

# Bowmans Creek Wind Farm Stage 2



Photograph of the project area

Bowmans Creek Wind Farm Stage 2 is a proposed extension to the Bowmans Creek Wind Farm that was approved by the NSW Independent Planning Commission in February 2024.

The project is a utility-scale wind energy generation project located about 12 km east of Muswellbrook in the Hunter Valley region of New South Wales, and involves the council areas of Muswellbrook Shire, Singleton and Upper Hunter Shire.

Bowmans Creek Wind Farm was approved for 54 wind turbines with a generation capacity of 335 megawatts (MW). Stage 2 would add 21 wind turbines and ~120 megawatts of generation capacity.

## Planning and assessment

Utility-scale wind farm developments in New South Wales are considered State Significant Development (SSD) and subject to a rigorous assessment process managed by the NSW Department of Planning, Housing and Infrastructure (DPHI).

Bowmans Creek Wind Farm was approved by the NSW Independent Planning Commission in February 2024 and is awaiting final approval from the Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW).

Bowmans Creek Wind Farm Stage 2 will require separate approval from the NSW Government.

Ark Energy is preparing to lodge a Scoping Report for Bowmans Creek Wind Farm Stage 2 with the Department in Q2 2024. Based on this the project will be issued with Planning Secretary's Environmental Assessment Requirements (SEARs) outlining the general and technical assessment requirements for its Environmental Impact Statement (EIS).

Key matters that are likely to be identified for assessment in the EIS include landscape and visual impacts, noise and vibration, biodiversity, cultural heritage, transport, water and soils, land, hazards and risks such as aviation safety, telecommunications and bushfire, social impact, economic and waste.

The EIS must also include details of the capital investment value and employment and proposed environmental management and monitoring measures.

The proposal will also be referred to DCCEEW for review under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Any assessment requirements from DCCEEW will be incorporated into the EIS and assessed by the DPHI under the bilateral agreement between the NSW and Commonwealth Governments.

## Location



The project area for the proposed Bowmans Creek Wind Farm is approximately 12 km east of Muswellbrook, in the Hunter region of New South Wales (NSW).

The Hunter region is significant to the NSW energy system and well placed to continue this tradition into the future through renewable energy generation.

The project site has an excellent wind resource and is within the NSW Government's Hunter-Central Coast Renewable Energy Zone, an area identified as optimal for new renewable energy projects due to the natural resources and proximity to existing or planned network infrastructure.

Bowmans Creek Wind Farm Stage 2 would add 21 wind turbines and ~120 megawatts of generation capacity to the project.

## Landscape and visual impact

Assessment of a wind farm's visual impact on the landscape is an important requirement for the EIS. The approach and technical requirements for the assessment are outlined in the Department's *Wind Energy: Visual Assessment Bulletin*.

One of the tools used for a visual assessment are photomontages (example on cover page), which show what the wind farm would look like from representative public viewpoints where it could be seen.

Photomontages are produced by technical specialists and involve combining location photographs with a digital representation of the wind farm called a wireframe.

Wireframes are produced using specialist industry software and based on precise locations and dimensions of the proposed wind turbine model to give an accurate and correctly scaled representation.

The Landscape and Visual Impact Assessment will be done by specialist consultants and will also include a Shadow Flicker Assessment. It will be available when the EIS is placed on public exhibition by the DPHI.

## Aboriginal cultural heritage

Ark Energy recognises the continuing connection that Aboriginal and Torres Strait Islander Peoples have to their land and Traditional Custodians are important project stakeholders.

The project team is engaging with the project area's Traditional Custodians to ensure the protection and maintenance of cultural heritage on the site and respect to traditional values and culture are upheld.

## Ecology

Avoiding and minimising impacts to fauna species that might utilise the project area is a priority, and comprehensive and thorough assessment of potential ecological impacts is required by both the NSW and Australian governments.

Key ecology matters that must be addressed in the EIS will be identified in the SEARs and assessment requirements under the Commonwealth EPBC Act will be provided by DCCEEW.

The ecological assessment work will be done by specialist ecologists and survey teams over multiple seasons. As findings from the ecology work become available the project's design may be refined and modified accordingly.

The project team is committed to collaborating with stakeholders and host landowners to implement responsible strategies to mitigate construction impacts and a key aim of the project will be to achieve net positive outcomes for biodiversity in the area over the longer term.

## Noise

Technological advances have reduced operational wind turbine noise and current models are much quieter than most people generally expect. Noise output from a wind farm can be predicted using acoustic modelling, and the EIS requires a technical noise impact assessment by a suitably qualified acoustic specialist.

Operational noise limits for wind farms in NSW, and the technical criteria and methodologies for noise assessment are outlined in the Department's *Wind Energy: Noise Assessment Bulletin*.

The noise limits have been established to ensure the health and safety of individuals and the community. They are designed to preserve peoples' amenity including the ability to sleep at night when background noise is usually low.

The NSW Government has adopted the most stringent noise limit criteria for wind farms. The predicted equivalent noise level at a non-involved residence cannot exceed 35 dB(A) or the ambient background noise by more than 5 dB(A), whichever is greater. The diagram below shows the decibel (dB) level of various familiar sounds for reference.

Compliance with the noise limits must be demonstrated before approval is granted and via a noise monitoring program during operation. The noise impact assessment for the EIS is based on the characteristics of the candidate wind turbine. After the specific wind turbine model has been selected the noise assessment must be repeated and demonstrate again that the wind farm will comply with the prescribed noise limits.

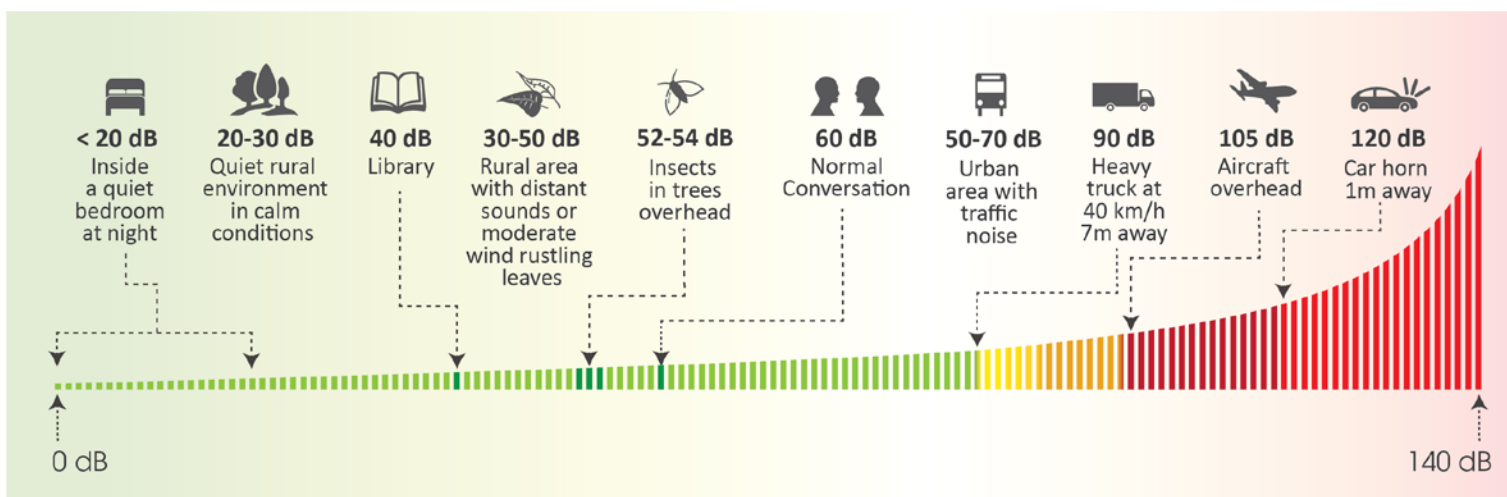
A preliminary noise impact assessment will be done for the Scoping Report and the final Noise Impact Assessment will be included in the EIS and available when it goes on public exhibition.

## Wind turbine noise and health

The relationship between noise from operating wind turbines and health effects has been the subject of extensive review by independent medical and research organisations including the Australian Medical Association (AMA) and the National Health and Medical Research Council (NHMRC).

To date, there is no evidence of a causal relationship between wind turbine noise and adverse health effects. Both the AMA and NHMRC have published statements on wind farms and health that conclude there is no consistent evidence that wind turbine noise causes adverse health effects in humans.

The Australian Energy Infrastructure Commissioner (AEIC) provides observations and recommendations around health matters. The AEIC notes that most complaints relate to proposed rather than operating wind farms, and complaints about human health impacts from operating wind farms are in the main anecdotal, without evidence.





## Livestock

Hosting wind farm infrastructure can provide a reliable supplementary income stream for farmers as wind farms and grazing are complementary land uses.

There is no evidence that wind turbines have any adverse effects on domestic animals and livestock. Livestock appear to be unaffected by wind turbines and will often graze beneath them and use the posts for shelter and shade.

## Roads and construction traffic

Preparing for construction will require upgrades to local roads and some key intersections.

A Traffic and Transport Impact Assessment will be required for the EIS, and the project will involve comprehensive construction management and traffic management plans, compliant with Occupational Health & Safety legislation and the local government planning scheme. They will cover all aspects of construction and traffic management including working hours, noise, traffic and dust.

Construction can only commence after the detailed engineering design has been completed. A detailed Construction Environment Management Plan will include measures to mitigate and manage biosecurity risks and the spread of weeds or pathogens between infected areas and non-infected areas during construction.

This will include measures such as cleaning of vehicles and construction equipment prior to entering the project site and crossing property boundaries. There will be a particular focus on weeds listed under the *NSW Biosecurity Act (2015)*.

## Property values

Property prices are influenced by many factors however there is no reliable evidence that proximity to a wind farm or the visibility of wind turbines has a measurable negative impact on land values and property sale prices.

The potential for wind farms to impact the value of properties in the surrounding area has been the subject of two separate studies by the NSW Government, one by the NSW Valuer General (2009) and one by Urbis on behalf of the NSW Office of Environment and Heritage (2016).

The studies reviewed property transactions before, during and after the construction of nearby wind farms and analysed sale prices in the context of broader market trends. They did not find a negative impact on property prices from nearby wind farms.

More recently property market researchers suggest that new renewable energy development is likely to have a positive effect on regional property markets.

## Fire safety and management

Wind turbines are designed to mitigate fire risk. They are constructed with fire resistant materials and operated by sophisticated monitoring systems that follow automatic shutdown procedures in response to operational issues and can be remotely shut down in the event of fire in the area.

Wind turbines also provide a safe path for lightning strikes to the ground and access tracks serve as natural fire breaks.

A comprehensive bushfire management plan for the site would be developed in consultation with the NSW Rural Fire Service. Fire services would manage firefighting on the site in the same way as any other area, using ground and air-based resources, subject to prevailing weather conditions and avoiding wind turbines in the same manner as any other obstruction such as buildings or powerlines.

Plans will be developed in consultation with Fire and Rescue NSW, the local Fire Control Centre, National Parks and Wildlife Services and the NSW Rural Fire Service.

## End of operation

Wind turbines have an operational life of approximately 30 years. Options at the end of this period include extending the life of the wind farm via refurbishment, repowering the site with new infrastructure or decommissioning.

If the operator decides not to extend or refurbish the wind farm it will be decommissioned within 12-18 months of ceasing operation. Decommissioning would involve the establishment of a decommissioning fund by the operator and the removal of above ground infrastructure including wind turbines, electrical infrastructure and maintenance buildings. The site would be returned to its former state where practicable.

Wind turbines are predominantly made of recyclable materials and approximately 85-94% of today's wind turbines are recyclable. Research and developments in technology continue to advance recyclability of wind turbine components. Most – if not all – of the materials would be reused, repurposed, recycled and recovered.

## Key benefits

**RENEWABLE ENERGY** - Renewable sources of energy are the most efficient and cheapest sources of bulk energy generation. More is needed to replace fossil fuel sources and meet growing electricity demand. Growth in renewable energy capacity will put downward pressure on wholesale electricity prices and deliver affordable, cleaner, reliable electricity to households and businesses. Bowmans Creek Wind Farm Stages 1 and 2 would have a total output capacity of approximately 455 megawatts.

**COMMUNITY BENEFIT PROGRAM** - The project will involve a program to provide meaningful and lasting benefits for the local community. It will provide funding annually from the start of construction and for the life of the project.

**JOBS** - The project will generate a significant number of jobs during the construction period and require a number of full-time jobs for operation.

**ECONOMIC BOOST** - Construction would generate significant expenditure within the local and regional economy including work for contractors and increased patronage for surrounding accommodation, retail, service and hospitality businesses.

**NET GAINS FOR BIODIVERSITY** - A goal of the project will be to achieve a net gain for biodiversity in the project area over the longer term. This might involve various initiatives including rehabilitation of the construction disturbance and environmental offsets with improved land management regimes.



# Planning & assessment

## Bowmans Creek Wind Farm Stage 2

Utility-scale wind farms in NSW are considered State Significant Development and assessed by the NSW Government.

1 Site selection and preliminary investigations

2 Initial concept and consultation

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3 Referral to the Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW) for review under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

4 Scoping Report submitted to the NSW Department of Planning, Housing and Infrastructure (DPHI)

5 Determination on EPBC Act referral by DCCEEW

6 Secretary's Environmental Assessment Requirements (SEARs) for the Environmental Impact Statement (EIS) issued by DPHI

7 Studies, assessments, design

8 Finalising EIS for lodgment

9 Development application (DA) and EIS lodged with DPHI

10 DA and EIS on public exhibition and open for submissions

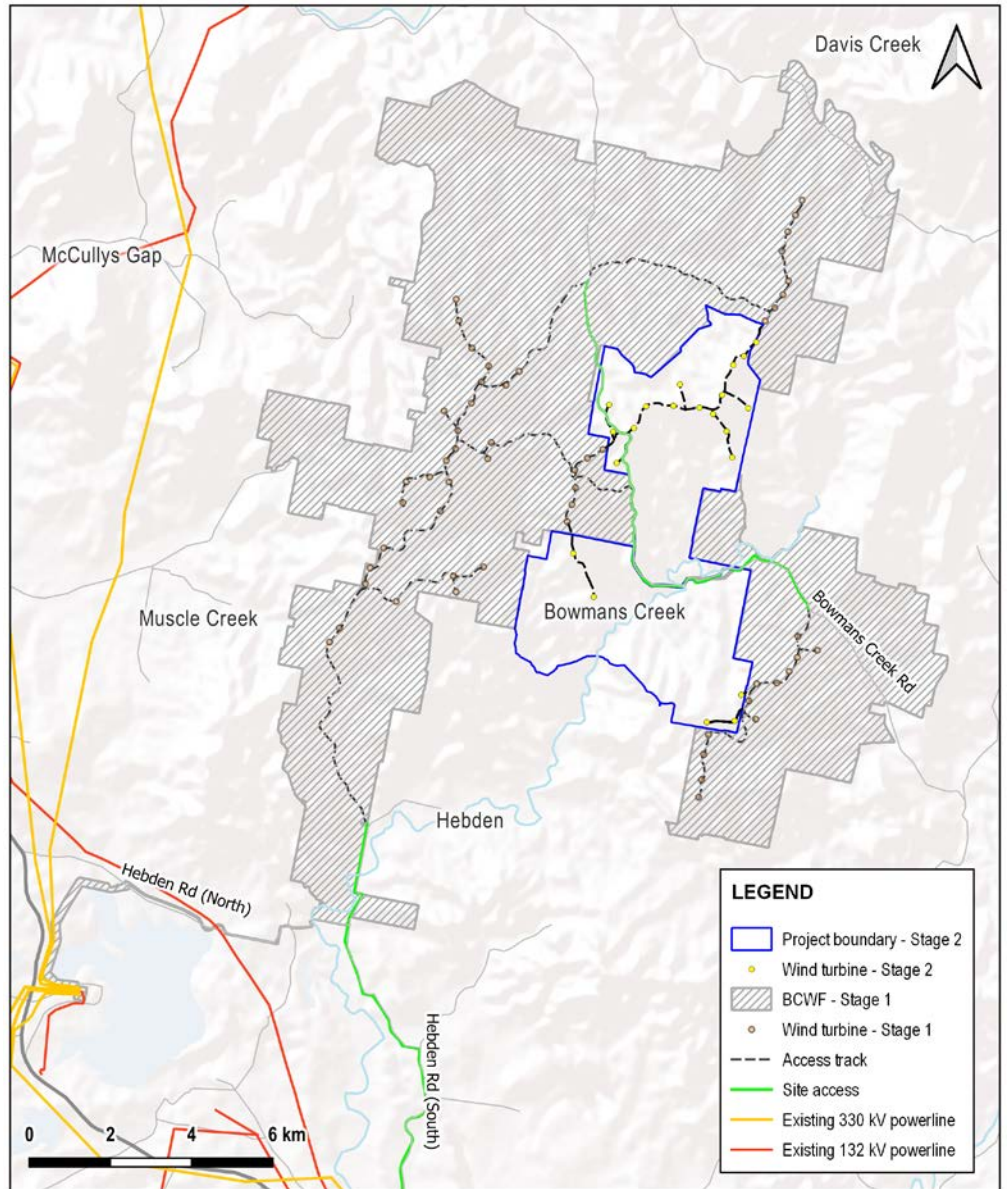
11 Response to submissions and requests for further information (if required)

12 Assessment by DPHI

13 DPHI assessment report and recommendation

14 Determination by DCCEEW

# Bowmans Creek Wind Farm Stage 2 – proposed layout



The proposed design for Bowmans Creek Wind Farm Stage 2 involves a layout of an additional 21 wind turbines in the middle of the existing Bowmans Creek Wind Farm project area.

## Questions and feedback welcome

Ark Energy appreciates the importance of involving local stakeholders, and input from interested community members and other local stakeholders is welcome and valued.

Comments and feedback can be sent directly to the project team.

Where practicable local input will be factored into the project's design to improve outcomes and community benefits.

## More information

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