# Central Queensland Power

Submission to AEMO ISP IASR Consultation- Feb 2021

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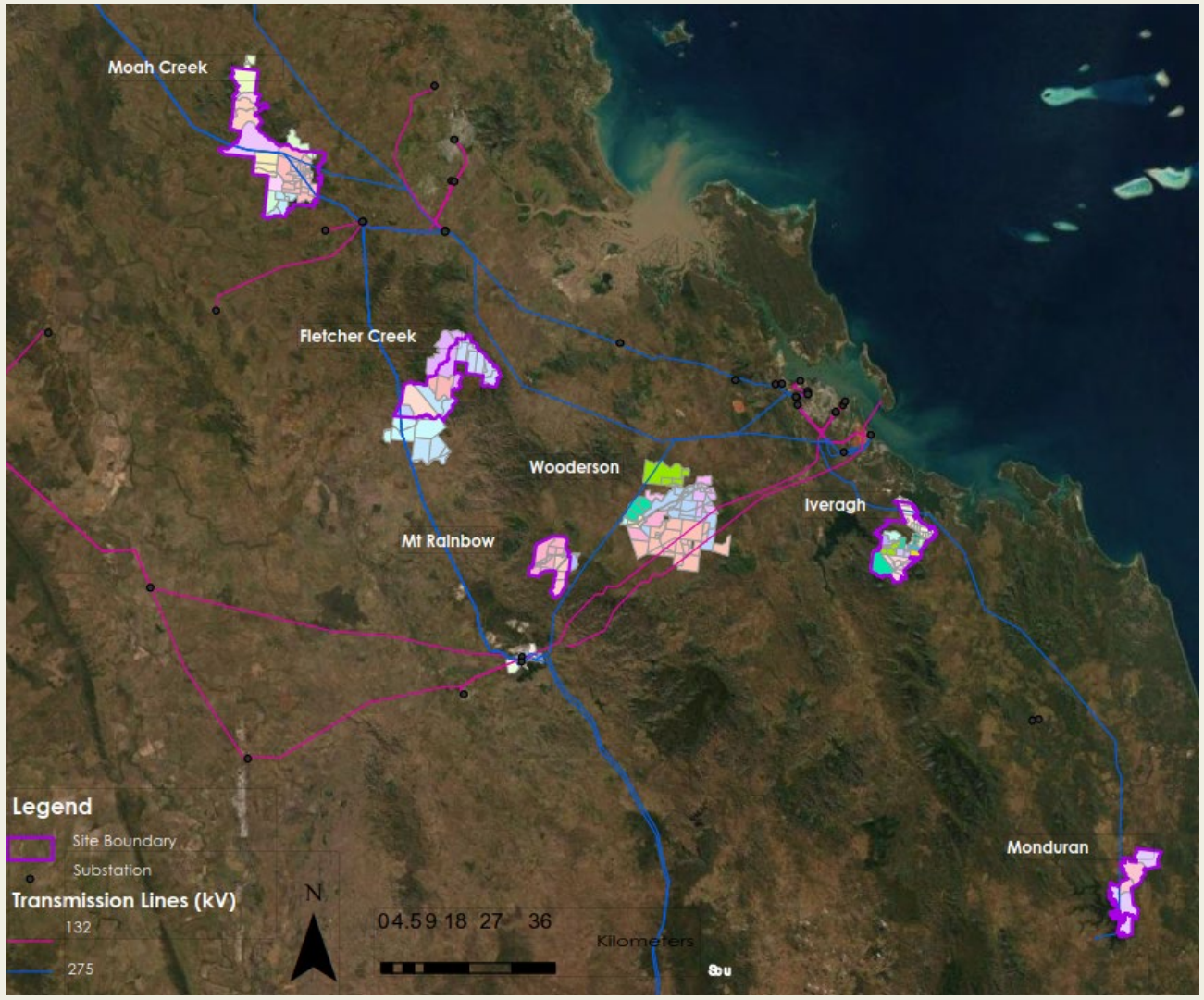
# Central Queensland Power

## Project overview

Energy Estate and RES have formed a joint venture to develop a portfolio of wind, solar and ESS projects with a capacity of over 2GW to drive the decarbonisation of heavy industry in Gladstone and the wider Central Queensland region.

CQP will provide cheap, reliable renewable energy for energy users, preserve and create local jobs and support the just transition of the energy workforce in Central Queensland.



# Central Queensland Power

## Key Information

| | |
|---|---|
| Technology | 1700MW wind, 300MW solar, 2TWh BESS and long duration storage options |
| Location |  Central Queensland region, QLD, Aus |
| Timeline | • Q4 2022/Q1 2023 – Scheduled construction commencement for Stage 1 projects<br>• 2024/2025 – Stage 1 projects operational |
| Energy Estate's role | Joint venture partner and co-developer 50% |

# Gladstone as a Regional Node

- **CQP is reviewing the implications of a separate Calliope River (Gladstone) Node in light of the ISP Methodology released today (1 Feb 2021). We are supportive of a detailed grid analysis centered around a Gladstone Node, but remain cautious around:**
    - **Inter-regional risk**: where a nodal strategy extends to nodal pricing (which we do not support). This is exacerbated by identified constraints between Central Queensland and Northern Queensland.
    - **Transmission costs**: the imposition of network reinforcement costs on REZ developers associated with the inter-nodal flows in circumstances where those reinforcements arise principally from the prospective retirement of both Callide B and Gladstone Power Station.

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# The Banana REZ

- **CQP strongly supports the inclusion of a new REZ in Central Queensland as suggested in Figure 32.**
- The Banana REZ would be consistent with the Central Queensland REZ promoted by the Queensland State Government and Central Queensland Power is developing large scale projects in this region in addition to the Q6 - Fitzroy REZ.
- In addition to the attraction of the development of Gladstone as one of the green hydrogen export ports we would like to highlight the other features of the Banana REZ:
    - Proximity to existing grid infrastructure – due to location of Stanwell and Callide power stations, the existing lines to large scale mines such as Blackwater and the lines to the south from Calvale
    - Strong wind resource (as demonstrated by the development of the Banana wind farm) and excellent solar resource (there are already a number of projects in development within this REZ)
    - Local load – In addition to the mining loads and the local communities, there are loads which can be electrified such as Queensland Nitrates ammonia plant at Moura. Please see the knowledge sharing report published by ARENA - https://arena.gov.au/assets/2020/07/qnp-green-ammonia-feasibility-study.pdf
    - Potential to replace coal-fired generation with local generation which will reduce transmission augmentation costs compared with development in some of the other REZs in Queensland
    - Good infrastructure in terms of roads and site suitability for wind and solar farms

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**We support, and refer you to, the submission by Energy Estate in relation to Hydrogen Modelling section 4.14**

# The Banana REZ

- **However:**
  - **Rationale:** The strategic rational for the establishment of the Banana REZ is, only in part to "*provide additional resources that may be advantageous to complement electrolyser loads*" (see 4.9.1 of the report). Key factors that should be articulated by AEMO should include:
    - to meet anticipated (early) retirement of the coal-fired power stations in Central Queensland
    - to meet the strategic need to decarbonize the existing load in Gladstone (the smelter, refineries etc.)
  - **Transmission costs**: Given the proximity of the Banana REZ to the significant load in Gladstone and the prospective retirement of Calide B and Gladstone Power Station (based on likely economic scenarios), it would be unreasonable for renewable generators to bear the costs associated with grid augmentation required to supply the existing Gladstone load to be met following that retirement
  - **Settle against the right node**: if (despite our opposition to nodal pricing principles) regional nodal pricing were to be adopted, then the Banana REZ and the Fitzroy REZ should be settled against the Gladstone Node, not the Ross Node.
  - **Timing**: The likely retirement of coal-fired power in and around Gladstone is likely, in our view, to be more accelerated than anticipated in the draft input assumptions, necessitating grid augmentation well before the "2030s".

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*We note that AEMO has released today (1 February 2021) the ISP Methodology. CQP will respond separately in relation to the Banana REZ once we have considered the methodology in further detail.*

# Coal Retirement & Energy Storage

## Coal Retirement

CQP is of the view that relevant coal-fired power stations in Central Queensland are likely to retire  well in advance of their scheduled retirement dates relied on by the ISP.

It is noted that in Table 46 that reinforcement is required "*To increase thermal capability of transmission lines to supply Boyne Island load and load supplied from Calliope River, Larcom Creek and Raglan substation following retirement of Gladstone power station*."

CQP believes that new projects should not be saddled with transmission augmentation costs arising by virtue of the retirement of coal fired power stations
in circumstances where major existing and future load cannot otherwise be met.

## Energy Storage technology

A key element of "dispatchable" renewable energy requires effective long duration energy storage, at lowest price.

CQP is exploring a variety of energy storage options to be located in and around its projects and more broadly in the region.

The ISP does not anticipate in detail the full range of storage options, including compressed air.  We recommend emerging technologies be considered in further detail

**We refer to and support the submission of Hydrostor Australia in relation to the ISP.**

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## System strength

One of the key issues facing Gladstone and the Queensland grid more generally is the implication of the retirement of Gladstone Power Station.  This not only impacts thermal capacity issues on nearby lines but may also have a material impact on system strength more broadly on the QLD grid. System strength should be a key part of AEMO's ISP planning process

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# Project snapshots

# Moah Creek Renewable Energy Project

## Key project details

| | |
|---|---|
| Location: | 30km west of Rockhampton, QLD |
| Technology: | Wind, Solar, Battery Storage |
| Plant Size: | 500MW (wind) 300MW (solar) 300MW (storage) |
| PPA Available: | 500MW |
| PPA (MWh): | 750.23 GWh/year (stage 1), 649.53 GWh/year (stage 2) |
| Connection point: | Stanwell substation |
| Project Energisation Date: | February 2025 |
| Project Commercial Operation Date: | May 2025 |

## Development status

- ✓ All landowners signed exclusivity agreements
- ✓ Heads of Terms agreed
- ✓ Constraints mapping completed
- ✓ Preliminary layout and energy yield completed
- ✓ Desk top feasibility undertaken
- ✓ Targeted Flora and Fauna spring surveys completed
- ✓ Bird and bat utilisation surveys completed
- ✓ Lidar deployed
- ✓ Connection options into either Stanwell substation or 275kv lines
- ✓ Full community engagement plan being developed

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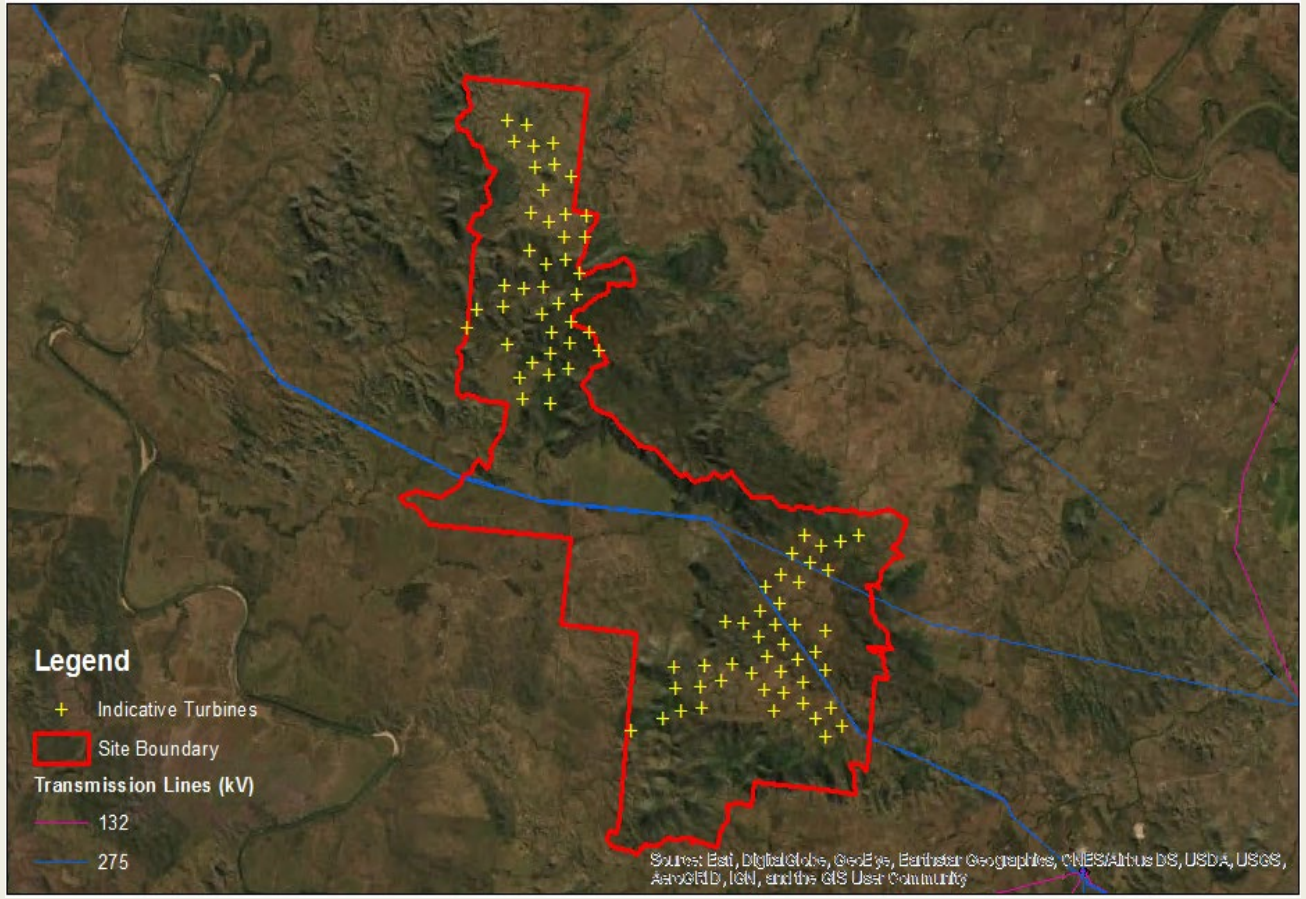
# Moah Creek Renewable Energy Project

## Design Ethos




Site selected due to:

- ✓ Good windspeeds
- ✓ Proximity to transmission lines
  - ✓ Two 275kv run across the site
  - ✓ Stanwell substation 12km south of the site
- ✓ Marginal Loss Factor expected to be stable due to high voltage connection and proximity to load in Gladstone
- ✓ Low environmental and community impacts
- ✓ Avoid, mitigate and manage approach to biodiversity impacts – minimal offset expected
- ✓ Access route selected to utilise main access routes
- ✓ Large turbine rotor diameter and tip Height (250m) means excellent energy yields

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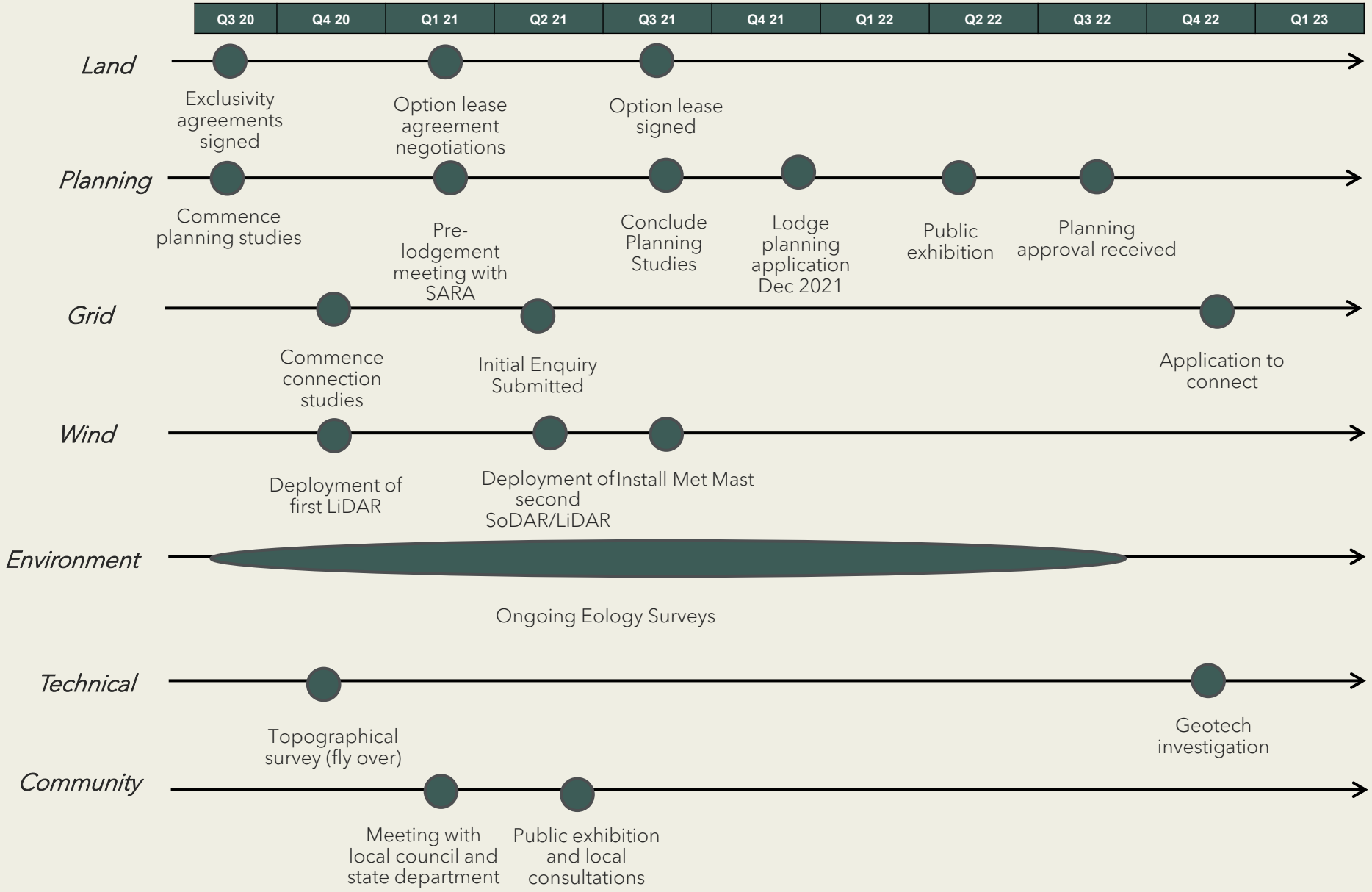
# Moah Creek Wind Farm : Project Milestones

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# Iveragh Renewable Energy Project

## Key project details

| | |
|---|---|
| Location: | 30km south of Gladstone, QLD |
| Technology: | Wind, Solar, Storage |
| Plant Size: | 340MW (wind) 200MW (solar) 100MW (storage) |
| PPA Available: | 340MW |
| PPA (MWh): | 829.24 GWh/year |
| Connection point: | 275kV Gin Wording to Calliope River or 275kV Gin Wording to Wurdong |
| Project Energisation Date: | September 2023 |
| Project Commercial Operation Date: | December 2023 |

## Development status

- ✓ 6 Landowners signed exclusivity agreements
- ✓ Constraints mapping completed
- ✓ Preliminary layout and energy yield completed
- ✓ Desk top feasibility undertaken
- ✓ Desktop ecology mapping
- ✓ Preliminary aviation assessment
- ✓ Connection options into either 275kV line Gin Ivereigh to Calliope River or 275kV Gin Ivereigh to Wurdong
- ✓ Full community engagement plan being developed

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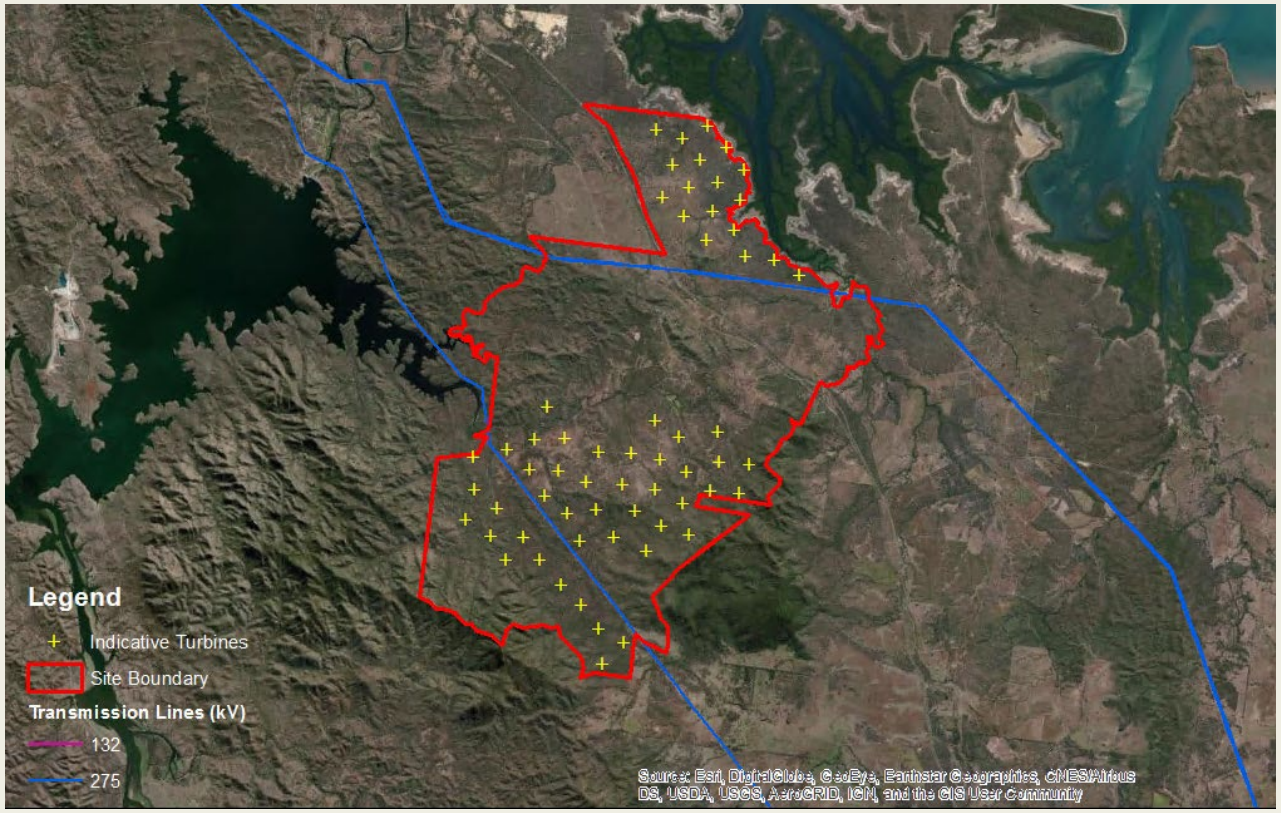
# Iveragh Renewable Energy Project

## Design Ethos




Site selected due to:

- ✓ Proximity to transmission lines
  - ✓ 275kV line Gin Wording to Calliope River runs across site
  - ✓ 275kV line Gin Wording to Wurdong runs across site
- ✓ Proximity to Bruce Highway means easy access from Gladstone
- ✓ Marginal Loss Factor expected to be stable due to high voltage connection and proximity to load in Gladstone
- ✓ Low environmental and community impacts
- ✓ Avoid, mitigate and manage approach to biodiversity impacts – minimal offset expected
- ✓ Large turbine rotor diameter and tip Height (250m) means excellent energy yields
- ✓ Good windspeeds

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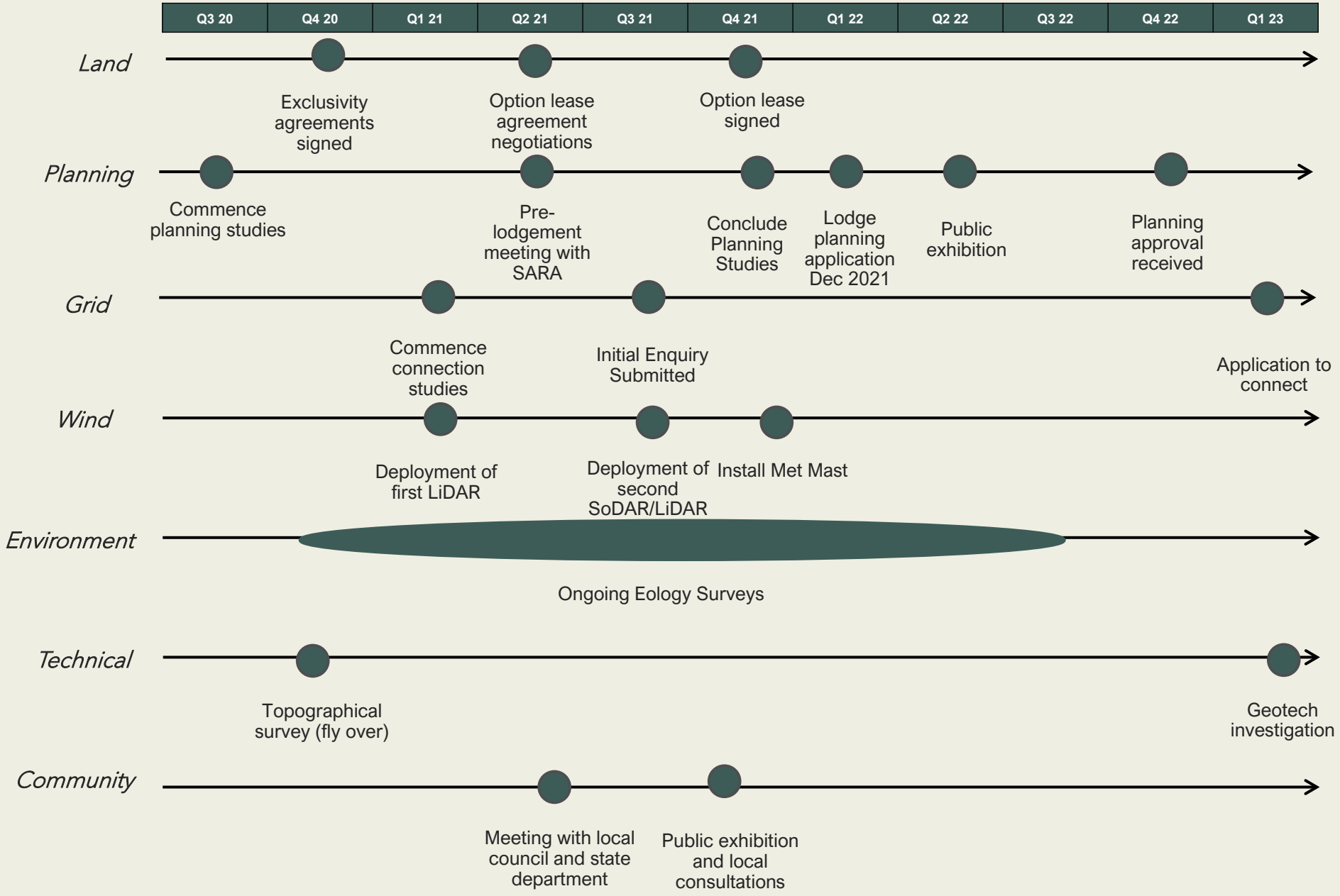
# Iveragh Wind Farm: Project Milestones

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# Mount Rainbow Wind Farm

## Key project details

| | |
|---|---|
| Location: | 30km north east of Biloela, QLD |
| Technology: | Wind |
| Plant Size: | 250 MW wind |
| PPA Available: | 250 MW |
| PPA (MWh): | 766.71 GWh/year |
| Connection point: | 275kV Wurdong to Calvale or 132kV Gladstone South to Callide A |
| Project Energisation Date: | July 2024 |
| Project Commercial Operation Date: | Oct 2024 |

## Development status

- ✓ 2 landowners signed exclusivity agreements
- ✓ Constraints mapping completed
- ✓ Preliminary layout and energy yield completed
- ✓ Desk top feasibility undertaken
- ✓ Targeted flora and fauna spring surveys completed
- ✓ Bird and bat utilisation surveys completed
- ✓ Lidar deployed
- ✓ Connection options into either 275kV Wurdong to Calvale or 132kV Gladstone South to Callide A lines
- ✓ Full community engagement plan being developed

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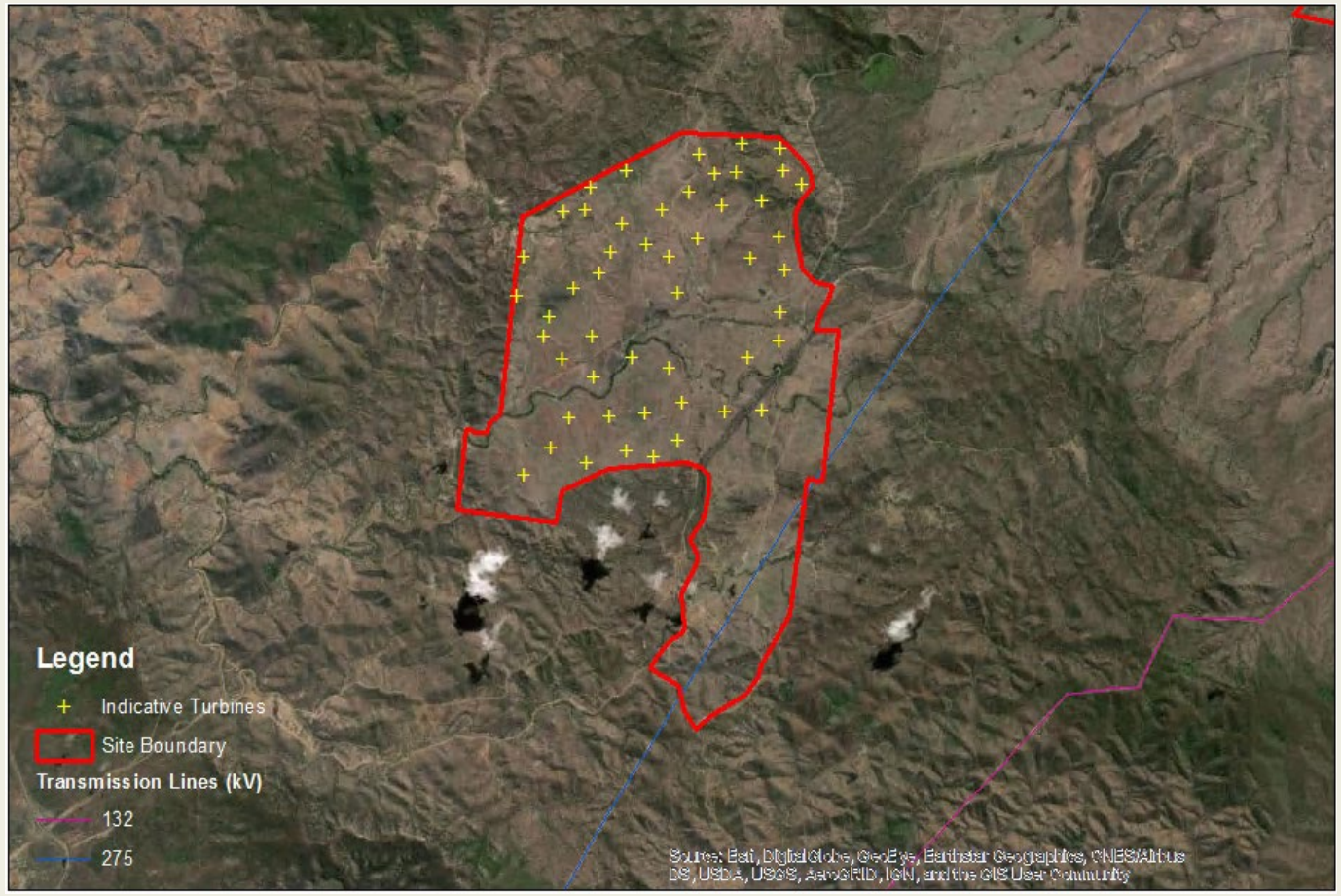
# Mount Rainbow Wind Farm

## Design Ethos




Site selected due to:

- ✓ Good windspeeds
- ✓ Proximity to transmission lines
  - ✓ 275kV line runs across the site
  - ✓ 132kV line runs 5km south of site
- ✓ Proximity to Dawson Highway means easy access from Gladstone
- ✓ Marginal Loss Factor expected to be stable due to high voltage connection and proximity to load in Gladstone
- ✓ Low environmental and community impacts
- ✓ Avoid, mitigate and manage approach to biodiversity impacts – minimal offset expected
- ✓ Large turbine rotor diameter and tip Height (250m) means excellent energy yields

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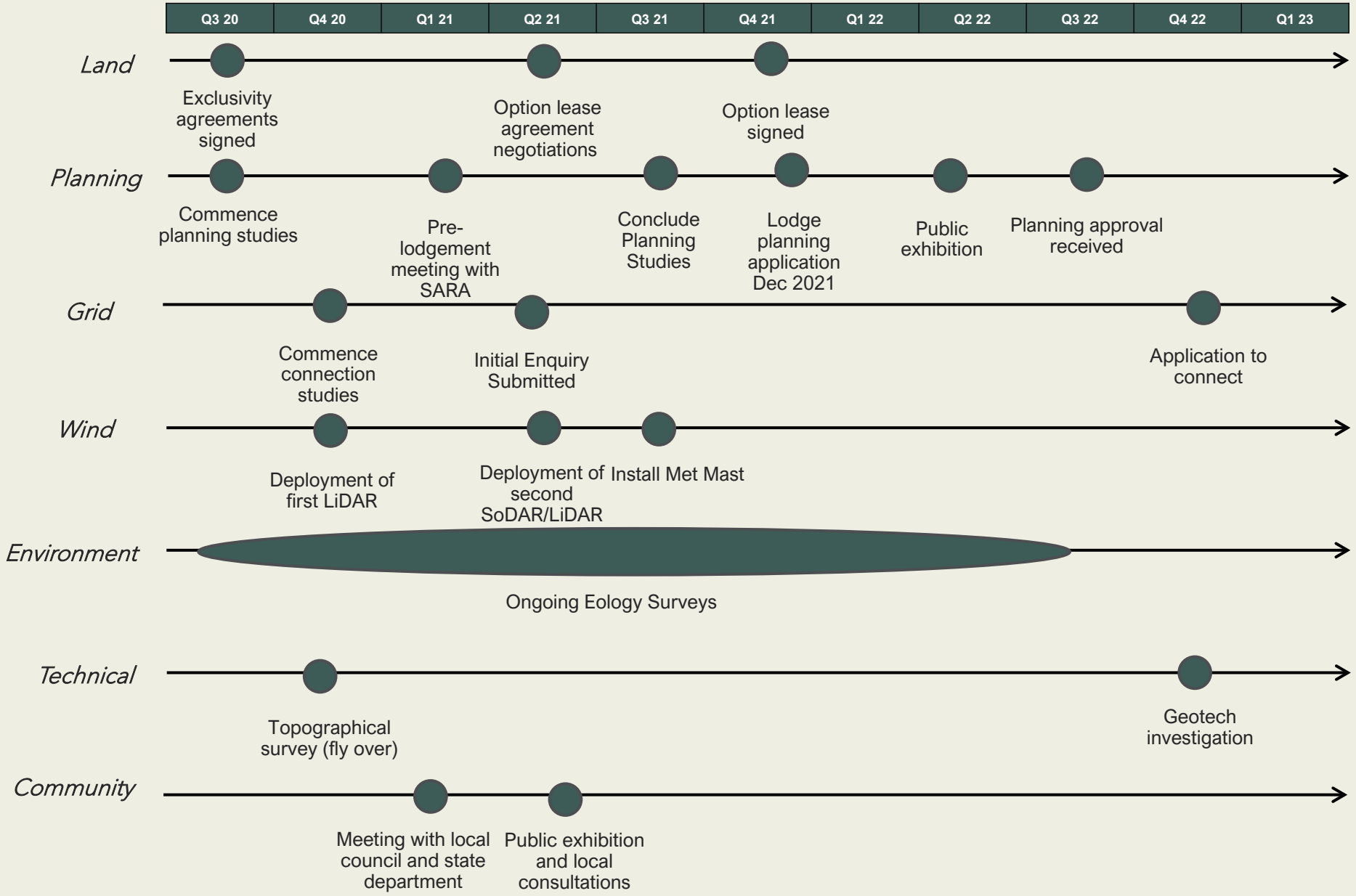
# Mount Rainbow Wind Farm: Project Milestones

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# Wooderson Renewable Energy Project

## Key project details

| | |
|---|---|
| Location: | 30km west of Gladstone, QLD |
| Technology: | Wind, Solar, Battery Storage |
| Plant Size: | 816.2MW (Wind), 300MW (Solar), 300MW (Storage) |
| PPA Available: | 800MW |
| PPA (MWh): | 2332.75 GWh/year |
| Connection point: | 275kV line Wurdong to Calvale |
| Project Energisation Date: | July 2024 |
| Project Commercial Operation Date: | October 2024 |

## Development status

- ✓ 3 Landowners signed exclusivity agreements
- ✓ Heads of Terms negotiations commenced
- ✓ Constraints mapping completed
- ✓ Preliminary layout and energy yield completed
- ✓ Desk top feasibility undertaken
- ✓ Spring flora and fauna surveys completed
- ✓ Preliminary aviation assessment completed
- ✓ 2 soDARs deployed
- ✓ Connection options into either developed 275kV line Gin Gin to Calliope River or 275kV Gin Gin to Wurdong
- ✓ Full community engagement plan being developed

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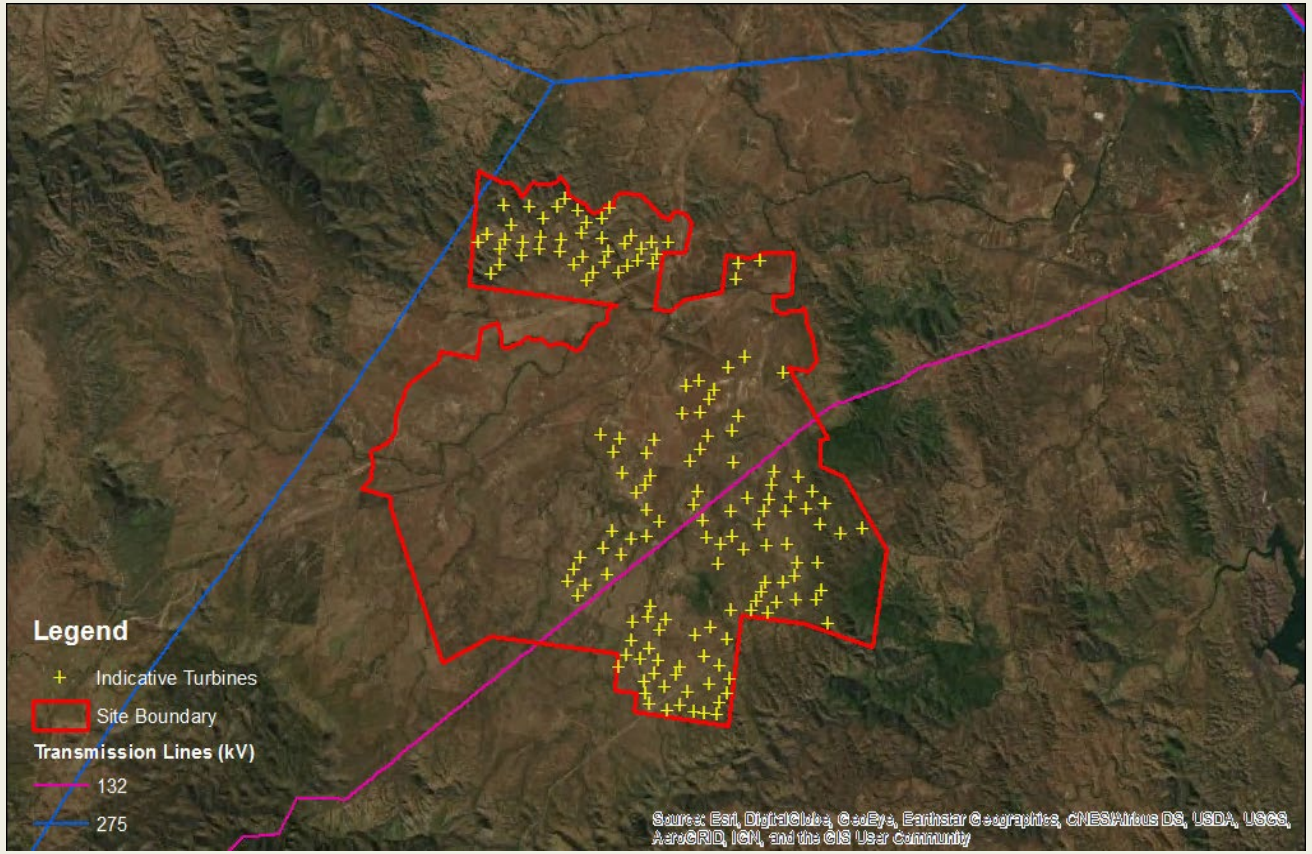
# Wooderson Renewable Energy Project

## Design Ethos




Site selected due to:

- ✓ Good windspeeds
- ✓ Proximity to transmission lines
  - ✓ 275kV line Wurdong to Calvale runs across site
  - ✓ 132kV line Gladstone South to Callide A runs across site
- ✓ Proximity to Bruce Highway means easy access from Gladstone
- ✓ Marginal Loss Factor expected to be stable due to high voltage connection and proximity to load in Gladstone
- ✓ Low environmental and community impacts
- ✓ Avoid, mitigate and manage approach to biodiversity impacts – minimal offset expected
- ✓ Large turbine rotor diameter and tip Height (250m) means excellent energy yields

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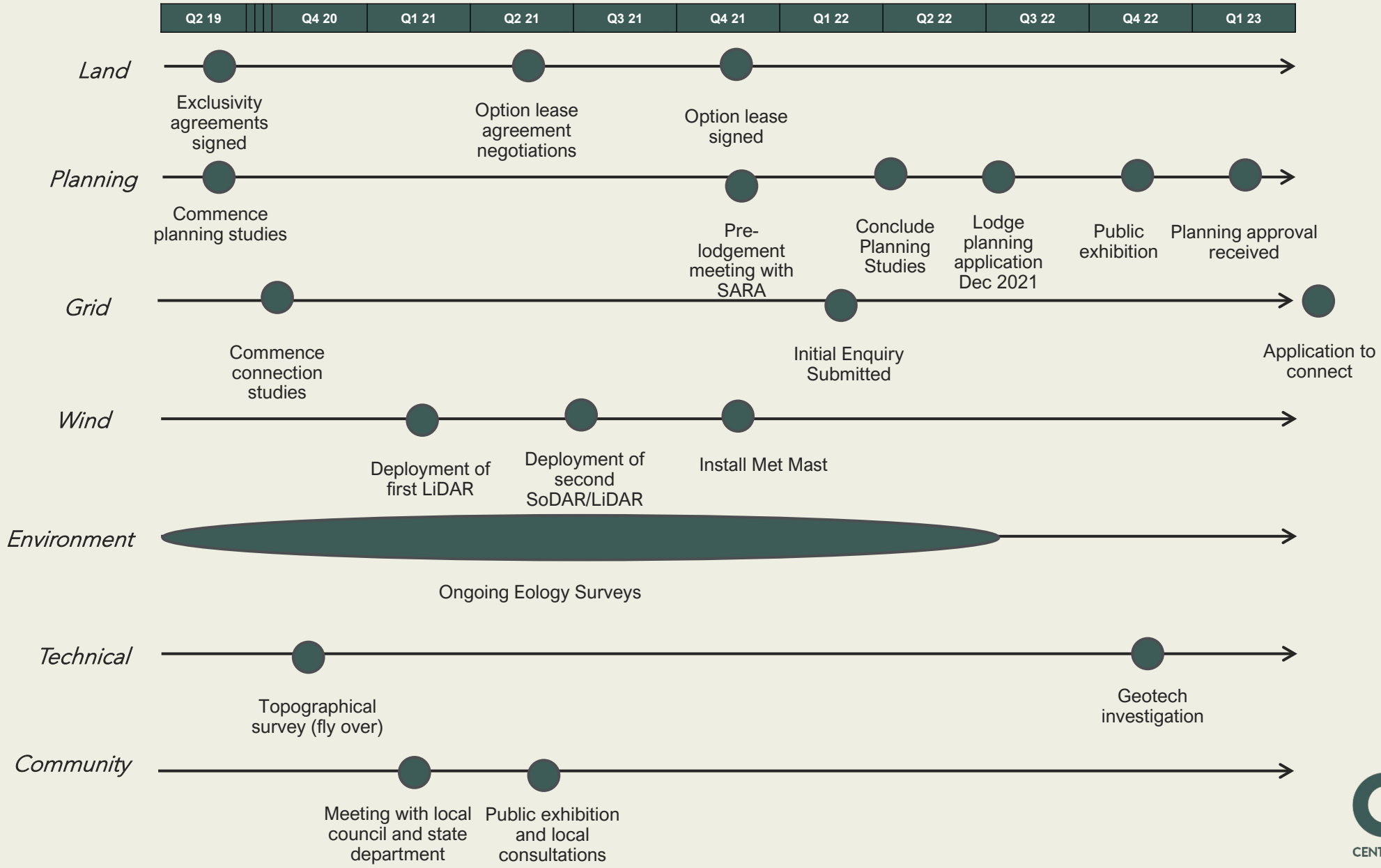
# Wooderson Wind Farm: Project Milestones

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