Burrendong Wind Farm

ENVIRONMENTAL IMPACT STATEMENT - EXECUTIVE SUMMARY

Ark Energy

ecological AUSTRALIA
A TETRA TECH COMPANY

DOCUMENT TRACKING

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PURPOSE OF THIS SUMMARY

Ark Energy propose to develop a 400 – 500-megawatt (MW) wind farm comprised of up to 70 wind turbines, known as Burrendong Wind Farm. It is referred to in this summary and Environmental Impact Statement (EIS) as the Project. The Project is expected to deliver enough renewable energy to power around 247,000 homes across New South Wales (NSW) and support Australia in its transition to a stable, low-carbon emissions future.

Eco Logical Australia (ELA) has prepared an EIS to support the assessment and approval of the Project under Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The EIS describes the Project, considers potential environmental, social, and economic impacts as required by the Secretary's Environment Assessment Requirements (SEARs) issued by the NSW Department of Planning and Environment (DPE) on 30 September 2022, and proposes measures to mitigate potential impacts in full detail. This executive summary has been prepared to provide a high-level overview of the Project and describe the structure of the EIS for accessibility and ease of understanding.

The structure of the comprehensive EIS document is described in Figure 1 below. The EIS will be on public exhibition for 28 days, providing the community an opportunity review and comment on the Project.

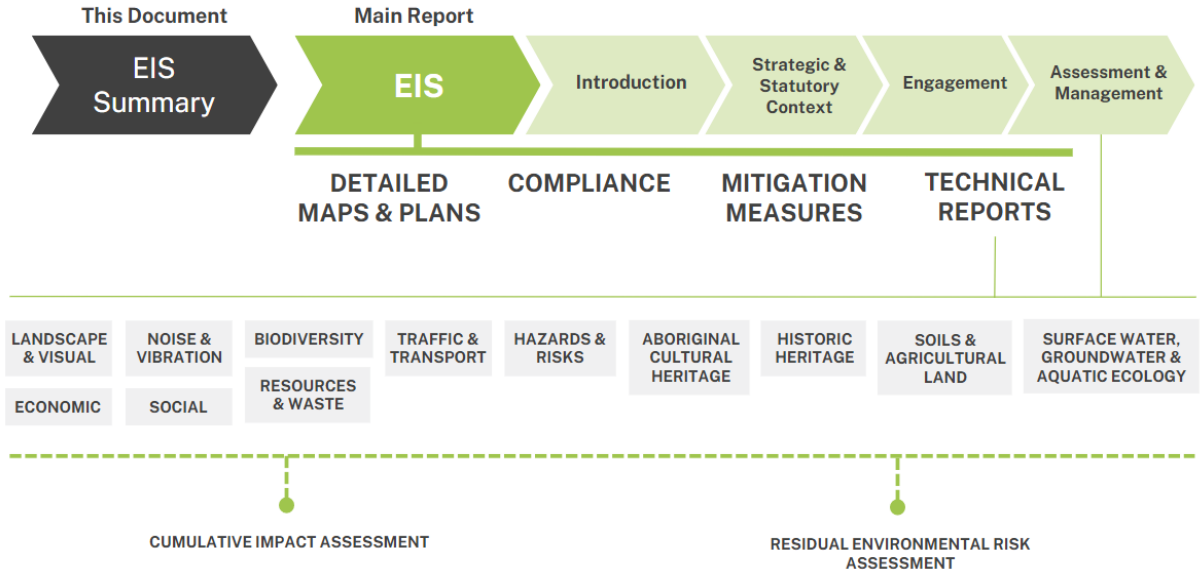


Figure 1: Structure of the Burrendong Wind Farm EIS

1. BACKGROUND

What is the Project?

The Project is the Burrendong Wind Farm, in all stages from construction and installation, operation, its ongoing maintenance and decommissioning at the end of life. Up to 70 Wind Turbine Generators (WTGs) are proposed as part of the Project, each up to 250 m in height and an individual expected capacity of 6 - 7 MW. The total installed capacity of the Project is expected to be 400 - 500 MW.

The WTGs consist of rotating blades that capture wind energy, spinning a turbine and generating electricity. The electricity produced by the Project is used to supply the National Electricity Market (NEM) and is supported by an existing 330 kV transmission line.

The construction phase of the Project will generate around 250 full time equivalent jobs for an 18 - 24-month period and will support the use of the local labour force, services, and amenities, with a peak workforce of 375. A further 12 full time equivalent jobs on an ongoing basis would be generated for the 30-year Project lifespan. A local workforce is favoured, and the relocation of staff to the region used as a supporting option to fill roles where required.

The Project will produce clean energy, enough to power the equivalent of 247,000 average NSW households each year. The electricity generated by the Project would also provide up to 900,000 tonnes of carbon dioxide equivalent emissions ($CO_{2\text{-}e}$) savings relative to the NSW electricity generation mix annually. This will assist NSW to meet the necessary target to halve greenhouse gas emissions (-50%) by 2030 (compared to 2005 levels) and reach net zero emissions by 2050.

Where is the Project located?

The Project is proposed to be located within the traditional lands of the Wiradjuri Aboriginal Nation. Its location spans the jurisdictions of two local Councils, being the Dubbo Regional Council Local Government Area (LGA) and Mid-Western Regional LGA in the state suburbs of Yarrabin and Mumbil.

The 'Project Site' is used to refer to the area within which the Project will be built and operated. The Project Site is located 30 km west of Mudgee, predominantly around the Yarrabin area, within the Mudgee Local Land Services region. It borders Lake Burrendong on the western side and is located on predominantly privately owned land used for agricultural purposes.

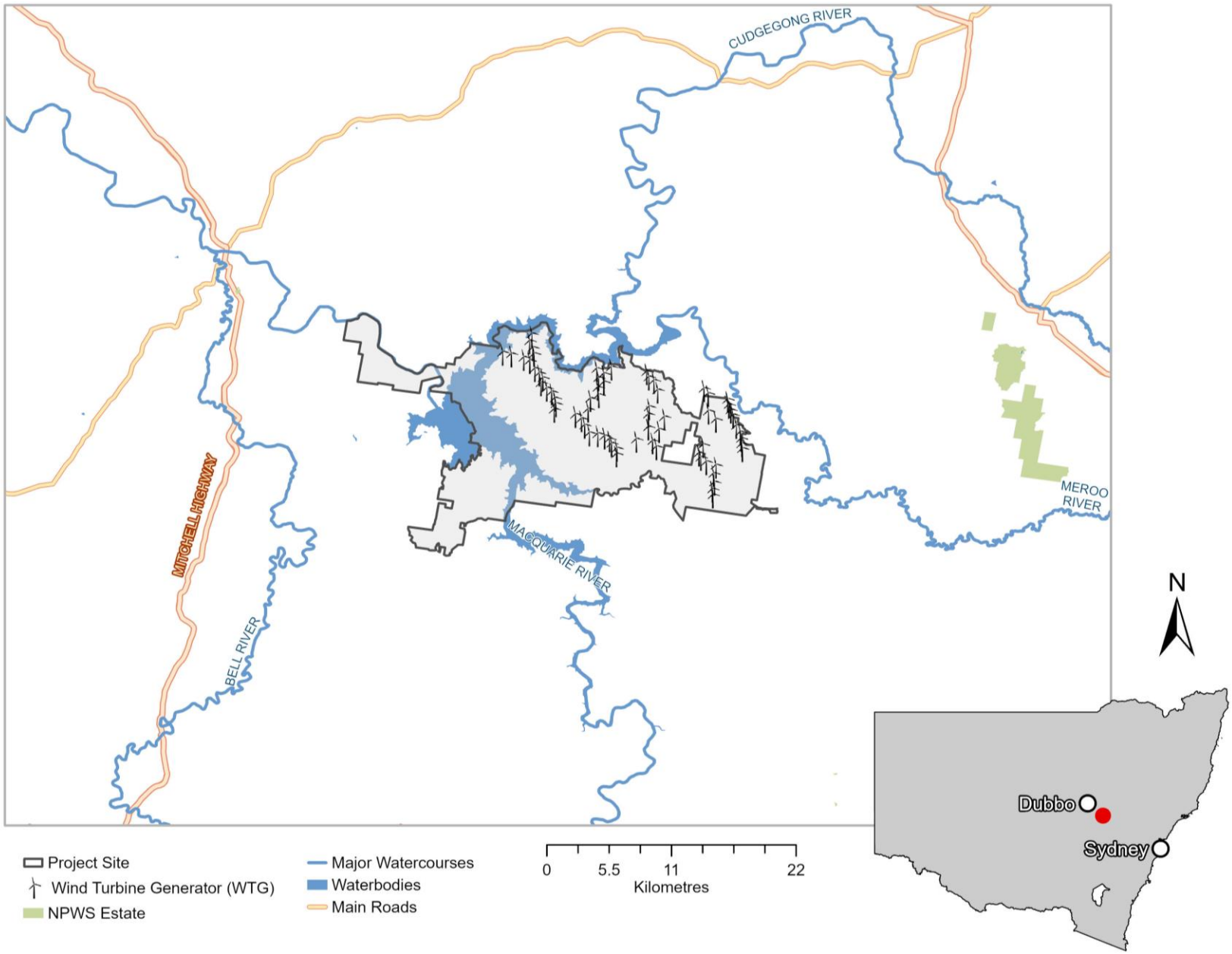


Figure 2: Location context of the proposed Burrendong Wind Farm

Why is the Project needed?

Climate change is increasingly affecting the way in which we live, with more frequent and severe weather events impacting our health, our agricultural systems, our communities, our economy and our natural ecosystems and wildlife. The scientific consensus is that human activities are key drivers of climate change and global warming, requiring the urgent need to transition from fossil fuels to a low (or zero) net carbon emissions future.

The Project will play an important role in addressing the need for affordable, renewable electricity to assist with phasing out of fossil fuel use. The strategic benefits of the Project are summarised in Figure 3 below and include the following:

- Mitigate the impacts associated with global warming and climate change by displacing 900,000 tonnes of $CO_{2\text{-}e}$ from the current NSW energy generation supply, which is heavily reliant on coal powered generation.
- Contribute to achieving Australia's commitment to the Paris Agreement of reducing emissions by at least 43% below 2005 levels by 2030.
- Contribute to the UN (United Nations) Sustainable Development Goals (SDGs).
- Contribute to achieving Australia's annual Renewable Energy Target to install 33,000 GWh of renewable energy.
- Supporting aims of NSW's *Net Zero Plan Stage 1: 2020-2030.*
- Implement the aims of NSW's Electricity Strategy by providing over $30 million in capital investment in NSW's electricity system.
- Provide a source of energy generation that is well positioned to meet future global and national demand for electricity with low production costs.
- Provide a source of energy generation that is competitive in cost through technological advancements.
- Provide energy generation technology that has a low carbon intensity across the Project life compared to other forms of energy.
- Provide mutually agreed opportunities for landowners, neighbours, and the wider community to share in the benefits of the Project.
- Provide approximately 250 full time equivalent jobs during both the construction phase (with a peak of 375) as well as 12 FTE ongoing jobs during the operational phase.

Figure 3: Strategic benefits of the Project

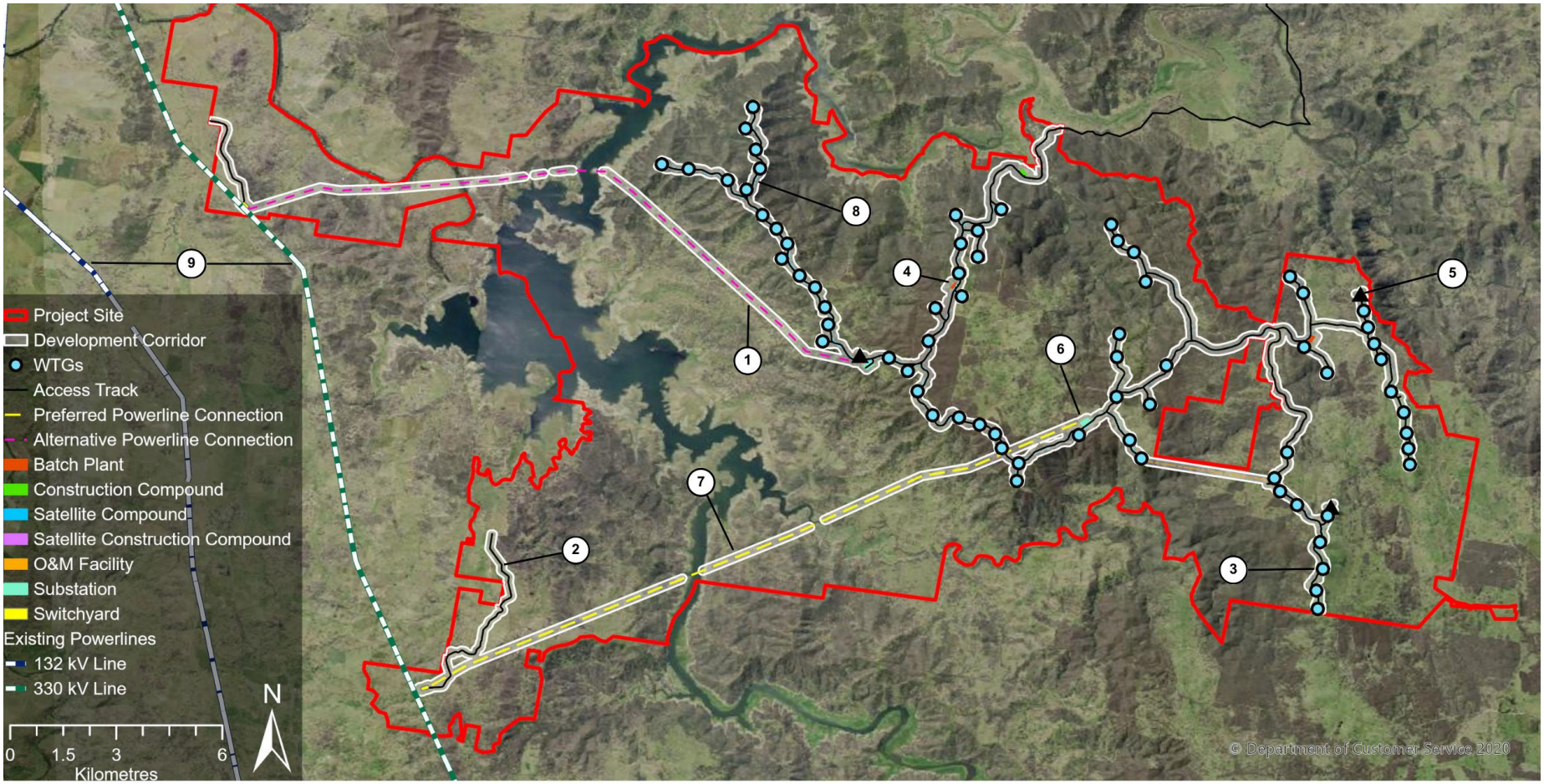
2. PROJECT DESCRIPTION

Project Elements

Primarily the Project will include up to 70 WTGs throughout the development corridor, as shown in Figure 4, as well as:

- Internal roads and drainage.
- Up to two (2) Substations.
- One (1) Operations and Maintenance (O&M) compound.
- Medium voltage (33 kV) electrical connections, including overhead and underground transmission cables.
- Up to three (3) permanent meteorological masts with concrete footings.
- Temporary facilities including concrete or asphalt batching plants, rock crushing facilities, materials laydown, and storage, two (2) temporary meteorological masts and a site compound and office.

Figure 4 provides an overview of Project Elements and their proposed layout.



BURRENDONG WIND FARM

PROJECT ELEMENTS

1. **Development Corridor**
   100 metre buffer around the Development Footprint to allow for micrositing
2. **Access Tracks**
   Internal roads for the construction, operation, repowering and/or decommissioning of the Project.
3. **Wind Turbine Generator**
   Up to 70 WTGs throughout the Development Corridor.
4. **Site Compounds**
   An operations & maintenance (O&M) compound for the day-to-day operation of the Project.
5. **Meteorological Masts**
   Up to three (3) permanent masts.
6. **Substations**
   Up to 2 substations with an Asset Protection Zone and security fence.
7. **Overhead Powerlines**
   To connect the Project to the existing powerline to the west.
8. **Underground Powerlines**
   Electrical cables underground following the internal road route.
9. **Existing Powerlines**
   Not included in the Project - this infrastructure is existing.

Figure 4: Key Project elements

Evolution of the Project Design

The selection of the Project Site was primarily based upon, among others, the following considerations:

- ***Will the location capture a viable wind resource?*** Ark Energy has established a vast network of monitoring masts across NSW, whose data has confirmed that wind speeds at the Project Site are sufficient for a viable wind farm.
- ***What are the environmental impacts*****?** The properties selected for involvement in the Project are generally used for agricultural purposes. Ridgelines where WTGs are proposed are mostly cleared of vegetation already.
- ***Access to local or national electricity network*****.** The Project Site is located adjacent to the existing electricity network which has sufficient capacity to export the design output from the Project with increased capacity as advanced transmission lines come online in the coming years.
- ***Local Communities.*** The Project is in a predominantly agricultural area with a low population density within and surrounding the Project. Therefore, there are limited visual and noise impacts associated with the Project.

Phases & Timing

Construction works for the Project are likely to commence within five (5) years of development consent being granted. The timing of construction will be influenced by a range of factors including appropriate permits and authorisations, tender, contractor selection, optimisation of the Project design, any micro siting required and procurement processes as well as the final investment decision. Following the completion of construction, the Project has an anticipated operational life span of thirty (30) years. An indicative timeline is presented in Figure 4 and approximate timings described below:

- **Pre-construction** including tender, detailed design, and contract development: 12-18 months.
- **Construction:** 18-24 months.
- **Operation:** 30 years.
- **Maintenance:** Continuous and ongoing for the life of the Project.
- **Repowering or decommissioning:** at end of Project life.

The main EIS report provides more detail around Project timeframes and phasing.

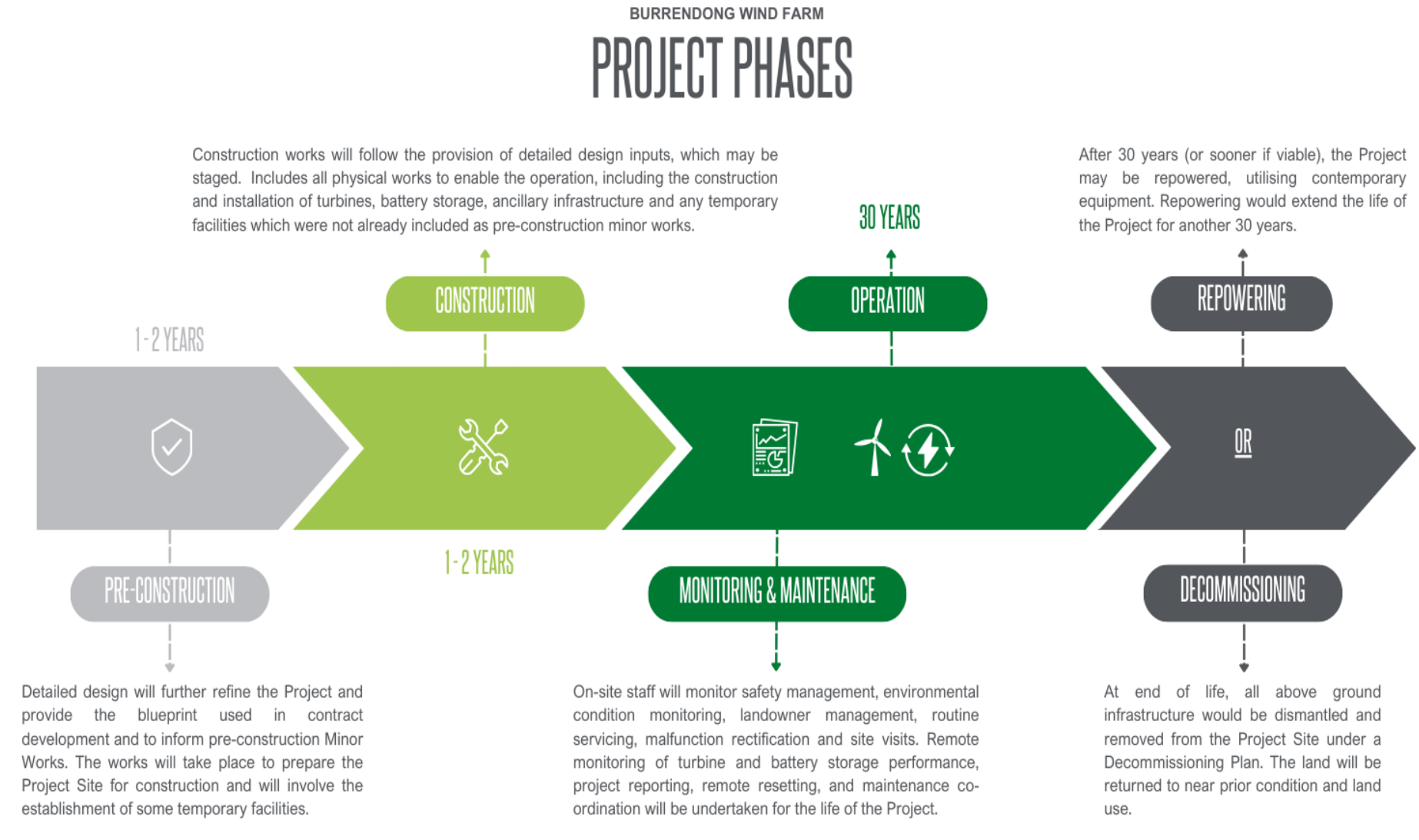


Figure 5: Indicative Project phases and timing

3. STATUTORY CONTEXT

The Project must respond to established statutory requirements at a Commonwealth, State and Local Government level. In doing so, the Project demonstrates its validity and conformance with underlying social principles and expectations. Statutory requirements include legislative direction and controls, as well as planning instruments that apply at different levels of government.

State & Local Government

One of the key pieces of legislation for any project approval is the *Environmental Planning and Assessment Act 1979 Act* (EP&A Act). The EP&A Act has relationships to other legislation and policies with regard to the approval of the project, including the *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP (State Environmental Planning Policy)), which states that development for electricity generating works (using any energy source, including wind power) with a capital investment value greater than $30 million are to be classified as State Significant Development (SSD) under Division 4.7 of the EP&A Act. The Project has a capital investment value estimated to be greater than $30 million, and therefore is declared to be SSD, and has been assessed and seeks approval under Division 4.7 of the EP&A Act.

The Project is within both the Dubbo Regional Council and Mid-Western Regional Council LGAs (Local Government Areas), which means that each Council's Local Environment Plan (LEP) must be considered. The LEP provides land use zones and their objectives, as well as controls on the types of development than is permitted in particular zones. The Project is on land zoned as RU1 (Primary Production) and adjacent to land zoned as RU3 (Forestry), which prohibits wind energy systems in the RU1 Zone. The *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and infrastructure SEPP), states that development for the purpose of electricity generating works may be carried out by any person with consent on any land in a prescribed rural, industrial, or special use zone. Therefore, the Project is permissible with consent.

Commonwealth

The Project has the potential to have a significant impact on Commonwealth listed threatened species and ecological communities. Therefore, the Project was referred to the Commonwealth as a Controlled Action in accordance with the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Project was determined to be a Controlled Action in 2022 and will be assessed under the Bilateral Agreement, which is a mechanism in place to strengthen and streamline environmental assessments between the State and the Commonwealth while protecting matters under the EPBC Act which are considered Matters of National Environmental Significance (MNES).

4. COMMUNITY AND STAKEHOLDER ENGAGEMENT

The Proponent recognises the key role that community members and key stakeholders have in the successful development of the Project. Therefore, engagement has and will continue to be undertaken with stakeholder interests in mind.

Key Issues

The Proponent understands that community and stakeholder engagement are a fundamental aspect of undertaking a successful Project and that ongoing engagement is required throughout the life of the Project. The Proponent engaged with various stakeholders associated with the Project, from involved landowners to neighbouring landowners and the wider community, to local, state, and federal government agencies. This broad consultation and engagement were undertaken to ensure key issues from stakeholders were appropriately determined and addressed.

To ensure robust and broad reaching engagement, the Proponent established a Stakeholder Engagement Plan which is a live internal document that is maintained throughout the assessment process, from feasibility, through the scoping phase, during preparation of this EIS and will regularly be updated and maintained to be used in future project phases, provided the Project is approved. Through the implementation of the Stakeholder Engagement Plan and Social Impact Assessment undertaken by Ethos Urban (2023), key issues associated with the proposed Project were identified. Issues raised through consultation with various stakeholders helped to guide the design evolution of the Project, with specific design changes in response to feedback from the community and stakeholders outlined in the main EIS report.

The Proponent has committed to ongoing and involved consultation with relevant stakeholders throughout the life of the Project. Additionally, this EIS outlines how the Proponent has already addressed key issues raised to date. The design evolution of the Project has allowed the outcomes of the consultation process to influence Project design, leading to a design that satisfies the avoid-minimise-mitigate-offset hierarchy and one that will deliver a net benefit to numerous stakeholders both locally and further afield.

Future Engagement

Should the Project be granted approval, a program of community awareness initiatives will be implemented prior to the commencement of construction works and documented in the Stakeholder Engagement Plan. This program of engagement will continue efforts already implemented to engage with stakeholders by maintaining consultation and collaboration efforts. Furthermore, information will be disseminated to the local community through various channels, including via the Project website, local newspapers, and direct mailings.

5. ASSESSMENT OF ENVIRONMENTAL IMPACTS

The purpose of the EIS is to identify and address all key environmental, social, and economic impacts arising from the Project. These key impacts have been identified through a rigorous environmental impact assessment process having regard to the SEARS, the requirements of the NSW EP&A Act and through engagement with stakeholders on matters that interact with the Project. Measures proposed to mitigate the unavoidable impacts of the Project are also detailed in the EIS.

The findings of the extensive technical assessments completed in support of the Project are summarised below. The main EIS report describes each technical assessment in detail, provides a cumulative impact assessment across each aspect, and provides each technical report in full within its appendices. The summaries below provide a high-level overview of the assessment process and key findings and should be read in conjunction with Chapter 6 of the main EIS report.

Landscape & Visual

A Landscape and Visual Impact Assessment (LVIA) was undertaken by Moir Landscape Architecture (MLA, 2023; Appendix F). The LVIA was undertaken in accordance with both the requirements of the SEARs and the *Wind Energy: Visual Assessment Bulletin* (DPE, 2016), and assessed the potential impact of WTGs and other Project infrastructure on non-associated landowners and the broader visual environment. The assessment identified 20 non-associated dwellings within 4,950 m of the nearest WTG. Of these, 4 were identified within 3,350 m (the Black Line) and 16 were identified within 4,000 – 5,900 m (the Blue Line).

The visual impact rating for non-associated dwellings was largely rated as negligible, very low or low. Two (2) non-associated dwellings were assessed as having the potential to have a moderate visual impact and 2 have the potential to experience a high visual impact. Mitigation measures have been proposed for each of the 4 non-associated dwellings that were rated as having a moderate or high visual impact, as well as for overall visual amenity.

The Landscape Character Unit assessment determined that the Project is likely to become a feature within the visual landscape. However, due to the undulating topography of the surrounding Project Site, there will be limited opportunities to view the project in its entirety. Furthermore, the character of areas valued for their high landscape quality by community members will remain intact.

The effects of shadow flicker and blade glint were also assessed. The impacts of each were determined to be significantly reduced due to a range of factors, including natural screening in the landscape (shadow flicker) and the use of low reflectivity surface treatments on WTG blades (blade glint).

On evaluation, the Project is compliant with the performance objectives as per the *Wind Energy: Visual Assessment Bulletin* (DPE, 2016).

Noise & Vibration

A Noise and Vibration Impact Assessment (NVIA) has been undertaken by Marshall Day Acoustics (MDA 2023; Appendix G). The NVIA was undertaken in accordance with both the requirements of the SEARs and the *Wind Energy: Noise Assessment Bulletin* (DPE, 2016), and assessed the potential impacts of the Project on noise receivers during both the construction and operation phases, as well as the decommissioning phase.

The predicted WTG operational noise levels from the Project were below the *Wind Energy: Noise Assessment Bulletin* (DPE, 2016) base (minimum) criterion of 35 dB L_{Aeq} at all non-associated receivers, except for 1 (R14-1). It was concluded that the Project would comply with the operational noise requirements of the *Wind Energy: Noise Assessment Bulletin* (DPE, 2016) at this receiver with a curtailment strategy in place.

The predicted operational WTG noise levels from the Project are all below Noise Bulletin (DPE, 2016c) base (minimum) criterion of 45 dB L_{Aeq} for all associated dwellings. Therefore, the Project can be designed and operated to comply with the operational noise requirements of the *Wind Energy: Noise Assessment Bulletin* (DPE, 2016).

The construction activity that would typically occur nearest to receivers is the construction of access roads and cable trenching. During these works, construction noise levels of up to 60 – 65 dB L_{Aeq} could be expected for brief periods when road and access work is carried out at distances less than 00 m from a receiver. It is expected that during site access works, only one (1) associated receiver and 0 non-associated receivers would be located less than 200 m from these types of construction activities. For context, the predicted noise levels are comparable to, and typical of, noise levels produced by general road maintenance works and activity.

Regarding operational infrastructure noise, noise levels from the collector substation are predicted to be below the 35 dB L_{Aeq} night-time project noise trigger level applicable at the nearest receivers.

On evaluation, the Project is compliant with the requirements of the *Wind Energy: Noise Assessment Bulletin* (DPE, 2016).

Biodiversity

A Biodiversity Development Assessment Report (BDAR) was undertaken by ELA (2023a; Appendix H) in accordance with both the requirements of the SEARs and the *Biodiversity Assessment Method 2020* (BAM).

The Project Site encompasses two IBRA regions, native vegetation, previously cleared and agricultural land as well as several dams.

Biodiversity impacts have been assessed through survey, mapping and assessment completed in accordance with the Biodiversity Assessment Method 2020 (BAM). The Project Site includes areas of two (2) Threatened Ecological Communities (TECs), being:

- Grey Box Grassy Woodland
- Box Gum Woodland

Three (3) species of threatened bats, one (1) mammal and four (4) species of birds (one migratory species) were detected during field surveys:

- *Chalinolobus dwyeri* (Large-eared Pied Bat)
- *Haliaeetus leucogaster* (White-bellied Sea Eagle)
- *Hieraaetus morphnoides* (Little Eagle)
- *Hirundapus caudacutus* (White-throated Needletail)
- *Miniopterus orianae oceansis* (Large Bent-winged Bat)
- *Phascolarctos cinereus* (Koala)
- *Polytelis swainsonii* (Superb Parrot)
- *Vespadelus troughtoni* (Eastern Cave bat).

Although detected onsite, it was concluded that after extensive inspection of rocky habitat that no specialised breeding, roosting or refuge habitat were present for threatened bats within the Project Site, as such no species credits for threatened bats would be generated.

An assessment of the impacts of the Project on MNES within the Project Site was undertaken. All assessments concluded that no significant impacts to MNES are predicted, however the Project was referred to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) and is yet to be determined.

While the Project has aimed to avoid biodiversity values through an iterative design process, a suite of mitigation measures, including the preparation of a Biodiversity Offset Strategy and Bird and Bat Adaptive Management Plan (BBAMP) have been proposed to manage residual impacts.

Traffic & Transport

A Traffic and Transport Impact Assessment has been undertaken by Stantec (2023; Appendix I) in accordance with the requirements of the SEARs. Traffic impacts generated by the Project were assessed at each of the construction, operational and decommissioning phases.

A route study was prepared by Rex J Andrews Engineering to identify the optimal route to transport WTG components to the Project Site. Transport routes 2A and 2B were selected as the preferred routes.

In addition to the (Over Size/Over Mass) OSOM vehicles, traffic impacts will be generated by:

- Light and heavy vehicles used to deliver construction materials and personnel during the construction phase.
- Light vehicles used by onsite personnel and visitors during the operation phase.

During the 18 – 24-month construction phase, the Project is estimated to generate an average of 153 one-way vehicle trips per day. The modal split between vehicle classes will fluctuate between various construction months, with light vehicles accounting for 81-83% of traffic generated, and heavy vehicles

making up 17%. During months 15-21 of the construction phase of the Project, 2% of traffic will be generated by OSOM vehicles.

The operational phase of a project is generally between 25-30 years. Routine maintenance during the operational phase is likely to generate traffic equivalent to 20-30 trips daily, assuming each employee drives themselves to and from the site (on the basis of 10-15 employees).

The decommissioning phase would conceptually generate a similar or lesser number of trips than the construction phase. A significantly reduced workforce and less traffic generation of heavy vehicles can be expected during this phase (i.e., no vehicles required to pour concrete slabs).

Mitigation measures for traffic and transport are proposed, including the upgrade of three intersections located on Route 2A to accommodate the OSOM vehicles. Upgrades to these intersections are discussed in the main EIS report.

Hazards & Risks

Several hazard and risk assessments were undertaken in accordance with the SEARs, which include:

- Aviation Safety (Aviation Projects 2023, Appendix K)
- Telecommunications (Middleton Group 2023, Appendix L)
- Health
- Bushfire (ELA 2023b, Appendix M)
- Blade Throw

AVIATION

The Aviation Impact Assessment (Aviation Projects 2023, Appendix K) determined that all WTGs, including the highest turbine (WTG 69), will not exceed 1,085 m AHD and therefore would:

- Not penetrate any OLS surfaces.
- Not impact nearby designated air routes.
- Not impact lowest safe altitude (LSALT) for aircraft.

However, 12 WTGs will impact on the height level designed to protect aircraft operations from colliding with obstacles and/or terrain during take-off and landing (known as PANS-OPS surfaces) by encroaching on the minimum altitude of the approach of aircraft into Mudgee Aerodrome. This will require the approach height to be raised from 3,900 ft to 4,500 ft to ensure safety.

TELECOMMUNICATIONS

The Project is not expected to have any adverse impacts on infrastructure associated with telecommunication services, such as point-to-point communication links, mobile phone service, TV or internet service, not any navigational equipment (trigonometry stations, GPS, etc.).

The Telecommunication Impact Assessment (Middleton Group 2023, Appendix L) found that there are no Australian Communication and Media Authority (ACMA) Links found within a 2 km buffer zone of any WTG. Therefore, the Project was assessed as having no impact on ACMA links and no detailed assessment of near-field effects was required. Consultation with the Bureau of Meteorology (BoM) indicated the potential for impacts to occur at the Yeoval weather station. The Proponent and BoM will enter into an agreement of operation that satisfies the BoM's operational requirements.

PUBLIC HEALTH

The electromagnetic fields (EMFs) produced by generating and exporting electricity from a wind farm and associated storage facilities are of very low frequency and do not pose a threat to public health or contractors and staff.

The shadow flicker assessment undertaken as part of the LVIA (MLA 2023, Appendix F) confirmed that no non-associated dwellings are expected to experience shadow flicker as the two closest dwellings are over 1,000m from a proposed WTG and that it would not exceed the acceptable level of 30 hours per year. Additionally, only a small extent of Wallawaugh Road has the potential to experience shadow flicker. The low frequency and extensive roadside vegetation is likely to mitigate the impacts to negligible levels.

While there is a potential for blade glint to occur, modern WTGs are often constructed with low reflectivity surface treatments to reduce the effect of the glint that make them often less reflective than common sheds found in rural settings. This will result in limited potential to impact stakeholders within proximity to the Project.

BUSHFIRE

The Bushfire Risk Assessment (ELA 2023b, Appendix M) concluded that a risk of a major fire spreading from the Project Site in the direction of Wellington is very low, based on the wind direction associated with significant fire weather being west. Conversely, a major fire spreading from the Project Site in the direction of Mudgee based on a west to south-westerly wind direction and associated weather is technically possible, but also unlikely.

BLADE THROW

The risk of blade throw is considered extremely rare and unlikely however, it has been known to occur previously in operating wind farms in Australia. A study analysing 20,000 WTG towers in Europe and the Americas concluded that the chance per annum of blade throw at any given time (yearly) is approximately 0.0008%. Further studies and research undertaken by the United Kingdom Health and Safety Executive have also indicated that the likelihood of blade failure is in the order of 0.001% - 0.0001%. While the risk of blade throw is unlikely, risks are further minimised through adoption of industry best management practices and regulatory quality assurance systems.

Measures to mitigate potential impacts relating to hazards and risks are recommended in the main EIS.

Aboriginal Cultural Heritage

The Project Site is located on the Traditional Lands of the Wiradjuri People, who have a continuous connection to the land. An Aboriginal Cultural Heritage Assessment (ACHA) was conducted by ELA (2023c, Appendix N) to assess the existing state of Aboriginal culture, sites and artefacts within the Project Site and the potential impacts to matters of Aboriginal Cultural Heritage because of Project works. The ACHA was conducted in accordance with the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW and the Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW.

The ACHA involved the surveying of areas of the Project Site, primarily areas involving proposed Project infrastructure or that would have likely experienced significant Aboriginal occupation such as watercourses. The results of the survey effort uncovered several Aboriginal locales and/or artefacts, with the majority found to contain nil to low overall significance.

A total of 36 survey units were traversed. While there is likely to be direct or indirect impacts to most survey units, the impacts were assessed as likely to result in no or partial loss of value as a result.

A total of 102 Aboriginal object sites were identified, with 35 being identified within the Development Footprint and may potentially be impacted by the Project. Most sites have low overall significance and will be registered on AHIMS. Six (6) Aboriginal sites (BWF AS10, AS11, AS14, AS38, AS86 and AS88) were assessed as having moderate to high overall significance, and BWF IF2 being of high cultural significance.

Historic Heritage

A search of the Australian Heritage Database revealed that there are no listed heritage items within the Project Site. There are 20 heritage items within 5 km of the Project Site that are listed under either the Dubbo or Mid-Western LEP. Two (2) items are located immediately adjacent to the Project Site (external transport route), however there are no sites listed within the Project Site.

Field survey across the Project Site was undertaken where two derelict cottages were identified in the western part of the Project Site. All these built elements are simple utilitarian structures necessary for a functioning farm. They are all in poor condition and are not assessed as significant. Apart from fencing, the remainder of the property has no additional evidence of historical use.

There are no heritage items in the Project Site and the potential for historical archaeological features or deposits is low. The property has functioned in a pastoral capacity since the 19th century and development activity on the property is minimal. The proposed roads, WTGs and electricity infrastructure will not be located near these structures and there will be no impacts because of the Project.

The Project is located at a distance to the several heritage items identified and will not impact those items. Some minor works associated with upgrades to transport routes will be located immediately adjacent to heritage items, however multiple mitigation measures have been proposed to reduce the potential for impacts to the listed heritage items. Furthermore, no items of local historic significance have been identified within the Project Site or Development Corridor.

Soils, Land Use & Agricultural Land

An Agricultural Impact Assessment has been prepared by Tucker Environmental (2023, Appendix P), as well as an Air Quality Assessment conducted by Benbow Environmental (2023, Appendix O). Erosion and sedimentation impacts are likely to occur during the construction phase of the Project due to vegetation clearing and excavation required to construct roads, WTG foundations and associated Project infrastructure. Erosion potential will increase when groundcover is removed however, this will be appropriately mitigated through the implementation of an Erosion and Sediment Control Plan.

The Project Site is in the vicinity of geological units comprising serpentine minerals that have the potential for Naturally Occurring Asbestos (NOA) to be present. Geotechnical investigations undertaken at the detailed design stage will determine if NOA is present and appropriate measures will be implemented, if required.

Impacts from the Project resulting from dust and other airborne emissions would occur primarily throughout the construction phase, with operational air pollution emissions being negligible. Due to most of the winds being medium to strong winds during the daytime (when most earthworks occur), any emitted pollutants would likely be dispersed quickly with low impacts on the surrounding area.

Over 95% of the Development Footprint will be on land considered to have low to very low agricultural capability (LSC Class 6 or 7), which will limit the impacts to productive agricultural land within the Project Site and Far West and Orana regions. The Project involves the temporary modification of land use of up to 3,058.08 ha (Development Corridor), which accounts for just 0.01% of all land used for agriculture in the Far West, for the duration of the Project life.

Water and Aquatic Ecosystems

A Surface Water Impact Assessment and Groundwater Impact Assessment were undertaken for the Project (ELA 2023d and 2023e; Appendix Q and Appendix R) to determine the potential impacts of the Project on a range of water-based factors. This includes impacts to:

- The regional catchment
- Surface water and hydrology (water quantity and quality) and surface water contamination
- Riparian land and aquatic ecosystems
- Groundwater
    - water tables and recharge zones
    - groundwater dependent ecosystems
    - groundwater contamination
    - aquifer interference
- Flooding potential in watercourses

The Project will require water during the construction phase from groundwater supplies to produce concrete and for dust suppression works. However, the volume of groundwater used will be limited as most of the water will be sourced locally where practical or through suppliers. This will reduce potential impacts on groundwater from excessive extraction.

The construction of WTGs has the potential to impact aquatic ecosystems both directly and indirectly. Several measures can be taken to avoid and minimise potential impact, including construction on or near waterways during periods of no water flow and locating WTGs on elevated ridgelines, away from watercourses. The Groundwater Impact Assessment determined the potential for WTGs to intercept groundwater to be highly unlikely due to the placement and construction of Project infrastructure on ridgelines, away from watercourses. Threatened fish species were assessed as having the potential to occur in some waterways within the Project Site, including Type 2 and Type 3 aquatic Groundwater Dependent Ecosystems. Utilising groundwater data, the assessment further determined that the potential to occur would be unlikely.

Resources & Waste

An assessment of the resource requirements for the Project and the waste that will be generated was undertaken, which identified waste management risks, and how these risks have been and will continue to be managed. Types of waste that would be generated by the Project were classified mitigation measures to manage and minimise these wastes were proposed.

The Project design evolution process seeks to minimise the Development Footprint, while maintaining power generation capacity. Where feasible, materials will be reused or repurposed to avoid redirection to waste.

The consumption of resources, and production and disposal of waste has the potential to have a negative impact upon the environment, and needs to be managed to ensure that:

- Resources are used efficiently
- Waste production is minimised
- Reuse of materials is maximised
- Contamination of land and water is avoided.

Legislation provides resource management hierarchy principles to encourage the most efficient use of resources and to reduce environmental harm. The Project's resource management options will be considered against the following order:

- Avoidance of unnecessary resource consumption
- Resource recovery (including reuse, reprocessing, recycling, and energy recovery); and
- Disposal.

The Project aims to adopt these principles to encourage the most efficient use of resources and reduce costs and environmental harm in keeping with the principles of Environmentally Sustainable Development (ESD).

The generation of waste because of the Project would not cause any significant adverse impacts if managed effectively and in line with the proposed mitigation measures.

Social & Economic

A Social Impact Assessment (SIA) and an Economic Impact Assessment (EIA) have been prepared by Ethos Urban (2023, Appendix S and Appendix T, respectively). The development of the Project is set to provide a myriad of social and economic benefits to numerous stakeholders, from the local level to across the state and country.

In terms of economic conditions, the regional labour market is tight as highlighted by the Study Area's existing low unemployment rate of 3%. As part of the Proponent's commitment to positively contributing to local and regional communities and economies, they have indicated that they will endeavour to employ approximately 25% of the Projects workforce from the local region. This will provide several new short-term employment opportunities (55 full-time equivalent construction jobs) as well as a small amount of ongoing employment opportunities (19 full-time equivalent direct and indirect jobs).

External Project labour requirements are expected to generate an accommodation need for approximately 190 full time equivalent workers at the peak of construction. The influx of workers during the construction phase is expected to inject approximately $21.4 million in new spending into local economies over a period of 18 - 24 months. Ongoing economic stimulus associated with the operation of the Project is estimated at approximately $190 million over 30 years of operation (adjusted for CPI). This stimulus includes operational wages, host and neighbouring landholder payments and payments to the community.

Most social and economic impacts are anticipated to be beneficial to individuals and communities, with community consultation being undertaken to understand the questions and concerns present amongst members of the region. These considerations have helped shape the design process through incorporation of key concerns into the Project layout. Most social and economic outcomes are anticipated to be beneficial to individuals and communities, primarily due to landholder agreements and community enhancement funds providing stimulus for rural communities. Extensive community consultation has occurred over several years to help guide the development of the Project appropriately. Consultation helped shape the design process and provided insight into key issues such as land use, biodiversity impacts and rural visual amenity. The Project has strived to be collaborative and supportive of the wider community.

Implemented with an inclusive, community focused approach guided by the goal of creating positive social and economic change to rural communities, the Project is set to deliver many benefits.

6. CONCLUSION

The Project has been developed to avoid and minimise environmental impacts where practicable and has been established through an iterative design and assessment approach. This approach has resulted in improved environmental outcomes as described in the EIS and its supporting technical studies.

Details of the Project have been extensively discussed with the local community through a variety of consultation approaches including face to face meetings and innovating techniques such as a virtual consultation room. Issues raised during the community consultation process have been addressed through the evolution of the design and are identified throughout the main EIS report. Consultation carried out for the Project, identified that the public expect the Project will contribute to the goals of the community including, increasing, and expanding sources of reliable, renewable energy and minimising reliance on fossil fuels, minimising environmental impacts, and providing economic benefits to local communities. The Proponent is continuing to engage with community and stakeholders as the Project progresses through the assessment phase and, if approved, will work closely with all interested parties throughout the construction and operational phases.

Overall, if approved, the Project would deliver:

- 400 - 500 MW of installed renewable energy generating capacity.
- A reduction in carbon emissions.
- Support for a range of State, national and international environmental commitments.
- Significant employment opportunities and benefits to the local economy.

Through the implementation of proposed mitigation, management and offsetting measures, the EIS demonstrates that the Project could be undertaken without any significant long-term impacts on the local environment. As such, the approval of the Burrendong Wind Farm is in the best interest of the public, the greater NSW and Australian communities, the environment. The Project is considered essential to the scaling down of fossil fuel generation and the mitigation of future climate change impacts.

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