



# RAY WIND FARM


Keeping you informed



# WELCOME TO RAY WIND FARM

Ray Wind Farm is our largest onshore project in England, which we expect to provide enough electricity to over 30,000 homes annually\*.

Today, we are celebrating with many of the people who helped to make this project a reality as well as giving local people a chance to come along and experience the project for themselves.

ENOUGH ELECTRICITY TO OVER  
 **30,000** HOMES  
ANNUALLY\*



\* based on most recent statistics from the Department for Business, Energy and Industrial Strategy.

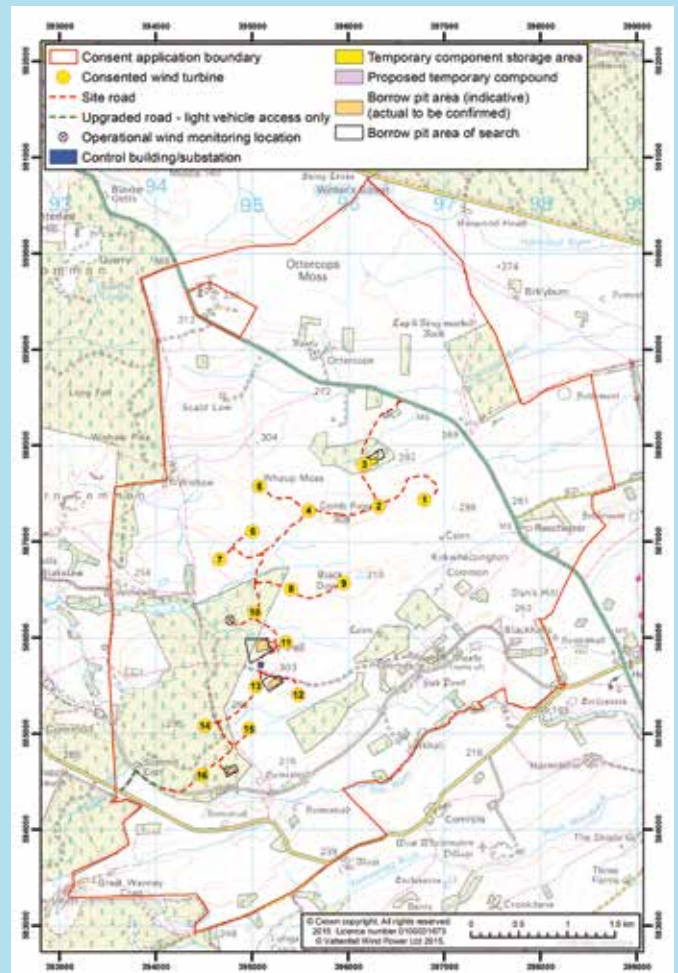
## ABOUT THE PROJECT

Exploring the potential

Ray Wind Farm is a 16 turbine wind project which is located on the Ray Estate near Kirkwhelpington in Northumberland.

Key facts	
Number of turbines	16
Wind turbine capacity	3.4MW
Total installed capacity	54.4MW
Average annual homes equivalent	over 30,000*
Estimated operational life	25 years
Hub height	73m
Rotor diameter	104m
Site and access roads	11.2km
Grid Connection	24.5km from Ray to Fourstones

\*based on most recent statistics from the Department for Business, Energy and Industrial Strategy showing that annual UK average domestic household consumption is 4,192kWh



# THE PROJECT IN PICTURES

## How we build a wind farm

Wind farm construction begins with the ground works, often called 'civils' works to build roads and foundations. Electrical cables are then installed to connect the site to the grid, finally wind turbines are delivered, installed and commissioned.



11.2km of site roads.



Turbine foundation excavations, approximately 20m diameter, 3m deep.



2 men 6 days to piece the steel reinforcement together.



Over 400 cubic metres of concrete and 2 days using large concrete pumps.



150km cabling in ducts, and a control building is built to connect the wind farm to the existing power grid.



A layer of stone and concrete to create a clean working area.



Backfilling of each foundation completed leaving the upstand exposed for the turbines to be bolted onto.



Each turbine component lifted into place using two cranes – three tower sections, the hub, nacelle and blades.



*"It's been great to work on a project close to where I live, where my children can see what I am doing, and working with local suppliers, contractors and consultants all of whom contribute to the local area."*

*"Great team spirit and sense of common purpose in delivering a viable, local project"*



# LOOKING AFTER THE LOCAL ENVIRONMENT

Behind the scenes, many people are involved with constructing a project like Ray. We don't just need construction teams onsite, but also teams of ecologists and environmental specialists who help us to make sure that we understand the site and environment and look after it through construction.

Ray Wind Farm comprises a variety of habitats typical of an upland setting including coniferous woodland, blanket bog, wet and dry heath, acid grassland and waterways. These support a diverse range of wildlife including a number of rare or protected species: red squirrel, badger, otter, bats, reptiles, white-clawed crayfish, and a number of owl and raptor species including barn owl, merlin, hen harrier and goshawk.



## This is the work we need to undertake

### Aviation



### Birds and Wildlife



### Archeological interests



### Transport and grid connections



### Heritage



### Tourism



### Economic impacts and opportunities



### Landscape and visual impact



### Noise




## Ecological and environmental monitoring and surveys



Ray Wind Farm

Ecological and environmental monitoring and surveys were undertaken during construction. An Environmental Clerk of Works (ECoW) was present throughout construction in order to:

- Train the construction team on environmental issues and raise awareness;
- Promote best practice and ensure compliance with planning conditions, relevant environmental guidance, management plans and legislation applicable to the site;
- Regularly monitor ecological sensitivities on site including protected species and breeding birds;
- Monitor work activities in close proximity to key environmental receptors; and
- Undertake hydrological monitoring and assessment.



*"The unwavering dedication and support from Lord and Lady Devonport in enabling us to deliver a wind farm on their Ray Estate is enormously appreciated. Vattenfall looks forward to continuing this excellent relationship during the operation of the wind farm. A heartfelt "thank you" to both of them."*

*"It is great to be able to go up to Hexham Racecourse and see Ray Wind Farm spinning away in the distance: we designed, consented, built and now operate that!"*

*"Inspiring to see the fruits of hard work on the doorstep (I can see the turbines from my own neighbourhood)"*



Successful mitigation was installed during construction for the following species and habitats:

- Protected mammals including: badger; otter; red squirrel; and bats;
- White-clawed crayfish and freshwater fish;
- Reptiles (adder and common lizard);
- Nesting birds including sensitive species such as merlin and goshawk;
- Trees and hedgerows;
- Designated Local Wildlife Sites;
- Invasive plant species including Himalayan balsam and Japanese knotweed; and
- Watercourses within the catchments of major rivers including the River Rede, River Wansbeck and River North Tyne.

Vattenfall will ensure that the impact on the environment is monitored during the operational phase and has committed to the following:

- Habitat surrounding the wind farm will be enhanced for the benefit of nature conservation by rewetting areas of blanket bog and reducing grazing on areas of degraded dry heath. This will be monitored throughout the life of the wind farm to ensure the enhancement measures are working and remaining effective;
- Monitoring for bats will be undertaken for up to 10 years following construction. This will comprise recording bat activity within the wind farm;
- Ornithological monitoring within 500 m of the turbines will be undertaken for at least 5 years after construction. This will involve targeted surveys for breeding waders such as curlew and snipe, as well as key raptor species including hen harrier, merlin and goshawk.

#### White-clawed crayfish



Juvenile white-clawed crayfish relocated under licence, from a water course during ducting work along the wind farm cable route.

#### Reptiles



Numerous adders were present throughout construction including this male within heather moorland.

#### Invasive plant species



Removing the invasive species Himalayan balsam by hand close to works along the cable route to ensure the spread of this species did not occur.

#### Birds Nesting



Merlin chicks were ringed during construction for the benefit of conservation.

#### Bats

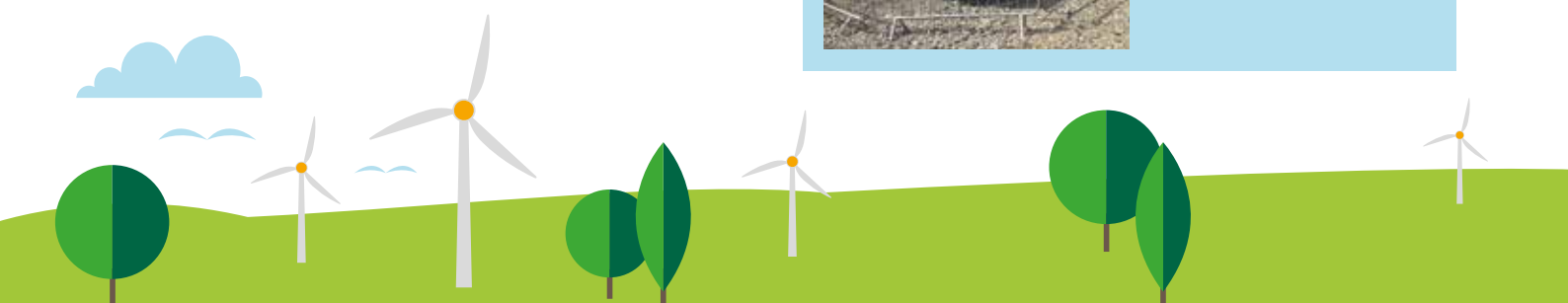


Juvenile whiskered bat roosting within the construction cabins canteen on the notice board.

#### Swallows



A site general waste skip – an unusual place for a pair of swallows to build their nest!



# INVESTING IN THE COMMUNITY

The local community will benefit from community funding that will run throughout the lifetime of the wind farm, bringing over £250,000 of investment to the area annually

A new Community Interest Company is being established which will run the fund. Following a review of the findings of the consultation, the priorities for the Fund have been established, with three key strands to its work:

- **A charitable grants scheme** – the Vattenfall Ray Wind Farm Small Grants Programme.
- The **improvement of infrastructure** to support the social and economic sustainability of the area – such as internet and mobile phone coverage and community transport.
- A **legacy fund** to maintain the benefit to the area long after the support from the Wind Farm operator has ceased.

BRINGING OVER  
**£250,000**  
OF INVESTMENT TO THE  
AREA ANNUALLY



LOCAL SCHOOLS HAVE PARTICIPATED IN A PROJECT TO  
FIND NAMES FOR THE FOUR MERLIN CHICKS THAT HAVE  
SUCCESSFULLY FLEDGED ON THE RAY ESTATE

Visit our website to view the completed projects: [www.vattenfall.com/ray](http://www.vattenfall.com/ray)

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