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Planning for Renewable Energy Development

Spatial Planning
Regeneration and Planning
North Lincolnshire Council
Pittwood House
Ashby Road
Scunthorpe
DN16 1AB

**Supplementary
Planning Document
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欲知粵語版的資訊，請致電：08000 193532 (Cantonese)

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1

Introduction

- 1.1 North Lincolnshire is already significantly involved in the power generation industry, producing around 7% of the country's electricity requirement. It is also strongly supportive of renewable energy and views it as being a key part of the transformation of its economy. The area is already home to a number of renewable energy generation facilities in the shape of the Bagmoor Windfarm and the Glanford Power Station at Flixborough, as well as one of the country's largest, greenest and most efficient power plants in the Conoco Philips Combined Heat and Power plant at Kilingholme. These will be joined by two large scale on-shore windfarms at Keadby and Tween Bridge in the Isle of Axholme, the Heron Renewable Energy Plant, a biomass plant being developed by Drax Biomass (Immingham) Ltd and potentially by the Eco2 biomass plant at Brigg.
- 1.2 Taking all these existing and consented developments together, North Lincolnshire will more than meet its target to produce energy from renewable sources. It will be one of the few authorities in the Yorkshire and Humber region to achieve this. These developments represent a total of almost 1,500 MW of electricity, which has the potential to power approximately 700,000 homes. It is clear that North Lincolnshire is more than doing its bit to promote the use of renewable energy, in order to help tackle climate change and global warming by reducing our reliance on fossil fuels.
- 1.3 North Lincolnshire is not just leading the way in power generation from renewable sources but is also a key location for the development of renewable energy technologies. The South Humber Gateway, already a centre of energy generation, will through the development of the Able Marine Energy Park become an international centre for the manufacture and assembly of wind turbines for the rapidly expanding off-shore wind sector, taking advantage of its location close to the North Sea, where the Government have identified three large areas for wind development. The Able Marine Energy Park will provide approximately 5,000 new jobs. This development will help North Lincolnshire play its part in securing the future energy supplies for the country and will help to deliver the aspirations of the Humber Local Enterprise Partnership and the Humber Renewable Energy Super Cluster Enterprise Zone in making the Humber area the country's leading centre for the development of renewable energy technologies.
- 1.4 Although North Lincolnshire has embraced renewable energy and is committed to providing its fair share of renewable energy, the council is equally committed to ensuring that this is not at the detriment of the area's communities, landscapes and environment.
- 1.5 North Lincolnshire's world class environment, diverse landscapes and varied communities provide high quality, attractive settings for tourism, businesses and residents, and are essential for the area's continued prosperity and quality of life. It is only right and proper that they are protected from inappropriate development.



- 1.6 A lack of national designations like Areas of Outstanding Natural Beauty and/or National Park, has resulted in North Lincolnshire experiencing an over concentration of proposals for renewable energy development, particularly for on-shore wind. These proposals represent a disproportionate burden being placed on the area, compared to other local authorities in the Yorkshire and Humber region. As a result the area has more than met its targets for renewable energy and will significantly exceed them over the next few years. This imbalance needs to be addressed. Before any further renewable energy development, in particular on-shore wind is accepted in North Lincolnshire, others need to ensure that they strive to meet their targets.
- 1.7 This Supplementary Planning Document (SPD) sets out North Lincolnshire Council's approach to planning for renewable energy. It aims to provide guidance for developers in preparing planning applications for renewable energy developments as well as assist elected members and council officers in determining planning applications. It should be noted that this document does not apply to domestic renewable development for example solar panels on roofs.



2

What is Renewable Energy?

- 2.1 Renewable energy is the term used to describe energy flow that occurs naturally and continuously in the environment, such as energy from wind and the sun. It has an important role to play as an alternative to energy generated using fossil fuels and nuclear power. The environmental, economic and social benefits are important factors when considering applications for such schemes.
- 2.2 The environmental benefits of renewable energy are linked mainly to the contribution it can make to responding to climate change. Without action, climate change will jeopardise wildlife, habitat integrity, the landscape and human activities across the UK, including North Lincolnshire. In addition to powering homes, buildings and businesses, renewable energy can bring about social and economic benefits through job creation in the manufacturing, construction and maintenance industries. The renewable energy sector is already contributing by creating employment opportunities in North Lincolnshire.
- 2.3 Careful consideration also needs to be given to likely adverse effects that may arise from renewable energy schemes. Schemes need to be well designed, reflect local circumstances and demonstrate how any environmental, social, resources and economic impacts have been minimised through careful site selection, design, construction and other measures. These impacts are material planning considerations and will need to be addressed on a site by site basis.



3

North Lincolnshire & Renewable Energy

- 3.1 North Lincolnshire as part of a wider economic transformation is leading the way in renewable energy development and technologies. This section of the SPD shows how the area is advancing with renewable energy and the level of pressure the area is under from wind energy developments.


On-Shore Wind

- 3.2 On-shore wind energy development has been the mainstay of proposals for renewable energy development in North Lincolnshire. This is due to the area being identified as having significant potential for wind development in the 2004 study "Planning for Renewable Energy Targets in Yorkshire & Humber". This study provided the basis for the regional targets set out in the Regional Spatial Strategy (RSS). The RSS targets for North Lincolnshire were limited to ensure the area did not have to bear too disproportionate a burden for onshore wind energy compared to other local authorities in the region. The study also highlighted that other renewable technologies for example biomass will provide significant opportunity for North Lincolnshire to supplement its power supply.
- 3.3 Over recent years, seven proposals for on-shore wind energy development have been put forward in North Lincolnshire. These have been considered by either the council or the government. Three have received planning permission at Bagmoor, Keadby and Tween Bridge which between them will generate 107MW of electricity, whilst two applications at Flixborough and Saxby are being considered through the appeal process and have the potential to generate a further 59MW of electricity. A further application is under consideration for 4 turbines generating 10MW of electricity at Winterton.
- 3.4 An application was refused by the council at Elsham Wold for 15 turbines generating 30MW of electricity due to its impact on the operation of Humberside Airport and was finally dismissed on appeal in 2006.
- 3.5 There are also a number of proposals or consented wind energy developments in neighbouring local authority areas, which are situated close or adjacent to the North Lincolnshire administrative boundary, - at Tween Bridge (Doncaster), Goole Fields, Twin Rivers, Sixpenny Wood, H & H Celcon, and Aire & Calder (East Riding of Yorkshire) and Stallingborough (North East Lincolnshire).

Offshore Wind

- 3.6 North Lincolnshire will be at the heart of the UK Government's Round 3 £100bn offshore wind programme. It aims to produce a quarter of the UK's electricity needs by 2020 and has the potential to create up to 70,000 jobs across the country. The Round 3 off-shore wind programme will, over a 17-year period, create an estimated capacity of 32GW of sustainable electricity. This will involve the construction of around 7,000 turbines off-shore, 4,000 of these will be built in the North Sea. There is every likelihood that turbine capacity could be further increased by a Round 4 programme, further European installations and the possibility of an offshore wind trans-European grid in the North Sea.
- 3.7 The South Humber Gateway has a significant competitive advantage in securing a super-cluster for offshore wind development. It is the largest port complex in the country and has the fastest sailing times to North Sea off-shore wind farm areas as well as boasting significant leadership in the wind power, marine renewables and bio-energy sector and proven expertise in engineering, construction, ports and logistics. The off-shore wind sector has already identified the South Humber Gateway as a premier site capable of accommodating multiple global offshore wind developers, associated operations and maintenance, and supply chain businesses.



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- 3.8 The South Humber Gateway has the necessary critical landmass to become the central hub of a genuine renewable and offshore wind super-cluster. It offers nearly four square miles of greenfield development land and is the only remaining large scale undeveloped site in Europe that is adjacent to a deep-water channel. This has been recognised by Able UK Ltd who has announced ambitious plans for a 322 hectare Marine Energy Park on the South Humber Gateway that incorporates a 1,300-metre quay facility.
- 3.9 The Marine Energy Park scheme is being progressed under the requirements of the Infrastructure Planning Commission and its planned successor body. The first phase aims to be operational by 2013. The Marine Energy Park will create an estimated 5,100 direct jobs and a considerable number of indirect jobs. This £600m investment demonstrates a massive vote of confidence in the South Humber Gateway by the private sector.

Carbon Capture and Storage

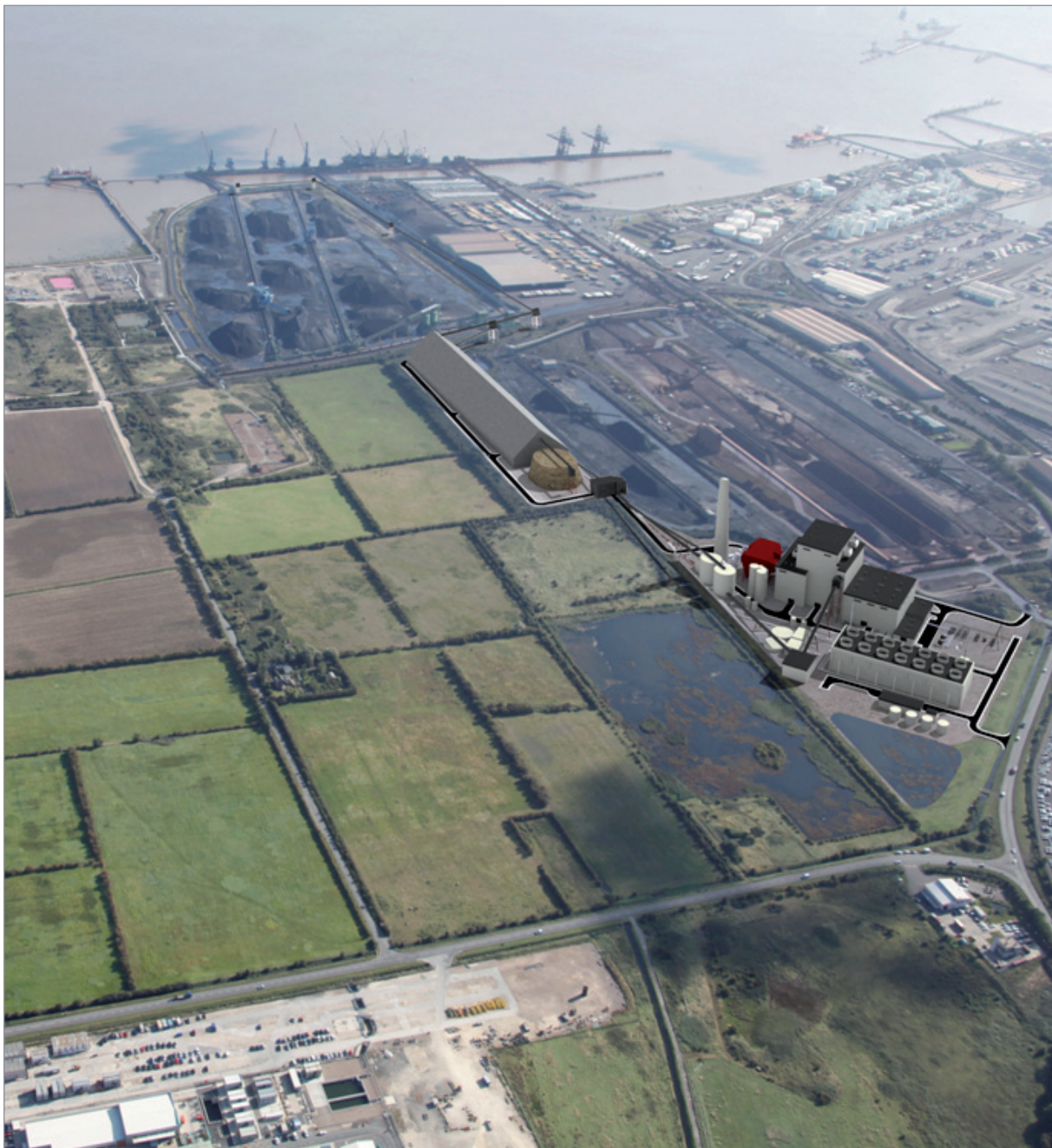
- 3.10 Carbon Capture and Storage (CCS) presents a major growth opportunity for the UK, with benefits estimated at £6.5bn, providing up to 100,000 jobs by 2030. Yorkshire and Humber is identified as the UK's first low carbon economic area for CCS. The region has been chosen because it hosts the UK's largest CO₂ emitters but also for its proximity to the largest storage areas under the North Sea in the form of redundant oil and gas wells. Again, the South Humber Gateway is ideally placed to service this massive initiative. There are currently proposals for an **Integrated Gasification Combined Cycle Power Plant** with CO₂ capture being put forward by G.Gen at Killingholme. The plant will have an overall net electricity generating capacity of 400-450 MW and the ability to capture and prepare the CO₂ for transport and storage when solid fuels are utilised.

Biofuels

- 3.11 North Lincolnshire is home to the UK's largest petrochemical refining cluster located on the South Humber Gateway. It provides more than 27 percent of total UK refinery capacity and is one of the largest petroleum ports in Europe processing, handling and distributing around 20m tonnes of fuel products a year. It is also located close to the country's major crop producing areas in Lincolnshire and slightly further afield in East Anglia. This combination provides a key opportunity for the area to be a leader in the production of biofuels such as bio-ethanol and bio-diesel.
- 3.12 The European Transport Fuels Obligations is driving new development. Bio fuels Ltd, Abengoa, Vireol and Greenergy are all involved in the development of major new biofuel capacity on the south bank of the Humber. Their proximity to the oil refineries provides a particular advantage to the emerging advanced biofuel sector in gaining access to market.
- 3.13 Abengoa is the largest producer of bioethanol in Europe and has bought a site on the South Humber Gateway. Bioethanol Ltd also has planning permission to develop a bio-ethanol plant. The opportunities brought from industrial symbiosis using the industrial waste of other businesses located on the South Humber Gateway will also support the development of bioethanol plants.

Biomass

- 3.14 Biomass is an emerging renewable energy technology within North Lincolnshire and has the potential to be a major growth sector. Significant levels of investment in biomass plants has been proposed in the area with a particular focus on the South Humber Gateway with the likes of Drax/Siemens in August 2011 having its planning application approved for its Heron Renewable Energy Plant. This £600m, 299 MW biomass plant will use 1.4 million tonnes of biomass per year and will generate enough electricity for approximately 512,000 homes.
- 3.15 A straw based biomass plant has also received planning permission adjacent to the existing conventional power station at Brigg. The Eco2 plant will produce 40MW of electricity.





Solar Farms

- 3.16 Solar farms, or photovoltaic field arrays, are becoming increasingly commonplace in the United Kingdom, particularly in southern and central England. Much of this interest is related to the availability of Government subsidies via the Feed in Tariff. Developers are now looking further north for opportunities, and North Lincolnshire is being viewed as a possible location. Already one planning application for a solar farm near Keadby has been submitted and subsequently refused by the council. It was refused due to the adverse impact on the character and visual amenity of the surrounding area as well as a failure to demonstrate and justify the visual impact of the development on the surrounding area. It also failed to comply with national policy set out in Planning Policy Statement (PPS) 4 regarding the control of economic development in the open countryside.



4

Planning Framework for Renewable Energy

National

- 4.1 The UK made a legally binding agreement at the United National Framework Convention on Climate Change in Kyoto to set a minimum target of 15% to reduce its greenhouse emissions. This is a challenging target given the low level of energy in the UK which is currently generated by renewable sources. It has been estimated that in 2009 only 6.7% of UK electricity was generated from renewable sources.
- 4.2 In November 2008, the Climate Change Act also set a legally binding target for reducing UK carbon dioxide emissions by at least 34% by 2020 and at least 80% by 2050, compared to 1990 levels. The use of renewable energy sources in generating electricity will be vital in meeting these targets.
- 4.3 The Government are in the process of introducing a National Planning Policy Framework (NPPF). This will replace existing guidance and policy set out in Planning Policy Statements/Guidance, Circulars and practice guides, bringing Government policy together in one document. A draft has been published for consultation and is to be considered when making decisions on planning applications. The Draft NPPF strongly supports the need for planning to tackle climate change by securing radical reductions in carbon emissions through the appropriate location and layout of new development, support for energy efficiency improvements to existing buildings and backing the delivery of renewable and low carbon energy including community-led initiatives. It also supports the need to conserve and enhance the natural and local environment by protecting valued landscapes and minimising impacts on biodiversity and providing net gains in biodiversity, where possible.
- 4.4 Also of importance are National Planning Statements (NPS), which set out the Government's policies for the provision of energy infrastructure. A total of six NPSs have been designated by Parliament in relation to energy infrastructure, the most important being NPS EN-1. These are used by the Infrastructure Planning Commission (IPC) to assess proposals for nationally significant energy developments and by ministers in making decisions. They can also be material considerations at the local level. However, the extent to which an NPS is a material consideration will be judged on a case by case basis.
- 4.5 Planning Policy Statement 22: Renewable Energy (PPS22) sets out the Government's policies for renewable energy. Renewable energy is defined in PPS22 as *"those energy flows that occur naturally and repeatedly in the environment – from the wind, the fall of water, the movement of the oceans, from the sun and also from biomass"*. PPS22 requires Regional Spatial Strategies and Local Development Frameworks to contain criteria based policies which promote and encourage renewable energy development across England where the technology is viable and environmental, social and economic impacts can be addressed. Regional Spatial Strategies should include targets for renewable energy capacity in the region.
- 4.6 Positive planning for renewable energy development will also contribute to the Government's strategy for sustainable development:

- Social progress which recognises the need for everyone - by contributing to the nation's energy needs; ensuring all homes are adequately and affordably heated; and providing new sources of energy in remote areas
- Effective protection of the environment - by reducing greenhouse gas emissions thus reducing the potential for the environment to be affected by climate change
- Prudent use of natural resources - by reducing the nation's reliance on diminishing supplies of fossil fuels
- Maintenance of high and stable levels of economic growth and employment - through the creation of jobs directly related to renewable energy developments and the development of new technologies.

4.7 Planning Policy Statement 1: Delivering Sustainable Development (January 2005) (PPS1) sets out a framework of national guidance and the basis for the Government's approach to sustainability. A key principle is the need for the development plan system to contribute to global sustainability by promoting the development of renewable energy resources. The use of renewable energy is also set out at paragraph 20 as an environmental issue that policies in development plans need to assess as part of the mitigation of the effects of, and adaptation to, climate change through the reduction of greenhouse gas emissions and use of renewable energy.

4.8 PPS1 Supplement: Planning and Climate Change was published in 2007 and is deemed to take precedence where there is conflict with existing PPSs. Furthermore, Paragraph 11 states that PPS1 Supplement can also supercede the policies in the development plan where regional and local policies have not been updated to reflect the requirements of the PPS.

Regional

4.9 The Yorkshire and Humber Regional Spatial Strategy (RSS) (May 2008) sets out the region's commitment to sustainable development. It includes two policies which aim to reduce greenhouse gas emissions and adapt to the predicted impacts of climate change. Policy YH2 addresses the issue of reducing greenhouse gases by at least 20%-25% below 1990 levels by 2016 and planning for the successful adaptation to the predicted impacts of climate change.

4.10 Policy ENV5 relates specifically to renewable energy generation. The purpose of the policy is to increase energy efficiency through passive design, better use of existing power sources, and other measures and increase installed energy capacity without causing adverse effects on the integrity of internationally important biodiversity sites. It also sets out regional and sub-regional capacity targets for 2010 and 2021 for installed grid-connected development. If these targets are met then renewable energy could provide 9.4% of the regions energy consumption by 2010 and 22.5% by 2021. In the RSS Table 10.2 also indicates local targets for installed grid-connected renewable energy. The targets for North Lincolnshire are 54 MW by 2010 and 112 MW by 2021.

4.11 The RSS forms part of the development plan for North Lincolnshire, and should be used in determining planning applications. However, it should be noted that the Government intends to revoke the RSS upon the enactment of the Decentralisation & Localism Bill at some point in late 2011/early 2012.

Local

Local Development Framework - Core Strategy

- 4.12 The North Lincolnshire Local Development Framework's Core Strategy Development Plan Document was adopted in June 2011 and sets out the overall development strategy for the area up to 2026. It strongly supports the need to tackle climate change through reducing reliance on non-renewable resources and generating energy from renewable sources. It also supports the need to protect and enhance the area's natural and built environment, which provides an attractive backdrop for living and working in the area. The key policies for consideration are CS1, CS2, CS16, CS17 and CS18. Policy CS18 (see below) is the principal policy in relation to climate change and renewable energy. It aims to reduce the size of North Lincolnshire's ecological footprint, reduce the causes of climate change and move the area towards a more resource efficient future, and is the key strategic policy on which this Draft SPD is based.

CS18: SUSTAINABLE RESOURCE USE AND CLIMATE CHANGE

The council will actively promote development that utilises natural resources as efficiently and sustainably as possible. This will include:

- 1) Meeting high water efficiency standards, and incorporating new technologies to recycle and conserve water resources.
- 2) Requiring the use of Sustainable Urban Drainage Systems (SuDS) where practicable.
- 3) Supporting the necessary improvement of flood defences and surface water infrastructure required against the actions of climate change, and preventing development in high flood risk areas wherever practicable and possible.
- 4) Meeting required national reductions of predicted CO₂ emissions by at least 34% in 2020 and 80% in 2050 by applying the following measures on development proposals. Requiring all industrial and commercial premises greater than 1000 square metres to provide 20% of their expected energy demand from on site renewable energy until the code for such buildings is applied nationally. Where developers consider these Codes and targets cannot be met on the basis of viability they will be required to provide proof through open book discussions with the council at the planning application stage.
- 5) Ensuring building design reduces energy consumption by appropriate methods such as high standards of insulation, avoiding development in areas subject to significant effects from shadow, wind and frost, using natural lighting and ventilation, capturing the sun's heat, where appropriate.
- 6) Supporting development that minimises the consumption and extraction of minerals by making the greatest possible reuse or recycling of materials in new construction, and by making best use of existing buildings and infrastructure.
- 7) Supporting development that seeks to minimise waste and facilitates recycling and using waste for energy where appropriate.
- 8) Ensuring that development and land use in areas close to the Humber Estuary and rivers responds appropriately to the character of the area, in the interests of preserving and making best use of limited resources.

- 9) Supporting development that will help to reduce the need to travel for people using that development.
- 10) Ensuring development and land use helps to protect people and the environment from unsafe, unhealthy and polluted environments, by protecting and improving the quality of the air, land and water.
- 11) Supporting renewable sources of energy in appropriate locations, where possible, and ensuring that development maximises the use of combined heat and power, particularly at the South Humber Bank employment site and where energy demands for more than 2MW are required for development.
- 12) Supporting new technology and development for carbon capture and the best available clean and efficient energy technology, particularly in relation to the heavy industrial users in North Lincolnshire, to help reduce CO₂ emissions.
- 13) Promote the use of a greenspace strategy and a green infrastructure plan, where applicable, which could help reduce the effects of climate change.

North Lincolnshire Local Plan

- 4.13 The North Lincolnshire Local Plan was adopted in May 2003 and provides detailed policy guidance for the provision of development across the area. A number of the policies have been replaced by those in the Core Strategy; however most have been saved and remain relevant. This includes policy DS21 (see below) on renewable energy. It provides the basis for the consideration of proposals for renewable energy development. Overall the Local Plan aims to provide guidance and incentives to promote the expansion and exploitation of renewable energy sources in North Lincolnshire. Other relevant policies include RD2, LC7 and DS1.

DS21 - RENEWABLE ENERGY

Proposals for the generation of energy from renewable resources will be permitted provided that:

- any detrimental effect on features and interests of acknowledged importance, including local character and amenity, is outweighed by environmental benefits; and
- proposals include details of associated developments including access roads and other ancillary buildings and their likely impact upon the environment.

Where appropriate, conditions will be imposed requiring the restoration of the site to its original condition or the implementation of an agreed scheme of after-use and restoration.

5

Renewable Energy Technologies

Wind Energy

- 5.1 Wind energy development is the most prevalent form of renewable energy generation technology in the United Kingdom. Recent years have seen large numbers of on-shore wind turbines being constructed across the country, with more beginning to be developed off-shore. In the coming years, a number of large scale off-shore windfarms will be constructed around the country's coastline.
- 5.2 Wind turbines use the movement of the wind to generate mechanical power for the generation of electricity, via single turbines or groups of turbines (i.e. a windfarm). The level of electricity that a wind turbine produces is dependent on the wind speed and the area swept by the rotor blades. A wind turbine consists of a steel tower which supports for a nacelle for a gearbox, alternator and the "yaw mechanism" which allows the machine to turn itself towards the prevailing wind. A turbine can have a varying number of blades. There are essentially two types of wind turbine, vertical and horizontal axis machines. Within each type there are various technical differences such as the number of blades.
- 5.3 In recent years wind turbine technology has continued to advance significantly. Larger wind turbines which are more energy dense are being deployed and are capable of operating at lower average mean wind speeds (AMWS). This has increased the area of potential future deployment across Yorkshire and the Humber. This will help to meet national and regional targets for renewable energy generation. However, this advance in technology will mean there is the potential for greater impact on the landscape.

Biomass

- 5.4 Biomass is the combustion of wood and other plant materials in a stove or boiler to produce heat which can be used to generate electricity or other processes. Although biomass combustion gives off carbon dioxide, this represents release of the gas that was absorbed when the plant material grew, and thus biomass fuels are regarded as carbon neutral.
- 5.5 Typical biomass fuels include wood by products from commercial forestry or parks maintenance, energy crops such as Short Rotation Coppice Willow or Poplar or grasses such as Miscanthus and clean wood waste from sawmills, furniture manufacture etc.
- 5.6 Currently three categories are used:
 - Plant designated for electricity production: typically larger schemes of 10 to 40MW, where excess heat is not used.

- Combined Heat and Power (CHP): typically 5 to 30 MW total energy output, primarily electricity but with 'waste' heat from the process captured for local use in other industrial processes or district heating. Biomass CHP is most likely to be viable when used to provide an electricity base load.
- Plant designed for heat production: these range in size from heating for a single home up to district heating systems with 5MW thermal capacity.

Solar Thermal

- 5.7 Solar thermal or solar hot water systems use a heat collector, which is generally mounted on a roof, and contains a fluid (usually water with antifreeze), which is heated up by the sun. The heated liquid is then passed through a coil in a hot water storage cylinder. The water in the cylinder may then be supplied directly, or raised to a higher temperature (if required) by a boiler or electric immersion heater.
- 5.8 While the UK climate is not sufficiently hot and sunny to meet all domestic hot water required year round, a well designed system should meet approximately 55% of the demand during May to September. For best performance in the UK, the solar collectors (either flat plate or more efficient evacuated tube) need to be inclined at an angle of 30-40 degrees, facing due south and clear of the shade of trees and buildings. Some flexibility may be necessary when installed on existing buildings as performance will be degraded. The collectors do not usually stand more than 12 cm round of the existing roof line, are generally dark coloured and on a domestic building are typically 3-5m² in area. Although most commonly roof mounted, a free-standing ground structure is also possible and frequently used for swimming pools.

Solar Power/Photovoltaic (PV)

- 5.9 The generation of energy from solar power has traditionally been associated with the mounting of solar panels on the roofs of domestic, industrial and other premises. This technology has now been taken forward and developed into large scale, ground mounted arrays which can cover whole fields. Solar power- often referred to as photovoltaics or solar PV – as opposed to solar energy for water and space heating, (which uses different technology) involves the capture of light energy from the sun to produce an electric current. This is then transferred into the National Grid via a connection. In a photovoltaic field array, the modules are usually mounted about 2m above the ground with substantial gaps between the rows of modules, providing both light and shade, and allowing grass to grow. In flat terrain, hedges about 2.5m high would hide PV panels from view.

Ground Source Heating

- 5.10 Underground temperatures remain constant relative to seasonal changes in air temperature. Ground source heat pumps take advantage of this fact by pumping fluid through buried pipes and using the warmed water to provide space heating and in some cases, to pre-heat domestic water.
- 5.11 There are three components to the system. Firstly, a circuit of pipes which is buried horizontally in a trench or vertically in a borehole and which absorbs heat from the ground. Secondly, a heat pump which works in a similar way to a domestic fridge by absorbing heat from the fluid pipes, transferring it to another location and then releasing it, in this case to a hot water tank. Thirdly, a distribution system, usually comprising under floor heating or radiators for space heating. A similar process and the same system may be used for space cooling during the summer.

Energy from Waste

- 5.12 Energy is generated from waste is either thermal or biological processes. The thermal process involves waste being used as fuel for power generation by burning it at high temperatures to release chemical energy. The Government's Renewable Obligations Order states that Renewable Obligations Certificates (ROCs) can only be claimed by electricity generators when the waste stream is at least 90% biomass or in the case of generating stations using pyrolysis or gasification technology, for the biomass fraction of the waste.
- 5.13 The biological process involves plant or animal matter being broken down by microbial action in the absence of air ('anaerobic digestion' AD), that produces gas with a high methane content. This methane is then captured and burned to produce heat, electricity or a combination of the two. The main types of organic material feedstock used in AD are:
- Sewage sludge: AD of sewage sludge currently takes place at many sewage treatment works in the UK, although only some of these schemes recover the energy from the sewage gas. Since sewage treatment is generally centralised in the UK, the digesters tend to be of a large scale.
 - Farm slurry: intensive livestock rearing produces large quantities of slurry (liquid manure) and AD is used widely in UK agriculture, generally in the form of small on-farm digesters from which biogas is captured and burned to heat farm buildings, although larger centralised schemes also exist.
 - Municipal solid waste (MSW): municipal waste contains a significant proportion of organic materials, including food, garden cuttings and paper, and the EU Landfill Directive requires that organic materials are progressively diverted from landfill. Energy extraction via AD therefore has the potential to contribute to both waste management and renewable energy targets.
- 5.14 In addition to biogas which can be used for energy generation, AD also produces a nitrogen-rich liquor which can be used as a fertiliser, and solids which can potentially be composted to produce soil conditioner, provided that toxic materials are removed from MSW prior to digestion.

Tidal Power

- 5.15 Tidal Power is an emerging technology which in the future could form part of North Lincolnshire's energy supply due the close proximity of the Humber Estuary and the North Sea. Tidal power is a form a hydropower that exploits the movement of water caused by tidal current and the rise and fall in sea levels which result from the gravitational attraction of the moon and the sun acting upon the oceans of the earth as it rotates.
- 5.16 There are two quite distinct categories of tidal resource: tidal stream and tidal range. The tidal stream resource is the kinetic energy contained in fast-flowing tidal currents, which are generally found in constrained channels. The tidal range resource refers to the gravitational potential energy that can be found in estuarine areas that exhibit a large difference in water height between high and low tides.
- 5.17 The technology used to exploit each of these resources is quite different. Tidal stream devices rely on capturing some of the energy contained in the currents passing by them, where as tidal range devices seek to impound large volumes of water at high tide and then release the water through turbines at low tide.



6 Policy Considerations

6.1 There a number of considerations that need to be taken into account by both developers and the council in preparing and dealing with proposals for renewable energy development. These are as follows:

- Targets for Renewable Energy
- Environmental Impacts
- Community Impacts
- Cumulative Impacts
- Other impacts
- National and other policy related to energy provision and climate change
- Local planning policy including the Core Strategy and adopted Local Plan

6.2 Among the planning issues that will need to be considered for all forms of renewable energy technologies are the positive benefits that they can have. These include meeting renewable energy targets, providing economic benefits such as job creation and tackling climate change. Such issues will need to be weighed against any impacts such as those listed paragraph 6.1, above and in table 6.2, below.

Technology	Key Planning Issues
Onshore Wind	<ul style="list-style-type: none"> • Impact on landscape and visual amenity • Impacts on biodiversity • Noise from operational turbines • Shadow flicker and reflected light from operational turbines • Impact on aircraft/radar and telecommunications • Impact on highway networks • Impact on heritage assests

Technology	Key Planning Issues
Biomass	<ul style="list-style-type: none"> • Economic benefit to fuel suppliers • Construction impact of the plant and fuel storage area (for example temporary effects on amenity and permanent effects on archaeology) • Visual impact of the plant • Noise from plant operations • Effects of airborne and water borne on health or ecology • Impacts of increased traffic required to bring biomass fuels to site and take away by-product including noise, congestion and impacts on air quality and climate change • Impacts on Heritage Assets. • Possible adverse effects on the Humber Estuary SAC, SPA, Ramsar and SSSI sites. • Impact on traditional arable and pastoral farming systems leading to an adverse effect on landscape and biodiversity.
Biofuels	<ul style="list-style-type: none"> • Economic benefit to fuel suppliers • Construction impact of the plant and fuel storage area (for example temporary effects on amenity and permanent effects on archaeology) • Visual impact of the plant • Noise from plant operations • Effects of airborne and water borne on health or ecology • Impacts of increased traffic required to bring biofuels to site and take away by-product including noise, congestion and impacts on air quality and climate change • Impacts on Heritage Assets. • Possible adverse effects on the Humber Estuary SAC, SPA, Ramsar, SSSI sites and local wildlife sites. • Impact on traditional arable and pastoral farming systems leading to an adverse effect on landscape and biodiversity.
Solar Thermal	<ul style="list-style-type: none"> • Impacts on visual amenity and on a building's fabric may be relevant in some circumstances. • Installation on a listed building or within its curtilage will require listed building consent
Photovoltaic (Large Scale)	<ul style="list-style-type: none"> • Impacts on visual amenity • Screening of development • Impacts on wildlife and biodiversity • Site access
Photovoltaic (Domestic)	<ul style="list-style-type: none"> • Impacts on visual amenity and on a buildings fabric may be relevant in some circumstances • Installation on a listed building or within its curtilage will require listed building consent • Impact on heritage assests
Ground Source Heating	<ul style="list-style-type: none"> • Construction impacts of trench or borehole may affect archaeology.
Anaerobic Digestion	<ul style="list-style-type: none"> • Construction impacts of plants and feedstock storage area (for example temporary effects on amenity and permanent effects on archaeology) • Impacts of increased traffic required to bring feedstock to site and take away by-product including noise, congestion and impacts on air quality and climate change • Potential odour nuisance and this will need to be controlled • Emission to ground or watercourse for example from the leakage of slurry • Emission to air, for example biogas vents, flare stacks, engine exhaust • Visual impacts of the plant • Impact on Heritage Assets.
Tidal Power	<ul style="list-style-type: none"> • Tidal energy schemes in waters close to the shore may have an impact on the landscape and seascape of the area. • Possible adverse effects on the Humber Estuary SAC, SPA, Ramsar and SSSI sites.

Targets for Renewable Energy Development

- 6.3 In order to meet the Government’s aim to increase the amount of energy generated from renewable sources, each of the nine English regions were required to include targets for installed grid-connected renewable energy capacity in their Regional Spatial Strategy (RSS). In the case of North Lincolnshire, the Yorkshire and Humber RSS (May 2008) provided targets for the provision of installed grid-connected renewable energy of 54MW by 2010 and 112MW by 2021.
- 6.4 The targets were derived from work undertaken during the preparation of the RSS in 2004/2005. The 2004 study Planning for Renewable Energy Targets in Yorkshire and Humber was commissioned by the former Regional Assembly and Government Office for Yorkshire & Humber to examine the region’s potential for renewable energy generation. This shows that North Lincolnshire would have the potential to accommodate 11.7% and 13.8% of the region’s potential wind energy development by 2010 and 2021 respectively. When compared against the fact that North Lincolnshire only covers 7.5% of the region’s landmass, this appears to be disproportionate and represents a significant concentration of wind energy development.
- 6.5 Broadly, the council consider the targets in the RSS to be challenging but achievable. However, North Lincolnshire Council is keen to ensure that all local authorities within the region contribute towards meeting their targets and prevent an over concentration of such development in North Lincolnshire. In reviewing any targets for North Lincolnshire should the 2021 target be reached, account will be taken of progress elsewhere in the region.
- 6.6 The area already has some 29.5MW of installed capacity including the Bagmoor windfarm, which is just short of the 2010 target. However, it is anticipated that the 2021 targets will be easily met when the consented schemes at Tween Bridge and Keadby windfarms and Heron Renewable Energy Plant come on stream over the next few years. The table (below) shows existing and consented renewable energy developments and their generation capacity. This clearly shows that North Lincolnshire will more than meet its regional targets

Planning Permission/Consents	Capacity (MW)	RSS Target 2010
Bagmoor windfarm	16	54
Glanford power station (Biomass Plant)	13.5	
Total Combined MW	29.5	
RSS Target - 2021		
Tween Bridge	6	112
Keadby windfarm	85	
Heron Renewable Energy Plant	299	
Total Combined MW	390	

- 6.7 It should be kept in mind that meeting the overall renewable energy target is of the greatest importance, not the method of renewable energy used to reach it. The development of a variety of renewable energy sources is encouraged, as the achievement of a greater diversity in our energy mix is vital to ensuring security and continuity of supply, in a climate where fossil fuels continue to be depleted.

Targets – North Lincolnshire will meet its 2021 targets for the generation of energy from renewable sources and will support the use of a range of technologies to do so. Any revision of this target will be subject to progress elsewhere in the Yorkshire and Humber region.




Environmental Impacts

6.8 Renewable energy schemes can contribute to the reduction of greenhouse gases, helping to reduce climate change and its impacts. They can also have potential impacts on biodiversity and nature conservation, landscape and heritage assets. North Lincolnshire has a high quality historic, natural and built environment, the enhancement and protection of these is fundamental to sustainable development.

Biodiversity

6.9 North Lincolnshire's landscapes are rich in biological and geological diversity. This is reflected in the range of international, national and local nature conservation designations which includes one Ramsar site, two Special Areas of Conservation and Two Special Protection Areas on the Humber Estuary, River Trent, Thorne Moor and Thorne and Hatfield Moors, 29 Sites of Special Scientific Interest, 10 Local Nature Reserves (LNRs), approximately 200 Local Wildlife Sites (Sites of Importance to Nature Conservation – SINC's) and 22 Local Geological Sites (Regionally Important Geological Site).

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- 6.10 It is important that the natural assets of North Lincolnshire are protected from inappropriate development, including renewable energy development. For International sites and any features they support, new development will need to demonstrate that they will not adversely affect their conservation value. Development should not cause harm to habitats and species outside the designated site that may adversely affect the integrity of the site, or cause a significant decline in the size, distribution, structure or function of a population of a species for which a site was designated. In accordance with the Habitat Regulations an assessment needs to be carried out for each new development to determine if it would have a likely significant effect, alone or in combination with other plans or projects, on sites or features associated with international designations. If likely significant effects are identified developers are expected to provide relevant information to the council to enable it to carry out a Habitat Regulations Assessment.
- 6.11 For National sites, developers will need to demonstrate that any renewable energy development will not have an adverse effect on SSSIs. Measures will be taken to ensure that harmful effects on SSSIs are avoided or mitigated against. Exceptions will only be made where the benefits clearly outweigh the impacts on the interest of the SSSI and its contribution to the national network of SSSIs. More guidance can be obtained in OPDM Circular 06/2005, PPS9 and PPS22.
- 6.12 In addition to the international and national site designations there are a number of plant and animal species within England that are subject to special protection under the Habitat Regulations, the Wildlife and Countryside Act and their own legislation. Any renewable energy development will need to demonstrate that these are protected from adverse effect through the adoption of appropriate avoidance and mitigation measures.
- 6.13 Local Geological and Local Wildlife Sites also need to be considered when assessing renewable energy development. Any development sited within or close to or adjacent to such sites should not cause significant harm to these nature conservation interests.
- 6.14 Developers also need to consider the effects of development on non designated sites and species. Government policy seeks to protect priority habitats and species in the UK Biodiversity Action Plan and any additionally identified in the Lincolnshire Biodiversity Action Plan. Many of these habitats and species extend outside of designated sites and consideration must be given to the potential impacts when developing any scheme.
- 6.15 Effects on biodiversity can take place during the construction, operation or decommissioning phases of wind energy scheme.
- 6.16 Past experience of wind energy development elsewhere in the county has shown the main adverse effects on nature conservation to be direct habitat loss for feeding, roosting and breeding; habitat damage; interference with geological processes; and disturbance to, displacement of and collision with mobile species. However, it should be noted all these adverse effects can be mitigated to some extent.

Bats and Birds

- 6.17 The impact of bats and birds is a particular interest for wind energy development. All bats and some birds are protected species that need to be considered when developing a wind energy scheme. In areas where bat activity is likely, work will need to be carried out to establish roosts, flight lines, feeding areas, hibernation or swarming sites in the vicinity of a proposal as part of an Environmental Impact Assessment (EIA). The results of the EIA should assist to identify the appropriateness of the scheme, its design and layout by looking in detail at the nature conservation both on and off site and the potential impact of the development. If a negative impact is identified then mitigation measures would be expected to be provided within the locality to reduce the potential harm. Also time to establish new habitats needs to be taken into consideration. Any work carried out should be in accordance with the Bat Mitigation Guidelines, England Nature 2005 and Bat Survey Guidelines, Bat Conservation Trust April 2007, Natural England Technical Information Note TIN069 - Assessing the effects of onshore wind farms on birds (7th January 2010) and Natural England Technical Information Note TIN051 - Bats and onshore wind turbines Interim guidance (11 February 2009)
- 6.18 The cumulative impact on bats and birds must also be assessed in relation to other proposed, approved or operational wind energy development.

POLICY 1 - BIODIVERSITY


Developers should assess the effects of potential renewable energy developments, alone or cumulatively on biodiversity sites, habitats and species and identify measures to avoid or mitigate harm to them and secure their conservation and enhancement.

If a scheme, alone and/or in combination with other plans and projects, could have an impact on an internationally designated site developers must submit all relevant information to the council for them to carry out an assessment of the likely significant effects of the scheme in accordance with the Habitats Regulations.

Developers should also pay attention to assessing the effects of renewable energy developments, alone and in combination with other development on bats, birds and other mobile species within and around the site. Measures should be identified to avoid or mitigate the harm to these species and secure their conservation and enhancement.

Landscape

- 6.19 North Lincolnshire's landscape is a fundamental part of the area's character and provides an attractive backdrop for residents, visitors and investors to live and work. The area is characterised by a variety of landscapes, significant changes to which have resulted following the extraction of minerals where semi-natural landscapes, such as Barton Clay Pits, Messingham Gravel Pits and the Ironstone Gulleys, have been created, and also from the development of large scale industry such as at Killingholme at the mouth of the Humber Estuary. The southern part of the Isle of Axholme has the most extensive surviving examples of a medieval landscape in England, notably the medieval open strip fields and Turbaries, both of which are of considerable national importance. These attributes together with enclosed land and the overall settlement pattern of the area make it unique in the country. Planning policy in the areas aims to protect and enhance such attributes, where appropriate.

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- 6.20 It is North Lincolnshire's rolling landscapes, lack of national designations such as National Parks and relatively consistent wind resource that contribute to making the area attractive to wind energy developers. It is likely that proposals for renewable energy development, depending on their location, will have some degree of impact on the landscape as well as visual amenity due to their size and appearance. Therefore, it is important that developers when preparing schemes for renewable energy development take account of any impacts on the area's landscapes. Careful consideration should be given to the character and quality of the landscape, the extent of physical change involved, and the ability of the landscape to accommodate this change. All these factors should be taken into account in scheme design.
- 6.21 In relation to landscape character and design, the council have approved Supplementary Planning Guidance, North Lincolnshire Landscape Character Assessment & Guidelines (1999) and North Lincolnshire Countryside Design Summary (1999). These documents provide a comprehensive assessment of the area's landscape character and suggest guidelines for future development. The landscape character assessment splits North Lincolnshire into six basic landscape types the Trent Levels, the Lincolnshire Edge, the Ancholme Valley, the Lincolnshire Wolds, the Lincolnshire Drift and the Humber Estuary. Accordingly, developers should consult these documents alongside current planning policies on landscape and conservation set out in the Adopted Core Strategy and the North Lincolnshire Local Plan.
- 6.22 North Lincolnshire does not have any nationally designated areas of landscape importance such as a National Park or Area of Outstanding Natural Beauty. However, the lack of such designations does not mean that landscape is any less important a consideration in determining proposals for renewable energy development.
- 6.23 A number of Areas of High Landscape Value identified in successive Local Plans were removed with the introduction Planning Policy Statement (PPS) 7. The importance of these areas as established against landscape criteria issued by the then Countryside Commission. These areas included the Lincoln Edge Cliff (between Whitton and Flixborough), the Lincoln Edge Woodland and Heathland areas (east of Scunthorpe and extending south to Kirton in Lindsey), and the Wolds Villages Scarp Slope. Other areas were proposed at Deepdale (near Barton upon Humber), Barton Claypits and areas of woodland at Kirmington. The purpose of these designations was to safeguard the natural beauty, distinctiveness and diversity of the best and most highly valued of North Lincolnshire's landscapes. Therefore it is important that these areas of high landscape value are protected from inappropriate development. It should be noted that this Supplementary Planning Document cannot reinstate these designations. These will be considered in the emerging General Policies Development Plan Document.
- 6.24 The council are also in discussions with Lincolnshire Country Council to look at amending the Lincolnshire Wolds Area of Outstanding Natural Beauty to include land up to the Humber Estuary. The potential expansion area is identified on the constraints map in Appendix 3.
- 6.25 These areas are prominent features in North Lincolnshire's landscape and contribute to the area's distinctiveness; they form part of the area's critical environmental capital. It is important to ensure the integrity and setting of these places is not adversely affected by inappropriate development. Any proposals which affects these areas of high landscape value should be assessed against the council's existing Landscape Character Assessment & Guidelines, and Countryside Design Summary.
- 6.26 If required by the EIA Regulations the impact of any development upon the landscape as a visual and cultural asset should be assessed as part of an Environmental Statement. If potential impacts are identified a Landscape and Visual Impact Assessment (LVIA) should be undertaken. Before commencing an LVIA, developers should discuss its contents with the council. Depending on the type of renewable energy development, an LVIA could include the following:

- diagrams showing the potential zones of visual influence (ZVI) of the proposed scheme: these will be of assistance in identifying the resources (e.g. designated areas, landscape units) and the locations of visual receptors (e.g. settlements, public access land and popular viewpoints), which may be affected by the proposal.
- photomontages and/or computer-generated wireframe views: these should be prepared at an appropriate scale and resolution.
- scale drawings to illustrate the physical appearance of the proposed renewable energy scheme: some authorities are likely to be less familiar with specific technologies (e.g. biomass or energy from waste plants)
- in areas where there are existing renewable energy schemes, it may be appropriate to consider the cumulative impact of further schemes.

6.27 Further information is available in Planning for Renewable Energy - A Companion Guide to PPS22.

POLICY 2 - LANDSCAPE

Developers should consider the landscape impacts of their proposal for renewable energy development. Consideration should be given at the earliest stage in the design process to the character and quality of the landscape, the extent of the physical change involved, and the ability of the landscape to accommodate the change.

Proposals in areas of high landscape value or which affect their setting will be rigorously assessed in relation to their impacts on these important landscapes. If adverse impacts are identified these should be avoided or mitigated. Should this prove impossible the proposal will be refused.

A Landscape and Visual Impact Assessment (LVIA), which must be agreed with the council, should be prepared and submitted alongside any planning application. Developers should also consult the council's approved Supplementary Planning Guidance on Landscape Character Assessment and Guidelines, and Countryside Design Summary.

Further Information

- North Lincolnshire Landscape Character Assessment & Guidelines (1999)
- <http://www.planning.northlincs.gov.uk/PlanningReports/LocalPlan/SPG5LandscapeCharacterAssessment.pdf>
- North Lincolnshire Countryside Design Summary (1999) - <http://www.planning.northlincs.gov.uk/PlanningReports/LocalPlan/SPG5CountrysideDesignSummary.pdf>
- Planning for Renewable Energy - A Companion Guide to PPS22 (ODPM, 2004) - <http://www.communities.gov.uk/documents/planningandbuilding/pdf/147447.pdf>
- Guidelines for Landscape and Visual Impact Assessment (GLVIA); 2nd Edition (The Landscape Institute, 2002)

Visual Effects

- 6.28 Renewable energy development can have significant visual impacts on its surroundings. This is dependent on their size, appearance and location. Accordingly it makes sense to select locations which minimise the area from which a proposed development would be visible. It is also important to consider the relative sensitivity of different viewpoints or receptors, and to use this understanding to influence the layout and design of the scheme.
- 6.29 A Landscape and Visual Impact Assessment (LVIA) should be provided as part of the Environmental Impact Assessment for proposed renewable energy development. Before commencing an LVIA, developers should discuss its contents with the council. This could involve an assessment of the visual relationship between the site and the surrounding area.
- 6.30 North Lincolnshire’s experience is primarily with wind energy developments. Wind turbines are likely to be tall, frequently located in open land and therefore likely to be highly visible. Domestic wind turbines are likely to be smaller and it will normally be realistic to seek to conceal them. Developers are encouraged to ensure that the visual impacts are minimised and appropriate to the location of the wind farm development. In the case of North Lincolnshire, in particular the Trent Floodplain area, the landscape is fairly flat and uniform therefore the visual impact of wind energy development will be substantial.
- 6.31 The visual effect of a wind farm will be dependent on a number of factors that include:
- the distance over it may be viewed;
 - whether the turbines can be viewed adjacent to other features;
 - different weather conditions,
 - the design and layout of the development; and
 - the landscape and nature of the visibility.
- 6.32 The following is a general guide to the effect distance has on the perception of the development in an open landscape. However, it should be noted that the each proposal and the associated visual effects will be treated on its own merits when being assessed against this guidance and other planning policy.

General Perception of a Wind Farm in an Open Landscape	
Up to 2kms	Likely to be a prominent feature
2-5kms	Relatively prominent
5-15kms	Prominent in clear visibility - seen as part of the wider landscape
15-30kms	Only seen in very clear visibility - a minor element in the landscape.

Taken from Best Practice Guidance to Planning Policy Statement 18 - Renewable Energy produced by the Department of Environment (Northern Ireland) (August 2009)

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- 6.33 The visual impacts of renewable energy developments including cumulative impact will be affected by their siting and layout in relation to local land form and landscape characteristics, and the qualities of the specific site, as well as by the size and number of turbines and/or buildings. Different layouts will be appropriate in different circumstances. For example, grouped turbines can normally appear acceptable as a single, isolated feature in an open, undeveloped landscape, while rows of turbines may be more appropriate in an agricultural landscape with formal field boundaries.
- 6.34 Although renewable energy developments may be complex, they should not appear confusing in relation to the character of the landscape. Ideally they should be separate from surrounding features to create a simple image. The design of each development must be appropriate to its site.
- 6.35 The style and colour of turbines and/or buildings may also be relevant. Experience with wind turbines suggests that solid towers appear less complex than lattice and tapering towers are generally regarded as being more elegant than cylindrical. In terms of colour, white or off-white is generally preferred, but other colours may be acceptable in appropriate circumstances. A semi-matt surface is required to reduce the reflection of light. However, colour choice can not be a substitute for good siting and design.
- 6.36 Ancillary elements also need to be fully addressed, as their impact can often be as significant. Access tracks should be routed and designed to minimise both visual and habitat impacts. This can be minimised by careful route selection, which takes account of layout and appropriate surfacing material together with the impact of cuttings, embankments and drainage channels. Managing problems of erosion and providing for reinstatement and enhancement of vegetation along the track is essential. Powerlines, fencing, buildings and anemometer masts should be located and designed in ways that minimise clutter.
- 6.37 It must also be noted that the renewable energy developments will only have a certain design life. For example, when a wind farm reaches the end of its design life, the turbines should be removed as soon as possible following cessation of operations together with any ancillary activities and the site restored to a suitable standard which should be agreed with the council.

POLICY 3 - VISUAL EFFECTS

The impact on visual amenity is a key consideration for developers in preparing schemes for renewable energy development. The size and appearance of the development should be taken into account from the earliest stage in the design process.

A Landscape and Visual Impact Assessment (LVIA), which must be agreed with the council, should be prepared and submitted alongside any planning application. Developers should consult the council's approved Supplementary Planning Guidance on Landscape Character Assessment and Guidelines, and Countryside Design Summary.

Where unacceptable negative impacts on visual amenity are identified, developers should ensure that they are satisfactorily addressed. If this cannot be done, the development will be refused.

Further Information

- North Lincolnshire Landscape Character Assessment & Guidelines (1999)
- <http://www.planning.northlincs.gov.uk/PlanningReports/LocalPlan/SPG5LandscapeCharacterAssessment.pdf>
- North Lincolnshire Countryside Design Summary (1999) - <http://www.planning.northlincs.gov.uk/PlanningReports/LocalPlan/SPG5CountrysideDesignSummary.pdf>
- Planning for Renewable Energy - A Companion Guide to PPS22 (ODPM, 2004) - <http://www.communities.gov.uk/documents/planningandbuilding/pdf/147447.pdf>
- Guidelines for Landscape and Visual Impact Assessment (GLVIA); 2nd Edition (The Landscape Institute, 2002)

Heritage Assets

- 6.38 North Lincolnshire has a range of heritage assets and a high quality historic environment. Renewable energy developments and associated infrastructure can have a detrimental impact on the heritage value of assets such as conservation areas, historic landscape, listed buildings, scheduled ancient monuments, archaeological remains and registered parks and gardens or their settings. To cause a negative impact the development does not have to be within the area of importance as it can affect views and landscapes of such areas. For this reason a general exclusion area would not be appropriate as each asset will be set in different contexts and with their own unique concerns.
- 6.39 Renewable energy developments and associated infrastructure can have direct impact on the historic environment and archaeological remains. They can also impair the setting of historic sites and can compromise the visual amenity of the wider landscape, detracting from the historic character, sense of place, tranquillity and remoteness. Therefore developers will be expected to provide a heritage assessment which will provide the appropriate information to address any heritage impacts. Developers should consult with the council's Historic Environment Record at an early stage when formulating their proposals for wind energy development.

POLICY 4 - HERITAGE ASSETS

Developers should consider the impact of their proposal for renewable energy development, both during and after construction on heritage and the historic environment.

Developers need to demonstrate that the objectives of the designation of the area or individual assets will not be compromised by the development, and that any significant adverse effects on the on the qualities for which the area has been designated are clearly outweighed by the environmental, social and economic benefits.

Soils & Hydrology

- 6.40 The effect renewable energy development might have on the soil, hydrology, surface and groundwater quality of a site and its surrounding watercourses will need to be considered when determining any proposal. North Lincolnshire has areas of soils that can be easily harmed, be made unstable and that can take a long time to regenerate for example peat. Disturbance to peat can release CO₂ into the atmosphere; however studies have shown that it is unlikely that this would be greater than the CO₂ saved by renewable energy production. North Lincolnshire also has extensive aquifers which provide water for public use, agriculture and industry which must be protected.
- 6.41 Any proposals that are being developed in areas with sensitive soils will need to demonstrate how harmful impacts can be minimised or avoided. It is also important not to cause significant harm to the integrity of local watercourses as this could create harm to nature conservation interests within the vicinity if a proposal.

POLICY 5 - SOIL AND HYDROLOGY

Developers should consider the effects of their proposal for renewable energy development on the soil, hydrology, groundwater and water quality in and around a site. Development should avoid harming soils, hydrology and water quality that would have a negative affect on habitats of principal importance for the conservation of biodiversity.

Flood Risk

- 6.42 Over 44% of North Lincolnshire is identified as high flood risk in the North Lincolnshire Strategic Flood Risk Assessment (SFRA) 2010. National policies set out in PPS22 and PPS25 indicate that energy infrastructure, including renewable energy facilities, are considered to be essential infrastructure, and as a result can be located in areas of flood risk without the need to apply a Sequential Test. Such developments will however be required to undertake an Exception Test to ensure the development itself is safe and does not increase flood risk to third parties. A Flood Risk Assessment will be required to demonstrate that surface water run-off is properly managed and that the development does not reduce flood storage capacity within the floodplain. Proposals close to watercourses or flood defence infrastructure may also require consent from other operating authorities.
- 6.43 The need to provide a Flood Risk Assessment, and where appropriate an Exception Test also applies to proposals for ancillary development to support renewable energy development. It should also be noted that (in the context of offshore wind farms) where cabling comes ashore such development will need a Flood Defence Consent if the cables cross coastal/tidal defences whether manmade or natural (e.g. sand dunes). In developing their proposals for renewable energy schemes, developers must liaise closely with the council, the Environment Agency and local drainage authorities from an early stage to ensure that full account is taken of flood risk and drainage matters.

POLICY 6 - FLOOD RISK

Developers must provide a Flood Risk Assessment with any renewable energy development proposal of 1 hectare or more in Flood Zone 1 and any proposal in Flood Zone 2 or 3. If proposals are put forward in areas of high flood risk (zone 3), development will be required to pass an Exception Test. This must demonstrate that the development will be safe during its lifetime, without increasing flood risk elsewhere and where possible will reduce flood risk overall. These requirements also apply to proposals for ancillary development related to renewable energy developments.



Community Impacts

- 6.44 There are clear benefits to be derived from renewable energy for communities and the country as a whole in terms of reducing CO₂ emissions and the reliance on fossil fuels by making better use of resources. This includes generating power from wind turbines and photovoltaic field arrays. However, it is the local communities that are directly affected by these developments.
- 6.45 Positive effects of renewable energy development can include rural diversification, the provision of jobs for local people, support of community projects and the provision of education resources. However, a range of planning related issues are often raised as concerns by communities. Such concerns are dependent on the type of renewable energy scheme proposed but include landscape and visual effects, impact on habitats and wildlife, noise, the impact on the local economy and shadow flicker. In certain developments these concerns can be addressed through mitigation, but nonetheless developers must take account of the positive, negative and neutral effects that their proposals will have on those matters listed above and the impacts on the community. In addition to this, local communities often raise concerns relating to a reduction in house value; however this is not a relevant planning issue and is not addressed by this guidance.
- 6.46 In progressing proposals for renewable energy development, developers should work with local communities from early stages before a planning application is submitted. During this time community concerns should be addressed and likely impacts mitigated against or minimised.
- 6.47 As part of developing its Local Development Framework, North Lincolnshire Council were required to prepare a Statement of Community Involvement (SCI). This document sets out how the council intends to involve the local community and key stakeholders in preparing LDF documents and on major planning applications. Proposals for renewable energy development are usually classed as major planning applications. The SCI sets out clearly that developers need to involve communities from the earliest stages in planning applications and suggests how they should do this. Developers should work with the council to seek advice on how to consult with the community and meet the requirements of the SCI.

POLICY 7 - COMMUNITY IMPACT

Developers should work with the local communities which are affected by their proposals for renewable energy development in order to identify and address key concerns. The council should be satisfied that appropriate levels of community engagement have taken place and where concerns are raised, they are appropriately mitigated or minimised.

Noise

- 6.48 The noise generated by wind turbines, and the impact that this can have on the quality of life for communities has been the subject of much discussion and concern over a long period of time. Since the 1990's, wind turbine technology has improved and mechanical noise has been reduced to around that of the aerodynamic noise. Where wind turbines are well sited and designed, they can be generally quiet in their operation.
- 6.49 There are two distinct noise sources which are associated with wind turbines. The first of these is mechanical noise which is produced by the turbine's gearbox, generator and drive train, whilst the second is aerodynamic noise produced by the blades passing through the air when the turbine is operating.
- 6.50 Topography and local environmental conditions can also have an effect on any noise produced by wind farms. Wind generated background noise increases with wind speed, at a faster rate than turbine noise does. The difference between wind farm noise and background noise is liable to be greatest when wind speeds are low. In modern wind turbines, it is possible to reduce noise by varying the speed of the turbine depending on the wind conditions.
- 6.51 In identifying and assessing potential sites for wind energy developments, developers must identify key sensitive receptors in the surrounding area. These sensitive receptors can include residential areas or businesses that require a quiet location in which to operate. Should these be identified, the developer should undertake a noise assessment to determine whether or not there are any impacts upon them. Before commencing a noise assessment, developers should consult and agree suitable sensitive receptor locations and background noise monitoring locations with the council. For the most part, wind turbines can be located at a suitable distance from sensitive receptors thus not causing undue harm. However, should this not be the case, developers should revisit the design of their proposal to mitigate again any unacceptable noise impacts. The council will, if appropriate, also attach conditions to any planning consent to ensure that noise limits are not exceeded. In addition, noise impact assessments should be submitted for the construction and decommissioning phase of renewable energy developments, making reference to appropriate noise standards.
- 6.52 Any noise assessment should be carried out in line with the Companion Guide to Planning Policy Statement (PPS) 22 and the ETSU report "The Assessment and Rating of Noise from Windfarms". It sets out a framework for the measurement of wind farm noise and gives indicative noise levels thought to offer a reasonable degree of protection to wind farm neighbours, without placing unreasonable restrictions on wind farm development or adding unduly to costs and administrative burdens on wind farm developers or the planning authority. The report provides a series of recommendations that can be regarded as relevant guidance on good practice. Developers should also reference the (unofficial) updated guidance contained in Volume 34, No.2 of the Institute of Acoustics publication "Acoustics Bulletin" of March/April 2009 titled "Prediction and Assessment of Wind Turbine Noise". This note provides updated guidance on the acquisition of baseline noise data taking into account site-specific wind shear, the prediction of turbine noise at receptors and the significance of low-frequency noise.

POLICY 8 - NOISE


When determining the siting and design of turbines the proximity of noise sensitive developments such as residential properties or businesses that need a quiet location in which to operate, must be considered along with appropriate mitigations to ensure that any turbine generated noise is at an acceptable level with other background noise. A noise assessment must be carried out to ensure that any turbine generated noise is at an acceptable level with other background noise. Further assessments should be submitted to cover the noise impacts of the construction and decommissioning phases of the development. If it is proven that a development has significant noise impacts on surrounding communities then it will be refused.

Further Information

- Planning Policy Guidance (PPG) 24 - Planning and Noise
- The assessment and rating of noise from wind farms, ETSU-R-97, DTI: <http://www.berr.gov.uk/energy/sources/renewables/explained/wind/onshore-offshore/page21743.html>
- Predication & Assessment of Wind Turbine Noise – Acoustic Bulletin (Vol. 34 No. 2) (March/April 2009), Institute of Acoustics
- Guidelines for Community Noise World Health Authority: www.who.int/docstore/peh/noise/guidelines2.html
- Health and Safety Executive Noise information: www.hse.gov.uk/noise

Shadow Flicker & Reflected Light

- 6.53 When a number of geographical, seasonal and time conditions combine, the blades of wind turbine can cast a shadow over neighbouring properties due to the sun passing behind them. When the blades rotate, they cast an intermittent shadow. When experienced through a narrow window opening, it can, under certain conditions, cause a phenomenon known as 'shadow flicker' which may be detrimental to residential or workplace amenity. Shadow flicker is essentially where the shadow cast into the property appears to flick on and off. This phenomenon only affects properties which are located within a 130 degrees either side of north relative to the turbine, and the shadow can be experienced within 10 rotor diameters of the windfarm.
- 6.54 There are concerns that when flickering occurs at certain frequencies (speeds) it may also give rise to health problems in a small proportion of those suffering from epileptic conditions, particularly photosensitive epilepsy. This is only likely to affect a very small proportion of sufferers, as wind turbines tend to operate at lower speeds than those which would trigger this condition. Normally turbines operated at a frequency of between 0.3 and 1.0 hertz. Health effects are unlikely to have the potential to occur unless operating frequencies of the turbine is between 2.5 and 3.0 hertz, and all other pre-conditions for shadow flicker effects to occur exist. Given this, it is likely that shadow flicker will tend to apply to effects on residential amenity.
- 6.55 Reflected light from rotating wind turbine blades is a potential issue that needs to be considered. This has been a problem associated with older wind turbines where the blades had a glossy finish. However, designs and finishes have emerged which allow for the amelioration of reflected light. For example, many modern wind turbines use a matt or semi-matt finish.

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- 6.56 In order to avoid the adverse effects associated with shadow flicker and reflected light, developers should in their site selection process, avoid situating wind turbines less than ten rotor diameters from properties that might be affected. If this cannot be avoided, developers are required to conduct an assessment to identify the extent and incidences of shadow flicker on surrounding properties. This assessment and its methodology should be agreed with the council and could include an assessment of window widths, the uses of the rooms with potentially affected windows and the effects of intervening topography and other vegetation. Should the assessment identify that significant shadow flicker effects are predicted on properties within ten rotor diameters of a turbine, mitigation may be available by changing the location of turbines within a selected site, by screening affected properties or by avoiding turbine operation during periods when shadow flicker would otherwise occur.
- 6.57 Another option open to the council is where it has been predicted that shadow flicker effects may occur in theory, a planning condition may be imposed. This condition will state that wind turbines should operate in accordance with a shadow flicker mitigation scheme which shall be submitted to and approved prior to the operation of any wind turbine, unless a survey carried out on behalf of the developer in accordance with a methodology approved in advance by the local planning authority, confirms that shadow flicker effects would not be experienced within habitable rooms within any dwelling.

POLICY 9 - SHADOW FLICKER & REFLECTED LIGHT

In developing proposals for wind energy development, developers should ensure that full account is taken of the potential for shadow flicker and reflected light on nearby properties and the surrounding areas. Turbines should not be located within ten rotor diameters of neighbouring properties unless there is no alternative. Should this be the case an assessment of the impact of shadow flicker should be prepared, and where appropriate mitigation measures identified or proposals amended. If it is proven that a scheme has significant impact on surrounding communities then it will be refused.

Further Information Sources

- Planning for Renewable Energy: A Companion Guide to PPS22, DCLG. Available from: <http://www.communities.gov.uk/publications/planningandbuilding/planningrenewable>

Cumulative Impacts

- 6.58 As the number of renewable energy developments across the country has increased, and proposals for such development continue to be drawn up, the issue of their cumulative impacts is becoming an increasingly important, and contentious, issue to be addressed in the planning process. North Lincolnshire has already experienced a number of proposals for renewable energy developments, some of which have received planning consent and are now operational or under construction. Proposals continue to be put forward. Given this it is likely that increasing significance will be attached to cumulative impacts of these developments. Cumulative impacts can relate to landscape and visual amenity, bird populations and other wildlife, the historic environment, the local economy or any other matter.
- 6.59 Cumulative impacts relating to renewable energy development may occur as a result of the combined consequences of one or more or a mix of the follow situations:
- An existing renewable energy development and a proposed extension to that development

- Proposals for more than one renewable energy development within an area
- Proposals for new renewable energy developments in an area with one or more existing developments.

- 6.60 Where a renewable energy development is being proposed or extended, alongside other proposed, consented or operational schemes, a cumulative impact assessment should be carried out to determine the overall effect on issues such as landscape character, visual amenity and nature conservation. Such an assessment should form part of an Environmental Impact Assessment (EIA) (if one is required), or be included within the planning statement submitted alongside any planning application. It is also required by the Habitat Regulations. Cumulative impact assessments should also assess the impact in conjunction with non renewable energy developments, as noted in Habitats Regulation Guidance Note 4: Alone or in Combination (HRN4) (English Nature, 2001)
- 6.61 Developers should adequately address the additional cumulative impact that their proposal would have on an area, along with other plans and proposals. Consideration should be given to static and sequential cumulative visual impacts and cumulative landscape impacts, and steps taken to ensure that these are minimal. Consideration should be given to potential cumulative impact on hydrology, hydrogeology, ecology, traffic and transport, aviation and radar, recreation, and local amenity. The cumulative impacts on noise and aviation should be assessed using British standards, best practice guidance or protocols identified by the developer and agreed with the council. Unacceptable cumulative effects may provide sufficient justification to refuse a scheme that would otherwise when assessed on its own be considered acceptable.
- 6.62 The cumulative impacts of proposals for renewable energy development will be considered on case-by-case basis, in the light of existing baseline conditions, accurate descriptions and visualisations of effects on key receptors, and relationships with other developments. The council will determine each proposal based on full and careful consideration of the information. Cumulative effects will also be considered in terms of impact on adjacent neighbouring areas across the boundary from North Lincolnshire.

POLICY 10 - CUMULATIVE EFFECTS

In preparing proposals for renewable energy development, developers should address the cumulative impact that the scheme could have on North Lincolnshire, taking into account operational and approved developments, any extensions to operational or approved proposals, and other proposals being advanced through the planning system. Any assessments should address cumulative visual and landscape impacts, as well as hydrology, hydrogeology, ecology, traffic and transport, aviation and radar, noise, recreation and local amenity impacts.

Further Information

- Scottish Natural Heritage has developed considerable experience in dealing with the cumulative effects of wind energy development. See 'Guidance - Cumulative Effect Of Windfarms' which can be found at: <http://www.snh.org.uk/pdfs/strategy/Cumulativeeffectsonwindfarms.pdf>
- Information on what to include in Cumulative Impact Assessment's can be found in Habitat Regulations Guidance Note 4 (HRGN4) 'Alone or in Combination' which can be found at: http://www.mceu.gov.uk/MCEU_LOCAL/Ref-Docs/EN-HabsRegs-InComb.pdf

Aircraft & Radar

- 6.63 Wind energy developments have the potential to adversely impact on aerodromes and radar as well as other navigation systems used for air traffic control purposes and aircraft instruments.
- 6.64 Wind turbines can represent a collision risk to low flying aircraft and can interfere with the air traffic control radar and aircraft landing instruments. In relation to ground based radar, the movement of wind turbine blades are a moving target for the radar beam. This can be mistaken for an aircraft or create clutter that can interfere with the radar systems ability to track aircraft near the wind energy development. Where there is a proliferation of wind energy developments, this can have cumulative adverse effects on the safety and efficiency of aircraft tracking. Wind turbine blades have the potential to affect ground based radar when they are in, or close to line of sight of the radar. Given this it is essential where possible that flight paths are determined and consideration given to what action can be taken to mitigate against collision risks and impacts on radar.
- 6.65 Under Civil Aviation Authority (CAA) guidelines, developers should consult the CAA's Directorate of Airspace Policy, the Ministry of Defence (MOD) (through Defence Estates) and National Air Traffic Services (NATS) on their proposals for wind energy development as early as possible within the planning process. They should use the proforma prepared by Renewables UK (formerly the British Wind Energy Association) to do so, which should be submitted to the organisations listed above.
- 6.66 The Directorate of Airspace Policy, in providing their assessment will base it on the CAA's policy and guidelines on windfarms. Where the proposals are located within a 30km radius of a safeguarded aerodrome, the CAA will tend to delegate any assessment to that particular aerodrome. In the case of North Lincolnshire, the area is covered by the consultation zones for Humberside and Robin Hood Doncaster Sheffield Airports. There are also a number of small, civilian aerodromes within and adjacent to North Lincolnshire and developers should consult them regarding the effect of their proposal on operations.
- 6.67 The regime for military aircraft radar and operations is somewhat different. For military radar, there is a 74km advisory zone around such establishments, which means that the MOD must be consulted on any proposals within them to assess their potential impact. The MOD has produced a map of those areas of the country where they anticipate the construction of wind turbines could present operational problems to MOD air traffic control and/or air defence radar. However, this map is not definitive and the MOD reserves the right to make comments on any development. Developers considering making applications for permission to erect turbines within these areas should liaise with the MOD before making any such applications.
- 6.68 Another consideration in relation to the military is low flying which is part of tactical training for military pilots. North Lincolnshire is covered by Low Flying Area 11, which extends from around Teesside in the north to central Lincolnshire in south. The MOD has prepared a map setting out Low Flying Consultation Zones from wind energy proposals. It identifies those areas where the MOD would have concerns about the impact of wind energy proposals on low flying. However, this map is not definitive and the MOD reserves the right to make comments on any development. Developers should liaise with the MOD before making any planning application.
- 6.69 Where significant impacts on aircraft or radar are identified, these may potentially be mitigated by alterations to the planned turbine height and/or the exact location and spacing of turbines on a site. Developers must submit clear evidence that Humberside and Robin Hood Doncaster Sheffield Airports, MoD and NATS have been involved in drawing up proposals, and where any mitigation measures are required that they are designed to the satisfaction of the relevant safeguarding bodies.

POLICY 11 - AIRCRAFT & RADAR


Developers should consult the relevant safeguarding bodies, the MoD, NATS as well as operators of other aerodromes and radar systems as early as possible in the process of developing wind energy proposals. Development will not be permitted unless it is shown that close liaison has taken place with the above bodies and that any highlighted impacts on radar and/or aircraft operation can be appropriately mitigated to the satisfaction of the relevant safeguarding bodies.

Further Information

- CAP 764 - CAA Policy and Guidelines on Wind Turbines, CAA. Available from: <http://www.caa.co.uk/application.aspx?catid=33&pagetype=65&appid=11&mode=detail&id=2358>
- BWEA Wind Farm Developers Application Proforma. Available from: <http://www.bwea.com/aviation/proforma.html>
- MOD Radar - <https://restats.decc.gov.uk/cms/aviation-safeguarding-maps/>
- MOD Low Flying Areas - <https://restats.decc.gov.uk/cms/assets/SiteFiles/datasets/LowFlyingZones16Dec2010.pdf>

Telecommunications

- 6.70 Wind energy developments have the potential to affect electromagnetic transmissions. This includes radio and television signals as well as telecommunications. Wind turbines can, depending on where they are sited block or scatter signals.
- 6.71 When drawing up proposals for wind energy developments, developers need to identify any line of site radio and microwave signals that cross the proposed site. In doing so they should consult with the Office of Communications (OfCom) who hold information about communications signals and protect radio systems from interference. In assessing impacts on signals, OfCom will examine whether or not all or any part of the wind energy development is within 0.5km to 1km of the path of fixed link. If this is the case, OfCom will advise the developer to contact fixed link's operator. Developers are also advised to consult with other organisations including utility companies and the emergency services (police, fire and rescue, ambulance and HM Coastguard) regarding any potential interference with their signals. Details of this consultation and its outcomes should be submitted alongside any planning application.
- 6.72 Scattering of signals tends to affect domestic TV and radio broadcasts. A wind farm can affect domestic television reception up to 5km from the wind farm. Terrestrial television transmissions for domestic reception within the UK are the joint responsibility of the BBC and Ofcom. The BBC can provide an online approximate assessment of populations that may suffer interference from a wind farm at a specified location. Developers should note, however, that 'the tool is not intended to be a substitute for an on-site survey where the potential for disruption to television services may more accurately be assessed'.

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- 6.73 Should a proposed wind energy development lead to fixed link signals being blocked, developers should clarify the likely impact with a competent supplier (or operator). Careful siting of turbines can assist in overcoming this issue. This means that the wind turbine blades can avoid a buffer zone around the signal path. This buffer is typically 100m either side of the signal path. If investigations on the proposed site shows that there is likely to be an impact on radio and TV reception, there are possible solutions such as upgrading domestic aerials or delivering the signal by another means e.g. via a cable.
- 6.74 Advice on any technical solutions should be sought from a member of the Confederation of Aerial Industries Ltd.
- 6.75 The council are likely to attach conditions to any planning consent to ensure these issues are appropriate dealt with during the construction phase. If negative impacts cannot be mitigated against it is unlikely approval will be given for a scheme.
- 6.76 As mentioned above, the design and layout of a proposal could be amended to mitigate any adverse effects on telecommunications identified from a technical evaluation of the site. In doing so, it is important to ensure that other environmental impacts, and particularly landscape and visual impacts, are considered alongside this. Experience, elsewhere, has shown that technical constraints such as this often dictate the overall design and layout without equal regard being given to landscape and visual impacts, biodiversity and cultural heritage.

POLICY 12 - TELECOMMUNICATIONS

Developers should contact OfCom at the outset of a project to determine any effects on telecommunications operators. This will assist with decisions on the final siting and design of a scheme and help identify any mitigation necessary if development is acceptable.

Further Information

- Further guidance can be obtained from Ofcom by contacting windfarmenquiries@ofcom.org.uk
- The Impact of Large Buildings and Structures (including Wind Farms) on Terrestrial Television Reception, BBC and Ofcom, 2006. Available from: http://www.bbc.co.uk/reception/info/pdf/buildings_factsheet.pdf
- BBC online assessment tool: Available from: <http://windfarms.kw.bbc.co.uk/cgi-bin/rd/windfarms/windfarm.cgi>
- ODPM (2004) Planning for Renewable Energy: A Companion Guide to PPS 22.

Highways/Rights of Way

- 6.77 The highways considerations associated with renewable energy development are largely similar to those considered for other development. However, certain types of renewable energy development, such as wind turbines and photovoltaic arrays, are likely to have a significant impact on the local network of roads. In all cases site access is an important consideration to ensure that the local network of roads can accommodate the vehicles required to transport the renewable energy components. Any scheme will need to satisfy the Highway Authority that it is acceptable and recommended proposals are discussed with the Highway Authority at the earliest possible opportunity.
- 6.78 The Highway Authority for motorway and trunk roads in North Lincolnshire is the Highways Agency. Any scheme which may have an impact on a motorway or trunk road will need to satisfy the Highways Agency that it is acceptable and it is recommended that proposals are discussed with the Highways Agency at the earliest possible opportunity.
- 6.79 An assessment of the full route to be used, including the site access, needs to be carried out in order to ensure that the road network can accommodate the loads and, where necessary, identify any measures that might be required. The full route should include consideration of the motorway and trunk road network outside the North Lincolnshire Council area in liaison with the Highways Agency. When examining such measures from a highway point of view consideration should also be given to any nature conservation interest on the route and landscape and visual effects. In relation to public rights of way, access routes to developments, in particular wind turbines should not be used unless there are no alternative options.
- 6.80 With regard to most types of renewable energy developments it should generally be possible to integrate existing public rights of ways into schemes. However, in the case of wind turbines care should be taken to ensure an adequate distance is provided between public rights of ways and turbines. At present there is no statutory separation distance between wind turbines and Public Rights of Way (PROW) and PPS22 states that 'not oversailing public rights of way' is the minimum separation distance and the recommended fall over distance is considered adequate. The importance of existing and planned rights of way will need to be taken into consideration. Natural England recommends that separation distances for National Trails should be 4 x the height of the turbine and for other bridleways 3 x the height. Impacts of wind turbines on PROW and National Trails should be included as part of the Landscape and Visual Impact Assessment. The British Horse Society has recently issued new guidelines for bridleways that developers should take into account in any discussions.
- 6.81 Where renewable energy developments adversely affect the public rights of way network and/or landscape provision should, be made where possible, include the dedication of new public rights of way to help offset the disadvantages to the public.

POLICY 13 - HIGHWAYS & RIGHTS OF WAY

Developers should consider access to proposed sites for renewable energy development from the earliest stages in putting together proposals. All proposals should be accompanied by an assessment of the full access route to the site, which should meet the requirements of the Highway Authority. Where appropriate mitigation measures should be identified.

Developers should also consider the impact of their proposals on existing and proposed Public Rights of Way as part of any Landscape and Visual Impact Assessment submitted with any planning application. Particular attention should be given to Natural England's and the British Horse Society's advice on minimum distance between Public Rights of Way/bridleways and wind turbines.

Where developments adversely affect PROWs and/or landscapes, new PROW's should be provided where possible to offset any disadvantages to the public.

Further Information

- ODPM (2004) Planning for Renewable Energy: A Companion Guide to PPS 22.

Local Grid Connections & Ancillary Equipment

- 6.82 As with all energy development, a connection to the local electricity distribution network will be required. This connection will either be by overhead power lines or underground line. Underground lines are 6-20 times more expensive, so are likely to only be used for limited lengths or in special circumstances. Their design and route is the responsibility of the electricity Distribution Network Operator (DNO) and does not need planning permission from the council. Although this is the case, it is important that any ancillary and infrastructure development associated with the proposal, such as the grid connections is considered as part of the overall design.
- 6.83 Under grounding of power lines may be preferable for landscape and visual impact reasons, however there may be other negative environmental effects as a result, for example disruption to sensitive soils or vegetation or archaeology. This should be factored in when determining the best approach to take for any particular scheme. Where cabling is required to be located underground, which is usually the case in the interests of visual amenity; this will be the subject of a planning condition. The cabling condition may also require that, following the installation of cables, the ground be re-instated to its former condition for both ecological and visual amenity reasons, in a given time period, to the satisfaction of the Local Planning Authority. Full re-instatement may not be required in all circumstances, for instance if the land is arable farmland.
- 6.84 Other ancillary equipment associated with renewable energy development, especially wind energy developments needs to be considered as part of any proposal. This includes access roads, foundations, transformers and substation buildings and fencing and could affect a range of environmental issues. Sensitive vegetation and soil type such as heather, semi-natural grassland or peat may not readily recover from construction disturbance and could be vulnerable in both ecological and landscape terms. On sensitive soils such as peat ongoing consequences may arise from erosion or disruption to the integrity of natural drainage patterns.
- 6.85 Grid connections should avoid internationally, nationally and locally designated sites and should avoid harm to protected and priority species and habitats. Connections should also provide biodiversity enhancements wherever possible including positive management of wayleaves.



POLICY 14 – LOCAL GRID CONNECTIONS & ANCILLARY EQUIPMENT

In determining the best route for grid connections and the positioning of ancillary equipment as part of renewable energy development, developers should ensure that they properly integrate the layout of the development with the landscape and topography of the site. Visual clutter should be minimised whilst existing landforms and vegetation should be used to screen ancillary equipment.

Areas of sensitive soils and vegetation as well as changes which have a negative impact on local hydrology should be avoided. Also trees and archaeological features should be protected. Where development does involve sensitive areas developers should provide a construction and reinstatement method statement as part of any planning application

In designing access to, and around sites, developers should consider using existing tracks and access points. Track lengths should be minimised and they should be designed to blend into the landscape in order to be less visually intrusive. At decommissioning they should be return to their original state.



APPENDIX 1:

Nature Conservation Sites in North Lincolnshire

National Nature Reserve (NNR)

- Humberhead Peatlands
- Far Ings

Ramsar Site

- Humber Estuary

Special Protection Areas (SPA)

- Humber Estuary
- Thorne & Hatfield Moors

Special Areas of Conservation (SAC)

- Humber Estuary
- Hatfield Moor
- Thorne Moor

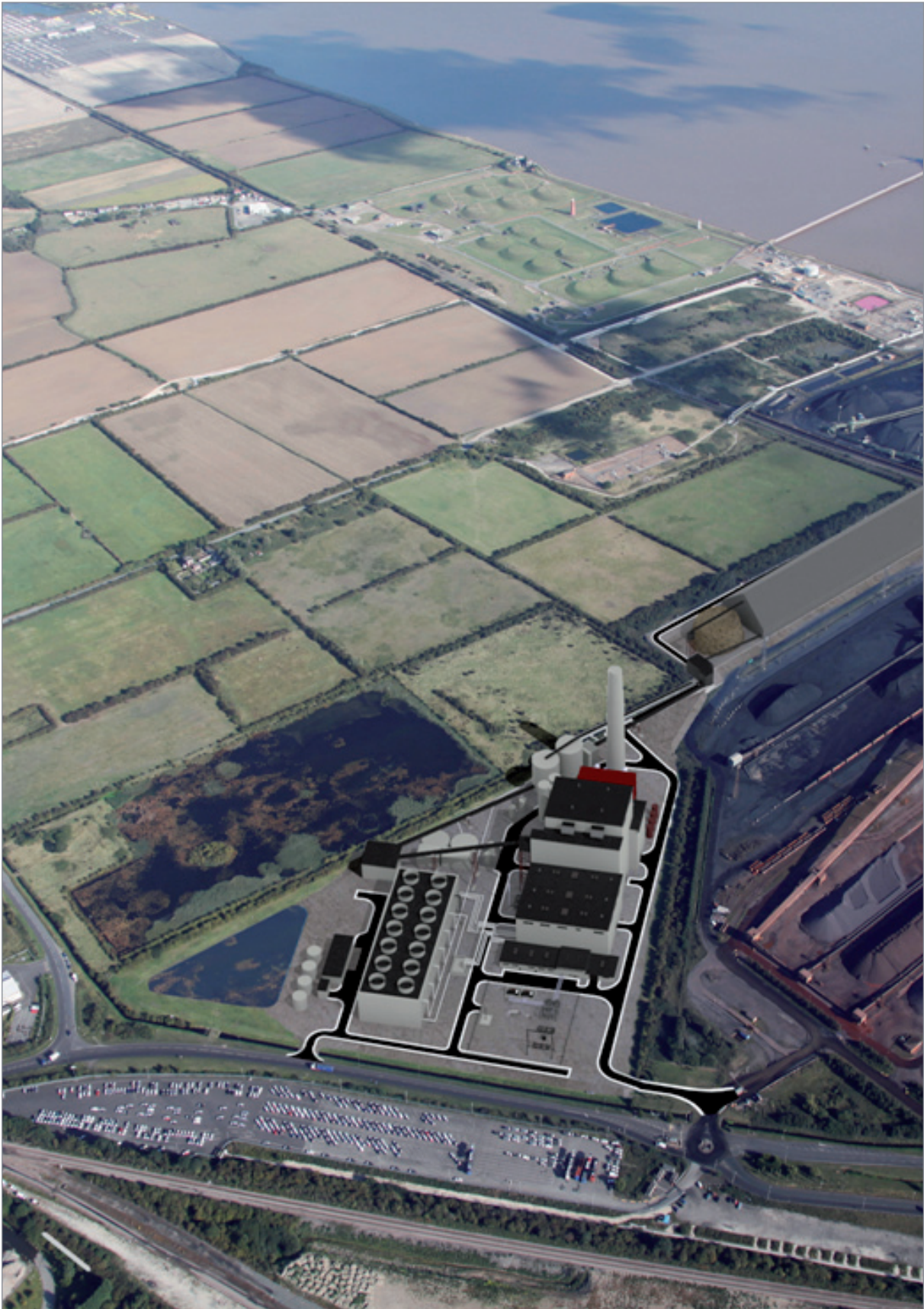
Sites of Special Scientific Interest (SSSI)

- Belshaw
- Broughton Alder Wood
- Broughton Far Wood
- Castlethorpe Tufas
- Cleatham Quarry
- Cliff Farm Pit
- Conesby (Yorkshire East) Quarry
- Crowle Borrow Pits
- Eastoft Meadow
- Epworth Turbary
- Hatfield Chase Ditches
- Haxey Grange Fen
- Haxey Turbary
- Hewson's Field
- Humber Estuary

- Kirmington Pit
- Manton & Twigmoor
- Manton Stone Quarry
- Messingham Heath
- Messingham Sand Quarry
- Misson Training Area
- North Killingholme Haven Pits
- Risby Warren
- Rush Furlong
- South Ferriby Chalk Pit
- Thorne, Crowle and Goole Moors
- Wrawby Moor

Local Nature Reserves - Declared

- Atkinson's Warren/Skippingdale Plantation, Scunthorpe
- Axholme Line, Haxey
- Brumby Woods, Scunthorpe
- Far Ings, Barton upon Humber
- Frodingham, Scunthorpe
- Owston Ferry Castle, Owston Ferry
- Sawcliffe, Scunthorpe
- Silica Lodge, Scunthorpe
- Waters Edge, Barton upon Humber)



APPENDIX 2:

Contacts for Renewable Energy Development

North Lincolnshire Council - Planning

Regeneration & Planning
North Lincolnshire Council
Pittwood House
Ashby Road
Scunthorpe
DN16 1AB

For Planning Policy Advice:

Contact: Chris Barwell/Iain Cunningham
Tel: 01724 297573/297577
E-mail:

For Planning Application Advice:

Contact: William Hill/Mark Simmonds
Tel: 01724 297482/297309
E-mail: planning@northlincs.gov.uk
North Lincolnshire Council – Environmental Matters
Church Square House
PO Box 42
Scunthorpe
DN15 6XQ

For Ecology Advice

Contact: Andrew Taylor
Tel: 01724 297370
E-mail: environment.team@northlincs.gov.uk

For Public Rights of Way Advice

Contact: Colin Wilkinson
Tel: 01724 297391
E-mail: environment.team@northlincs.gov.uk

For Heritage Advice

Contact: Eddie Rychlak
Tel: 01724 297396
E-mail: environment.team@northlincs.gov.uk

For Archaeology Advice

Contact: Alison Williams
Tel: 01724 297055
E-mail: environment.team@northlincs.gov.uk

For Environmental Health Advice

Contact: Liz Hamer/Sarah Nicholson
Tel: 01724 297633/297318
E-mail: environmental.health@northlincs.gov.uk

North Lincolnshire Council - Highways

Hewson House
Station Road
Brigg
DN20 8XB

For Transport Planning Advice

Contact: Jodie Booth
Tel: 01724 297373
E-mail: transport.planning@northlincs.gov.uk

For Highway Control Advice

Contact: Darren Cowling
Tel: 01724 296699
E-mail:

Government Agency Contacts

Natural England

Maps are available on the Natural England website relating to designated sites. Where it is found that any development will have an affect on a designated site Natural England should be contacted.

Natural England
Yorkshire and the Humber Region
Government East and Maritime Team
Bullring House
Northgate
Wakefield
WF1 3BJ
Tel: 0300 060 0430
Web: www.naturalengland.org.uk
E-mail: govteast.y&h@naturalengland.org.uk

Environment Agency

Provide a regulatory role in relation to bio-energy, hydro power, ground source heat pumps and tidal barriers as they have a significant environmental impact. Responsible for issuing permits for such development. Have a statutory role in relation to flood risk.

Environment Agency
Anglian Region (North)
Waterside House
Waterside North
Lincoln
LN2 5HA
Tel: 03708 506 506
Web: www.environment-agency.gov.uk
E-mail: enquiries@environment-agency.gov.uk

Highways Agency

Where development is close to or will use the strategic road network

Highways Agency
Lateral
8 City Walk
Leeds
LS11 9AT
Web: www.highways.gov.uk
E-mail: planningqueries@highways.gsi.gov.uk

Airport Safeguarding

Humberside Airport and Robin Hood Doncaster Sheffield Airport should be contacted before applications within 30km of the airport are submitted.

Humberside Airport (Safeguarding)
c/o East Midlands Airport
Building 34
East Midlands Airport
Castle Donnington
Derby
DE74 2SA
Robin Hood Doncaster Sheffield Airport
Heyford House
First Avenue
Doncaster
DN9 3RH

Civil Aviation Authority Contacts

Directorate of Airspace Policy

Policy lead for CAA on wind turbine issues affecting aviation.

Civil Aviation Authority
Directorate of Airspace Policy
CAA House
45-59 Kingsway
London
WC2B 6TE
Contact: Renewable Energy Project Officer
Tel: 020 7453 6529
Web: www.caa.co.uk/windfarms
E-mail: windfarms@caa.co.uk

Safety Regulation Group – Aerodrome Standards

For information on aerodrome licensing criteria, obstacle limitation surfaces and call-in procedures, contact:

Civil Aviation Authority
Aerodrome Standards
Safety Regulation Group
Aviation House
Gatwick Airport South
West Sussex
RH6 0YR
Web: www.caa.co.uk/srg
E-mail: aerodromes@caa.co.uk

National Air Traffic Services (NATS) Contacts

NATS are responsible for the management air traffic control (ATC) for the United Kingdom and the eastern Atlantic Ocean. Wind turbines could have an impact on ATC radar.

National Air Traffic Services
1 Kemble Street
London
WC2B 4AP
Web: www.nats.co.uk
NATS En-Route Limited
Nav, Spectrum & Surveillance
Spectrum House
Gatwick Airport South
Gatwick
West Sussex
RH6 0LG
NATS (Services) Limited
Technical Safeguarding
Room 101
Control Tower Building
Heathrow Airport
Hounslow
Middlesex
TW6 1JJ

Ministry of Defence Contacts

The MoD should be contacted to assess whether or not proposals impact on defence infrastructure.

MOD Safeguarding
Defence Infrastructure Organisation
Kingston Road
Sutton Coldfield
West Midlands
B75 7RL
Tel: 0121 311 3781
Fax: 0121 311 2218
Web: <http://www.mod.uk/DefenceInternet/MicroSite/DIO/WhatWeDo/Operations/ModSafeguarding.htm>
E-mail: deopsnorth-lms7parl@de.mod.uk

Ofcom Contacts

The construction of tall structures, including wind turbines, may impact on wireless services including wireless links or domestic broadcast reception. In relation to fixed wireless links (above 1GHz) and scanning telemetry links, Ofcom currently offers a coordination service for windfarm developers and planning authorities.

Ofcom Spectrum Licensing
Riverside House
2A Southwark Bridge Road
London
SE1 9HA
Tel: 020 7981 3131
Web: <http://licensing.ofcom.org.uk/radiocommunication-licences/fixed-terrestrial-links/guidance-for-licensees/wind-farms/?a=0>
E-mail: windfarmenquiries@ofcom.org.uk

Other Contacts

Royal Society for the Protection of Birds (RSPB)

RSPB can be contacted in relation to potential surveying for and assessing the potential impacts on sensitive birds and post construction monitoring.

Royal Society for the Protection of Birds (RSPB)
The Priory Centre
15 Priory Street
York
YO1 6ET
Tel: 01904 613121

Humber Industry and Nature Conservation Association

May be a useful source of information within 10km of the Humber Estuary.

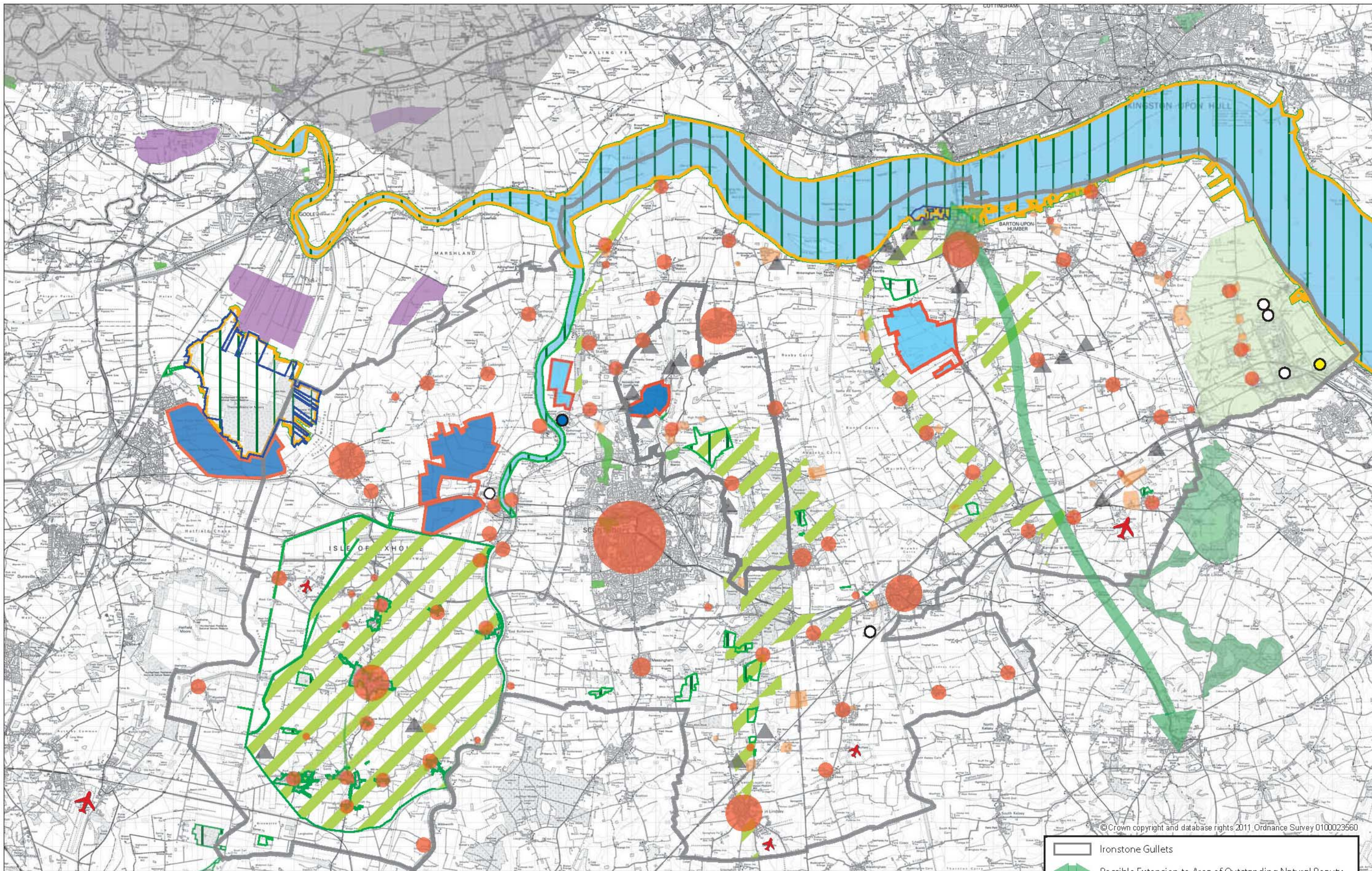
Humber INCA
Waters Edge
Malkin Lane
Barton upon Humber
DN18 5JR





APPENDIX 3:

Constraints Map



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|--------------------------------------|---|--|---|--|
| Major Sub Regional Town | Ramsar | Historic Parks and Gardens | Airport | Possible Extension to Area of Outstanding Natural Beauty |
| Market Towns | Special Protection Area (SPA) | Local Geological Site | Local Aerodromes | Approved Other Renewable Energy Plants |
| Rural Settlements | Special Areas of Conservation (SAC) | Scheduled Monument (SM) | Area Outside Airport Consultation Zone (30km) | Existing Renewable Energy Plants |
| Rural Settlements in the Countryside | Site of Special Scientific Investigation (SSSI) | Area of High Landscape Value | Existing Power Station | Appeals |
| Local Nature Reserve (LNR) | National Nature Reserve (NNR) | Area of Special Historic Landscape Value | Approved Wind Energy Development | Neighbouring Renewable Energy Developments/Proposals |
| | | | | South Humber Gateway Landscape Area |