

Wind turbine development at Boddington Reservoir

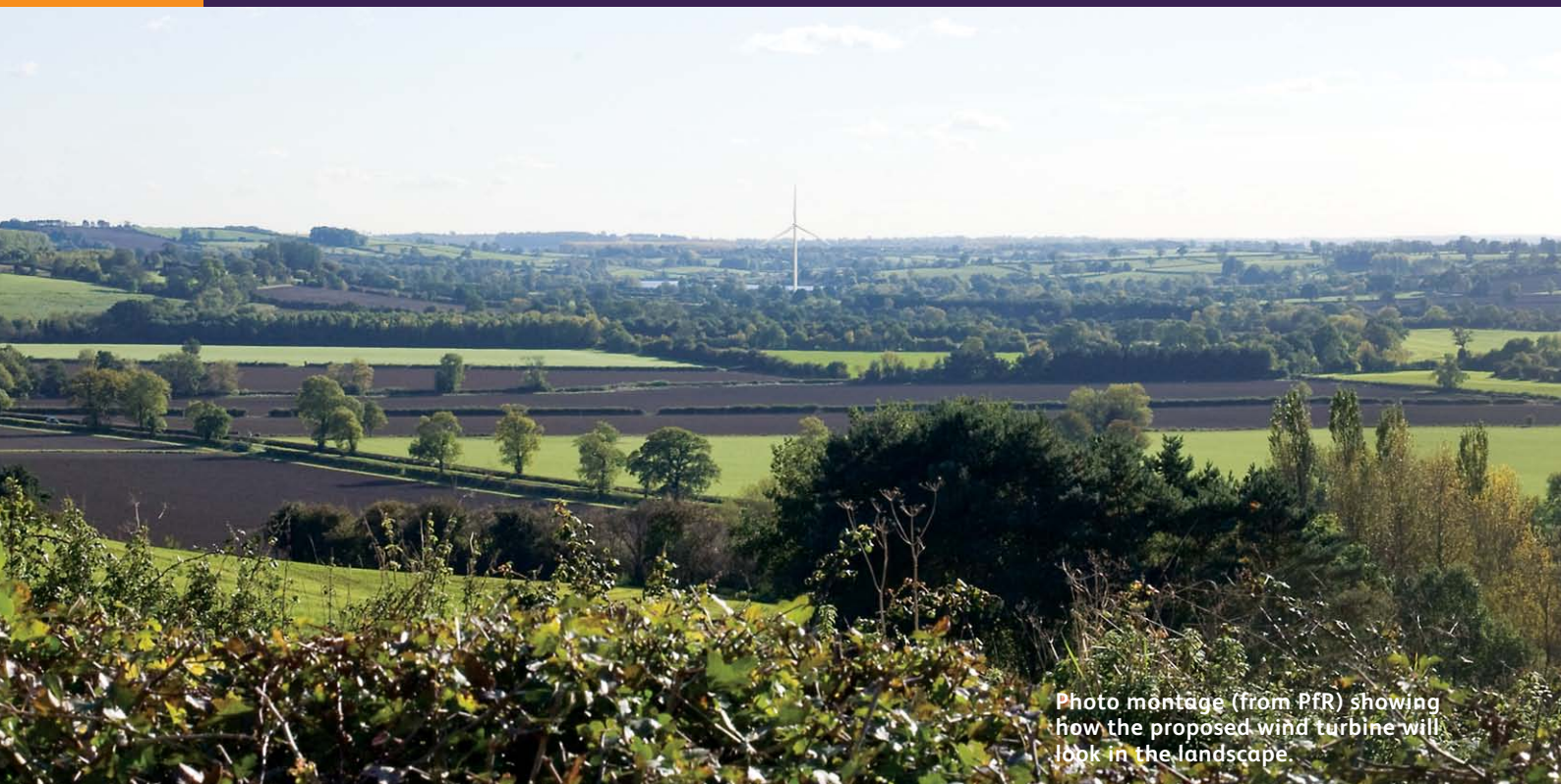


Photo montage (from PFR) showing how the proposed wind turbine will look in the landscape.

This case study details some of the key iterations to the Boddington Reservoir wind turbine development leading to a planning application to Daventry District Council. The application was made by Partnerships for Renewables Ltd to construct and operate a wind energy development on land owned by the Canal & River Trust (formerly British Waterways) adjacent to Boddington Reservoir. This site was identified as suitable in 2009 and planning consent was granted in January 2012.

The role of onshore wind energy

Renewable energy development presents an opportunity for the public sector and charitable landowners to both respond to climate change and to improve their finances. There are challenges and risks, but also many rewards. The public sector has demonstrably started to open up to commercial-scale renewable energy generation and is increasingly seen as a leader towards a solution.

There is now top-down International, European and UK legislation and policy supporting renewable energy. Onshore wind is the lowest cost technology at present to meet renewable energy targets in the UK and forms a key part of the UK strategy to meet renewables targets.

5.3% of all electricity in December 2011 was generated by wind, 6,000MW in total ~4500MW onshore, ~1500MW offshore.

www.climate-em.org.uk/projects/decentralised-energy

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The Developer

Partnerships for Renewables

was set up as a limited company by the Carbon Trust in 2006 and attracted investment from HSBC in March 2008 and the OP Trust in December 2010. Partnerships for Renewables encourages public sector bodies to host commercial-scale wind energy developments on appropriate sites, helping them to make more of their community leadership role, their public land assets and the opportunity to contribute towards the Government's climate change and renewable energy commitments. Partnerships for Renewables aims to break down barriers to renewable energy developments through demonstration of risk minimisation

and reduced development costs. Furthermore, Partnerships for Renewables have committed to promote projects to communities and encourage debate.

The Landowner

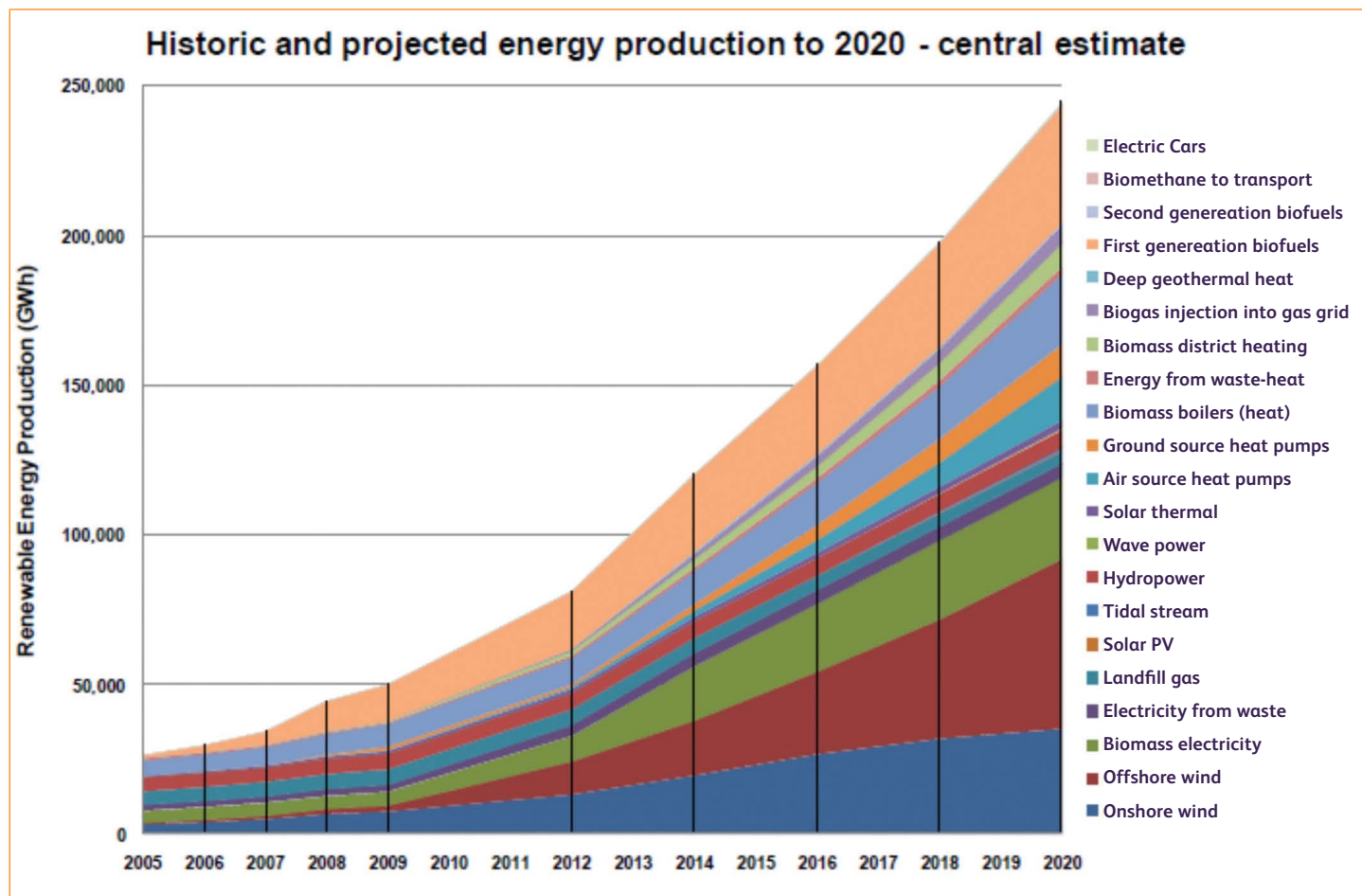
The Canal & River Trust manage 2,000 miles of canals and rivers across England and Wales and, whilst always protecting its heritage, is proactively looking at how it can manage its resources to make a contribution towards the fight against climate change. In support of this agenda, Canal & River Trust has entered into a lease arrangement with Partnerships for Renewables to facilitate installation of the turbine on its land.

The development phase at Boddington Reservoir

The development phase to get the wind turbine to planning approval has taken 36 months and involved significant investment from the developer to undertake numerous studies, the erection of an anemometry mast on site and the incurrence of legal and other costs. The following timeline details the 3 steps in the development phase at Boddington (further details of each are included below).

2008 – Partnerships for Renewables carried out a high level assessment of land within Canal & River Trust's ownership in order to identify suitable sites for wind development opportunities.

Figure 1 – historic and projected energy production to 2020



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Clarification of key risks

June 2009 – The Boddington site was identified as a potential location for a wind energy development and preliminary work was undertaken

November 2009 – First meeting with Daventry District Council Officers to introduce the initial project concept. The Officers clarified specifically named groups in the community who should be consulted, including statutory and community stakeholders. The consultation effectively began in December 2009

Risk resolution: technical studies

March 2010 – Project moved to the scoping phase and a request for scoping opinion was issued to Daventry District Council. Initial proving layout for wind turbine design presented to the Council

July 2010 – Council response allows permission for scoping opinion, including erection of anemometry mast. The mast is required to gather data on wind speeds in the locality and was installed on the application land

August 2010 – Vehicle access studies to proposed development site undertaken

September 2010 – Final design agreed with Daventry District Council (more details of iterative design process below)

EIA, planning application and determination

February 2011 – Design and Access statement submitted to Daventry District Council for review

March 2011 – Environmental statement submitted to Daventry District Council for review

July 2011 – Planning Application submitted

January 2012 – Planning consent granted, subject to completion of Section 106 agreement

June 2012 - Planning decision issued.

The design consultation process

Initial Design – The five turbine Proposal

A preliminary proving layout was prepared during feasibility studies. The initial layout of a wind farm based on five 2.5 MW turbines was published for consultation as part of the EIA scoping report in March 2010. The proposed five turbine development comprised three turbines on Canal & River Trust's land and two on third party land.

Intermediate Design – The Three Turbine Proposal

During the design process, consultations continued with the Banbury Ornithological Society, the Royal Society for the Protection of Birds (RSPB) and other recreational users of the reservoir including the Daventry Ramblers' Association, the British Horse Society, Banbury Sailing Club and the Banbury & District Angling Association. As a result of these consultations, and giving due consideration to the amenity of the reservoir users, it was decided to remove the two southerly turbines close to the reservoir.

Final Design – Single Turbine Proposal

By late Summer 2010, Partnerships for Renewables had gathered a considerable body of information from the comprehensive on-site

ecology, archaeology, and noise and grid study. A thorough review of this was carried out also taking account of the range of engineering constraints which influence the design of a wind energy development. It was considered that a single turbine layout would achieve a more technically and environmentally appropriate design.

The main reasons leading to this design decision were:

- The presence of notable bat species highlighted the requirement to maintain buffer distances from bat habitat as recommended by Natural England
- The need to maintain appropriate buffer distances from badger sets
- Issues with access for turbines 2 and 3 during the construction phase
- Studies carried out by E-On Central networks confirmed that a 1.5 MW turbine can be accommodated on the local grid infrastructure and would be preferred by National Air Traffic Services (NATS) and Coventry City airport
- The height of the proposed turbine was reduced in response to consultation responses from Daventry District Council's Conservation Officer and English Heritage, which referred to the potential visual impact on a nearby listed church.

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Public Consultation at Boddington

Public consultation is a key part of the development process and therefore is given particular consideration here. Here are the key elements from the Boddington Reservoir development consultation strategy that led to very little public opposition to the development:

- Begin consulting at a very early stage (usually 1-2 years pre-planning). The long lead-in time allows for genuine chance to influence design.
- Encouraged community visits to operational wind farms
- Arranged regular public events (quarterly / every 2 months).
- Communications campaign provided a dedicated website, regular press releases, school events, and social media, such as Facebook. This ensured that the local community had open access to the developers and regular updates on project development

Meetings with politicians (Parish, District, County, Parliamentary)

This allowed some areas of design to be influenced by the local community including:

- Site layout / micro-siting
- Access routes
- Habitat mitigation / enhancement
- Site investigation work
- Construction / traffic management plans
- Community benefit funding

The finalised layout seeks to draw a reasonable compromise between the differing technical and environmental priorities on site. A maximum overall turbine height of up to 105m is now proposed. The height proposed was the lowest that could harness the wind capacity considered to be feasible in the Boddington location. The turbine will generate 3.28 GWh of renewable energy and displace approximately 1,400 tCO₂ per year from fossil fuel generated energy.

Project Delivery

As the cost of developing sites for wind turbines is extremely high, the Partnerships for Renewables model (and that of other developers) seeks to minimise costs by addressing the highest risks early on. Pre-application work can take anything from 12 months to 3 or 4 years in some cases.

There are 3 development phases (DP1, DP2, DP3) prior to submitting any planning application. Throughout the pre-application process, the more input that is received from the Local Planning Authority the better the final design will be.

The development process leading to the submission of a planning application can be split into 3 distinct phases.

DP1 - Clarification of key risks.

The aim of Development Phase 1 is to clarify and understand the basis for any objections and development risks and where possible identify potential solutions

Typically Phase 1 involves:

- Anemometry mast planning application
- Budget cost estimate from the Distribution Network Operator
- Site visit
- Confirm any 3rd party land for access
- Identification of any access restrictions
- Land check reports
- Aviation consultation and engagement
- Noise modelling and potential site visit
- Cultural heritage and landscape assessments
- Ecology and ornithology surveys, if time critical
- Local Planning Authority (LPA) engagement
- Public exhibition and launch

Community ownership and involvement in wind energy developments

There are three main methods of enabling community ownership:

- 1 Shares
- 2 Licences' over some portion of income
- 3 Bonds

Each has various strengths and weaknesses. It should be noted that there are significant costs associated with setting up these schemes; nothing is as simple as it seems. Examples include Baywind, Energy 4 All cooperatives and Bath and West Energy Co-op (solely solar to date). Selling electricity locally also has its pitfalls. The key issue is that as soon as the electricity enters the network there are huge regulatory and cost barriers.

Partnerships for Renewables offers a community benefit package which consists of a community fund that receives an annual payment (in direct proportion to the installed capacity) and is administered by representatives of the local community. In the case of Boddington, Partnerships for Renewables will donate £5,000 per year (index linked) to the Community Benefit Fund.

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The aim of Development Phase 2 is to secure the removal of any outstanding objections received from key statutory consultees and to ensure that mitigation solutions are viable for any issues or objections identified.

DP2 - Risk resolution: technical studies

Typically Phase 2 involves:

- Erection of anemometry mast
- Legal agreements secured for access
- Screening report or Scoping received from Local Planning Authority
- Continue consultation with community and stakeholders
- Statutory objections addressed
- Submission of Grid connection application
- Access confirmed by haulage contractors
- Access agreed in principle with authorities

- Aviation mitigation agreed
- Communication link objections removed
- Baseline noise, heritage, landscape, ecology, ornithology, hydrology, shadow flicker completed
- Final site design agreed

The aim of Development Phase 3 is to complete the Environmental Impact Assessment (EIA), write up and analysis, confirming final site design together with any necessary enhancement, mitigation and monitoring measures and a draft Environmental Management Plan.

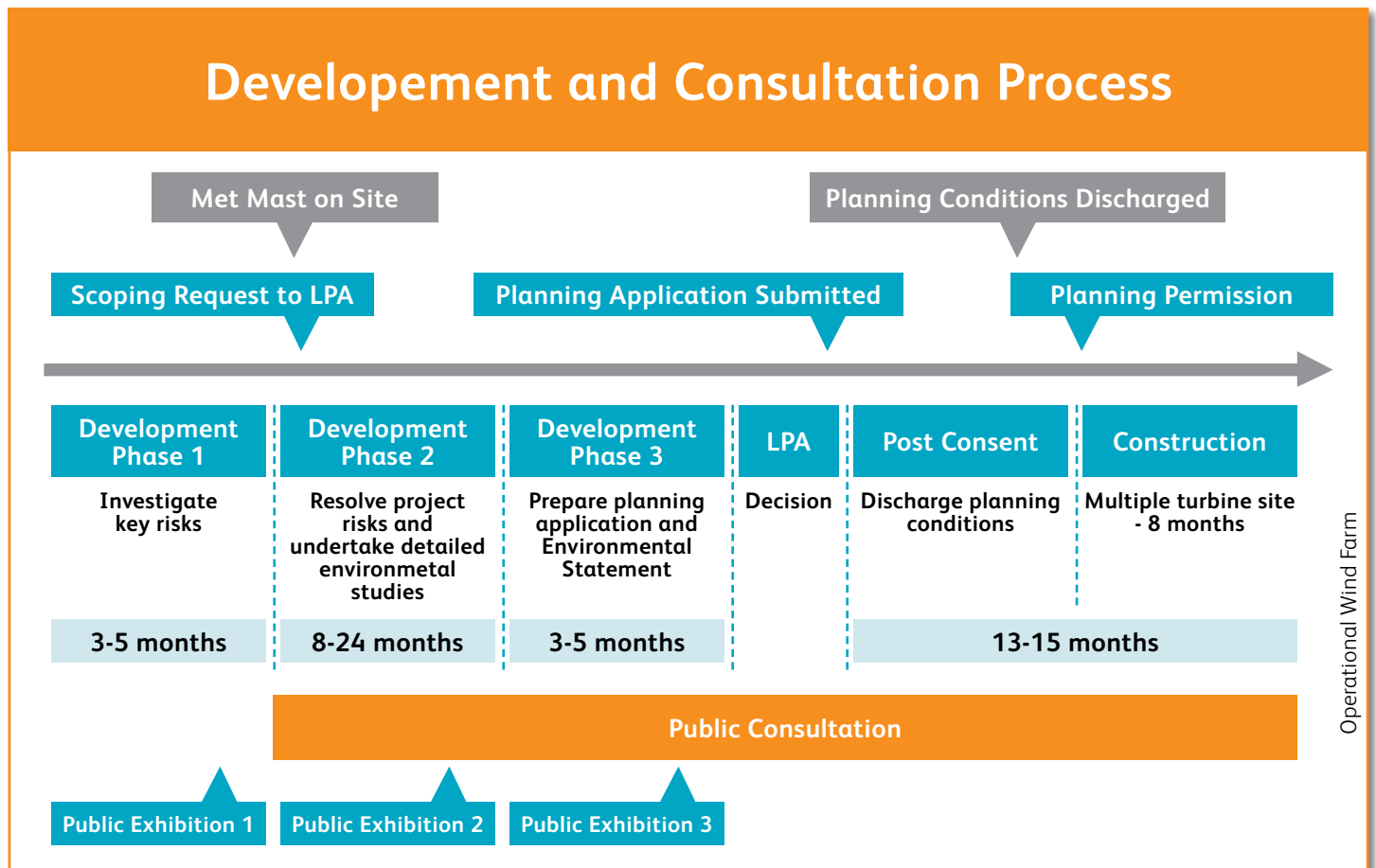
DP3 - EIA, planning application and determination

Typically Phase 3 involves:

- Resolving any residual material objections

- P90 wind analysis (if 12 months data)
- Securing grid connection way leaves if a significant risk to the project
- Negotiations with aviation bodies to secure mitigation and conditions
- Ongoing consultations with statutory bodies and Local Planning Authority on findings of assessments
- Public Exhibitions
- Production of planning documents i.e.: Environmental Statement/Environment Report, Supporting Statement, Non-Technical Summary, Design and Access Statement, Statement of Community Involvement
- Submission and validation by the Local Planning Authority of the planning application

Figure 2 – The Planning Development Process



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These Decentralised Energy Case Studies are one of the outputs from a climate change training programme for local authority planners that ran in 2011/12. Other case studies can be viewed at the web address below. The programme was commissioned by Climate East Midlands, funded by East Midlands Improvement and Efficiency Partnership and delivered by the Carbon Trust in association with Aecom.

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