# Solwaybank Wind Farm Exhibition

30<sup>th</sup> June - 2<sup>nd</sup> July 2011







- RES is one of the world's leading independent renewable energy developers with operations across Europe, North America and Asia-Pacific. RES grew out of Sir Robert McAlpine, a British family-owned firm with over 130 years experience in construction and engineering with a proud history in Scotland stretching from the Glenfinnan Viaduct to Hampden Park.
- RES has been at the forefront of wind energy development since the 1970s and has developed and/or built 100 wind farms (or 5.3 Gigawatts (MW) of wind capacity) around the world, including 10% of the UK's wind energy. This includes seven wind farms in Scotland with a total generation capacity of more than 120 MW. In 2010, RES commenced construction of Hill of Towie Wind Farm in Moray and Kelburn Wind Farm in North Ayrshire.
- RES has offices across the UK and worldwide. Regional development in Scotland is managed from Glasgow by a growing team of over 50 staff.
- RES values its community role and active engagement with local residents is an integral part of each RES development.



- The UK is currently facing two major challenges in its energy policy. One being the need to tackle climate change by reducing greenhouse gas emissions and the second being to ensure a secure, diverse and clean energy supply as the country moved towards an increasing dependence on imported energy (DTI, 2007);
- There is clear evidence that the global climate is changing as a result of human activities, primarily though the burning of fossil fuels and land change use (IPCC, 2007), where global atmospheric concentrations of carbon dioxide (CO2), methane and nitrous oxide have increased markedly since 1750 and so far exceed pre-industrial levels;
- At national level, the Scottish Government has recently announced a new target of generating 100% of Scottish gross electricity consumption from renewables by 2020. In 2009, more than a quarter (27.4 per cent) of electricity demand came from renewables. There are around 7 Gigawatts (GW) of renewables capacity installed, under construction or consented around Scotland, enabling Scotland to exceed its interim target of 31 per cent of Scotland's electricity demand from renewables in 2011. (Scottish Government, 2011)

- Scotland has one of the best wind resources in Europe. By utilising this abundant and free resources we can generate electricity, reducing the need for fossil fuels and harmful emissions such as carbon dioxide;
- Wind energy, as part of a diverse renewable energy portfolio across the UK, can make a valuable contribution to our national energy security and meet rising demand in a sustainable way;
- Wind turbines are among the most technologically advanced and cost-effective renewable electricity generating sources currently available. Modern turbines are likely to be producing useful power for up to 85% of the year, and have a design lifespan at least 20 years. The power produced by onshore wind farms is one of the cheapest forms of renewable energy available today, with the real potential for continuing technological advances to bring the costs down still further;

The Solwaybank site was chosen through detailed analysis of the area's constraints to wind farm development. Initial constraints mapping showed:

- Appropriate wind speeds;
- Adequate separation from houses;
- Absence of military or civil aerodromes or radar installations covering the site;
- Sufficient separation from watercourses;
- Identified surrounding designated areas NSA, SAC, SPA, Ramsar, Nature Reserves, National Parks, RSPB Reserves, Ancient Woodland, SSSIs and SAMs.
- Good access options to site with minimal disruption to local residents and businesses.



- In Scotland, the number of sites suitable for offshore wind farm development are limited; and
- Offshore wind farms have longer deployment times than onshore and deployment costs are higher at the moment;
- To achieve our renewable energy targets there will need to be a mix of onshore and offshore wind farms.

# Environmental Impact Assessment (EIA) Process

SCREENING	Before a Council can request an EIA it must determine whether the proposal is subject to EIA regulations. RES will ask the planning authority for an EIA screening opinion prior to submission of the Planning Application.
SCOPING	As wind farm developments require EIA , RES will ask the Council for advice on the scope of the information to be gathered during the EIA, to be covered within the Environmental Statement (which reports the findings of the EIA).
BASELINE SURVEYS	Preliminary investigations into the sites wind regime, local government policy, and proximity to features such as houses, roads and national designations will identify the sites constraints to wind development.
DESIGN WITH PRIMARY MITIGATION	If a site is deemed suitable for development from the results of our baseline survey, our in house technical specialists will design a turbine layout suitable to avoid the aforementioned features and situate the farm appropriately.
ASSESSMENT	A range of appropriate assessments including ecological, wind regime, noise, archaeological, hydrological and socio-economic will be undertaken in response to both RES methods and statutory consultee responses
SECONDARY MITIGATION	In light of assessment findings, processes, activities and design alterations will then be made to avoid, reduce, remedy or compensate for any significant adverse effects of the proposed development.
ASSESSMENT OF RESIDUAL EFFECTS	Once secondary mitigation measures have been decided upon and agreed with the relevant consultees, a finalised layout design will be fixed upon for planning submission, accompanied by a detailed Environmental Statement.
PLANNING DETERMINATION	RES have been successful in obtaining planning consents since 1992. Strong attention to design detail, engagement with stakeholders and vast experience in planning processes help to achieve consent.

# STEPS IN DESIGNING A WIND FARM

SITE SURVEYS	<ul> <li>Breeding &amp; Wintering Birds</li> <li>Habitats</li> <li>Badgers</li> <li>Bats</li> <li>Hydrology</li> <li>Archaeology</li> <li>Contaminated Land</li> </ul>
IDENTIFY CONSTRAINTS	<ul> <li>Properties</li> <li>Roads</li> <li>Pylons</li> <li>Gas lines</li> <li>Radars</li> <li>Microwave links</li> <li>Trees</li> <li>Ecology</li> <li>Archaeology</li> <li>Footpaths &amp; Bridleways</li> <li>Rivers/ditches</li> </ul>
VISUAL DESIGN	<ul> <li>Viewpoint selection</li> <li>Layout design</li> <li>Size &amp; number of turbines</li> <li>Screening of substation</li> </ul>
IMPACT ASSESSMENT	<ul> <li>Identifying what effects the wind farm might have using a defined criteria</li> <li>Report in an Environmental Statement</li> </ul>
MITIGATION & ENHANCEMENT	<ul> <li>Construction best practice</li> <li>Site Waste Management</li> <li>Traffic Management</li> <li>Habitat Enhancement</li> </ul>

In addition to constraints of wind speed, national designations and aviation issues, the Solwayabnk site was developed to incorporate RES' design buffers. These 'buffers' have been set by best practice and through correspondence with consultees to create adequate turbine separation distances from the following:

- Houses
- Telecommunication links
- Areas of ecological importance
- Hydrological features
- Cultural heritage features
- Public Rights of Way, and
- Electricity pylons.





- During the design and consultation process, the layout and size of the proposed development changed several times in order to find a design that maximises energy generation while minimising environmental effects;
- Solwaybank was originally submitted for planning in 2009 as a 21 turbine scheme. Following responses from the local community and statutory consultees the decision was made to withdraw that application and redesign the layout.
- Cumulative landscape impact and an objection from the MOD regarding low flying were the key drivers when designing the new layout.
- The redesign process was primarily carried out by experienced landscape architects LUC and RES technical experts. The current layout is the result of that iterative process.
- The following slide shows some key layout iterations considered by RES finishing with the current 15 turbine layout. We welcome your views.







The proposed development is for the construction, operation and maintenance of the following components:

- 15 turbines with towers up to 80m and a maximum tip height of 126.5m;
- 15 crane hardstandings measuring 30x40m with additional temporary hardstanding which will be reinstated following the turbine erection
- Site tracks to access the turbines with a 5m wide running surface on straight sections, widening may be required on corners;
- A temporary 50 x 60m construction material laydown area;
- A 20m tall telecommunication mast;
- A temporary construction compound 50 x 60m;
- A sub station compound 9 x 30m;
- A control building 16 x 30m x 5.5m high
- Up to 6 temporary power performance masts 80m tall;
- A 80m permanent meteorological mast.



- A new network of tracks would be built to provide access to each turbine, the access tracks will be approximately 5m wide with widening on bends and at passing places and would be made of crushed and graded stone. The existing forestry tracks have been used as much as possible in the design of the wind farm to minimise additional land take;
- All electrical cabling between the turbines and the wind farm sub-station on the site would be underground and follow on site tracks;
- Construction of the wind farm will take up between 12-18 months. This period is somewhat weather dependent and could be affected by ground conditions found at the site. Site working would be Monday to Saturday from 7.00am to 7.00pm, however, during turbine erection and commissioning site working would be seven days a week.



### SET-UP

- Construct road improvements
- Fell trees where necessary on site outwith bird breeding season
- construct temporary construction compound

## CIVILS

- Construct the site access tracks, rotor assembly pads and crane hardstandings, gates and temporary fencing (if required)
- Excavate and construct the turbine foundations
- Construct the substation and install the grid connection
- Excavate the trenches and lay the power and instrumentation cables

### TURBINES

- Erect the turbines and monitoring masts
- Commission the turbines
- Carry out land reinstatement, remove temporary accommodation, temporary compound, rotor assembly pads and crane hardstanding areas and clear the site



- We are planning to access the site from two directions.
  - Construction traffic will access the north of the site via the B7068 using the existing forest entrance.
  - 'Abnormal loads' (for example turbine components and substation equipment) will leave the M74 at Junction 21 (Kirkpatrick Fleming) and then approach the site from the south entering at Pingle Farm.
- The approach route along the B7068 (eastbound or westbound) will be confirmed closer to the start of construction and will be dependent on where the construction materials are sourced.
- A plan showing the proposed delivery routes follows.





Detailed assessments of the potential effects a wind farm development could pose to a site, its environment and the surrounding area are conducted during the preplanning stage. Routine assessments conducted by RES and our highly experienced consultants include:

- Landscape and visual assessments;
- Ecological surveys;
- Ornithological assessments;
- Hydrology and hydrogeology assessments;
- Cultural heritage assessments;
- Acoustic assessments,
- Transport and access assessments;
- Socio-economic assessments; and
- Electromagnetic interference and aviation assessments.



The existing landscape and visual context of the proposed wind farm was established as a baseline against which to assess the potential effects on the landscape and visual amenity of both the application site and surrounding countryside. This included the identification of other wind farms (existing/operational, consented and currently in planning). Based on this early investigation a series of recommendations were made concerning the possible layout of the development, in order to minimise potential impacts on the landscape and visual amenity of the area.

It has been clear from the outset that key landscape and visual issues for consideration in the final Landscape an Visual Assessment will include:

- Cumulative effects (i.e. when the proposed wind farm is seen in conjunction with other wind farm developments nearby);
- effects on the character and amenity of local and neighbouring landscapes adjoining the coast
- effects on settlements; and
- roads, railways and footpaths (a number of which represent key tourist routes).



To address the above issues RES have carried out a detailed site design phase taking into consideration the above from the outset.

The site itself occupies an area mainly characterised as Foothills transitioning to a thing belt of Upland Fringe to the east of the site. The landscape mainly comprises a large area of plantation forest to the west and open acid grassland/heath to the east.

From the site there are open and expansive views to the south towards the Solway Firth.



- Ecologists from Land Use Consultants have been updating survey work carried out for the previous submission. These have included new detailed habitat surveys, bat activity survey, otter and water vole survey and badger survey;
- Watercourses on the site are mainly unsuitable for fish species as they are narrow, shallow and frequently dry. The lower reaches of the Palling Burn and Pokeskine Sike are the most suitable habitat for fish on site.
- Low levels of otter activity have been recorded on the site making it likely that the species only periodically use the small burns originating at Solwaybank. No evidence of water vole has been found.



- A number of badger setts have been identified outwith the main development area with evidence of foraging across the whole area.
- Bat surveys are being carried out throughout the summer months. Previous surveys suggest low use of the site with common and soprano pipistrelle being the main species likely to be found.
- Habitat surveys have found the area east of the plantation forestry to be a mosiac of blanket and modified bog. Further survey work is being carried out to determine the bog condition.



#### ORNITHOLOGY

- Previous survey work carried out in 2005 and 2006 identified one Schedule 1/Annex 1 protected bird species was recorded on site; hen harrier, two species listed on Annex 1 only; golden plover and short eared owl, and two Schedule 1 only species; goshawk and barn owl. Of these only goshawk and barn owl were found to be breeding. Over 30 other bird species have been recorded on and around the site. Notable breeding species included skylark, song thrush and bullfinch.
- Ornithologists from Macarthur Green have been updating the bird survey work since Winter 2010 and will continue through to the end of breeding season in August 2011.
- To date hen harrier, goshawk, merlin, short eared owl, golden plover and lapwing are target species of interest which have been observed flying on the site. No raptors have been recorded using the site for breeding to date however survey work will continue throughout the summer.



#### HYDROLOGY

- Possible impacts on geology and water from the proposed Solwaybank Wind Farm development are related to the potential for sediment transport, water and soil pollution, interruption or alteration of surface and groundwater flows and flooding;
- The sensitive features on and around the site include surface watercourses, the local groundwater system and private water supplies identified during field visits, desk studies and consultations;
- Hydrological constraints are identified on the site with defined buffers around the surface watercourses. Local private water supply information will also be taken into account for all abstractions within the affected water catchment area.
- Measures to reduce or eliminate potential effects has been undertaken through careful design of the project and during construction would be managed according to best practise guidelines;
- These measures focus on reducing and controlling runoff from access tracks and land disturbed during construction, and preventing/ managing spills, leaks or concrete contamination of groundwater and surface water.



- There are no sites of national or regional importance or with statutory protection within the site boundary. Pingle Farm is a Category C Listed Building.
- A proposed Core Path (No. 2685/2686) runs adjacent to the north of the site before crossing into the top north eastern corner and onto the B7068.
- There are eight site of cultural heritage interest which are considered to have negligible importance within the site boundary relating to post medieval agriculture and settlement. These include a sheepfold, enclosures, a bank, a cottage and three areas of rig and furrow one of which has no remaining surface evidence. One feature, the Bloomery Mound has local importance.



- Within 5km of the site boundary there are 13 Scheduled Ancient Monuments, 17 sites recorded on the Non-Statutory Register (NSR) and one Category A Listed Building at Springkell House. The nearest Garden or Designated Landscape is Kinmount (17km).
- In the wider area D&G Council have asked us to consider impacts on Malcolm Monument Langholm (9 km), Burnswark Fort and Roman Camps (10 km), Repentance Tower (15 km), Birrens Roman Fort (7.5 km) and Sprinkell Estate (4.5km).



#### ELECTROMAGNETIC INTERFERENCE & AVIATION

- As with any large structure, wind turbines can potentially interfere with communication systems that use electromagnetic waves as the transmission medium (e.g. television, radio or microwave links);
- RES has gained considerable experience in this area and in practice problems are only experienced when the receiver already has a poor signal. Generally TV interference problems are predictable and normally there is a range of solutions available;
- RES will perform a full technical assessment through prediction modelling of the scale and location of TV interference that might occur as a result of the wind farm. Assessment of the 2009 layout concluded that some minimal interference may be experienced by a small number of properties. The advent of digital TV in the D&G area will reduce these impacts. Once built if any TV interference is proven to have been a result of the wind farm RES will provide a solution either through an improved aerial system, alternative transmitter of provision of satellite TV.
- The wind farm will not have an effect on microwave links (mobile phone signals) as they have been avoided through the careful siting of turbines during the design. Microwave links in the area can been seen on the constraints map



#### ELECTROMAGNETIC INTERFERENCE & AVIATION

- Ministry of Defence (MoD) had raised a concern to a previous 21 turbine version of the layout due to concerns regarding their low flying operations in the area. Working with the MoD and taking advice about the Low Flying operations, the layout was redesigned to satisfy the MoD and subsequently the concern has been removed.
- MoD also safeguard a seismic monitoring station at Eskdalemuir and are currently objecting to all new wind farm developments, including small-scale turbines, within a 50km radius due to the impact the turbines may have on their operations. RES is actively working with the MoD and other organisations on a solution.
- NATS En-Route Ltd (NERL) have raised a concern with the site due to the wind turbines having line of site to Lowther Hill. A Scottish Government initiative, *South West Scotland Regional Aviation Solution,* investigated projects with outstanding aviation concerns and worked with all interested stakeholders to realise a solution that would allow the most MW of power to be released into planning. A mitigation for Solwaybank was identified in this initiative and RES are currently working with NERL to implement the solution.



- To ensure that any noise is kept to acceptable levels a distance of at least 10 rotor diameters from any turbine to any dwelling has been specified in design of the wind farm.
- In many circumstances the wind farm noise may be inaudible or effectively "masked" by the background noise already present. However, whilst complete inaudibility of a wind farm under any and all conditions might be desired, in reality such a position would effectively rule-out any development of this important, secure, low-carbon source of energy. Instead planning policy aims to balance any potential impacts (and limit these) with the benefits that may arise from such development.
- The noise assessment methodology under which Solwaybank shall be assessed has been applied at the vast majority of wind farms currently operating in the UK (>280 wind farms in operation). Complaints that exist from wind farms are generally confined to a handful of specific cases and are significantly less in number than complaints regarding other, everyday noises.



In the first instance, it should be appreciated that wind farm noise is, comparatively, generally low. This table is provided within planning policy documentation in Scotland:

Source/Activity	Indicative noise level dB(A)
Threshold of pain	140
Jet aircraft at 250m	105
Pneumatic drill at 7m	95
Truck at 30mph at 100m	65
Busy general office	60
Car at 40mph at 100m	55
Wind Farm at 350m	35-45
Quiet bedroom	35
Rural night-time background	20-40
Threshold of hearing	0



- The important aspect of noise assessment is to put the noise levels in context of the environment they are within as the existing background noise may "mask" the wind turbine noise.
- To that end, noise surveys were undertaken at a selection of locations. The slide shown gives an illustration of the process involved to determine the acceptability of the noise levels from the wind farm within the existing noise environment context. Note that this chart is not from Solwaybank area itself but simply illustrates the process involved.
- In summary, with the separation distances adhered to in the wind farm design, and with the knowledge of the existing background noise levels, the proposed Solwaybank wind farm will comply with relevant guidance on wind farm noise.
- Please ask a RES representative to further explain the process of acoustic impact assessment or if you wish to discuss specific concerns.



- The wind farm would produce sufficient electrical energy to satisfy the average requirements of over 17,000 homes, equivalent to the annual consumption of 25% of the households in Dumfries and Galloway;
- The benefits of using renewable forms of energy are not confined to tackling climate change. Environmental costs of conventional generation are avoided, including the health implications associated with poor air quality, the damage to the natural and built environment caused by acid rain and radiation related health and safety problems. In terms of energy-security, renewable energies such as wind are inexhaustible, being free are not subject to fuel-price uncertainty, are not subject to the vagaries and politics of the international fuel markets, and have no requirement for fuel transportation, drilling, or mining. Furthermore wind farms are easily and quickly decommissioned, leaving no significant adverse legacies.



- RES has a proven track record of using local contractors and employees wherever reasonably practicable for building its wind farms. One might expect a 30 MW project to result in significant local civil and electrical contracting work during construction;
- RES will give £2,000 per MW of installed capacity to a local community fund, set up with the purpose of distributing this money to schemes at the heart of the community;
- Based on a 30 MW scheme this would provide £60,000 per annum for local communities to use as they see fit. In the past such funds have been used for installations of small scale renewable energy technology, energy efficiency programmes, environmental projects or bursaries for schools, and can benefit everyone from local schools, individuals, clubs and entire communities.



- Under the Planning etc. (Scotland) Act 2006, which came into force in 2009, RES is required to submit a Proposal of Application Notice (PAN) report setting out how we will consult with the local community over our plans. We submitted our PAN to Dumfries and Galloway Council and this has been approved. There are copies available for viewing at the exhibition and it can be downloaded from our website: <u>www.solwaybank-windfarm.co.uk</u>
- We believe in meaningful and productive consultation. RES has a Community Relations Manager for Solwaybank Wind Farm, Rachel Anderson. Rachel is available on 0141 404 5531/ 07785 680 803 or by email <u>rachel.anderson@resltd.com</u> Please feel free to contact her if you have any queries or comments about the wind farm at any point during the development process.



#### OUR AIMS OF THE CONSULTATION PROCESS

- Engage early with the community to facilitate a constructive consultation process; to help RES understand and address concerns.
- Assist the local community in understanding the benefits and impacts of the proposed wind farm.
- Add value and improve the quality of our proposal through meaningful and productive consultation.
- Work with the community to define the structure of the community benefits offered as part of the development.



- We have sent our PAN report to all the local Community Councils and are taking on board their views on how we should undertake our wider public engagement. We have set up Community Liaison Group, which is made up of representatives from all of the local communities around the wind farm and meets every 2-3 months to discuss any matters relating to the project. Members of the public are welcome at these meetings, our next meeting is 12<sup>th</sup> July at Eaglesfield Village Hall.
- We believe in open and honest communication with the communities where we are active and will publish all of the meeting minutes on our website. Before we submit our planning application, we will create a Pre-Application Consultation (PAC) report and submit this to Dumfries and Galloway Council. The report will document the engagement process and steps we have taken to adapt our proposal, if necessary. We will ensure the findings are presented with transparency and integrity; once complete the report will be published on our website: <a href="https://www.solwaybank-windfarm.co.uk">www.solwaybank-windfarm.co.uk</a>



SUBMISSION OF COMMENTS UNDER PRE-APPLICATION CONSULTATION (PAC)

In accordance with Town and Country Planning (Development Management Procedure) Scotland Regulations 2008, Pre-Application Consultation 7(2). Any persons wishing to submit comments can do so either in writing or by e-mail to: Rachel Anderson RES, Third Floor STV, Pacific Quay, Glasgow, G51 1PQ <u>rachel.anderson@res-ltd.com</u> 0141 404 5531 / 07795 680 803

The closing date for the submission of comments is **29th July 2011**. Persons submitting comments in response to the Pre-Application Consultation are advised that comments submitted to RES at this time are not representations to the planning authority (Dumfries and Galloway Council); there will be an opportunity to submit representations to the planning authority should a planning application be made.