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FIGURES

FIGURE 1 **SITE LOCATION**

FIGURE 2 **SITE LAYOUT**

1 INTRODUCTION

- 1.1.1 British Telecommunications Plc (BT) has submitted a planning application to Hartlepool Borough Council for permission to build and operate five wind turbines on land at Red Gap Moor, Hartlepool.
- 1.1.2 Under planning legislation ⁽¹⁾ it is required that an Environmental Impact Assessment (EIA) should be undertaken to assess certain types of development and a report of this, an Environmental Statement (ES), should be submitted along with the application. On 17 October 2008 Hartlepool Borough Council confirmed in writing that an EIA would be required in support of the planning application for BT's proposed wind farm at Red Gap Moor.
- 1.1.3 This document is the Non Technical Summary (NTS) of the Environmental Impact Assessment and the findings reported in the ES. Its purpose is to provide an overview, in non-technical language, of the following:
- the project, including its design and the way it will be constructed and operated over the long term; and
 - its impacts on the environment.
- 1.1.4 The ES and this NTS have been prepared by Environmental Resources Management (ERM) on behalf of BT. This NTS forms part of the ES and is also available as a separate document.
- 1.1.5 Paper copies of the full ES are available, priced £100 each or £10 on CD (including VAT). Copies of the NTS are available free of charge. The NTS can also be viewed on the BT Wind for Change website at the link identified in the footnote ⁽²⁾. Requests for either document should be made to Environmental Resources Management at the address below:

Environmental Resources Management
Norloch House
36 King's Stables Road
Edinburgh
EH1 2EU
Tel - 0131 478 6000
Fax - 0131 478 3636
E-mail - gail.napier@erm.com

(1) Town and Country Planning Act, 1990 and the Town & Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999

(2) www.btplc.com/ClimateChange/WhatsBTdoing/Reducingourfootprint/Windforchange

1.1.6 The planning application may also be inspected during normal working hours at the following address:

Bryan Hanson House
Hanson Square
Hartlepool
TS24 7BT

1.1.7 If you wish to comment or make representations to Hartlepool Borough Council on the planning application or supporting ES, so that your views can be considered by the Council in reaching its decision on the application, please write as soon as possible to:

Chris Pipe
Bryan Hanson House
Hanson Square
Hartlepool
TS24 7BT

Email: DevelopmentControl@hartlepool.gov.uk

2 *OUTLINE OF PROPOSAL*

2.1 *THE PROPOSAL*

2.1.1 BT aims to generate 250 megawatts (MW) of wind power, equivalent to around 25 % of its current electricity needs, from 'green' energy by 2016. To achieve this target commitment BT is committed to developing wind farms of various sizes throughout the UK. The proposed Red Gap Wind Farm will make an important contribution to BT and Government's renewable energy objectives by harnessing wind in Hartlepool Borough.

2.1.2 The proposed application site is located on land immediately to the west of the A19(T) near Sunderland Lodge, approximately 6 km southwest of Hartlepool and is illustrated on *Figure 1*. The proposal is to build 5 wind turbines on this land and also to construct permanent access tracks to link the 5 wind turbines together and a building that will accommodate the electrical equipment used to operate the wind farm. A temporary access track will be laid to allow access to the site from the A19(T). Each turbine will have a generating capacity of 3 MW, giving the wind farm a total generating capacity of 15 MW. The wind farm is planned to be operational for 25 years.

2.1.3 Each wind turbine, to the centre of the blades, will be 80 metres in height. When the 3 blades turn their tips will extend the overall height of the structure to a maximum of 125 metres. This height is 4 metres taller than the wind turbines that already exist in the surrounding area (Walkway and High Volts).

2.1.4 Given the scheme would generate 'green' electricity the Red Gap Wind Farm could prevent 16,950 tonnes of carbon dioxide emissions being released into the atmosphere during each year of operation (423,765 tonnes of carbon dioxide over the wind farm's 25 year lifetime).

2.2 *SITE SELECTION*

2.2.1 The selection of an appropriate site for a wind farm is a complex and lengthy process which involves examining and balancing a number of technical, environmental and planning issues. After an initial site search process a number of potentially suitable and available sites were identified by BT across the country. Given its suitability for wind resource and its availability BT considered that a wind farm development at Red Gap was viable. BT is also progressing other sites in the UK in a similar way.

2.2.2 The Red Gap site has good wind resource and is accessible, both in terms of connection to the national grid and to the local highway network. The absence of international and national designations, its fit with local and national planning policy for the area and potential landscape capacity also suggest Red Gap is a suitable site for wind farm development.

2.2.3 The proposals were then progressed to establish a site design that could be assessed and reported in the ES. This site design forms the basis of the planning application and is discussed in *Section 2.4* below.

2.3 *SITE AND SURROUNDING AREA*

2.3.1 The application boundary is defined by the red line in *Figure 2* and has a total area of approximately 21.3 hectares (ha). The area within the applicant's control (blue line) is approximately 317.5 ha.

2.3.2 The site is almost entirely made up of good to moderate quality mixed arable farmland and contains some low lying hedgerows. The nearest villages comprise Dalton Piercy (2.5 km NE), Elwick (3 km NE), Brierton (3 km E) Wynard Village (2.5 km SW), Billingham and Wolviston (3 km S), Sedgfield (7 km W), and Trimdon (7 km NW). A number of individual residential properties lie within 1 km of the proposals.

2.3.3 There are no environmentally designated sites (*eg* for ecology, landscape or heritage) within the application site. There are, however, designated sites close to the application boundary. The closest featured Scheduled Ancient Monument (SAM), the Medieval Farmstead and Irregular Open Field System at High Burntoft Farm, lies 1 km to the south of the site. The eastern boundary limit of a Special Landscape Area (SLA) is situated 2 km to the west of the site.

2.3.4 There is a site designated for 'prestige employment' off the A689 approximately 2 km to the south of site. That site currently accommodates a sizeable office development complex. A new hospital for Teesside is planned to the south of Red Gap at Wynyard Business Park (1 km south of the site).

2.3.5 There are a number of existing wind farms in the area, the closest developments comprise the 3 turbine development of High Volts which lies 3 km from the centre of the Red Gap site to the north east. The Walkway wind farm development of 7 turbines is located 4 km to the west. The 10 turbine development of Butterwick Moor has recently been consented and will be located adjacent to the Walkway Wind Farm 4 km to the west.

2.4 *SITE DESIGN*

2.4.1 Following selection of the Red Gap site an initial turbine layout was developed, taking into consideration the proximity of residential properties, landscape features and existing infrastructure constraints (*eg* overhead power lines). This presented a possible site layout of 10 turbines. Through the identification of further constraints during the assessment process the layout was reduced to 9 turbines.

- 2.4.2 As the detailed assessment progressed the layout was further reduced to a 5 turbine layout, as a result of consultation (with the council, the public and other interested parties) and the identification of more infrastructure constraints (such as underground pipelines and telecommunications networks).
- 2.4.3 Once the turbine locations were fixed the design then needed to add in access tracks, other supporting infrastructure and a building. A description of what is proposed to be constructed and how this will be achieved is described in *Section 2.5* below.

2.5 *PROJECT DESCRIPTION*

Key Components

- 2.5.1 The key components of the wind farm will comprise the following:
- 5 wind turbines;
 - crane hardstanding areas next to each wind turbine;
 - electrical transformers and cabling between the wind turbines;
 - a meteorological mast;
 - a temporary haul road from the site entrance to the turbines;
 - an electrical switch room building;
 - permanent access tracks between the turbines and switch room building; and
 - a temporary construction compound.
- 2.5.2 The location of these elements is illustrated in detail in *Figure 2*, technical elevations of the key structures are presented in *Chapter 3* of the Environmental Statement. The turbines will be of a typical modern design incorporating tubular towers and three blades attached to a cabin known as a nacelle. The nacelle houses the generator, gearbox and other operating equipment.
- 2.5.3 The turbines will only generate electricity at certain wind speeds. If the wind gets too strong the turbines will automatically shut down to prevent any damage. The generated electricity of the turbines will be delivered by an underground cable to the national grid.
- 2.5.4 Turbines will be built upon strong concrete foundations that will sit below ground level. Next to each turbine a large flat area of crushed stone (30 m x 40 m) will be built and this flat area will be used by the large cranes that are needed to lift the turbine structures into place. The cranes will only be at each turbine location for about one week, the flat area of stone will remain in place during the lifetime of the wind farm. These will remain in place to allow cranes to park next to the turbines in the future. Cranes may be needed to

replace faulty or worn out parts over the 25 year operational period, for example.

- 2.5.5 A transformer box will be built within 5 m of the wall of each turbine tower and will be the same colour as the turbine. This box will not exceed 3 m by 4 m by 2.8 m (height) and will house electrical equipment. This unit is linked by underground cable to the main switch room building on the site.
- 2.5.6 Approximately 3 km of new permanent track is required for the Red Gap wind farm. Tracks linking the turbines will be used during both the construction and operational phases. The width of these access tracks will be approximately 5 m and built out of crushed stone, to a style similar to a forestry track. Any small field drains that the new tracks cross will be culverted so that water can still flow freely through the watercourses.
- 2.5.7 A temporary access track will be laid during the construction phase to allow construction vehicles to access the site from the A19(T). This 1 km temporary road will be 6 m wide and will be constructed from metal matting. It will remain in place for the duration of the construction period and will be removed after construction is complete. It may need to be re-laid at some stage over the 25 year operation period to allow access for large vehicles. Large vehicles may need to access the site to replace any damaged or broken turbine blades, for example.
- 2.5.8 One permanent meteorological mast (met mast) will be built to the west of the application site and will be 80 m in height. The mast will have a sensor on it that measures wind speed, wind direction, temperature, pressure and humidity.
- 2.5.9 Cables from the wind farm will be routed underground to a building known as the electrical switch room. This building will house the grid connection equipment, a control and metering room, telecommunications equipment, a small office, and toilet facilities for visiting staff. The building will have a pitched roof and its dimensions will be 8 m x 5.5 m x 4.5 m high.

Construction Activities

- 2.5.10 Construction will not commence until planning approval has been gained and contractors have been selected. This is unlikely to be before summer 2011. The main construction period is likely to last for approximately 6-9 months, from commencement of detailed site investigation, survey and design work, through to the installation and commissioning of the wind turbines and ending with reinstatement of construction areas.
- 2.5.11 Normal construction operations will generally be from 7am to 7pm on weekdays and 7am to 1pm on Saturdays. These timings will also apply to the delivery of the majority of materials to site. Delivery of large turbine pieces will require the use of abnormally-sized and slow-moving vehicles. These vehicles will require a police escort and the timing of these deliveries will be

dictated by the police. It is possible that, in order to minimise inconvenience to other road users, some of these deliveries will be made during the evening and at night.

2.5.12 During the construction period an area for work huts, parking and storage will be required on site. These areas will be temporary and will be returned back to farmland after the scheme has been built.

3 SUMMARY OF IMPACTS

3.1 INTRODUCTION

3.1.1 The ES reports the predicted impacts during construction, operation and decommissioning of the scheme, and these are summarised below.

3.1.2 Many of the predicted impacts can be reduced or prevented by putting what is called ‘mitigation measures’ in place. For example, to reduce the amount of mud that construction vehicles draw onto the main roads there will be a rule that every construction vehicle must get its wheels washed before going off the site. A list of all the planned environmental mitigation measures is provided in the ES in *Annex B*. The impacts summarised below are predicted to happen once all mitigation measures have been put in place.

3.2 LANDSCAPE AND VISUAL

3.2.1 This chapter of the ES assessed the impact of the proposals in two areas, landscape character and visual impact. The landscape character assessment predicted how the wind farm could change the character of the area and how the character of other nearby areas could change because of the scheme. The assessment also considered the character of certain landscape features also, such as listed buildings and conservation areas.

3.2.2 The visual impact assessment looked into the likely changes that would occur to views currently experience from, or to, the area where the wind farm is proposed. This visual impact assessment includes views from nearby property and footpaths in the area, for example, as well as views from areas many kilometres away.

3.2.3 The assessments were carried out by following a number of recognised techniques that were agreed by the Council and their advisors. A number of images were created by computer which illustrate what the wind farm would look like from a number of viewpoints in the area. These are available in *Annex D* of the ES document.

Predicted Impacts

3.2.4 During construction there will be short term landscape and visual impacts from construction plant and activities on the site including:

- clearance of vegetation and soil removal;
- construction of internal tracks for access to turbines, mast and switch building locations;
- temporary haul road from the site entrance to the turbines;
- temporary fencing;

- machinery and material storage;
- plant and vehicle movements and tall cranes;

3.2.5 It is considered that the above will cause major, but temporary, landscape and visual impacts from short range over the 6 - 9 month duration of construction activity. The significance of the impacts will be reduced with increasing distance from the proposals.

3.2.6 Once the scheme is built there will be long term impacts on the local landscape characters in the area. These impacts range from minor to major impacts and depend on the sensitivity of the landscape in question and the distance from the scheme. Similarly there will be impacts on landscape features (such as conservation areas, listed buildings and Scheduled Ancient Monuments). These impacts range from minor to major impacts and depend on the sensitivity of the feature in question and the distance from the scheme.

3.2.7 As would be expected, the greatest visual impacts will be at properties within and close to the site where residents will have views of the turbines and other elements of the scheme from their homes. The assessment concludes that a few properties very close to the site will have major visual impacts to their views.

3.2.8 There will also be an impact on the setting of the scheduled monument at High Burntoft to the south east of the development. It has been assessed that the setting of this site is of medium sensitivity to the proposed change. Given this it is assessed that the change will result in a minor impact.

3.3 *ECOLOGY AND NATURE CONSERVATION*

3.3.1 The ecological assessment has considered the potential of the proposed Red Gap Wind Farm to affect habitats and species (including birds, badgers, bats, water vole, otter and great crested newt) in and around the site. The scope of ecological surveys was agreed with Natural England and RSPB, and the assessments were undertaken by experienced ecological consultants.

Designated Sites

3.3.2 The nearest site designated with an international importance for birds is the Teesmouth and Cleveland Coast Special Protection Area (SPA), located approximately 8 km southwest of the site, at the mouth of the Tees estuary. None of the species related to this protection were recorded within the Red Gap study area during any of the bird surveys, or identified from previous work by Teesmouth Bird Club. The SPA features are therefore not considered to be affected by the proposed wind farm development.

3.3.3 Sunderland Lodge Site of Nature Conservation Interest (SNCI) is located within the wider site and comprises the narrow strip of broad-leaved woodland along the driveway to Red Gap Farm. A further eight SNCIs,

including woodland, grassland and marsh habitats, are located within 200 m of the wider site boundary. Sunderland Lodge SNCI will not be affected by construction or operational work or by the type and levels of road traffic accessing the site. The eight SNCI adjacent to the site will not be impacted by the proposals.

Habitats

3.3.4 All vegetation and habitats within the site are relatively common and widespread and are of low botanical and structural diversity. The arable field margins are however listed as a habitat of importance within an Act of Parliament ⁽¹⁾.

3.3.5 A programme of species-rich hedgerow creation (over 2 km) and management, together with the creation of a new pond and potentially larger areas of wetland, coupled with woodland management will create significant enhancements to the habitat types encountered on site.

Species

Bats

3.3.6 The survey results indicate that there are not currently any bat roosts within the study area. However, as bats are highly mobile and known to be present within the wider area, it is possible that individuals or small numbers of bats could use the existing buildings at some time in the future. Bats were recorded flying and foraging within the wider site. The number of bats and the range of species detected was relatively low, suggesting that the site's current importance with regard to bat populations in the wider area is minimal.

3.3.7 As part of the proposals the creation of hedgerow and wetland habitats will provide significant enhancement for bats living in the area. Over 2 km of new hedgerows and wetland areas will be positioned at least 200 m from turbine locations to minimise the risk of collision with turbine blades.

3.3.8 After mitigation and enhancements the remaining impact is considered to be of minor significance affecting a small number of noctule bats as they fly between roosts and feed.

Birds

3.3.9 The breeding bird survey in 2008 recorded a number of species including corn bunting, grey partridge, tree sparrow, reed bunting, yellow hammer, yellow wagtail and lapwing.

(1) Section 41 of the Natural Environment and Rural Communities Act, 2006

- 3.3.10 A key target for ecological enhancement is the farmland bird community through creation of improved hedgerow and wetland habitats. It is anticipated that populations of species including corn bunting, reed bunting, tree sparrow, yellowhammer and linnet will all benefit. This will be a significant enhancement at the district level.
- 3.3.11 The enhanced hedgerow habitats and a winter bird feeding programme targeted at seed-eating finches and buntings will enhance over winter survival and help to enhance breeding populations.
- 3.3.12 There are remaining impacts relating to small numbers of possible collision and displacement to the wintering greylag goose flock that is located at Crookfoot Reservoir and feeds in the surrounding arable landscape, including within the study area. After mitigation measures this remains a minor adverse impact.

3.4 *GEOLOGY, HYDROGEOLOGY AND SOILS*

- 3.4.1 Underground, beneath the application site and wider area there is a layer of sediment up to 60 m thick in places. This sediment is made up of glacial drift deposits and alluvial deposits. The rock beneath this is from what is known as the Roxby Formation (mudstone, siltstone, sandstone and gypsum) across the northern and southern areas and the Seaham Formation (limestone) in the centre. The Seaham Formation is considered to be part of a major aquifer as clean water travels deep underground over and through these rocks.
- 3.4.2 The excavation of turbine foundations are not expected to have a significant permanent impact on the rocks, or geology, of the site due to the localised and small scale nature of the works. There may be small local changes to shallow underground water, only if excavations begin to fill with water and they need pumped out to keep them dry during construction. It is anticipated that there will be only minor impacts during construction from spills or soil erosion across the site if all mitigation measure are implemented appropriately.

3.5 *WATER RESOURCES AND FLOOD RISK*

- 3.5.1 The Red Gap Wind Farm site is located in the upper reaches of what is known as the Claxton Beck catchment area. A catchment area is the zone within which all rainwater will run to a certain river or stream. A number of unnamed streams or ditches which flow into the Claxton Beck are located within the wider site and flow in a south east direction across the site. The Claxton Beck joins Greatham Creek approximately 5 km downstream from the site, a tidal tributary of the River Tees.
- 3.5.2 A number of public water groundwater and surface water abstractions are located within 2 km of the site. These abstractions are not considered to be at

risk from the proposals due to the depth beneath the site. There are no records of private water supplies within 3 km of the site.

3.5.3 Construction activities including excavation of turbine foundations, construction of access tracks, areas of hardstanding, temporary construction compound and installation of culvert crossings have the potential to impact on the water environment through:

- erosion and sedimentation of surface watercourses;
- pollution;
- alteration to drainage conditions and flow;
- dewatering; and
- increased flood risk.

3.5.4 Appropriate pollution control measures will be implemented (as part of the Construction Method Statement) to minimise and control the potential for impacts to water quality. Following implementation of these measures, the impacts from sediment and chemical pollution will be minor.

3.5.5 A flood risk assessment concluded that the site has a low risk of flooding from all sources. Drainage systems and watercourse crossings will be appropriately designed to prevent any increase in flooding either on site or downstream from the site.

3.6 *CULTURAL HERITAGE*

3.6.1 A Desk Based Assessment and site visit were undertaken to collect any existing information on the known archaeology and cultural heritage within 5 km of the application site. The results of this baseline data collection have been used to assess the impact of the scheme on both the potential buried archaeological remains and the wider historic environment.

3.6.2 The Council's advisor, Tees Archaeology, was consulted during the collation of the baseline data and has advised on the formulation of a suitable mitigation strategy.

3.6.3 The construction of the scheme will have the potential to impact on known or currently unknown archaeological remains. Proper construction techniques and an agreed strategy for recording any features that may be unearthed during the construction process will be implemented.

3.6.4 Assuming the appropriate mitigation strategies are employed, the lasting effects on the archaeology will be negligible and are considered to be not significant.

3.6.5 The impacts on the setting of historic features are addressed in the Landscape and Visual Chapter of the ES.

3.7 *NOISE AND VIBRATION*

3.7.1 Noise and vibration impacts have been assessed for both the construction and operational phase of the wind farm. During construction the noise and vibration impacts will result from construction traffic and construction activities within the application site boundary. During operation the noise impacts will relate to the wind turbines moving in the wind.

3.7.2 Recognised techniques and practices for assessing noise and vibration have been followed and these techniques required existing noise levels in the area to be recorded for a number of weeks. Noise levels were recorded at a number of properties closest to the application site. These records allow the specialists to understand how noisy the area is at present and allows them to accurately predict the level of change in noise that would occur as a result of the construction activities and the operation of the wind turbines.

3.7.3 Construction activities will take place for a period of between 6 to 9 months, given this timescale they are considered temporary in their nature. Construction activities on the site will be undertaken between the hours of 7am to 7pm on weekdays and 7am to 1pm on Saturdays. The assessment concludes that during the construction phases no properties will experience noise levels over the recognised acceptable levels.

3.7.4 During the operational phase of the wind farm the assessment shows that at no wind speed do the noise levels exceed the recognised acceptable levels at any property in the area. The impact of noise from the turbines is therefore assessed as being not significant.

3.8 *SITE ACCESS, TRAFFIC AND TRANSPORT*

3.8.1 This topic area assessment focuses on the impact of the scheme on the baseline traffic, transport and access conditions. The impact of the construction and operation of Red Gap Wind Farm, on traffic, is dependant upon a wide range of existing factors which include:

- the current volume of traffic on nearby roads;
- traffic speeds and operational characteristics; and
- traffic composition (eg percentage of heavy goods vehicles).

3.8.2 Given the low number of vehicles (one or two per week) that would typically need to visit the wind farm during the operational phase the impacts are considered not significant.

3.8.3 Once the existing baseline situation is understood the specialist assesses whether the predicted construction traffic movements would significantly impact on the capacity and safety of the surrounding road network. The table below shows the predicted vehicle movements for the entire construction period.

Table of Construction Traffic Requirements During Construction Phase

Construction Activity	Estimated No. of Vehicles	Main Vehicle Type
Access track construction	966	Excavators, dumpers, rollers, articulated HGV
Compound and laydown areas	191	Dumpers, flatbed trailers, articulated HGV
Transformers and switch room	9	Flatbed trailers, low loaders
Turbine and mast foundations	556	Concrete lorries, dumpers
Turbine components	45	Special transport vehicles
Crane hardstanding	262	Dumpers
Other (cranes, plant, met mast, sand, fuels)	154	Various
Construction staff	25 <i>daily average</i>	Cars and light goods vehicles

Delivery figures relate to the entire construction phase of 6 to 9 months.

3.8.4 The ES document breaks these figures down into monthly figures for all construction phase requirements. Because the site access will be taken directly off the busy and duelled A19(T) the impact on the existing capacity will be minor. To ensure construction traffic enters and leaves the site safely there will be traffic management measures put in place on the A19(T). This is proposed to be a controlled system that will allow construction vehicles to get onto and off the A19(T) without compromising the safety of other traffic and road users.

3.8.5 Very long and heavy lorries will be required to bring the wind turbine parts to the site. These will come from Teesport and will travel along an agreed route to the site. These lorries will have a police escort and will travel at the quietest periods of the day.

3.8.6 Impacts on existing footpaths near the application site will be minimal, there will be a need to temporarily divert one Right of Way by a small distance (a few hundred metres) during the construction phase. This will be reinstated during the operational phase.

3.9 OTHER OPERATIONAL IMPACTS

Electromagnetic Interference

3.9.1 An assessment was carried out to determine the potential effects of the Red Gap Wind Farm on telecommunications and television reception in the vicinity of the site.

3.9.2 Consultation with Ofcom and telecommunication companies indicated that there are a number of microwave links that transmit signals in the vicinity of the site. The BBC's wind farm assessment tool identified up to 6,216 homes in the area which may be affected by the wind farm in terms of television reception. The wind turbine layout at Red Gap has been designed to avoid electromagnetic interference as far as is possible. Some impacts may be

experienced on radio communication and television reception but mitigation measures will be introduced by BT to fix any significant adverse impacts. No significant residual impacts have been identified for radio communications, microwave links and television reception.

Utilities Infrastructure

- 3.9.3 Utilities operators were consulted to gain information on existing utilities infrastructure within the wider Red Gap site. A number of gas pipelines and electricity cables were identified crossing the application site.
- 3.9.4 The turbine layout has been designed to ensure that the required buffer zones around all existing utilities are met. All utility operators will be consulted again prior to commencement of construction to ensure that conditions for working close to underground pipelines and cables can be agreed. This will apply, in particular, to construction of access tracks and cable routes which require to cross over pipelines in a number of locations.

Aviation

- 3.9.5 Consultation was carried out with the Civil Aviation Authority, NATS, Defence Estates (who represent the Ministry of Defence [MoD]) and Durham Tees Valley Airport (DTV) to determine the potential effects on aviation operations. Their responses are summarised in *Annex C* of the ES.
- 3.9.6 The Red Gap site lies in direct line of sight of the Watchman radar situated at DTV. DTV has indicated that they would object to the proposed development on the grounds of possible radar interference. However, discussions have identified the possibility of operational mitigation. Consultation with the airport is ongoing.
- 3.9.7 The closest NATS airway to the development is over 10 nautical miles to the west, the lower section of this is controlled by Newcastle International Airport. There are several Upper Air Routes that cross the area but none pass close to the site. The closest NATS en-route radar is situated at Great Dunn Fell approximately 73 km to the west of Red Gap Moor and is shielded by terrain from the development. It is therefore considered unlikely that this development will be of concern to controllers at the London Area Control Centre, Scottish Area Control Centre or Newcastle Airport.
- 3.9.8 The closest military aerodrome is RAF Leeming situated 42 km to the south south-west. The turbines will not be visible to any Air Defence radars and the MoD has not indicated that they will object on low flying grounds.
- 3.9.9 It is considered that there will be impacts on DTV's radar operations. Potential mitigation measures identified for the impact on air traffic radar operations at DTV Airport include occasional re-routing of aircraft to avoid the Red Gap Moor radar clutter. No impacts are anticipated, no mitigation is assessed as required in respect of Ministry of Defence or NATS radars.

Shadow Flicker

- 3.9.10 An assessment was carried out to identify properties which may experience shadow flicker during operation of the Red Gap Wind Farm. Shadow flicker is a term used to describe the pattern of alternating light intensity observed when the rotating blades of a wind turbine cast a shadow on a receptor under certain wind and light conditions. This is most pronounced during sunrise and sunset when the sun's angle is lower and the resulting shadows are longer. In the UK, the phenomenon is most likely to be a problem in the winter months when the sun is lower in the sky and shadows are longer.
- 3.9.11 Shadow flicker could potentially cause adverse impacts on receptors in the local area around the Red Gap site. Three properties may experience over 30 hours per year of theoretical shadow flicker. However, effective mitigation measures have been identified to ensure that there will be no significant residual impacts.

Ice Throw

- 3.9.12 Wind turbines operating in cold climates may suffer from icing in certain weather conditions. A possible consequence of icy conditions is ice throw. Ice throw occurs when blade ice is thrown off during wind turbine movement, potentially harming maintenance crew or the public/users of the area.
- 3.9.13 The companion guide to PPS22 states that:

"the build-up of ice on turbine blades is unlikely to present problems on the majority of sites in England. For ice to build up on wind turbines particular weather conditions are required, that in England occur for less than one day per year."

- 3.9.14 The risk of ice throw occurring at the Red Gap site is therefore low, and no significant residual impacts associated with ice throw are predicted, given the incorporation of ice detection capabilities or the implementation of recognised measures.

Driver Distraction

- 3.9.15 The potential for driver distraction was assessed, due to the proximity of the proposed Red Gap Wind Farm to the A19(T). The stretch of the A19(T) in the vicinity of the Red Gap site does not include any major junctions, sharp bends or pedestrian crossings, therefore, the wind turbines are unlikely to distract a significant number of drivers attention from complex driving situations.
- 3.9.16 The existing accident record on the A19(T) was examined and it was concluded that there are no particular accident problems on the section of the A19(T) in the vicinity of the site. An accident analysis of the A19(T), undertaken following completion of the nearby High Volts Wind Farm (4 km

northeast of Red Gap), concluded that installation of the wind farm had no significant impact on accident rates on the A19(T).

3.9.17 No significant impacts on driver distraction are therefore anticipated as a result of the Red Gap Wind Farm.

3.10 *SOCIO-ECONOMICS*

3.10.1 This chapter of the ES considers the social and economic implications of the proposed development in terms of employment, disruption to local communities and impacts on tourism. The background data gathering assessment includes an analysis of data covering population demographics, employment and economic deprivation, tourism and recreation for the study areas defined. Three study areas were defined for this assessment:

- an immediate study area relating to the three closest local wards;
- an inner study area covering Hartlepool Borough Council, Stockton-on-Tees Borough Council and Sedgefield Borough Council; and
- a broader study area covering the North East region of England.

3.10.2 The construction cost of the Red Gap Wind Farm is estimated to be £16.5m ⁽¹⁾. Based on other wind farms, the wind turbines and other equipment will account for approximately 60-70 % of this expenditure and the construction work about 30-40 % (£4.95m to £6.6m). It is anticipated that approximately 25 people will be employed at any one time on site during the construction of the scheme. This is a full time equivalent (FTE) of 15.6 workers over a full year ⁽²⁾. However, this employment is most likely to come from existing resource and new jobs may not be created specifically for the project in question.

3.10.3 Economic and employment impacts during construction will therefore be not significant. Job creation during the operational phase will not be significant.

3.10.4 Results from numerous surveys demonstrate that the effect of wind farms on tourism is negligible, at worst, with many respondents taking a positive view to wind farms, and saying it would not affect their likelihood of returning to an area ⁽³⁾.

3.10.5 Property values are not a material planning consideration and these are not considered further in this ES.

(1) Estimate is based on assumption that costs are £1.1 million per MW installed

(2) Assuming an average construction period of 7.5 months.

(3) BWEA (2006). The Impact of Wind Farms on the Tourist Industry in the UK.

Enhancement Measures

- 3.10.6 As well as trying to minimise the impacts of a proposed scheme developers are often encouraged to think of ways to add benefits or enhancements. BT is proposing a number of enhancements and these are summarised below.
- 3.10.7 A programme of species-rich hedgerow creation (over 2 km) and management, together with the creation of a new pond and potentially larger areas of wetland, coupled with woodland management will create significant enhancements to the habitat types encountered on site. There will also be a programme of bird feeding over the winter carried out.
- 3.10.8 Financial contributions will be made via a Community Fund for use by the 'host' community. It is likely that payments will be made on an annual basis and the value will be linked to the annual electricity capacity of the wind farm.

4.1.1 As a very brief summary of the key impacts identified in the Environmental Statement are:

- Given the scheme would generate 'green' electricity, the Red Gap Wind Farm could prevent 16,950 tonnes of carbon dioxide emissions being released into the atmosphere during each year of operation (423,765 tonnes of carbon dioxide over the wind farm's 25 year lifetime).
- The main construction period is likely to last for approximately 6-9 months and normal construction operations will generally be from 7am to 7pm on weekdays and 7am to 1pm on Saturdays.
- There are no environmentally designated sites (*eg* for ecology, landscape or heritage) within the application site. There are, however, designated sites close to the application boundary.
- Impacts on landscape character and features range from minor to major impacts and depend on the sensitivity of the feature in question and the distance from the scheme. There will be a minor impact on the setting of the scheduled monument at High Burntoft to the south east of the development. The significance of any visual impacts will be reduced with increasing distance from the proposals, although property very close to the site will experience impacts of major significance.
- No ecologically designated sites will be impacted by the proposals although minor impacts to bats and birds at the wind farm site are predicted. A programme of species-rich hedgerow creation (over 2 km) and management, together with the creation of a new pond and potentially larger areas of wetland, coupled with woodland management will create significant enhancements to the habitat types encountered on site.
- Appropriate pollution control measures will be implemented (as part of the Construction Method Statement) to minimise and control the potential for impacts to water quality. Following implementation of these measures, the impacts from sediment and chemical pollution will be minor.
- During the construction phases no local properties will experience noise levels over the recognised acceptable levels. During the operational phase of the wind farm the assessment shows that at no wind speed do the noise levels exceed the recognised acceptable levels at any property in the area. The impact of noise from the turbines is therefore assessed as being not significant.

- Construction traffic will be managed to ensure it enters and leaves the site safely. A large number of construction vehicles will be required over the 6 to 9 months of construction although there are no significant impacts predicted to road users or local residents in relation to this construction traffic. One local Right of Way will need to be temporarily diverted during construction operations.
- Shadow flicker could potentially cause adverse impacts on receptors in the local area around the Red Gap site. Three properties may experience over 30 hours per year of theoretical shadow flicker. However, effective mitigation measures have been identified to ensure that there will be no significant residual impacts.
- Economic and employment impacts during construction will not be significant. Job creation during the operational phase will not be significant.