



Forest Wind

Forest Wind Project Overview



September 2020



Forest Wind

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#1

Project overview



Forest Wind

Project snapshot

- Expected project size is:
 - Up to 226 wind turbines with output of approximately 1200MW
 - Batter storage under consideration
- At full capacity, Forest Wind has the capacity to generate enough electricity to supply 1 in Queensland houses, or about 1/10th of Queensland's electricity demand on average every year.
- Total investment is up to \$2billion
- Project will create up to 516 jobs, including 444 full time equivalent direct jobs during construction, peaking at over 600 jobs, and up to 50 direct long-term operational roles, mostly in Wide Bay
- Project has received planning approval for wind turbine area from the State Government; assessment by the Federal Department of Environment underway.
- Forest Wind Farm Development Bill 2020 passed in August. Provides a tenure pathway for the project (not related to planning approvals or process); allows for tenure in State Forest. Involved public submission, public hearing, Committee report and Parliamentary Debate.
- Team is currently focused on technical, environmental, procurement, social, commercial and economic aspects of the project.
- Aim is to start construction at the end of 2021, or early 2022.
- Community partnerships strategy development underway

About Us

CleanSight commenced development of Forest Wind in 2015.

Forest Wind Holdings Pty Limited was formed in 2018 and is the Proponent for the Project.

The Project is now a joint venture between CleanSight and Siemens Financial Services.



- CleanSight is a Sunshine Coast -based renewable energy company. Established in 2010, CleanSight is owned by Queenslanders who have extensive international experience developing renewable energy projects and operating in international energy markets.
- Our mission is to deliver large-scale renewable energy generation below the cost of conventional sources, whilst benefiting local communities.
- CleanSight is responsible for the development of the Project and managing all stakeholder relationships, including with Traditional Owners.



- Siemens group is a global powerhouse focusing on the areas of electrification, automation and digitalization.
- One of the world's largest producers of energy-efficient, resource-saving technologies, Siemens is a leading supplier of systems for power generation and transmission as well as medical diagnosis.

Project location



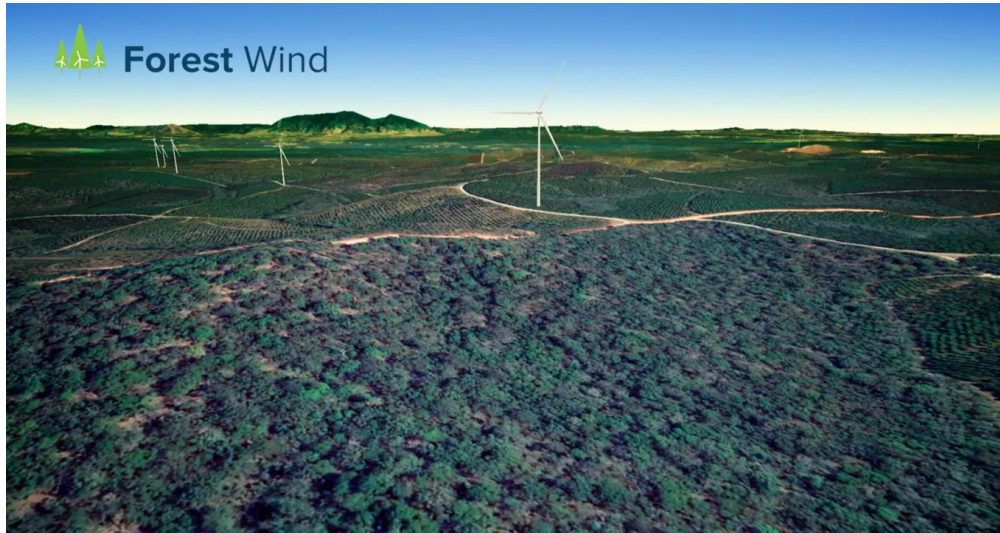
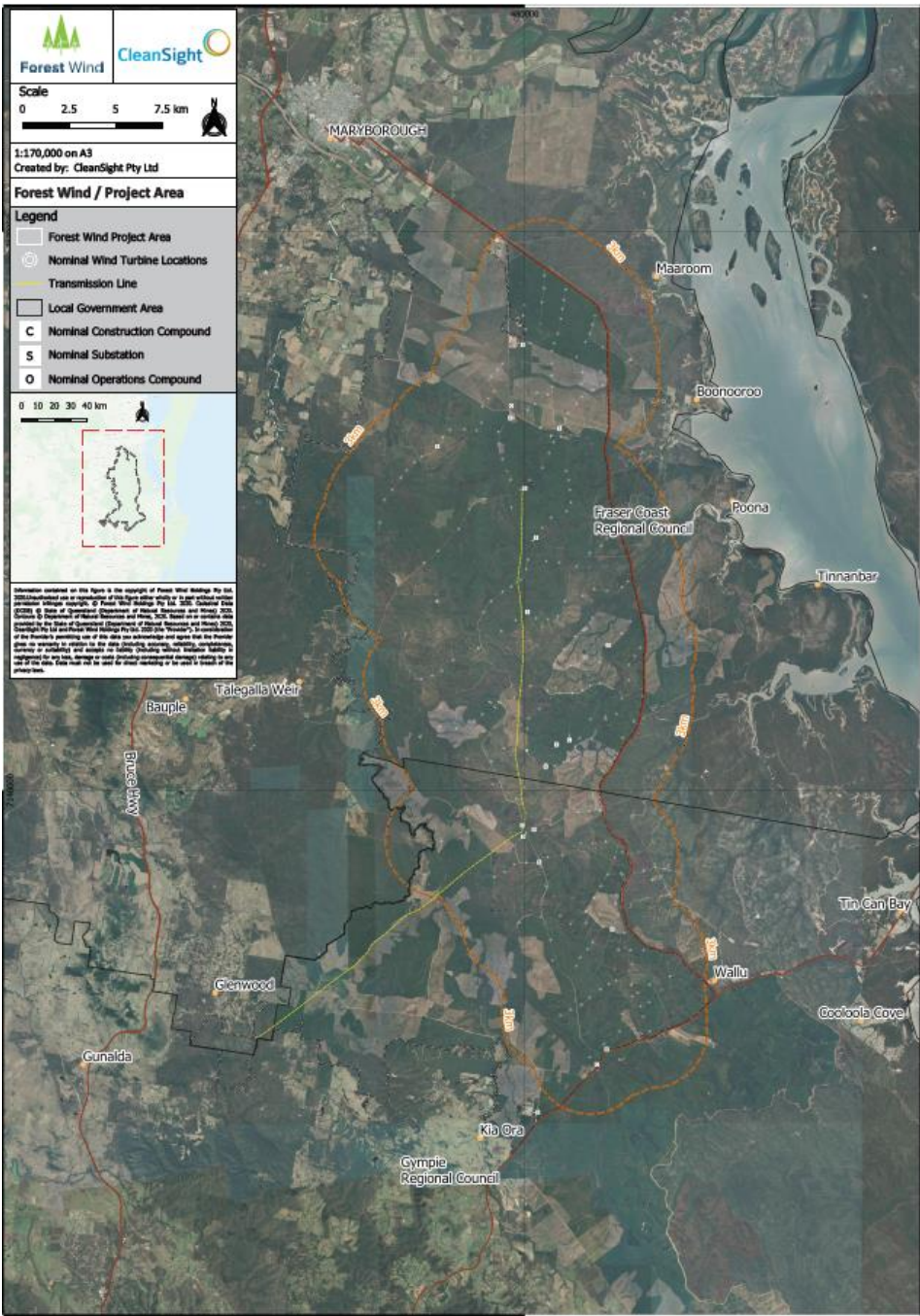
Forest Wind

Forest Wind's location has been carefully selected to meet energy market needs. It avoids or mitigates potential community impacts, including landscape, ecology and acoustic amenity

Co-location within exotic pine plantation in the Wide Bay region

- The Project will be located within the Gympie and Fraser Coast Regional Council Local Government Areas (LGA).
- Within existing exotic pine plantations between Gympie and Maryborough, on Queensland Government owned land amongst Toolara, Tuan and Neerdie State Forests.
- The co-location of forestry and wind turbine generators showcases land use for sustainable energy and forestry.
- The pine forest covers a very large area of 65km by 30km, with the dense pine needles providing a natural buffer between Forest Wind and local residences.
- 3,000m separation distance from residents to wind turbines is world leading.
- Overhead transmission corridor connecting the project to the existing Woolooga substation.





Project Infrastructure



Forest Wind



WTG Installation
Up to 226



WTG Foundations
Up to 226



Hardstands
Up to 226



Substations
2-3



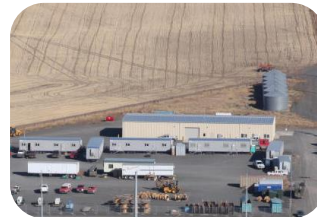
Over Head Lines



Underground Power Cable Install



Road Upgrades
Up to 250km



Construction Compounds



Operations Compounds



Concrete Tower Manufacturing-TBC



Concrete Batching Services



Logistics Services



Construction Services



O&M

#2

Development phase activities





Development Application

Forest Wind Holdings Pty Ltd has submitted a development application for the Project to the Queensland State Government, which was assessed as being compliant. Conditional permit granted in February 2020. Permit conditions are available on our website.



Landscape

Forest Wind has been designed to avoid or minimise impacts on landscape and scenic amenity. Views from homes are limited and the region's landscape values will be protected.



Separation distances

Turbines will be set well back from houses and situated at least 3km from nearby residences—that's twice the distance required by the State code for wind farm development.



Acoustic amenity

With a separation distance of 3km from turbines to residences, any noise generated by the turbines will not be audible by households. The noise impact assessment confirms that turbine noise will not exceed 35db at any sensitive land use, as required by the State code for wind farm development.



Flora and fauna

Forest Wind's proposed location within an exotic pine plantation means the impact on local ecology is minimal. In accordance with the State code for wind farms, the design, construction and operation will also ensure that impacts are avoided, or minimised and mitigated.



Construction management

Forest Wind's construction will be planned to avoid, or minimise and mitigate any adverse impacts on environment, water quality, water courses, amenity and local transport networks, and road infrastructure. During development we will also regularly keep the community notified of planned and actual works.



Aviation

Forest Wind will be designed to ensure it does not interfere with aviation operation and safety in the area. There will be no adverse impact on aircraft and their ability to take off, fly and land safely.



Electromagnetic interference

Forest Wind's turbines will be situated to avoid or minimise and mitigate electromagnetic interference. This means Forest Wind will have no impact on your TV, radar and radio transmission and reception; or will be remedied.



Traffic access

During construction and operations, Forest Wind will ensure safe traffic access for vehicles entering the site.



Shadow flicker

Due to the 3km separation distance from turbines to residences, there will be no shadow flicker on any existing or approved sensitive land uses.

Development Permit

Material change of use

- Approval for up to 226 wind turbines which are able to be micro-sited within 100m of the locations shown on the approved plans

Conditions of approval

- Marking of the wind turbines, white, off white, light grey
- Pre- and post-construction assessment of television and radio reception strength
 - Measures to restore strength if assessment shows there is an unacceptable increase in interference to reception as a result of the wind farm
- Ecological management achieved through the following:
 - Vegetation and Fauna Management Plan
 - Bird and Bat Management Plan
 - Construction Environmental Management Plan, stormwater management
- Bushire Management Plan and Safety and Emergency Management Plan
 - Consultation commenced with QFES
- Traffic management
 - Traffic Impact Assessment in consultation with council and in accordance with TMR's *Guide to Traffic Impact Assessment 2017*
 - Strategies to mitigate impacts on local roads
 - Construct any necessary upgrades, if =required, in accordance with Council requirements
 - Construction and operational impacts on State-controlled roads
 - Pavement Impact Assessment
- Noise management
 - Noise impact assessment and monitoring plan
- Decommissioning and Rehabilitation Plan
- Complaint Investigation and Response Plan
 - Toll free telephone number, liaison with the public, process of investigations, recording complaints

Local and Traditional Owner content

Background

- Maximising local and Traditional Owner content is a clear objective for the Project.
- FWH is working closely with SGRE to develop, implement and review strategies and initiatives to maximise local and Traditional Owner content in the construction and operations of Forest Wind.
- An EOI process has been established to capture as many local businesses as possible to inform the procurement strategy.
- SGRE has engaged ICN Gateway to support management of the expression of interest and RFP stages for the Project.

Key activities undertaken

- FWH, together with SGRE and ICN hosted three online Project Information Sessions for Industry and Suppliers on the 19th, 21st and 25th May and 15th June
- The events were held online instead of in person due to COVID-19 restrictions.
- Participation in the events was very high with:
 - More than **800** people registered
 - **490** participants were from QLD businesses
 - **136** of the participants were from Wide Bay.
- The Session provided an overview of the Project, procurement objectives and process (emphasising importance of local and Traditional Owner content and HSE), and how to submit an EOI for various work packages through the ICN Gateway. (<https://forestwind.icn.org.au>)
- Following the sessions, and to promote stronger local business participation in EOI process, advertisements have been placed with 4 local papers and notices distributed through local chambers of commerce and regional council networks.
- More events will be planned that consider COVID-19 restrictions
- Local content strategy is under development.



Ongoing site optimisation

Optimising the technical and economic aspects of the Project



Grid connection studies

Community engagement approach

Forest Wind is committed to building and maintaining strong and effective relationships with the local community and delivering lasting benefits.

- Forest Wind is working with a wide range of local stakeholders to build knowledge of the Project and respond to community feedback and interests.
- Our community engagement program has been impacted by COVID restrictions. As COVID-19 related restrictions are lifted on gatherings of people, we have recommenced face-to-face engagement activities such as Community Engagement sessions.
- The Forest Wind team will continue a strong engagement program with surrounding communities, local businesses, Traditional Owners and local government. The timeline till construction provides at least 12-18 months of community engagement to build an understanding of the Project and for the community to provide feedback on Stage 1 plans within the Development Permit conditions granted by the State.
- The primary community engagement initiative moving forward is the Community Reference Group. Community engagement sessions will also continue throughout development phase.
- Beyond building knowledge and understanding, we want to work with the local stakeholders, including the Community Reference Group to identify and develop strategies and partnerships that address community priorities and needs, align with the Project's objectives and deliver lasting benefits to the surrounding communities.



Community consultation activities to date

Activities undertaken in since Dec 18 2019

Forest Wind website www.forestwind.com.au

- 15,000+ unique visitors since Project launch
- 80+ businesses signed on to supplier register

Mail out to residents and property owners within 5km in Jan and March 2020

E-Newsletter

- E-Newsletters sent on:
 - 1# Feb 6 #2 February 26
 - #3 March 14 #4 June 3
 - #5 July 30 #6 August 28
- Provides project updates, details of community engagement sessions, feedback, information on supplier opportunities, briefings, call for nominations to Community Reference Group.
- 420+ subscribers to Forest Wind newsletter as of end of August 2020

Community Information Sessions

February 8th and 9th

Location	Estimated attendance	No. registered attendance
Kia Ora	65	33
Tinana, Maryborough	55	29
Poona	80	57
Total	200	119

June 13th

Location	No. registered attendance
Online Community Engagement Session	12

August 19th and 26th

Location	No. registered attendance
Poona	19
Bauple	19

Next session scheduled for Sunday 13th Sept in Boonooroo (30 people currently registered)

Community info session feedback forms

- 70 feedback forms completed at February sessions:
 - 34 support the Project
 - 14 are unsure
 - 16 don't think wind energy is a good idea and don't support the Project
 - 6 think wind energy is a good idea and don't support the Project

Key issues/ themes raised at

- Noise impacts
- Visual impacts
- Job opportunities
- Property value impacts
- Impacts on birds/ wildlife
- Impact on lifestyle, amenity
- Access route/ traffic impacts
- Construction impacts
- Fire risks
- Life-cycle of turbine components
- Tourism opportunities
- Subsidies, electricity market



#3

Project benefits



Project macro-benefits



JOB CREATION

Up to an estimated:

444 FTE construction jobs

50 long-term FTE operations jobs over life of project

Hundreds of indirect jobs

in region with high unemployment rate and higher rate of among youth.



INVESTMENT & ECONOMIC GROWTH IN REGIONAL QLD

Up to \$2 billion overall investment in Project

Up to \$471 million direct Investment in Queensland in construction. Opportunity for local business and suppliers to meet demand for materials, services, manufacturing



LARGE CONTRIBUTION TO RENEWABLE ENERGY TARGET

The Project will contribute:

- 1/4 of Qld's RET of 50% by 2030
- 1/10 of Australia's RET of 23% by 2030;

Generate enough electricity to power 1 in 4 Qld homes.



SUPPRESS WHOLESALE ELECTRICITY PRICE

Forest Wind's supply into the national electricity market will suppress wholesale electricity prices which will have flow on effects to business and household consumers across Queensland. Forest Wind's generation profile can offset expensive gas generators in peak periods in summer and winter.



SUPPORT ENERGY SECURITY FOR QLD'ERS

Forest Wind will complement the existing generators and electrical transmission infrastructure.



SUPPORT SUSTAINABILITY OF FORESTRY INDUSTRY

Co-location on wind farm in forestry will support sustainability of forestry business through leasing terms and opportunity to supply electricity to mills.



TACKLE CLIMATE CHANGE

Forest Wind make a significant contribution towards addressing climate change through reducing emissions.

The Project will offset emissions by

- 3 million tonnes of CO2e each year;
- 90 million tonnes of CO2e offset over 30 years.

Local community benefits



JOB CREATION

Opportunities during construction:

- Estimate that 80 per cent of the jobs created during construction can be filled by people living in Queensland.
- Approximately half of all jobs created during construction can be filled by people living in Wide Bay.
- Local material resources, including sand, rock and road materials will be used and will require trucking operators to deliver raw materials to the turbines.
- Earth-movers, concreters, electrical fitters, crane operators, electrical and mechanical fitters, engineering and project managers and administrative staff will undertake the works.

Opportunities during operations:

- Estimate that around 90 per cent of the jobs created during operations will be locally sourced and be Wide Bay based positions.
- A range of civil, mechanical, electrical and administrative positions will be required.

Over the life of the project, indirect jobs in a range of support services will be created, including in:

- retail trade, accommodation, health care, education and training and transport.

NB. The source of labour and contracts is a current estimate and is subject to change in the design and procurement phase.



COMPENSATION & BENEFITS TO FIRST NATIONS PEOPLE

Forest Wind Holdings will provide compensation and benefits to Butchulla and Kabi Kabi First Nations People as part of proposed ILUAs. Forest Wind will also seek to build relationships with and promote understanding and respect of indigenous cultures, and create opportunities for indigenous employment and businesses.

COMMUNITY PARTNERSHIPS

A Community partnerships strategy is under development. Our approach is to work closely with a range of stakeholders in the community, including this CRG, to properly and carefully identify where and how the Project can support social and economic development objectives and deliver lasting benefits to the community. For example, potential partnerships may be formed to support:

- Targeted training and skills development to promote youth employment on the project
- Local environmental protection and improvement initiatives
- Schools program, providing educational resources on topics such as renewable energy, environmental protection, career pathways (STEAM related), cultural outreach.



#4

Key community issues



Key community issues

Noise impacts



Forest Wind

In Queensland, some of the toughest guidelines in the world are applied to wind farm developments to ensure noise levels are minimised.

Source of noise originating from a wind turbine

- There are two main noise sources originating from a wind turbine; mechanical and aerodynamic. Sources of mechanical noise include the following: gearbox, generator, yaw drives, cooling fans, auxiliary equipment and application of brakes.
- Sources of mechanical noise tend to be both tonal and broadband in nature since the emitted sound is associated with the rotation of mechanical and electrical equipment. However, in modern wind turbines, mechanical noise is not usually audible above aerodynamic noise. Mechanical noise can be effectively reduced through standard noise control practices such as vibration isolation, damping and noise enclosures.
- Aerodynamic noise is associated with the passage of air over the wind turbine blades and is considered the most dominant source of wind turbine noise emissions. Aerodynamic noise levels typically increase with rotor speed.

What the State Code for wind farm development says:

- Wind farm developments must be sensitively developed to ensure local communities understand what is proposed and to minimise impacts at sensitive receptors.
- The Queensland Government has regulated wind farm development under State Code 23, which specifies acceptable noise impacts generated by a wind turbine on nearby residents and sensitive receptors.
- The acceptable noise level specified in State Code 23 is 45dBA during the night for host lots with sensitive land users, and 37dBA during the day and 35dBA during the night for non-host lots.

The Forest Wind experience

- Forest Wind has been planned in line with international best practice, the requirements set out in the State Code for wind farm development, and the Australian Wind Energy Best Practice Guideline. Forest Wind will comply with the Queensland Government wind farm noise regulations.
- An independent acoustic amenity assessment has been undertaken for Forest Wind.
- The operation noise impact assessment report identifies acoustic criteria that are to be complied with at sensitive land uses located on non-host lots. In the Queensland Government regulations, non-host lots are classified as a parcel of land that does not accommodate any part of a wind farm development. Sensitive land uses (herein referred to as sensitive receptors) are defined as areas including childcare centre, residential dwellings, educational establishments, healthcare services, short-term accommodation and tourist parks.
- The acoustic modelling assessment was based on a wind farm layout that includes 226 Siemens SG 6.0-170, Rev. 0 Wind turbines with a hub height of 160 m and 180 m. The technical specifications for this model have a maximum sound power level (LwA) of 106 dBA, however, to be conservative, Forest Wind requested this model be assessed assuming a worst case of LwA 109 dBA, or 3 dBA above standard technical specifications.
- The assessment used the most stringent criterion, that is the baseline criterion (37dBA during the day and 35dBA during the night for non-host lots) rather than the background LA90 noise level add 5 dBA criterion. As the assessment applied the most stringent criterion, the requirement for adjustment based on measured background noise levels was not required, and as such background noise monitoring was not necessary for this assessment.
- The assessment identified that, using the worst case noise for a wind turbine operating at 12 m/sec (43km/ hour or 23 knots), the wind farm is predicted to comply with the required criteria at all host and non-host lots during both day and night periods: noise levels will not exceed 37dBA during the day and 35dBA during the night for private residents.
- The expected noise levels modelled at the sensitive receptors (labelled as SR0X on Figure A) around the project area are described over page.

Key community issues

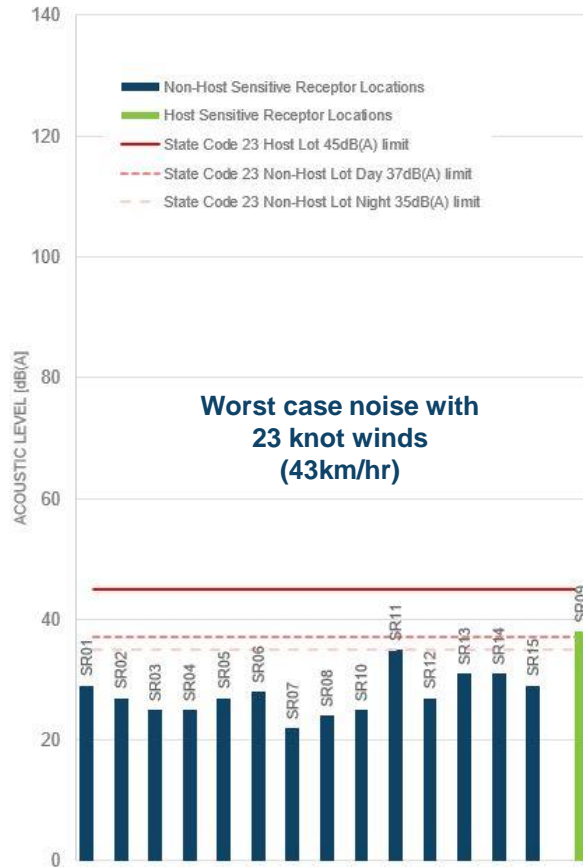
Noise and health impacts



Forest Wind

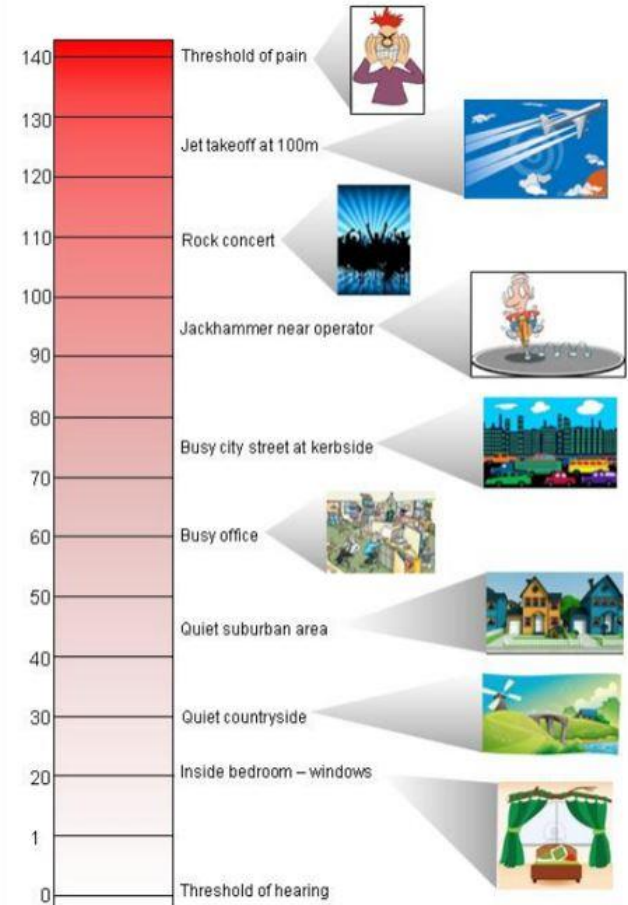


Figure A. Modelled sensitive receptor locations



Source: GHD Forest Wind Noise Assessment, September 2019

Figure B. Results of noise modelling at sensitive receptor locations at worst case



Source: Noise Measurement Manual, ESR/2016/2195 (formerly EM1107), Department of Environment and Science, © The State of Queensland 2013

<https://environment.des.qld.gov.au/licences-permits/pdf/noise-measurement-manual-em1107.pdf>

Figure C. Common sound pressure levels dB(A)

A full copy of the noise impact assessment is available at:

Visit: www.forestwind.com.au
 Email: info@forestwind.com.au
 Phone: 07 5447 1472

Key community interests

Health impacts

National Health and Medical Research Council

In 2015, the National Health and Medical Research Council (NHMRC) released an updated statement on the impact of wind farms on human health. The statement was based on a rigorous independent assessment of the existing scientific evidence on wind farms and human health. According to the NHMRC statement:

“There is no direct evidence that exposure to wind farm noise affects physical or mental health...While exposure to environmental noise is associated with health effects, these effects occur at much higher levels of noise than are likely to be perceived by people living in close proximity to wind farms in Australia. The parallel evidence assessed suggests that there are unlikely to be any significant effects on physical or mental health at distances greater than 1,500 m from wind farms...Although individuals may perceive aspects of wind farm noise at greater distances, it is unlikely that it will be disturbing at distances of more than 1,500m. Noise from wind farms, including its content of low-frequency noise and infrasound, is similar to noise from many other natural and human-made sources.”

Australian Medical Association

“The available Australian and international evidence does not support the view that the infrasound or low frequency sound generated by wind farms, as they are currently regulated in Australia, causes adverse health effects on populations residing in their vicinity. The infrasound and low frequency sound generated by modern wind farms in Australia is well below the level where known health effects occur, and there is no accepted physiological mechanism where sub-audible infrasound could cause health effects.”

National Wind Farm Commissioner – observations regarding health impacts

“Since the Office has commenced, 70 complaints about operating wind farms have been received. These complaints relate to 14 operating wind farms out of a total of more than 80 operating wind farms across Australia. Of these 70 complaints, approximately half of the complainants cited concerns about health impacts from the operating wind farms. Of these, a very small number of complainants agreed to work with the Office and provide evidence of the stated health issues. In all of these cases, the root cause of the stated health issue was not attributable to the wind farm.

Further, in 2019, only five complaints about operating wind farms were received. The clear majority of complaints received have been about proposed wind farms. On the basis that a wind farm has to be built and operating before it could possibly cause a physiological health effect, the potential cohort of potential physiological health complaints is very small.

It should also be noted that, for the last two years, the Office has not received any complaints regarding allegations of vibration sensations being caused by a wind turbine’s operation. The Office’s findings could not confirm any actual evidence of vibrations at a residence with causality from a turbine, findings which are consistent with advice received on this topic from Flinders University. The Office’s complaint data further substantiates these findings.”

Key community issues

Environmental impacts



Avoid

- The turbines, associated infrastructure and a section of the high voltage transmission line will be located within an existing highly modified pine plantation which has been determined to be of low ecological value.
- Remnant vegetation will be avoided when determining siting of the wind turbines
- Existing forestry tracks will be used for access and electrical cabling where possible
- Micro-siting of wind turbines and transmission towers to avoid MNES where possible
- The Wind Turbine Area will not impact the Ramsar wetland
- Waterways will be avoided, some existing tracks over waterways may need to be upgraded to enable haulage of heavy equipment



Minimise

- Clearing of native vegetation for the Overhead Line Corridor will be minimised as follows:
 - Following existing Powerlink corridors and access tracks in the State Forest where possible
 - Using State-designated Key Resource Area where possible
 - Limiting clearing between towers where possible
 - Restricting clearing to minimum areas required
- Clearing of large hollow bearing trees will be limited wherever possible



Avoid, Minimise, Mitigate



Mitigate

- Management plans
 - Species management, erosion and sediment control, weed management, fire management
- Construction management
 - Pre-clearance flora and fauna surveys
 - Fauna surveys during clearing activities
 - Adaptive management monitoring program
 - Weed assessments
 - Establish no-go zones
 - Rehabilitation



Key community issues

Environmental impacts, in particular migratory birds



Forest Wind

Four years of field surveys

- 2016 to 2019 and ongoing in 2020
- Surveys in the Plantation Licence Area
- Completed by experienced and qualified ecologist and bird expert

190 bird utilisation surveys

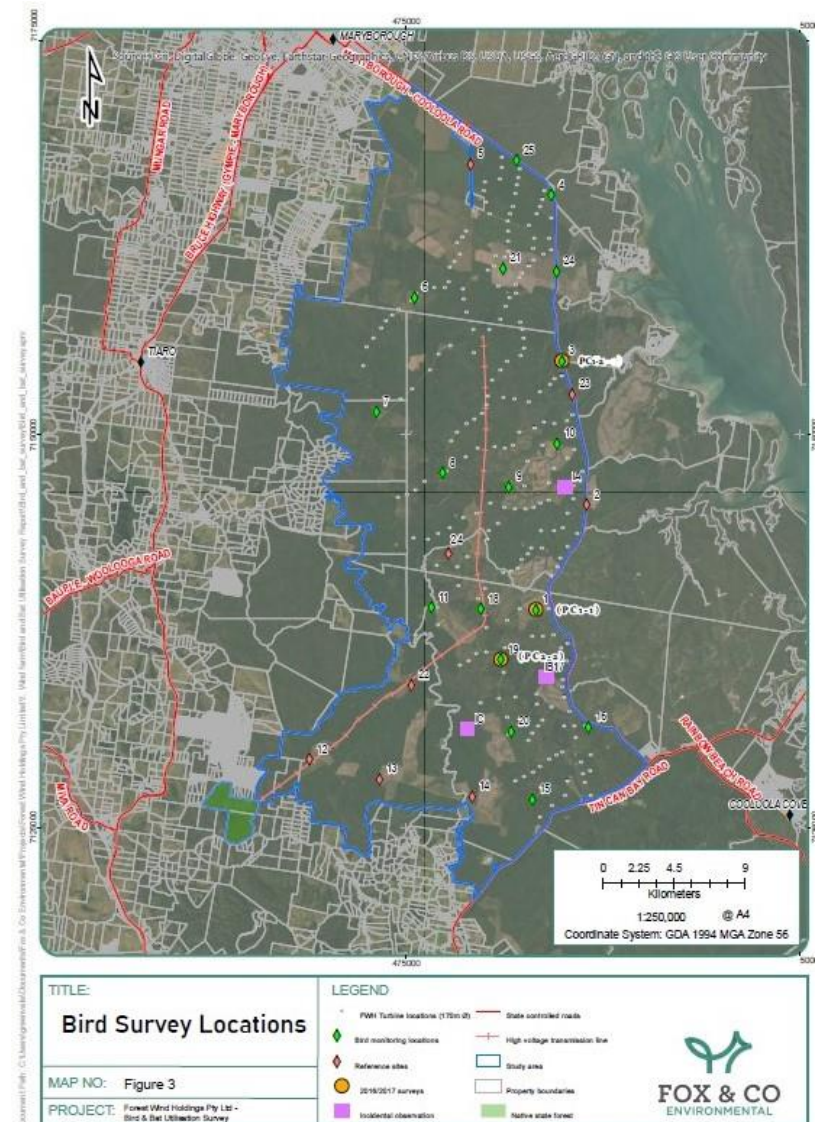
- Monthly bird utilisation surveys over migratory periods
- Before After Control Impact (BACI) monitoring program
- Very low numbers of each species

25 survey locations

- Includes seven reference sites away from the proposed turbines
- Located in clear vantage points

Assessment

- Risk assessment based approach
- Extending the assessment to include modelling in preliminary documentation phase
- National renowned expert in bird utilisation modelling for wind farms



Date: 7/09/2019

Data Source: © State of Queensland (Department of Natural Resources, Mines and Energy) 2018.

Key community issues

Transport routes and construction impacts

Transport and access routes

- The project's oversize components, including the wind turbine's nacelle, blades, hub, towers and main transformers, may be delivered to the Port of Brisbane. From there they would travel up the Port of Brisbane Motorway, onto the Gateway Motorway, merge with the Bruce Highway at South Pine and travel along a access track through the State forest, where they would then enter the project area.
- An access track is being determined which is being designed to minimise impact on local communities.
- Other options are being explored. Once these are confirmed, we will consult with local communities and affected residents.
- Workers and delivery of other materials may enter the site at either the site entrance or secondary site entrances which will be constructed at northern, southern and eastern entry points.

Construction management

- A preliminary Construction Management Plan for the wind farm has been prepared that outlines the proposed activities, management and mitigation measures to be adopted on the Site. The detailed construction methodology and plan will be the responsibility of the construction contractor.
- The construction management plan will prioritise safety and ensure that potential impacts are carefully mitigated and managed, particularly those that have the potential to affect residents along the access route.
- We aim to keep local disruption to a minimum. A range of communication tools will be used to keep the community informed about transport and traffic management.

Construction duration

The overall duration of construction will depend on the number of turbines to be installed for that stage.

Typically, equipment supply requires a lead time of 6-9 months and then turbines are installed at a rate of 6 to 9 turbines a month.

For example, a stage with 80 turbines would take nine months less than two years to construct.

Key community issues

Visual impact

- Forest Wind's location has been carefully selected to avoid or largely mitigate potential community impacts from the wind farm, including on landscape. The project has been strictly planned in line with international best practice, the Queensland State code for wind farm development, and the Australian Wind Energy Best Practice Guideline.
- Internationally recognised landscape architect Viento has undertaken the landscape visual impact assessment for Forest Wind.
- The sensitive design of the proposed Forest Wind site is a priority, and a number of significant amendments have already been made to the site design during the planning phase. This is ongoing.
- Forest Wind will implement industry leading 3km buffers between turbines and existing residences and other sensitive land uses—double the distance required under the Code.
- The thicket of pine needles on trees up to 30m tall will also act as a buffer from communities, absorbing sound and acting as a screen to soften the visual impact from many local viewpoints and roads.
- The turbines will be produced in a colour that helps them blend in as far as practicable with the surrounding landscape.
- The transmission line will be designed to minimise impacts on visual amenity and landowners.
- The full Landscape and Visual Impact Assessment Report is available for viewing on our website: <https://www.forestwind.com.au/planning-documentation>

Key community issues

Fire impacts

Fire risk management

Forest Wind recognises the importance of fire risk management and is committed to deliver its responsibilities under the *Queensland Fire and Emergency Service Act (1990)*.

Wind farms and fire risk

AFAC, The Australasian Fire and Emergency Service Authorities Council believes that “*wind farms are not expected to adversely affect fire behaviour, nor create major ignitions risks*”.

Fires in wind turbines are rare. International data indicates that the risk of a fire in a turbine in any year was historically 0.017%¹.

No one wants a fire and therefore the latest design and technology developments incorporate enhanced prevention and managements systems:

- passive, which include design features such as transformer isolation, arching avoidance design and fire proof materials; and
- Active, such as smoke, heat and fire detection systems and extinguisher systems
- More sophisticated maintenance procedures and checks and balances.

Ongoing development of mitigations is expected to result in the low rate of fire incidence reducing further over time.

The Forest Wind experience

Forest Wind turbines and support infrastructure will have in-built active and passive fire protection systems to minimise the likelihood of a fire occurring.

Controls may include:

- smoke alarms, heat detectors, heat protective coatings and fire proof materials
- system remote control shutdown and isolation following exceedances
- real time monitoring of detectors and alarms at the Forest Wind control centre
- in-built fire suppression systems
- underground cabling throughout the site, other than the overhead transmission line corridor

Operators of the wind farm will be trained in both forest and wind asset fire response.

Operators will work with the plantation to reduce fuel loads immediately around infrastructure and manage fires that occur within the wind farm.

Forest Wind fire planning

Forest Wind has undertaken a detailed Fire Hazard Impact Assessment identifying potential hazards within the wind farm and the forest operation. This assessment informs the control strategy in our Fire Management Plan.

Key community issues

Decommissioning

- The current wind turbine design configuration is for a hub height of around 160m, with blade length of 83m, seeing tip height in the order of 240m. Forest Wind Holdings did nominate up to 295m in the development application, however, technology does not yet provide for such a height configuration, however, may do so over time. The blades are typically made of fibre glass.
- At the end of a wind turbine's life, it will be decommissioned, with the wind turbine being disconnected, dismantled and all components above ground removed from the Site. The steel tower sections are expected to be recycled and turned to new steel items for new purposes. The gearboxes and generators may be refurbished and given an extended life on Site, or elsewhere, or alternatively melted down and recycled. The removed section of the foundation to a 1m depth (to allow ongoing forestry) would become recycled concrete, which is used in road base applications, such as highway upgrades, or even recycled for used in new concrete applications.
- Recycling of blades is becoming more common and expected to be standard practice in 25-30 years, will include a range of recycling options. For example, recycled wind blade material is currently being used as filler for cement in a process that can reduce the carbon dioxide output of the cement manufacturing process by up to 16%.
- Composite materials are being recycled today at commercial scale through cement co-processing, where the cement raw materials such as silica are being partially replaced by the glass fibres and fillers in the composite, while the organic fraction is burned in the process for energy, replacing coal. The wind blades can be broken down by the grinding equipment on location, so there is no need to ship entire blades to a recycling point.
- Another example involves alternative technologies like mechanical recycling, solvolysis and pyrolysis are being developed, which will ultimately provide the industry with additional solutions for end of turbine life.
- As part of Forest Wind's Development Permit Condition no.17, Forest Wind is required to prepare a Decommissioning and Rehabilitation Management Plan (DRMP) prepared by a suitably qualified person. The requirements of the DRMP are outlined in the enclosed Development Permit conditions, no. 17.



Forest Wind

THANK YOU!

QUESTIONS?