



# The **co-operative**

*Extension to Coldham Wind Farm  
Non Technical Summary*

## Introduction

The Co-operative has submitted a planning application to Fenland District Council for the development of an additional 7 wind turbines to the existing 8 turbines on its Coldham Farm Estate. The Wind Farm lies 4.5km to the north of March, Cambridgeshire. Friday Bridge is the nearest large settlement approximately 2.5km to the north of the site with Coldham village approximately 1.8 km to the North-west. Of the additional 7 turbines, 6 lie within the planning boundary of the existing Coldham Wind Farm and the remaining turbine lies on adjacent land at White House Farm. On the southern boundary there is another operational wind farm of nine turbines owned by Eon and known as Stags Holt.

The Co-operative is an Industrial and Provident Society, which is owned and democratically controlled by over 3 million members. The Group encompasses a diverse range of businesses, including Co-operative Food, Co-operative Funeralcare, Co-operative Pharmacy, Co-operative Travelcare Co-operative Farms and Co-operative Financial Services (CFS), which in turn is the holding company for Co-operative Insurance Society (CIS), The Co-operative Bank and the internet bank Smile.

A Group-wide Social Goals Strategy identifies climate change and waste as environmental priorities, and climate change, social inclusion, tackling crime, food integrity and modern co-operation as community investment and campaigning priorities. The Strategy makes provision for sustainability reporting to focus increasingly on the business' response to Sustainable Development.

The Co-operative is responsible for over 70,000 acres of farmland in Britain. As a landowner of long standing the Group understands the challenges and community responsibilities of owning and managing rural assets.

The proposed extension to Coldham Wind Farm has been the subject of a formal Environmental Impact Assessment (EIA), which has been fully documented with an Environmental Statement (ES) to accompany the planning application.

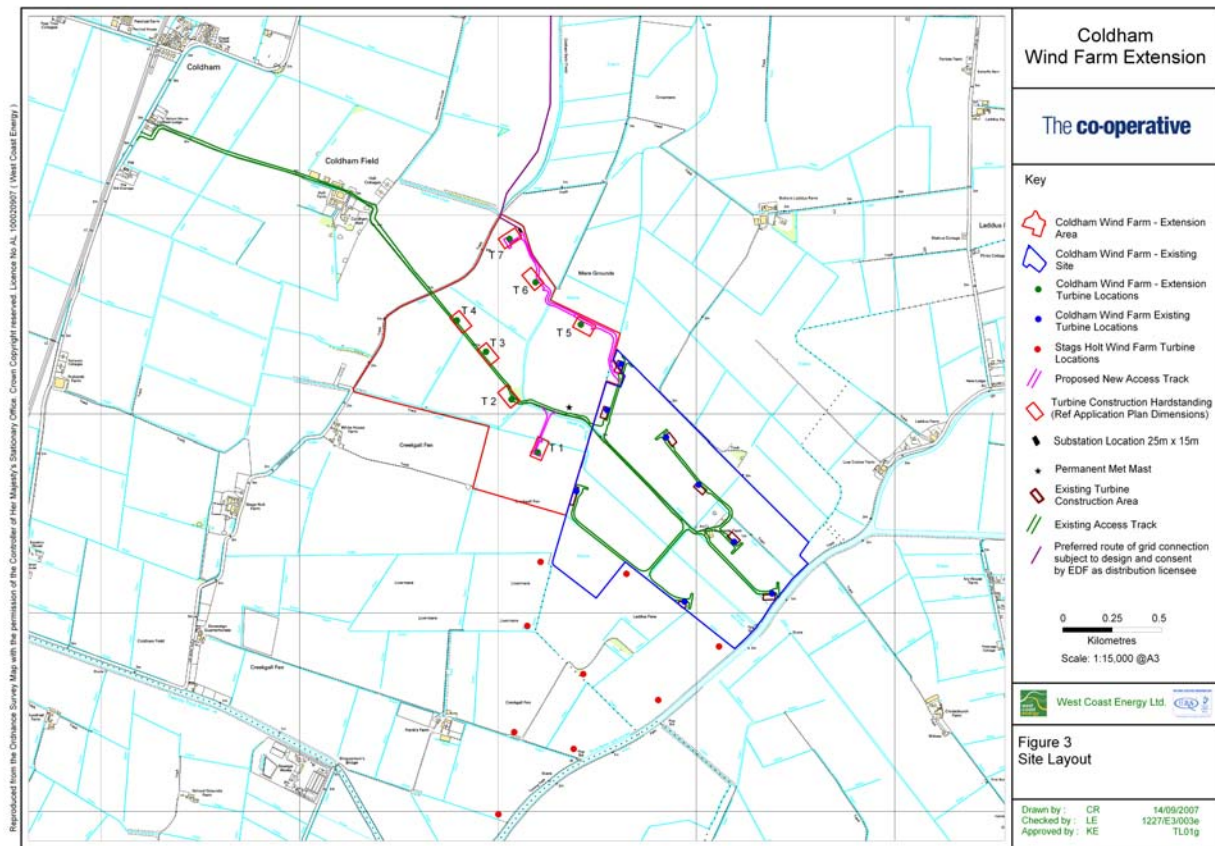
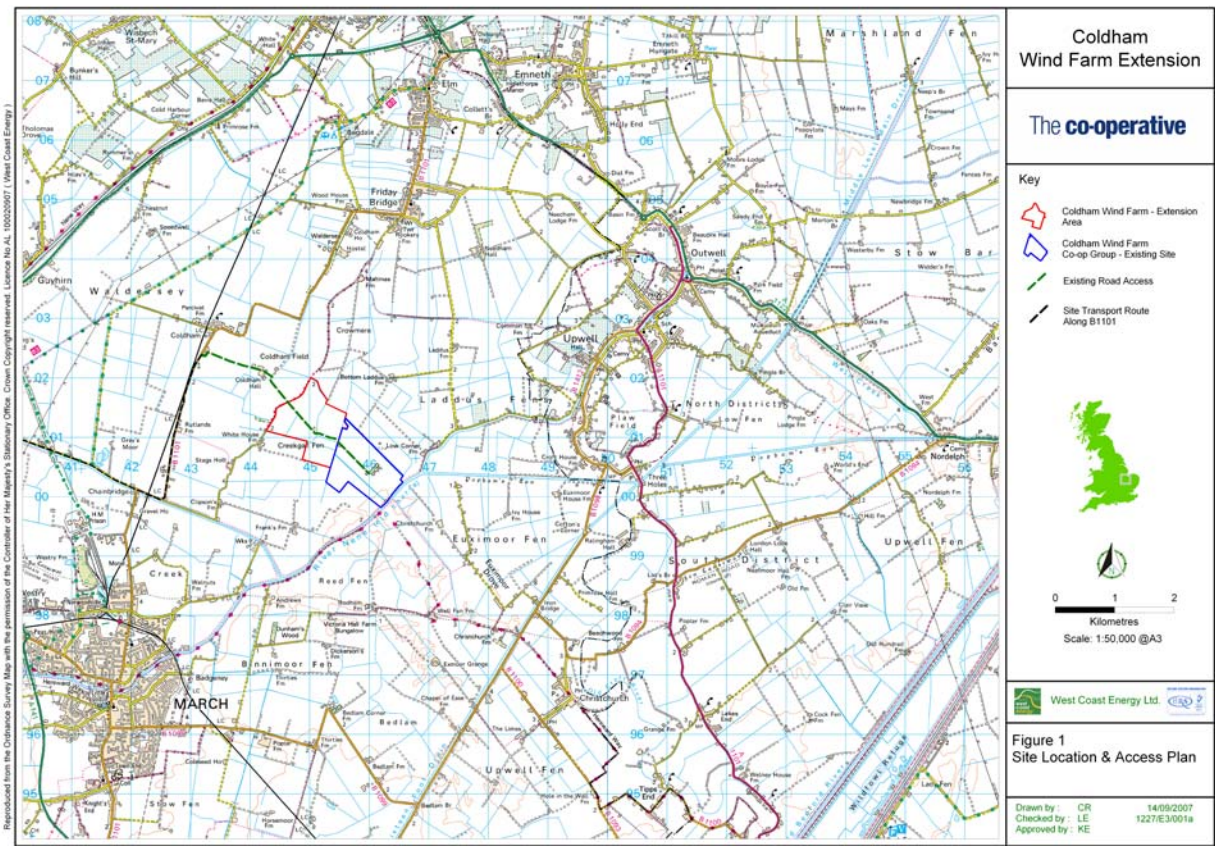
As the Coldham site had been the subject of assessment for the existing wind farm scheme, it was agreed with Fenland District Council that the process of environmental assessment would follow the previous methodology. A lengthy consultation process was undertaken with statutory and non – statutory organisations to provide environmental information to assist in the preparation of the application and ES for the extension to the wind farm proposal.

A Public Information Exhibition was held on 1<sup>st</sup> August 2007 at Friday Bridge to display the key results of the environmental assessments for the proposed extension together with an accompanied bus trip to view the existing Coldham Wind Farm.

This Non-Technical Summary forms part of the Environmental Statement providing an overview of the proposed development, its potential environmental effects and proposed mitigation measures.

The ES comprises of:

- Volume 1 - Written Text
- Volume 2 - Appendices
- Volume 3 - Figures and Drawings
- Non - Technical Summary
- In addition a Planning Statement and Design and Access Statement have also been produced, and included with the Planning Application.



## Wind – Clean Energy for a Sustainable Future

There is now clear evidence that global warming and climate change are a reality and have the potential to cause major adverse effects on sea levels, water supply and agriculture in the coming decades.

The Energy white paper: "Meeting the Energy Challenge." (May 2007) said:-

"Energy is essential in almost every aspect of our lives and for the success of our economy. We face two long-term energy challenges:-

- tackling climate change by reducing carbon dioxide emissions both within the UK and abroad; and
- ensuring secure, clean and affordable energy as we become increasingly dependent on imported fuel."

Within the UK, climate change is predicted to have the following impacts:

- Extremes in weather, with dry areas becoming drier and wet areas wetter;
- Increased bouts of flooding for communities;
- Increased erosion to coastal land and defences;
- A decline in populations of wading birds and wildfowl due to rising sea levels.

One of the major causes of global warming is the emission of carbon dioxide from power stations burning fossil fuels (coal, oil, gas) to generate electricity. In order to combat the threat of global warming, there is a need to obtain clean, diverse and sustainable supplies of energy from renewable sources such as wind.

The Stern Review on the Economics of Climate Change (Nov 2006) summarise the effects of climate change;

*'Most climate models show that a doubling of pre-industrial levels of greenhouse gases is very likely to commit the Earth to a rise of between 2 – 5°C in global mean temperatures.*

*This level of greenhouse gases will probably be reached between 2030 and 2060. A warming of 5°C on a global scale would be far outside the experience of human civilisation and comparable to the difference between temperatures during the last ice age and today. Several new studies suggest up to a 20% chance that warming could be greater than 5°C. If annual greenhouse gas emissions remained at the current level, concentrations would be more than treble pre-industrial levels by 2100, committing the world to 3 – 10°C warming, based on the latest climate projections'.*

## Wind Energy in Europe

Within Europe, virtually all member states are seeking to generate electricity from wind energy. Germany, Spain and Denmark lead the way with respective installed capacities of 20,621MW (Mega Watts), 11,615MW and 3,136MW. Whilst the UK has the biggest wind resource in Europe, statistics show the UK currently lagging significantly behind many of the other EU members in its rate of installing new renewable energy capacity.

## Wind Energy in the UK – Sustainable Power

The UK Government is strongly committed to developing wind power and other renewable technologies. A market-based support mechanism for renewable energy has been introduced creating an obligation on electricity suppliers to buy an increasing proportion of electricity from renewable energy sources. In England this mechanism is called the Renewables Obligation (RO). The Government has also adopted targets for the deployment of renewable energy sources. The targets include, by 2010, for 10% of electricity to come from renewable sources, with an aspiration for 20% by 2020 and a long-term path for a 60% reduction in CO<sub>2</sub> by 2050.

Renewable energy has a key role to play in the UK Government's energy policy. Renewable energy sources produce low or negligible levels of pollutants such as carbon dioxide and other 'greenhouse gases', and so by displacing conventional sources of energy, they can help the UK meet its climate change targets. Renewable energy is also an indigenous

source and thus assists security of supply over imported fuels. Finally renewable energy projects can assist domestic industry in the supply chain.

## Renewable Energy Policy in the East of England

The Draft East of England Plan (The Regional Spatial Strategy) (draft RSS), sets regional and sub-regional targets for renewable energy. By 2010, the target is to produce 1192MW from on-shore wind. To date the East of England Region has an installed capacity of 108MW leaving a short fall of 1084MW to be achieved over the next three years.

Cambridgeshire and Fenland District Council have made an important contribution to the target with 86MW of installed or under construction capacity,<sup>1</sup> The proposed extension at Coldham could have an installed capacity of up to 14 MW and thus will contribute to the East of England regional targets.

If the draft RSS 2010 targets are to be achieved, a significant number of new renewable energy and wind energy projects must receive planning permission and be constructed within the next 3 years.

## Proposed Extension to Coldham Wind Farm

The Coldham Wind Farm was identified as potentially suitable for a wind farm after consideration of the following criteria:

- Good wind resource;
- Availability of a suitable connection to the electricity grid;
- National and local planning policy;
- No national ecological or landscape designations;
- No detrimental effect on transmission and microwave signals;
- Suitable access from the local highway;
- Landowner participation.

Coldham Wind Farm was commissioned in October 2005 and has shown no significant environmental effects. The same consideration has been given to the siting of the proposed extension to the wind farm. Further detailed assessment and consultations with the Council, consultees and interested parties have tended to confirm these initial conclusions.



Coldham Wind Farm

<sup>1</sup> Figures from BWEA, 2006, UK Wind Energy Database  
<http://www.bwea.com/ukwed/>

## Project Description

The design of the extension to the wind farm was a dynamic process, the aim of which was to evolve an extension to the wind farm which was visually sympathetic and sustainable with the surrounding environment. There were several iterative design phases which were underpinned by a continuous process of site evaluation, environmental appraisal, and repeated consultations with relevant organisations. The final layout of the extension to Coldham Wind Farm incorporates engineering considerations to avoid potential environmental effects. The proposed extension area of 100.9 hectares (ha) contains a maximum development footprint of approximately 7.5ha.

It is proposed to install 7 x 2MW wind turbine generators of modern design. The maximum height from the turbine base to the top of the blade tip will be up to 100m (330ft). As the physical characteristics of individual turbine models can vary depending on the manufacturer, the turbines will have a maximum hub height of up to 60m (198ft) and a maximum rotor diameter of up to 80m (264ft). For the avoidance of doubt, all turbines erected on the site will have the same dimensions. For the purposes of this application a generic 2MW turbine with a hub height of 60m and 80m rotor diameter has been considered.

The extension to the wind farm design is shown in the site layout plan. The wind turbines are spaced so as to minimise energy loss due to wind turbulence, to avoid sensitive areas and to minimise impact on nearby properties.

The public highway route to be used by the abnormal loads is as previously used for the existing Coldham Wind Farm:-

- From A141 east onto Twenty Foot Road
- Twenty Foot Road joins the B1101 at Chainbridge
- Follow the B1101 in a northerly direction towards Coldham
- Turn right off B1101 at Coldham Estate into the site

Access to the site will be from the farm access to Coldham Hall Farm, which was completed to facilitate access to Coldham Wind Farm. Access to individual turbines is proposed by 1.45km of existing and 1.35km of purpose built site tracks. The turbines will be connected by underground cables, which will take power from each turbine to a substation at the site.

The new substation, located to the north west of Turbine 7, would connect to the existing EDF 33kV Walsoken to Leverington line, located near Begdale. This connection will be subject to a separate application.

The application will be for the wind farm's operational life of 25 years, after which it may be taken down and the land restored or a repeat planning application for new wind turbines may be submitted.



Coldham Wind Farm Substation

## Wind Farm Construction and Operation

The extension to the wind farm will take approximately seven months to construct. To provide access to the site, the vehicles will be routed by agreement with Cambridgeshire County Council Highway Authority and the Highways Agency, to minimise disruption and disturbance to local residents. Delivery of turbine components will generally be timed to avoid transportation between the hours of 0830 – 0930 and 1530 – 1630, Monday to Friday to avoid school and commuter traffic.

During the construction period, there will be three types of traffic accessing the site – abnormal loads, conventional HGVs, and the vans and cars of construction staff.

There will be around 66 abnormal loads, 56 of which will deliver the tower sections, blades and components of the turbines and the associated electrical equipment. The remaining ten will deliver the mobile cranes and other construction plant. With the exception of the cranes, all of the long vehicles delivering the large loads will reduce in length for their return journey, thus reducing their impact.

Aggregate material for track construction, crane hardstandings and the substation hardstanding will be imported to the site from regional sources during the seven months of the construction period. These elements will require approximately 1500 HGV loads of aggregate material. Concrete for the foundations will be delivered from local ready mixed batching plants, each turbine foundation will require

approximately 61 lorry loads (440 in total). There will be approximately 249 deliveries of plant, machinery etc in addition. If importation of this material is evenly spread throughout this period, it will equate to approximately 16 HGV loads per day, although they will be more frequent on some days. There will be approximately 20-30 people working on site at any one time during the period of construction and there will be various light vehicle deliveries. These vehicles will approach the site from various directions and will not create any noticeable impact during the construction period. Following construction, the site will be restored to maintain normal farming operations.

The proposal will make a significant contribution towards the East of England region's 2010 renewable energy targets and contribute towards the outstanding wind energy requirement for Cambridgeshire.

Over a 25 year period, carbon dioxide emission savings alone could amount to over 650,000 tonnes. (This is based on an emissions factor of 860g CO<sub>2</sub>/kW, as electricity generated by coal fired power stations is typically displaced by wind power generating capacity. 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.)



Coldham Wind Farm

Viewpoint 1:A47



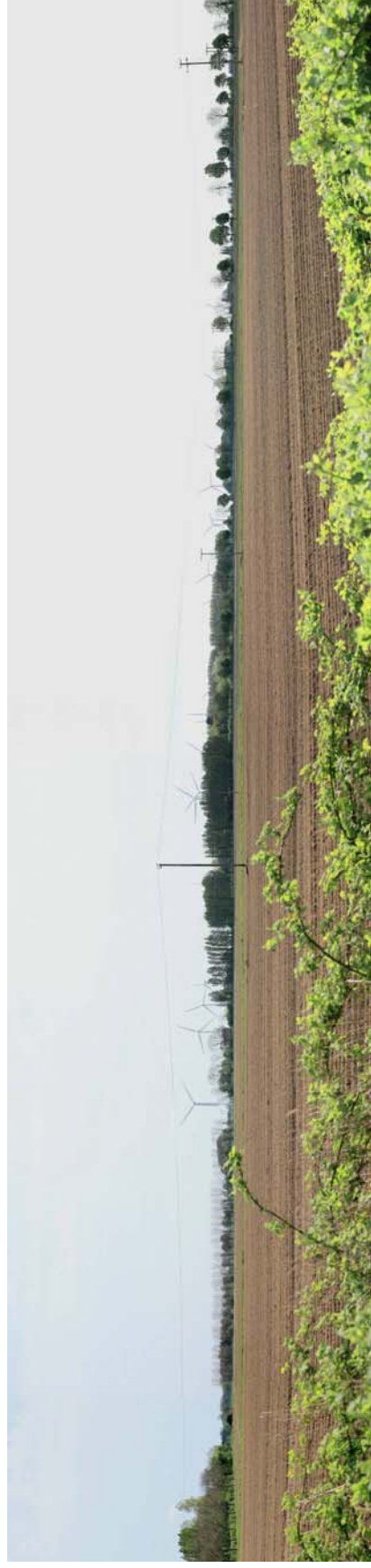
Viewpoint 4: B1098 Sixteen Foot Bank



Viewpoint 8: B1101 North of March



Viewpoint 9: Coldham Village:



## Benefits

The cost of the extension to the wind farm is expected to be over £14 million. The provision of site facilities, concrete foundations and access roads together with general civil engineering and technical services would benefit local companies, contractors and their employees. It is estimated that total regional direct investment in construction and engineering services is likely to be over £1.5m with additional indirect expenditure in local shops, hotels, service stations etc.

It is calculated that once built the additional turbines would generate in the region of 30 million kilowatt hours (units) of electricity each year. Based upon the average UK household electricity consumption of 4,100 kWh per annum,<sup>2</sup> it is calculated that the proposed wind farm will generate enough electricity to power the annual domestic needs of approximately 7,500 homes. This is equivalent to making the Parish of March or 20% of the population of Fenland District Council area self sufficient in clean and sustainable renewable energy.<sup>3</sup>

Every unit of electricity produced by wind energy could displace a unit of electricity which would otherwise have been produced by a power station burning fossil fuel.<sup>4,5</sup> Using the BWEAs emission figures<sup>6</sup> for coal-fired plant, it is estimated that the proposed wind farm could displace the following gaseous emissions which would otherwise have been produced by a power station burning fossil fuel:-

- 26,000 tonnes of carbon dioxide (CO<sub>2</sub>) per annum
- 300 tonnes of sulphur dioxide (SO<sub>2</sub>) per annum
- 90 tonnes of nitrogen oxides (NO<sub>x</sub>) per annum

Coldham 1 provided community benefits comprising a lump sum of £30,000 for

“Community and Access improvements”; £5,000 for a climate change strategy report and £6,200 p.a. (index linked for the life of the wind farm) for environmental education. The Co-operative initiated the concept of pooling environmental education funding from Coldham Wind Farm and other wind farm developments within Fenland District (in aggregate approximately £23,000 p.a.) to provide a coordinated district wide environmental education programme which is due to commence in Autumn 2007. The project, to be run by Cambridgeshire Education Service (CEES), aims to deliver environmental education programmes and projects for the 41 primary, secondary and special schools in the district. It is proposed that the project will also provide open days at Coldham Wind Farm and adult learning events.

If approved, the extension of Coldham Wind Farm will provide further community benefits to the order of around £14,000 per year. This could support the environmental education programme as well as local community initiatives, probably through the formation of a community trust structure, subject to agreement with the Parishes and District Council.

## Environmental Impact

Early consultations with Fenland District Council and other stakeholders identified the key environmental and amenity issues to be considered in determining the planning application. These are fully addressed in the Environmental Statement which includes reports on landscape and visual amenity, noise, ecology, cultural heritage, safety, and the effects of the proposal on television and other communication systems. These reports have been commissioned from independent expert consultants. The main conclusions are summarised in this document.



<sup>2</sup> PPS 22- Guidance (Ofgem) 2004

<sup>3</sup> <http://www.cambridgeshire.gov.uk/community/census/>

<sup>4</sup> Annual CO<sub>2</sub> emissions reductions is calculated assuming a 30% load factor and typical emissions of 860g CO<sub>2</sub> /kWh

<sup>5</sup> Parliamentary Office of Science and Technology (1994). Select Committee Briefing: *Environmental Aspects of Wind Generation*. Crown press.

<sup>6</sup> Figures based on BWEA emission calculations. BWEA (2006). <http://www.bwea.com/edu/calcs.html>

## Landscape and Visual Impact

An independent landscape and visual impact assessment (LVIA) of the extension to Coldham Wind Farm was undertaken, involving a review of landscape character and designations, and evaluation of a range of viewpoints around the site. Computer generated images of the wind farm were superimposed on photographs to create photomontages which give an accurate impression of the scale and location of the turbines.

The LVIA found that having regard to the existing Coldham Wind Farm and the adjacent Stag's Holt Wind Farm, which was under construction during this assessment, it is considered that any additional significant landscape effects would be very limited and that the landscape has the capacity to accept the development without any undue adverse effect.

With respect to recreational amenity there would be very few significant visual effects arising in addition to those arising from the existing schemes. .

The overall character of and general amenity within the nearest settlements would not be significantly affected.

Although Coldham extension would give rise to significant local effects within a range of up to c4.0 km to c5.0 km, where open views are available, the turbines would not overwhelm perceptions from residential properties. In addition, from some directions the proposed turbines would be seen within the context of the existing wind farm, and 'significant' cannot be equated with adverse.

As with any scheme of this nature, there will be a change to the landscape and a degree of local visual impact, but if Government and regional targets on renewable energy and onshore wind are to be met, it must be accepted that wind turbines do have a place within the landscape and countryside. The significant effects noted will be very localised and the proposed development is considered to be acceptable in this location

The turbines will be painted an appropriate matt colour to complement the existing turbines. A matt colour reduces the distance over which the turbines are visible, especially in dull weather conditions or low light conditions.

Four predicted views (photomontages) of the extension to Coldham Wind Farm from A47, Sixteen Foot Bank, North of March and Coldham Village, are shown in this document.

## Ecology & Ornithology

An independent 12 month study into the ecological impacts of the proposed extension to Coldham Wind Farm has been undertaken. It found that the application site is not located in any area notified or classified or designated for wildlife interests under either domestic or international legislation. The primary focus has been the risk posed by the extension to bird species which form part of the wintering populations of the Fens, the most important being Berwick Swans and Whooper Swans. The level of collision risk is assessed as very low and therefore the integrity of the relevant international sites for these species is not under threat from the proposed extension. Collision risks for other bird species of regional or local importance is considered to be low and / or insignificant.

Direct and indirect impact on the water vole population at the site can be dealt with by mitigation. No other ecological impact of significance has been identified.

In accordance with best practice, a monitoring scheme would be set up to assess any ornithological changes arising from the extension to the wind farm.

## Cultural Heritage

Independent archaeologists were engaged to undertake an assessment of the proposed extension to Coldham Wind Farm. Due to previous on site work at Coldham Wind Farm and desk based research, the Senior Archaeologist at Cambridgeshire County Council considered that no further intrusive work was necessary. An additional walkover survey was undertaken to assess the extension area to the south of the site. There are no Scheduled Ancient Monuments or Conservation Areas within 5km of the site and the extension will not affect the fabric or setting of either. No adverse effects on the setting of any local listed building is envisaged.

## Noise

An independent noise assessment has been undertaken using a predictive model that compares the worst case predicted noise levels with noise limits as referred to in the policy reference PPS22 and derived from measurements of background noise levels. The noise measurement and predictions focussed on the nearest residential properties to the proposed wind farm.

The assessment shows that the predicted noise levels at the nearest residential locations to the site meet the night time limit under all conditions. The predicted noise levels meet the quiet daytime noise limit under all conditions, except at two properties where there is a small

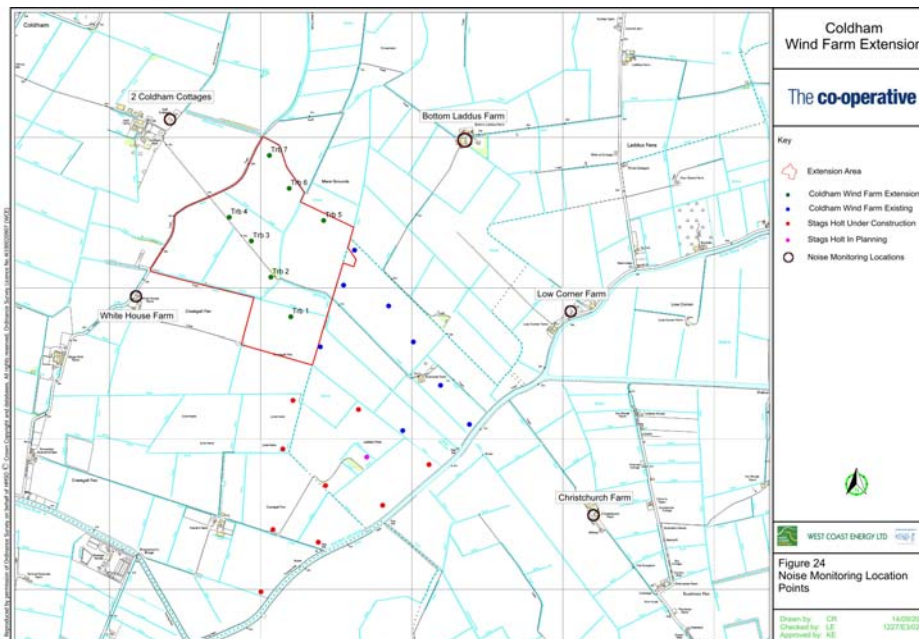
theoretical exceedence of around 0.5 dB for a very narrow range of wind conditions from the cumulative effect of all turbines on the existing and proposed extension sites .

Because of the worst case nature of the assessment carried out here, this exceedence is unlikely to occur in practice. If the limits are found to be exceeded, this can be mitigated using standard procedures which could include slowing the turbine rotors under certain wind conditions.

Under exceptional atmospheric conditions there is also the possibility of an exceedence of up to 1 dB of the night-time limit at Coldham Hall Cottages. This is also un-likely to occur in practice but similar mitigation can be applied if the limits are found to be exceeded.

A further programme of physical noise monitoring tests have been conducted around the operational wind farms and the results of these show that the predictive model applied here has been found to over predict noise levels as expected. The measured noise levels were found to be around 1dB below the predicted level for wind speeds from 4 – 7.5m/s.

Noise from the proposed development will therefore not have a significant effect on residential amenity and is a matter that can be adequately controlled by the imposition of appropriate planning conditions.



## Interference with Television, Radio and Microwave Paths

Based on consultation with the relevant bodies, it is concluded that the development will have no effect on any existing microwave and radio frequency links. The potential exists for the proposed extension to affect national UHF (analogue) domestic television reception, which is a declining service. OFCOM notes that in the Anglia TV region, 80% of homes have converted to digital TV in anticipation of the closure of analogue transmissions. Therefore only around 20% of local residents may be susceptible to interference and mitigation is readily available. This matter can be controlled by planning conditions or legal agreement. In any event, such potential for interference would not occur after the switch over to digital transmissions by 2012.

## Public Safety

The UK Government considers wind energy to be a 'safe' technology, requiring no special safety provisions. There is no recorded incident of a member of the public being injured by a wind turbine. There is no public access to the proposed wind turbines with the exception of occasional supervised visits. The nearest open public access is at least 100m from turbine 7.

The wind turbines are designed and manufactured to withstand weather conditions at least as extreme as those occurring in the United Kingdom, in terms of wind speed, turbulence and temperature. The wind turbines are equipped with safety systems which will automatically shut down the machine should a fault occur

Shadow flicker could arise from the passing of the moving shadow of the turbine rotor over a narrow opening such as the window of a nearby residence up to a maximum distance of 800m from the wind farm. Various conditions need to be met to create a shadow flicker effect. Shadow flicker may cause minor disturbance at three properties in the control of the applicant close to the extension area for a limited period each year, calculated to be less than 20 hours per year assuming worst case conditions.

## Conclusion

The proposed extension to Coldham Wind Farm is clearly in accord with the principals of sustainability and will provide significant environmental, social and economic benefits.

The environmental impact assessment process indicates that the proposed development forms an integral part of the existing operational wind farms at Coldham and Stags Holt. As such it will have a relatively low impact, both individual and cumulative, on the immediate and wider environment. As with any scheme of this nature, there will be a change to the landscape, but if Government and regional targets on renewable energy and energy from on-shore wind are to be met, it must be accepted that wind turbines have a place within the landscape and countryside and this is an accepted principle of national policy.

The wider environmental, social and economic benefits of renewable energy schemes, whatever their scale, are a material consideration which, according to Government advice, should be given significant weight in the decision making process. Support for the development of renewable energy sources in appropriate locations is advocated in national planning policy, energy policy and within the Development Plan.

On balance, weighing up all of the above factors, it is considered that the environmental, social and economic benefits of the proposed development outweigh its relatively low impact on the local environment. The proposal is in accordance with the spirit and provisions of the Development Plan and there are no material considerations of such weight that justify a refusal of the application.



Coldham Wind Farm

## Further Information

If you would like to find out more about the Extension to Coldham Wind Farm proposal, you can read the full Environmental Statement at Fenland District Council planning department or other venues where advertised. Alternatively copies of the Environmental Statement, can be purchased in paper for £150 while stocks last, or in CD version for £20 on request to West Coast Energy (as below).

The Non-Technical Summary is available free of charge, separately on request. Contact: Karen Elliott at West Coast Energy Ltd, The Long Barn, Nercwys Road, Mold, Flintshire CH7 4EW. Tel. 01352 757604 or email [info@westcoastenergy.co.uk](mailto:info@westcoastenergy.co.uk)



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