

Limestone Quarry Wind Farm

Environmental Statement Scoping Report
June 2010



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1 Introduction

1.1 Project Overview

- 1.1.1 Waste Recycling Group (WRG) has identified a site near Darrington in West Yorkshire as being potentially suitable for a wind farm development. The project is called Limestone Quarry Wind Farm, known from hereon in as the 'proposed development'. The proposed development would include up to eight wind turbine generators and associated infrastructure. A temporary meteorological mast will also be installed but this is subject to a separate planning application.
- 1.1.2 The proposed development would be situated on land that is currently an operational quarry and closed landfill site which are operated by WRG. The location of the site (indicating the landfill area only) is shown on WRG Drawing No. 264T018A which is included in Appendix A. A full description of the proposed development is provided in Section 2 of this report.
- 1.1.3 The site lies within the boundaries of two local planning authorities (LPAs) – Wakefield Council and Selby District Council.

1.2 The Developer and Background to the Project

- 1.2.1 WRG is one of the leading waste management service companies in the UK. Each year they receive, recycle and dispose of household, commercial and industrial waste.
- 1.2.2 WRG is committed to helping the UK meet its renewable energy targets and reduce its carbon emissions. Currently, around 200 megawatts (MW) of electricity is generated at WRG's operational and closed landfill sites across the UK from the methane-rich landfill gas that is generated naturally in all landfills. This is enough to power approximately 200,000 homes.
- 1.2.3 WRG is now looking at additional ways of generating renewable energy through the deployment of wind turbines on their land holdings. The UK is the windiest country in Europe and holds approximately 40% of Europe's overall wind reserve; therefore harnessing the wind to produce clean and renewable energy is an excellent way to provide a secure supply of electricity for people living in the UK.
- 1.2.4 WRG has previously undertaken a review of sites in its ownership throughout the UK identifying their suitability to support wind farm development. Scott Wilson Ltd undertook this study on behalf of WRG. From this study, the site at Darrington Quarry was identified as having the potential to be suitable for wind power generation. In developing a site, WRG seek to maximise the generating potential of renewable energy in an area, whilst taking into account localised constraints and minimising the extent of any environmental impacts.

1.3 The Consultant

- 1.3.1 WRG has commissioned Scott Wilson Ltd to prepare the planning application and undertake an Environmental Impact Assessment (EIA) for the proposed development. As the first stage of the EIA process, Scott Wilson has prepared this Scoping Report. The full EIA will be undertaken, and an Environmental Statement (ES) prepared, on receipt of the LPA's Scoping Opinion.

1.4 Screening

- 1.4.1 The requirement to undertake an Environmental Impact Assessment (EIA) of a development depends on the nature and scale of the project, as defined within the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (SI 199293) (as amended), hereafter referred to as the EIA Regulations. Projects within the EIA Regulations are listed within two categories:
- Schedule I Projects – which must always be subject to EIA; and
 - Schedule II Projects – which must be subject to EIA whenever they are likely to have significant effects on the environment.
- 1.4.2 The proposed development is not classified as a Schedule I Project. However, it is a project defined under Schedule II in Schedule 2.3(i): (*Energy industry – Installation for the harnessing of wind power for energy production (wind farms)*).
- 1.4.3 The proposed development exceeds both the applicable and indicative thresholds and criterion as stated in the EIA Regulations. The EIA Regulations state that if more than two turbines (for the applicable threshold criteria) or more than five turbines (for the indicative threshold criteria) are proposed, then it is likely that an EIA will be required. The proposed development will involve the installation of up to eight turbines and could have significant environmental effects in terms of visual impact and noise.
- 1.4.4 Determination of whether or not an EIA is required for a Schedule II project is usually undertaken through a Screening process, where the LPA makes a formal determination of whether an EIA is required for a specific project (known as a Screening Opinion). However in this case, WRG have made the decision to undertake an EIA for the development voluntarily. The EIA process therefore proceeds from this point forward by undertaking a Scoping Exercise.

1.5 Scoping

- 1.5.1 ‘Scoping’ is a fundamental component of the EIA process and involves focusing the study (and hence the Environmental Statement (ES)) on those issues of greatest potential significance. By compiling a Scoping Report and submitting the report to the LPA (in this case both Selby District Council and Wakefield Council), a formal opinion can be obtained which will inform the content of the ES, which is known as the Scoping Opinion.
- 1.5.2 This Scoping Report provides a suggested scope of the EIA for the proposed Limestone Quarry Wind Farm development. An agreement is sought from the LPAs on the elements that have been ‘scoped in’ and ‘scoped out’.
- 1.5.3 For elements that have been ‘scoped in’ to be included in the ES, a methodology has been outlined in this report as to how such elements will be assessed. Opinions on the suggested methodology are requested from the LPA to ensure that agreed methodologies and guidance are followed to the satisfaction of each LPA and other statutory consultees.

1.6 Structure of Scoping Report

1.6.1 This Scoping Report has been structured as follows:

- **Section 2:** outlines the key elements of the proposed development;
- **Section 3:** describes the site and the environmental features on site and in the surrounding area;
- **Section 4:** Summarises the Scoping Assessment and identifies the potentially significant issues that need to be addressed within the Environmental Impact Assessment process;
- **Section 5:** Presents the approach to assessing the potentially significant issues for the Environmental Statement;
- **Section 6:** Summarises the proposed contents of the Environmental Statement.

2 Proposed Development

2.1 Introduction

- 2.1.1 The proposed development will consist of up to eight wind turbines and ancillary infrastructure including a meteorological mast (subject to a separate application), substation, access tracks, on site electrical and telecommunication infrastructure, hardstanding areas and a temporary construction compound. An initial schematic layout is shown in Appendix A on Drawing No. 264A106 (WRG, March 2010).
- 2.1.2 There is currently no definitive construction programme for this development, although WRG is currently aiming for construction works to commence in Spring 2012.

2.2 Site Infrastructure

Turbine Type

- 2.2.1 Each wind turbine would have a three bladed rotor and nacelle mounted on a cylindrical steel tower, as shown in Photo 2.1 below. Each wind turbine has a maximum overall height to blade tip of 125m. The type of wind turbine that could be installed at the site is the Nordex N90 HS 2.5MW model, which has an 80m hub height and a 90m diameter rotor. The machines would be delivered to site in pre-assembled major component form.



Photo 2.1 – Image of the Nordex N90 Turbine Model

- 2.2.2 It is proposed that the turbines would be of a mid-grey or white colour with a minimum reflective, semi-matt finish coating.

Turbine Transformers

- 2.2.3 Turbine transformers would be installed internally within each turbine tower to convert the electrical output from the turbine generator to the local electricity distribution network voltage.

Turbine Foundations

- 2.2.4 The foundations of the wind turbines would, subject to ground investigation, be steel reinforced gravity foundations. These foundations would be topped with a plinth on which the wind turbine would be mounted just above ground level. A fixing assembly would be embedded in the plinth to provide an attachment for the turbine tower. Gravity foundations such as that shown in Photo 2.2 primarily range between circular, square or cross shape designs depending on manufacturer preference and ground conditions. Typically gravity foundations for the Nordex N90 have a diameter of 17.3m. The depth of the foundation will depend on the results of the ground investigation.



Photo 2.2 – Typical Wind Turbine Foundation (before backfilling)

Access Tracks

- 2.2.5 To allow delivery of the major turbine components and crane to the turbine positions, and to allow ongoing access through operation, a series of on-site access tracks would need to be constructed. Where new tracks are required these would generally be 5m wide. The tracks would have a rough crushed stone appearance and would be constructed from a geo-textile membrane with approximately 300mm-500mm depth of compacted stone. It is estimated that between two or three access points into the site would be required.
- 2.2.6 Offsite changes to the local road network may be required, including small sections of widening of existing roads at bends and junctions in order to allow the long component delivery vehicles to gain access to the site after they have left the main road network. The offsite highway works that would be required would be determined by undertaking a swept path analysis of the turbine transporter.

Turbine Hardstandings

- 2.2.7 A hardstanding area abutting each of the turbines would be laid for use by the crane and other construction vehicles. These hardstandings would be typically 20m by 60m and would have the same appearance and general specification as the new access tracks. The hardstandings would

usually remain in place throughout the operational life of the development to provide access during operation for cranes and delivery lorries in the unlikely event of component replacement.

Wind Farm Electrical and Communications Network

- 2.2.8 The wind turbines would be connected together through a series of underground cables that carry generated power to the substation. The cables would be laid in a shallow trench (usually 0.75m wide by 0.45m deep) which would primarily follow the route of the access tracks and would be backfilled and covered with topsoil. The wind turbines would be electrically earthed as site conditions require. Turbine communications and monitoring cables would also share the same trench as these power cables.

Substation

- 2.2.9 An onsite substation would be constructed to house the wind farm control system, metering equipment and switchgear necessary for connection to the local electricity distribution network. If connecting to the local distribution network at 33kV, as is currently anticipated, this substation would be a single storey building of approximately 5.6m by 4.6m and can be designed to have the appearance of a vernacular farm building.

Meteorological Mast

- 2.2.10 A temporary meteorological mast would be installed on site to monitor wind conditions at the site. The mast would be in place for approximately 2 years. The mast will be a 50m tall chillwind guyed tower and constructed of galvanised steel. Installation of the mast is subject to a separate planning application.

2.3 Wind Farm Operation

- 2.3.1 The wind turbines would start to generate power when the wind speeds at the nacelle reach 3m/s, attaining their maximum output around 14m/s. Under severe weather conditions (i.e. wind speeds above 25m/s) the turbines would automatically shut down to protect the equipment.
- 2.3.2 The turbines would be of the variable speed type with the rotors operating at a range of between 9.6rpm and 16.8rpm dependant on wind conditions. Control is achieved through pitch regulation of the blades, i.e. the 'pitching' of the blades into and out of the wind. The rotors of all turbines would rotate in the same direction.
- 2.3.3 In the Nordex N90 wind turbine, the rotor is connected to the generator via a gearbox. Power cables pass down the inside of the turbine tower to a transformer housed at the foot of the tower that would convert the generation voltage (usually 690V) to the local distribution network voltage. Additional power cables would then be run underground following the route of the turbine access tracks, to the substation from which the connection to the local distribution network is made.
- 2.3.4 The wind turbines are fully automated by a computer controller. Wind sensors mounted on the nacelle of each turbine continuously detect wind speed and wind direction. A yaw drive continuously ensures that the turbine is facing the wind as wind directions change.
- 2.3.5 All key operating parameters (e.g. oil pressure, temperature, vibration) are monitored by the turbine itself, and also remotely by the operator. Should any parameter of any turbine go beyond normal operating limits, the operator would be automatically alerted and would either restart the site remotely, or send out operations personnel to investigate and rectify the fault on site.

- 2.3.6 The wind turbines would be serviced annually, during which operations personnel would check the integrity of the structure, the mechanical systems and the control system functionality.
- 2.3.7 It is anticipated that the proposed development would be generating electricity for a period of twenty-five years.

3 Site and Identification of Potential Environmental Impacts

3.1 Site Description

- 3.1.1 The site of the proposed development is located (from the centre of the site) approximately 1.8km south of Knottingley and approximately 2.7km northeast of Darrington, near Pontefract in West Yorkshire. The approximate National Grid Reference for the centre of the site is SE 510210. The location of the site (which indicates the landfill area only) is shown on WRG Drawing No. 264T018A, included in Appendix A.
- 3.1.2 The Darrington Quarry site extends over an approximate area of 188 hectares. The eight proposed wind turbines would be located within this area. Indications of the positioning of the turbines are provided on Drawing No. 264A106 produced by WRG, April 2010, which is included in Appendix A.
- 3.1.3 The site is currently partly owned and partly leased by WRG. The site is currently an operational limestone quarry and has some cells which have been landfilled and have accepted a range of industrial, commercial and domestic waste, as well as quarry wastes. The site includes several blocks of land that vary in composition from restored, capped landfill to operational quarry works. Silt lagoons are present in the southern extents of the site. Photos 3.1 - 3.5 show photos of the site and surrounding area.



Photo 3.1 – View of the northern area of the site towards the north east.

- 3.1.4 In the vicinity of the site, the M62 is located directly adjacent and to the north of the site. Beyond the motorway to the north are open fields (which are soon to be subjected to quarrying) and the southern outskirts of Knottingley. To the east of the site is a railway line with agricultural fields and the village of Cridling Stubbs beyond. To the south are agricultural fields, isolated farmsteads and blocks of woodland, as well as Womersley Quarry which is understood to have received colliery waste. A public footpath runs from north to south across the western side of the site. To the west are agricultural fields and a golf course to the south west. The A1 is approximately 1.5km to the west of the site and the village of Darrington is located beyond the A1 to the south west of the site.



Photo 3.2 View of the site from Stubbs Lane to the south.



Photo 3.3 View of 'Cell 6' towards the southeast



Photo 3.4 View to the west of the site.



Photo 3.5 View to the northwest

- 3.1.5 Overall, the surrounding land use is predominantly rural, although the wider surrounding area is more of semi industrial nature, with the presence of power stations to the north and features such as colliery heaps, pylons, major roads and railway lines within the proximity.
- 3.1.6 In terms of nearby communities, the closest residential properties are located approximately 0.9km east of the site in Cridling Stubbs as well as other isolated properties to the west of the site including Grove Hall and Hodgewood Farm. Other residential areas in the vicinity include Knottingley to the north, Darrington to the southwest and Stapleton to the south (approximately 2.0km away).

3.2 Potential Environmental Impacts

3.2.1 Identification of environmental features within the vicinity of the site is the first step in defining the issues that need to be addressed within the Environmental Statement. A brief summary of the key environmental features that have been identified is presented below (topic by topic), along with an analysis of the potential environmental impacts that may be associated with the development.

Landscape and Visual Effects

3.2.2 The proposed development site lies in Natural England's National Character Area (NCA) 30: Southern Magnesian Limestone, which is described as a narrow elevated ridge, no more than a few miles across with smoothly rolling landform with long views over the surrounding lowland. The site is situated within Green Belt (designated by both Selby District Council and Wakefield Council) and a Locally Important Landscape Area (within Selby only).

3.2.3 A Zone of Theoretical Visibility (ZTV) has been produced for a 30 km study area. The ZTV indicates that visibility of the development from the west would be restricted due to the undulating landform. In the east, where there are less variations in the landform, the development may be potentially visible from a wider area, although due to very flat topography and intervening vegetation, views of the development site will be restricted.

3.2.4 It is likely that as a result of the development there would be an impact on the local landscape character within the vicinity of the site. It is anticipated that this impact could be significant.

3.2.5 It is anticipated that there would be impacts to key sensitive visual receptors including:

- residents experiencing views from dwellings;
- users of outdoor recreational facilities including public rights of way;
- people experiencing views from important landscape features of physical, cultural or historic interest, beauty spots and picnic areas;
- road users and travellers on trains experiencing views from transport routes; and
- workers, users of facilities and commercial buildings.

3.2.6 Visual impacts on these receptors would also be significant and require assessment.

3.2.7 Impacts are anticipated to occur during both construction (in particular because of the use of cranes to install the turbines) and once the wind farm is operational. Therefore the assessment of the impacts on landscape and visual effects during the construction and operational phases will be required.

Shadow Flicker

- 3.2.8 Shadow Flicker is a phenomenon that can occur when the moving blades of a wind turbine cast a shadow over a small opening such as a window on a property. Where this opening provides the primary light source, the effect of reducing the light intensity within the room in a repetitive manner can cause the perception of flickering as each blade passes in turn. This effect can occur when the sun is low in the sky and is particularly noticeable where the window represents the primary light source in the room. This phenomenon does not occur outside buildings where a passing shadow may be noticed but no 'flicker' would be perceived.
- 3.2.9 Whether this phenomenon is likely to occur or not depends on the positioning and distance of the turbine in respect to sensitive receptors, in relation to the diameter of the turbine rotor. In this case, the rotor diameter of the turbines that are proposed to be used is 90m, therefore properties within 900m of a turbine may be affected by this phenomena.
- 3.2.10 Considering the current layout of the wind farm, Grove Hall and Hodgewood Farm would be approximately 650m from the nearest turbine proposed to be located on the west side of the site and therefore may be affected. In addition, properties on the western edge of Cridling Stubbs are just less than 1km from the turbine proposed to be located on the eastern side of the site. Properties on the southern edge of Knottingley may also be affected.
- 3.2.11 This impact is only likely to occur during the operation of the wind farm therefore does not require assessment during the construction phase.

Noise and Vibration

- 3.2.12 The noise climate in the vicinity of the site is relatively high considering the close proximity of the site to the M62, as well as the A1. Also quarrying operations that currently occur on the site add to the road traffic noise, including activities such as excavators and loader movements on internal haul roads (see Photo 3.1) as well as heavy good vehicles (HGVs) travelling to and from site on local roads.
- 3.2.13 The proposed wind farm has the potential to generate noise during both its construction and its operation.
- 3.2.14 As the turbines are delivered to site in pre-assembled major component form, foundation preparation and increased HGV movements are the most likely sources of increased noise during the construction phase.
- 3.2.15 In general terms there are two 'types' of noise associated with the wind turbines during the operational phase:
- Mechanical noise – generated by the gearbox; generator; and other parts of the drive train, and radiated as noise through the nacelle and tower support structure (if not suitably isolated); and
 - Aerodynamic noise – generated by the action of the turbine blades rotating through the air. The level of noise is determined by the rate of rotation, blade diameter and form.

- 3.2.16 As identified above, there are properties that are within the vicinity of the site; therefore, although the noise climate is relatively high, there may be the potential for noise impacts to occur as a result of the proposed development.
- 3.2.17 An assessment of the impact of the proposed development on noise levels will therefore be required during both the construction and operational phases of the development.

Socio-economic Effects

- 3.2.18 The site is located in an area which has close economic and social links with the surrounding West and North Yorkshire towns, in particular Wakefield and Selby.
- 3.2.19 Wakefield, located in West Yorkshire has close social and economic links with Leeds located to its north and is linked to surrounding areas by the M1 and A63. The district is also served by two main train stations within the City Centre, Wakefield Westgate and Wakefield Kirkgate. Knottingley is well served by local connections to the urban conurbations of Wakefield and Leeds by Knottingley station.
- 3.2.20 Selby, located in North Yorkshire was built around a large shipbuilding industry and was an important port. Today it has a strong agricultural economy and with good transport links including the A19 north to York and south to the M62; and with the A63 linking with the A1(M) and on to Leeds and Wakefield it also acts as a popular commuter area. Selby is served by direct rail services to London, Leeds, Manchester and York.
- 3.2.21 According to 2008 ONS Population Estimates, the population of Wakefield District was 322,320¹ and Selby Districts was 82,000² giving a combined population of over 400,000 people covering an area of approximately 950 square kilometres.
- 3.2.22 Darrington, located in the east of Wakefield District has a population of approximately 1,300 people with a relatively elderly demographic at the last census (37% of people in Darrington were aged 45 to 64). Cridling Stubbs, located to the east of the development site in Selby District had a population of approximately 150 and similar to Darrington had a relatively high percentage (35%) of people aged 45 to 64.
- 3.2.23 The region was once heavily dependent on the coal mining industry but since the miners strikes in the 1980s the number of pits declined with only a couple of mines still operating across the two districts today. In 2001 the two main industries in the area were 'manufacturing' and 'wholesale & retail trade; vehicle repair'. The region also had a large financial and service sector industry incorporating real estate, health and social work and transport and communications. Unemployment in Wakefield is higher than the regional average (35%) but lower than the regional average in Selby.
- 3.2.24 Tourism is a significant contributor to the regional economy but is relatively undeveloped in Wakefield District. The Yorkshire Sculpture Park, the National Coal Mining Museum and Nostell Priory house and Xscape are already important tourist destinations. However, improvement of the district's city and town centres is crucial to attracting tourists and investment.
- 3.2.25 Considering the socioeconomic elements of the region, the following potential impacts associated with the development have been identified:
- Direct, indirect and induced impact measured in terms of jobs created from construction and limited ongoing operational positions (due to the size of the development);

¹ Wakefield District Council Annual Monitoring Report 2009

² Selby District Annual Monitoring Report 2009

- Impact on the local economy;
 - New market opportunities which may arise as a result of lower energy tariffs;
 - Tourism opportunities (potentially limited due to its proximity next to an operational landfill); and
 - Community well being and social cohesion impacts on local residents.
- 3.2.26 An assessment of the potential socio-economic effects resulting from the construction and operation of the proposed wind farm will therefore be required.

Cultural Heritage

- 3.2.27 There are approximately 800 Listed Buildings, 52 Scheduled Monuments and four Registered Parks and Gardens within 15km of the site. There are also four Conservation Areas within 5km of the site. In addition, Wakefield District Council maintains a list of locally important buildings. This has not been consulted as part of this scoping report as it is not a readily accessible database.
- 3.2.28 A search of the West Yorkshire Historic Environment Record (HER) and the North Yorkshire HER for undesignated heritage assets has been undertaken for this scoping report. The search area for this is 2km from the proposed development boundary. This is in order to identify only those assets which would be significantly impacted by the proposed development. The search has identified 83 sites from the West Yorkshire HER and 42 monuments, 21 events and 20 historic landscape character units from the North Yorkshire HER.
- 3.2.29 Due to the height and moving parts of the wind turbines, there is the potential for the wind farm to have an impact on the setting of designated and undesignated heritage assets including Scheduled Monuments, Listed Buildings, Conservation Areas, Registered Parks & Gardens, Registered Battlefields, locally listed buildings.
- 3.2.30 There is the potential for the setting of heritage assets to be impacted up to 15km from the proposed development site. Following Scottish legislation set down in PAN 45, 2002; Renewable Energy Technologies, it is stated that between 15km and 30km from the site, turbines would only be seen in very clear visibility, constituting a minor element in the landscape, therefore, a search of designated assets within 15km has been undertaken. This encompasses the area where the turbines would be prominent only in clear visibility and seen as part of the wider landscape.
- 3.2.31 In addition, although the site is an operational quarry, there is the potential for one of the turbines to be located on virgin ground. The proposed development may therefore directly impact upon buried archaeological assets during construction. This element is therefore scoped into the assessment at this stage. However, the assessment of the impacts of the development on archaeological remains may not be necessary if the turbine locations as well as the positioning of other ancillary infrastructure are to be located on disturbed ground. This will be confirmed during the EIA process.

Access, Traffic and Transportation

- 3.2.32 The proposed development is in close proximity to major road corridors and a railway line. Although the site has close links to the motorway network (with the A1 and M62 in close proximity), there are only very minor roads on approach to the site, some of which have tight bends and are located in undulating topography.
- 3.2.33 There are two potential transportation impacts associated with the development. The first is during construction, construction vehicles, in particular the turbine delivery vehicles, may not be able to navigate the minor roads on approach to the site, therefore offsite highway works may be required.
- 3.2.34 In addition, operation of the wind turbines would be in close vicinity to the motorway and railway line, although the proposed locations for the turbines have ensured that they are outside the required buffer zone, consultation with the Highways Agency and Network Rail will be required to ensure that the impacts on these transportation corridors are minimal.
- 3.2.35 An assessment of the impacts on traffic and transportation during construction and operation of the proposed wind farm will be required.

Electromagnetic Interference and Aviation

- 3.2.36 Microwave, television signals and other electromagnetic signals associated with telecommunications are transmitted throughout the country by a wide range of operators, including both statutory agencies and commercial companies. There is the potential for interference to the transmission of these signals from any large structure, including wind turbines, if developed close to or bisecting the transmission path.
- 3.2.37 There are numerous communication masts in the area and initial requests for information on nearby telecommunication links has indicated that there are links associated with the power lines to the north of the site and the operation of wind turbines may interfere with these links.
- 3.2.38 In addition, wind turbines can affect airport radar systems. Sherburne Airfield is located 10km to the north and Walton Wood airstrip 6km to the south of the site. The site is also located 26km from Robin Hood Airport and therefore is within the 30km radius that triggers the requirement for consultation.
- 3.2.39 Therefore consultation with aviation organisations and telecommunications companies shall be undertaken to assess the potential for the wind farm to have an impact on these systems.

Ecology

- 3.2.40 An ecological records search was provided by West Yorkshire Ecology in May 2009. There are no European designated sites within 5km of the proposed development. There are two Sites of Scientific Interest within 5km of the site, which are:
- Willowgarths SSSI - approximately 3km north north-east of the site. The SSSI contains notable habitats including open water, willow carr, tall swamp, scrub and marshy and neutral grassland; and
 - Went Hill Grassland - approximately 4km south west of the site. The SSSI contains notable habitats including unimproved calcareous and neutral grassland and scrub.

- 3.2.41 An extended Phase 1 Habitat Survey was undertaken on the site in April 2009. All accessible parts of the site were walked where it was safe to do so. Habitats on site were mapped and the site searched for evidence of protected species.
- 3.2.42 Habitats mapped across the site include species poor grassland with tall ruderal margins, bare ground mosaic, semi-mature woodland blocks, species poor hedgerows and open water. The open water habitats are large lagoons and small ephemeral ponds. The lagoons are frequently deep and steep sided with limited marginal and no significant aquatic vegetation. Three ephemeral water-bodies were identified, associated with run off from operational areas; water quality is poor and associated vegetation limited.
- 3.2.43 The assessment of the site's potential to support protected species is as follows: Breeding birds, high; passage birds, low to moderate; bat roosts, low; bat foraging, moderate; badger, low; water vole, low; invertebrates, good; reptiles, low to moderate; great crested newt, low. A number of species specific surveys have already been undertaken at the site, which have identified the presence (as well as absence) of protected species.
- 3.2.44 The surveys identified that there is potential for the proposed development to have impacts on birds, bats and reptiles and survey for these species are continuing to be undertaken to further establish presence and behavioural patterns.
- 3.2.45 Impacts on the two SSSI's as a result of the proposed development are not anticipated so no further assessment of these sites is proposed for the Environmental Statement. In addition, an Appropriate Assessment would not be required as there are no European designated sites within 5km of the proposed development.
- 3.2.46 Impacts on the identified protected species could occur during both construction and operation of the wind farm. For instance, disturbance of species during site preparation and clearance activities, as well as impacts on bat and bird populations as a result of the rotation of the turbines, which may result in direct injury or indirectly through changing commuting /wildlife corridors.

Geology and Soils

- 3.2.47 Information on the geology of the area is reported in the Darrington North Cell 6 PPC application (September 2007). This report consulted the following sources of information:
- British Geological Survey Sheet 1:50,000 sheet scale, No 78 (Solid and Drift Edition);
 - The Geological Survey Memoir for Barnsley District; and
 - Borehole logs.
- 3.2.48 Large areas of the region have no drift deposits, the drift geology of the area is fairly localised with alluvial sediments associated with the flood plain of the Rivers Aire and Calder circa 2km north of the M62, and pockets of glacial derived sediments. These could consist of sand and gravel and 'head' (an earthy mass containing angular fragments), and boulder clay.
- 3.2.49 The solid geology of the region consists of Carboniferous strata to the west and Triassic and Permian rocks to the east. The regional dip of the geology is circa 5 degrees to the east, therefore the older rocks are exposed to the west of the regions and younger ones to the east.
- 3.2.50 The West Yorkshire Geological Trust website gives information on the local geological sites of importance, known as RIGS (Regionally Important Geological sites). The closest RIGs are listed in the area is located in the middle of Pontefract (Mill Hill Road located circa 4.5km to the west of

- the Darrington area) and 4km to the south is the Wentbridge Road cutting on a bend of the old A1.
- 3.2.51 On site, the quarry workings at Darrington Quarry complex have taken place over many years. Historical maps show the area being quarried in the mid 18th Century, but records indicate that quarrying activities have been taking place in this area many years previous to this date. The area is being quarried for limestone, in particular the Upper Magnesian Limestone (also known as the Brotherton Formation). The limestone is being worked down to the older Middle Permian Marl (also known as the Edlington Formation).
- 3.2.52 The planning permission for the extraction of limestone included for the restoration of the site to agriculture, to be achieved through the infilling of the voids with controlled wastes. Therefore the phased extraction of limestone has subsequently then allowed for some designated cells to be infilled with controlled (household, commercial and industrial) wastes. Other cells (within the central and southern excavations) have also been used for the deposition of quarry waste derived from the Darrington complex. Currently there are two fully restored landfill areas, both of which contain controlled wastes.
- 3.2.53 In addition to landfill and extraction areas, there are lagoons on site, which are in various stages of silt deposition, some being almost entirely filled.
- 3.2.54 The turbines are proposed to be mainly located within extracted quarry zones and therefore positioned onto bedrock for the purpose of ground stability. No turbines would be located on the landfill itself, although two turbines are proposed to be located adjacent to landfilled areas. A ground investigation will be undertaken in targeted areas to test ground stability, with selective testing of the soil arisings.
- 3.2.55 It is understood that the construction of the turbines is unlikely to result in the disturbance of landfilled materials. The intrusive works to create the foundations for the turbines are likely to be minimal, in particular when considering the nature of the site being an operational quarry extracting mineral resource to a much more significant extent than the turbine foundation works.
- 3.2.56 Considering the nature of the existing site, impacts of the development on land (such as soil erosion, impacts on agriculture, waste disposal and soil contamination) are not considered to be significant. From information gained from the West Yorkshire Geological Trust no listed sites of regional geological importance would be impacted by the construction of the proposed wind turbines.
- 3.2.57 Ground stability is primarily an engineering issue and would be addressed within a ground investigation report. In addition, soil arisings created during turbine foundation preparations and routine construction works would be controlled by standard good practice measures, which would be set out within a Construction Environmental Management Plan (CEMP).
- 3.2.58 On this basis, the potential impact of the proposed development on soils and geology (including contamination of soils) is not considered to be significant and is proposed to be scoped out of the Environmental Statement.
- 3.2.59 It should be noted that potential issues associated with leachate disturbance (in particular at locations where the turbines are located adjacent to landfill areas) and the potential for impacts on groundwater would be assessed in the hydrogeology section of the ES (see below).

Hydrogeology

- 3.2.60 The geology below the site is classified as a major aquifer but is not within a source protection zone. The aquifer is associated with the limestone formation. Removal of the limestone in areas of the site has resulted in a change in groundwater flow patterns and has removed the effective aquifer in parts. The marl formation that lies below the limestone is a non aquifer and hence acts as a vertical barrier to groundwater movement and so acts as a natural liner underneath some areas of landfill (the West Yorkshire Dilute and Disperse Landfill cell).
- 3.2.61 Information contained within the PPC Application to allow for the infilling of a cell on the Darrington Quarry site (Darrington North Cell 6 (September 2007)) reports that the groundwater flow is generally in an easterly to east-north-easterly-direction towards the River Aire, but the Darrington Quarries Complex acts as a barrier to groundwater flow. This barrier effect causes mounding of groundwater to the west of the site, and a depression, or groundwater shadow, to the east adjacent to the Darrington North Landfill Cells 1 – 4. A plan that was used within the PPC application (ESID11) to demonstrate groundwater flow is included in Appendix B for clarity.
- 3.2.62 The Ordnance Survey mapping of the area shows the area to lie circa 30-40m AOD. The groundwater monitoring results included in the PPC application (September 2007) shows monitored boreholes in the area to have groundwater levels of 40m AOD to the west of the site, reducing to 5m AOD to the east.
- 3.2.63 The potential impact of construction of the wind farm on groundwater is considered necessary, in particular in terms of the potential for pollution of the aquifer as a result of mobilising contamination through excavation and possible piling activities close to areas of landfill and the silt lagoons.

Hydrology

- 3.2.64 There are no significant surface water features on or within close vicinity of the site. The closest surface water features are small field drains that run to the west of Leys Lane (see Photo 3.6 below) as well as field drains to the east of the site, east of the railway line.
- 3.2.65 The drains to the east flow to a small tributary of Sandy Dike, which flows in a north-easterly direction towards the M62 south drain, which in turn ultimately discharges to the Air and Calder Navigation waterway, which lies 2.2km north-east of the site.
- 3.2.66 The site is not located within an area at risk of flooding as shown by Environment Agency mapping of the area. The closest area at risk of flooding is situated to the east of the railway line and is associated with the field drains which are tributaries to Sandy Dike.
- 3.2.67 The development would comprise only a small area of impermeable surface (<0.5ha), therefore impacts on drainage patterns is unlikely. The development is unlikely to exacerbate flood risk nor have a significant effect on the characteristics of surface watercourses. Therefore it is proposed that this aspect is scoped out of the Environmental Statement. It is anticipated that the proposed development would not require a Flood Risk Assessment.



Photo 3.6 - Nearest surface water features – field ditches to the west

Air Quality and Climate

- 3.2.68 Wakefield District Council has declared several parts of the Borough an Air Quality Management Area (AQMA). The site itself is not located within an AQMA, although it borders the AQMAs designated around the M62 and the A1.
- 3.2.69 The temporary additional vehicle movements that are likely to occur during the construction phase of the development would have a negligible impact on existing traffic on these routes and hence on the AQMA. Likewise, construction dust impacts are likely to be negligible considering current activities that are undertaken at the site.
- 3.2.70 Impacts of the development on local air quality are therefore not considered to be significant and it is therefore proposed that this aspect is scoped out of the Environmental Statement.
- 3.2.71 The positive impacts of the development on climate change through the provision of a renewable energy source would be addressed within the Project Description of the Environmental Statement and within the Planning, Design and Access Statement.

Indirect and Secondary Effects

- 3.2.72 These aspects relate to impacts that are likely to arise as an indirect result of a proposed development, such as the sourcing of raw materials that are used to construct the development or as a result of other infrastructure that is required to support the development. In this case the following aspects have been identified:
- the use of raw materials in terms of turbine manufacture and construction of on-site infrastructure; and
 - the connection to the National Grid would require additional infrastructure to be installed off – site.
- 3.2.73 It is proposed that these aspects are addressed within the Project Description section of the Environmental Statement. In addition, this also includes the consideration of the development in combination with other existing / proposed developments in the surrounding area. There are two

wind farm applications currently being considered by Selby Council, these are Woodland Wind Farm and Bishopwood Wind Farm (Ref: 2009/0393/FUL). The proposed wind farm in Darrington (at Westfield Lane) is currently in appeal and being considered by the Secretary of State.

- 3.2.74 These proposed sites amongst other developments will be considered in terms of the potential cumulative impact within the Environmental Statement.

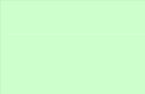
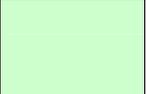
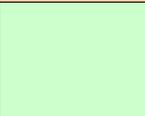
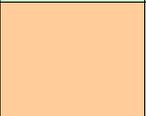
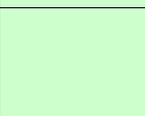
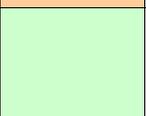
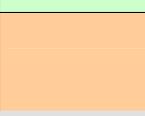
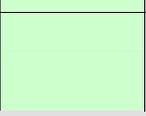
4 Scoping Assessment

- 4.1.1 An examination of the initial proposals for the Limestone Quarry Wind Farm and the nature of the site and its surrounding area has led to the derivation of the issues which are considered to be significant and those which are not.
- 4.1.2 Table 4.1 below provides a summary of the scoping assessment, along with a rationale of the potential significant environmental issues which are suggested to be scoped into the EIA, as well as reasons for proposing to scope out certain topics. The table is based on a guideline checklist of issues listed within 'Environmental Impact Assessment: Guide to Procedures, (ODPM now know as Department for Communities and Local Government (DCLG)), 2000'.

Table Key:

-  Issue to be **Scoped into** the Environmental Statement
-  Issue to be **Scoped out** of the Environmental Statement

Table 4.1 Summary of the Scoping Assessment

Aspect	Scope in or out		Rationale
	Construction Impacts	Operational Impacts	
Effects on human beings, buildings and man-made features.			
Landscape and Visual Effects (including Shadow Flicker)			The proposed development is in the vicinity of residential receptors, within Green Belt and in a locally important landscape area.
Noise and Vibration			The proposed development is in proximity to noise sensitive receptors.
Socioeconomic Impacts			The proposed development has the potential to impact on the local community, as well as the local economy and leisure and tourism, and also may create jobs.
Built Heritage / Historic Landscape Impacts			The impact of the operational development on cultural heritage features will be assessed, associated with setting impacts on heritage features within the surrounding area.
Archaeological Impacts			Possible direct impacts on archaeological features during construction for one turbine, depending on the defined sitings of turbines and other development infrastructure.
Local roads and Transport			The proposed development is in close proximity to major road corridors and a railway line. Also changes to local roads may be required to facilitate the delivery of the turbines.
Impacts on Telecommunication Links			There are a number of communication links that are present in the area. Operation of the wind farm may affect these links.
Effects on Flora, Fauna and Geology			

Ecological Impacts			Protected species have been identified on the site. Potential impacts during construction and operation on particular species will need to be assessed.
Loss of Geological/physiographic Features			Because of the nature of the site, being an existing quarry, there would be no loss or damage to this type of resource as a result of the proposed development. There are no Regionally Important Geological sites (RIGs) close to the site. Therefore this aspect would not require assessment.
Effects on Land			
Change in topography/ soil erosion/effects of earth moving on stability			The proposed development would not result in a significant impact on soils or topography of the site, in particular because of the nature of the site, being an existing quarry.
Chemical emissions and deposits on land/ waste disposal.			Considering the nature of the site, as well as the minimal excavations required in comparison to the existing site operations, the impact of the development on this aspect is not considered to be significant.
Land use/resource effects (e.g. on agriculture, minerals)			Majority of the wind farm development is located on areas that have already been subject to quarrying activities, therefore the mineral resources have already been utilised. Only one turbine may be located on virgin ground but this area is not used for agricultural purposes.
Effects on Water			
Drainage patterns/surface waters			No significant surface water features on site and not located in a flood risk zone. The development would comprise only a small area of impermeable surface (<0.5ha), therefore impacts on drainage patterns is unlikely and would not have a significant effect on the characteristics of surface watercourses.
Groundwater			Assessment of the potential impacts on groundwater during construction excavations will need to be undertaken, in particular to determine impacts on groundwater flows and levels as well as the risk of contamination to occur.
Effects on Air and Climate			
Local Air Quality			Impacts associated with emissions from construction traffic and dust generated during construction is anticipated to not be significant, in particular considering the current operations at the site. No operational emissions from the proposals would occur, with only minimal emissions from operational traffic.
Climate			The positive aspects of development on climate are not considered to be relevant to include in the Environmental Statement, although the general positive environmental benefits (in terms of climate change) of the development would be addressed in the planning statement.
Indirect and Secondary Effects			

Effects of traffic related to the development			Impacts on noise and air quality resulting from construction and operational traffic are not considered significant. The effect on local roads is scoped in, as described above.
Effects from consumption of raw materials			Development construction would involve the use of raw materials in terms of turbine manufacture and construction of on-site infrastructure. This would be outlined in the Project Description but would not be formally assessed.
Effects of other developments required by the project.			The connection to the Grid would be the main associated project to the proposed development (which would be subject to a separate application and assessment). This element will be described in general terms within the project description section of the ES, but would not be formally assessed.
Effects of development with other existing / proposed development			Other committed developments in the area have been identified and the cumulative impact of these developments alongside the proposed development will be required.

5 Proposed Approach to the EIA

5.1 Introduction

- 5.1.1 Section 4 has defined the issues that are potentially significant and which are therefore to be included within the Environmental Statement. This section of the report now focuses on these issues and describes the methodology and approach to the assessment to address these issues.

5.2 Landscape and Visual Effects

Introduction

- 5.2.1 Three Natural England National Character Area's (NCA) fall within the extent of the study area, NCA30 Southern Magnesian Limestone, NCA38 Nottinghamshire, Derbyshire and Yorkshire Coalfield and NCA39 Humberland Levels. The proposed development site lies in the NCA 30 Southern Magnesian Limestone, as described previously. The site and surrounding area also lies within an area designated as Green Belt.
- 5.2.2 A Zone of Theoretical Visibility (ZTV) has been produced for a 30 km study area. The ZTV indicates that visibility of the development from the west would be restricted, but more potentially visible from a wider area to the east; although due to very flat topography and intervening vegetation, views of the development site would be restricted from this direction also.

Proposed Methodology for EIA

- 5.2.3 The intention of the Landscape and Visual Impact Assessment would be to assess how the proposed wind farm development would be accommodated by the local landscape and its effects on the character of the immediate and broader areas. In addition, it aims to determine the likely effect of the proposed development on views from identified sensitive receptors.
- 5.2.4 The desk-top study has utilised the Natural England's Characterisation, National Character Areas and the local landscape characterisation produced by Wakefield, Selby and North Lincolnshire. Current, relevant landscape policies would also be considered in relation to the site and local surrounding area.
- 5.2.5 An approximate ZTV of the proposed development has been produced prior to the site visit, and any local variations on site (including localised screening) used to inform the selection of viewpoints. Map work would also identify any potentially sensitive visual receptors in the vicinity of the development. The ZTV is based on a bare-ground scenario and presents a 'worst case' situation. There may be extensive areas within the ZTV from which there are no views of the proposed development due to local screening effects of built form and vegetation.
- 5.2.6 The desk-top study and ZTV would help to identify sensitive landscape and visual receptors to be assessed. Identified viewpoints would be agreed in consultation with Wakefield Council and Selby District Council and amended accordingly prior to the site visit as a result of consultation. A site visit would be carried out to verify these receptors and to record the potential visibility or lack of views to the development.

5.2.7 The landscape and visual impact assessment would be based on the following best practice guidance:

- Guidelines for Landscape and Visual Impact Assessment, Second Edition. (2002) Landscape Institute and Institute of Environmental Management and Assessment;
- Landscape Character Assessment; Guidance for England and Scotland (2002) The Countryside Agency and Scottish Natural Heritage; and
- Visual assessment for Wind Farms; Good Practice Guidance (2006) Scottish Natural Heritage.

5.2.8 It would also take account of advice within the following documents:

- Environmental Impact Assessment Regulations (1999);
- Guidelines on the Environmental Impact of Windfarms and Small Scale Hydro Electric Schemes (2001) Natural Heritage;
- Visual Representation of Wind Farms, Good Practice Guidance. (2006) Scottish Natural Heritage; and
- Cumulative Effect of Wind Farms (2005) Scottish Natural Heritage.

5.3 Shadow Flicker

Introduction

5.3.1 Shadow Flicker, as described previously, is a phenomenon that can occur when the moving blades of a wind turbine cast a shadow over a small opening such as a window on a property. The Companion Guide to Planning Policy Statement (PPS) 22 describes the conditions in the UK under which flicker may occur. It states that the effect diminishes with distance, and that 'flicker effects' have been proven to occur only within ten rotor diameters of a turbine. It also states that effects only occur within 130 degrees either side of north relative to the turbines. It only occurs inside buildings where the flicker appears through a narrow window opening.

Proposed Methodology for EIA

5.3.2 In line with government guidance any potential shadow flicker effects would be quantified using a computer model during the EIA process. Properties with the potential to be affected by shadow flicker would be mapped and a detailed assessment of any impact would be made using specialist software (Windfarm Release 4.0).

5.4 Noise and Vibration

Introduction

- 5.4.1 Considering the location of the turbines and vicinity of noise sensitive receptors, noise and vibration impacts will be assessed. The proposed wind farm has the potential to generate noise during both its construction and its operation.
- 5.4.2 Construction noise and vibration will be assessed in accordance with British Standard BS5228: 2009 Code of Practice for *Noise and Vibration Control on Construction and Open sites*.
- 5.4.3 Operational noise will be assessed in accordance with the requirements of ETSU-R-97:1996 *The Assessment and Rating of Noise from Wind Farms*.
- 5.4.4 These methods are explained in more detail below.

Proposed Methodology for EIA

- 5.4.5 In order to gather an understanding of the existing acoustic climate, baseline noise monitoring would be undertaken for a period of 2 to 3 weeks, at a selection of noise sensitive receptors in each direction from the proposed wind farm.
- 5.4.6 Precise locations would be agreed in advance with the relevant Local Authority Environmental Health Departments, but are anticipated to be as follows:
- 1/3, Coniston Place, WF11 0NB, or 62..68 (even numbers) Windermere Drive;
 - Park Balk Farm, Womersley Road, or Farpark Farm Cottage / Farfield Cottage;
 - 17..35 Wrights Lane (odd numbers) Criddling Stubbs;
 - Scrombeck Farm, Bankwood Road;
 - Hodgewood Farm, Hodgewood Lane; and
 - Grove Hall, WF11 0AD.
- 5.4.7 Data from an on-site anemometer mast (for which a separate application is to be submitted) would provide wind speed measurement data, measured every ten minutes and over the same period as the noise survey.

Operational Noise

- 5.4.8 Once the baseline noise survey and meteorological data has been analysed and criteria determined, noise levels at surrounding receptor locations as a result of operation of the turbines, would be predicted using Cadna-A noise modelling software. This noise prediction software employs the methods of ISO 9613-2 1996: *Attenuation of sound during propagation outdoors*.
- 5.4.9 Source data for the wind turbines, in terms of their A-weighted sound power level over a range of operating wind speeds, would be sourced from the manufacturer.

Significance Criteria

- 5.4.10 The ETSU-R-97 document recommends that noise limits should be set relative to existing background noise levels at the nearest noise sensitive properties, subject to a fixed minimum limit. It is also emphasised that these limits should reflect the variation in both turbine source and background noise with wind speed.
- 5.4.11 For daytime hours, the suggested limit is 35-40 dB (L_{A90}) or 5 dB (A) above the prevailing background level (as measured during quiet daytime periods), whichever is the greater. For night time periods, the recommended limit is 43 dB (L_{A90}) or 5 dB (A) above the background, whichever is greater.
- 5.4.12 Quiet daytime periods are defined as:
- All evenings from 1800hrs to 2300hrs;
 - Saturday afternoon from 1300hrs to 1800hrs;
 - All day Sunday, 0700hrs to 1800hrs; and
 - Nighttime is defined as 2300hrs to 0700hrs.

Construction Noise

- 5.4.13 Construction noise would be assessed in accordance with British Standard BS5228: 2009 Code of Practice for Noise and Vibration Control on Construction and Open sites. The noise associated with construction of the wind turbines would be assessed in accordance with BS5228:2009 and the assessment would comprise the following:
- Liaison with the relevant Environmental Health Departments to agree appropriate noise criteria;
 - Predictions of noise associated with the proposed plant and activities, at the closest sensitive receptors in each direction from the site;
 - Consideration of the impact of increased traffic movements to and from the site during the construction period; and
 - Consideration of vibration levels at the closest receptor locations as a result of proposed plant and activities.

5.5 Socio-Economic Effects

Introduction

- 5.5.1 Considering the communities that are located in the vicinity of the proposed wind farm, as well as the businesses, schools and leisure facilities that exist, an assessment of the socioeconomic impacts of the development will be undertaken.
- 5.5.2 The socio-economic Chapter within the ES would describe and evaluate the socio-economic environment of the proposed wind farm and the surrounding locality, and assess the potential

construction and operational impacts on the socio-economic environment. The approach to the assessment is described below.

Proposed Methodology for EIA

- 5.5.3 The baseline information that would be used for this assessment would focus principally on district level data for Wakefield and Selby and regional level data for Yorkshire and the Humber. This provides the most relevant scope to prepare a commentary about the socio-economic characteristics appropriated to the type and scale of development.
- 5.5.4 The assessment would consider both temporary and permanent effects and would calculate potential residual impacts on existing nearby businesses, residential and local communities. The Chapter would propose appropriate mitigation measures to offset adverse and maximise beneficial effects and assess the residual impacts following mitigation.
- 5.5.5 The assessment methodology of employment and wider economic impacts would follow the recommendations set out in the HM Treasury Guidance “The Green Book: Appraisal and Evaluation in UK Government” (2003) and the English Partnership’s Guidance “Additionality Guide” (2004) on socio-economic impact assessment and evaluation.
- 5.5.6 Assessment of the tourist related issues would be undertaken though a combination of consultation with local tourism representatives and operators, and a desk review of recent studies into the tourism impact of wind farms. Local consultation would be with officers at Selby and Wakefield Council and provide an assessment of tourism activities within the vicinity of the proposed wind farm and consideration of documents such as the *Strategic Framework for the Visitor Economy*.
- 5.5.7 Assessment of community well-being and social cohesion impacts would include consideration of any likely significant community disturbance and potential public safety issues which may be experienced by residents living in close proximity of the wind turbines as well as any other potentially sensitive social receptors, such as Darrington School and the Local Parish. Consultation with Wakefield and Selby District Councils and statutory consultees with respect to these and any further local issues pertinent to the proposal, would also add to this assessment.
- 5.5.8 The significance of the impacts takes into consideration the following three factors:
- The magnitude or severity of an effect (i.e. the number of people likely to be affected);
 - The permanence of an effect (i.e. whether the impact is likely to have a long term or irreversible effect); and
 - The sensitivity of the affected (i.e. whether the effects are likely disproportionately to affect vulnerable or disadvantaged groups).

5.6 Cultural Heritage

Introduction

- 5.6.1 There are a number of designated and non-designated cultural heritage assets recorded within the vicinity of the site, including Scheduled Monuments, Listed Buildings, Conservation Areas, Registered Parks & Gardens, Registered Battlefields, locally listed buildings and undesignated archaeological assets.
- 5.6.2 The potential impact of the proposed development on archaeological sites during construction may require assessment if a turbine is to be located on virgin ground). In addition, the potential impact of the proposed development, once constructed, on setting of heritage features will be undertaken. The assessment methods are described below.

Proposed Methodology for EIA

- 5.6.3 The assessment would be undertaken in accordance with PPS 5: Planning for the Historic Environment, PPS 22: Renewable Energy, guidelines provided by the Institute for Archaeologists, Scottish legislation PAN 45, English Heritage guidance *Wind Energy and the Historic Environment 2005* and other relevant guidance on setting and cumulative impacts.
- 5.6.4 Following receipt of the scoping responses, a baseline assessment would be undertaken; the scope of which would be agreed with the County Archaeologists for North Yorkshire and West Yorkshire. This would consist of the identification and description of the heritage assets which may be impacted upon by the development and would involve further documentary and archive research. A review of existing reports that have been produced for Darrington Quarry would also be undertaken. Following this, a site visit would be undertaken to assess which assets would be significantly impacted upon by the development.
- 5.6.5 A Cultural Heritage chapter would be prepared for the ES. This would assess the magnitude of the impact from the proposed development and identified heritage assets, including historic buildings, historic landscape and archaeology (if applicable). These assets would have been given a value decided by national criteria. Mitigation proposals would be proposed where necessary, taking into account the temporary nature of the turbines and their reversibility.

5.7 Access, Transport and Traffic

Introduction

- 5.7.1 Throughout the design life of the wind farm, the traffic impact would vary considerably. The three key phases of the wind farm, all of which would result in different traffic impacts, are:
- Construction;
 - Operation; and
 - Maintenance.
- 5.7.2 It is expected that the proposed wind farm would take approximately nine months to construct. Traffic associated with the construction phase would include:
- Deliveries of construction materials, such as aggregate, concrete and steel reinforcements;

- Deliveries of wind turbines and rotors; and
 - Construction workers.
- 5.7.3 During construction it is expected that routes used for delivery vehicles would be as per the existing routes used by quarry trucks associated with the adjacent quarry development. It is understood that quarrying activities would continue at the site alongside the wind farm development.
- 5.7.4 Due to their size, the wind turbines would be delivered to site in component form. Typically, for turbines of the size proposed for this development, each turbine delivery would be split into the loads, as shown in Table 5.1. In addition to the turbine components, a large mobile crane would be required to erect the turbines, with the assistance of a smaller crane.

Table 5.1: Turbine Delivery Breakdown

Part Description	Number of Loads
Nacelle (complete)	1
Blades	3
Towers	4
Cables / controllers	1
Assembly tools / generator	1

- 5.7.5 The routing for turbine delivery during construction, as well as for the operational stages (if parts need to be replaced) would be determined through a separate assessment of access routes. The findings of this separate assessment would dictate the routes considered in the ES. Offsite highways works may be required, which would be determined by this study.
- 5.7.6 Once constructed, the wind farm would have minimal traffic impacts during the operation, with only maintenance work required.

Proposed Methodology for EIA

- 5.7.7 The ES would consider:
- Existing traffic conditions, both at the site access junction and on the main access routes;
 - The delivery route for the identified vehicles;
 - The potential highways modifications which may be required to allow safe, efficient delivery of construction materials and the wind turbines;
 - The impacts on roads and users and the significance of these impacts when measured against the baseline; and
 - Potential mitigation of identified impacts.

- 5.7.8 In order to assess the significance of identified traffic impacts, it is proposed to utilise the Guidelines for the Environmental Assessment of Road Traffic (IEA, 1993).
- 5.7.9 Consideration would be given to the construction, operation and maintenance phases of the project.
- 5.7.10 In order to undertake the traffic input to the ES the following traffic data would be analysed:
- Classified turning count data at the proposed site access junction;
 - Classified turning count data at the A19 Selby Road / Whitefield Lane junction;
 - Classified turning count data at the Leys Road roundabout junction immediately to the east of the A1;
 - 12hr counts on Stubbs Lane either side of the site access; and
 - 3 years of accident data on Leys Road, Stubbs Lane, Cobcroft Lane and Whitefields Lane
- 5.7.11 Impacts on other transport infrastructure (including the M62 and the railway line) would be assessed, mainly through consultation with the Highways Agency and Network Rail.

5.8 Electromagnetic Interference and Aviation

Introduction

- 5.8.1 As identified in the previous section, a wide range of telecommunication systems operate around the country and there are links which have already been identified as passing close to the site. The proposed development may interfere with these links, as well as microwave, television signals, mobile phone masts and airport radar systems.
- 5.8.2 The impact of the proposed development on these systems will be determined through undertaking consultation with the relevant organisations as described further in the section below.

Proposed Methodology for EIA

Electromagnetic Interference

- 5.8.3 Operators of communications systems would be approached through the formal wind farm consultation mechanism set up by the Office for Telecommunications (OFCOM). OFCOM would also forward the consultation to the operators of scanning telemetry links: CSS Spectrum Management Services, and the Joint Radio Company (JRC).
- 5.8.4 In order to ensure that the wind farm does not cause an unacceptable effect to the telecommunications links identified by OFCOM, a further consultation exercise would be undertaken with these operators to ensure that the wind turbines are sited with an acceptable avoidance from the links.
- 5.8.5 In addition to the companies and links identified by OFCOM, the consultation would be extended to include:
- Cable and Wireless;

- Vodafone;
- Orange;
- BT Wholesale;
- MLL Telecom Ltd;
- O2;
- Hutchinson 3G;
- Thus pls;
- Arqiva; and
- Local Fire & Rescue, Police and Ambulance Services.

5.8.6 Should any issues with television reception be identified, following OFCOM consultation, a mitigation and avoidance strategy would be developed and adopted to ensure that these issues are minimised and swiftly resolved.

5.8.7 Impacts upon physical utilities infrastructure including for gas, water and sewage pipelines and high voltage overhead lines would also be taken into account within this section of the EIA, through consultation with National Grid, Yorkshire Water, CE Electric UK and any other local infrastructure operators.

Consultations to Date

5.8.8 Preliminary consultations taken place through OFCOM have identified that further consultation is required with the following bodies through the Joint Radio Company (JRC):

- Yorkshire Electricity Distribution Ltd (YEDL)
- Northern Gas Networks (NGN)

5.8.9 As such, detailed investigations have commenced through the JRC of the signals potentially affected by the wind farm. Through this process mitigation measures would be identified if required.

Aviation

5.8.10 The Defence Estates, CAA, NATS and British Wind Energy Association (RenewableUK) produced a set of Interim Guidelines in 2002 (Wind Energy and Aviation Interests – Interim Guidelines ETSU W/14/00626/REP) which outlines the formal consultation mechanism for contacting these authorities with potential wind farm projects, through an official set of consultation forms. This mechanism is also enshrined within PPS22 that requires developers to consult these bodies prior to a planning application being submitted.

Consultations to Date

- 5.8.11 As required through PPS22, the Developer has consulted aviation bodies at an early stage in the development process, through the submission of the official consultation forms.
- 5.8.12 Consultation through this process with the CAA identified that further consultation is required with:
- Robin Hood Airport.

5.9 Ecology

Introduction

- 5.9.1 A number of ecological surveys have already been undertaken at the site, which have identified the presence (as well as absence) of protected species. The surveys identified that there is potential for the proposed development to have impacts on birds, bats and reptiles and further survey for these species are to be undertaken to further establish presence and behavioural patterns. Details of these surveys and how the results will be used to assess the impact of the development are presented below.

Proposed Methodology for EIA

- 5.9.2 Further survey work is currently being undertaken at the site which includes survey for breeding birds, passage birds, vantage point survey for over-flying birds, bat roost assessment, bat activity and automated bat surveys and reptile survey. Surveys for water vole, great crested newts, invertebrates or badgers are not required as no negative impacts on these species are anticipated as a result of the proposed works.
- 5.9.3 In accordance with the guidelines produced by the Institute of Ecology and Environmental Management, 2006, the following ecological survey work would allow an ecological evaluation of the proposed site to be undertaken, along with an assessment of potential impacts and their significance:
- Breeding bird surveys (undertaken between March and June) based on the Common Birds Census (CBC) methodology. This involves three survey visits during which time a predetermined transect route through the sites will be walked to map breeding territories.
 - Vantage Point Bird Surveys have been undertaken following the Scottish Natural Heritage and RSPB survey and monitoring guidance, with an initial baseline survey to identify the number of vantage points required. This identifies whether there are any significant bird issues in the area that would have to be mitigated for.
 - A bat roost potential survey has been undertaken to identify any suitable roost sites. Bat activity and automated bat surveys are being undertaken between May and September. These surveys would identify any roosts as well as any potential commuting corridors, which would have to be considered in the positioning of the proposed wind turbines.
 - A reptile survey is currently being undertaken to determine the distribution and species present throughout the site, as works would be taking place where reptiles are likely to be found. At the time of writing, the survey visits have already commenced and are due to be completed by early June.

- 5.9.4 A letter detailing the ecological surveys and methodology being undertaken on site has been submitted to Natural England for consideration and comment to ensure that the survey effort is sufficient.
- 5.9.5 Ecological survey of the site is anticipated to be completed by July 2010. The results of these surveys would be formulated into a full impact assessment following the 'Guidelines for Ecological Impact Assessment' (IEEM, 2006).
- 5.9.6 The ecology chapter within the Environmental Statement would detail any necessary avoidance or mitigation measures which would be required to be included in the design plan. Results from the bat and bird surveys would inform the design of the wind farm to avoid, reduce or mitigate negative impacts on these species during the operational phase. It is anticipated that disturbance to reptiles and breeding birds would be avoidable with timings of works and implementation of good working practices.
- 5.9.7 It is also proposed that where practical and in line with the mitigation and avoidance measures proposed for the development (if any), the potential for further habitat enhancement should be considered in line with the development, particularly in new 'pockets' of land created by the site design.

5.10 Hydrogeology

Introduction

- 5.10.1 The site is underlain by a major aquifer, which is associated with the limestone formation. Removal of the limestone in areas of the site has resulted in a change in groundwater flow patterns and in some areas has almost removed the groundwater source. However, the aquifer is still present in other parts of the site. The consideration of the impact of the proposed development on groundwater will therefore need to be considered, in particular in terms of the potential for pollution of the aquifer as a result of mobilising contamination through excavation and piling activities close to areas of landfill.

Proposed Methodology for EIA

- 5.10.2 A desk top study would be undertaken to assimilate and interpret publicly available information as well as information provided by WRG. This would include utilising existing information contained within studies that were undertaken in support of the PPC application for Cell 6 (September 2007), including the hydrogeological risk assessment, as well as the assessment undertaken in support of the planning application for the quarry extension to the north of the M62 (undertaken in June 2008).
- 5.10.3 In addition, the assessment would use the results of the intrusive ground investigation, during which it is planned to retrieve and analyse groundwater samples to establish a baseline in groundwater quality. Also, ongoing monitoring of groundwater levels by WRG would provide important evidence of depth to groundwater across the site.
- 5.10.4 The Environment Agency would also be consulted to establish if they have any concerns about the proposed scheme.
- 5.10.5 When assessing the potential impacts on the water environment the following points would be considered for a 1 km radius of the proposed scheme;

- Relevant EU and UK legislation;
- Environment Agency Pollution Prevention Guidelines;
- Surface and Groundwater related River Basin Management Plan water quality information;
- Source protection zone information;
- Historic pollution incidents;
- Local abstraction and discharge consents; and
- Designated sites of nature conservation importance.

5.11 Cumulative Impacts

Introduction

- 5.11.1 There are a number of other proposed developments (including wind farm proposals) in the surrounding area that have either been approved or are awaiting approval. It will therefore be important to consider the potential for combined impacts arising from the result of development activities occurring within the vicinity of the site. For example, if construction phases are similar for adjacent developments there may be impacts such as the occurrence of construction noise from both developments at the same time.
- 5.11.2 The potential for cumulative impacts of several wind farm developments upon the surrounding landscape is a particularly important element to address. As a result this issue will be investigated in detail within the landscape and cultural heritage assessments.

Proposed Methodology for EIA

- 5.11.3 Using available information on other proposed developments within the vicinity of the site and the potential impacts associated with the Limestone Quarry Wind Farm proposals, the combined impact of the developments would be considered (both in a construction and operational sense). This will involve a review of the sensitive receptors that are likely to be subject to impact interactions.
- 5.11.4 The proposed (committed) developments to be considered within the assessment would include:
- Darrington Quarry Extension – proposal to extend the existing quarry to the north of the M62 on the land either side of Leys Lane near the ‘Warwick’ residential estate. The site will be used for limestone extraction in eight phases over 18 years; and
 - A1 Redhouse to Darrington Upgrade – proposal to upgrade the existing A1 between J38 (Redhouse) and J40 (M62) from a two lane dual carriageway to three lane motorway. The motorway will run to the west side of the A1 until it passes on line through Barnsdale Bar then runs to the east side of the A1 and crosses the Went Valley. The motorway continues off line to the east of Darrington rejoining the A1 at the south end of the new Ferrybridge to Hook Moor Scheme. The former A1 will be converted to a Local Access Road.
- 5.11.5 At the time of writing, a wind farm is being proposed to the south of Darrington village (Westfield Lane Wind Farm) by Banks Renewables Ltd. The development was refused planning

permission in March 2009. In July 2009, the development was appealed following amendments to the proposed layout of the site, including the removal of a turbine. The outcome of the appeal is due to be announced in June 2010. If the development is refused at appeal, then this wind farm will not be considered within the ES, conversely, if it is approved then it will become an important consideration in assessing the cumulative impact.

- 5.11.6 The combined effects of different types of impacts, or impact interactions, from the proposed development on particular receptors will be considered during both the construction and operation phases.

6 Proposed Format of Environmental Statement

6.1 Introduction

6.1.1 The Environmental Statement would be prepared with reference to Schedule 4 of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 and would consist of four volumes:

- Volume 1: Non-Technical Summary – summarising the key issues and findings in a format which is easily accessible to a non-technical audience;
- Volume 2: Written Statement – the detailed Environmental Statement, containing the independent specialist assessments, mitigation, anticipated residual impacts, concluding statement and appendices;
- Volume 3: Figures – an A3 document containing the site layout figures, construction figures and chapter specific figures; and
- Volume 4: Visualisations – an A2 document containing photowires, wireframe images and photomontages and a description of how best to read them.

6.1.2 Further detail on the contents of Volume 2 of the Environmental Statement is given in Section 6.2 below.

6.2 Environmental Statement

6.2.1 It is currently anticipated that the Environmental Statement would include the following sections:

Introduction

- Brief introduction to the scheme;
- Legal basis for the Environmental Statement;
- Purpose of the Statement; and
- Scope and Content.

The Proposed Development

- Background to the Project;
- Description of the proposed development (including Construction, Operation and Decommissioning activities);
- Land use requirements, proposed access and transportation arrangements; and
- Employment requirements.

Alternatives

- Discussion of alternative sites considered; and
- On-site constraints influencing alternatives to establish final site design.

Environmental Impact Assessment Methods

- Responses to the scoping report;
- Summary of the consultation process;
- Surveys and Predictive Techniques; and
- Significance Criteria applied.

Policy Framework

- Appraisal of the scheme against Legislation and Local, Regional and National Policies (outlined below).

Environmental Assessment (for each topic)

- Applicable regulatory / policy framework
- Methodology and study area applied;
- Existing conditions and key sensitivities;
- Mitigation and enhancement measures;
- Assessment of effects and magnitude of impact; and
- Limitations of the assessment.

Assessment of Cumulative Effects

Conclusions

- Summary of significant effects
- Summary of mitigation measures

Planning Policy Framework

6.2.1 The proposed development would be appraised in the Environmental Statement against, but would not be limited to, the following legislation and planning policies:

- international and national directives, strategies and legislation on climate change, including the Kyoto Protocol, the Climate Change Act 2008, and Beyond Copenhagen: The UK Government's International Climate Change Action Plan;
- emerging National Policy Statements;
- national Planning Policy Guidance and Statements including PPS1 Delivering Sustainable Development and the Climate Change Supplement, PPG2 Green Belts, PPS5 Planning for the Historic Environment, PPS9 Biodiversity and Geological Conservation, PPG13 Transport, PPS22 Renewable Energy, and PPG24 Planning and Noise;
- the Yorkshire and Humber Plan (Regional Spatial Strategy for Yorkshire and Humber to 2026), the Regional Economic Strategy, and the emerging Integrated Regional Strategy;
- the adopted Selby District Local Plan and emerging Local Development Framework, and

- the adopted Wakefield Core Strategy and Development Policies documents, the adopted Unitary Development Plan and emerging Local Development Framework.

Environmental Topics to be Assessed

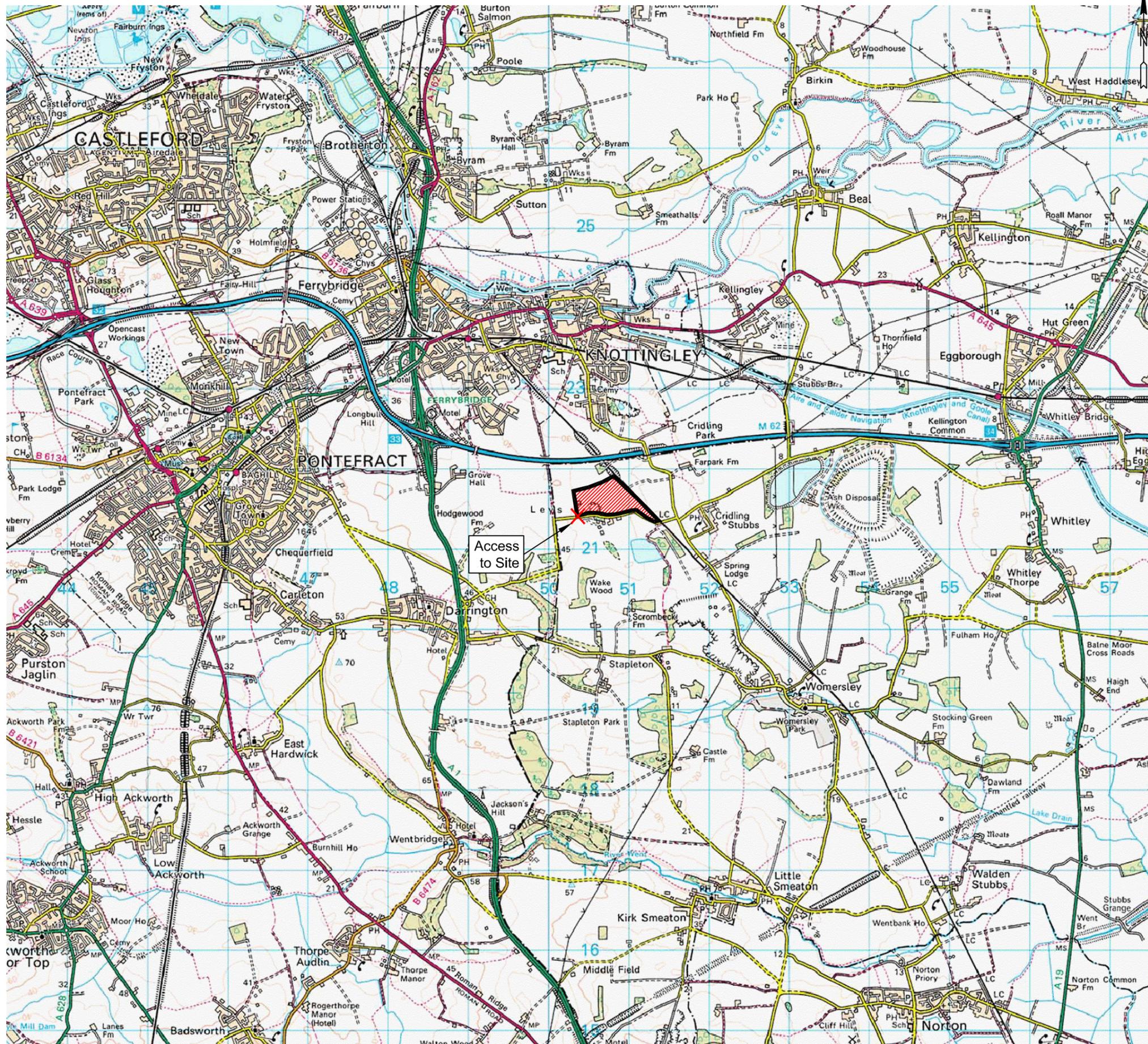
6.2.2 As defined by this scoping report, the following topics would be assessed within the Environmental Statement:

- Landscape and Visual Impacts;
- Shadow Flicker;
- Noise and Vibration;
- Socio-economics;
- Cultural Heritage;
- Access, Transport and Traffic;
- Electromagnetic Interference and Aviation;
- Ecology;
- Hydrogeology; and
- Cumulative Impacts.

6.3 Planning Application Submission

- 6.3.1 In addition to the four volume ES, the Developer would also submit a Planning, Design and Access Statement. Whilst not forming part of the ES, this document would be a key document within the overall submission summarising the National, Regional, County and District policies relevant to the development, as well as the need for wind energy.
- 6.3.2 The Developer proposes to submit printed copies of the ES, as well as a CD version. The Developer seeks advice from the Local Authority with respect to the number of copies required of both media.

APPENDIX A – SITE DRAWINGS



Darrington Landfill Site
 Darrington Leys
 Cridling Stubbs
 Knottingley
 West Yorkshire
 WF11 0AY
 Tel: 01977 670607

4km east of Pontefract, W. Yorkshire
 Site centred N.G.R. SE504214

REVISIONS

No	Description	By	Chk'd	Date
A	Titlebox updated.	CMD	CJM	22.06.04

Project: **DARRINGTON NORTH LANDFILL SITE**

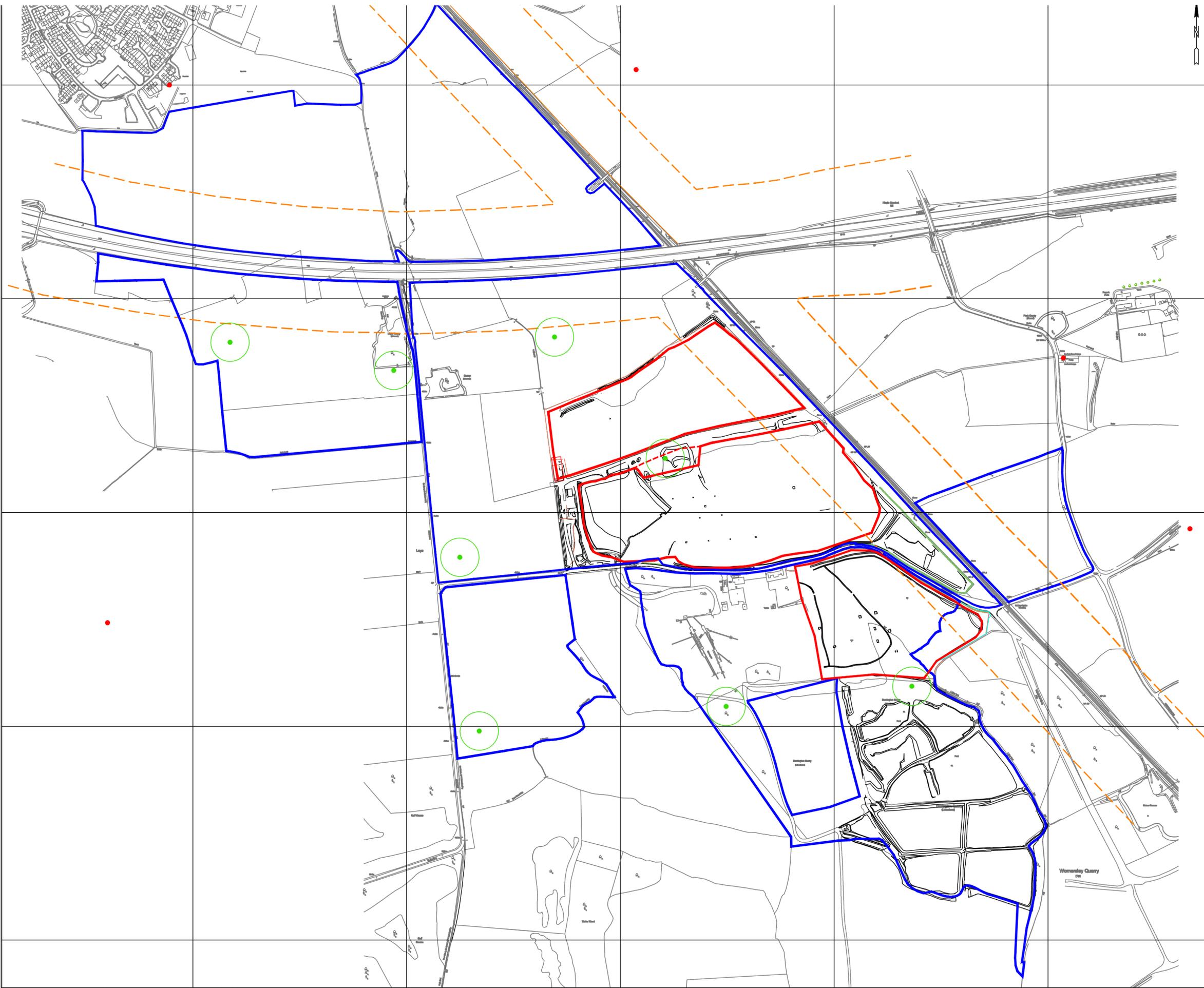
Title: **Site Location Plan**

Drawn By: CJM Date: 03.10.01
 Chk'd By: WS Date: 03.10.01
 Scale 1: 50,000 Sheet Size A3



Waste Recycling Group
 3 Sidings Court
 White Rose Way
 Doncaster
 DN4 5NU

Drawing No: 264T018A



-  120m Stand off from M62 and Railway
-  Landfill
-  2MW Wind Turbine
-  Leasehold
-  Site Boundary
-  Leachate Treatment Lagoon

LSS Files Used:

REVISIONS				
No	Description	By	Chk'd	Date

Project: **DARRINGTON LANDFILL SITE**

Title: **Wind Farm Base Map**

Drawn By: KW Date: 08.04.08
 Chk'd By: SM Date: 08.04.08
 Scale 1: 6000 Sheet Size A2

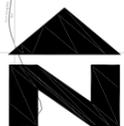
Waste Recycling Group
 3 Sidings Court
 White Rose Way
 Doncaster
 DN4 5NU



Drawing No: **264A106**

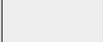
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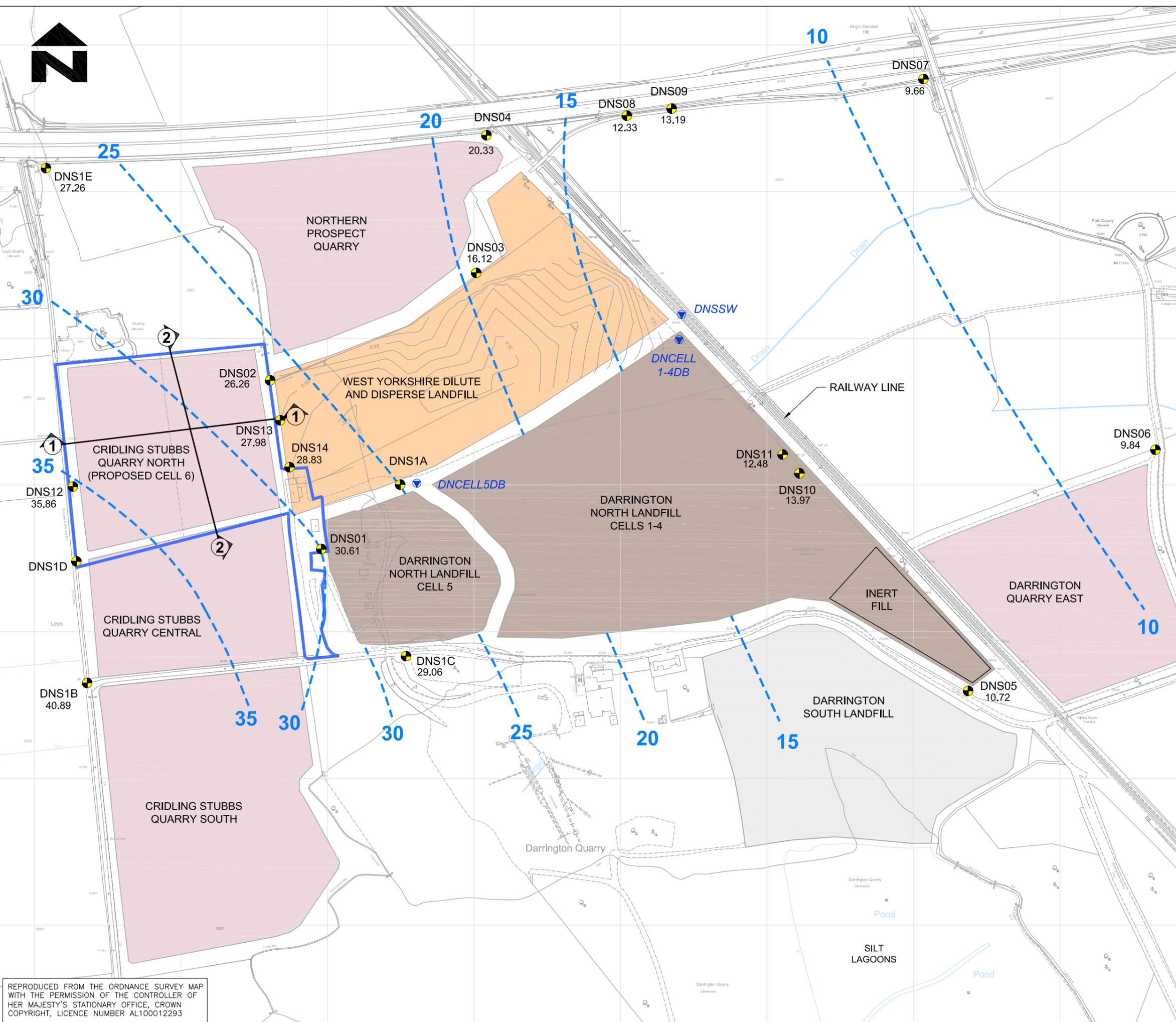
APPENDIX B – OTHER SUPPORTING INFORMATION



NOTE
 1. DRAWING BASED ON DRAWING NUMBER 3, DARRINGTON NORTH DISCHARGE CONSENT REPORT, JUNE 2003.

LEGEND

-  INSTALLATION BOUNDARY
-  DARRINGTON NORTH LANDFILL CELLS 1-4 & 5 (ALL UPPER MAGNESIAN LIMESTONE REMOVED)
-  DARRINGTON SOUTH LANDFILL
-  WEST YORKSHIRE DILUTE AND DISPERSE LANDFILL
-  35 --- INFERRED GROUNDWATER CONTOURS (FOR MARCH 2007)
-  DNS07 BOREHOLE LOCATION (WITH GROUNDWATER LEVEL MARCH 2007)
-  DNS07 SURFACE WATER MONITORING LOCATION
-  QUARRY BOUNDARIES
-  24.0 DILUTE AND DISPERSE LEACHATE CONTOURS (DECEMBER 2001)
-  SECTION DETAILS SHOWN ON DRAWING ESID12A



Site **DARRINGTON NORTH CELL 6**

Project **PPC APPLICATION**

Drawing **Local Hydrogeology**

Date **SEPTEMBER 2007** Drawing No. **ESID11**

Scale **1:5000**

404.0197.00563 ESID-11



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