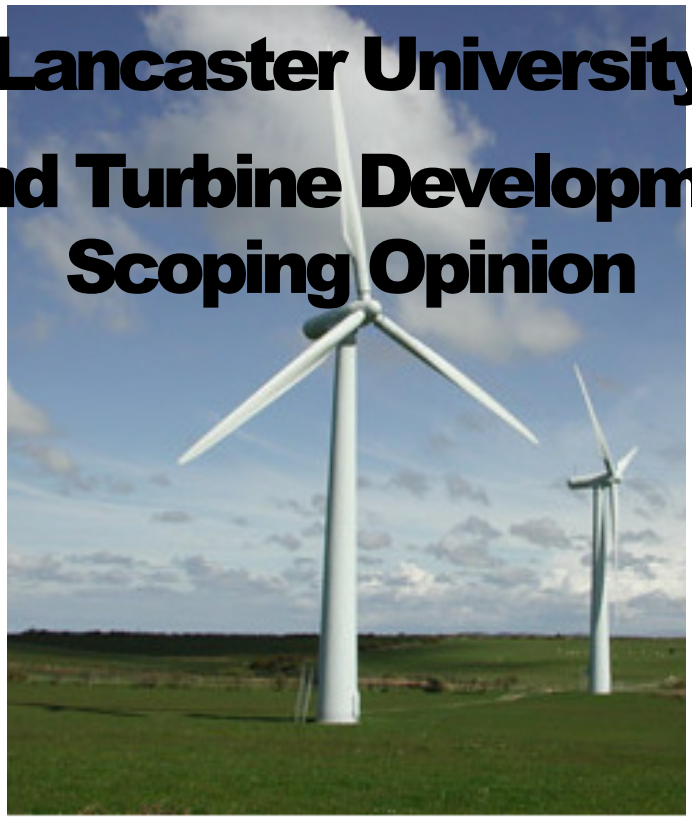
Lancaster University

Wind Turbine Development Scoping Opinion



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RTPI
mediation of space · making of place

LANCASTER UNIVERSITY

Document Control

Version Control

Version	Date	Comments
1	October 2009	First release

Distribution List

Name	Position	Organisation
Roger Horn	Director	Segen
Joanne Peaks	Planning Manager	Segen
Mike Sheppard	Head of Infrastructure	Lancaster University

Table of Contents

Executive Summary

Segen

Segen is one of the UK leaders in renewable energy systems. We have extensive experience in the design and implementation of wind, solar, hydro and CHP systems. Segen is an accredited installer under the Low Carbon Buildings Programme (LCBP) and is a member of the Renewable Energy Association's REAL code.

Joanne Peaks, MRTPI, Planning Manager, will be the main point of contact for this Planning Application. She will be on hand to discuss all planning matters relating to this project and will head pre-application and application discussions with the local planning authority and all public bodies.

Client

Lancaster University are committed to the UK Government's targets of reducing carbon emissions by 26% by the year 2020 and 80% by 2050.

The University recognises that sustainability and the reduction of carbon emissions is an essential part of future growth and development. The University also appreciates the social, economic and environmental benefits renewable energy installations bring. Energy efficiency and carbon reduction are the therefore a key University priority.

There are currently no universities in the UK which have an installed large scale wind development due to the urban locations of many Universities. Lancaster University's rural setting places it in a distinct position whereby the utilisation of wind power will make for a very high yielding form of sustainable energy supply which will make a significant contribution towards Lancaster University meeting the UK Governments targets of reducing carbon emissions.

Purpose

Segen on behalf of Lancaster University have prepared a request for a Scoping Opinion, under the 1999 EIA Regulations, to seek the views of Lancaster City Council and the relevant Statutory Consultees on what information should be included within an Environmental Statement (ES) to be submitted to accompany a planning application for a wind turbine development on land opposite the university campus.

The request is accompanied by:

- A sufficient plan to identify the land.
- A brief description of the proposed development's nature, purpose and possible effects upon the environment.
- Any information or representation from the developer – In this case an outline of the proposed study methodology and environmental statement contents.

1.Scoping Opinion

1.1 Lancaster Council Screening Opinion

On the 25th September 2009, in response to a Screening Request submitted to Lancaster City Council by Segen with respect to the Lancaster University wind turbine development, Lancaster City Council responded confirming that an Environmental Impact Assessment would be required for the proposed development on the basis that the proposal falls outside that development listed in schedule 1 of the Regulations.

The Screening Opinion identified the potential impacts as;

It is considered that the main environmental impacts will be:

1. The visual impact of the turbines on both the local and the wider landscape, including distance views from a semi-circular arc across the bay, medium distance views to the north west from within the A.O.N.B. and close range views from Bailrigg Village, the southern edge of the urban area of the city and nearby dwellings on Hazelrigg Lane.
2. The impact of the turbines on highway safety on the M6 due to the distraction of drivers passing so close to such large turbines and the effects of direct sun-light flicker on drivers and passengers passing the site in the a.m. hours and reflection light flicker in the p.m. hours.
3. The impact of light flicker of both types on the residential amenities of nearby occupiers including University Halls of Residence.
4. The impact of noise on the residential amenities of nearby occupiers including University Halls of Residence.
5. The visual impact of the proposed access road on the local landscape.
6. The southern turbine is located between and in close proximity to two significant areas of woodland and could have significant impacts on wildlife therein and on the future of the woodland itself due to its potential disturbance to the wind flow around the turbine.

The location of this proposal on elevated land at the edge of the coast plain and in close proximity to the M6 motorway and surrounding residential properties gives rise to the potential for significant impacts on the issues of acknowledged importance identified above. The scale of these impacts and their consequences for the proposal can only be adequately assessed following detailed study of the issues involved in relation to the circumstances of this particular site.

1.2 Introduction

This Scoping Request provides an overview of the process carried out by Segen in order to determine the proposed content of the Environmental Impact Assessment (EIA) for the wind turbine development on land opposite Lancaster University Campus, Hazelrigg Lane. The following information sets out:

- background information on the EIA scoping opinion process;
- an outline of the approach to scoping used for this request;
- the results of the consultation process undertaken; and
- the finalised scope of the EIA

1.3 Background to Scoping

EIA is a procedure that attempts to ensure that prior to any development decision likely to have significant effects on the environment being made, those effects are fully understood and taken into account. The roots of EIA are within the accepted principals of sustainable development – both at an international level and a national level.

Scoping forms a component within the overall EIA process, and attempts to identify all of the possible environmental impacts that a development project might cause, and then subsequently determine which of those impacts are likely to be significant and which therefore require detailed investigation in the EIA.

Although not legally required by EIA Regulations, scoping is seen as an undoubtedly important facet of the EIA process. Regulation 10 of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 forms the basis for this procedure for any "person mindful to make an EIA application" to ask the relevant planning authority to state in writing their opinion as to the information to be provided in the Environmental Statement (a "scoping opinion").

1.4 Scoping Methodology

A scoping exercise was initiated following confirmation from Lancaster City Council on the 25th September 2009 confirming that an Environmental Impact Assessment is required for the wind development. The scoping opinion development exercise involved a number of stages of inquiry, and these are set out in the following paragraphs.

Initially an analysis of a recent EIA Screening Opinion for possible development provided an impact checklist used during the preparation of the scoping request. This checklists identifies the potential environmental impacts of a project as the local authority see it.

The scope of the EIA must reflect the development proposals in question and the nearby land uses and their environmental attributes that might be affected by the development. The EIA Scoping Opinion endeavours to consider these factors, and use this information to tailor the scope of the EIA accordingly.

Information on the environmental attributes of the development site and its surroundings was obtained from a number of sources

- Screening Opinion – Lancaster Council September 2009
- Lancaster Councils Local Plan and Proposals Map
- Lancashire County Council Landscape Sensitivity to Wind Energy Development in Lancashire, 2005
- Magic Map and Interactive Maps
- Ecology Records Searches
- Environment Agency Information request
- Preliminary Consultation responses
- Initial site investigations and walkover studies

The scope of the EIA has been prepared by combining the impact checklist, and initial information on the development proposals and environmental attributes, and using a degree of reasoned professional judgement, including consultee replies. This ensures that the process provides comprehensive coverage of likely issues.

2. General Principles - Information required Regulation Section 10(2)

2.1 Site Description

The University Campus lies between the M6 and the A6 to the south of Lancaster. The application site is situated to the east of the M6 adjacent to the university campus on agricultural land accessed from Hazelrigg Lane.

The general character of the landscape around the site comprises rolling farmland with hills in the distance. To the north of the site is grazing land and a line of electricity pylons and wires. To the west is the M6 motorway and the main university campus beyond, separated from the site by a mature trees belt which extends in to a mature area of woodland. To the east is the University field station which comprises grassland and research plots, a small building, a number of atmosphere controlled greenhouses, permanent meteorological mast and a telecommunications mast. There is area also an area of coppice to the south east which provides screening to the sporadic residential properties located on Hazelrigg Lane. To the south is additional agricultural land and the existing site access off Hazelrigg Lane.

A location plan (2.4) and site layout plan (2.5) which defines the extent of the application site are included in this statement.

2.2 Proposal

The proposed development consists of two wind turbines which will have an indicative operation capacity of 4.6MW and will not exceed 5MW. The precise turbine make and model have not been finalised at this stage, however the turbines will be three bladed, horizontal axis machines with a maximum hub height of 80m, a maximum blade length of 45.2 m and a maximum rotor diameter of 92.5m, giving a maximum ground to tip height of 125.2m. The turbine rotor and nacelle will be mounted on a tapered steel tower, colour to be agreed with the Local Planning Authority.

Further to the wind turbine, ancillary development will comprise a crane hard standing, an access track leading to the site and between the turbines, Underground electrical cables and a temporary construction compound. It is currently proposed to house the new transformer unit and switch gear within the base of the turbine towers removing the need for a standalone control building at the site.

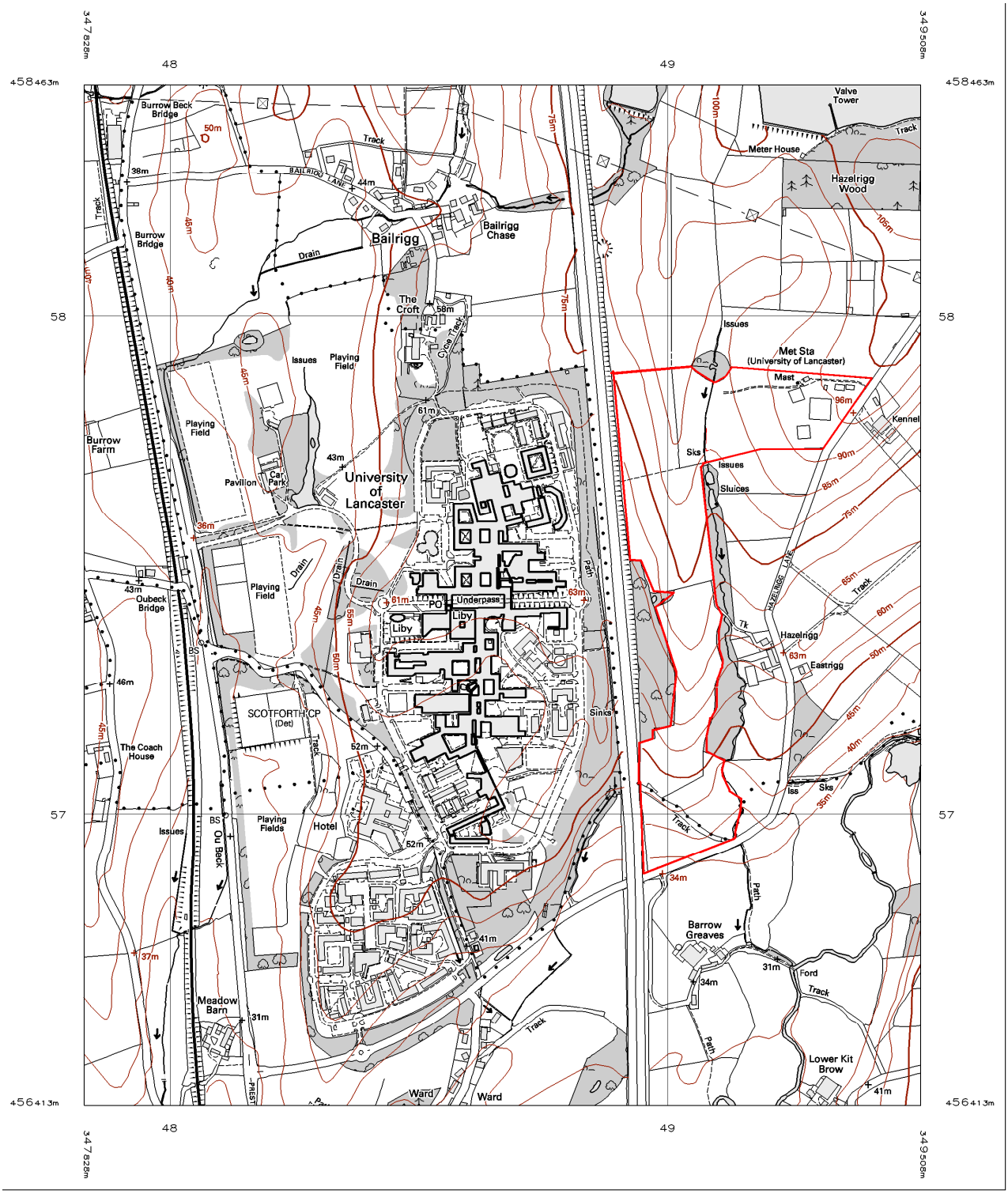
The turbines will be supported on reinforced concrete foundations. The foundation will be approximately 20 metres x 20 metres with an overall depth of 3 metres. The crane hard standings will be approximately 20 metres wide by 40 metres long.

The scheme is designed with an operational life of 25 years. When the scheme ceases operation, all major equipment would be removed from site. The upper sections of the foundation structures would be removed to below ground level and the area would be reinstated to pasture. Underground cables would be left in place as removing them would cause unnecessary environmental disturbance.

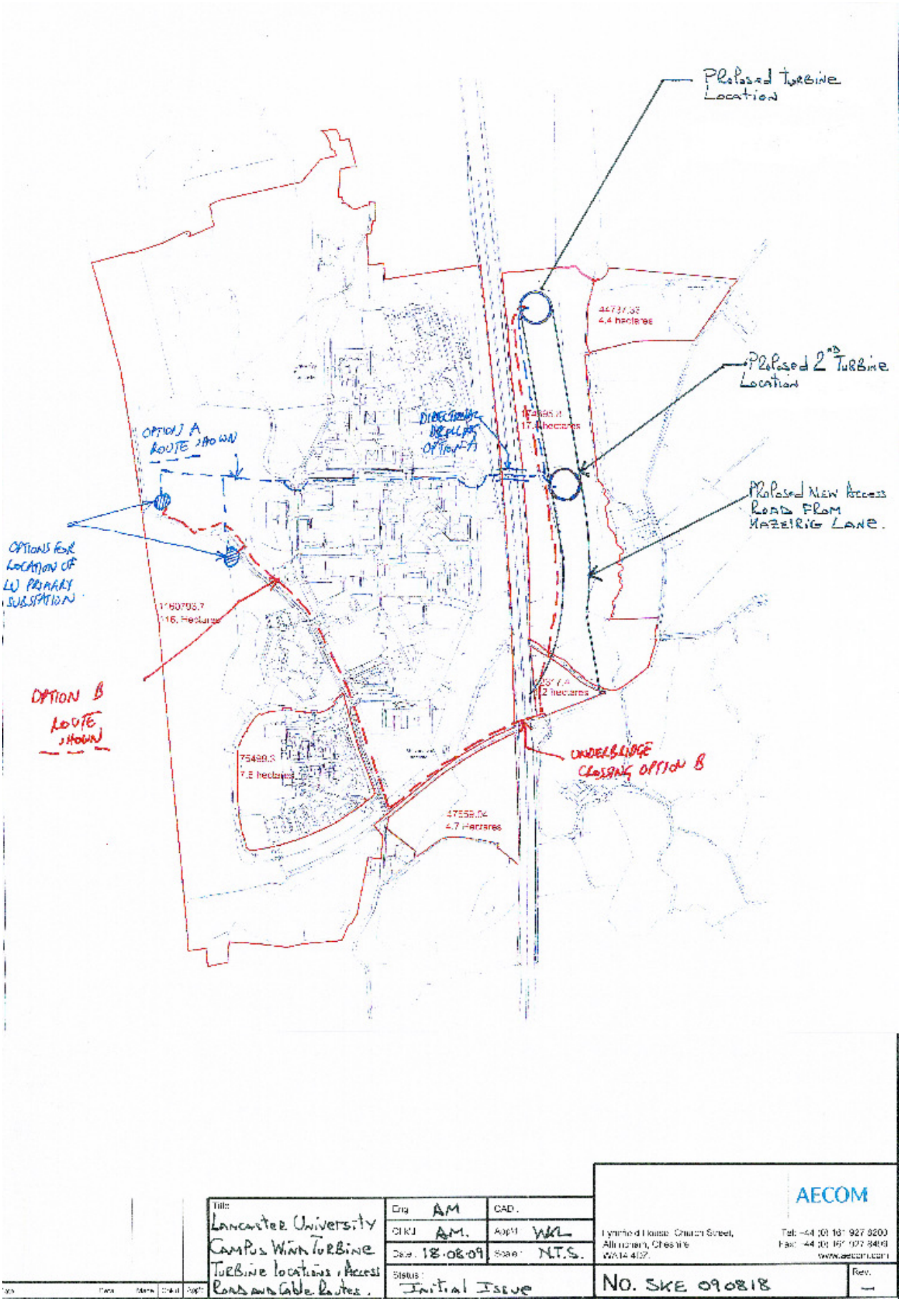
A temporary site compound will be required during the construction phase of the project. The location of this compound has not been finalised however it will be approximately 20 metres x 40 metres and will provide a site offices, welfare facilities, materials storage compound and parking area. The compound will be removed and the land reinstated to its former condition once the construction phase has been completed.

The main entrance to the site will require some alterations to enable turbine component delivery. This will typically comprise the creation of a new access onto site and temporary improvements of verges and visibility splays to enable long vehicles to access and egress the site.

2.3 Location Plan



2.4 Site Plan


Proposed Turbine Location
Proposed 2nd Turbine Location
Proposed New Access Road from Hazelrig Lane.
OPTION A ROUTE SHOWN
OPTIONS FOR LOCATION OF LV PRIMARY SUBSTATION
OPTION B ROUTE SHOWN
UNDERBRIDGE CROSSING OPTION B
44731.33
4.4 hectares
47558.04
4.7 Hectares
AECOM
Lancaster University
Campus Wind Turbine
Turbine locations, Access Roads and Cable Routes.
Drg AM
CHKD AM.
Date 18.08.09
Scale N.T.S.
Status Initial Issue
No. SKE 090818

2.5 Indicative Turbine Specifications

The precise turbine make and model have not been finalised at this stage. The information below represents an indicative turbine specification. It is important to note that minor modifications to the turbine specification may occur prior to submission of the planning application.

2.5.1 Rotor

Maximum Diameter	92.5m
Maximum Swept area	6,720m2
Rotational speed, rotor	7.8-15 rpm
Direction of rotation	Clockwise
Rotor position	Up-wind

2.5.2 Blades

Length	45.2 m
Height	5 m
Type	GRP Sandwich construction manufactured in infusion-process

2.5.3 Tower

Type	Steel Tube
Hub Height	78.5m
Diameter top	3 m
Diameter bottom	4.3 m

2.5.4 Weights

Rotor blade	approx. 7.9 t
Hub complete incl. pitch system	approx. 17.0 t
Nacelle (excl. rotor)	approx. 69.0 t

2.5.5 Operational data

Cut-in wind speed	3 m/s
Rated wind speed (2,050kW)	12.5 m/s
Cut-out wind speed	24.0 m/s

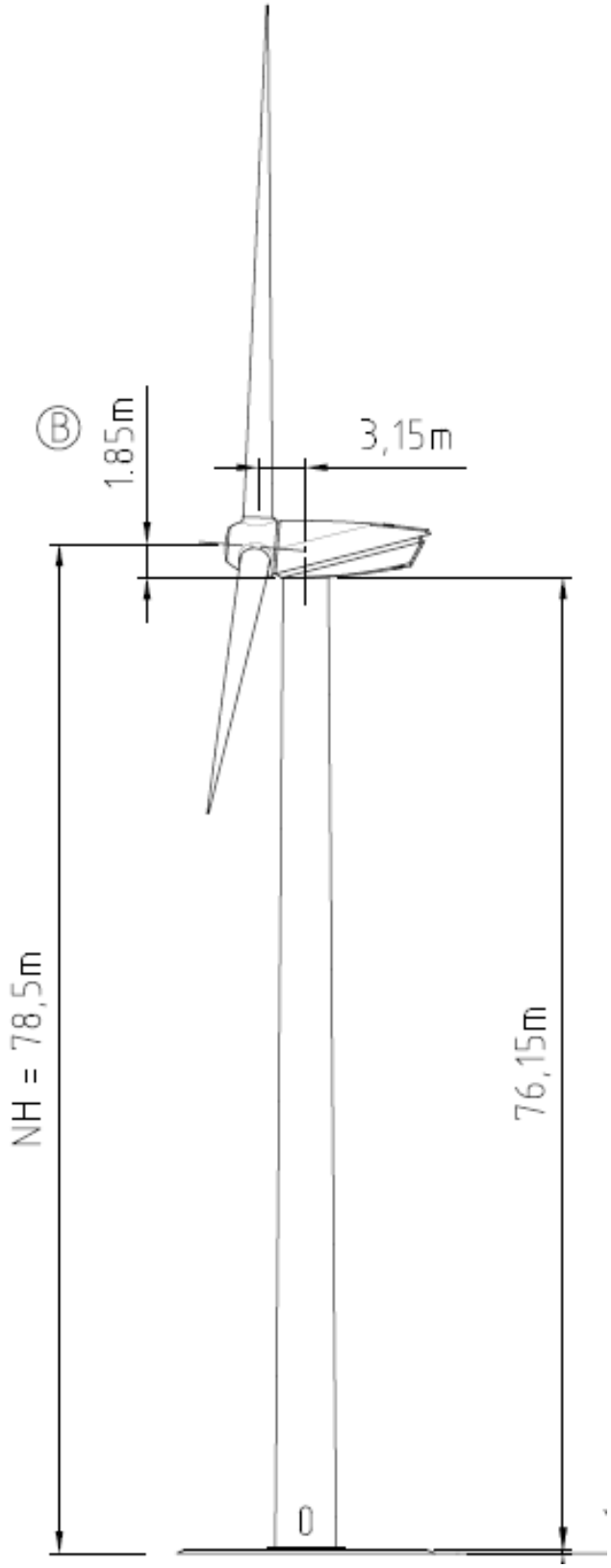
2.5.6 Power curve

The precise turbine make and model have not been finalised at this stage. The information below represents an indicative power curve for a 2MW turbine. It is important to note that modifications to this data may occur prior to submission of the planning application.

Wind speed v [m/s] [3]	Power P [kW]	Sound Power Level L_{WA}[dB(A)] [4]
3.0	20	--
4.0	94	--
5.0	205	--
6.0	391	--
7.0	645	102.1
8.0	979	103.5
9.0	1375	104.2
10.0	1795	104.7
11.0	2000	105.0
12.0	2040	105.0
13.0	2050	105.0
14.0	2050	105.0
15.0	2050	105.0
16.0	2050	105.0
17.0	2050	105.0
18.0	2050	105.0
19.0	2050	105.0
20.0	2050	105.0
21.0	2050	105.0
22.0	2050	105.0
23.0	2050	105.0
24.0	2050	105.0

2.6 Indicative Turbine Elevation

The precise turbine make and model have not been finalised at this stage. The information is an indicative turbine elevation demonstrating the likely turbine appearance. It is important to note that minor modification to the appearance may occur prior to submission of the planning application.



2.7 Site Selection

PPS22 confirms that 'As most renewable energy resources can only be developed where the resource exists and where economically feasible, local planning authorities should not use a sequential approach in the consideration of renewable technology projects. It is Government policy to develop such acceptable sites wherever they occur.'

In this instance the site selection process has taken into account the following:

- Wind resource
- Proximity to the grid
- Ground conditions
- Site access
- Safety
- Environmental Impacts
- Social Impacts
- Economic Impacts

2.8 Estimated annual and lifetime energy production

An initial energy yield assessment has been undertaken to provide an indication of the energy output having regard to the turbine type, number and layout. Industry standard calculations were used to assess the expected energy yield at each site. At this stage indications of expected energy yields are based on predicted wind speeds from the Noabl database. For the purposes of the main planning application a more detailed energy yield will be submitted having regard for the onsite historical wind monitoring data available of from the anemometry mast 280m east of the site and from the hub height wind monitoring mast which is to be installed at site in November following approval of a temporary planning consent.

2.8.1 Indicative Energy Generation Per Turbine

The precise turbine make and model have not been finalised at this stage. The information below represents the indicative energy generation of a 2MW turbine. It is important to note that modifications to this data may occur prior to submission of the planning application.

Wind Speed (AMW)	6.96
Rated Power	2.05
Rotor diameter	92.5
Hub Height	80
Annual Energy Yield in MWh	7284.119
Capacity Factor	35%

2.9 Safety Features

Experience indicates that properly designed and maintained wind generators are a safe technology. The very few accidents that have occurred involving injury to humans have been caused by failure to observe manufacturers' and operators' instructions for the operation of the machines. There has been no example of injury to a member of the public.

The only source of possible danger to human or animal life from a turbine would be the loss of a piece of the blade or, in most exceptional circumstances, of the whole blade. Many blades are composite structures with no bolts or other separate components. Blade failure is therefore most unlikely. Even for blades with separate control surfaces on or comprising the tips of the blade, separation is most unlikely.

The turbines have the following safety features to ensure safe operating and in order to avoid ice being ejected and catapulted away;

- Differential power curve
- Vibration recording
- Anemometer plausibility

These features will be explained in the Technical Details section of the main Environmental Appraisal to be submitted in support of the planning application.

3.Scope of Environmental Statement

The EIA Scoping Opinion helps facilitate the EIA process. It informs the proposed overall EIA methodology. The objectives of the Environmental Statement will be as follows;

- To establish the existing environmental conditions of the site and surrounding area.
- To identify the positive and negative effects that may arise from the construction, operation and decommissioning of the wind development.
- To predict and evaluate the extent and significance of the potential effects.
- To identify and evaluate possible mitigation measures that can be adopted to minimise any adverse effects.

The Environmental Statement will be split into four chapters which can be summarised as follows;

- Non Technical Summary
- Environmental Statement
- Environmental Statement Figures
- Environmental Statement Technical Appendices

3.1 Assessment Structure

It is proposed that the Environmental Statement shall provide a description of the environmental features covering the following. **Agreement of this structure is sought from the Local Planning Authority and the relevant Statutory Consultees.**

Chapter 1 INTRODUCTION;

Chapter 2 PROJECT DESCRIPTION;

Chapter 3 POLICY CONTEXT;

Chapter 4 LAND USE;

Chapter 5 SOCIAL, ECONOMIC AND ENVIRONMENTAL BENEIFTS;

Chapter 6 ECOLOGY AND NATURE CONSERVATION;

Chapter 7 LANDSCAPE AND VISUAL IMPACT;

Chapter 8 CULTURAL HERITAGE;

Chapter 9 SHADOW FLICKER;

Chapter 10 NOISE AND VIBRATION;

Chapter 11 HYDROLOGY, HYDROGEOLOGY;

Chapter 12 AVIATION AND ELECTROMAGNETIC INTEFERENCE;

Chapter 13 TRAFFIC AND TRANSPORTATION;

Chapter 14 MISCELLANEOUS ISSUES.

Each chapter will include the follow sections;

- **Consultation**- Summary of consultation undertaken
- **Assessment Methodology**- A description of the methods used in the site based on the results of desk study, consultations and surveys
- **Baseline Description**- A description of the ecology of the site based on the results of desk study, consultation and surveys
- **Information Gaps**- A summary of uncertainties encountered in the assessment
- **Assessment of Potential Effects**- A consideration of the ways in which the proposed development may affect the ecology of the site.
- **Mitigation**- Description of appropriate mitigation recommended to offset identified potential effect, this section also identifies any monitoring requirements
- **Residual Effects-** An assessment of the significance of the effects if the proposed development after mitigation has been implemented.
- **Statement of significance**- A summary of the findings of the assessment with reference to the obligations to identify any significant effects set out in regulations

4 Assessment

4.1 Introduction and Project Description

The assessment section of Environmental Statement will identify the main environmental impacts of the proposed development. It will be informed by the conclusions of specialist studies and by information gathered from consultation responses from statutory and non statutory bodies and the community.

The Environmental Statement will begin by introducing the development and the background issues associated with proposal. It will describe the proposed structure and content of the Environmental Statement before moving on to a general description of the proposed wind development, outlining the site selection process and iterative design process.

4.2 Planning Policy Framework

4.2.1 Planning Policy Overview

As part of the full planning submission the Environmental Appraisal will assess the context of the development in relation to the following national planning policy.

- Planning Policy Statement: Planning and Climate Change - Supplement to Planning Policy Statement 1
- Planning Policy Statement 7: Sustainable Development in Rural Areas
- Planning Policy Statement 9: Biodiversity and Geological Conservation
- Planning Policy Guidance 15: Planning and the Historic Environment
- Planning Policy Guidance 16: Archaeology and Planning
- Planning Policy Statement 22: Renewable Energy & Planning for Renewable Energy: A Companion Guide to PPS22
- Planning Policy Statement 23: Planning and Pollution Control
- Planning Policy Statement 25: Development and Flood Risk
- Planning Policy Guidance 24: Planning and Noise

4.2.2 Basic Policy Framework

- Overall the policy framework position for is supportive.
- **Planning Policy Statement 1:** Planning for Sustainable Development sets out overarching planning policies that include;
  Development plans and planning decisions should be based on the potential impacts, positive and negative, on the environment, of development proposals;
  Development plan policies should take account of environmental issues such as: mitigation of the effects of, and adaptation to, climate change through the reduction of greenhouse gas emissions and

use of renewable energy; and the protection of the wider countryside and the impact of development on landscape quality;
Development plan policies should seek to promote and encourage, rather than restrict, the use of renewable resources (for example, by the development of renewable energy); and

Good design should consider the direct and indirect impacts of a development on the natural environment.

- **Planning Policy Statement: Planning and Climate Change – Supplement to Planning Policy Statement 1** fully supports the use of renewable energy setting out "how planning should contribute to reducing emissions and stabilising climate change and take into account the unavoidable consequences". In particular;
  Paragraph 19 requires policies within Local Development Documents (LDD) to "promote and not restrict renewable and low-carbon energy and supporting infrastructure". Paragraph 20 provides a number of guidelines for planning authorities which include;
  There is no requirement for applicants to demonstrate overall need for renewable energy and its distribution, nor question the justification for renewable energy generation in a particular location;
  The local approach to protecting landscape should be consistent with PPS22 and should not prevent the supply of any type of renewable energy, other than in the most exceptional circumstances;
  Local authorities should identify areas for renewable and low-carbon energy sources, and should not reject proposals solely because they are outside of areas identified for energy generation.

- **Planning Policy Statement 7: Sustainable Development in Rural Areas** includes policies that relate to development in the countryside. Stating that policies and planning decisions should provide for the sensitive exploitation of renewable energy sources in accordance with the policies set out in PPS 22;
  Policies and planning decisions should conserve specific features and sites of landscape, wildlife and historic or architectural value, in accordance with statutory designations;
  In nationally designated areas (National Parks and Areas of Outstanding Natural Beauty), the conservation of the natural beauty of the landscape and countryside should be given great weight in planning policies and development control decisions in these areas.

- **PPS 22: Renewable Energy** and its accompanying document planning for Renewable Energy: A Companion are principally concerned with the promotion of renewable energy development. Key points set out in PPS 22 that are of relevance to wind farm development include:
  Regional Spatial Strategies (RSS) and development documents should contain policies which promote and encourage, rather than restrict, renewable energy development;
  Local planning authorities should set out criteria for the assessment of applications for the planning of renewable energy projects. They should not restrict the development of renewable energy without sufficient justification;
  The wider environmental and economic benefits of renewable energy projects are a material consideration that should be given significant weight in the planning application process;
  The RSS should include targets for the minimum amount of renewable energy to be generated within the region as a percentage of total generation within the region. In addition, where appropriate, sub-regional targets may be set, together with an indication of how a specific technology may contribute to the achievement of targets;
  Planning authorities should not create "buffer zones" around internationally or nationally designated areas to constrain renewable energy development, nor should local landscape designations be used in their own right to refuse planning permission;
  No sequential approach is required in the consideration of renewable energy projects (e.g. there is no preference for previously developed land);
  With regard to visual impact, the focus of policy should be on mitigating visual effects, rather than providing criteria against which harm is assessed;
  Renewable energy developments may generate small increases in noise level;
  Of all renewable technologies, wind turbines are likely to have the greatest visual and landscape effects. However, in assessing planning applications, local authorities should recognise that the impact of turbines on the landscape will vary according to the size and number of turbines and the type of landscape involved, and that these impacts may be temporary if conditions are attached to planning permissions, which require the future decommissioning of turbines.

  Key points set out in the **PPS 22 Companion Guide** include;
  Regional planning authorities should identify the sensitivity of landscape character areas to particular types of change/development at a broad scale;

Developers should be able to demonstrate that their project: meets the requirements of applicable development plan policies; does not compromise the reasons behind any are designation, or if it does, provides a substantive case for allowing the project to proceed; and addresses the issue of visual impact and cumulative visual impact, where relevant;
Factors to consider in analysing the landscape and visual effects of an application include: national designations; landscape character areas; landscape sensitivity; landscape and visual analysis; and cumulative effects;
For small and medium size projects; in cases where power can be dedicated to on-site uses, economically attractive schemes are a strong possibility. Local Planning Authorities can take a proactive approach to encourage this form of urban wind development.

- At a regional level **The North West of England Plan** – Regional Spatial Strategy to 2021, adopted September 2008 provides a broad development framework for the region including policies relating to renewable energy development. In particular;
  Policy EM 17 Renewable Energy states in line with the North West Sustainable Energy Strategy, by 2010 at least 10% (rising to at least 15% by 2015 and at least 20% by 2020) of the electricity which is supplied within the Region should be provided from renewable energy sources.
  Policy EM 18 Decentralised Energy Supply Plans should encourage the use of decentralised and renewable or low-carbon energy in new development in order to contribute to the achievement of the targets.

- At a county level the **Replacement Joint Lancashire Structure Plan 2001-2016** sets out strategic policies and proposals for the development, use, and conservation of land in Lancashire. In particular;
  Policy 20 Lancashire's Landscape states that development must be appropriate to the landscape character type within which it is situated and contribute to its conservation, enhancement or restoration or the creation of appropriate new features;
  Policy 25 Renewable Energy states that Developments that generate energy from renewable sources…will be assessed against the following criteria and will be supported where they demonstrate that these have been satisfactorily addressed: (a) the impact on the character of the surrounding landscape, biodiversity and the natural and built heritage; (b) the extent that any material harm that may be created by the proposal will be minimised to acceptable levels; (c) the contribution that will be made to targets for renewable energy and for reducing greenhouse gas emissions; and (d) the wider environmental, social and economic benefits of proposed renewable energy schemes.

- At a local level the **Lancaster District Core Strategy** (adopted July 2008) has policies which support both the continued development of Lancaster University and Renewable Energy;
  Policy ER 1 Higher and Further Education (Purpose; to maximise the Regeneration Benefits to Lancaster District of growth at Lancaster University and the University of Cumbria) states that through the preparation of Local Development Documents, the Council will seek to maximise the economic benefits of the Higher Education sector and seek to spread its impacts to areas of deprivation by supporting the continued expansion of Lancaster University within the existing built-up part of the campus and, outside this area, where special justification is demonstrated;
  Policy ER 7 Renewable Energy (Purpose; to maximise the proportion of energy generated in the District from renewable sources where compatible with other sustainability objectives) states that the Council will promote renewable energy in the District by promoting and encouraging the development of renewable energy resources across the District including, but not limited to, the promotion of South Heysham as a key focus for renewable energy generation including wind and biomass technology whilst ensuring the protection of Natura 2000 sites including the Morecambe Bay, Bowland Fells and Leighton Moss Special Protection Areas from adverse effects;

- The **Lancaster District Local Plan** (adopted 2004) has policies concerned with landscape protection and renewable energy;
  Policy E3 states that development proposal both within or adjacent to the Forest of Bowland AONB which would directly or indirectly have a significantly adverse effect upon the character or an adverse effect upon landscape quality, nature conservation interest or features of geological importance will not be permitted. Any development must be of an appropriate scale and use materials appropriate to the area.
  Policy E4 states that within the area identified as countryside on the Local Plan Proposals Map, development will only be permitted where it is in scale and keeping with the character and natural beauty of the landscape; is appropriate to its surroundings in terms of siting, scale, design, materials, external appearance and landscaping; would not result in a significant adverse effect on nature conservation or geological interests; and makes satisfactory arrangements for access, servicing cycle and car parking;

Policy E22 has been partly superseded by the Core Strategy but should continue to be taken into account along with the pertinent Core Strategy Policy) states that, proposals for the development of wind turbines will be assessed against their impacts on; the character of the landscape, including their impact on a number of sites; nature conservation interests, historic buildings and areas and archaeological sites; and nearby dwellings including the effects of electromagnetic disturbance.

4.3 Land Use

A land use assessment will be submitted as part of the Environmental Statement to determine the effect of the proposal development and agricultural land and in order to establish land take associated with the development. This section of the assessment will also determine the direct and indirect impact of the proposal on private property during the construction, operational and decommissioning phases of the development.

Potential effects of the scheme on land use will be assessed within a 500m boundary of the site. Impacts on land use outside this study area will relate predominantly to visual or noise effects. These impacts will be assessed under other chapter headings covered within the Environmental Statement.

The land use assessment will comprise of a walk over site visit and a desk study which will review information from the following resources;

- Lancashire CC Definitive Public Rights of Way (PROW) plans;
- Lancashire CC Replacement Joint Lancashire Structure Plan 2001- 2016 (adopted March 2005);
- Natural England mapping of 'Access Land' (open country and registered common land), prepared under the CROW Act 2000;
- Ordnance Survey 1:25 000 Explorer
- Planning Policy Statement 7: Sustainable Development in Rural Areas(2004)
- North West of England Plan - Regional Spatial Strategy to 2021 (published September 2008)
- Lancaster City Council Core Strategy (adopted July 2008) and emerging LDF
- Lancaster Local Plan (adopted 2004)
- Lancaster University Masterplan 2007-2017, (adopted October 2007)

N.B. This list is not exhaustive, modification to the chosen text list may occur.
The following Statutory and Non-Statutory consultees will be contacted to obtain baseline information;

- Environment Agency
- Lancashire County Council
- Natural England
- Lancaster City Council
- Lancashire Bridleways Association

4.4 Social, Economic and Environmental Benefits

PPS22 companion guide recognises that the Economic, Social and Environmental benefits of a renewable energy proposal should be considered as material when determining the application and that these benefits can be used as justification for landscape and visual impacts associated with such developments.

A social, economic and environmental assessment looking at the direct and indirect impacts of the proposal on the community will be submitted as part of the Environmental Statement.

4.4.1 Economic Benefits

The development will generate electricity for Lancaster University who are committed to reducing their fuel costs as well as their carbon footprint. This application is an essential element in achieving the University's ambitions as set out within their Carbon Management Plan. The turbine will replace a significant proportion of grid-sourced electricity and in the wider context will help reduce the cost of electricity in the UK.

4.4.2 Social

Lancaster University are committed to the UK Governments targets of reducing carbon emissions by 26% by the year 2020 and 80% by 2050.

The University recognises that sustainability and the reduction of carbon emissions are an essential part of future growth and development. The University also appreciates the social, economic and environmental benefits renewable energy installations bring. Energy efficiency and carbon reduction are therefore key University priorities.

There are currently no universities in the UK which have an installed large scale wind development due to the urban locations of many Universities. Lancaster University rural setting places it in a distinct position whereby the utilisation of wind power will make for a very high yielding form of sustainable energy supply which will make a significant contribution to towards Lancaster University meeting the UK Governments targets of reducing carbon emissions.

The installation of large scale wind turbines at the University will deliver a number of direct and indirect benefits to University stakeholders, the education sector as a whole and the wider community. The turbines close proximity to the M6 motorway will have a positive effect of educating and promoting renewable energy to the general public. Furthermore there is also an opportunity to develop further research activities, educational opportunities and meteorological monitoring work at the Hazelrigg Field Station centre, promoting Lancaster University as a leading centre for research and further encouragement for large scale renewable projects.

4.4.3 Environmental Benefits

Wind energy is an abundant natural resource. It is non-polluting, clean and sustainable. The UK has one of Europe's windiest climates and therefore wind energy is an important element in achieving the UK Government's commitment to reduce carbon dioxide emissions by 26% by the year 2020 and 80% by 2050. This proposal will help to move towards these targets and will benefit the wider community in that it will work directly towards achieving Lancashire's sub-regional targets for renewable energy capacity as defined within the North West Regional Spatial Strategy

Lancaster University recognises the overriding significance of climate change and resource depletion to global society. As an institution it is committed to rapidly adapt its operations and activities in order to ensure their sustainability. The significance and scope of Lancaster University's carbon emissions are recognised and quantified. Lancaster University has developed a Carbon Management Plan which details how the University manages its carbon emissions.

Detailed Calculations and modelling on the carbon savings from the project have been undertaken by the University and their specialist engineering consultants. The Wind Turbine project is an integral part of the plan to significantly reduce Lancaster University's carbon emissions as set out in University Carbon Management Plan which provides a framework for the University for controlling and reducing carbon emissions.

4.5 Ecology and Nature Conservation

As highlighted through PPS22, the greatest threat to all living species is climate change resulting from carbon emissions. The land immediately surrounding the application site for the proposed turbines is agricultural. Basic land designation searches have identified no adjacent sites that are designated as having any local, regional, national or international ecological interest.

An ecology study will be commissioned as to support the Environmental Statement to determine the possible direct and indirect effects of the turbines during the construction, operation and decommissioning phases of the development. Mitigation requirements and residual impacts will also be assessed and the significance of these quantified.

4.5.1 Desk based appraisal

The initial ecology and nature conservation section of the Environmental Appraisal will comprise of a walk over site visit and a desk study. The IEEM Guidelines require the identification of a 'zone of influence', within which lie ecological areas and resources that may be affected by the development in question. An initial review of ecological resources identified the following resources statutory and non statutory designations within this 5km zone;

The following statutory designated sites were recorded in a 5km radius of the site:

- The Bowland Fells SSSI (4.57km)
- The Lune Estuary SSSI (2.5km)
- Morecambe Bay Ramsar Site (2.8km)

In addition to this initial search a number of organisations and groups will be contacted with regard to any ecological records they may have held within the site boundary itself and for the surrounding area up to a distance of 1km. Records of non-statutory and statutory designated sites will be requested up to a distance of 2km and 5km respectively from the site boundary. Full citations for the statutory and non statutory site will be included in Environmental Statement appendices.

4.5.2 Site Based Appraisals

An extended phase 1 Habitat Survey & Baseline Ecological Impact Assessment has been commissioned in support of the Environmental Statement with the following areas;

- To establish the presence or absence of protected species and evaluate the overall nature conservation status of the site
- To assess the likely impact of proposed works to develop the site upon any protected species that may occur on or adjacent to the area of land concerned and the integrity of nature conservation interest of any other sites of ecological or nature conservation interest within the vicinity.
- To provide outline mitigation and habitat after care for the proposal.

The general ecology and botanical survey methodology for the extended phase 1 habitat survey will comprise a modified version of that described in NNC (1990) and IEA (1995) and where appropriate, with particular respect to the Phase 2 Habitat Survey, incorporating the methodology outlined in Rodwell (1991, 1992, 1995 & 2000) for the determination of national vegetation classification plant communities.

This phase 1 Habitat Survey & Baseline Ecological Impact Assessment will be used to enable informed consultation to take place with the following statutory and non statutory bodies;

- Lancashire County Council
- Natural England
- The Wildlife Trust
- The Bat conservation Trust
- The RSPB

The following text will be used to inform the study protocol;

- Bat Conservation Trust (2007) Draft Survey Guidelines
- Natural England Technical Information Note TIN051 Bats and onshore wind turbines Interim guidance
- First edition 11 February 2009
- Betts, S (2006) Are British bats at risk from wind farms British Wildlife Vol.17, No.5 (June 2006)
- English Nature (2004) Bat Mitigation Guidelines
- Environment Agency Pollution Prevention Guidelines, Works in, near or liable to affect watercourses (PPG5)
- Euro bats. Report on the Intercessional Working Group on Wind Turbines and Bat Populations
- Gilbert, G., Gibbons, D.W. and Evans, J. (1998) Bird Monitoring Methods.
- Institute of Environmental Assessment (1995) Guidelines for Baseline Ecological Assessment
- Scottish Natural Heritage (2000) Wind Farms and Birds: Calculating a Theoretical Collision Risk Assuming no Avoiding Action
- Scottish Natural Heritage (2005) Survey Methods To Assess The Impacts Of Proposed Onshore Wind Farms On Bird Communities. SNH Guidance Note, SNH, Edinburgh
- Scottish Natural Heritage (2006) Assessing Significance of Impacts from Onshore Wind farms on Birds Out with Designated Areas. SNH Guidance Note, SNH, Edinburgh
- Lancaster Council Local Plan (2004)
- Lancaster Core Strategy (2009)

N.B. This list is not exhaustive, modification to the chosen text list may occur.

4.6 Visual Impact

A Landscape and Visual Impact Assessment will be provided as part of the Environmental Statement to identify, and where possible quantify, the likely significant effects of the Lancaster University Wind Development on the visual amenity within 10km of the Scheme.

The methodology for the assessment will follow the 'Guidelines for Landscape and Visual Impact Assessment' (GLVIA) 2nd edition (2002), published by the Landscape Institute and Institute of Environmental Management and Assessment.

The study will include a baseline survey and identification of visual receptors, a description and quantification of the changes to the baseline views and an evaluation of the predicted impacts.

The development site is identified within an area of key urban landscape and urban green space. It is not considered that there are any local landscape designations that would preclude the installation of the wind development. However the impact of the proposal on the Forest of Bowland AONB located 2.4km east of the site will be an important material consideration and will form an integral part of the Landscape and Visual Impact Assessment. The study area for the Landscape and Visual Impact Appraisal will be agreed with Lancaster City Council and the Forest of Bowland AONB Board, however at this stage it is likely to comprises a 10km radius from the scheme, from which appropriate and representative locations which represented a typical view to the scheme from a number of sensitive visual receptors in the vicinity.

4.6.1 Zone of Theoretical Visibility

Zone of Theoretical Visibility (ZTV) plans will be prepared to give a general impression of how the Scheme would potentially influence the wider landscape.

The ZTV will be generated using 'Wind Farm ZVI Version 4.1.2.3 - Copyright 1997-2009 ReSoft Ltd'. The programme uses a 3D girded terrain height data obtained from Ordnance Survey to build a digital terrain model. Windfarm then renders the model using a square grid to show how each turbine will be visible at the centre of each 50m x 50m on a grid for a specified distance in every direction from the site. The ZVT will be used as a tool to choose potential viewpoints for photomontages.

ZTV's are generated using a computerised process which uses topography or 'bare earth' data only to indicate areas from which it might be possible to see parts or the entire Scheme. It takes no account of vegetation or the built environment which may screen views of the development. As such it demonstrates the worst case scenario of visibility assuming that only landscape contours are present. As a consequence, there may be views from roads, tracks, footpaths and buildings in the vicinity of the site and in the wider setting which fall within the ZTV but are in reality screened or filtered by banks, walls trees, hedges and buildings which restrict views of the turbines from many of the areas identified by the ZTV as having potential visibility.

4.6.2 Wire Frame Visualisations

Wire frames are generally used in the field to ascertain potential levels of screening by vegetation and the built environment from specific viewpoints.

A wireframe visualisation is a computer generated 3D outline of a wind turbine placed on top of a 3D ground terrain model. No rendering is given to any of the surfaces. The actual dimensions of the turbine are used to build a model which is then placed in position over a ground terrain model generated from Ordnance Survey Landform tiles.

The coordinates of the viewpoints are taken from grid registered aerial photographs and these coordinates are used to set up viewpoints in Windfarm. Similarly to a ZTV, the wire frame images are

generated on a bare ground model and therefore are a worst case scenario which doesn't take into account vegetation.

4.6.3 Cumulative Impact

Guidance provided in The Companion Guide to PPS22, 'Planning for Renewable Energy' (Office of the Deputy Prime Minister, 2004), identifies cumulative effects as "the degree to which renewable energy development becomes a feature in particular views (or sequence of views), and the effect this has upon the people experiencing those views". The Guidelines for Landscape and Visual Impact Assessment' (GLVIA) 2nd edition (2002), defines cumulative effects as additional changes to visual amenity caused by the proposed development in conjunction with other developments, or actions that occurred in the past, present or are likely to occur in the foreseeable future. Cumulative effects consist of combined visibility and sequential visibility. Combined visibility occurs where the observer is able to see two or more developments from one viewpoint. Sequential effects occur when the observer has to move to another viewpoint to see a different development.

Cumulative ZTV maps will also be prepared using Wind farm Software, The cumulative impact study will also be agreed with Lancaster City Council. However at this stage it is proposed to provide a view of the Lancaster wind development in relation to the Caton Moor Windfarm which is10km from the application site.

4.6.4 Photomontages

Once a ZVT and a wireframe have been created they can be used to produce a photomontage from that viewpoint. A Photomontage is a superimposition of a rendered, photorealistic, computer generated model of the wind turbines onto a baseline photograph. All photos are taken using a grid orientated tripod and using a high quality setting of 10 megapixel resolution.

Using the previously created wireframe and known landmarks on the landscape the photograph is aligned and the scale and positioning of the turbine is amended. The turbine model is then rendered to give a photorealistic image with corrected lighting levels and turbine colour.

The following documents provide guidance for landscape and visual assessment and will be used to inform the study protocol;

- Countryside Commission (1992) 'Countryside Character, Volume 2: North West
- Lancashire County Council (2000) 'A Landscape Strategy for Lancashire
- Lancashire County Council (2005) 'Landscape Sensitivity to Wind Energy Developments in Lancashire'.
- Landscape Institute and Institute of Environmental Management and Assessment (2002) Guidelines for Landscape and Visual Impact Assessment 2nd edition
- Countryside Commission (1992) Countryside Character, Volume 2: North West
- Lancashire County Council (2000) A Landscape Strategy for Lancashire
- Lancashire County Council (2005) Landscape Sensitivity to Wind Energy Developments in Lancashire
- Office of the Deputy Prime Minister (2004) PPG22: Renewable Energy
- Office of the Deputy Prime Minister (2004) Planning for Renewable Energy, A Companion Guide to PPS22
- Scottish Natural Heritage (2002) Visual Assessment of Wind farms: Best Practice.

N.B. This list is not exhaustive, modification to the chosen text list may occur.

4.7 Cultural Heritage

Listed Buildings and Conservation Areas are designated under Section 1 of the Planning (Listed Building and Conservation Areas) Act, 1990. National policy advice on Conservation Areas and Listed Buildings is given in Planning Policy Guidance (PPG) Note 15 (Planning and the Historic Environment). The principal legislation concerning archaeology is the 1979 Ancient Monuments and Archaeological Areas Act, which provides statutory protection of monuments of national importance (Scheduled Ancient Monuments). In addition, PPG 16 (Archaeology and Planning) gives advice on handling archaeological matters in the planning process. Other sites of archaeological importance are entered onto county Sites and Monuments Records under the 1990 Town and Country Planning Act. The National Monuments Record is an index of the more detailed information held in the various Sites and Monuments Records.

The chapter of the Environmental Statement will identify, and where possible quantify, the likely significant effects of the Lancaster University wind development on cultural heritage resources.

This assessment will take the form of an archaeological assessment which will appraise the direct impacts of the two wind turbines, the access track leading to the site and between the turbine, the underground electrical cables and the temporary construction compound. The report will include baseline data, walkover survey data and interpretation. A Visual Appraisal based on the photomontages provided as part of the Landscape and Visual Impact Assessment will also be undertaken to determine the impact of the Scheme on the setting of important historic features such as Listed Buildings and Scheduled Monuments.

The following text will be used to inform the study protocol;

- Planning Policy Guidance Note 15 Planning and the Historic Environment
- Planning Policy Guidance Note 16: Archaeology and Planning, London
- English Heritage (2005) Wind Energy and the Historic Environment, London
- Faro (2005) Framework Convention on the Value of Cultural Heritage for Society

N.B. This list is not exhaustive, modification to the chosen text list may occur.

4.8 Shadow Flicker

A Shadow Flicker Assessment will be carried out for the wind development site to identify and determine the impact of the turbines on potentially sensitive receptors which would include windows, indoor public areas and work places etc. The Assessment will identify areas that will be exposed to potential shadow flicker, identify potentially sensitive receptors and quantify the shadow flicker impacts on those sensitive receptors.

Specific reference has been made within the Councils Screening Opinion to the impact of Shadow Flicker on the M6 motorway and the potential for direct shadow flicker or light reflection flicker to affect drivers and passengers. In response to this the study will also quantify and asses the significance of these impacts.

Shadow flicker is the name given to the effect that may arise when turbine blades rotate in bright sunlight conditions, casting shadows within rooms of buildings. Shadow flicker is more likely to cause sufficient variation in luminance when perceived indoors through narrow window openings. In outdoors areas shadow flicker is less likely to be perceived unless light influx is limited to one direction, for example within an enclosed courtyard.

The BERR points out that modern wind turbines do not cause shadow flicker at frequencies greater than 1 HZ (3 blades and a rotor speed of less than 20 rpm) meaning in this case flicker frequency is not a concern. There is no statutory guidance regarding acceptable duration and frequency of shadow flicker. When quantify shadow flicker impact reference is often made to a German court ruling which suggests limiting shadow flicker to a 30minitue per day, 30 hour per year maximum for rooms within residential dwellings, lectures halls, offices and hotels. However the BERR recent

guidance note leaves it up to local authorities to impose planning conditions to control shadow flicker where appropriate. To this effect complete mitigation of any adverse effects can be provided by stopping turbines rotating when conditions give rise to potential flicker at local homes.

'Wind Farm Version 4.1.2.3 - Copyright 1997-2009 ReSoft Ltd is the industry standard computer software for modelling all aspects of wind farms. This software uses mathematic modelling to predict where and when shadows might be cast by proposed turbines over the course of a year and calculates the maximum possible duration of occurrences. This software plots shadow flicker with the fundamental assumptions that there will be no intervening cloud cover or rainy conditions, that the wind turbines are operational and the blades are rotating and that the wind direction and the sun are always the same i.e. the turbine rotor is perpendicular to the solar azimuth. To this end the software plots the worst case scenario where in reality screening by vegetations, banks and buildings may prevent adverse impact.

Wind Energy Annex to the Companion Guide to PPS22 paragraph 76 makes it clear that shadow flicker effects only occur within 10 rotor diameters of a wind turbine: “Shadow flicker can be mitigated by siting wind turbines at sufficient distance from residences. On this the distance parameters for the shadow flicker assessment have been set at a maximum of 925m from the base of each turbine.

The Companion Guide also says that only properties within 130° either side of north, relative to the turbines can be affected in the UK. The winter and summer solstices, December 21 and June 21, mark the times when the sun, as it moves toward its most northerly or southerly positions, slows and shortly stops before moving the opposite way. Shadows cast at dawn and dusk on or near these dates are both spatially and temporally long.

The following text will be used to inform the study protocol;

- Planning Policy Guidance Note 22: Renewable Energy
- Planning for Renewable Energy, A companion guide to PPS22
- DBERR website, Onshore Wind: Shadow flicker
- On shore wind energy planning conditions guidance note – A report for the renewable advisory board and the BERR, 2007
- OS landform Data, 2007

N.B. This list is not exhaustive, modification to the chosen text list may occur.

4.9 Noise and Vibration

A noise and vibration study will be submitted as part of the environmental statement to identify, and where possible quantify, the likely significant noise effects of the Lancaster University Wind Development on the surrounding area, and in particular on the nearby residential properties.

The assessment will be carried out according to the recommendations of ETSU-R-97, ‘The Assessment and Rating of Noise from Wind Farms’, as referred to in Planning Policy Statement (PPS) 22, ‘Renewable Energy’, as the methodology by which noise from wind farms should be assessed.

ETSU-R-97, ‘The Assessment and Rating of Noise from Wind Farms’, presents the recommendations of the Working Group on Noise from Wind Turbines, set up in 1993 by the Department of Trade and Industry (DTI) as a result of difficulties experienced in applying the noise guidelines existing at the time to wind farm noise assessments. The group comprised independent experts on wind turbine noise, wind farm developers, DTI personnel and local authority Environmental Health Officers.

Baseline noise levels will be taken from approximately four locations, representative of the nearest noise sensitive properties and worst case turbine noise levels at the nearest locations will be predicted based on likely warranted sound power level data for the proposed wind turbines The assessment protocol and noise location will be agreed with Lancaster Council Environmental Health Department prior to commencement of the study.

The following text will be used to inform the study protocol;

- Department for Communities and Local Government (1994) Planning Policy Guidance 24: Planning and Noise
- Department of Trade and Industry (2000) ETSU W/13/00385/REP, A Critical Appraisal of Wind Farm Noise Propagation Department of Trade and Industry (2006) The Measurement of Low
- Frequency Noise at Three UK Wind farms. W/45/00656/00/00
- ETSU for the Department of Trade and Industry (1996) ETSU-R-97, The Assessment and Rating of Noise from Wind Farms IEC 61400-11:1998 Wind Turbine Generator Systems: Part 11: Acoustic noise measurement techniques
- Office of the Deputy Prime Minister (2004) Planning Policy Statement 22: Renewable Energy
- Office of the Deputy Prime Minister (2004) Planning for Renewable Energy, A Companion Guide to PPS22

N.B. This list is not exhaustive, modification to the chosen text list may occur.

4.10 Geology, Hydrogeology and Hydrology

A Hydrogeology study will be submitted as part of the environmental statement to identify, and where possible quantify, the likely significant geological and hydrological effects of the Lancaster University Wind Development. There is likely to be overlap between this chapter and the land use and ecology sections of the assessment.

Collection of baseline data will include a site visit and the use of a number of published sources of information, including:

- British Geological Survey (1990) 1:50,000 scale England and Wales
- Groundwater Vulnerability Map of Central Lancashire. Environment Agency. Sheet 10. 1:100,000 scale (1996).
- The Environment Agency's website (www.environment-agency.gov.uk)
- Lancashire County Council's website (www.lancashire.gov.uk)
- RIGS (Geological Heritage Sites) information.
- Ordnance Survey (1970) Soil Survey, Lancashire, 1:250000

The following text will be used to inform the study protocol;

- Water Resources Act 1991, as amended;
- Land Drainage Act 1991, as amended;
- Environment Act 1995, as amended;
- Surface Waters (River Ecosystem) (Classification) Regulations 1994;
- EC Groundwater Directive 80/68/EC transposed by the Groundwater Regulations 1998 as amended
- EC Dangerous Substances Directive 76/464/EEC (and daughter directives) as transposed by the Surface Waters
- Department for Environment, Food and Rural Affairs (2008) Draft Soil Strategy for England

N.B. This list is not exhaustive, modification to the chosen text list may occur.

4.11 Aviation and Interference

The objective of this part of the Environmental Statement will be to identify, and where possible quantify the likely significant effects of the Lancaster University wind development on Aviation Radar and Telecommunication and Radio Links. An Aviation and Interference Impact study will be commissioned on this basis to establish direct and indirect baseline impacts, mitigation and residual effects.

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4.11.1 Interference

PPS 22, section 8.64 states that 'Provided careful attention is paid to siting, wind turbines should not cause any significant problems of electromagnetic interference'. A number of telecommunication links have been identified within the vicinity. The following consultation will take place to inform the Environmental Appraisal;

- Ofcom
- JRC
- Lancashire Police
- Lancashire Fire
- North West Ambulance
- BT
- CSS Spectrum Management Services
- Vodaphone
- Cable and Wireless Communications
- Orange
- 3
- Virgin Media
- Arqiva ltd.
- Thus

4.11.2 Aviation

Because of their physical size, in particular their height, wind farms can have an effect on the aviation domain. Additionally, rotating wind turbine blades may have an impact on certain aviation operations, particularly those involving radar. The aviation community has procedures in place which are designed to assess the potential effect of developments such as wind farms on its activities, and, where necessary, to identify mitigating measures.

4.11.3 Civil Aviation

CAP 764 states the distances from various types of airfields where consultation should take place. These include:

- Aerodrome with a surveillance radar – 30 km;
- Non radar licensed aerodrome with a runway of more than 1.1km – 17km;
- Non radar licensed aerodrome with a runway of less than 1.1km – 5km;
- Licensed aerodromes where the turbines would lie within airspace coincidental with any published Instrument Flight Procedure;
- Unlicensed aerodrome with runways of more than 800m – 4km;
- Unlicensed aerodromes with runways of less than 800m – 3km; and
- Other aviation activity such as parachute sites and microlite sites within 3km, developers are referred to appropriate organisations.

4.11.4 National Air Traffic Services (NATS) En Route Radar

View from NATS should be sought to ensure that adequate technical or operational mitigation is available to radar in line of sight.

4.11.5 Ministry of Defence Air Traffic Control, Air Defence Radar Systems and Meteorological Radars

Views from Defence Estates of the Ministry of Defence (MoD) should be sought in order to gain a view regarding military airfields and ATC radars, defence or weather radar and to ensure that adequate technical or operational mitigation is available.

4.11.6. Consultation Proforma

Following discussions throughout 2001 by the DTI-led 'Working Group for Wind Energy, Defence and Civil Aviation Interests', a consultation proforma has been agreed between the BWEA and key Aviation issue consultees such as the MoD, NATS and CAA. It is in the interests of all developers to use the proforma when making enquiries to ensure that consultation responses are able to be dealt with quickly and consistently. Developers who don't will be likely to be directed to it by the consultee with subsequent delays. Details on the issues and background concerning aviation and wind turbines can be found on the BWEA website at www.bwea.com/aviation/index.html. In line with the guidance issued by the BWEA and key aviation parties, the Wind Turbine proforma was completed and issued to the MOD and CAA as per standard procedure. A copy of the proforma submitted is enclosed with this statement in Appendix 6.2

4.12 Traffic and Transport

The objective of this part of the Environmental Statement will be to identify, and where possible quantify the likely significant effects of the Lancaster University wind development on road traffic

An Access Study has be commissioned on this basis to establish baseline impacts during construction operation and decommissioning, where necessary mitigation will be recommended and residual effects quantified. This study will determine the delivery route assessment and vehicle swept path for turbine delivery vehicles. It will also review traffic flow data to inform the development of an outline construction programme and activity schedule.

Collection of baseline data will include a site visit as well as consultation with the local highway authority, Lancashire County Council and reviews of 1:25,000 Ordnance Survey Maps.

The following text will be used to inform the study protocol;

- Guidelines for the Environmental Assessment of Road Traffic, Institute of Environmental Management and Assessment (IEMA), 1993
- Guidelines for Traffic Impact Assessment, The Institution of Highways and Transportation, September 1994

N.B. This list is not exhaustive, modification to the chosen text list may occur.

4.13 Miscellaneous Issues

The objectives of this part of the Environmental Statement are to describe and assess the potential effects of the development on issues such as Air Quality and Health and Safety. The effects of these matters will be established for the construction, operation and decommissioning phases of the project.

Collection of baseline data will include a site visit and the use of a number of published sources of information, including:

- The Management of Health and Safety at Work Regulations 1999
- The Construction (Health, Safety and Welfare) Regulations 1996, by Statutory
- Instruments 1996/1592, 1998/494, 1999/3242 and 2000/2380
- Construction (Design and Management) Regulations 1994 (as amended
- Electricity Safety, Quality and Continuity Regulations 2002
- Electricity at Work Regulations 1989
- The Control of Noise at Work Regulations 2005
- Personal Protective Equipment at Work Regulations 1992
- Manual Handling Operations 1992
- Work at Height Regulations 2005
- Personal Protective Equipment Regulations 2002

N.B. This list is not exhaustive, modification to the chosen text list may occur.

5 Community Involvement

A community consultation statement will be submitted with the Environmental Appraisal detailing the consultation exercises carried out as part of the preparation process for the planning submission.

To date public consultation procedure has taken the form of;

- Detailed discussions with Lancaster University's wind farm public consultation researchers
- Community Plan and Stakeholder Identification
- Initial discussions on community benefits
- Parish, County and District Councillor Briefing
- Letter to nearby householders in Bailrigg, Ellel and Galgate
- Initial Press Release
- Question and Answer Summary
- Local and National Press Publicity
- Wind Development webpage www.lancs.ac.uk/windturbines
- Lancaster University Newsletter Articles
- Update for Times Newspaper

Additional consultation in the form of several public exhibitions is schedules towards December following completion of baseline study work. These exhibitions will be used to ascertain the overall public perception of the Lancaster University Wind Development. At this initial stage it is envisaged that three community consultation exhibitions that will take place in Ellel, Scotforth and at the University, however the Local Planning Authority will be consulted before agreement of this strategy.

6 Consultation

6.1 Initial Consultations

Consultation List

The following list of Statutory and Non Statutory consultee's have been contacted to gather baseline information in support the planning application;

Consultee	Date Sent	Date of Response and Details	Action
Lancaster Planning Authority	Initial Meeting 14/09/09 Screening Opinion 21/08/09	Screening Opinion received confirming that an Environmental Impact Assessment is required for the wind turbine development	Submit Scoping opinion and continue with Pre application discussions
Environmental Health	04/09/09	Agreement of study protocol and noise monitoring location received 08/09/09	Noise monitoring study to commence October 09 Send noise report to Environmental Health Officer once completed.
County Council Highways Department	Aecom to being consultation and provide highway contact details	Initial contact made with Highways regarding visual interference 21/09/09	Follow up consultation when Aecom have established main point of contact for Access Study
County Council Public Rights of Way Officer	02/09/09	Delivery receipt 03/09/09 No Response received as of 17th September Reminder Sent 21/09/09	As detailed in reminder , if after 30th September still no response we will assume that the PROW has no specific comments
Lancashire Bridleways Association	03/09/09	Response received 03/09/09 stating scheme looks ok but requesting advice from Michael Helme, Bowland Bridleways Officer Reminder sent to Mr Helme 21/09/09	As detailed in reminder, if after 30th September still no response we will assume that Mr Helme has no specific comments
County Council Archaeology Department	02/09/09	Response Received 03/09/09 stating no known archaeological sites within the proposed site however recommending some field evaluation work and a desk based assessment.	Archaeology Study commissioned 07/09/09 to be completed by Oxford Archaeology

Environment Agency	02/09/09 Request for information. 03/09/09 Preliminary consultation	Response to request for information received 08/09/09 Acknowledgement to Preliminary consultation received 03/09/09 estimated timescale for response 10 working days 11/09/09 Ian Southworth has confirmed that he has no observation	
English Heritage	Consulted 09/09/09	Delivery Receipt 09/09/09 Reminder Sent 21/09/09 Reponses received 21/09/09, Enquiry being dealt with by Beverley Jackson Tel 01612421414. Additional details provided.	Comments due 30th September Send Archaeology Study to English Heritage once completed
Natural England	02/09/09 Natural England Lancashire	Delivery Receipts 02/09/09 Reminder Sent 21/09/09 Pin Dhillon-Downey is assessing the consultation	Send Ecology Report to Natural England for comment
RSPB	02/09/09 RSPB Lancashire	Delivery Receipts 02/09/09 Reminder Sent 21/09/09 Tim Youngs is assessing the consultation. A review of the Lancashire bird protection zones identifies that the turbine location is within an unallocated area.	Send Ecology Report to RSPB for comment
Wildlife Trust	02/09/09	Delivery Receipts 02/09/09 Reminder Sent 21/09/09	As detailed in reminder , if after 30th September still no response we will assume that the Wildlife trust has no specific comments
Lancashire County Ecologist	Records Search to be undertaken by CSC Associates as part of Ecology Study	Information request carried out	Send Ecology Report to County Ecologist for comment
Bat Conservation Trust	Records Search to be undertaken by CSC Associates as part of Ecology Study	Information request carried out	Include record results search in the ecology study
Ofcom	03/09/09	Response Received 07/09/09 identifying microwave fixed links and recommending consultation with CSS, JRC, and reference to website information	Additional Consultation and Searched carried out 09/09/09 EMI Consultant Commissioned to investigate impacts and recommend mitigation

Northwest Ambulance	18/09/09	Consultation sent recorded delivery to assess impact on emergency microwave links and air response units Response received expressing no concerns	
Lancashire Fire	18/09/09	Consultation sent recorded delivery to assess impact on emergency microwave links and air response units	Chase response 10th October
Lancashire Police	18/09/09	Consultation sent recorded delivery to assess impact on emergency microwave links and air response units	Chase response 10th October
Geo Network	18/09/09	Response received	Chase response 10th October
National Grid Electricity	18/09/09	Response received impact negligible	Chase response 10th October
National Grid Gas	18/09/09	Response received impact negligible	Chase response 10th October
Shell Uk	18/09/09	Consultation received Robin Palmer Shell UK, responded confirming that the Stanlow Complex is in the vicinity of the site but is not affected by the proposed works	
BT	09/09/09	Turbine 1 is acceptable concerns regarding turbine 2 as link ref 0475821/1 is 45m south of the site	EMI consultants to investigate impacts
T Mobile	09/09/09	No Objection to locations chosen	
ISS Network Specialist Lancaster University	09/09/09	No Objections	
Cable and Wireless	09/09/09	No Comments received 17/09/09 Reminder Sent 21/09/09	As detailed in reminder , if after 30th September still no response we will assume no specific comments
Ericsson	09/09/09	Comments same as response for T-mobile, same enquiry contact	
Orange	09/09/09	No Comments received 17/09/09 Reminder Sent 21/09/09	As detailed in reminder , if after 30th September still no response we will

			assume no specific comments
Blackpool Airport	25/08/09	Confirmation via telephone that enquiry has been received 09/09/09	Anticipated Response week commencing 21/09/09
BAE Warton	25/08/09	Dave Higginbottom Head of Aerodrome Services is dealing with consultation	Chase Response 21/09/09
Civil Aviation Authority (CAA)	25/08/09	For completeness it would also be sensible to establish the related viewpoint of local emergency services air support units. This is because of the unique nature of their operations in respect of operating altitudes and potentially unusual landing sites. In respect of any aviation need to increase the conspicuous of the turbines, developers should be aware that there may be a need to install aviation obstruction lighting to some or all of the associated wind turbines should this development be progressed. This comment is made specifically if there were concerns expressed by other elements of the aviation industry; ie the operators. For example, if the Ministry of Defence or a local aerodrome had suggested such a need, we the Civil Aviation Authority (sponsor of policy for aviation obstruction lighting) would wish, in generic terms, to support such a claim. We would do so if it could reasonably be argued that the structure(s), by virtue of their location and nature, could be considered a significant navigational hazard. That said, if the claim was clearly outside credible limits (ie the proposed turbine(s) was/were many miles away from an any aerodrome or it/they were of a height that was unlikely to affect even military low flying) the Authority would play an 'honest-broker' role. All parties should be aware that international aviation regulatory documentation requires that the rotor blades, nacelle and upper 2/3 of the supporting mast of wind turbines that are deemed to be an aviation obstruction should be painted white, unless otherwise indicated by an aeronautical study. It follows that the CAA advice on the colour of wind turbines would align with these international criteria. Developers are advised that there is a civil aviation requirement in the UK for all structures over 300 feet high to be charted on civil aviation maps (I understand that the ministry of defence utilises a lower threshold height). Should this proposed wind turbine development progress and the 300 feet height be breached, to achieve this civil aviation charting requirement, developers	Defence Geographic Centre and Emergency Services Consulted 18/09/09

		will need to provide details of the development to: Defence Geographic Centre AIS Information Centre Jervis Building Elmwood Avenue Feltham Middlesex TW13 7AH Telephone: 020 8818 2708 (This number is for Defence Geographic, not the CAA)	
Defence Geographic Centre	18/09/2009	Informed of the proposal by letter including details of the proposal and the Aviation proforma, sent recorded delivery.	Acknowledgement and advice awaited
National Air Traffic (NATS)	25/08/09	Response from Sarah Allen; As per our telephone conversation, I can confirm that we (NERL) only respond to full, formal planning applications with we receive directly from Local Planning Authorities. However, we do offer a consultancy service for a fee. Please see attached document for more information. Also, the BWEA (British Wind Energy Association) website (www.bwea.com) also contains some information that may be helpful to you under the 'Aviation' section.	Chase Response 09/10/09
Ministry of Defence (MOD)	25/08/09	Acknowledgement Received 27/08/09 Spoken with Aadil Pathan 09/09/09 to chase response. No news yet expected timescale 3 months from date of initial consultation	Chase response 09/10/09
Forest of Bowland AONB Board	02/09/09	Delivery Receipt 02/09/09 Acknowledgement received being dealt with by Don McKay who is awaiting technical advice on AONB impact before responding donald.mckay@lancashire.gov.uk +44 (0)1772 534140	Send locations for landscape assessment to be agreed with AONB before study commenced