

Bowmans Creek Wind Farm

Independent Planning Commission
Meeting

Thursday 7 December 2023



ARK ENERGY

Acknowledgement of Country

I would like to acknowledge the Wanaruah people that are the Traditional Custodians of this land on which we meet and their continuing connection to lands, waters and communities. I would also like to pay my respects to the Elders both past and present and extend that respect to other Aboriginal and Torres Strait Islanders who are present here today.



Agenda

1. Introductions – Ark Energy
2. About the Applicant
3. Regional Context
4. Strategic Context
5. Project Overview
6. Key Issues in the EIS
7. Residences surrounding the site
8. Visual Assessment
9. Noise
10. Traffic and Transport
11. Biodiversity
12. Socio-Economic Impacts
13. Voluntary Planning Agreement
14. Decommissioning



1. Introductions

Ark Energy

- Martin Poole – A/Head of Development
- Rebecca Riggs – Project Manager



2. Applicant – Ark Energy

- Bowmans Creek Wind Farm is owned by Ark Energy. Friendly acquisition of Epuron completed in 2022 and Epuron name retired.
- Ark Energy is a leading Australian renewable energy company specialising in greenfield utility-scale wind, solar and hydrogen.
 - 20+ years' experience; first project was Cullerin Range, NSW, commissioned in 2010.
 - 13 projects in development.
 - Focused on accelerating the energy transition, including decarbonise energy supply of parent company Korea Zinc and other third-party customers.
- Korea Zinc first major refiner to join RE100 and commit to powering global operations from 100% renewable energy by 2050.



3. Regional Context

- Project area is in the Hunter-Central Coast Renewable Energy Zone.
- Located approximately 10km east of Muswellbrook township and 25km north-east of Singleton.
- The project area is within three LGAs;
 - Singleton Shire Council
 - Upper Hunter Shire Council
 - Muswellbrook Shire Council
- The project area is near the localities of Bowman's Creek, Goorangoola, Davis Creek, Hebden, McCully's Gap, Muscle Creek and Rouchel Brook.
- The area includes large rural properties, with a population of approximately 1,000 within the broader localities.
- Within a 10km radius of the site there are 3 operational coal mines and three quarries.
- Bayswater Power station and the recently closed Liddell Power station are located ~10km southwest of the project site.

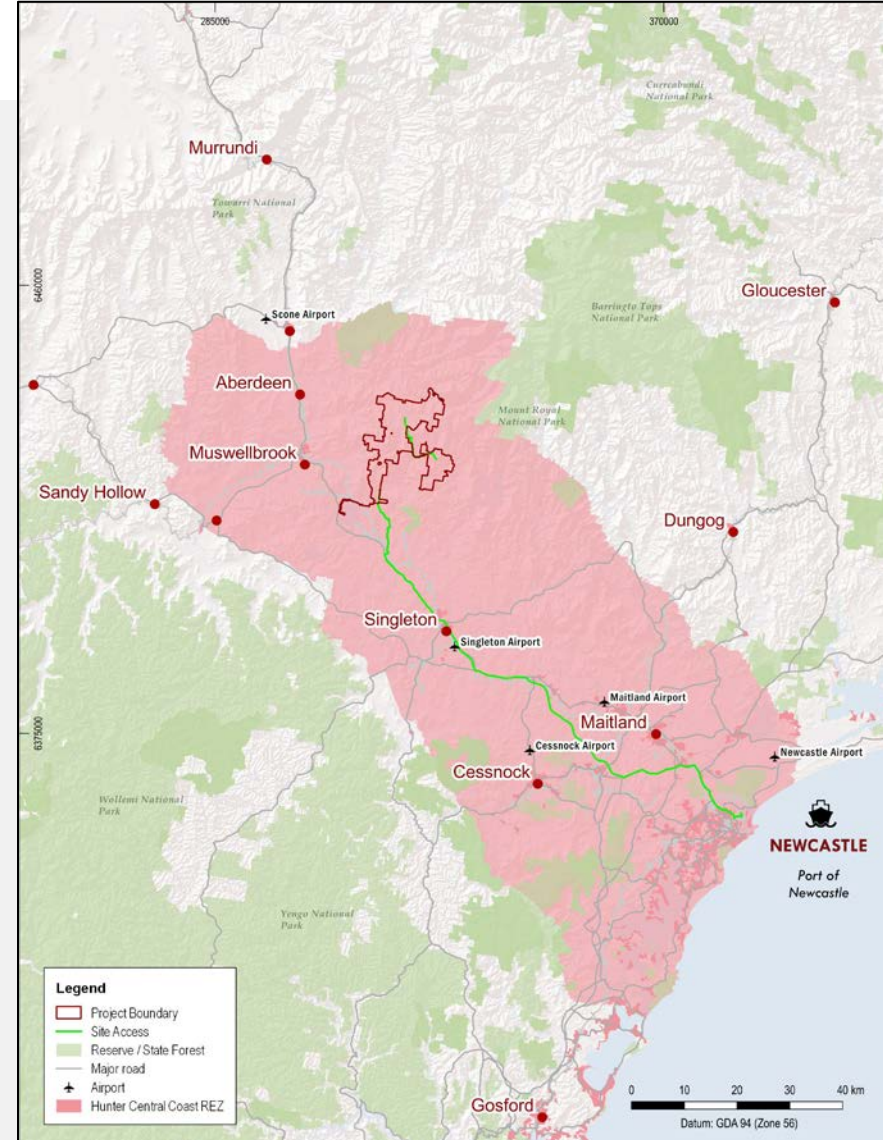


Figure: Regional site locality.

4. Strategic Context

- Supports NSW 'Net Zero' objective (by 2050), Electricity Strategy, Elec Infrastructure Roadmap, Climate Change Policy Framework, Hunter Regional Plan, Australia's emissions reduction plan (2021), Commonwealth 82% renewables target for 2030, and local Council policy objectives.
- Bayswater Power station and the recently closed Liddell Power station are located ~10km southwest of the project site.
- Liddell was regularly generating 1,000MW prior to closure. Up to 347MW from this project will contribute to capacity replacement and complement proposed battery storage at Liddell site.
- The Energy Market Operator AEMO anticipates a 9x increase in renewables required – predominantly solar and wind – to meet domestic demand to 2040.
- The project has a good wind resource, which is highly complementary to solar. It has the potential to drive down electricity prices.

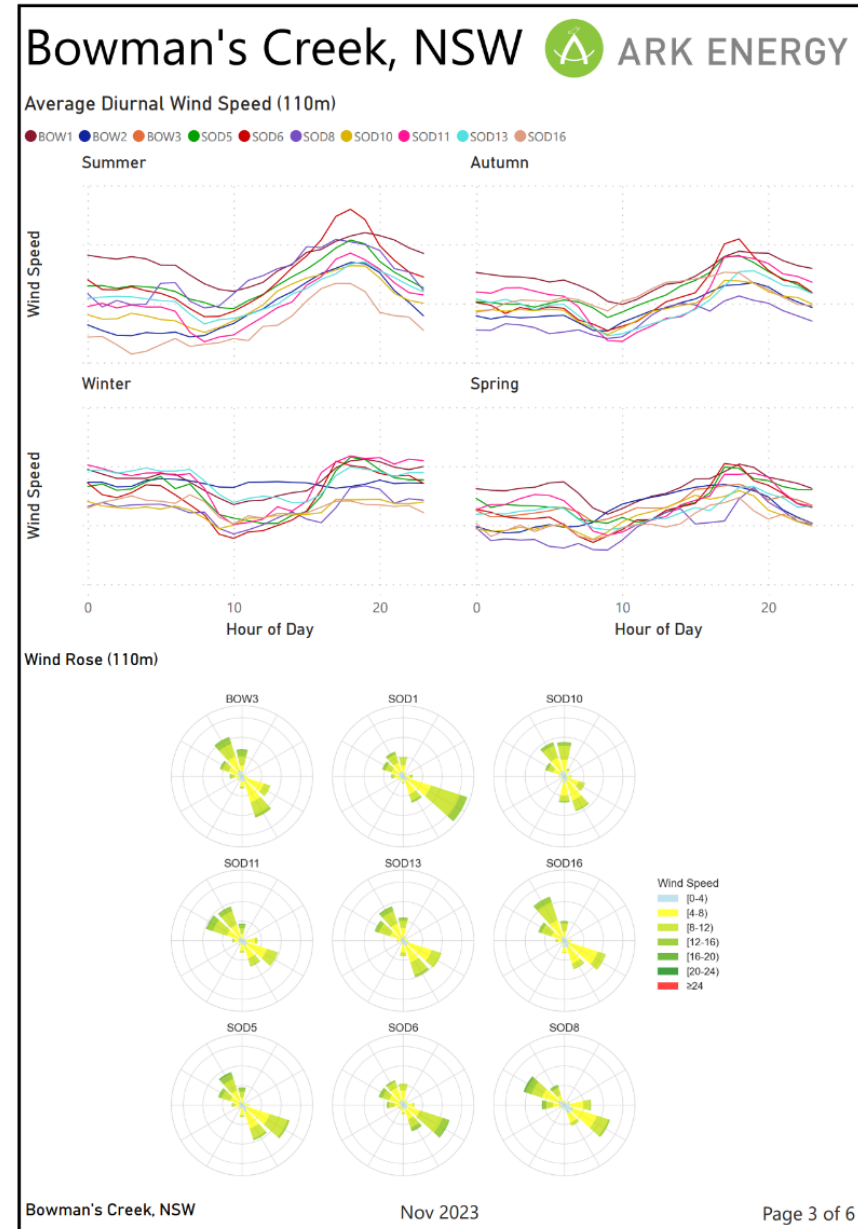
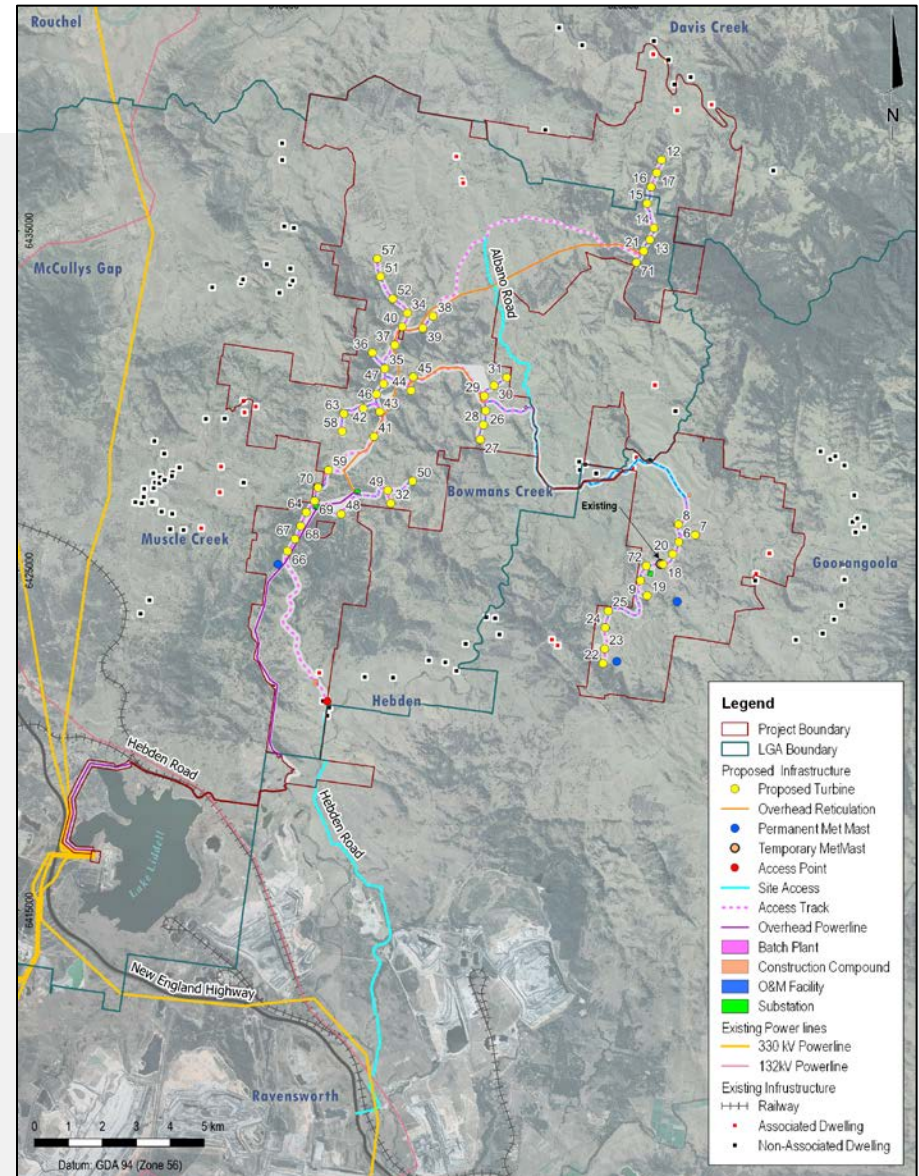


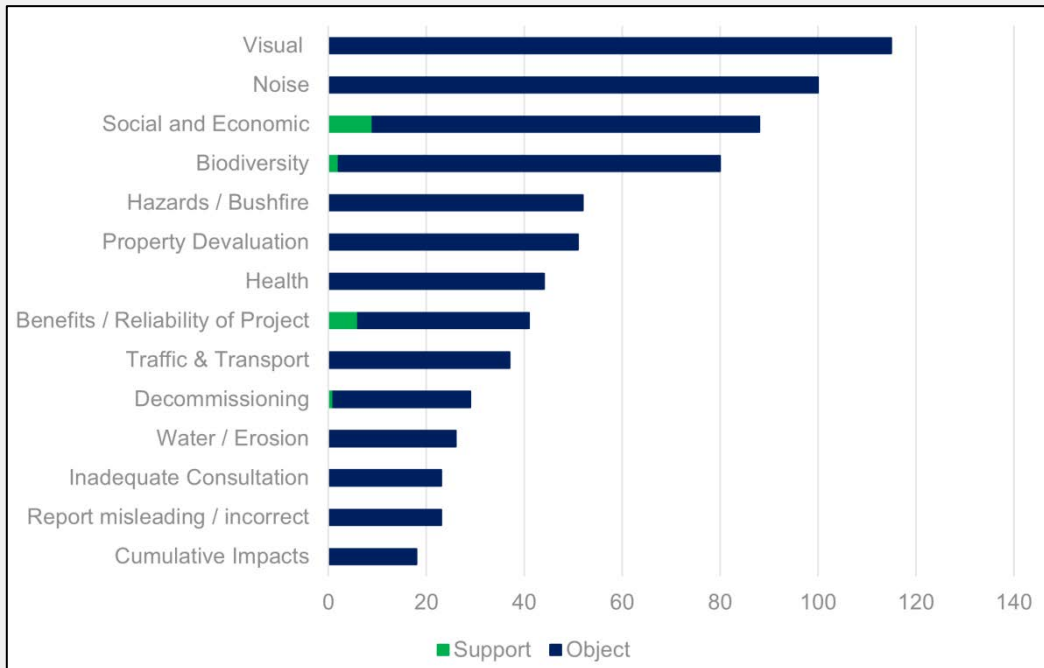
Figure: Wind resource

5. Project Overview

- Up to 56 Turbines (347MW capacity) – max tip height of 220m and max hub height of 150m
- Two onsite substations (from 3 proposed locations)
- Connecting to existing Transgrid Substation at Liddell
- 17km of overhead reticulation and 40km of underground reticulation (33kV)
- 14km of overhead and 7km of underground to reach Liddell substation from onsite substation (330kV)
- 2 construction compounds and up to 3 concrete batching plants
- OSOM access route from the Port of Newcastle via Hunter Expressway, New England Highway and onto local roads at Hebden (Hebden Road South). Site Access off Scrumlo Road.
- Upgrades to infrastructure along Hebden Rd (south), Scrumlo Rd, Albano Rd and Bowmans Creek Rd.



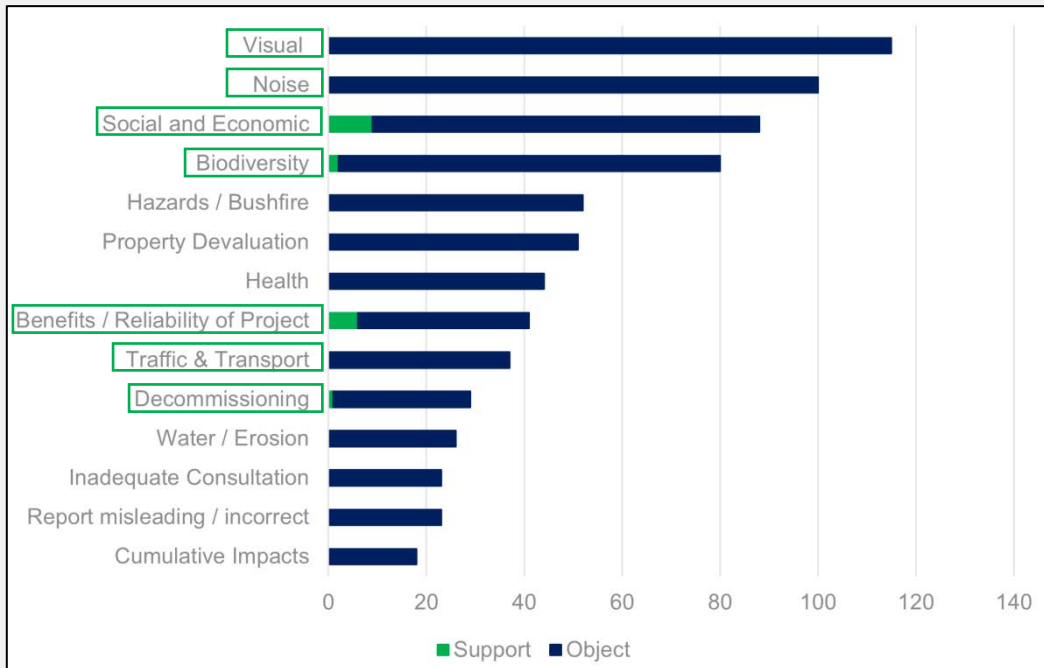
5. Key Issues Raised During EIS Process



- Breakdown of issues raised by members of the public during the EIS phase.



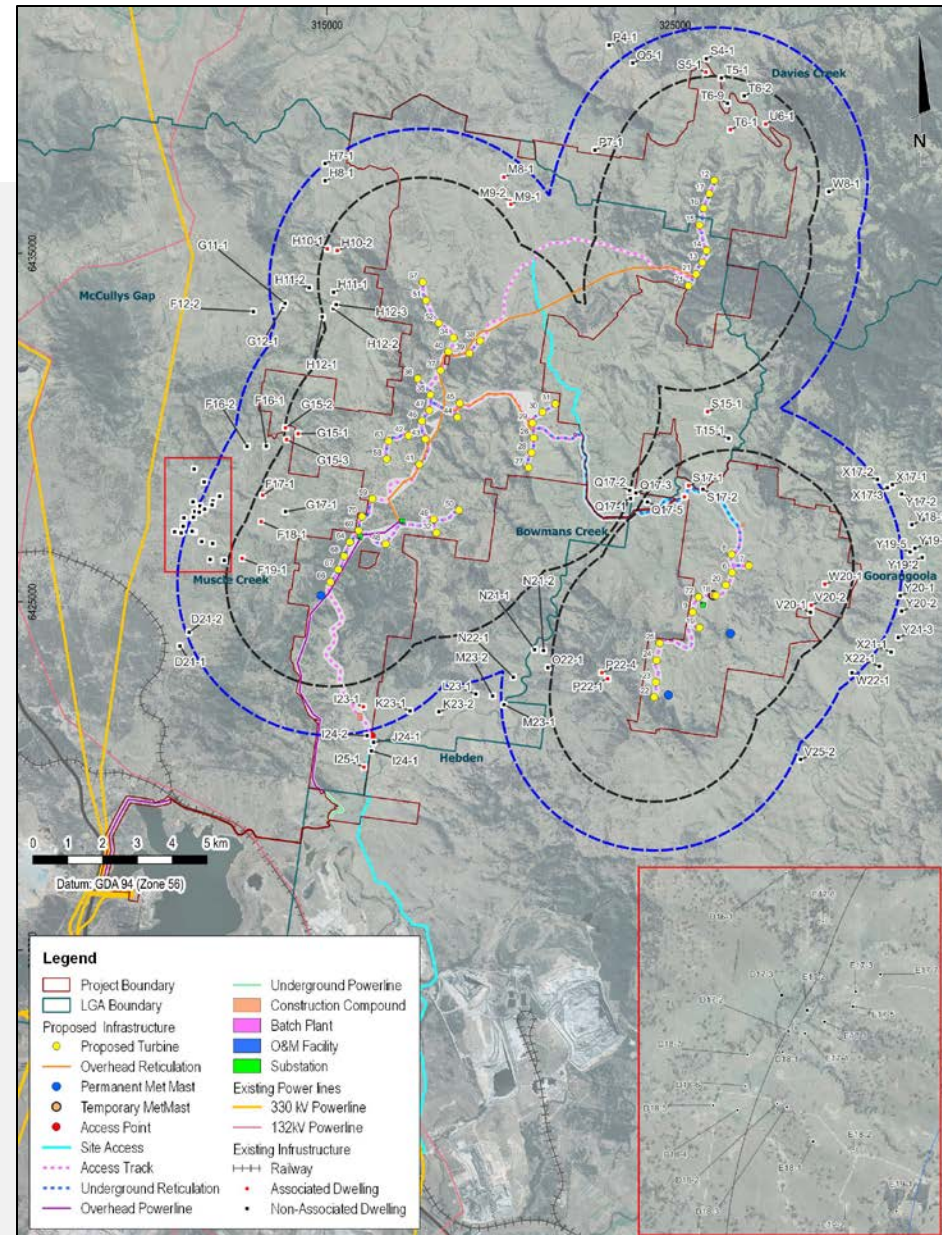
6. Key Issues Raised During EIS Process



- Breakdown of issues raised by members of the public during the EIS phase.
- Highlighted in green are the topics we propose to go through today.

7. Residences

- There are 47 non-associated residences within 4.4km of a proposed turbine location, shown in black (within the blue line).
- There are 20 associated (both neighbour and infrastructure hosts) within 4.4km of a proposed turbine location, shown in red. An additional 3 associated residences are greater than 4.4km from a proposed WTG location.
- There are six neighbour agreements for the project:
 - G15-3
 - F17-1
 - F18-1
 - F19-1
 - H10-1/H10-2 (two dwellings on the same holding)
 - P22-1/P22-4 (two dwellings on the same holding)



8. Visual Assessment

- Prior to the EIS being submitted Ark (then Epuron) removed 12 WTGs from the layout. Reducing the number of proposed turbines in the LVIA from 72 to 60.
- A landscape and Visual Impact Assessment was carried out as part of the EIS. This LVIA was then updated in accordance with the Amendment Report submitted to DPE.
- The LVIA was updated during the amendment report and a further 4 turbines were removed.
- As a result of the changes above it was determined that 15 non-associated dwellings (at the time) would experience changes to their Sensitivity Level (decrease) or a reduction in visual impact.
- During the assessment there were 20 private Photomontages provided within the EIS document. An additional 6 locations and updates to a number of the originals provided during the EIS, were provided during the RFI stage.
- There were 7 public Photomontage locations from around the site and 2 additional Wireframe locations.

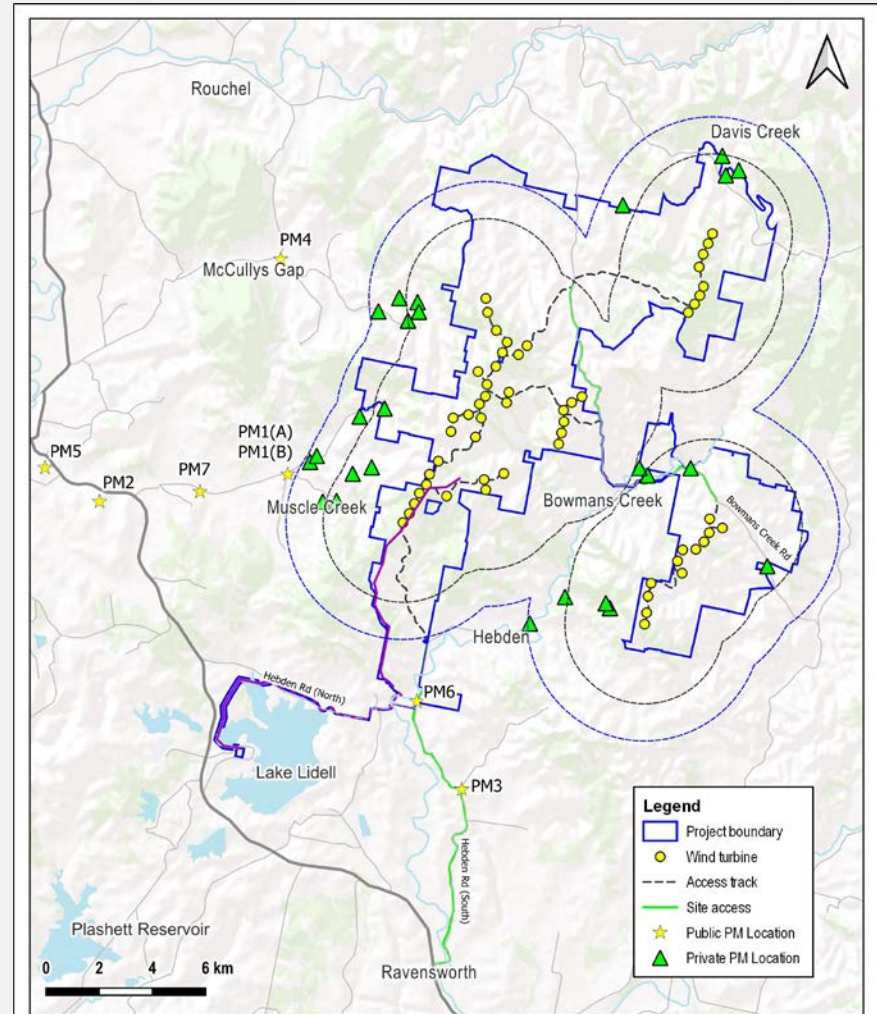


Figure: Public and private photomontage locations across the site.

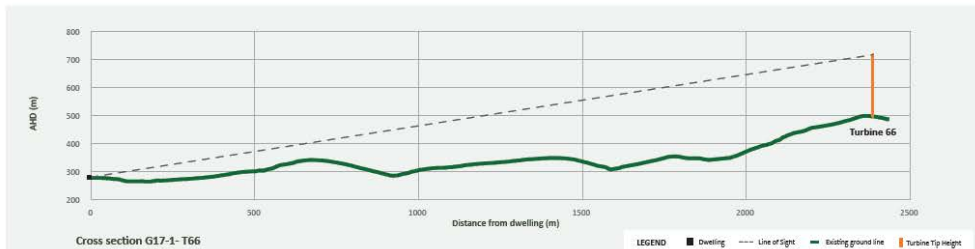
8. Visual Assessment

8.1 Line of Sight diagrams and Photomontages

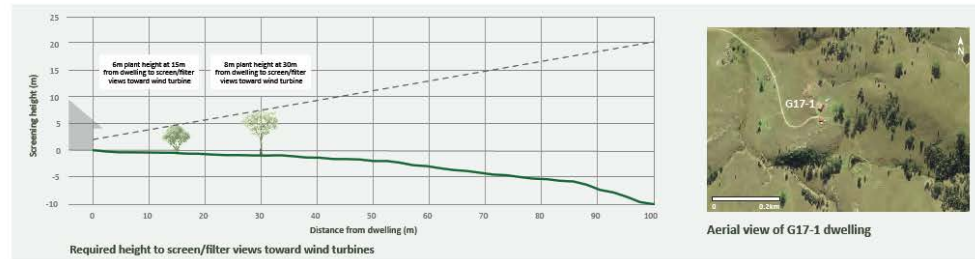
G17-1 - Bowmans Creek Wind Farm - Line of sight diagram



Photomontage view from G17-1 Dwelling: Approximate distance to turbine T66 is 2,370 metres Viewpoint location: E: 313819 N: 6427578 Turbine dimensions: 150m hub, 220m tip



Cross Section G17-1 - T66 location plan



Aerial view of G17-1 dwelling

Additional Information

Proposed mitigation
Three turbines within 3km (T65, T61 and T62) were removed. Screen planting recommended. Neighbour Agreement has been offered.

Residual impacts
Photomontage prepared from dwelling G17-1 illustrates direct and open views toward 4 turbines on an elevated ridgeline east of dwelling G17-1. Existing mature eucalypt trees beyond the dwelling screen/filter views toward other turbines on the ridgeline. A cross section analysis has determined that screen planting between 7m to 8m in height at 30m from the dwelling would provide screening toward wind turbines.

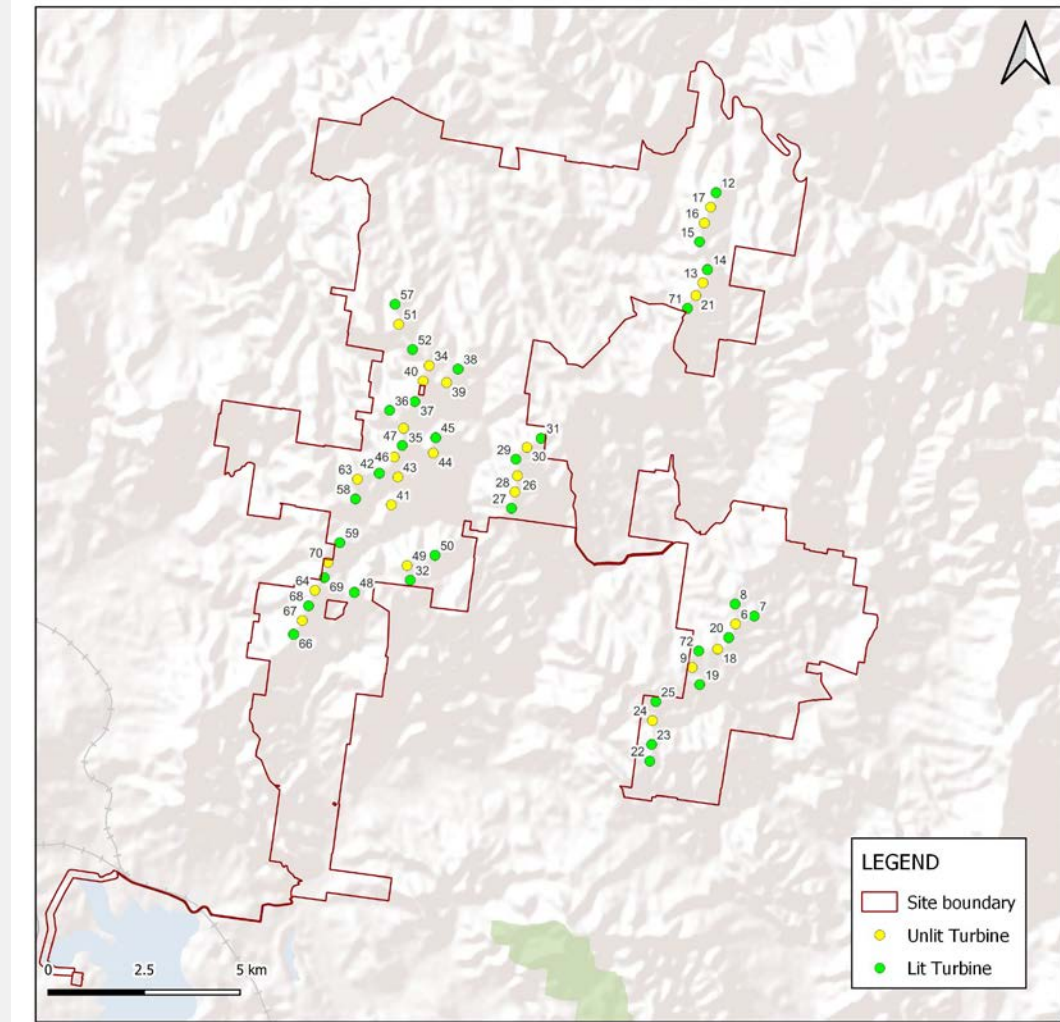
Visual significance
Without screening, the turbines would have potential to result in a significant visual impact at dwelling G17-1. With screening the wind turbines would not have a significant visual impact at dwelling G17-1.

- Line of sight diagrams were completed for several dwellings where screening was suggested.
- A digital elevation model (DEM) was used for topography.
- This diagram is referring to screening turbine T66 from G17-1.
- Line of sight starts from 2m above ground level.
- Based on this diagram the height and distance from a point, vegetation screening can be estimated.
- In this case a tree 8m high ~30m from the residence or 6m high 15m from the residence.



8. Visual Assessment

- 8.2 Night Lighting
- Night lighting was raised as a concern for residences within proximity of the site.
- An obstacle lighting plan was developed for the project by Aviation Projects.
- The proponent is of the position, based on assessments to date, that night lighting for the project is not required. Though if it is determined that it is required than lighting and shielding specifications should be in accordance with CASA.
- CASA permits shielding of the downward component of obstacle lighting, we believe this should be utilized if night lighting is going to be proposed.
- Due to the proximity to DoD bases; the DoD was consulted. If lit, DoD requirements are
 - Switched on Monday to Friday at 0800
 - Switched off Monday to Friday at 1800
 - With auto turn off during those periods when >5000 lux.



9. Noise

- A detailed noise assessment was carried out by Sonos during the EIS phase of the project, in line with the Noise Assessment Bulletin.
- Background noise monitoring was carried out at 4 locations in the vicinity of the site between October 2019 and January 2020.
- Construction noise levels are predicted to comply with the recommended criterion (under 45dB(A)) at all non-associated receivers.
- Road work noise levels are predicted to be high at 6 non-associated receivers. In particular S17-2, due to the proximity of the dwelling to the road. The increased noise levels at these residences would be short term and intermittent.
- Operation noise levels were assessed in accordance with the Noise Bulletin. Noise modelling predicts that the project complies with the relevant environmental noise criteria at all receivers, at all wind speeds.
- 50dB(C) is the highest predicted low frequency noise level, which is significant under the 60dB(C) level, at which level the bulletin would require further assessment.

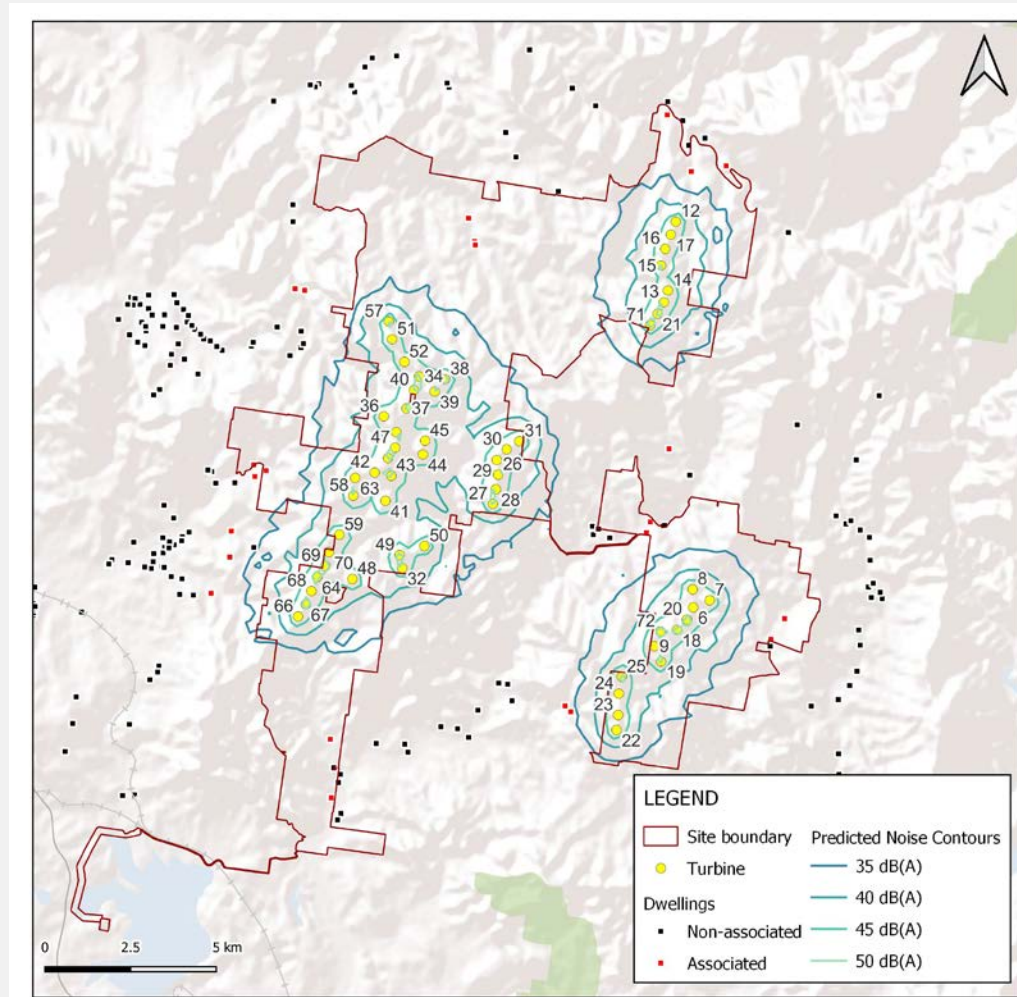


Figure: Predicted operational noise levels.



10. Traffic and Transport

10.1 – Transport Route from Port to Site

- Over Size Over Mass components would be shipped to the Port of Newcastle.
- From there they would travel to site via the New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, before turning onto local roads at Hebden.
- 560 heavy vehicles requiring escort would be required to deliver the turbine components to the site, approximately 10 per turbine.
- There are ten locations where minor road works between the Port and Hebden Rd would be required to accommodate heavy vehicles requiring escort.
- The works include relocating fencing, traffic lights and various median barriers at points along the route.

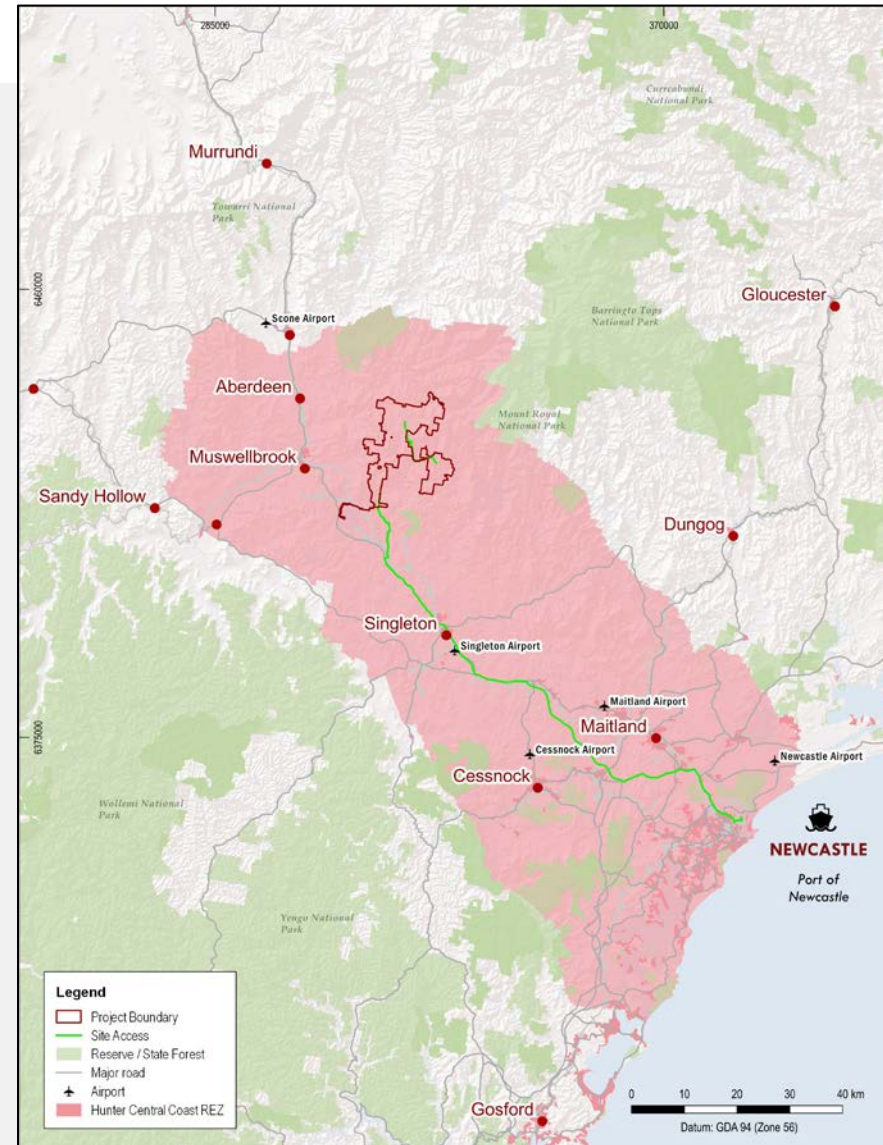


Figure: Transport route to site, major roads.

10. Traffic and Transport

10.2 – Transport Route from Hebden Rd turn off to Site entrance

- There are 75 points along four local roads within Singleton Shire Council and Muswellbrook Shire Council that will require upgrade for the project.
 - Hebden Road
 - Scrumlo Road
 - Albano Road
 - Bowmans Creek Road
- The type of road works required are:
 - Construction of a new site entrance on Scrumlo Rd
 - Road widening at 4 locations, replacement of 6 cattle grids and associated fencing along Albano Rd
 - Gradient reduction at 3 causeways on Albano Rd
 - Temporary relocation of some road furniture along Hebden Rd (south)
 - Potential works to increase the load capacity of the bridge on Hebden Rd (south)
 - Branch and tree trimming and/or embankment modifications along Hebden Rd (south) and Albano Rd.

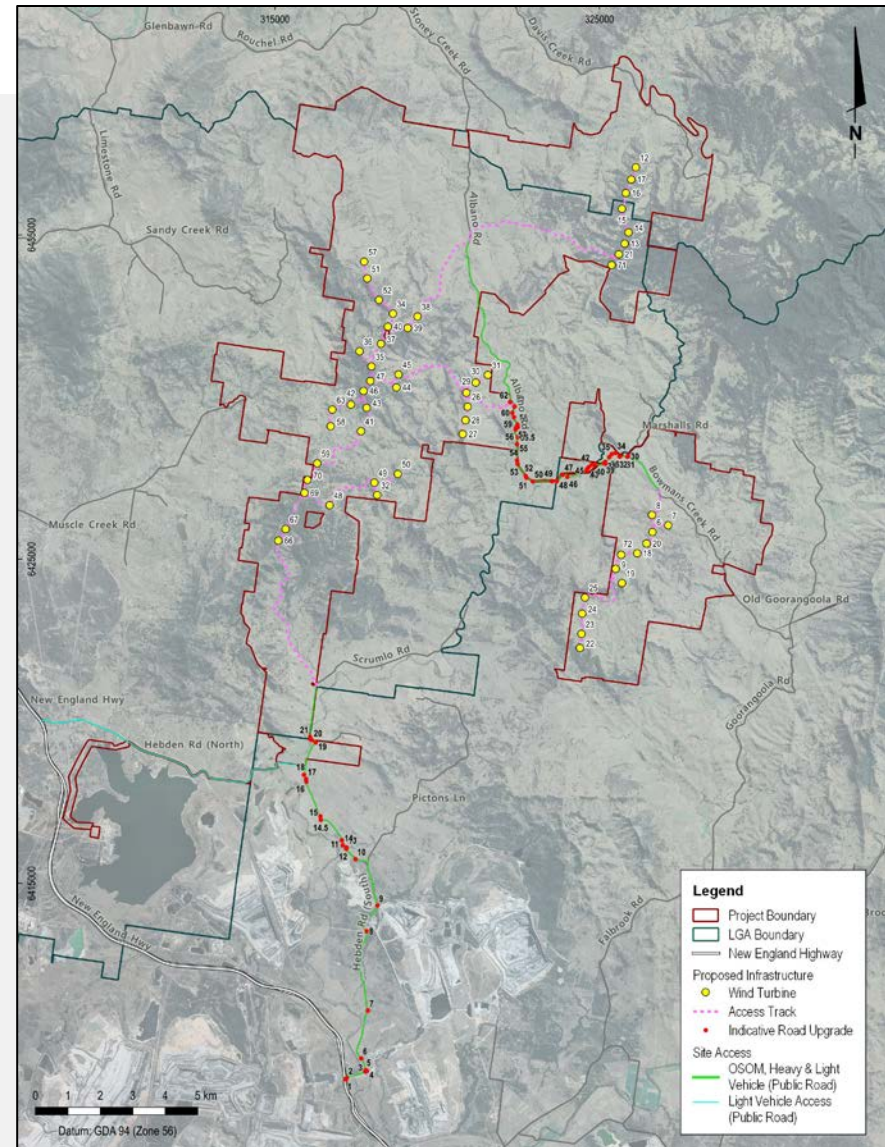
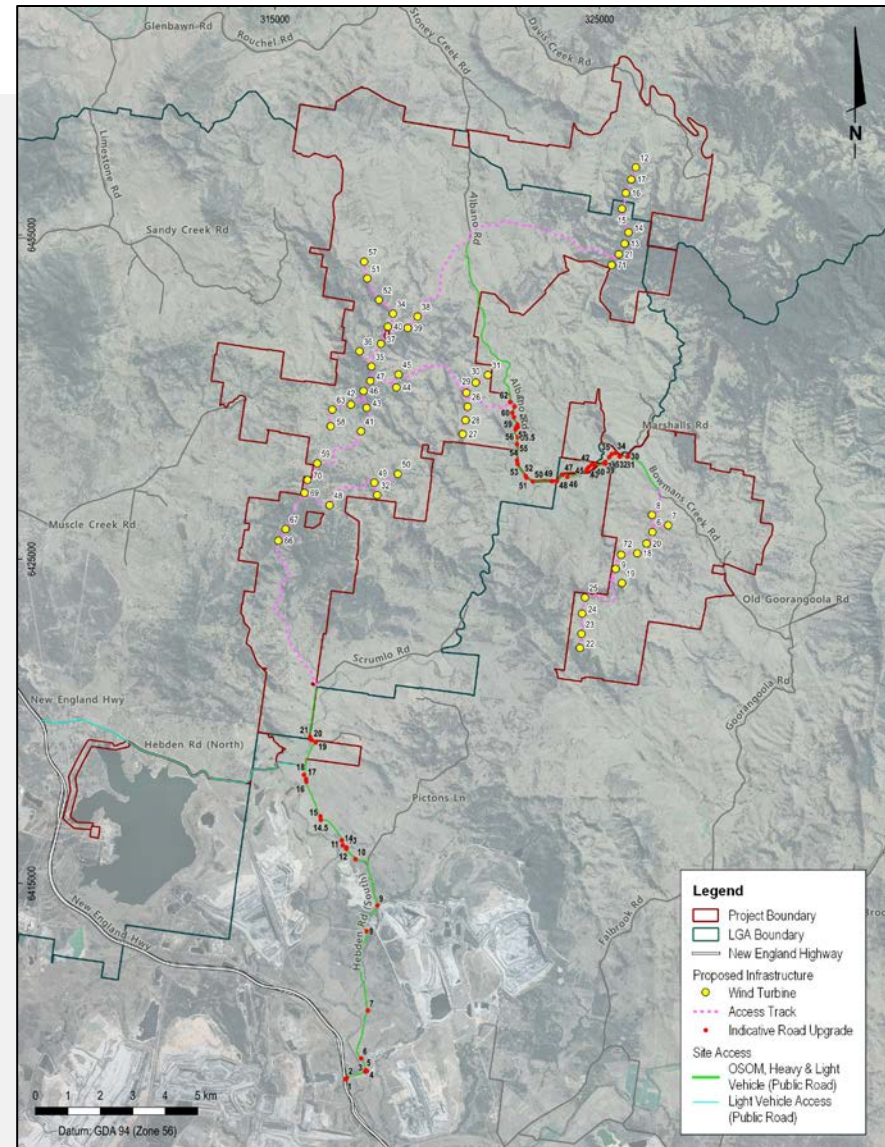


Figure: Transport route to site, local roads.

10. Traffic and Transport

10.3 – Traffic Management

- A detailed traffic management plan will be prepared in conjunction with the relevant road authorities.
- The Traffic Management Plan would consider (but is not limited to) the following points:
 - OSOM vehicles scheduled to avoid morning and evening southbound peaks – at New England Hwy/Hebden Rd intersection.
 - Ensure school bus routes are avoided for OSOM. Where they can't be avoided, ensure OSOM movements happen outside of the school bus times.
 - Ensure there are adequate passing bays on local roads.
 - Discuss with local mines to ensure the least amount of overlap between shift change over times.
- As noted in the recommended conditions of consent, this will require the proponent to undertake all construction works prior to the use of the road for construction
- Dilapidation surveys and repair works would be undertaken to repair any damage to the road from the project.



11. Biodiversity

- The development footprint of the project (including road upgrade land) is ~411ha.
 - 280ha is classified as native vegetation, of that;
 - 98.4ha is dry rainforest
 - 178.6ha is derived native grassland (DNG)
 - 3.3ha is poor condition or planted vegetation
- Approx. 232ha of vegetation comprising of four threatened ecological communities would be impacted.
 - 215.5ha of Box Gum Woodland –endangered – 178.6 ha is DNG and 37ha is woodland.
 - 11.7 ha a of Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the NSW North Coast and Sydney Basin Bioregions – Endangered.
 - 3.5 ha of Central Hunter Grey Box – Ironbark Woodland in the NSW North Coast and Sydney Basin Bioregions – Endangered..
 - 1.4 ha of Lower Hunter Valley Dry Rainforest – Vulnerable.
- Ark has committed to avoid and minimise the impact on Box Gum woodland and other TECs where feasible via micro-siting during the design phase.



11. Biodiversity

- Ark has committed to avoiding impacts on three Serious and Irreversible Impact (SII) entities, which have been assumed presence on the site, being;
 - *Acacia pendula*;
 - Scrub turpentine; and
 - Native Guava
- If the above species are confirmed present by targeted surveys during the detailed design, the region in which they occur would be avoided and the total clearing on native vegetation would be reduced by 6ha.
- Additionally, Ark has offered to implement additional measures beyond biodiversity offsets to further minimise impacts on Box-Gum Woodland. Whereby 37ha of Box Gum Woodland DNG (PCT 618) land would be brought to a condition of Box Gum Woodland (PCT 1608 – Woodland).



Figure: PCT 618.



Figure: PCT 1608.



12. Socio Economic Impacts

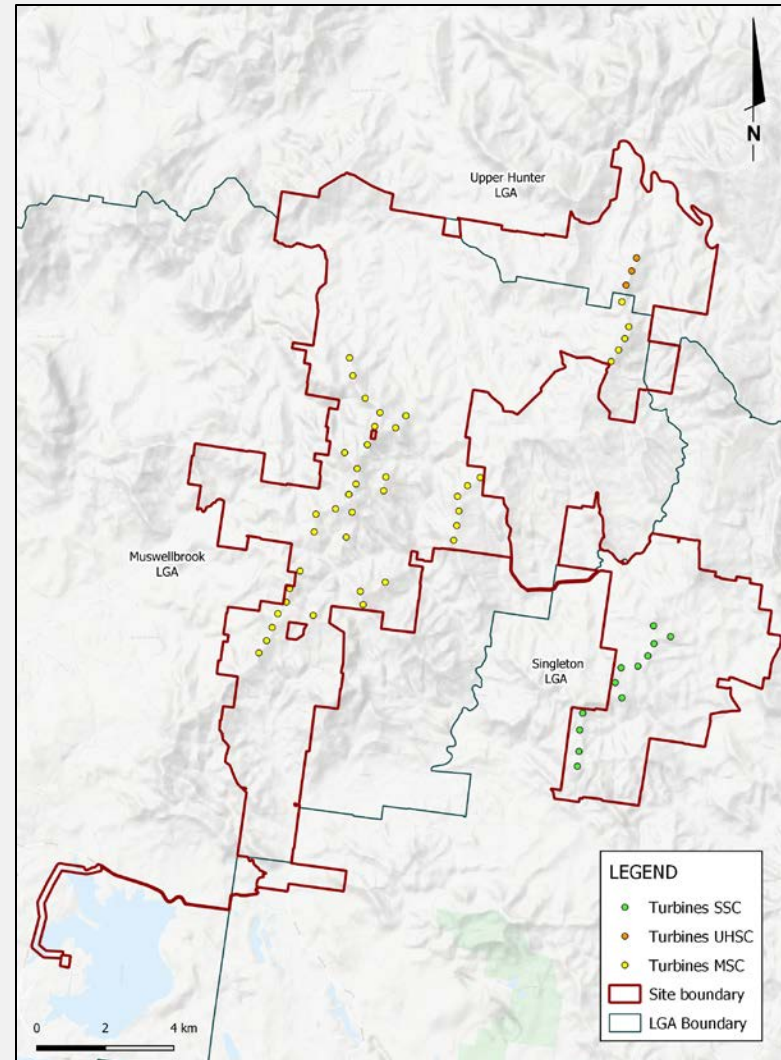
- The project would generate direct and indirect benefits to the community over its lifetime.
 - During the 18 month construction phase there will be benefit to the local community through the creation of employment opportunities and supply arrangements with local business. It is anticipated due to the nature of the area, that a large majority of the work force and supply of materials could be sourced within the local area.
 - Upgrading and maintenance of local roads.
 - Procurement of goods and service by the proponent and associated contractors.
 - Expenditure on accommodation and business within the local community.
- DPE has recommended that the proponent prepare and implement an Accommodation and Employment Strategy in consultation with the local councils.
 - Ark welcomes this idea and believes that with constructive discussions with the local councils there is a great opportunity for the towns, as Bowmans Creek Wind Farm is one of the many proposed infrastructure projects in this region.
- There is expected to be a small amount of impact to agricultural activity over the life of the project.
- Mainly during the construction period and would mainly be impacting those landowners who are involved in the project. Though it is estimated this impact would be less than 0.01% of the total agricultural activity
- This economic impact will not impact the capability of the land in perpetuity. Once the wind farm is decommissioned, the land could be returned to its former agricultural productivity.



13. Voluntary Planning Agreement

Of the proposed 56 Wind Turbine Generators;

- 3 WTGs are located within the Upper Hunter Shire Council (UHSC)
 - 41 WTGs are located with the Muswellbrook Shire Council (MSC)
 - 12 WTGs are located with the Singleton Shire Council (SSC)
- All three local councils were consulted, regarding the terms of the VPA. Ark initially proposed \$3,000 per turbine per year rate, consistent with other projects in NSW to date.
 - Following further consultation this offer was increased to \$3,400 per turbine per year in Nov 2022.
 - In March 2023, SSC wrote to the proponent and expressed the preference for the VPA to be expressed as a per MW figure. They made a request of \$686 per MW installed per year.
 - This figure was accepted by the proponent extended to the other two councils.
 - That offer was accepted by both MSC and UHSC, in April 2023.



14. Decommissioning

- Ark has developed a decommissioning fund in conjunction with involved landowners, which is to sit with an independent decommissioning agent.
- Currently, that fund is proposed to reach 100% of the costs required for decommissioning by year 10 of the life of the project.
- The fund is proposed to be paid into from the start of construction.



Thank you

Bowmans Creek Wind Farm

T 1800 731 296

E info@bowmanscreekwindfarm.com.au

W bowmanscreekwindfarm.com.au

