

PREFACE TO NON-TECHNICAL SUMMARY

As required under the EIA regulations the Non-Technical Summary provides a synopsis of the assessments contained within the Environmental Statement (ES) and presents the information in a non technical manner avoiding, wherever possible, the use of technical terminology. The Environmental Statement has been compiled and project managed by **ecotricity**, with individual chapters being prepared by leading independent experts in the relevant field. The key contributors have been:

- The Landmark Practice: Chapter 6 - Landscape and Visual Assessment
- Just Ecology: Chapter 7 - Ecology
- Kevin Shepherd Consultant Ornithologist Ltd. :Chapter 8 - Ornithology
- RAW Group : Chapter 9 - Hydrology, Hydrogeology and Water Quality
- Watermans CPM: Chapter 10 - Cultural Heritage
- Hayes McKenzie Partnership: Chapter 11 - Noise
- BAE Systems: Chapter 13 - Radar and Aviation

A Planning Statement has also been prepared in support for the application. This Planning Statement summarises the National, Regional and Local Planning Policy and other material considerations which can be used to help determine the outcome of this application.

All of these documents have been submitted to South Gloucestershire Council for consideration against this planning application.

Non-Technical Summary

The Environmental Statement and accompanying documents can be viewed at the following locations during the statutory consultation period:

Location 1

South Gloucestershire Council,
Planning Department,
The Civic Centre,
High Street,
Kingswood,
Bristol
BS15 9TR

Location 2

Thornbury Library,
St. Mary Street,
Thornbury
South Gloucestershire
BS35 2AA

Further copies of the Environmental Statement can be obtained by contacting **ecotricity** at the address below at a cost of £150 per hard copy and £35 on CD.

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This Non-Technical Summary is available to download free of charge from www.ecotricity.co.uk/projects/Alveston where photomontages of the proposed scheme and more information about the project can be viewed via our online exhibition.

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NON-TECHNICAL SUMMARY

1 OVERVIEW

- 1.1 This document is a non-technical summary (NTS) of a more detailed Environmental Statement (ES) which forms part of **ecotricity's** full planning application to South Gloucestershire Council. The NTS is a simple summary of the main environmental effects likely to occur during construction, operation and the removal of the wind park.
- 1.2 **ecotricity** was established in 1995 as the UK's first green electricity company and a pioneering wind energy developer. The Enercon turbines they install were designed by Foster and Partners, who also designed Stansted Airport and the Great Court at the British Museum.
- 1.3 The Alveston Wind Park comprises 3 turbines and the associated infrastructure to allow connection to the grid system and operational maintenance.
- 1.4 As this development is expected to generate approximately 16.75GWh of renewable electricity per year¹, the following statements can be made:
- The electricity generated from this development would supply up to approximately 5% of the households within the area of South Gloucestershire².
 - The output is equivalent to the annual electricity demand of approximately 5,075³ average UK households; this amount would be adequate to supply over and above 4 times the number of households in Alveston⁴ if household energy consumption in South Gloucestershire matched the National Average.
- 1.5 Through the production of 16.75GWh of renewable electricity, the Alveston Wind Park is expected to prevent the emission of at least 6,000 tonnes of CO₂ each year⁵ as well as emissions of SO₂ and NO_x. It will also prevent the release of particulate matter (which can cause breathing difficulties, asthma and lung cancer), as well as preventing thermal pollution and the production of considerable amounts of ash and slag.

2 INTRODUCTION

- 2.1 This NTS forms part of an Environmental Statement for the proposal undertaken by **ecotricity** to construct a wind park at land off Gloucester Road, Earthcott Green, Alveston, South Gloucestershire. The proposed wind park consists of 3 turbines and associated infrastructure including, sub-station, temporary laydown area and access tracks.
- 2.2 The wind park will generate electricity for 25 years, after which it will be removed. Alternatively a new planning application will be submitted to the Local Planning

¹ This figure is based on the average performance (capacity factor) between 2002 and 2006 of UK onshore wind park performance deduced from the "onshore wind" "load factors on an unchanged configuration basis" in table 7.4 of the Digest of UK Energy Statistics 2007, from the Department of Business, Enterprise and Regulatory Reform (BERR, formerly DTI). Please note that the actual performance of the Alveston Wind Park may vary.

² Census (2001). 99,038 households within South Gloucestershire area (www.statistics.gov.uk).

³ This figure is based on a "medium" UK domestic electricity consumption of 3,300kWh/yr used by Ofgem and Energywatch. Future changes in average domestic electricity consumption means this figure may change over time.

⁴ Census (2001). Average household size in South West of England is 2.31. http://www.statistics.gov.uk/census2001/profiles/commentaries/south_west.asp#housing South Gloucestershire Council, (<http://www.southglos.gov.uk/NR/rdonlyres/5126FDDF-5316-4489-BD26-E169C6350D64/0/PTE040035.pdf>). Alveston total households 1,236 approx.

⁵ This figure is based on an assumption that the proposal would offset only gas-fired electricity generation and is therefore conservative; the offset figure is derived from the BERR document Digest of UK Energy Statistics 2007, table 5C @ 370gCO₂/kWh for gas-fired generation. However, it should be noted that future changes in the power generating mix and fuel costs in the UK over the life of the wind farm means this figure may change over time.

Authority (LPA) to replace the turbines. The installed capacity of the project will be approximately 6.9 megawatts (MW).

- 2.3 Global Climate Change is widely recognised as being one of the greatest environmental challenges facing the world today. The Government has set a domestic goal of reducing Carbon Dioxide emissions. It launched the UK Climate Change Programme in November 2000, as part of its commitment to meeting its obligations under Kyoto Protocol. The stance highlighted the importance of taking immediate action to minimise the impact of climate change was clarified even further in February 2007 with the publication of the IPCC Report called '*The Physical Science Basis of Climate Change*'.⁶

3 THE ENVIRONMENTAL STATEMENT

- 3.1 The Environmental Statement has been prepared in accordance with Environmental Impact Assessment (England) Regulations 1999. It describes the wind park development itself, the nature of the site and its surroundings, the potential effects of the development on the local environment and the measurements proposed to mitigate against any potential adverse effects identified.
- 3.2 The proposed development is considered to be a 'Schedule 2 development', under the Regulations. The Environmental Statement has therefore been prepared in accordance with Schedule 4 of the Regulations, which specifies the information that should be included in the Environmental Statement.
- 3.3 Likely environmental effects including direct, indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative effects have been considered for construction, operation and removal (decommissioning) of the wind park.
- 3.4 The Environmental Statement is bound in an A3 document with the accompanying figures. The Appendices, this Non-Technical Summary, a Planning Statement and a Design and Access Statement have also been prepared and are bound separately but will be submitted in tandem with the Environmental Statement to South Gloucestershire Council.

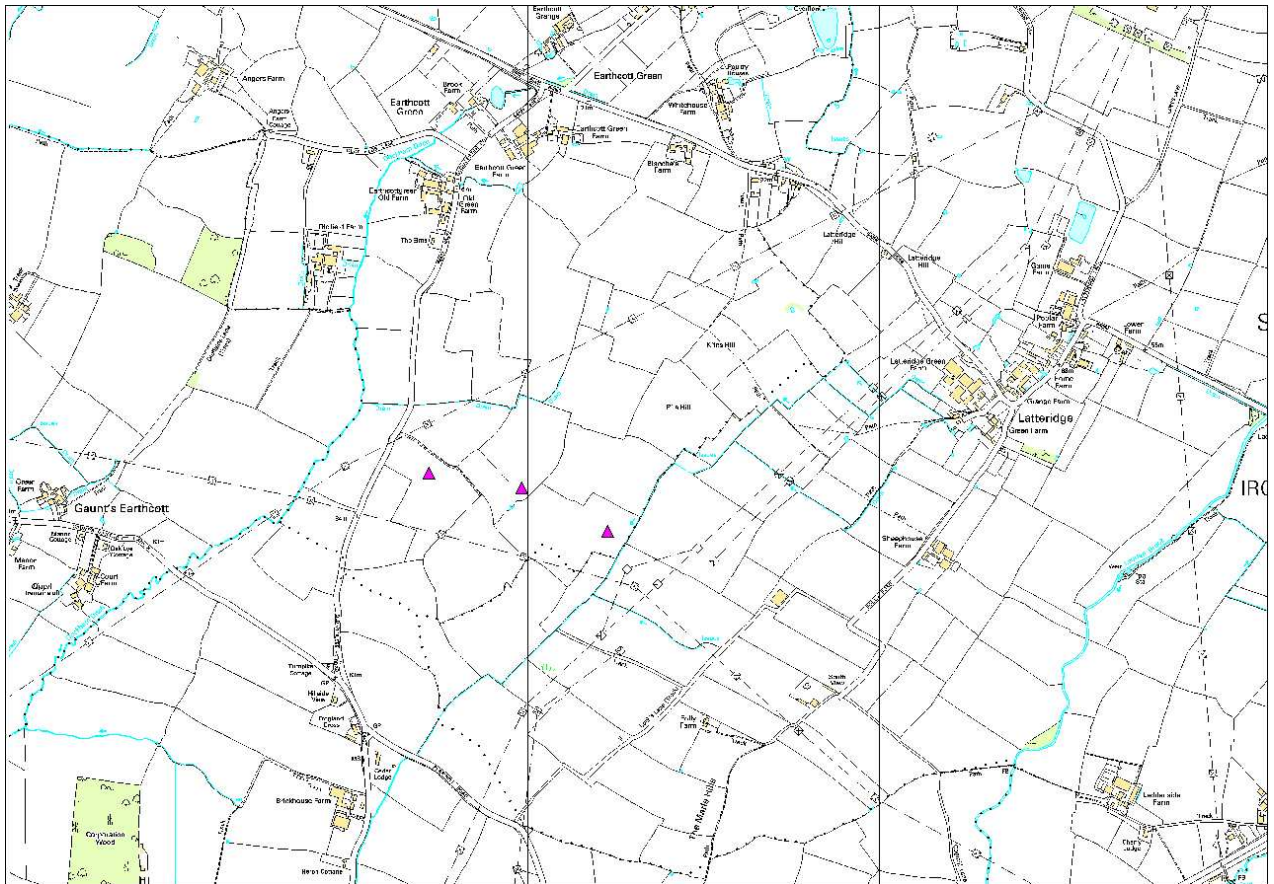
4 SITE SELECTION

- 4.5 Finding a suitable place to build wind turbines is a complex process dependent on a whole range of factors. Using advanced digital mapping computer software and extensive consultation with local, regional and national bodies and organisations, **ecotricity** assessed a number of possible sites within South Gloucestershire and found that this was a suitable site because:
- There is sufficient wind resource.
 - Homes are far enough away from the turbines not to be significantly affected by, for example, noise or shadow effects.
 - There will be no interference that cannot be resolved with televisions, radar, or mobile phone masts.
 - The power can be taken from the turbines to the local electricity grid.
 - Construction and maintenance vehicles can access the site.
 - The current land use can continue around the turbines.
 - The turbines will not affect wildlife and the site is not protected for ecological or landscape reasons.
 - No features of historic interest or importance have been found on or adjoining the site.
 - The land can be leased from the owner.

⁶ <http://www.ipcc.ch/>

- The site is supported by Planning Policies.
- 4.6 The site within Earthcott Green is deemed suitable for development since it is technically and commercially viable and selected in order to minimise any local environmental effects.
- 4.7 The final number of turbines and their locations have been influenced by various site specific factors including, archaeological remains, telecommunications links, ecological habitats, landscape and built heritage considerations and feed back from South Gloucestershire Council during pre-application discussions.

Site Layout



Results from Internal Site Selection

- 4.8 The factors outlined above are mapped using Geographical Information Systems (GIS). Once mapped, areas which are suitable for appropriate development remain.
- 4.9 Despite generally good wind speed, a number of constraints to wind farm development exist within South Gloucestershire. These include conservation areas, proximity to residential housing and distance to the electrical grid network. Maps showing these constraints and the resulting suitable areas can be found in **Chapter 3: Site Selection & Design**.

Iterative Site Design

- 4.10 The final number of turbines and their locations have been influenced by various factors including, noise monitoring studies, ecological habitats, landscape and built heritage considerations and feed back from the Council during pre-application discussions.
- 4.11 The process of environmental impact assessment is iterative in its nature, which has resulted in incremental changes to the proposed design to reach this final layout. Revisions of the layout of turbines at Alveston have responded to specific environmental impact, identified at both scoping and during the EIA process. The final layout aims to mitigate against all of the identified environmental impacts where possible.

5 THE WIND PARK PROPOSAL

- 5.1 The proposed wind park comprises of the following:
- 3 three bladed, horizontal axis wind turbines with a total maximum height to blade tip of 99.5m;
 - Sub Station;
 - Access tracks between the turbines & construction pads;
 - 33kV underground cabling to connect the turbines and sub-station;
 - Temporary construction compound; and

6 NEEDS AND BENEFITS

- 6.1 The Government's policy regarding renewable energy is to increase the supply of electricity from renewable sources of power such as wind, sun, tides and waves. The objective is to reduce the UK's reliance on coal and gas, the use of which release pollutants into the atmosphere, such as carbon dioxide which is known to be causing the world's climate to warm up.
- 6.2 On the 16th February 2005 the Kyoto Protocol, a legally binding agreement committing the UK to reducing the release of pollutants, came into force. In order to help achieve this Protocol's objectives, UK Government energy policy requires 10% of all electricity produced to come from renewable sources by 2010, with the aim of rising to 40% by 2050. The need for new sources of renewable energy is urgent as currently only 4.2% (2005) of UK electricity is produced from renewables such as wind power. Government Energy Policy is enshrined in the White Paper 'Our Energy Future – creating a low carbon economy', in which the Government set out on a path to reduce CO₂ emissions by 60% by 2050. As a part of this policy, the West of England region is required to produce 11% – 15% (595MW) of its electricity from renewable energy sources by 2010. In achieving this target, the Former Avon area, of which South Gloucestershire is part, has been set a sub-regional target of 35-52MWe of installed capacity to be produced from land based renewable sources by 2010, as set out in the Draft Regional Spatial Strategy for the South West.

Community Consultation and Scoping

- 6.3 The consultation process complies with the requirements outlined by South Gloucestershire Council in their submission draft Statement of Community Involvement (SCI). Under the terms of this document this project is considered a 'Major Development' as it is over 0.5 hectares in size.
- 6.4 During the 12 months prior to the submission of the planning application **ecotricity** undertook an extensive programme of consultation with all key stakeholders including South Gloucestershire Council, Natural England (NE) (formerly English Nature), the Environment Agency (EA), Defense Estates (DE), a division of the MoD and the Civil Aviation Authority (CAA). A full list of consultees (statutory and

non-statutory) is included in the Environmental Statement within **Chapter 2: Environmental Impact Assessment**. The views and comments of these bodies influenced the final design of the wind park and the methodologies employed to assess environmental effects in the Environmental Statement.

- 6.5 In line with Best Practice, **ecotricity** submitted a Request for a Scoping Opinion to South Gloucestershire Council in October 2007. This is a document inviting the Council to formally comment on the range of issues to be assessed within the Environmental Statement. The comments included within the Council's Scoping Opinion have been duly addressed.
- 6.6 Public consultation on the proposed development was also considered to be a key element of the planning process. To allow the local community to understand the details of the proposed Alveston Wind Park, a Public Open Day was held on the 18th March 2008 at the Brockridge Centre, Frampton Cotterell. This event was manned by staff from **ecotricity** who were available to answer questions the members of the public had. The display materials used at this open day remained on view at Thornbury Library, from 25th March - 8th April, to allow anybody who could not attend the open day an opportunity to view the proposal.
- 6.7 In conjunction with this exhibition the full application will be on display and available for comment at the addresses listed in the preface of this document. A website has been set up (<http://www.ecotricity.co.uk/projects/Alveston>), which will outline the proposal and show the exhibition information. A dedicated email address has also been established (Alveston@ecotricity.co.uk) which allows the general public to raise any queries with **ecotricity** if they were unable to attend the public exhibition or they wish to discuss items further. A breakdown on the proposed public consultation process can be viewed in **Chapter 2: Environmental Impact Assessment**.

Public Opinion

- 6.8 People have differing opinions about wind turbines; they can be seen as graceful structures symbolising a more sustainable future, or as a blot on a landscape that should be conserved for future generations. Surveys indicate that many residents living in areas where there are wind turbines, support their local wind farms. Since the first wind development in the UK in early 1992, there have been a number of opinion polls undertaken to sample local opinion towards wind power.
- 6.9 The British Wind Energy Association (BWEA) briefing sheet *Public Attitudes to Wind Energy in the UK*⁷ indicates that the results of over 60 public opinion surveys taken over the last 15 years show 'a consistently high level of support for the development of wind farms, on average 70-80%, both in principle, as a good thing, and also in practice, among residents living near wind farms.'
- 6.10 A study by MORI Scotland, commissioned by the Scottish Executive examines the views of local people living within 20km of Scotland's 10 largest windfarms⁸.
- 6.11 Three times the number of residents say that their local wind farm has had a broadly positive impact on the area (20%) than say it has a negative impact (7%). Most (73%) feel that it has neither a positive nor negative impact, or expressed an opinion.
- 6.12 The 2003 study also found that those people living closest to the wind farms tend to be more positive about them (44% living within 5km say that the wind farm has had a positive impact, compared with the 16% of those living 10-20km away). They are

⁷ BWEA (2004). *Public Attitudes to Wind Energy in the UK*. <http://www.bwea.co.uk/pdf/energy/attitudes-2005.pdf>

⁸ *Public Attitudes to Wind Farms: A survey of Local Residents in Scotland, MORI for Scottish executive, 2003 Sample: 1,800 Residents*

also most supportive of expansion of the sites (65% of those within a 5km zone support 50% expansion, compared with 53% of those within the 10-20km zone).

- 6.13 More recently, a study of the effects of wind farms on house prices was undertaken by Peter Dent and Dr Sally Sims of the Department of Real Estate and Construction, Oxford Brookes University (March 2007). The study considered transactions in two areas of North Cornwall where significant number of properties were located within 5 miles of wind farms. Initial results of research indicated that there may have been an effect; however on examining this more closely the effect on house prices appeared to be as a result of other factors. Although data in the study was limited, a news release by Royal Institute of Chartered Surveyors (RICS) commenting on the research (which was supported with a grant from the RICS Education Trust) stated:

“The impact of wind farms may be an urban myth with no clear relationship being observed between the proximity of wind farms and property prices, according to research...”⁹

- 6.14 The message which is consistently coming from independent public attitude surveys is supportive of wind energy development and further, levels of support increase following the construction and operation of a wind farm.

7 ENVIRONMENTAL EFFECTS

- 7.1 As a result of the wide ranging series of consultation, the following issues have been identified as being of particular relevance to the proposed development of Alveston Wind Park and were subject to scrutiny during the Environmental Impact Assessment (EIA) process:

- Landscape and Visual;
- Ecology;
- Ornithology;
- Geology, Hydrology and Hydrogeology;
- Cultural Heritage;
- Noise;
- Traffic;
- Radar;
- Shadow Flicker;
- Other Issues - communications, tourism, safety & security, land use and climate change and air quality.

Chapter 6: Landscape and Visual

- 7.2 The location of the turbines has been carefully selected in order to ensure that they cause as minimal visual impact as possible. The countryside within which the proposed wind turbines are located is not identified as being of particular national landscape importance, for example, an Area of Outstanding Natural Beauty or a National Park. However, it is located within the South Gloucestershire Green Belt. The Cotswold AONB also lies approximately 10km to the east of the site. A landscape study to assess the project was commissioned by **ecotricity**, and undertaken by the independent landscape consultants The Landmark Practice.
- 7.3 The site does not lie within or close to a landscape designated for quality. It lies within the Earthcott Vale Character Area which is largely characterised by a high density of pylons which emanate from a major sub-station which lies approximately

⁹ RICS News Release 'Blown away: The impact of wind farms on property prices' (27 March 2007)

2km to the north. This, combined with other factors, results in a landscape of medium-low quality. Although the Cotswolds Area of Outstanding Natural Beauty lies on the margin of the study area it is considered to be too distant to be affected both in terms of its character and setting. The impact on landscape character is considered to be negative and of minor significance for the Earthcott Vale Landscape Character Area because of the increase that the proposed development will bring in the number of man made structures within the landscape, but for surrounding character areas (including those within the Cotswolds Area of Outstanding Natural Beauty), negligible significance.

- 7.4 The turbines will be visible over a wide area due to their height and the elevated position of the site (compared with the immediate environment) and lack of any land screening. Most views, however, will be partial views of the turbines and the turbines will be seen either amongst pylons or against a backdrop of pylons.
- 7.5 The visual receptors have been identified; there are relatively few private residents within a 2km radius of the application site and the overall residual visual impact resulting from construction and operation of the proposed development is assessed to be negative and of minor/moderate significance based on the worst case assumption that peoples perceptions of wind turbines will be negative. For visual receptors within the wider landscape, the residual impact is negative and either of minor or negligible significance.
- 7.6 In accordance with best practice the Landscape Visual Impact Assessment (LVIA) takes into account other wind turbines which are built or in the planning system. This is known as a 'cumulative' assessment. There are four main operational wind farms in the surrounding area which were considered for the cumulative assessment, together with 4 other proposed wind park developments .
- 7.7 The existing and proposed wind turbine developments in the Avon and South Gloucestershire area are sufficiently separated in terms of distance and elevation that the cumulative landscape and visual impacts are predicted to be negligible.
- 7.8 In summary, the LVIA concludes that, in the light of government guidance and the support within the development plan for renewable energy, and bearing in mind the urgent need to meet carbon dioxide reduction targets in order to combat climate change, the proposed Alveston Wind Park represents a positive addition to the landscape of South Gloucestershire. One which would neither harm the character or value of the local landscape, nor significantly affect views or visual amenity in the long term, due to its reversible and finite nature.

Chapter 7: Ecology

- 7.9 This assessment concerns the wildlife which may be potentially affected by the proposed construction of the wind park. It was undertaken by independent wildlife specialists - Just Ecology. The potential ecological effects of the development are assessed through the various key phases of its development - design, construction, operation and decommissioning. The findings of this assessment can be read in detail in **Chapter 7: Ecology**.
- 7.10 Historical records, and on site field work (Phase 1 Habitat Survey & Protected Species Surveys) were undertaken to find out what animals and plants maybe affected by the development. Natural England (formally English Nature), RSPB and Avon Wildlife Trust were consulted for advice regarding the ecological status of the site.
- 7.11 There are no national statutory designations, such as Sites of Special Scientific Interest (SSSIs) within the development boundaries, although there are SSSIs

located nearby, the closest being Bishop's Hill Wood at approximately 8.4km North East of the site.

- 7.12 The main impacts likely to occur on protected species found using the site were potential collisions of the turbine blades with bats. The actual number of bats recorded on the site was in no greater levels than would be found in many other arable areas within the country. The turbines have been located at least 10m from hedgerows to reduce any potential impacts upon bats. No mature trees or derelict buildings which often help to support the bat populations will be altered through the installation of the 3 turbines.
- 7.13 The construction phase of the development has been identified as the phase which could result in a negative impact on the ecology of the site. However, if the suggested mitigation within the accompanying Environmental Statement is implemented then negative effects will not occur.
- 7.14 Overall, when all ecological elements of the site are assessed and mitigation measures are taken into account, there will be no harmful effects on any of the wildlife throughout all phases of this proposed development.

Chapter 8: Ornithology

- 7.15 Government guidance considers that birds can live in harmony with wind turbines that are sensitively located. The object of this assessment was to establish that the location of the turbines would not affect any important bird feeding or breeding area or migratory routes.
- 7.16 Studies were undertaken by Kevin Shepherd in accordance with methodologies agreed and developed with Natural England and South Gloucestershire Council. A twelve-month baseline ornithological survey was initiated in April 2007. Although the area is used by species of high nature conservation importance breeding bird, wintering bird and flight line assessments were completed and have shown that the turbines will not have any harmful effect upon bird species. This assessment can be read in more detail within **Chapter 8: Ornithology**.

Chapter 9: Hydrology and Hydrogeology

- 7.17 The hydrology assessment looks at whether the turbines will affect surface water, ground water, private water supplies and any underlying aquifers. It was prepared following consultation with the Environment Agency and other relevant bodies by RAW Group. The assessment found that there is no major aquifer below the surface of the site and so there is no chance of contaminating any ground water supplies. However, standard safeguarding techniques will be used to prevent the accidental discharge of contaminants during the construction phase of the development.
- 7.18 The turbines have been located at least 30m away from any water course to minimise any effects on water courses or supplies due to this development.
- 7.19 Mitigation measures in line with best practice guidance will be implemented throughout the construction, operation and decommissioning of the wind park. The aim of all of these measures will be to minimise the risk to the water environment and specific measures are outlined in more detail within **Chapter 9: Hydrology and Hydrogeology**. This assessment concludes that the proposed development will not cause any major impacts on the water resources in the area.

Chapter 10: Cultural Heritage

- 7.20 Assessments have been undertaken to see if this development could have an environmental impact on any archaeological remains on the site by the independent

specialists Watermans CPM. This study is explained in detail in **Chapter 10: Cultural Heritage**. The site itself does not contain any Scheduled Ancient Monuments (SAM) or Listed Buildings, but Acton Court SAM is located approximately 2.3km north east and the Grade 1 Winterbourne Church is located approximately 3.3km to the south. Both of these have been explicitly assessed within Chapter 10.

- 7.21 The impact on other Listed Buildings, Scheduled Ancient Monuments and protected landscapes was also assessed. Photographic impressions, known as photomontages, were created for the views from some protected sites in the direction of the wind turbines to see if they would impact on the inherent value of these features. This assessment has determined that the proposed wind turbines will not have any harmful effects upon these protected features.
- 7.22 The baseline of archaeological data from previous investigation work on the site when the pipeline was laid showed no archaeological remains. However this information was supplemented with further trenching work across the areas where the turbine foundations and crane pads would be. This trenching found no archaeological remains, and it is therefore predicted that this development will have no impact on any archaeological features within the area.

Chapter 11: Noise

- 7.23 The Enercon turbine proposed to be used for this development is the quietest in production worldwide. Unlike other wind turbines they are direct drive, which means they have no gearbox, thereby producing no mechanical noise. The only noise they make is from the passage of air over the blades, which increases and decreases with wind speed. An assessment of turbine noise was commissioned by **ecotricity** and carried out by the specialist independent acoustic firm, The Hayes McKenzie Partnership.
- 7.24 This is included within the Environmental Statement as **Chapter 11: Noise** and includes measurements of background noise levels and takes into account the predicted noise produced by the three proposed wind turbines. The assessment was undertaken in accordance with the recommendations of ETSU-R-97, *The Assessment and Rating of Noise from Wind Farms*.
- 7.25 Baseline noise levels were measured at 6 locations representative of the nearest 3rd party residential properties to the site. These locations were agreed with the Environmental Health Department of South Gloucestershire Council. The predicted noise levels from the turbines have been provided and warranted by Enercon, the turbine manufacturer.
- 7.26 The turbine numbers and location were heavily influenced by the noise study and turbine numbers were reduced in order to meet the relevant noise limits applied throughout the UK, required by national planning policy guidance (*PPS 22 Planning for Renewable Energy*). The Council can also set stringent noise limits on the proposal and in the unlikely event that the development breaches these, the turbines can be easily adjusted to operate within the set limits.
- 7.27 It can therefore be concluded that the effect of this proposed development should not lead to any noise complaints from local residents as it complies with all government guidance and standards.

Chapter 12: Traffic & Access

- 7.28 Effects on roads are short-lived and essentially limited to the construction period. This traffic can be accommodated on the local road network without undue difficulty and no highway improvements are required. All turbine component deliveries will be

made along the M5, followed by minor roads up to the proposed access point on to the site on Old Gloucester Road. Details are provided in **Chapter 12: Transportation & Access** of the Environmental Statement.

- 7.29 There will be a small number of abnormal load movements (the delivery of the turbine components) to the site during the construction phase. The movement of these abnormal loads will be undertaken in consultation with the Highways Authority and Police to ensure minimal disruption to traffic. In order to get the turbines to their final position it will be necessary to build access tracks and hard standings for the cranes that lift them into position on site.
- 7.30 An assessment of the effects of traffic arising as a result of the three phases of the proposed development (construction, operation and decommissioning) has been carried out. Predicted construction vehicle numbers were compared to existing vehicle numbers, based on data supplied by the Highways Agency.
- 7.31 The duration of construction will be 18 weeks, with the greatest average number of vehicle movements occurring during weeks 8-14.
- 7.32 During operation there will be very low levels of traffic, likely to consist of a bi-annual maintenance crew which will arrive on site in a small van, using the existing access points discussed above.

Chapter 13: Aviation

- 7.33 The MoD, NATS and CAA have raised no concern with the proposal and as such it will not have any effect on any of their existing or proposed radars in the area. There are two civil airfields in the vicinity that of Bristol International (BIA) and Bristol Filton. Only Bristol Filton has raised a concern about the proposal due to the turbines being in Line of Sight of their radar.
- 7.34 When wind turbines operate their blade movement creates a primary radar return on an Air Traffic Controller's (ATC) radar screen. This return is known as 'clutter'. The Civil Aviation Authority (CAA) have published a policy that recommends to airfields that they can exclude these small areas of clutter from their operational consideration as this will not impact the service that they are offering. It is believed that Bristol Filton is already implementing this policy around the existing 3 turbines at Avonmouth. As a result it is believed that this development will have no effect on the operations at Bristol Filton and discussions are on going with Filton to confirm this. Details of this assessment and the CAA policy which recommends this procedure can be found in **Chapter 13: Aviation**. The level of 'clutter' Filton is currently experiencing will decrease even further when their new radar is installed in early 2009.

Chapter 14: Miscellaneous

- 7.35 'Shadow Flicker' is caused by moving shadows. This effect only occurs when the sun is at specific heights in the sky and its beam passes over the turbine blades. An assessment has been carried out at 33 residential properties within the vicinity of the site. These properties were chosen to be representative of the nearest properties to the proposed development and in areas with the most open views toward the development.
- 7.36 Many variables are required for shadow flicker to occur. These factors include the height of the sun, the weather conditions, the rotation of the turbines, the height of nearby trees, the presence of hills and valleys and the size and location of windows in residential properties.
- 7.37 This issue has been studied in detail by the Wind Industry and they have invested considerable time developing a model of an area around a proposed development

which could be affected by Shadow Flicker. In tandem with this modeling they have also developed simple processes which can stop all of the effects. South Gloucestershire Council can ensure that these processes are employed if any shadow flicker occurs from this development.

- 7.38 Although South Gloucestershire and the surrounding area is a popular area for tourism, the proposed wind park is not located on land currently used for the purposes of tourism or recreation and will have no direct impact on such resources in the vicinity of the site during the operation of the wind park. Public perception studies indicate that only a small minority consider wind farms to have a negative effect.
- 7.39 The proposed development will not be open to the general public and is therefore not expected to increase tourism in the area. Although it will not be open to the public, an information board will be installed close to the site entrance.
- 7.40 The proposed development would occupy only a small percentage of the whole farming estate at Alveston and would not affect the use of the fields for agricultural purposes. The development would contribute to the economic viability of the estate by diversifying the agricultural enterprises on the site.
- 7.41 During the construction period a minor significant benefit could be felt in the local community as services for the construction process are purchased locally. Once construction is completed this economic benefit will revert to current conditions.
- 7.42 Discussions have been undertaken with the operators of the telecommunications links and they have confirmed that there are no expected issues with this proposal. Therefore no mitigation is required.
- 7.43 Due to the method of radio transmissions and reception, it has been concluded that the proposed wind turbines would have no detrimental effects on national or local radio reception in the vicinity of the proposed development.
- 7.44 Although unlikely, wind turbines can interfere with TV reception, causing 'ghosting' of the image or a reduction in quality. The BBC and The National Grid Wireless, who operate the transmission networks, have been consulted for this application and they do not feel that this development would affect their network. If any problems due occur with TV reception as a result of the turbines, it can easily be remedied by a range of measures including, re-orientating the aerial to another TV transmitter, fitting of a signal booster or installation of a digital TV box. **ecotricity** will incur the costs for these mitigation measures if necessary.
- 7.45 With regards to health and safety, the wind park would comply with all relevant health and safety regulations. During construction all site based activities will be conducted in accordance with the Construction (Design & Management) Regulations 1994, with all site workers conforming to the requirements of a specific health and safety plan.
- 7.46 There should not be any issues regarding the safety of pedestrians during construction, as there are no public footpaths crossing the development area.

8 MITIGATION MEASURES

- 8.1 Two main types of mitigation have/will be employed during the project:
- Mitigation at the design stage influencing the layout of the site; and
 - Post design measures to be followed during construction, operation and decommissioning.
- 8.2 The layout of this wind park is such that adverse environmental effects have been minimised through the design process. This has minimised ornithological,

ecological and cultural heritage impacts, reduced visual effects and ensured technical construction requirements are met.

- 8.3 Remaining effects will be mitigated by measures taken during construction and operation wherever possible, such as pollution prevention measures and a watching brief for archaeology during the construction phase of the development.

9 CONCLUSIONS

- 9.1 The final section of each chapter within the Environmental Statement summarises how important the environmental effects arising from the construction, operation and decommissioning the wind turbines are. This summary shows any environmental effects of this development which would remain significant under the Environmental Impact Assessment (EIA) guidelines of 1999 (positive/negative) once mitigation have been implemented.