Ballyutoag Wind Farm

McIlwhans Hill, Ballyutoag Road, Co. Antrim

EIS Volume 3

Non-Technical Summary

November 2014

contents

tci renewables

Computer-rendered photomontage of the view from Divis Mountain - about four kilometres south of the Ballyutoag site

introduction

This non-technical summary (NTS) is Volume 3 of the Environmental Statement (ES) and has been prepared by TCI Renewables (TCIR) on behalf of Ballyutoag Wind Farm Ltd., to accompany its application to Planning NI for planning consent to construct five wind turbines, 2.4 kilometres north west of Belfast, County Antrim.

Site Address:

Ballyutoag Wind Farm
Land approximately 1 km north of 71 Ballyutoag Road,
Belfast, Co. Antrim,
BT14 8SS

This NTS provides a description of the Environmental Impact Assessment (EIA) and has been produced in accordance with the *Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2012*.

It contains an analysis of the environmental implications of the proposal to construct, operate and decommission the wind farm. All three volumes of the ES have been submitted to the Planning Service in Belfast where they may be examined by the public during normal working hours. Copies will also be made available for purchase and viewing - see Page 23 for details.

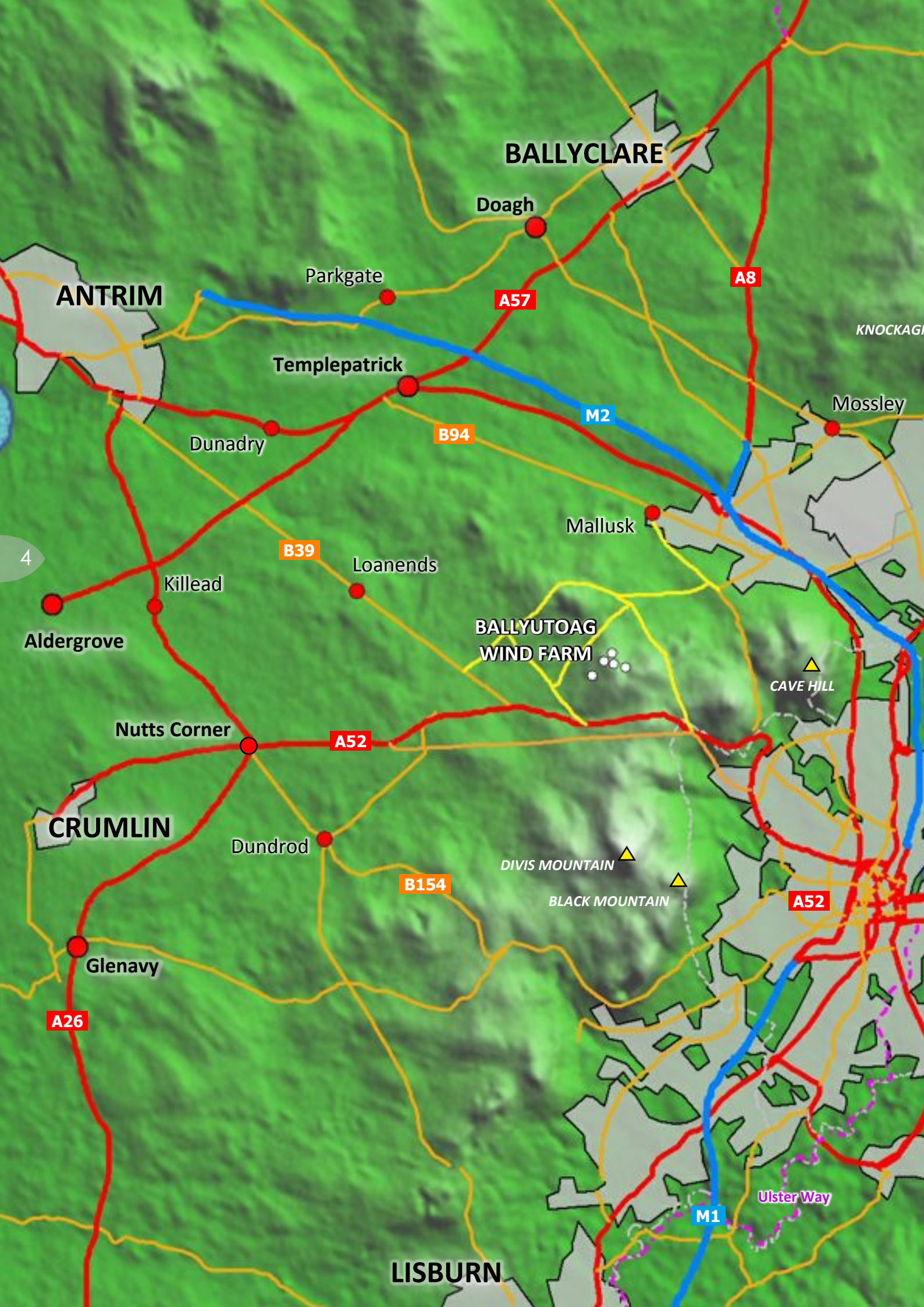
The EIA has been prepared by members of the TCIR in-house technical and development teams with input from external specialists. The NTS is accompanied by two other volumes (1 and 2) which together form the complete Environmental Statement:

- Volume 1: Environmental Statement
- Volume 2A: General Figures
- Volume 2B: Landscape and Visual Impact Assessment Figures
- Volume 2C: Technical Appendices

Printed copies of the non-technical summary and the environmental statement can be obtained from:

TCI Renewables
The Old Throne Hospital
244 Whitewell Road
Belfast BT36 7EN

A copy of the NTS can be downloaded free as a PDF file from the TCIR web site at www.tcirenewables.com. Printed copies of the NTS or the complete ES (including figures) can be purchased in print or CD format from TCI Renewables - see Page 23 for more details.


BALLYCLARE
Doagh
ANTRIM
Parkgate
A57
A8
KNOCKAGH
Templepatrick
M2
Mossley
B94
Dunadry
Mallusk
B39
Loanends
Killead
Aldergrove
BALLYUTOAG
WIND FARM
CAVE HILL
Nutts Corner
A52
CRUMLIN
Dundrod
DIVIS MOUNTAIN
B154
BLACK MOUNTAIN
A52
Glenavy
A26
Ulster Way
M1
LISBURN

the site

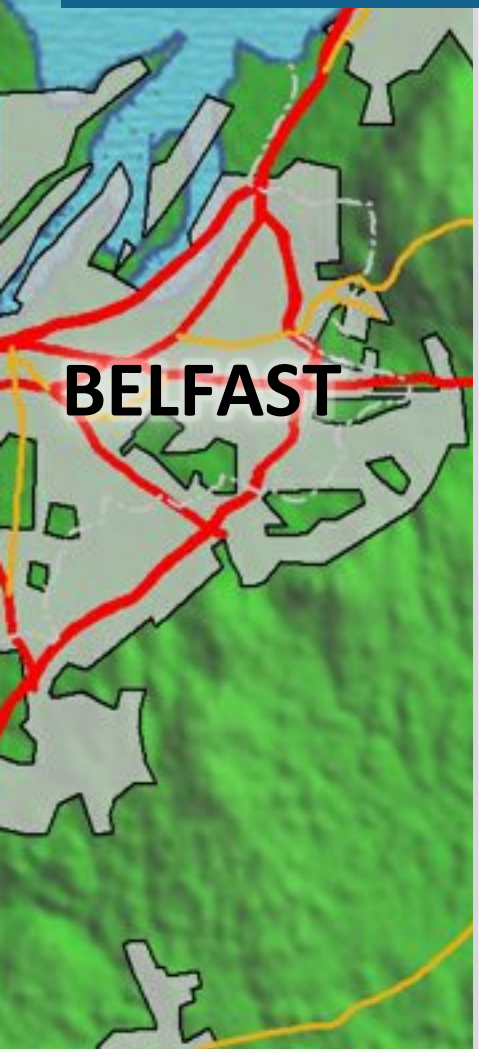
The proposed development site is located approximately 2.4 kilometres north west of Ligoniel, on the outskirts of Belfast, County Antrim. The site is on an open area of primarily rough grassland pasture, used for the grazing of livestock within the townland of Ballyutoag, on McIlwhans Hill. The closest settlements to the proposed turbine development are Ligoneil to the south east, Newtownabbey to the north east and Dundrod to the south west.

The site is located within the Divis Summits Landscape Character Area (LCA 111). The landscape is relatively open, with extensive areas of windswept moss and rough farmland. Valley slopes have a more farmed character, with straight, overgrown hedgerows, belts of mature trees and farmsteads. Many of the farmsteads are sheltered by stands of mature trees and reached by straight tracks, some of them raised on embankments.

The landscape has a rather irregular, patchy pattern with areas of scrub and wasteland often associated with abandoned mineral workings. There are several derelict farmsteads and areas of waterlogged or un-farmed land. The landscape of the Divis Summits is generally in poor condition, particularly on the summits and in areas where there has been a history of mineral extraction. There is much evidence of hedgerow removal. The character of the roads, which were originally fringed with hedgerows on the lower slopes of the plateau, has been eroded by a combination of neglect and ongoing minor road improvements, largely to accommodate the passage of mineral lorries. Much of the farmland is in a partially-abandoned condition and there is widespread fly-tipping.

Where possible, TCIR has sought to minimise the land-take required for the installation and operation of the development by utilizing existing access tracks and following field boundaries and land contours within the landscape.

the project



The proposed development consists of five wind turbines of up to 92.5 m in height, each generating up to 2.3 megawatts of electricity. Other infrastructure will include underground electric cabling, transformers, a permanent anemometer mast, extension of existing lane-ways and construction of new site access tracks and a temporary site storage compound. There will be new gates and road improvement works at the site entrance, a new substation and site control room, communication tower and other ancillary site works associated with a wind farm development.

The wind turbines will comprise three blades forming a rotor, attached to a nacelle containing a generator and other operating equipment and located at the top of a steel tower. The turbines will be fixed to the ground on concrete foundations which will incorporate the tower base and foundation. The switch gear for the turbines will be contained either within the bases of the towers or in adjacent external kiosks.

Subject to the granting of planning consent and turbine procurement it is anticipated that construction of the Ballyutoag Wind Farm will take between nine and twelve months. The turbines will generate electricity at between 400 volts & 690 volts. This will be stepped up to 33 kV using the proposed transformers. Underground and overhead cables will connect the wind turbines to the Northern Ireland Electricity (NIE) grid. NIE will be responsible for the planning application and design of the grid connection route. At the end of the wind farm's expected 25-year lifespan the turbines can be decommissioned and removed, with foundations broken to below ground level and the site restored. Underground electrical cables will be de-energised and removed from the site.

Operations and maintenance are the initial responsibility of the turbine supplier. After this warranty period has elapsed, a suitable company will be contracted to ensure the wind turbines are regularly maintained. The turbines will be monitored via remote internet computer links to maintain optimum efficiency.

All Northern Ireland wind farm planning applications are determined via the planning system, which is currently administered by Planning NI of the Department of the Environment (DoE). Northern Ireland wind farm applications are processed centrally by the Renewable Energy Team within the Strategic Projects and Design Division of Planning NI Headquarters, based in Causeway Exchange, Belfast. Planning NI has determined that the Ballyutoag Wind Farm application should be assessed in accordance with *The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2012* and that it must be accompanied by an Environmental Impact Assessment.

In assessing applications, Planning NI is guided by the relevant development plan for the area and by a raft of planning policy and guidance, such as the Regional Development Strategy for Northern Ireland 2035 (RDS - 2012) and the Strategic Energy Framework (SEF - 2010). The SEF outlines that Northern Ireland is committed to a legally binding renewable energy target where 40% of Northern Ireland's electricity consumption will be generated from renewable sources by 2020.

In reaching the planning decision on the application, Planning NI must consider the degree to which the proposed development is in compliance with the relevant Planning Policy Statements (PPS). In the case of wind farms, PPS 18: Renewable Energy, published in August 2009, sets out the DOE's overarching requirements for all renewable energy developments and outlines the factors that will be taken into consideration when reaching a planning determination. The proposed Ballyutoag Wind Farm has been designed in full policy compliance with this document and the associated Best Practice Guidance and Supplementary Planning Guidance (SPG). The SPG to PPS 18 was published by the department in August 2010 and contains a description of landscape value, landscape character and guidance on landscape and visual Impact assessment.

The requirements and recommendations outlined in each of these guiding documents have been considered in detail in the siting, design and assessment of the proposed Ballyutoag Wind Farm development.

the need for wind energy

The growth of the market for wind energy is being driven by a number of factors including energy supply and demand and the rising profile of environmental issues such as climate change. These factors have combined in many regions of the world to encourage political support for the industry's development and, in some countries, for targeted fiscal stimulus.

It is predicted that by 2030 world energy needs will be between 30% and 60% higher than current levels. The International Energy Agency (IEA) estimates that around 4,500 GW of new energy capacity needs to be installed before 2030, requiring investments of more than US$13 trillion (£8 trillion).

Just as energy demand continues to increase, supplies of the main fossil fuels used in power generation are becoming more expensive and more difficult to extract. Some of the major economies of the world are forced to rely on imported fuel at unpredictable costs, sometimes from regions of the world where conflict and political instability threaten the security of that supply.

According to figures released by BP in their statistical review of World Energy, energy consumption grew more sharply in 2012 than in any year since 1973. Global energy consumption rise by 5.6% and the demand for oil, coal and gas was stronger in 2010 than it had been in almost 40 years. This was accompanied by a rise in emissions of harmful greenhouse gases, which shot up more quickly than in the previous four decades.

Given Northern Ireland's location on the western periphery of Europe, with few indigenous fossil fuel resources, the country has a near 100% dependence on imports to meet energy needs. This dependency creates uncertainty in terms of security of supply and exposes the province to the volatility of world energy prices. In Northern Ireland, almost uniquely, there is cross-party political consensus that more renewable energy is needed. The Strategic Energy Framework 2010 has set energy generation targets of 40% from renewable sources by 2020. Renewable energy developments such as the Ballyutoag Wind Farm are vital and will make meaningful contributions towards achieving this goal.

Wind power is a cost-effective technology and a reliable non-polluting source of electricity. Wind power provides considerable opportunities which can benefit the environment and the economy. The Ballyutoag Wind Farm will play an important role in diversifying Northern Ireland's mix of electricity production, contributing to renewable energy targets at both local and national levels.

Computer-rendered photomontage of the view from Aughnabrack Road - just over one kilometer north of the turbines

community attitudes

Altahullion Wind Farm, Dungiven

Although a new wind farm will often generate public interest and debate, public opinions are generally positive. People typically want to know more about how the structures will look or how a wind farm will sound when it begins operation.

A major new poll carried out by the Department of Energy and Climate Change (DECC) shows overall support for renewables, including wind farms, has strengthened during 2012-13. Recent media reports attacking the impact of wind farms and other renewable energy projects appear to have had no discernable impact on public opinion. The survey revealed public support for renewable energy has increased over the past year. The survey of more than 2,000 people, completed in April 2013 found that public support for onshore wind power reached a 12-month high.

An Ipsos MORI poll, carried out for RenewableUK in April 2012 shows that around two-thirds (67%) of respondents are in favour of wind power in the UK. One in twelve (8%) are opposed, with only 3% suggesting that they are "strongly opposed." These figures indicate that while there is a small but vocal anti-wind contingent, the public majority supports harnessing the UK's abundant wind resources.

Information about the Ballyutoag Wind Farm has been provided to key stakeholders from public and private bodies for advice and comment, including government agencies, local councils, DoENI, NIEA, Planning NI and local community groups.

A public information day was held at Lylehill Young Farmers Club, on the Lylehill Road, Co Antrim on the afternoon and evening of 20th October 2014, in advance of the submission for planning consideration. The event provided an opportunity for local residents to gain information about and comment on the proposal. The event was advertised in the public notice sections of four papers - The Farming Life supplement of The Newsletter, The Farming Week, The Antrim Guardian and The Ballymena Guardian - all of which are read locally. Invitations to attend the event were sent to community groups, councillors, MLAs and Planning NI. Attendees included local residents, members of community groups, landowners and a number of people who were strongly in favour of wind energy development and its associated benefits.

So far, the response to the Ballyutoag Wind Farm proposal has been positive. We are confident that the level of support will grow as people learn more about the benefits the project will bring and its contribution towards our renewable energy targets of 40% by 2020.

For additional information, please contact TCI Renewables directly (Contact details on page 23).

community benefits

Wind power delivers zero-emission renewable energy and assists in securing and safeguarding our energy supply while helping to reduce our reliance on imported fossil fuels such as oil, coal and gas. These are the well-recognised benefits of wind energy, there are also however more tangible positives to be gained from the installation and operation of a successful wind energy project.

Approximately £14.6 million will be spent in delivering this wind farm, of which around 15%, or £2.19 million, will be spent locally on procuring services for development, financing, legal arrangements, delivery, construction works, materials, plant and auxiliary equipment. On-site works will provide employment for a period of up to 12 months. Local contractors are ideally placed to tender for this work, which offers opportunities to diversify business and/or build experience.

In recognition of the commitment by communities to embrace wind farm developments, the Northern Ireland wind industry strives to ensure that a proportion of the benefits delivered by these projects is realised within the communities that host them. As a responsible developer, Ballyutoag Wind Farm Ltd welcomes the opportunity to work closely with the community to deliver real and tangible benefits at a local level. Once the wind farm becomes operational, a dedicated community fund will be set up in line with the NIRIG Community Commitment Protocol (Jan 2013); whereby a minimum of £1,000 per megawatt installed will be paid annually, over the lifetime of the wind farm. The fund will be administered by an independent fund-management company in conjunction with the local community.

The development will also provide revenue generation for land owners and other financially-associated parties. Each turbine installed within the Antrim Borough Council Area is liable for the payment of rates. These are estimated to be worth up to £120,000 per annum to the local council, based on a rateable value of £17,000 per MW of energy generated. It is noted that this figure is likely to be a minimum as rateable values have been under review for some time and are likely to increase in advance of the development being constructed.

The operation of the wind farm further presents an educational opportunity for schools, community groups and the general public in raising awareness of the value of local energy generation, farming diversification, energy conservation, sustainability and even tourism opportunities, should the development prove to be a visitor attraction.

The Ballyutoag wind farm will have a positive socio-economic impact on the area, boosting the local economy, particularly during the construction phase, and generating a significant, positive impact via community development.

strategic benefits

Based on RenewableUK figures for average UK household electricity consumption of 4,229 per kilowatt-hour (kWh), the Ballyutoag Wind Farm is projected to provide the equivalent annual electricity needs for over 8,100 homes (see footnote).

Electricity generated by the proposed development will feed into the national grid and displace conventional forms of electricity generation. Using DECC's carbon saving figure of 430g/kWh (grammes per kilowatt-hour) we can predict the volume of carbon dioxide offset through the wind energy generated by the proposed Ballyutoag Wind Farm. The development is projected to reduce annual equivalent carbon dioxide emissions of approximately 14,800 tonnes (see footnote).

Onshore wind is already competitive in terms of cost when compared with coal-fired energy generation, and as fuel prices continue to rise and turbine costs begin to fall, that competitive position will only improve. Currently, wind energy generation costs, at £1,300-£1,600/kW (see footnote), are more expensive when compared with gas, at £650/kW. However a volatile wholesale market and unstable supply makes for an uncertain future for gas-generated energy.

In a report on the Electricity Market Reform published in May 2013, the Committee on Climate Change presented an analysis which demonstrated that there are significant economic benefits from investing in a portfolio of low-carbon technologies through the 2020s rather than investing in gas-fired generation. The report found that such investment could save consumers £25-45 billion, rising to £100 billion with higher gas and carbon prices. The committee has urged the UK Government to make commitments that would support investment in a portfolio of low-carbon technologies.

DECC highlights the fact that the wholesale cost of energy, which is largely determined by international fossil fuel prices, is by far the biggest part of all fuel bills, accounting for nearly half (47%) of what consumers have to pay. At least 60% of the increase in household energy bills between 2010 and 2012 was due to rising wholesale energy prices. In contrast, the cost of energy and climate change policies, including energy saving measures and encouraging investment in renewables, currently accounts for just 9% of bills. According to the Department of Energy and Climate Change annual domestic energy bills were £64 lower in 2013 than they would have been without green policies. The study also demonstrates that by 2020, as a result of green measures, annual domestic bills will be £166 lower than the do-nothing scenario.

In addition to these over-arching environmental benefits there will be specific direct benefits to the local economy, including:

- Jobs during the construction and operational phases.
- The purchase of local construction materials and the hire of plant and equipment.
- The potential for local maintenance contracts.
- Potential diversification opportunities for local businesses
- Revenue for land owners and businesses financially associated with the wind farm
- The contribution to local government revenue via business rates.
- Additional benefits to other areas of the local economy (hotels, retailers and other businesses) arising from the temporary concentration of labour resources.

According to DECC, during the 2011-12 financial year £180 million was invested and 767 jobs were created by the renewables industry and related professions within Northern Ireland. One of the largest forms of local benefit relates to the awarding of civil engineering contracts. Local contractors in County Antrim are well placed to tender for this work, which typically accounts for up to 15% (£2.9 million) of the overall development costs.

Guidelines to DEFRA's GHG conversion factors for company reporting, DEFRA 2007. www.defra.gov.uk/environment/business/envrp/pfd/conversion-factors.pdf. Renewable UK;

Wind Energy Generation Costs http://windcrop.co.uk/wp-content/uploads/2012/12/Wind-Energy-Generation-Costs.pdf

The most recent statistics from the Department of Energy and Climate Change show that annual UK average domestic household consumption is 4,229kWh. DECC's carbon saving figure of 430g/kWh. Carbon reduction is calculated by multiplying the installed wind energy capacity in megawatts by the average (onshore + offshore) load factor as a fractional percentage of 1 (e.g. 0.2782), multiplied by the number of hours in the year (8760), multiplied by the number of grammes of CO2 saved per kilowatt hour, divided by 1000 (to align the units, as grammes of CO2 is expressed in kWh). So for a generic 2MW turbine: 2 x 0.2782 x 8760 x 430 / 1,000 = 2,096 tonnes of CO2 per year, assuming an average load factor (onshore + offshore) of 27.82%.

See more on the Renewable UK website

www.renewableuk.com/en/renewable-energy/wind-energy/uk-wind-energy-database/figures-explained.cfm

The design of the proposed Ballyutoag wind farm has been undertaken with full knowledge of the habitats and species present at the site. Development constraints were applied to avoid areas of greatest conservation value and where construction works could result in adverse impacts to the environment. Ecology studies have been led by Clive Mellon of Allen and Mellon Environmental Ltd., and have been on-going at the site since April 2012. These involved over 60 visits to the site covering a range of ecological survey work including habitat and bat surveys, a breeding and non-breeding bird survey and vantage-point watches in all seasons. Clive Mellon is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and an experienced field naturalist and ornithologist with over 25 years of experience in undertaking structured bird surveys.

Flora and Fauna

Habitat mapping and assessment was conducted over the course of the spring and summer of 2013. Habitats across the proposed development area were identified using JNCC Phase 1 classification. Field workers recorded all priority habitats and species. The proposed wind farm has been designed to avoid habitat areas of ecological importance or conservation value.

The survey area is dominated by grassland habitats, with a core of degraded wet heath and acid grassland mosaic. Many of the grassland areas on the lower slopes have been agriculturally improved, although there are several areas of better quality grassland. No vegetation consistent with blanket-bog habitat was identified at the site. Habitat at the higher reaches of the site was classified as wet heath/acid grassland mosaic, degraded due to prolonged over-grazing. The survey area is both bounded and bisected by several kilometres of poor quality, defunct hawthorn hedges with occasional small ash trees.

The proposed mitigation measures, and the preparation of a detailed habitat management and enhancement plan in advance of construction, will further minimise potential for impacts and assist in the compensation for habitat lost under the footprint of the development.

Birds

Bird survey work was undertaken over a full year between April 2013 and March 2014 in accordance with NIEA: NH requirements. Coverage included vantage-point observations (both summer and winter) and a wider search for nesting raptors (particularly peregrines) within two kilometres of the proposed development lands.

Several species of high sensitivity were recorded, but none were breeding within the site or buffer zone. A pair of curlew held territory over a kilometre to the south west of the site. Up to two peregrine falcons were present throughout the year, but mostly in winter when a sub-adult female was resident at Sheepheads Quarry, to the east of the site. An adult male was also present and although the two birds occasionally interacted, no nesting attempt was made. Eighteen peregrine flights were recorded over the year. A single merlin flight was recorded and a woodcock was present in the eastern buffer zone in November and December 2013. This area also supported numbers of snipe in winter, peaking at 53 in February 2014. Two jack snipe were also recorded here. Small groups of golden plover were encountered on passage and through the winter a small flock roosted in a field in the eastern buffer zone, with a maximum of 76 recorded. Meadow pipits and skylarks were the most numerous breeding birds (27 and 26 pairs respectively).The only other red-listed breeding species was grey wagtail, with one territory in the northern buffer zone along Aughnabrack Road. The collision risk for peregrine falcon is low and for curlew very low, since only five curlew flights were recorded within the survey area. Although golden plover flights were recorded, a number were the result of birds being disturbed from roosting by the observers.

It is recommended that an ecologist is present during wind farm construction to ensure that works avoid disturbance to nesting birds and aggregations of non-breeding birds. Otherwise general mitigation measures will significantly reduce any potential for residual impacts on both breeding and non-breeding birds. A standard programme of ornithological monitoring both during and post – construction is also recommended.

Bats

A full programme of bat survey work was undertaken at the site between May and October 2013. This involved six activity transect surveys, including one pre-dawn survey and extensive use of static monitoring devices, employed for a total of 81 nights across the site, together building up a comprehensive picture of bat activity across all seasons.

Activity at the site was generally restricted to the landholding boundary hedges and was very low over the open moorland areas. Bat activity was extremely unpredictable, appearing to depend significantly on weather conditions, in particular prevailing wind speed and direction. On certain nights bat activity could be relatively high along some hedges, but be preceded and followed by long periods of inactivity. No potentially suitable bat roosts were identified within the site, Potential roost sites outside the survey area showed no evidence of roosting bats. A minimum of five species of bats were recorded including four passes by the rare Nathusius' pipistrelle *Pipistrellus nathusii*. Common pipistrelle *Pipistrellus pipistrellus* was the most frequently recorded species.

The risk of adverse impact to bat populations from this proposal is assessed as very low. No roost sites will be disturbed, loss of foraging habitat and displacement of commuting or migrating bats will be negligible. Risk of collision or barotrauma (injury caused by pressure changes) is low and the magnitude or significance of this is likely to be very low. Mitigation work will enhance foraging areas away from turbine locations and a programme of post-construction monitoring is recommended.

Rigged Hill Wind Farm, Limavady

Landscape & visual assessment

For many people a wind farm is a positive sight, representing function and sustainable energy in an attractive modern form; a complementary addition to the landscape and many views. However, wind turbines are large, visible structures and detailed consideration of their impact on the receiving landscape is a necessary inclusion in any comprehensive assessment. In most cases, the visual impact of a wind farm is a subjective response to its shape and form within the context of the landscape. Wind farm visual and landscape impacts are therefore not necessarily negative.

The landscape and visual impact assessments are separate but linked procedures. Landscape impacts describe changes in the physical character of the environment and how this is experienced. Visual impacts relate to the actual views and visual effects of the turbines when they are in place. Belfast based company, RPS was commissioned in September 2014 to complete a landscape and visual impact assessment (LVIA) for the proposed Ballyutoag Wind Farm. This was completed by Stuart Anderson, landscape architect and Raymond Holbeach BSc, MLA, MLI, a chartered landscape architect and regional director of RPS with over 20 years' experience including multiple LVIAs for wind farm projects in Northern Ireland.

To establish a thorough understanding of what the turbines will look like when built, a series of ZTV (Zones of Theoretical Visibility) maps, wire frames and photomontage illustrations have been produced to simulate views from selected locations. The ZTV maps are first used to identify locations where the wind farm may theoretically be visible. Then, using turbine geometry and digital terrain data, a wire frame model of the surrounding terrain and the wind turbine is generated using a standard proprietary software package. Finally, the wire frame and a rendered model of the turbine is combined with a technically-verified baseline photograph, taken from each location and looking towards the wind farm, to produce a representative photomontage of what a viewer might see of the development from that particular vantage point. All the maps and images are reproduced to scale and published as part of the LVIA in Volume 2B of the Environmental Statement.

Landscape Character Assessment

The starting point for landscape and visual assessment is to gain a detailed appreciation of the existing landscape with reference to the PPS18, Supplementary Planning Guidance, published by the Northern Ireland Environment Agency (NIEA). The proposed Ballyutoag Wind Farm will be located in the north central portion of LCA 111: Divis Summits. According to the SPG, LCA 111 has a relatively open landscape with extensive areas of windswept, often waterlogged, moss and rough farmland on the plateau top. Valley slopes have a more farmed character, with straight, overgrown hedgerows and belts of mature trees. Farmsteads are often sheltered by trees and reached by straight tracks, sometimes embanked. The landscape exhibits evidence of hedgerow removal, much abandoned farmland and widespread fly-tipping. There are a number of disused hard rock quarries in the lands adjacent and more distant to the site. Radio masts are situated on the highest summits and are prominent in views from surrounding areas, as are the transmission pylons and lines running adjacent to the site and crossing the ridge between Divis and Cave Hill. As a result, the landscape in parts of this LCA is in poor condition.

Because of their iconic character.The Belfast Hills, which this form the highest point within the LCA, are the most sensitive of all the upland and escarpment landscapes around the city. The hills influence the landscape character and setting of almost all parts of the city, as well as Lisburn, Newtownabbey and Belfast Lough. The LCA has been assigned a rating of High Overall sensitivity to wind farm development. The proposed Ballyutoag wind farm however, will be located in an area considered to be of much poorer landscape condition, with little significant visibility from the valley of the city and lough. When constructed, a number of approved single turbines will characterise the immediate receiving landscape as one of wind energy generation.

Visual Impact Assessment

A total of 30 Landscape and Visual viewpoints have been prepared for assessment along with an additional selection of 25 heritage and archaeology viewpoints. The majority of the selected viewpoints illustrate no significant visual effects. Four viewpoints have been assessed as having 'moderate to major significant visual impact' on their views: Aughnabrack Road, Ballyutoag Road, Blackrock Estate (all within 2.5 km of the site) and Divis Mountain footpath. Although more notable landscape and visual impacts will occur at close proximity to the proposed wind farm, the assessment establishes that with distance, there is a greatly decreased level of landscape and visual impact especially on the downhill approaches to Belfast. Indeed, visibility of the proposed development from Belfast city centre will be largely nil.

When the guidance set out in the SPG that accompanies PPS 18 is considered, there are no significant landscape or visual impacts are predicted and the proposed Ballyutoag Wind Farm is broadly consistent with the guidance for the location of wind farms in the Divis Summits LCA 111.

A detailed cumulative visual impact assessment has determined that the proposed wind farm can be built without undue negative or lasting impact to the landscape and visual amenities of the area. Whether the predicted changes are seen as negative or positive will depend on the perceptions and opinions of the individual experiencing the view. The broad landscape character area and local visual resource are judged to have capacity to absorb a wind farm development of this scale.

air and climate

Wind energy is a non-polluting generator of electricity and therefore has no direct negative impacts on the composition of the atmosphere. In fact, by displacing energy which would otherwise be generated through the burning of fossil fuels, wind farms can make a significant positive contribution to lowering harmful emissions to the atmosphere.

Fossil-fueled power plants emit many pollutants, including sulphur dioxide, which causes acid rain; nitrogen oxides, which contribute to smog; carbon dioxide, the primary contributor to global warming; and fine particles of soot and mercury and other contaminants which can enter waterways as well as pollute the air. Wind energy does not produce any of these emissions.

Wind energy is often less expensive than other control measures in achieving emission reductions from traditional generating, especially in urban areas, and can therefore help reduce the costs for pollution control paid by government, and ultimately, taxpayers.

Although the exact turbine model has not been selected yet, preliminary models show that the proposed Ballyutoag Wind Farm could result in the annual production of approximately 11.5 MW of energy, resulting in a carbon saving of around 14,800 tonnes of CO_2 for each year it operates. Over the 25-year life of the wind farm it would displace the production of approximately 370,275 tonnes of CO_2 at current comparisons.

As no fumes, pollutants or greenhouse gas emissions will be output by the operational wind farm, the Ballyutoag proposal will not result in any adverse impacts to local or regional air quality. The overall impact of the wind farm, in relation to national and international air quality and climate concerns, is therefore both positive and significant.

See more on the Renewable UK website

www.renewableuk.com/en/renewable-energy/wind-energy/uk-wind-energy-database/figures-explained.cfm

Owenreagh Hill Wind Farm, Strabane

archaeology and cultural heritage

John Cronin & Associates were commissioned by TCI Renewables to conduct detailed desk and field studies to assess any impact the proposed wind farm development might have on the cultural heritage resource.

A site inspection was undertaken to identify previously unknown or unrecorded upstanding archaeological sites. The landholding where the development is proposed contains a number of features of potential archaeological significance, including one SMR site approximately 550 m from the nearest turbine location.

The landholding within which the wind farm is proposed is considered to be of moderate to high archaeological potential. A number of features with archaeological potential have been identified. Though undesignated, these features suggest there is potential for further archaeology to be identified here. These elements of potential archaeological significance have been avoided in the design of the proposed development and will not be directly impacted as a result of the necessary construction works.

There are a moderate number of SMR sites within the wider environs of the site and archaeological material has been found during archaeological excavations in this wider area. There are a total of 14 designated cultural heritage sites within 1km of the proposed development site. Each have been assessed and are deemed to have a neutral or neutral/slight significance of effect.

The potential impact of the proposed development on the setting of listed buildings has been assessed and no significant or adverse impacts have been identified. None of these sites will be directly impacted by the proposed wind farm and any identified impacts are of a temporary visual nature only, associated with the lifetime of the project.

No direct physical archaeological impacts of a definite nature have been identified to known sites or monuments in the region and the outlined mitigation measures will remove potential for significant adverse impacts on known or previously unknown archaeological remains.

It is recommended that a programme of licensed archaeological testing/evaluation or monitoring takes place at the site following the approval of planning permission and in advance of the construction works. This will determine if any sub-surface archaeological features exist, and if present, they can be fully excavated or preserved in-situ as appropriate (in agreement with the NIEA:HMU).

In conclusion, the archaeological settings analysis has determined that the Ballyutoag turbines will not result in significant impacts on archaeological heritage. All potential visual and settings impacts are reversible with the decommissioning of the turbines at the end of their operational life (around 25 years).

Lylehill

The assessment of soils, existing ground conditions, hydrology, geology and hydrogeology was undertaken by McCloy Consulting, an independent environmental consultancy specialising in the water environment, with expertise in hydrological and hydro-geological assessments, Sustainable Drainage Systems (SuDS), drainage assessment, mapping and management, watercourse modelling, and flood-risk assessment.

Hydrology and Drainage

A desk-top study and detailed site-walkover survey were conducted. Works included consideration of ground stability issues, peat depths, ecology, local hydrology and underlying geology. NIEA, the Met Office, Water Service of Northern Ireland and the GSNI were all consulted.

The proposed wind farm development lands are located approximately 1 km north of 71 Ballyutoag Road, County Antrim, on the outskirts of Belfast. The site lies on Ballyutoag Hill, which has a peak of approximately 340 m. Topography within the land-holding boundary is dictated by the peaks of the Ballyutoag and McIlwhan Hills near the centre of the site. The western region of the site (including T5) generally falls in a western direction towards the Clady River and the northern region of the site (including T1, T2, T3 and T4) generally falls in a north eastern direction. Average gradients across the site are low to moderate, with slopes of 0-10° encountered along the route of the proposed access track and turbine and infrastructure locations. The site is a marginal upland area of semi-improved grassland with open degraded heath on upper elevations and improved farmland on the lower slopes. The development area is underlain by bedrock of the Antrim Lava Group.

The development area falls within the Neagh Bann River Basin District and is situated within the Lower Neagh Bann Catchment Stakeholder Area within the Sixmilewater Local Management Area (LMA). The site is drained by three primary watercourse catchments: Flush River Tributary (Ballymartin Water Catchment), Clady Water Tributary (Clady Water Catchment) and Back Burn (Clady Water Catchment).

A full assessment of water quality, and hydrological processes across the development lands was carried out. It identified aspects of the design, construction and operation of the wind farm with potential for adverse impacts on the receiving geological and water environment. Site-specific impact avoidance and mitigation measures are proposed, including:

- Direct impact avoidance, using baseline constraints mapping in the design stage and design of individual site elements to minimise impact on the geological and water environment.
- Implementation of a robust surface water management plan comprising the use of SuDS (drainage) management.
- Comprehensive pollution prevention procedures during the construction phase.

The SuDS drainage methodology designed by McCloy Consulting has been used at many wind farms throughout Northern Ireland and has been extremely successful in the prevention of silt migration and pollution of watercourses during wind farm construction, operation and decommissioning. The success of mitigation will be checked through physico-chemical and biological monitoring. Implementation of the mitigation proposed will eliminate or reduce the potential significance of any impacts to slight or neutral. Therefore, in terms of its potential impact on the receiving geological, hydrological and hydrogeological environments, the Ballyutoag Wind Farm is considered acceptable as proposed.

Peat Slide Risk Assessment

Attention to ground stability is essential where construction will take place on peat substrates. Independent geo-technical experts Whiteford Geoservices Ltd. were commissioned to map peat depth and structure, assess the potential for peat-slide hazard and risk and advise in relation to ground stability within the development footprint. Their leading consultant, John Whiteford, has more than 17 years of experience in the field of earth sciences, geo-technical engineering and management.

Investigations were carried out in accordance with best practice methodology defined by the Scottish Executive guidance - Peat Slide Hazard and Risk Assessment - Best Practice Guide for Proposed Electricity Generation Developments of December 2006.

Detailed surveys were carried out between May and September 2014, with peat-depth probing at each turbine base, hard-standing area, met-mast location and along the routes of planned access tracks and site entrances. The average soil peat depth encountered was 0.18 m. Peat depth was within the range of 0.0 m and 0.9 m within the development footprint of the site. The development area is characterised by shallow peat and low slope gradients.

No substantial hazards were identified within the proposed development area and the project can proceed, with adherence to the recommended mitigation measures allowing a minimum level of risk to be attained. The detailed report concludes that all proposed turbines, access tracks and associated infrastructure pose insignificant risk of peat slip or ground failure during construction and operation.

Dunmore Wind Farm, Limavady - from the air

sound

Wind turbines generate sound as they rotate - caused mainly by the turbine blades passing through the air and, to a lesser extent, the working of the generator inside the turbine. Modern wind turbines are designed to minimise sound emissions and the nacelle which houses the mechanical equipment at the top of the turbine tower is sound insulated. Modern turbines are so quiet it is possible to stand at the base of a turbine and carry out a normal conversation.

TCI Renewables commissioned the Hayes Mc Kenzie Partnership Ltd. to complete a cumulative noise assessment considering the sound levels from the proposed Ballyutoag wind farm in conjunction with the nearby consented single turbines. The potential effects have been assessed in accordance with the best practice methodology. Background noise data at the nearest receptors have been collected and analysed in accordance with current accepted practice, and noise limits have been derived, in accordance with the guidance document, ETSU-R-97 *Assessment and Rating of Noise from Wind Farms*, as required by PPS18, Renewable Energy.

Sound generated by the operation of the proposed Ballyutoag Wind Turbines, considered both in isolation and in combination with sound from the operation of existing and approved single turbines in this locality will comply with the required ETSU-R-97 noise limits. Compliance with these limits can be achieved and controlled by the council through a suitable planning condition based on the ETSU-R-97 limits described.

No significant noise from construction and decommissioning activities is predicted to be received at the nearest receptors due to the distances involved and the influence of local topography. Significant adverse noise impacts are not anticipated to result from the proposed development.

shadow flicker

Shadow flicker occurs when a particular combination of weather conditions arise at specific locations at particular times of the day and year - usually when the sun is low in a clear sky and shines through the rotating blades, casting a moving shadow on a nearby building or location. When it passes across a window, doorway or narrow space the shadow from each blade causes the light to appear to flick on and off. This change in light intensity can be perceived as an adverse impact by residents of very close-by properties. By computing data on the location, latitude and dimensions of the turbines and nearby properties - known as receptors in the analysis - the WindFarm software programme can predict a worst-case-scenario of the potential extent and duration of potential shadow flicker effects from a proposed wind farm development.

The PPS 18 Planning Policy Best Practice Guidance states that "P*roblems caused by shadow flicker are rare. At distances greater than 10 rotor diameters from a turbine, the potential for Shadow flicker is very low*". The turbines at Ballyutoag will have blade diameters of 71 m, thus the distance within which potentially adverse shadow flicker impacts may be experienced at a residence is 710 m. There are no properties within this distance to the proposed Ballyutoag turbines.

Detailed assessment has shown that no significant singular or cumulative adverse impacts are anticipated to result from from the operation of the proposed Ballyutoag wind farm. It is not considered that shadow flicker will present any problems of annoyance or nuisance to the inhabitants of nearby residences.

With regard to any potential flicker effect, the UK Updated Shadow Flicker Evidence Base, prepared by Parsons Brinkerhoff on behalf of the Department of Energy and Climate Change, concludes that *"the frequency of the flickering caused by wind turbine rotation is such that it should not cause a significant risk to health"*.

In the unlikely event that residents experience shadow flicker from the Ballyutoag turbines, the developer will implement appropriate mitigation measures ,in agreement with householders, to remove any such adverse impacts.

tourism

An individual's reaction to views of wind turbines is a subjective matter. In any area where tourism plays a role in the economy a wind farm application can raise questions about potential impacts on tourism. Independent UK studies have consistently shown that fears about the negative impact of wind farms on tourism are unfounded. Surveys addressing this issue in the UK between 1992 and 2013 show that visitors are unlikely to be put off by the presence of a wind farm. While some people may be concerned, fears are generally eased when the development begins operation. In general, public reaction to these developments is tempered by knowledge of the value of wind energy in reducing emissions of greenhouse gases, improving diversity and security of energy supply.

In August 2011, the Northern Ireland Tourist Board published a paper exploring visitor attitudes towards Wind Farms. Responses from tourists, both domestic and from the Republic of Ireland (RoI), illustrated that wind farms do not have a negative impact on tourism. The survey demonstrated that 52% of domestic tourists would be happy to visit an area which has wind farms, while 40% of RoI tourists also agree with this statement. It also found that only 5% of domestic tourists and 3% of RoI tourists to Northern Ireland would avoid returning to an area that has wind farms.

The Northern Ireland Tourist Board concluded that the impact of wind farm development on tourism may not be as severe as previously thought and tourists, on the whole, seem generally positive or neutral to the prospect of wind farm development. To date, there is no published evidence to indicate wind farms have a negative effect on tourism. The Altahullion wind farm, north of Dungiven, features a dedicated tourist turbine, signposted from the main A6 Dungiven-to-Derry road by the Northern Ireland Tourist Board (NITB) using brown tourism signs.

The effects on tourism from the Ballyutoag Wind Farm are difficult to quantify. However, it is considered that the five turbines will not make a significant difference to tourist attitudes and may even attract visitors to the area.

transport & haulage

Because of their unusual dimensions and weight, the turbine components (blades, turbine hub and tower sections) are classified as abnormal loads by the road service, Transport NI. It is intended that the Ballyutoag turbine components will be delivered to the Belfast port and transported along public roads to the site. Detailed road surveys and liaison with the turbine component hauliers have confirmed the details of a suitable transport route from port to site and it has been agreed as acceptable by Transport NI.

A relatively small number of oversized loads will be needed to transport the blades, towers and heavy/outsize turbine components. Locations on the public roads have already been identified where minor, temporary road works will be implemented to facilitate safe passage. Other construction materials, including stone and concrete, will be sourced where possible from the local area and delivered in standard stone lorries and cement trucks. These vehicles will take a more circuitous route to and from the site and will not normally require special traffic provisions on public roads.

The Environmental Statement provides a detailed description of the delivery routes, outlines the traffic-management procedures for local roads and details the breakdown and schedule of the number and size of vehicles associated with the construction, operation and decommissioning phases of the development. The haulage route and traffic assessment report concluded that the local transport network will be able to absorb these additional traffic movements.

Transportation will be undertaken in association with traffic-management procedures, agreed with Transport NI in advance of construction, to ensure maximum safety and minimise potential impact on local residents and road users.

As with any large structure, wind turbines have the potential to interfere with electromagnetic signals, such as television, civil and military aviation activities, communication, microwave links and radar. The turbine construction phase must include provisions for safeguarding existing ground based telecommunication infrastructure.

TCIR has consulted extensively with public and private telecommunication operators to establish the electromagnetic environment within and around the Ballyutoag development. Each turbine location has been carefully selected to avoid potential interference with existing and future planned radio broadcast communication equipment. Details of the currently proposed Ballyutoag Wind Farm have been communicated to and agreed with telecommunication operators, such that adverse impacts are not anticipated.

In the unlikely event that impact to residential television reception occurs once the turbines begin operating, the wind farm owner will put remediation measures in place to restore normal service. Remediation measures may include the restoration (or even improvement) of TV reception by the redirection / replacement of domestic TV aerials or installation of alternate service provision facilities.

Aviation

Belfast International Airport, George Best Belfast City Airport, City of Derry Airport, Enniskillen Airport and the Civil Aviation Authority were consulted with details of the wind farm proposal. The operator for each airport has confirmed the proposed Ballyutoag development will pose no risk to airport management, air traffic safety or control, following the implementation of agreed mitigation measures prior to operation.

safety assessment

All statutory health and safety requirements and planning conditions will be adhered to during the construction, operation and decommissioning phases of the project. Fencing will be erected at potentially hazardous zones within the wind farm construction area, machinery stored on site will be within an enclosed compound. All unattended machinery will be immobilised to prevent unauthorised use. All potentially hazardous materials will be managed in accordance with The Environmental Protection (Duty of Care) Regulations 1991. Access into turbine towers will be locked at all times, except when in use by authorised operation or maintenance personnel. Temporary construction safety signs will be erected in the most appropriate locations.

The lands on which the wind turbines will be sited are privately owned and unauthorised access to the wind farm site will not be permitted. Public access to the site will be strictly regulated. All site users, including staff, visitors, working personnel and the landowner, will be inducted with the necessary health and safety provisions.

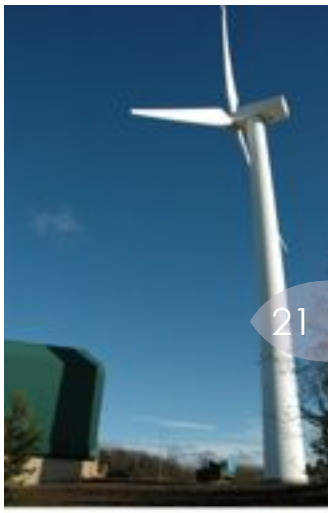
The wind turbines will be equipped to operate automatically. The turbines will be installed with sensors to detect potential operation or generation issues including faults and voltage irregularities. Should a significant irregularity or technical fault be diagnosed, the individual turbine or wind farm will be halted until the issue can be addressed and resolved.

The construction, operation and decommissioning of the development will be completed in accordance with all relevant health and safety legislation and guidelines and by regulating public access.

Decommissioning

Wind turbines have an operational life time of approximately 25 years. At the end of that period, the site will be reinstated in accordance with a site decommissioning and reinstatement method statement which will be prepared for agreement with the Planning Service at least six months prior to the agreed date of wind farm decommissioning.

Decommissioning works will include the de-energising and removal of turbines and all electrical cabling at the site. The wind turbines will be dismantled. Turbine blades and towers will be disassembled and removed from the site. Where practical, hard surfaces will be broken down and rehabilitated. Hard-standing areas and any tracks that are to not to be utilised by the landowner, will be covered by topsoil and re-seeded to encourage the re-growth of local vegetation. Underground electrical cables will be de-energised and removed from the site. All works will be carried out in accordance with an agreed decommissioning plan.



conclusion

This non-technical summary has outlined the findings of the Environmental Impact Assessment for the proposed five-turbine, 11.5MW, Ballyutoag Wind Farm development. Further details are set out in Volumes 1 and 2 of the Environmental Statement, which accompanies the planning application for this development, along with all supplementary technical appendices.

The Ballyutoag landholding was selected for its reliable wind resource, accessibility, suitable topography and land area, compliance with noise requirements and distances from dwellings. A rational and rigorous assessment of the strengths, weaknesses and visual impacts of various alternative options has produced a design which is in full compliance with environmental planning policies and requirements and which makes optimal use of the available lands and wind energy resource, while minimizing potential for adverse environmental impacts.

The Environmental Statement has demonstrated that lasting social, economic and environmental benefits will arise from this development. Visual and landscape impacts of the Ballyutoag Wind Farm will be non-permanent, almost entirely reversible and associated with the medium-term, 25-year projected life span of the proposal. Wind farms are viewed by many, as positive additions to the landscape. Potential adverse effects of the wind farm can be managed through the application of appropriate mitigation measures, best practice management, appropriate training and construction techniques.

Comprehensive assessments of potential environmental impacts, carried out by respected experts in their fields, have concluded that the benefits to the environment and the local community of the Ballyutoag Wind Farm will far out-weigh any potential perceived temporary changes to views and landscape character. A wind farm of this size offers tangible local financial contributions and provides much-needed rural diversification. It reduces our reliance on imported fossil fuels, increases the security of our energy supply and helps towards the meeting of renewable obligations.

Permitting this development is therefore an imperative. The Ballyutoag Wind Farm presents an opportunity to generate energy from an infinitely renewable source, in a non-polluting manner within a suitable landscape, generating financial and environmental gains which are considered to be of over-riding public interest in the current economic climate.

The development has been designed in full compliance with planning and environmental requirements, as primarily laid out in Planning Policy Statement (PPS) 18: Renewable Energy, as well as UK and EU Energy policies and guidance. In both planning and environmental terms, the Ballyutoag Wind Farm is judged to be acceptable development at this location.

further information

The Environmental Statement can be purchased from the TCI Renewables office and the Library in Limavady:

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T: + 44 28 9037 1122

Templepatrick Post Office
Unit 6, The Milestone Shopping Centre
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Tel: 02894 433 642

Purchase prices for the Environmental Statement:

	Price Excl. P&P	Price Inc. P&P
Fully bound paper copy of Volumes 1, 2 and 3	£150.00	£160.00
Paper copy of Volume 1 (Environmental Statement)	£60.00	£70.00
Paper copy of Volume 2 (Appendices A & B A3 Full Colour)	£78.00	£88.00
Non-Technical Summary - Volume 3	£6.40	£7.00
Electronic copies - Full Environmental Statement on CD	£5.00	£6.00

The full Environmental Statement can also be inspected free of charge at:

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Computer-generated image of the view looking west from the Cave Hill path about four kilometres from the site

tci renewables

IntelligentSolutions

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