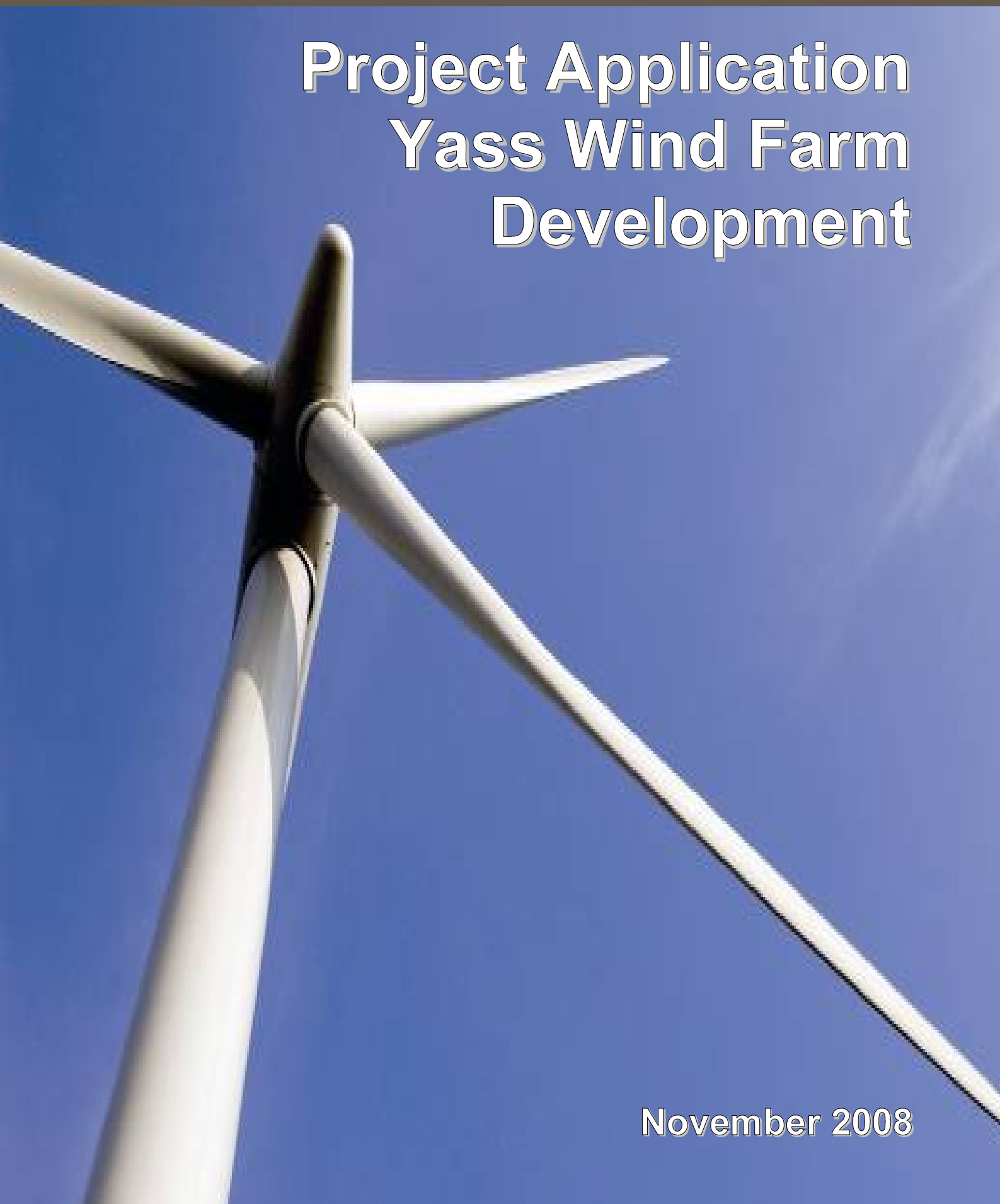
EPURON
POWER FOR PORTFOLIOS

Project Application Yass Wind Farm Development



November 2008

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1 EXECUTIVE SUMMARY

The Yass Wind Farm Development would be located on the western edge of the Southern Tablelands and the South West Slopes, between 20 and 35 kilometres west and south-west of Yass, New South Wales (Figure 1.1).

The proposal consists of three geographically separate "precincts" that would contain wind turbine generators and the electrical plant (substations and power lines) required to connect into the existing transmission network.

The Yass Wind Farm Development has been designed to allow these three precincts to be developed and built separately to allow for possible changes in market conditions or other constraints. These three precincts are to be assessed simultaneously as part of the one project application to ensure that common or cumulative impacts between the three developments are adequately addressed.

The Yass Wind Farm Development would involve the construction and operation of up to 200 wind turbines across the three precincts. The turbines would be placed along a series of ridgelines and surrounding crests within the three precincts. Each wind turbine would have three blades up to 55 metres long mounted on a tubular steel tower up to 105 metres high. The wind turbines are likely to have a rated output of between 1.75MW and 3.3MW each. Accordingly, the wind farm could generate in excess of 450 Megawatts of clean, renewable energy.

Underground and overhead cabling would be used to connect the turbines within the precinct boundaries. Based on the current grid connection concept, one substation would be installed at each precinct to facilitate a separate connection to the existing electricity network. This application includes a proposed substation for each precinct and also the necessary off-site powerlines to connect this wind farm to the national electricity grid. The proposal will also include an application to sub-divide some lots in the Marilba Hills precinct.

This Project Application outlines the scope of the construction, operation and decommissioning/recommissioning phases of the Yass Wind Farm Development proposal. It identifies and prioritises the associated potential environmental impacts. This Project Application has been prepared by the proponent Epuron Pty Ltd.

The proposal would be assessed under Part 3A of the *Environmental Planning and Assessment Act 1979* (the Act) which provides a consolidated assessment and approval regime for Major Projects. Following the submission of this Project Application and issuing of the Department of Planning Director-General's Requirements, a detailed Environmental Assessment Report would be prepared.

The Environmental Assessment Report would draw upon the input of local and state government agencies, as directed by the Department of Planning. A Planning Focus Meeting involving government representatives was held on 14 and 15 of October 2008 to identify the key issues of involved government agencies.

Moderate to high priority issues associated with the proposal identified by the preliminary assessment include visual, noise, archaeological, biodiversity, traffic and roads and community impacts. These issues are being investigated by way of specialist reports, liaison with relevant stakeholders and for the latter a comprehensive community consultation program.

Issues where impacts are expected to be readily manageable using a range of mitigation measures include land use, aircraft and telecommunication (including defence), services and infrastructure, bushfire, construction noise, safety and potential impacts on local hydrology, soils, air quality and climate. These issues would be investigated primarily through desktop assessment and liaison with stakeholders and relevant agencies.

2 INTRODUCTION

2.1 Purpose of this document

Epuron proposes to develop the Yass Wind Farm Development, with three geographically distinct precincts in the Southern Tablelands and South West Slopes. The three areas under investigation are the Coppabella Hills, the Marilba Hills and Carrolls Ridge. The three precincts are between 20 and 35 kilometres west and south-west of Yass, New South Wales (Figure 1.1). The wind farm precincts are located on private property within and adjacent to agricultural areas. The proposed precincts are located across the Local Government Areas (LGA) of Harden and Yass Valley.

This Project Application details the scope of the construction, operation and decommissioning / recommissioning phases of the proposal and undertakes a preliminary prioritisation of potential environmental impacts. Such impacts associated with the proposal have been categorised into **moderate to high** and **lesser** priority issues. Issues identified as moderate to high priority would be comprehensively investigated and assessed via specialist studies in the Environmental Assessment report, as directed by the Director General's Requirements. Lesser priority issues are anticipated to generate impacts which are readily manageable, requiring less intensive investigation.

It is anticipated that the turbines would be maintained as required until the decision is made to decommission the wind farm. As part of the decommissioning stage, above ground infrastructure would be removed and the disturbed areas rehabilitated.

2.2 Statutory context

Part 3A of the *Environmental Planning and Assessment Act 1979* consolidates the assessment and approval regime for all Major Projects that require the approval of the NSW Minister for Planning. Part 3A applies to wind power developments with a capital cost of $30 million dollars or greater, defining these developments as Major Projects.

The proposed Yass Wind Farm Development would have a capital cost in excess of $30 million dollars and in the Minister's opinion is considered to be a Major Project, under Part 3A of the Act (Minister's opinion dated 17/10/2008, included in Appendix A). The Department of Planning requested the proponent to prepare this document and categorise the potential impacts of the proposal in terms of moderate to high and lesser priority issues. Epuron seeks the Director General's Requirements for the Environmental Assessment Report of those issues assessed by the Minister to be of moderate to high priority. It is understood that upon validation of this document, the Department of Planning will issue the Director General Requirements within 28 days.

Following a declaration by the Minister for Planning on 27 February 2008, the Proposal would be considered Critical Infrastructure under the Environmental Planning Assessment Act 1979 as it has the capacity to generate in excess of 250 megawatts.

2.2.1 Planning Focus Meeting

The Planning Focus Meeting for this proposal was held on 14 and 15 October, 2008. Representatives from the Department of Planning, Department of Environment and Climate Change (DECC), Department of Primary Industries (Minerals), Department of Lands, Murrumbidgee Catchment Management Authority (CMA), Country Energy, Transgrid, Harden Shire Council, Yass Valley Shire Council and Roads and Traffic Authority were present at the Planning Focus Meeting. The Department of Defence, the Civil Aviation Safety Authority, Airservcies Australia, the Department of Water and Energy and the Rural Fire Service were unable to attend but requested that they be kept informed.

Key issues identified by these agencies to date have been considered in the assignment of priority to potential impact areas in relation to this proposal.

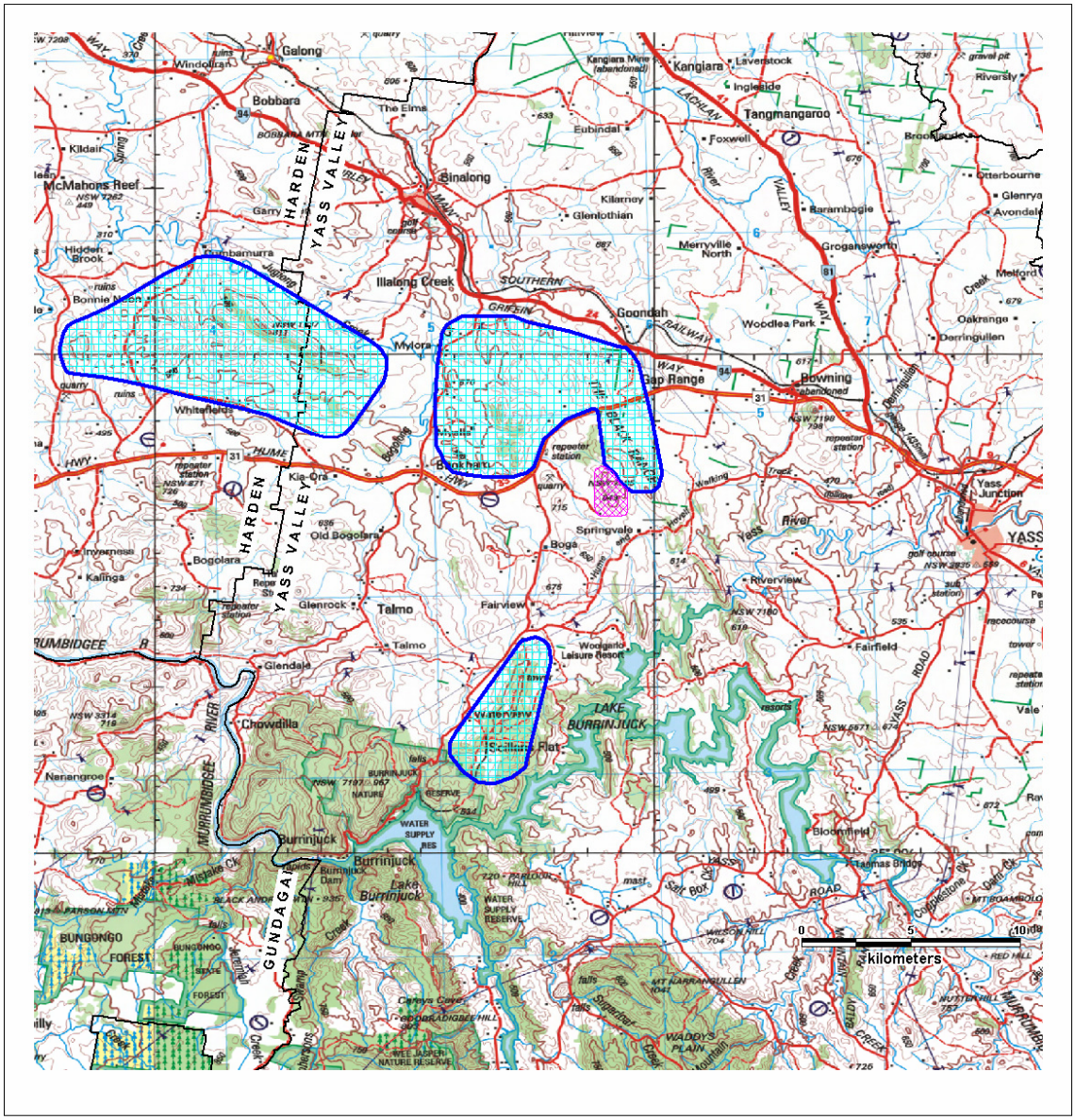

Figure 2-1 Location of the proposed Yass Wind Farm Development

3 SITE CONTEXT

The proposal is located on the western edge of the Southern Tablelands and the South West Slopes, between 20 and 35 kilometres west and south-west of Yass, New South Wales. It consists of three geographically separate "precincts" that would contain wind turbines and the electrical plant (substations and power lines) required to connect into the existing transmission network (Figure 1.1). The proposed development would occupy the ridgelines and surrounding crests.

3.1 Land use and density of settlement

The study area is characterised by undulating to hilly country with broken ridgelines.

The tenure of land at the subject site is private freehold. The land is currently used for commercial agriculture (sheep and cattle grazing) and farm residences. The proposal would directly involve approximately 25 properties.

The majority of the development area across the three precincts is farmland that has been cleared and grazed over many decades.

3.2 Landforms and vegetation

The three precincts fall within the Murrumbidgee Catchment Management Authority (CMA).

Areas that would be developed contain a combination of native and exotic pasture and remnant woodland. The ridges most likely to contain turbines carry some remnant native vegetation in the form of scattered trees. The surrounding slopes and gullies are unlikely to contain turbines but could be affected if access routes or powerlines were routed through them. In general the slopes and gullies carry more native vegetation than the ridges.

A detailed description of flora and fauna values and ecological communities in the study area would be provided at part of the Biodiversity Assessment.

4 PROJECT DESCRIPTION

4.1 General description

The proposal has three distinct areas (Precincts) for investigation that are the subject of one Project Application to be submitted to the Department of Planning. The proposal would involve the construction, operation, and decommissioning of wind farms in each precinct. A brief description of each of the precincts is given below.

At this stage, final turbine numbers have not been developed. For the purpose of providing an indication of the possible project extent, the estimation of turbine numbers is based on an expected upper limit. Final turbine numbers for each precinct is dependant on the outcomes of the various engineering and environmental studies and are subject to change from the estimations detailed below.

Coppabella Hills – 90 Turbines – approx. 225MW

- The area known as the Coppabella Hills is located approximately 35 kilometres west of Yass and consists of one main ridge line with surrounding hillocks.
- The precinct could contain up to 90 wind turbines.

Marilba Hills – 70 Turbines – approx. 200MW

- The Marilba Hills would be located on ridges in the northern part of Black Range (to the north of the previously approved Conroy's Gap project) and hills to the west of this ridge.
- The investigation area would include two parallel ridges on both sides of the Hume Highway.
- Marilba Hills could contain up to 70 wind turbines.

Carrolls Ridge – 35 Turbines – approx. 75MW

- Carrolls Ridge is located approximately 25 kilometres south-west of Yass and to the west of Burrinjuck Dam.
- Carrolls ridge could contain up to 35 wind turbines.

Each turbine would have three blades likely to be up to 55m long mounted on a tubular steel tower up to 80-105 metres high, with capacity between 1.75 and 3.3 MW.

Additional site works

The proposal would also involve the construction, operation and decommissioning of:

- Electrical connections between wind turbines and on-site substations, which would be a combination of underground cable and overhead power lines.
- An onsite control building and equipment storage facilities for each precinct.
- A temporary concrete batching plant at each precinct.
- Access roads within the precincts in addition to minor upgrades to access on local roads, as required for the installation and maintenance of wind turbines.
- A number of freestanding permanent monitoring masts for wind speed verification and monitoring.

At this stage of investigations, optimal turbine and easement locations have not been determined. These would be determined prior to submission of the Environmental Assessment report, after a full investigation of site specific constraints.

This project description is based on the current and initial wind farm design concept. In particular, any site layouts are based on the current proposal, which may change due to the outcomes of further investigation and transmission connection design amendments.

4.2 Wind farm infrastructure

4.2.1 Wind turbines

Wind turbines

Each wind turbine would be a three bladed up-wind machine. A variety of wind turbines are under consideration, however, the specific turbine selection would be carried out through a competitive tender process after development approval has been received.

Nacelle

The nacelle, or housing at the top of the tower, contains the generator, gearbox, and control gear including motors, pumps, brakes and electrical components. This control gear ensures that the wind turbine always faces into the wind, and adjusts blade angles to maximise power output and minimise blade noise. The nacelle also houses a winch or winches to assist in maintenance equipment or smaller replacement parts to the nacelle.

The nacelle design takes into account acoustic considerations to minimise noise emissions from mechanical components.

Tower

The tower is a tubular steel tower 80 to 105 metres high. The final dimensions would depend on the wind turbine design selected. The tower would be constructed in up to four sections, each section bolted together via an internal flange. Within the tower are the power and control cables, and access ladder to the nacelle (with safety climb system).

Footings

The tower would be secured in a reinforced concrete footing. Various designs of footings are under consideration, based around a gravity footing (where subsoil geology is less stable) and a rock-bolted footing (where subsoil geology provides adequate bedrock). A combination of these footing designs may be used on the site to best match the subsurface geology at each turbine location.

Transformer

Each wind turbine generator would produce power at typically 690V, up to 1,000V. This power is then transformed at each wind turbine to a higher voltage (typically 22-33kV) for reticulation around the site. The transformer for each wind turbine would be located either within the base of the tower or in the nacelle, depending on the specific wind turbine model selected. The transformer would be either dry-type or suitably bunded.

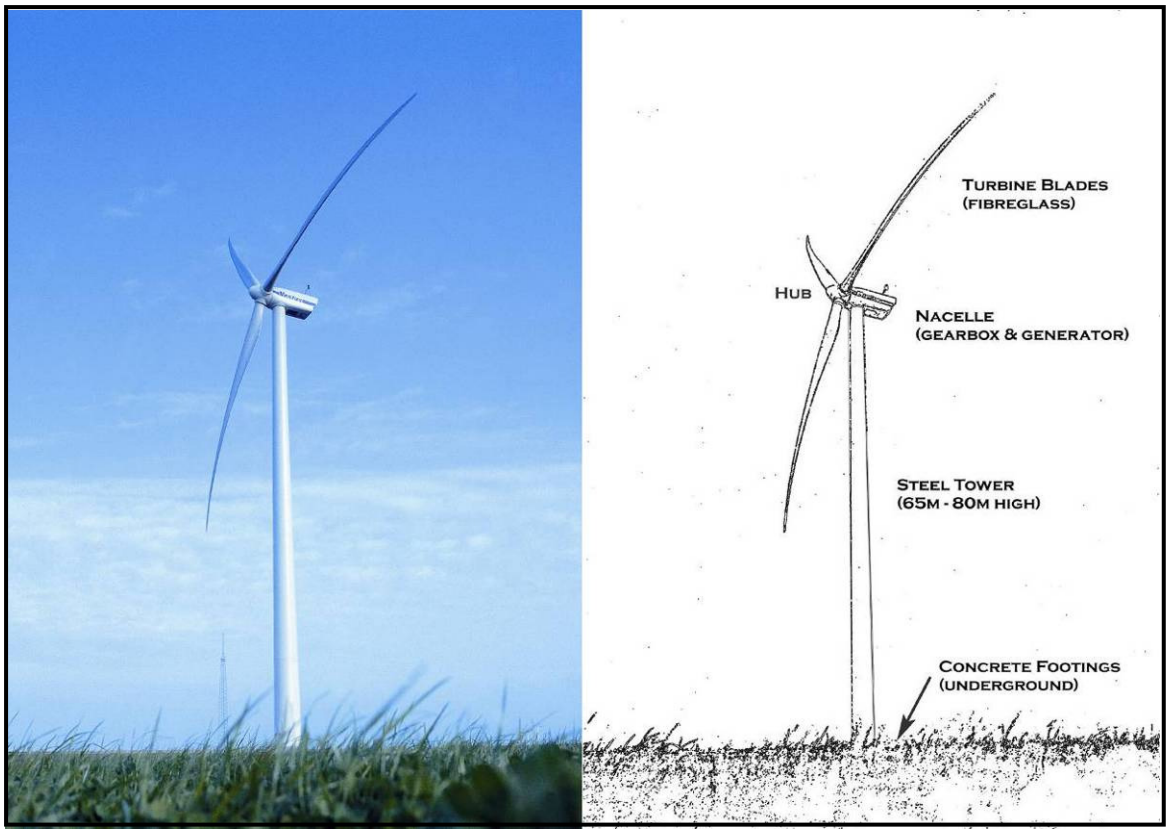

Figure 4-1 A typical wind turbine.

Lightning protection

Each wind turbine would have a lightning protection system installed. This system includes lightning rods through each wind turbine blade, an earth mat built into the foundations of the wind turbine, and lightning protection around the various electronic components within the wind turbine.

Obstacle Lighting

The turbines may have aircraft warning lighting which would comprise of a red flashing beacon on the top of the nacelle to meet the requirements of the Civil Aviation Safety Authority (CASA). CASA guidelines for aviation warning lighting for a group of wind turbines require that sufficient wind turbines should have red obstacle beacons to indicate the extent of the group.

4.2.2 Wind turbine operation

Each wind turbine would have its own individual control system, and would be fully automated. Start-up and shutdown (including safety shutdowns) are fully automated, with manual interruption available via onsite control systems and remote computer.

Generally, wind turbines would commence operation at an approximate wind speed of 3–5 metres per second (11–18 kilometres per hour) and gradually increase in production to their maximum capacity, usually at an approximate wind speed of 12–15 metres per second (44–54 kilometres per hour). Once at this maximum capacity, the wind turbine would control its output by altering the pitch of the wind turbine blades. Under high wind conditions in excess of 25 metres per second (90 kilometres per hour) the wind turbine would automatically shut down to prevent damage. The wind turbine would continue measuring the wind speeds during this state via an anemometer mounted on the nacelle, and would restart once wind speeds drop to a suitable level.

Various operating constraints are able to be programmed into the control system to prevent operation of the turbine under certain operational conditions. For example, if operational issues such as excess noise or shadow flicker are noted under certain conditions, these

conditions can be pre-programmed into the control system enabling individual wind turbines to automatically shut down whenever these conditions are present. For instance, the noise control systems can be programmed such that if the wind is blowing from a certain direction at a certain wind speed, the wind turbines can be switched off. Similarly, wind turbines can be switched off at a certain time of day during a period of the year when the sun angles may cause shadow flicker on nearby properties.

It should be noted that noise and shadow flicker are not expected to be an issue, as these impacts can be minimised in the design process. However, this capability within the control system would allow adjustment of wind turbine operation modes for unforeseen outcomes.

4.2.3 Wind Turbine Layouts

Epuron is reviewing a number of wind farm layouts for the various wind turbines under consideration. Proposed layouts have undergone a preliminary review to determine constructability. Further studies will provide greater information in determining the optimised locations for each turbine model and final geotechnical investigations at each turbine location will further refine the process. The biodiversity and archaeology assessments are being conducted on the gross footprint of the development zones and can accommodate relocation of turbines, roads and other infrastructure.

Detailed geotechnical investigations can only be carried out once consent conditions are known and a turbine supplier has been selected.

4.2.4 Sub-division

Pending final turbine placements, sub-division of some existing lots may be required on one property in the Marilba Hills precinct to minimise commercial interference with existing farming practices. Lots containing turbines and necessary road and transmission access would be subject to sub-division as agreed between Epuron and the landowner.

4.2.5 Ongoing wind monitoring equipment

Epuron has established a 71m high lattice tower wind monitoring mast in each of the three precincts to assess wind speeds at the site. It is proposed to continue operation of each mast to allow ongoing performance monitoring of the site. Data from each mast would also be used for any additional noise monitoring and assessment.

Pending final turbine placements, it may be necessary to move existing monitoring masts, or install additional wind monitoring masts to assist with control and operation of the site.

4.3 Electrical connections

To export power from the wind farm precincts to the electricity grid, the onsite electrical works would include:

- Electrical connections between wind turbines and on-site substations. These would be a combination of underground cable and overhead power lines.
- Onsite control and communication cabling.
- Onsite control buildings and equipment storage facilities.
- A substation step the voltage up from reticulation voltage to transmission voltage of 132,000 V.

Substations and Grid Connection

Grid connection options are being assessed in consultation with Country Energy and Transgrid. It is envisaged that each precinct would have an individual on-site substation and a separate grid connection, though common arrangements are also being investigated. Grid

connections are expected to be via Transgrid's existing 132kV Yass – Murrumburrah, Yass – Wagga and/or Yass – Burrinjuck powerlines.

A substation is required to convert power from the anticipated 33kV reticulation voltage to the 132kV transmission voltage suitable to connect to TransGrid's transmission network. It would also include ancillary equipment such as control cubicles, voltage and current transformers, communications equipment and circuit breakers for the protection of the substation.

Substations would be surrounded by a security fence as a safety precaution to prevent trespassers and stock ingress. The ground would be covered partly by crushed rock and partly by concrete pads for equipment, walkways and cable covers, and would have an earth grid extending approximately 1 metre outside of the boundary of the security fence.

Onsite electrical reticulation

Within each wind turbine, or in the adjacent pad-mount transformer, the power voltage is stepped up from generation voltage to an expected 33,000 V for reticulation around the site. The final decision on the reticulation voltage would be a technical and commercial consideration following finalisation of the electrical design.

Each wind turbine must be connected by electrical reticulation which cables turbines together in groups and then into the Site Substation. These connections would be made using both underground and possibly overhead cabling. Cable trenches would, where possible, be dug alongside the onsite roads to minimise any related ground disturbance. Short spur connections would come off a main cable run which would, where possible, approximately follow the main access tracks on site.

The routes for power reticulation would be finalised taking into account the ease of excavation of cable trenches, and with an effort to minimise impacts on areas with sensitive biodiversity or heritage; to minimise clearing of vegetation and trees; and to minimise erosion issues resulting from construction. Where possible the routes for power reticulation would follow the access tracks within the precincts.

Control cabling

In addition to the power reticulation cabling, control and communications cabling is required from the control building to each wind turbine, and to the Site Substation. This control cabling would be installed using the same method and route as the power cabling described above, that is, strung from the same poles as overhead lines, or dug in the same cable trench as underground cables.

Control cables would consist of twisted pair cables, multi-core cables or optical fibres, and would be used for central and remote control of individual wind turbines, substation controls, monitoring of weather data and equipment and communications to offsite control centres where required.

4.4 Site Civil Works, Roads and Access

Access route

Access routes to the site are expected to use the Hume Hwy from Yass and then smaller roads including; the Burley Griffin Way, Garryowen Rd. Illalong Rd, Berramangera Rd and Burrinjuck Rd.

A traffic and transport study will fully investigate the local road network and will involve consultation with the local Councils and the RTA to determine the most suitable access routes.

Access tracks

Onsite access tracks for construction and operation would be designed to balance the requirement to enable large parts to be delivered to turbine locations and the substations and to minimise impacts. Existing tracks would be utilised where practical.

At each wind turbine base, a hardstand area would be required to provide a level and stable base for cranes necessary for construction.

Every effort would be made to:

- Minimise the number, length and width of necessary access tracks.
- Locate access tracks along the route of existing farm tracks, in areas where clearing of existing native vegetation would be minimised, and where impact on sensitive biodiversity or heritage areas would be avoided or minimised.; and
- Construct access tracks with due regard to erosion, sediment control and drainage.

Control Building

A control building would be built onsite to house instrumentation, control equipment and communications equipment. This building would also house routine maintenance stores, a small work area, and amenities for staff.

The control building would likely be constructed from a concrete slab on ground construction with a steel frame, metal or brick walls, a non-reflective sheet steel (colourbond) roof, and would include rainwater collection and storage for domestic use. A composting or septic toilet system would be installed for staff use. It is likely that the control building would be air-conditioned. The internal layout of the control room would be finalised after the Grid Connection Agreement has been completed.

A telephone connection to the control building would be required to allow remote monitoring and control of the wind farm. The control building would be located adjacent to the site substation, and is expected to be a joint facility for control of the substation as well as the wind farm.

Other Site Services

Operating staff would be responsible for removal of all other wastes at the site; no waste management services would be required.

4.5 Construction Facilities and Works Staging

4.5.1 Phase 1: Construction of the wind farm

The construction phase of the wind farm would include the following activities:

- Transport of people, materials and equipment to site.
- Civil works for access track construction, footings and trenching for cables.
- Establishment, operation and removal of concrete batching plant.
- Potential use of rock crushing equipment onsite, if required.
- Installation of wind turbines using large mobile cranes.
- Construction of substation and onsite power reticulation lines and cables.
- Temporary site offices and facilities.
- Restoration and revegetation of site on completion.

Construction would commence with the upgrading and construction of new roads and all other site civil works, including preparation of hardstand areas, and laying of cables. This would be followed by preparation of concrete footings, which must be cured prior to construction of wind turbines.

Wind turbine construction can be relatively fast once the footings are prepared. If weather conditions permit, wind turbines can be installed at a rate of approximately 3-4 per week. The towers are erected in sections, the nacelles lifted to the top of the towers, and finally blades lifted and bolted to the hub.

The necessary substation construction and grid connection works would be carried out in parallel.

The commissioning phase would include pre-commissioning checks on all high-voltage equipment prior to connection to the transmission system. Once the wind farm electrical connections have been commissioned and energised, each wind turbine is then separately commissioned, connected and put into service.

On completion of construction, the site would be rehabilitated and all waste materials removed from the site. Any temporary road realignments, not required for on going maintenance, would be restored and rehabilitated.

4.5.2 Phase 2: Wind farm operation

Once installed, the wind farm would operate for an economic life in the order of twenty to thirty years. The economic life would depend on various considerations including increasing costs of maintenance; requirements for major repair work; and cost and efficiencies of possible replacement wind turbines.

During the operation phase the wind turbines and other equipment would require regular maintenance, and it is possible that at some stage some equipment may require major repair or replacement. In addition, during the initial operating years, operator attendance may be more regular while the wind farm operation is being fine-tuned and optimised.

Routine maintenance

To ensure the wind farm operates in a safe and reliable manner, regular maintenance, and inspection checks are scheduled. This would generally require only standard vehicles. As a guide, each turbine can require around 7 days of maintenance per year.

Major repairs

It is possible that major unexpected equipment failures could take place during the life of the wind farm. While wind turbines and electricity connections are designed for a 20 - 30 year life, failures can occur due to a number of factors including lightning strike (either onsite to the wind turbines or offsite to the transmission line) and damage to key components (such as transformers or gearboxes).

Most repairs can be carried out in a similar manner to routine maintenance, with some exceptions which may require the temporary reinstatement of wider construction tracks.

4.5.3 Phase 3: Wind farm decommissioning and recommissioning

The maximum life of the wind turbines is 30 years at which point if the turbines are no longer viable they may be replaced, overhauled or removed from the site.

Decommissioning and recommissioning would involve similar road access arrangements to construction, and would require access for large cranes and transport vehicles to dismantle and remove the turbines. All underground footings and cable trenches would remain in situ, all other equipment would be removed from site. It should be noted that the scrap value of turbines and other equipment is expected to be sufficient to cover the majority of the costs of their dismantling and site rehabilitation.

5 PROJECT JUSTIFICATION

5.1 Project viability

In Australia, wind farms are viable because of legislation executing the renewable energy policies of the Federal and State Governments which require electricity retailers to source a certain percentage of electricity from renewable sources. The NSW State Government introduced legislation, called the Renewable Energy (NSW) Bill, to create a renewable energy market of 7,500GWh/an. The Federal Government has subsequently proposed a National Renewable Energy Target (RET) as an expansion / extension of the existing MRET program. This increase to the Federal renewable energy target announced by the Government will create a renewable energy market of 45,000GWh/an. This relates to approximately 10,000 – 12,000 MW of additional capacity required, with wind energy anticipated to be the primary technology used.

Both the MRET and the NRET are market based mechanisms designed to encourage investment in renewable technologies that will provide the lowest cost generation of renewable electricity in the National Electricity Market. Projects like the Yass Wind Farm Development would encourage renewable investment in NSW and reduce the costs of production by reducing transmission losses to the NSW load centres.

CSIRO collected wind monitoring data have established that the Southern Tablelands have some of the fastest wind speeds in NSW. Through CSIRO, Epuron has a vast network of existing masts in the area, including two at Conroy's Gap (approximately 15km away) to confirm that wind speeds are high at the site and more than sufficient for a viable wind farm. Additional site specific monitoring masts were installed in each precinct in October 2008.

5.2 Project benefits

The wind farm offers several benefits to the environment and local community:

- In a typical year the wind farm could produce over 1,000 GWh of clean, renewable energy in each year of operation;
- This project would directly inject funds into the local economy (both during construction and during the operational phase);
- This project would provide an opportunity for regional investment in the Goulburn, Harden and Yass areas as the renewable energy sector grows in the Southern Tablelands and south west slopes;
- The wind farm would provide additional generation capacity into the NSW grid that would assist in meeting load growth and result in a clean, reliable generation mix;
- This project would reduce greenhouse gas emissions, helping to move towards cleaner electricity generation and reduce the impact of climate change in a carbon-constrained environment;
- This project would supply renewable energy that would assist electricity retailers to fulfil their obligations under state and federal renewable energy targets;

6 MODERATE TO HIGH PRIORITY ISSUES

6.1 Summary of issues identified

The following issues are considered potentially able to generate moderate to high level impacts and would therefore be given greater priority in terms of investigation and mitigation of impacts. These are impacts which may be, for example:

- Highly contentious within the community (impact on visual values and noise in the locality);
- Non reversible (impact on Aboriginal heritage features);
- Have potential to cause population level impacts to threatened species.

Moderate to high priority issues will require additional investigation/consultation and will be dealt with more fully in the **Environmental Assessment Report** in order to enable impacts to be managed and kept to acceptable levels. Table 6.1 summarises the sources of impact and proposed strategies for investigation for each issue of moderate to high priority.

Table 6.1 Issues of moderate to high priority.

Issue	Sources of impact	Risk Priority	Investigation strategy
Visual	• Loss of visual amenity • Impact on scenic character • Visual impacts from the Hume Highway corridor • Cumulative visual impacts.	Moderate to high	Further investigation via specialist visual assessment and community consultation.
Noise	• Operational noise may impact residences nearby.	Moderate	Further investigation via specialist acoustic assessment including modelling and mapping.
Archaeology	• Potential to impact Aboriginal heritage values and items.	Moderate	Further investigation via specialist archaeological assessment including desktop literature review and onsite field work. Subsurface work would only be undertaken if required.
Biodiversity	• Clearing of vegetation during construction and maintenance. • Loss or modification of habitat. • Potential for spread of weeds through soil disturbance during the creation of access tracks, footings and underground cable routes. • Impact on threatened species or endangered ecological communities.	Moderate to high	Further investigation via specialist biodiversity assessment including desktop literature review and onsite field work.

Issue	Sources of impact	Risk Priority	Investigation strategy
Traffic and roads	• Turbines may distract drivers (either by their movement or as other motorists pullover to view the development). • Increased traffic may be a safety risk in the local area. • Construction traffic may contribute to road pavement deterioration.	Moderate	Further investigation via Traffic Impact Study.
Community	• Potentially divisive development.	Moderate to high	Further investigation via community consultation. Implementation of a community consultation plan.

6.2 Specialist reports

Further investigation is proposed to include specialist reports for a number of priority issues identified above. These include visual, acoustic, archaeology, biodiversity and road and traffic impacts. A summary of the proposed approach to each of these areas is provided below. A community consultation plan will be developed and implemented to identify and respond to community impacts.

6.2.1 Visual Assessment

A visual and landscape assessment report will be prepared to document and present the results of the assessment process and mitigation measures together with figures and illustrative material. A description of the likely methodology for this assessment is as follows.

1 Desktop Study and Analysis

A desktop analysis to identify a series of Landscape Units and to determine and plot the likely extent of visibility of the proposed wind farm, and associated infrastructure, within distance bands.

2 Detailed Site Investigations

Carry out a detailed site inspection to confirm the boundaries of the Landscape Units and review and confirm the visual catchment of the proposed wind farm and transmission connection. Review and confirm potential view locations and record photographs toward the proposed wind farm site.

3 Landscape and Visual Impact Assessment

Classify the potential view locations and viewers in terms of view context, view distance, number of potential viewers, and period of view and record the results in a matrix.

Record the likely magnitude of visibility of the development from the view locations, and define the level of sensitivity of the various categories of viewers to change that would result from the wind farm development.

4 Glint and shadow flicker assessment

Review and incorporate glint and shadow flicker assessment into the visual assessment report.

5 Potential Mitigation Options

Identify potential mitigation measures to be considered as part of a strategy to minimise potential visual impacts.

6 Illustrative Material

Prepare figures, where appropriate, to illustrate the results of fieldwork and to demonstrate issues of distance and relative scale between selected view locations and the wind farm site.

7 Visual Simulations

Prepare a series of visual simulations to illustrate the development of the wind farm from a number of selected view locations.

8 Reporting

6.2.2 Archaeology

The Aboriginal Heritage project would be conducted in accordance with the requirements of the NSW DECC Aboriginal Cultural Heritage Standards and Guidelines Kit (NPWS draft 1997). In addition the study will be undertaken following the new requirements for Community Consultation – Interim Guidelines for Aboriginal Community Consultation-Requirements for Applicants. Accordingly, the study would include:

- consultation requirements including Notification and Registration of Interests and Preparation of Assessment
- consultation with relevant Aboriginal organisations
- a review of heritage listings and relevant literature;
- a synthesis of local and regional archaeology;
- an historical review and outline of relevant historical themes;
- the construction of a predictive model of Aboriginal site location;
- a comprehensive field survey of the zones of proposed impact conducted in accordance with the NSW DEC Aboriginal Cultural Heritage Standards and Guidelines Kit (NPWS draft 1997)
- an analysis of the survey and results;
- a significance assessment of cultural heritage sites located within the study area;
- recommendations for the mitigation and management of cultural heritage based of the results of the investigation, significance assessment and a consideration of the impacts of the proposed activities;
- provision of a draft document to registered Aboriginal stakeholders; and
- compilation of a heritage report in accordance with the relevant standards and guidelines.

6.2.3 Acoustic Assessment

The Acoustic Assessment would detail the noise criteria, background noise measurements and the predicted noise level at all potentially impacted receivers from the operation of the proposed wind farm. The acoustic assessment will include:

- construct a noise model and create a colour contour map for the reference wind speed (typically 8 m/s).
- using the SA EPA Guideline for Wind Farm Noise Assessment indicate the potential zone of noise affectation.
- undertake baseline noise monitoring near sensitive receivers
- undertake noise modelling of proposed wind farm noise

- Predict received sound level at all surrounding noise sensitive locations for the wind speed range from cut-in to rated
- Produce a noise contour map for the reference condition of 8 m/s
- determine if the wind farm is likely to be compliant.

The study will include an assessment of construction noise and develop potential mitigation measures that may be required for the construction phase of the proposal.

6.2.4 Biodiversity Assessment

The biodiversity assessment will survey fauna by passive survey, trapping, direct searches and habitat assessment and flora via the 'random meander' method, quadrat sampling and vegetation mapping. The work would target migratory and threatened species and communities listed on State and Federal legilsation.

A specialist report would include:

- A literature review of regional and local biodiversity values;
- The methods and results of field investigations;
- Consideration of potential impacts associated with the development,
- Consideration of likely constraints and risks to biodiversity (including collision and avoidance risks);
- Consideration of Commonwealth and State listed species, populations and communities;
- Mitigation to reduce the risks and identified impacts.

Mitigation measures are anticipated to include an outline of an adaptive management monitoring program to ensure collision impacts are quantified and responded to in order to ensure that population level impacts do not eventuate.

6.2.5 Traffic and transport

A Traffic and Transport assessment would be undertaken to identify:

- traffic volumes and vehicle types;
- Preferred access options and routes; and
- Access requirements including assessment of technical upgrades required to existing access and roads.

6.2.6 Community consultation

A community consultation plan incorporating face to face meetings, phone contact, newsletters, an Open House session and focussed presentations as required, would be being carried out in parallel to the design and assessment of the proposal. The aim of the consultation process is to establish two-way channels of communications between the public, the proponents and the environmental assessment personnel whereby information can be distributed and feedback incorporated into the design and assessment of the proposal.

7 LOWER PRIORITY ISSUES

This section outlines issues considered to be of lesser priority. These are issues which pose environmental risks which are considered to be readily identifiable and manageable. It is anticipated that these issues will be the subject of desktop investigation. Liaison with relevant agencies and stakeholders would occur where appropriate.

Table 7.1 Issues of lesser priority

Issue	Sources of impact and potential risks	Risk Priority
Land use and land value	• Permissibility of the development on the site selected, under local government legislation and planning instruments. • Impact on onsite and adjacent land uses, including mineral leases.	Low to moderate
Aircraft and tele-communication impacts.	• Television, radio and telecommunications may be impacted. • Turbines may cause a collision hazard.	Low to moderate
Defence	• Television, radio and telecommunications may be impacted. • Turbines may cause a collision hazard.	Low
Bushfire Risk	• Potential for wind turbines to start or influence the pattern of bushfire. • Potential to impact bushfire-fighter access.	Low to moderate
Services and Infrastructure	• Potential to affect transport routes and telecommunications (such as mobile, TV and radio). • Access to the site may be improved as a result of the development. Provision of new substation may allow future electricity network improvements for properties in the area.	Low to moderate (Positive)
Construction noise	• Operation of equipment. • Transportation of equipment and materials to and from the site.	Low
Safety	• Potential to generate electromagnetic fields. • Potential to cause injury.	Low
Climate and air impacts	• Dust and emissions generated during excavation, road works, transport of machinery. • Greenhouse gas emissions. The proposal would make a positive contribution to the reduction in greenhouse gas emissions by providing alternative electricity sourced from fossil fuels.	Low to moderate (Positive)
Hydrology (water quality and water-table impacts)	• Mobilisation of sediment and pollutants generated during excavation, road works, transport of machinery. • Risk of oil leaks during operation and maintenance.	Low to moderate

Issue	Sources of impact and potential risks	Risk Priority
Economic impact	• Property prices may be impacted by the infrastructure. • Local employment would be created during construction - net economic gain to the local community.	Low to moderate (Positive)
Tourism	• Potential to affect the number and type of visitors to the area.	Low to moderate
Removal of infrastructure	• Ability to finance removal of infrastructure. • Potential to Environmental rehabilitation of site.	Low to moderate
Soils and landforms	• Soil disturbance from vegetation clearing. • Erosion from excavation works. • Soil compaction from the transport of heavy equipment	moderate

8 CONCLUSION

This Project Application summarises the scope and receiving environment of the Yass Wind Farm Development proposal, as of November 2008. This proposal is to be assessed under Part 3A (Major Projects) of the *Environmental Planning and Assessment Act 1979*.

This document is intended to give a preliminary prioritisation of potential impacts, in order to guide the full investigation of issues in the Environmental Assessment. Epuron now seeks the Director General's Requirements, identifying the key issues and any required methods of inquiry in order to complete the Environmental Assessment for this proposal.

9 APPENDIX A MINISTERS OPINION OF PART 3A PROJECT

[redacted]

10 APPENDIX B PLANNING FOCUS MEETING MINUTES