.

Operational noise has been assessed following the methodology specified in ETSU-R-97 (*The Assessment and Rating of Noise from Wind Farms*), which is specified in PPS22 (*Planning Policy Statement 22: Renewable Energy*) as most appropriate for assessing noise from windfarms. Surveys of background noise levels at the closest properties to the Development have been carried out. The more recent of these, the results of which have been used to inform the assessment, was carried out as per the recommendations contained in a recent article on best practice measures for windfarm noise assessment published in the Institute of Acoustics' *Acoustic Bulletin*. This article also recommends procedures for predicting windfarm noise levels, which have been followed. The predicted operational noise levels have been assessed against noise limits derived from the results of the baseline noise survey in accordance with ETSU-R-97. It has been concluded that noise levels during operation of the Development would not exceed the limits specified in ETSU-R-97 and within the limits defined within planning policy and guidelines.

An assessment of noise during decommissioning of the Development will be carried out prior to decommissioning taking place as per the legislation, guidance and standards relevant at the time. It is likely that the process of decommissioning and therefore the resulting noise levels will be similar to those during decommissioning of the existing windfarm. Therefore, in terms of current standards, the effects of this decommissioning would not be significant.

2.11 TRAFFIC AND TRANSPORT

The traffic and transport assessment has been based on abnormal load Access Review, traffic surveys and consultation with organisations including Lancashire County Council and Lancashire Highways. The assessment centres on the effects during the decommissioning of the existing windfarm and construction of the Development, when the maximum traffic generation occurs. The decommissioning and construction programme is estimated to last 14 months.

The Abnormal Loads Access Review identified a suitable route for turbine delivery that also formed the basis of the consequent traffic assessment. A description of the proposed turbine delivery route is:

- A671 Westway;
- B6240 Trafalgar Street;
- A682 Centenary Way;
- A671 Yorkshire Street;
- C660 Brunshaw Road/ Red Lees Road;
- A new access route is proposed which will bypass the village of Mereclough to then join the Long Causeway and gain access to the site.

This new access route will form part of a separate planning application and consequently is not considered further within the ES. Prior to joining the A671, the vehicles would most likely travel in a north-east direction from Ellesmere Port after exiting the M65 at Junction 10 for Burnley.

The traffic assessment concluded that there would be short-term increases in traffic levels on the delivery routes to the Development site. In accordance, with the IEMA significance criteria⁶, these increases were considered to be significant. The major impact will be felt on the Long Causeway (mostly on the immediate vicinity of the Development) during month 6 of the construction programme, when the total number of Heavy Good Vehicles (HGV) is predicted to be an average of 16 vehicles a day. Despite, the large magnitude of impact, the total number of HGV per day is expected to average only 7 movements throughout the 14 month course of the programme and is therefore not considered excessive.

Abnormal load vehicle movements would normally be timed to be during off-peak periods in order to avoid creating delays and contributing to congestion along the route. The timing of these movements will be agreed with the Burnley Borough Council, Highways Authority and the Lancashire Constabulary.

Other mitigation measures such as sign posting, travelling in convoys, and the use of a banksman (responsible for loading and unloading of lorries and crane) would minimise the adverse effect on the highway network and will be agreed as a part of a Traffic Management Plan, which will be finalised prior to construction.

Traffic generated during the operation and maintenance of the windfarm would be minimal and would not have a significant impact. Traffic generation during decommissioning of the Development is likely to be lower than the construction period. An appropriate traffic assessment will be undertaken prior to the decommissioning of the Development.

2.12 LAND-USE, RECREATION AND TOURISM AND SOCIO-ECONOMICS

The assessment has been based on a detailed desk study and consultations with organisations, including Lancashire County Council, Burnley Borough Council, British Horse Society (BHS), Burnley Bridleways Association (BBA), Ramblers Association and Sustrans.

The Development is located on upland grassland of poor agricultural quality land (Grade 5) which is used for pastoral agriculture. The Development will utilise approximately 7% of the land within the site boundary of approximately 101.5 ha. Existing agricultural practices will be continued. The overall loss of agricultural area will not be significant relative to the larger area of land with similar quality locally and nationally and given the value of land associated with land of this classification.

Part of the land within the development site is designated "access land", commonly referred to as Open Access Land. There are four public rights of way (PRoWs) comprising of footpaths and bridleways within the Development site that start at the Long Causeway and end at A646 which lies to the south of the site. Other recreational routes such as Long Distance Routes and National Trails within 5 km of the Development, which do not pass through the site, have also been considered. These routes include the Pennine Bridleway, the Burnley Way and National Cycle Route no. 68 and the Pennine Way.

⁶ Institute of Environmental Assessment (1993) *Guidelines for the Environmental Assessment of Road Traffic*, IEA.

Some of the PRowS are currently used as access tracks for the windfarm. These will be upgraded as part of the Development and the improved surfaces will be available for use following construction. During decommissioning and construction, it will be necessary to temporarily close the route and re-direct the footpath users to an alternative route within the existing network of PRowS off-site. The use of notices will ensure that there is minimum disruption and overall public health and safety. When the Development is operational, access to the footpaths and bridleways will continue as it is at present.

Overall, there will be a positive effect on bridleways and footpaths within the site during operation due to the reduced number of turbines and increased separation between turbines and routes compared to before.

Other recreational routes which utilise the public highway may be affected by an increase in traffic associated with the construction of the Development resulting in localised disruption and delay. Various mitigation measures will be put in place to ensure that the users are aware of the presence of construction traffic.

Impacts on tourism and recreation resources relate strongly to the attitudes of the individual experiencing the windfarm. Various studies undertaken by professional bodies across the UK have shown that the public is generally in favour of generating energy from renewable sources and that the majority of those surveyed do not have a negative attitude towards windfarms. The study relating solely to Coal Clough Windfarm showed a shift in attitudes towards the windfarm before and after it was built.

Coal Clough Windfarm Repowering will create an indirect economic benefit by offering construction tendering opportunities locally as well as employment opportunities within the supply chain. Once the Development is operational, there will be two full-time equivalent maintenance jobs created.

2.13 MISCELLANEOUS ISSUES

Coal Clough Windfarm will have a positive benefit on carbon dioxide (CO₂) emission savings. Energy generated by the windfarm will have the potential to displace electricity generated from other sources such as fossil fuels. It is estimated that Coal Clough Windfarm Repowering would displace a minimum of 16,194 tonnes of CO₂ during each year of its 25 year operational life.

Effects on TV reception are not predicted to be significant, and consultation with microwave link and infrastructure operators has allowed the windfarm to be designed to avoid any effects on these.

Shadow flicker is the term used to describe the effect that occurs when the shadow of a wind turbine blade passing a narrow opening (usually a window), appears to quickly turn on and off as blades pass the opening in succession, resulting in a flicker. According to the Government Planning Guidance⁷, there are limited atmospheric conditions in the UK during which shadow flicker can take place and occurrence relates to the position of the sun relative to the turbines and the window opening. The guidance advises that the distance over which this effect can occur is generally within ten rotor diameters and 130 degrees of north relative to the proposed turbine locations. There are no properties located within this distance of the proposed turbines and no effects are predicted.

There will be no effects on health and safety as a result of shadow flicker, distraction to drivers using roads around the site and the potential for ice thrown from rotating blades.

2.14 SUMMARY

There are strong legislative and policy drivers for renewable energy development in the UK. Minimum targets have been set for Regions across England and in the case of Lancashire 293 MW of installed renewable energy generation requires to be installed 2010 rising to 297 MW in 2015. Of this it is anticipated that onshore wind will contribute 195 MW and 232.5 MW respectively.

⁷ DCLG (2004) *Planning for Renewable Energy: A Companion Guide to PPS22*. HMSO. pp. 17

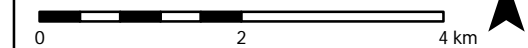
Coal Clough Windfarm Repowering, if granted planning permission, will be developed and operated by ScottishPower Renewables (UK) Ltd, the UK's leading onshore wind operator with a current installed capacity in excess of 790 MW.

Significant effects are limited to landscape setting and visual effects in relative close proximity to the site and there are no significant effects predicted on ecological receptors.

Key

Coal Clough Windfarm
Site Boundary

1:75,000 Scale @ A3



Produced: AB
Reviewed: SC
Approved: VR

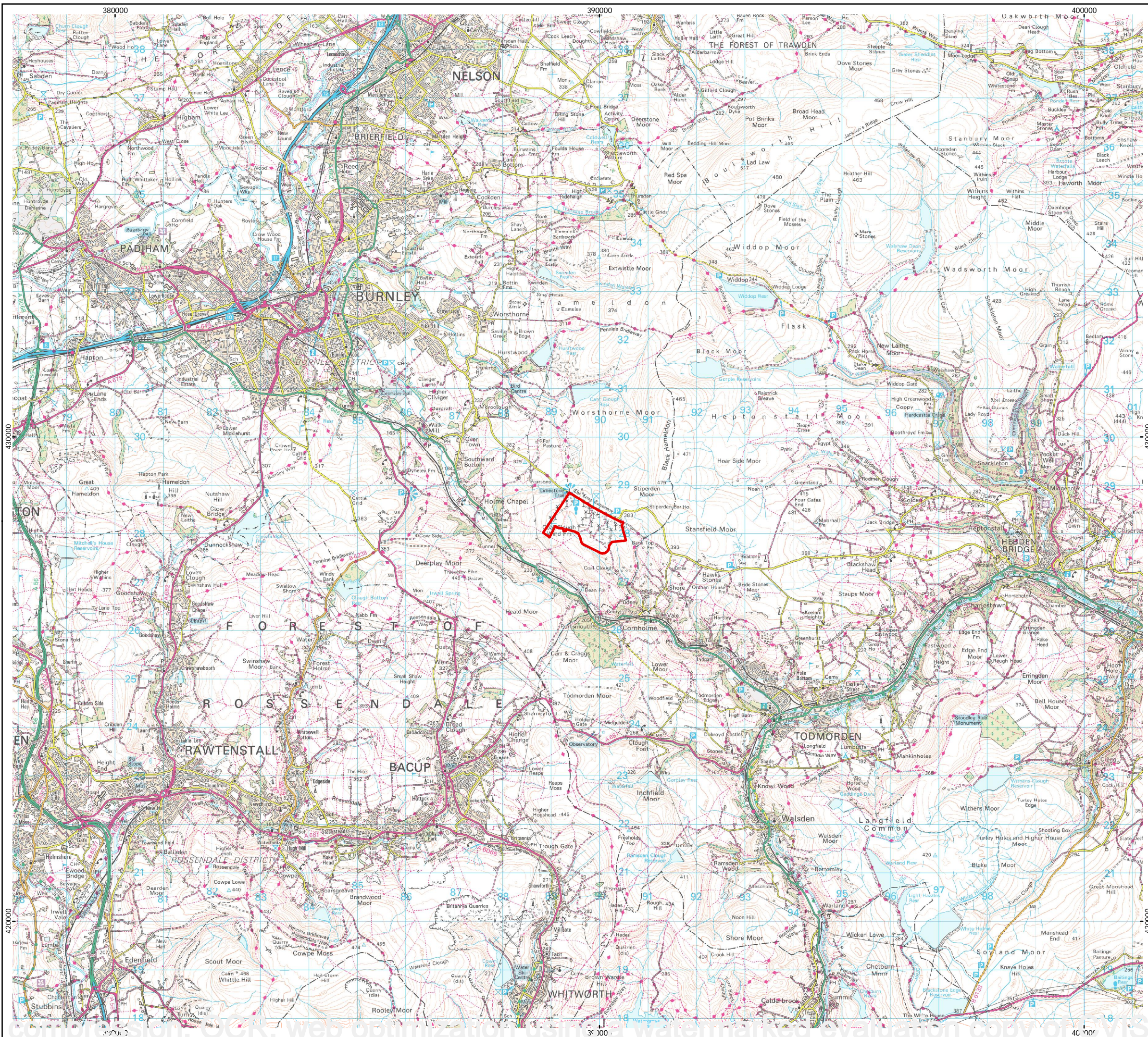
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Revision: B






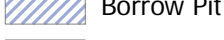
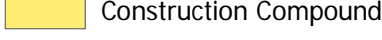
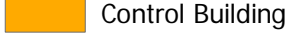
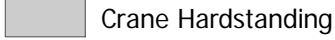
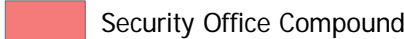
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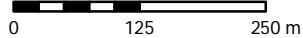
Site Location
Figure 1

Coal Clough Windfarm Repowering
Non-Technical Summary



Key

-  Proposed Turbine Location
-  Site Boundary
-  Power Performance Mast
-  New Track
-  Upgraded Track
-  Borrow Pit
-  Construction Compound
-  Control Building
-  Crane Hardstanding
-  Security Office Compound

1:7,500 Scale @ A3




Produced: AB
 Reviewed: SC
 Approved: VR
 Ref: 185/ES/028
 Date: 04/12/2009

**Site Layout
Figure 2**

Coal Clough Windfarm Repowering
 Non Technical Summary

