

# Lotus Creek Wind Farm

**Community Information Sessions**

**St Lawrence, 9 March 2022**

**Clarke Creek, 10 March 2022**

**Jessica Picton, Development Manager**

**EPURON**

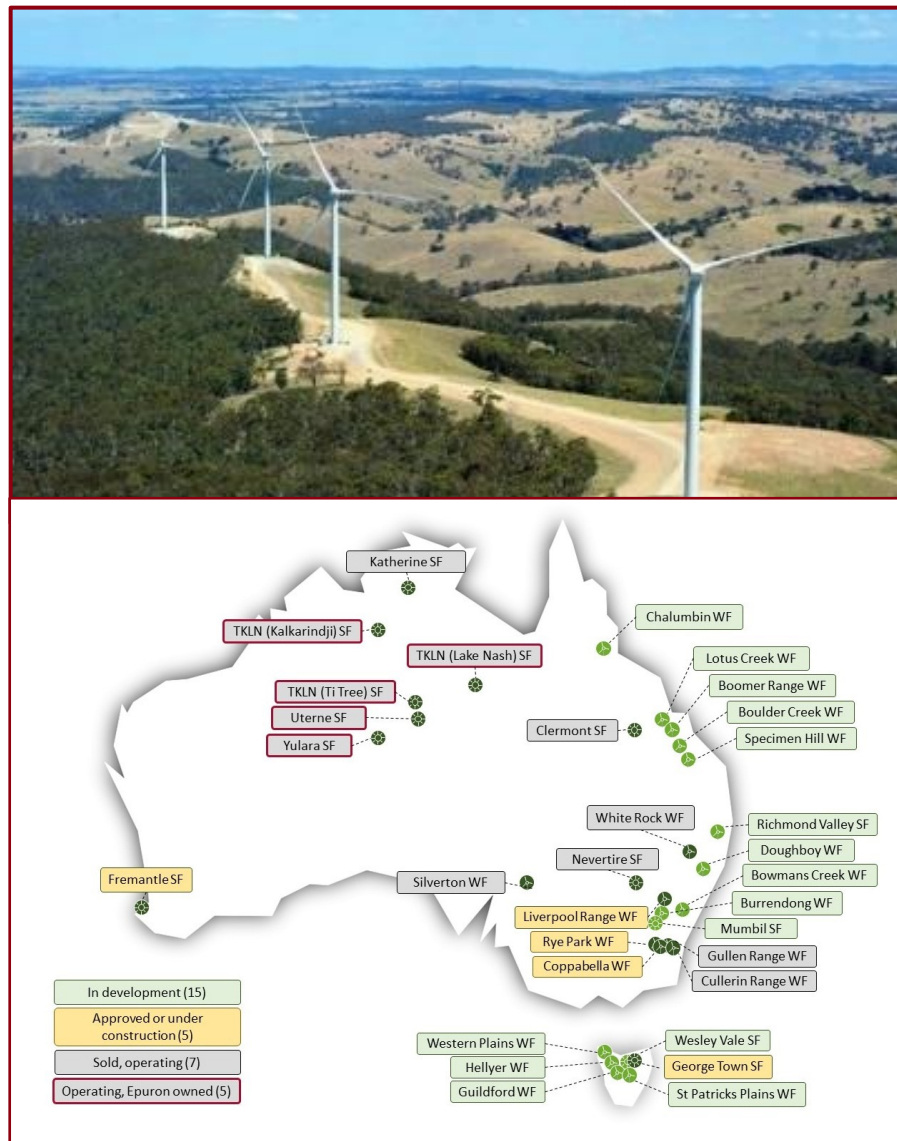
# Acknowledgement of Country

We acknowledge the Traditional Custodians of the land on which we meet and their continuing connection to lands, waters and communities.

We pay our respects to Elders past, present and emerging.

# Epuron

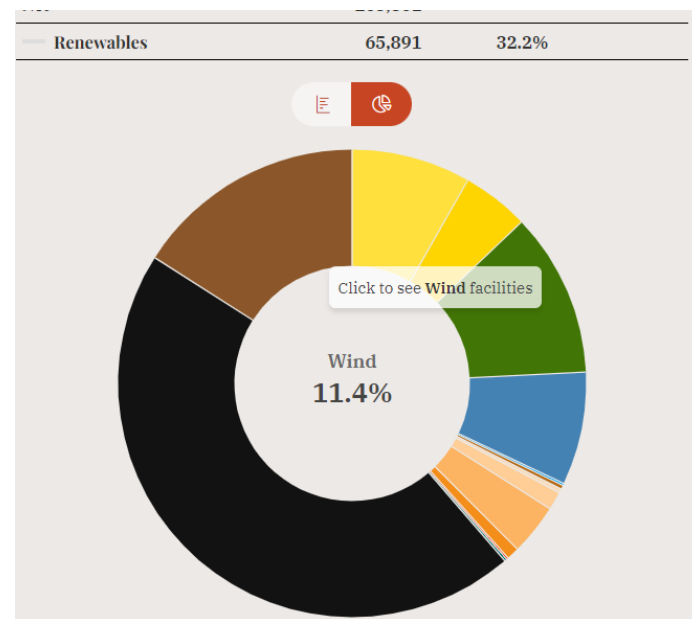
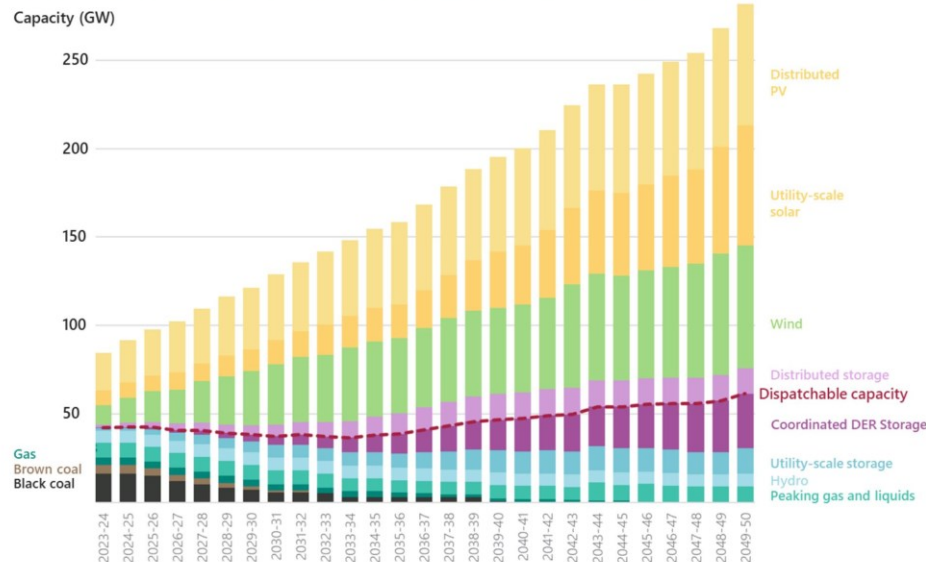
- Developing renewables since 2003.
- **4000 MW** of utility-scale wind farm experience including 8 approved wind farms.
- **12** wind farm projects in development (Qld, NSW, Tas).
- **400 MW** of utility-scale solar energy experience including 5 operating solar farms
- **6** solar farm projects in development (WA, NSW, Tas, NT).
- Signatory to Clean Energy Council's Best Practice Charter.
- Expert team, collaborative and consultative approach.



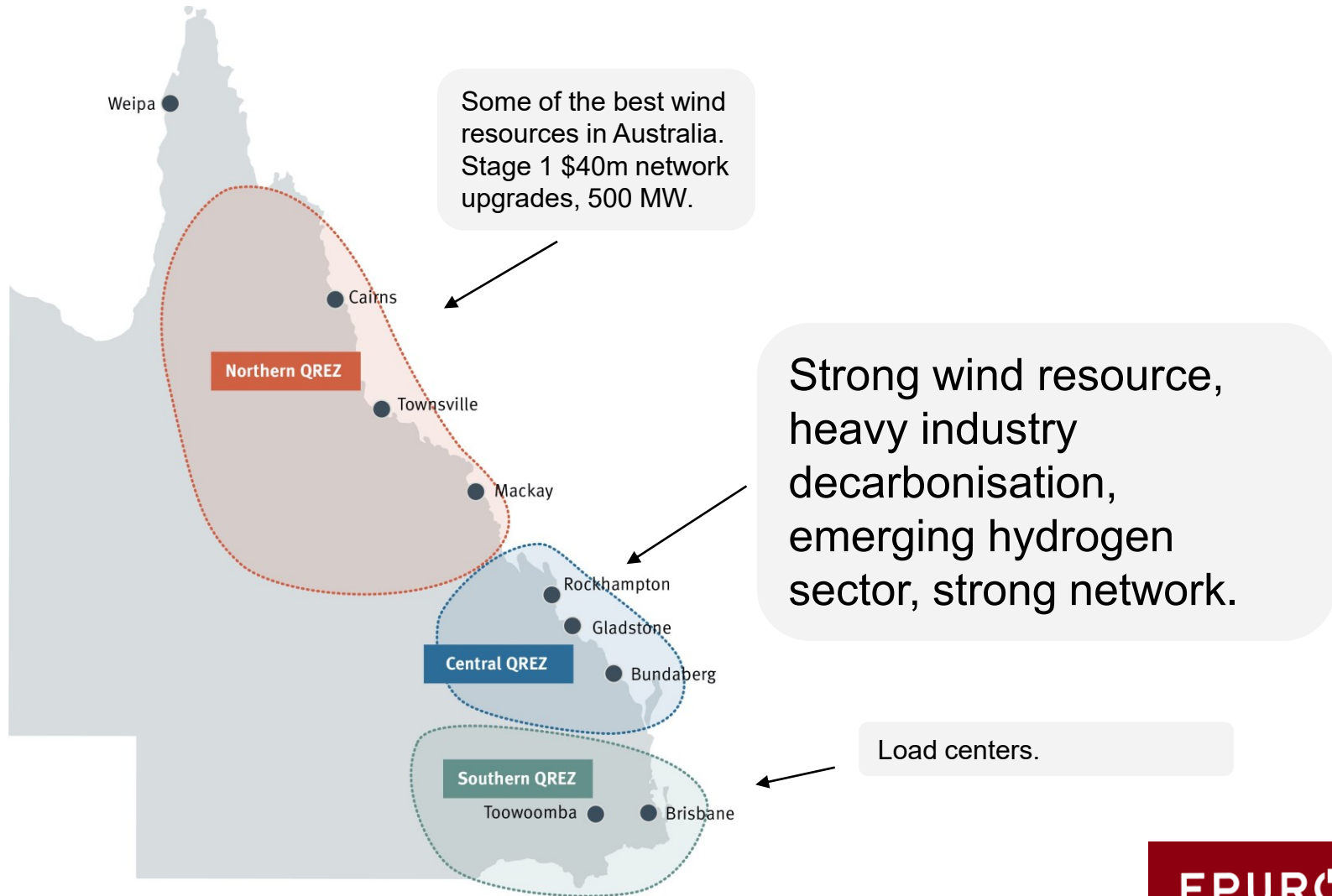
# Big picture

- Aus energy ~30% from renewables ~10% wind
- Coal retiring 2-3 times faster than expected.
- Draft 2022 Integrated System Plan (ISP) = NEM needs 135GW solar, 70GW wind, 45GW storage by 2050.
- Triple the previous forecast and nine-times the variable RE we have now.
- Qld. renewable energy target 50% by 2030 (currently ~20%).
- AEMO projects 47 GW of new RE in Qld by 2050.

Figure 1 Forecast NEM capacity to 2050, Step Change scenario, with transmission



# Queensland's renewable energy zones



# Site selection



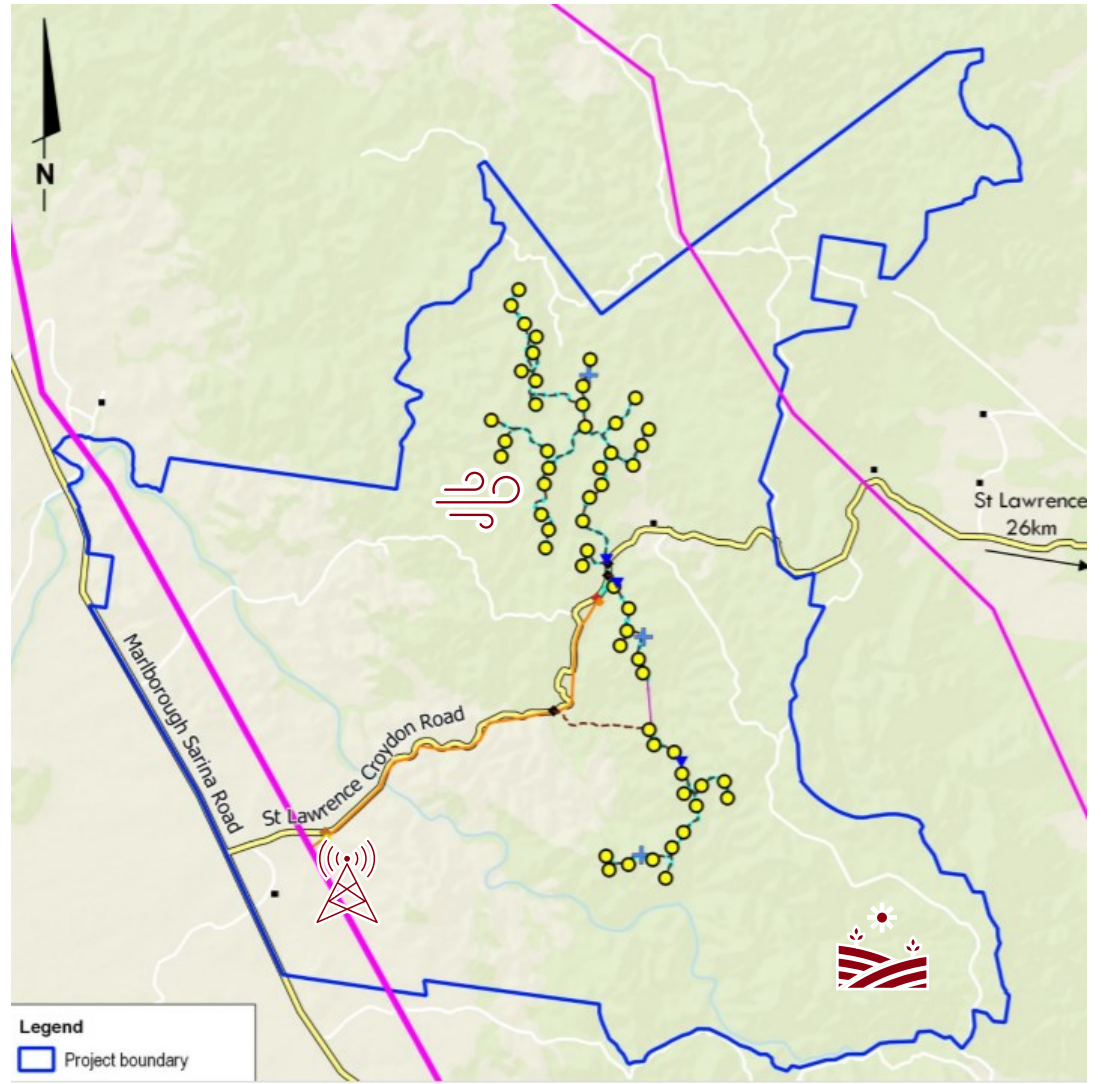
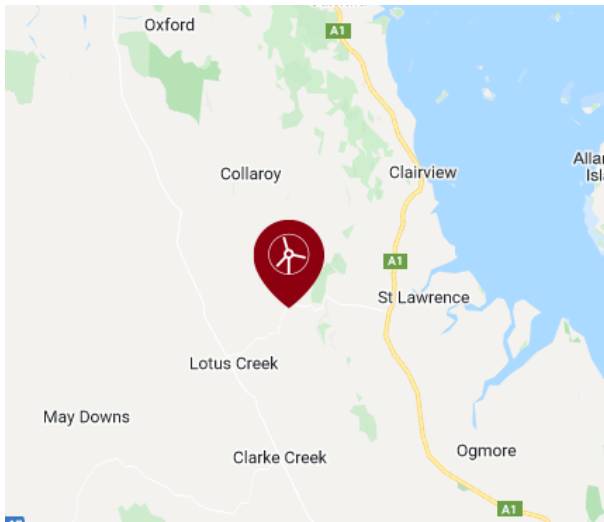
Wind resource



Grid connection

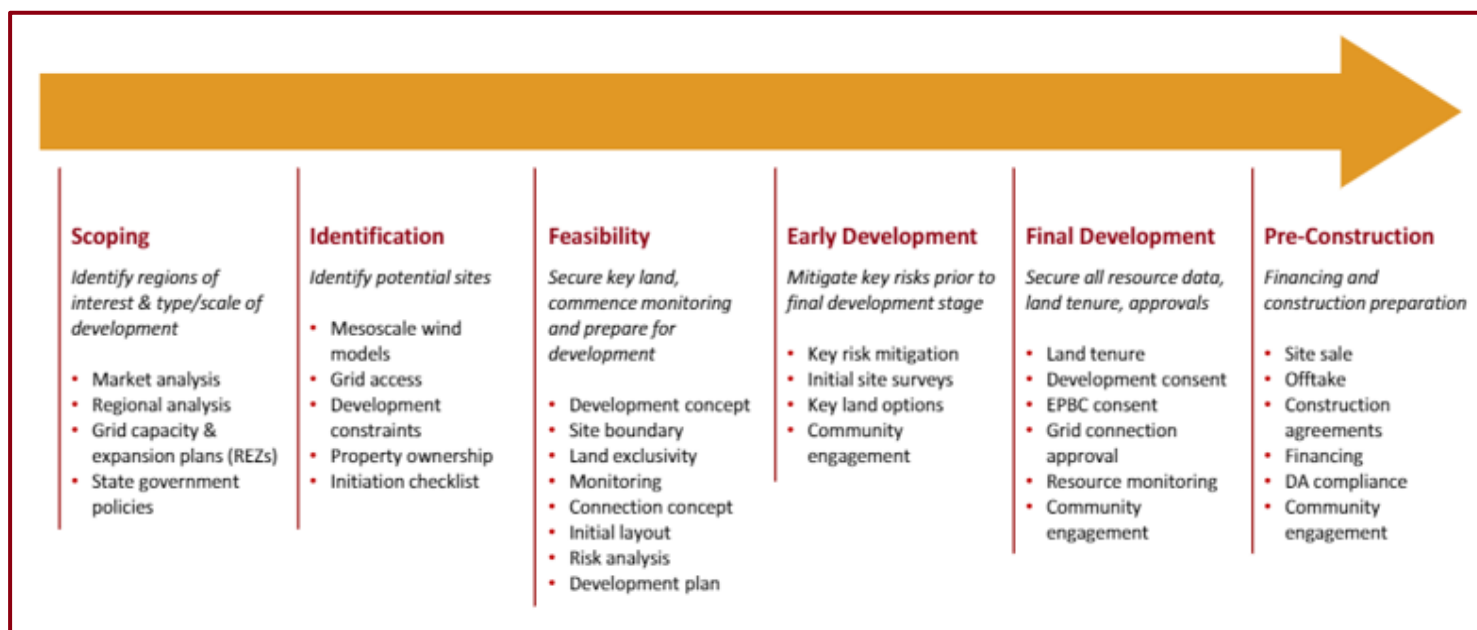


Land tenure

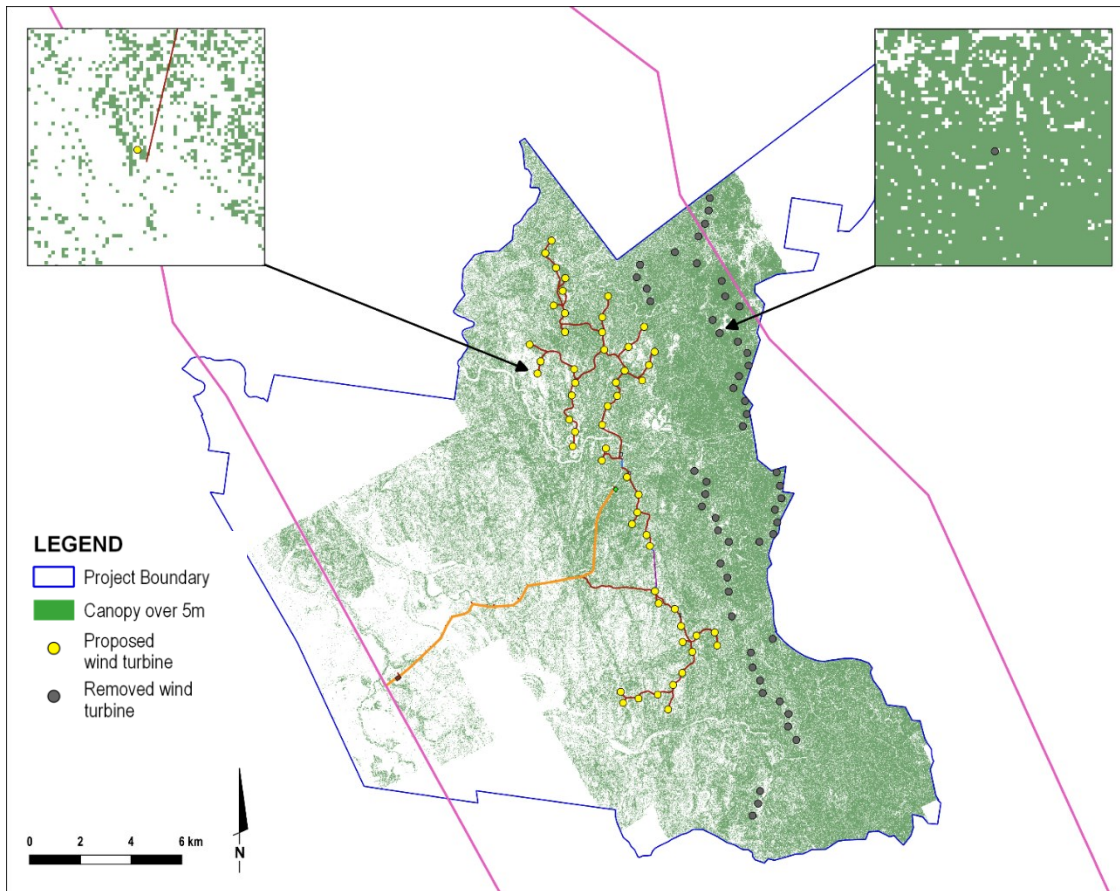


# Project design process

- Feasibility study process advances project definition over time.
- Iterative design process, constraints and opportunities considered (e.g. ecology, cultural heritage, civil works, wind resource modelling etc.)
  - Original concept considered 81 wind turbines (maximise economic wind resource).
  - Footprint reduced to 55 wind turbines (avoidance of site-specific constraints).



# Design refinement – ecology



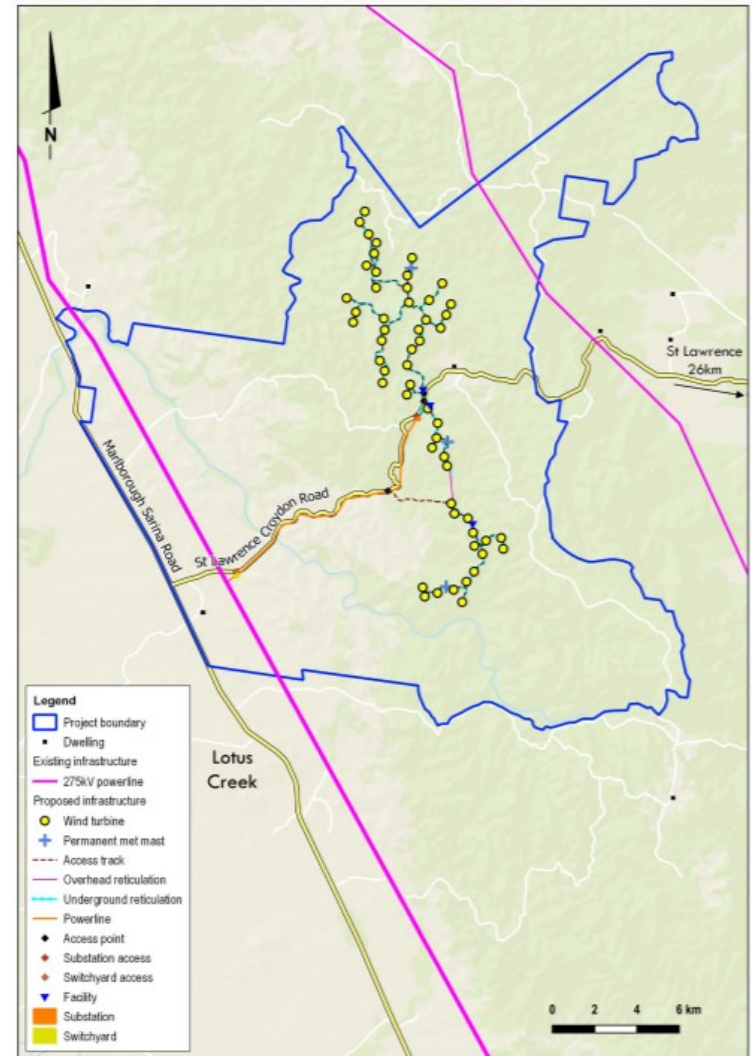
- Referral March 2020
- Decision action unacceptable in June 2020
- Additional ecological surveys undertaken
- Design revisions
- Decision acceptable/controlled action Feb 2021

*Design Revisions Include Move of Infrastructure Into Low Density Trees*



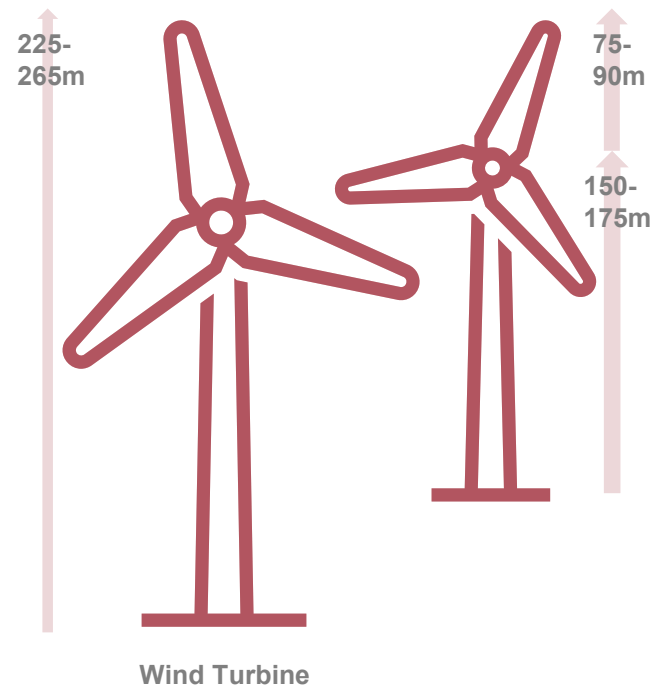
# Proposal

- Location: approx. 26 km west of St Lawrence in Isaac Regional Council area.
- Capacity: 55 wind turbines, approx. 341 MW.
- Wind resource: monitoring since 2018 (10 sodar sites, 3 met masts).
- Grid connection: new substation to connect to 275 kV Powerlink transmission line. Internal collector sub-station and overhead transmission line.
- Land tenure: land agreements with landholders, co-exist with pastoral land use.



# Wind turbine specifications

Parameter	Unit	Qty
1. Hub Height (Up to)	Metres	110 – 175
2. Blade Length (Up to)	Metres	75-90
3. Total Tower Height (Up to)	Metres	225-275
4. Wind Turbine Capacity	Megawatt	5 to 7
5. Wind Farm Size	# Wind Turbines	55
6. Total Wind Farm Capacity	Megawatt	275-385



# Components - examples

## Access tracks



- 5.5m crest width
- Wider toe width required for cut / fill batters, drainage and erosion control
- Buried cabling
- Preliminary design

## Tower foundations



- 800m<sup>3</sup> concrete
- Constant pour to maintain integrity

# Components - examples

## Hardstands



- Crane assist pad, high / large equipment
- Laydown area (blades, tower, nacelle etc.)

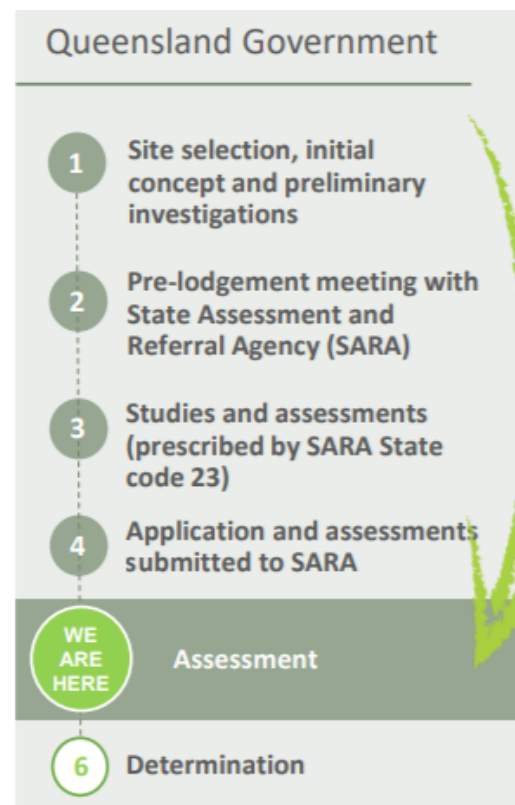
## Substations



- Wind farm collector to link turbines across site
- Low voltage to high voltage connection
- Potential for battery storage to support grid connection
- 2 ha each

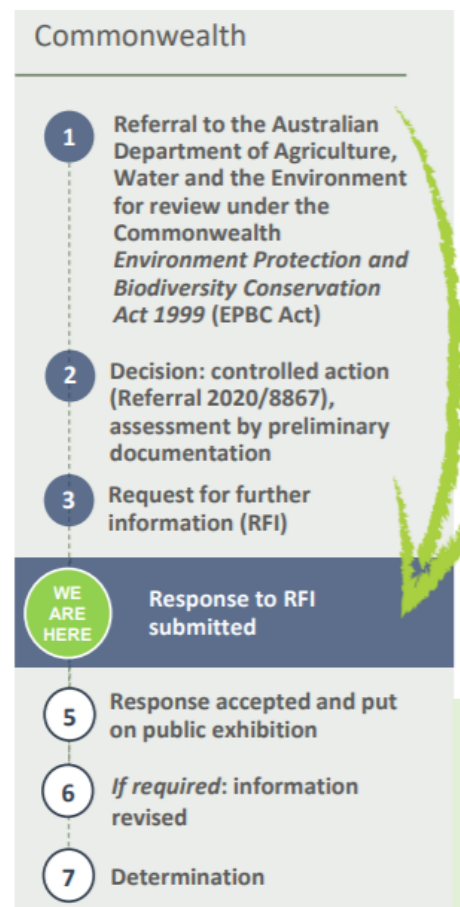
# Assessment – State

- Development Application lodged 2021
  - Material change of use for Wind Farm (State code 23).
  - Operational works for clearing native vegetation (State Code 16).
- Technical studies include:
  - Aviation Impact Assessment.
  - Ecological Assessment Report (including Vegetation Management Plan, Fauna Management Plan, Bird and Bat Management Plan).
  - Electromagnetic Interference Assessment.
  - Landscape and Visual Impact Assessment.
  - Noise Impact and Shadow Flicker Assessment.
  - Traffic Impact Assessment and Preliminary Route Assessment (port to site).
  - Preliminary Stormwater Management Plan.
  - Preliminary Construction Management Plan and Erosion and Sediment Control Plan.



# Assessment - Commonwealth

- Referral lodged March 2020
- Following design iterations the Federal Department of Agriculture, Water and Environment (DAWE) deemed proposal a 'controlled action' assessable by Preliminary Documentation (PD) in February 2021
- Request for Information (RFI) issued by DAWE in March 2021.
- Initial response to RFI submitted to DAWE in January 2022 with supplementary information provided in March 2022.
- Draft PD will be placed on public exhibition following adequacy review by DAWE, most likely in Q2 2022.



# Traditional Owners

## Barada Barna People

- Eastern portion of project area.
- Cultural Heritage Management Plan and Indigenous Land Use Agreement signed in February 2020.

## Barada Kabalbara Yetimarala People

- Western Portion of the Project Area
- Cultural Heritage Management Plan and Indigenous Land Use Agreement signed in October 2021.

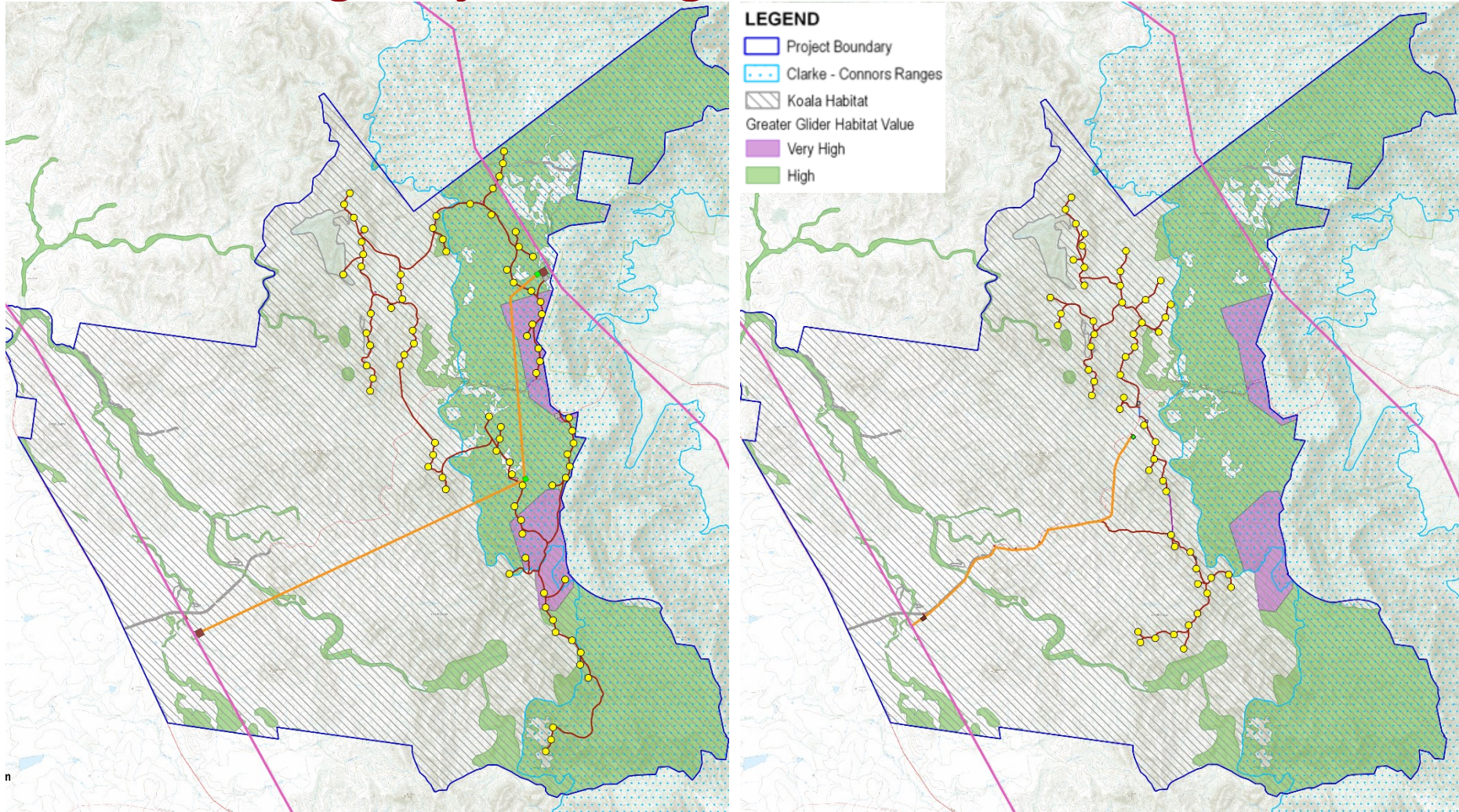


ILUA and CHMP Signing February 2020



ILUA and CHMP signing October 2021

# Avoiding key ecological values





# Ecology survey effort

- Detailed ecological surveys between Autumn 2019 to Spring 2021
- Ecologists on site for more than 2,000 hours
- Four repeats of bird and bat utilisation surveys
- Autumn and Spring (x2) flora and fauna surveys
- Walkover of entire footprint 2021



# Ecology results

## Matters of National Environmental Significance

- Koala 341 ha
- Greater Glider 45 ha
- Squatter Pigeon 16 ha breeding & 32 ha of foraging
- Rufous Fantail & Satin Flycatcher 352 ha
- White-throated Needletail & Fork-tailed Swift 399 ha

## Matters of State Environmental Significance

- *Cycas terryana* (304 individuals)



Greater Glider on the Clarke-Connors Range



*Cycas terryana* (Qld state-listed)

# Avoid and minimise measures

- Entirely avoids impacts to Greater Glider habitat, which is also high-quality habitat for Koala.
- Entirely avoids impacts to Clarke-Connors Range bioregion.
- Minimises impacts to Koala (and other MNES, such as Squatter Pigeon) habitat due to:
  - Smaller project (from 81 turbines down to 55 turbines; and from 620 ha down to approximately 350 ha).
  - Reduced project footprint: refinement of detail in design.
  - Individual turbine siting assessment: comparative selection by energy generation vs impact.
  - Siting turbines as close to existing or proposed tracks as possible.
  - Siting turbines in areas of lower density non-juvenile Koala feed trees.
  - Siting transmission line adjacent to existing state road.

# Mitigation measures

- Sensitive construction procedures including pre-clearance checks and staged clearing methods.
- Cycad translocation – no net loss.
- Responsive predator and weed control.
- Assisted regeneration of disturbed areas.
- Restore local habitat by working with existing landowners to improve already degraded areas.
- Improve connectivity: minimise physical barriers to Koala movement etc.
- Bushfire risk reduction: improve access for fire fighting to help prevent and manage the devastating impacts of major blazes.

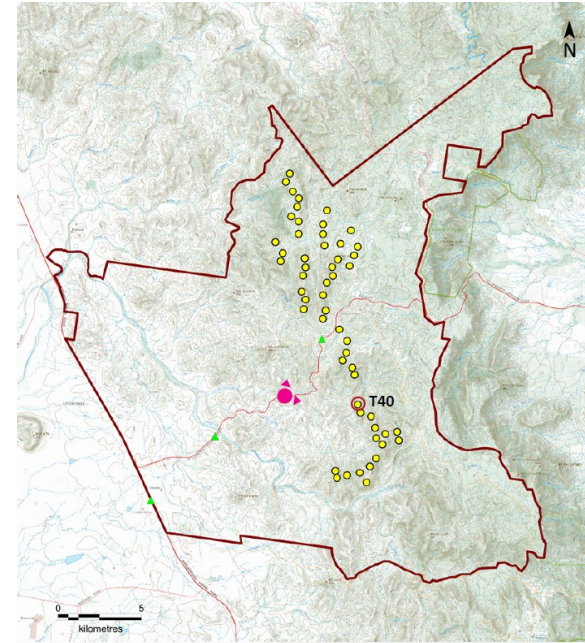
# Offsetting measures

- Offsets are likely to be required for:
  - Commonwealth – Koala, Greater Glider, Squatter Pigeon habitat
  - State – Remnant vegetation
- The direct offset will incorporate:
  - Additionality. Reduced risks (from predators, weeds, bushfire); improved habitat quality, selective removal of cattle grazing.
  - Protection.
  - Mix of good quality habitat which currently supports the target species, and lesser quality habitat with the potential for improvement.
- Other compensatory measures are under consideration.

# Visual amenity

## State Code 23 Performance Outcome 09

Development avoids, or minimises and mitigates, adverse impacts on the character, scenic amenity and landscape values of the locality and region through effective siting and design.



Photomontage of what the wind farm would look like from location “PM4” on Saint Lawrence Croydon Road

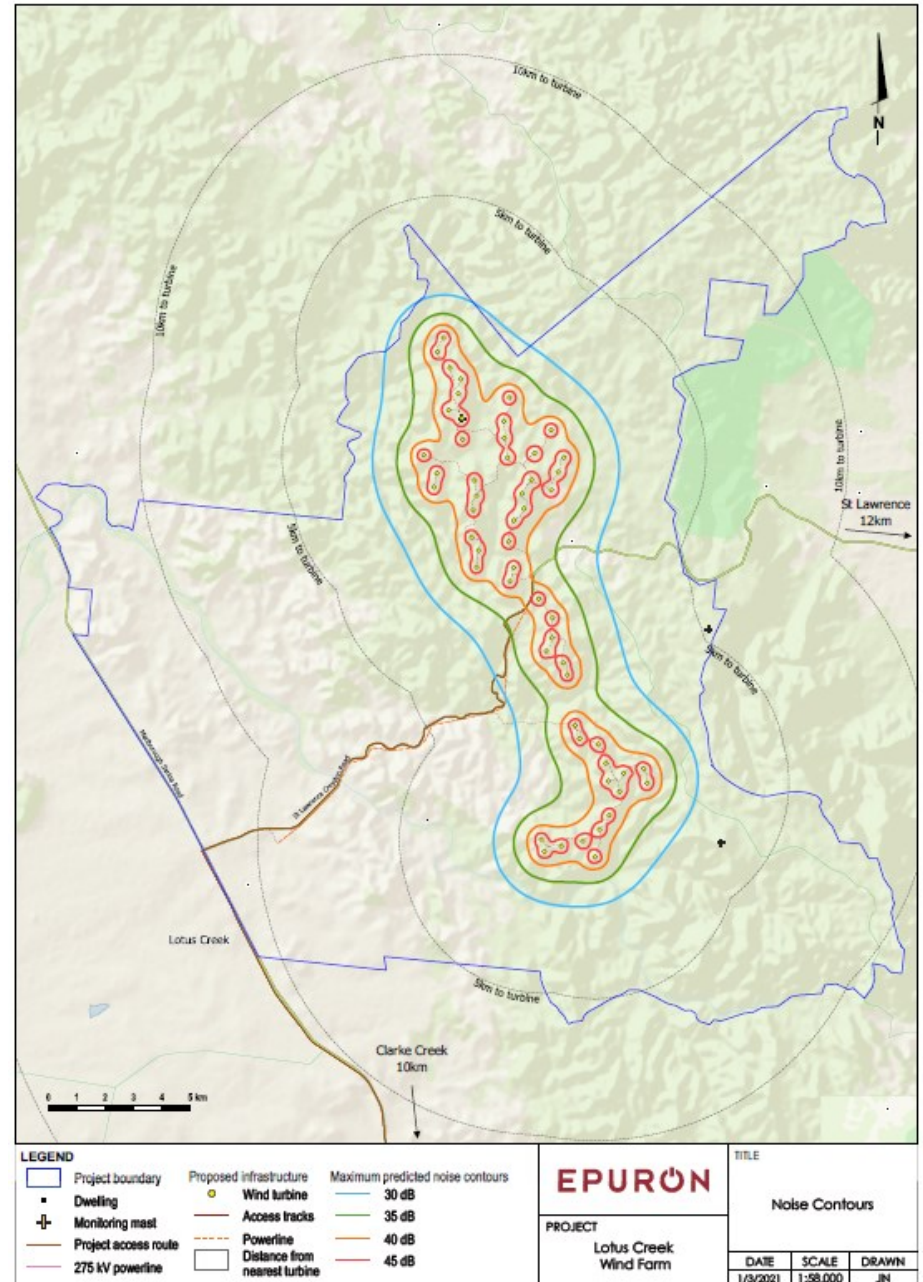
# Transport

- Delivery of components along existing route from Port of Gladstone (~340 km).
  - Swept path analysis, large components: blades (81m length) and tower (6.2m diameter).
  - Feasible route with mitigation measures (Traffic Management Plan).
- Tower delivery requires diversion.
  - Goondoon street over bridge height restriction 5.2m
  - Base tower diameter 5.9m
  - Diversion via Flinders Parade.
- Nacelle, hub, drive train and transformer.
  - To use Red Rover Road, Don Young Drive, Dawson Highway to access Bruce Highway
- Increase on road network minor.
  - 190 to 250 vpd (average) increase Marlborough Sarina Road during construction.
  - 15 to 215 vpd (average) Saint Lawrence Croydon Road during construction.



# Noise

- Noise assessment undertaken against criteria provided in State code 23.
  - Night-time (host): 45 dB(A) / background + 5 dB(A).
  - Night-time (non-host): 35 dB(A) / background + 5 dB(A).
  - Day-time (host): 37 dB(A).
  - Day-time (non-host): background + 5 dB(A).
- Predictive modelling indicates compliance at all host and non-host lots.





# Socio-economic benefits

- ~\$700M investment to engineer, procure and construct the project
  - Significant direct and indirect expenditure, value-add and household income in local, regional and Qld economy.
  - Preliminary analysis indicates \$200M in direct and indirect expenditure in local economy during construction.
- 2 years of construction work
  - 250-350 jobs on site – civil/electrical, construction, admin, support etc..
  - Aim for local work force where possible.
- 25 + years of operation
  - 15-30 long term jobs for local people.
  - Mostly wind turbine technicians – electrical trade.
  - Landscaping, admin, support etc.
- 1700 GWh per annum of clean renewable energy production
- Powering ~300,000 homes per year

# Construction opportunities

- Electricians HV/ LV
- Engineers
- Heavy vehicle drivers
- Steel fixers, & Welders
- Riggers & Labourers
- Road constructors
- Crane operators
- Geotechnical testers
- Excavator operators
- Mechanical fitters
- Project managers
- Environmental officers
- Plumbers
- Fence builders
- Supervisory roles
- Surveyors
- Security Officers
- Landscapers & Gardeners
- Cleaners
- Maintenance staff
- Caterers
- Administration staff
- Safety officers
- Accommodation services

# Operations opportunities (25+ years)

- Operations team remains with the project.
- Wind turbine technicians
  - Electrical experience (typically).
  - Special training.
  - 1 technician per 5-6 turbines.
- Managers/admin
  - 2-3 depending on project size and ownership.
- Landscaping
  - Ongoing offset and ecology management requirements.
  - Rehabilitation.
- Community liaison
  - Contact for any community concerns.
- Total team 15-30
  - Living locally or sourced locally.

# Community engagement

- Project updates issued via mail and email.
- Project website with feedback form: [lotuscreekwindfarm.com.au](http://lotuscreekwindfarm.com.au)
- Information sessions.
- Ongoing engagement and consultation with community members and stakeholders via email and phone.

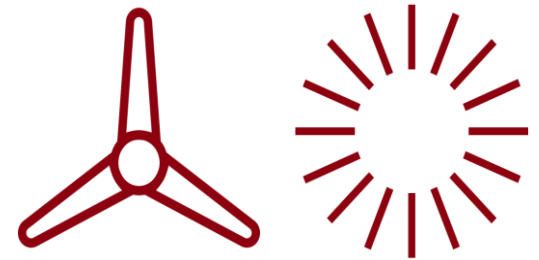


# Next steps

- Quarter 1 to Quarter 2 2022
  - Feedback from Community Information Session
  - Wind Farm Development Application
  - Public exhibition of Preliminary Document Report
  - Register interest for construction involvement
- Quarter 3 2022 to Quarter 2 2023 (pre-construction activities)
  - Completion of Final Development activities (Commonwealth approval, grid connection)
  - Commence pre-construction activities (detailed design, secondary approvals, management plans)
  - Final investment decision to proceed with construction
- Mid 2023\* construction (24-30 months)

\* Indicative, subject to completion of previous stages

# Questions



EPURON



# Thank you

**Jessica Picton –  
Development Manager**

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