

# White Rock *Wind Farm*

Request to Modify a Major Project

Supporting Document

January 2013

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# 1 Executive Summary

The White Rock Wind Farm proposal is for the development of a wind farm with up to 119 turbines and associated infrastructure in the Northern Tablelands region of NSW, 20km west of Glen Innes and around 500km north of Sydney. The proponent for the project is White Rock Wind Farm Pty Ltd, a wholly owned subsidiary of Epuron.

An application for the proposal was lodged with the Department of Planning on 10 September 2010 and Director General's Requirements were issued to the proponent on 13 October 2010 to guide the work required in assessing the proposed wind farm. An Environmental Assessment for the White Rock Wind Farm, which addressed the issues raised in the Director General's Requirements, was lodged in April of 2011 and placed on Exhibition from 27 May 2011 to 27 June 2011. Fifteen submissions were received in response to the exhibition of the Environmental Assessment of the wind farm. Epuron responded to these submissions in a Submissions Report in November 2011. The Minister for Planning issued Project Approval for the White Rock Wind Farm on 10 July 2012.

This Supporting Document details the proposed modification to the White Rock Wind Farm project and seeks approval for the following minor additions to the approved development:

- an alternative 132kV powerline route from the wind farm to TransGrid's 330kV transmission line located approximately 13km west of the wind farm site; and
- an alternative switchyard/substation location to connect the wind farm to the electricity grid.

This Supporting Document provides details of the potential environmental impacts of the alternative powerline and substation. The impact assessments included:

- consultation with landowners including neighbours within 2km of the powerline route;
- landscape and visual impact assessment;
- operational noise assessment of the revised substation location;
- ecology assessment; and
- heritage assessment

The additional environmental assessments demonstrated that that this proposed modification can be constructed with no overall additional impact to the environment and a lower impact to native vegetation compared to the approved powerline and substation. To ensure any impacts from the proposed modification are minimised, several mitigation measures have been incorporated into additional Statement of Commitments.



**Figure 1-1 The existing 132kV powerline near the wind farm site**

## 2 Summary of the wind farm proposal

As presented in the Environmental Assessment for the White Rock Wind Farm, the approved proposal would involve the construction and operation of a wind farm with:

- up to 119 wind turbines, each with three blades mounted on a tubular steel tower and concrete foundation;
- access tracks required for the installation and maintenance of the wind turbines;
- electrical connection between the turbines and an on-site substation using a combination of underground and overhead powerlines;
- a 132kV powerline connecting the on-site substation to the TransGrid Glen Innes to Inverell transmission line; and
- an onsite operation and maintenance facility.

Additional temporary construction activities and infrastructure such as a temporary construction compound, concrete batching plant and storage areas would be required during the construction and refurbishment phases.

The White Rock Wind Farm would provide the following primary benefits:

- In full operation, it would generate more than 830,000 MWh of electricity per year - sufficient for the average consumption of around 130,000 homes.
- It would improve the security of electricity supply through diversification of generation locations.
- It would reduce greenhouse gas emissions by approximately 754,000 tonnes of carbon dioxide equivalent (CO<sub>2</sub>e) per annum<sup>1</sup>
- It would contribute to the State and Federal Governments' target of providing at least 20% of consumed energy from renewable sources by 2020.
- It would contribute to the NSW Government's target of reducing greenhouse gas emissions by 60% by the year 2050.
- It would create local employment opportunities and inject funds of up to \$300 million into the Australian economy.

In addition to these primary benefits there are also significant secondary benefits which include opportunities for tourism and ecology and improvement to existing infrastructure.

The alternative powerline contemplated in this Supporting Document would connect into TransGrid's 330kV transmission line which would allow the energy output from the wind farm to be maximised and the energy losses in the electricity grid to be minimised. This would maximise the project benefits outlined above and further described in Section 5 of this document.

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<sup>1</sup> Calculated using the NSW Wind Farm Greenhouse Gas Savings Tool developed by DECCW, accessible at <http://www.environment.nsw.gov.au/climatechange/greenhousegassavingstool.htm>



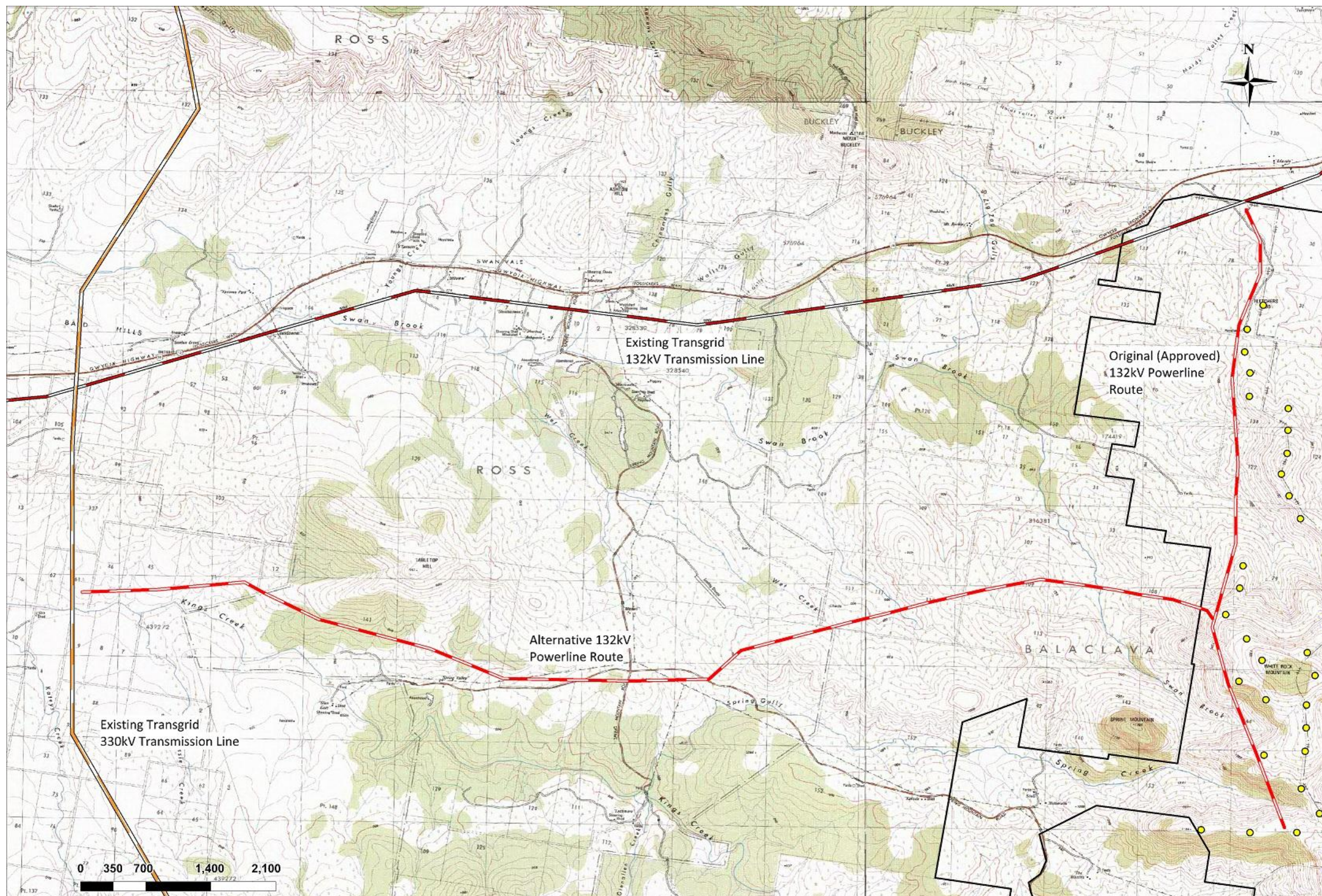


Figure 2-1 Approved 132kV powerline route and alternative powerline route from the wind farm site



## 3 Description of Modification

The description of the approved 132kV powerline and substation for connecting the wind farm to the grid can be found in section 3.4 “Connecting to the Electricity Grid” (page 40) of the Environmental Assessment of the White Rock Wind Farm. The approved connection arrangement includes approximately 8km of 132kV overhead powerline together with a substation and 132kV switchyard connecting the onsite powerline to TransGrid’s 132kV Glen Innes – Inverell transmission line.

### 3.1 Alternative 132kV powerline route

The alternative 132kV powerline route from the wind farm would run approximately 13km west from the wind farm site to connect to TransGrid’s 330kV transmission line which runs between Armidale and Dumersq. The alternative powerline would be the same size and configuration as the original approved powerline, but would be approximately 5km longer. The easement for the powerline would be 50m wide.

The proposed powerline route was developed by an iterative process which took into account:

- technical requirements to minimise the length of the powerline and identify a suitable location for the substation adjacent to the 330kV transmission line;
- minimising the potential impact on flora and fauna habitat using detailed aerial imagery;
- alignment to allow relatively easy access to the route from existing roads and tracks to avoid the additional impact of having to construct new access tracks during construction;
- feedback from landowners to minimise impacts on ongoing farming activities; and
- avoiding residences and minimising the visual impact of the powerline and substation

The permanent physical impact of the powerline is limited to the foundations for each pole along the powerline route. Temporary access tracks to enable installation of the powerline poles and stringing of the conductors would be minimised and use made of existing roads and farm tracks where possible. New gates through existing fences will be installed to enable the installation to be completed.

The proposed powerline would operate at voltage of 132kV as per the approved powerline and would be very similar in construction to the recently upgraded TransGrid line between Glen Innes and Inverell, with concrete poles spaced approximately 200 to 250m apart. The poles would have a maximum height of 32m. The detailed design for the powerline hasn’t been finalised, but would be either single circuit (3 conductors) or double circuit line (6 conductors) as shown in the photographs below.



**Figure 3-1 Existing double circuit & single circuit 132kV powerlines near the wind farm site**



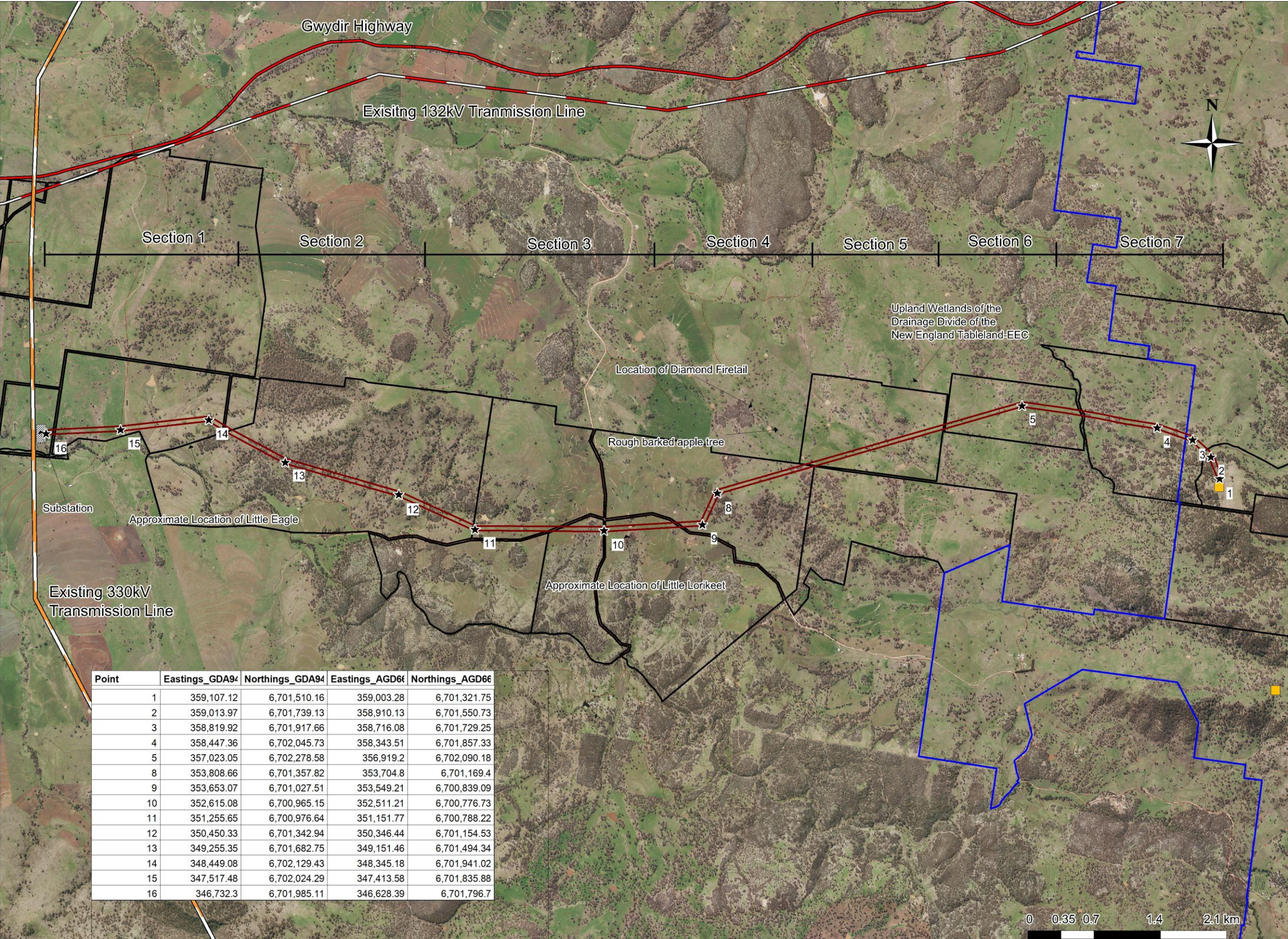


Figure 3-2 Aerial image of alternative powerline route



## 3.2 Alternative substation location

The alternative substation location was selected based on a number of criteria including:

- immediately adjacent to the TransGrid 330kV transmission line;
- existing track and right of way nearby to provide access for construction and maintenance;
- no native vegetation to minimise environmental impact;
- relatively level terrain to reduce construction impact;
- located on the edge of cultivated paddock to minimise disturbance to farming operations; and
- significant distance from nearby residences to minimise visual and operational noise impact



**Figure 3-3 Alternative substation location adjacent to TransGrid 330kV transmission line**

The detailed design of the grid connection and substation has not been completed, but is likely to be similar to other 330kV substations as shown in the photograph below.



**Figure 3-4 330kV Macarthur substation constructed in Sydney by TransGrid in 2009**



## 4 Assessment of the proposed modification

### 4.1 Planning and environmental regulatory considerations

Part 3A of the Environmental Planning and Assessment Act 1979 (EPAA) was repealed on 1 October 2011. However because the environmental assessment for White Rock Wind Farm was submitted in April 2011 (prior to the Part 3A repeal date), the Minister approved White Rock Wind Farm on 10 July 2012 as a Part 3A transitional project (EPAA Schedule 6A, clause 2(1)(d)).

Part 3A continues to apply to transitional Part 3A projects (EPAA Schedule 6A, clause 3). Accordingly, this modification application is lodged pursuant to former section 75W (Modification of Minister's approval).

As described in section 6.3.1 of the original Environmental Assessment for White Rock Wind Farm, the Minister may (but is not required to) take into account the provisions of any environmental planning instrument that would apply to the project. The alternative powerline traverses land zoned 1 (a) Rural Agriculture under Inverell Local Environmental Plan 1988 (ILEP). Powerlines are not prohibited under the LEP and would be permissible with consent. While development control plans are not environmental planning instruments (EPAA section 4), the Minister may wish to take into account Inverell Shire Council Development Control Plan - Wind Power Generation (2009) (DCP) as an expression of the policy concerns in the local area, as discussed in section 6.3.2 of the original environmental assessment.

No State Environmental Planning Policies (SEPPs) apply to the White Rock Wind Farm project, with the result that SEPPs do not apply to this modification request (EPAA former section 75R(2)(b)).

### 4.2 Assessment Requirements and Key Issues

The key issues for assessment of the proposed modification were adopted from the Director-General's Requirements and the original Environmental Assessment for the project. These were:

- visual impact;
- noise impact;
- biodiversity impact; and
- indigenous & non-indigenous heritage impact.

### 4.3 Visual Impact

The alternative 132kV powerline would extend through a rural landscape of pastoral grazing land with small pockets of cultivated arable crops. The landform is undulating to gently sloping with steeper hillside sections extending to the wind farm site. There are a variety of topographical features within the local and regional landscape and an overall moderate landscape scale with a range of distant to mid distance views into neighbouring landscapes.

The undulating areas with a combination of open views interrupted by groups of trees and small forested areas would have a high capability to visually absorb the powerline without significantly changing its amenity.

There are five residential dwellings located within 2km of the alternative powerline route. Please refer to the map in Figure 4-2 on page 13.



**Table 4-1 Nearby residential dwellings**

Location	Distance to alternative powerline	Overall Visibility & Potential Impact
Unassociated residential dwelling R123	1.7 km	Nil/low
Unassociated residential dwelling R124	0.9 km	Low
Associated residential dwelling R125	0.3 km	Low
Associated residential dwelling R126	0.8 km	Low
Associated residential dwelling R142	1.9 km	Nil

The alternative 132kV powerline alignment would be located in a landscape with a moderate to high visual absorption capability, and the existing physical characteristics of the landscape surrounding the alternative powerline would tend to reduce the overall visibility and visual impact of the alternative alignment.

There are a very low number of people travelling through or residing in the landscape surrounding the alternative powerline alignment. Views from residential dwellings within 2km of the alternative alignment are unlikely to result in a high visual impact. Four of the five residential dwellings will have restricted views toward the powerline route resulting from topography and vegetation screening. One dwelling would have potential short distance views towards a short section of the powerline, however existing tree cover would partially obscure views.

The alternative substation and switchyard connecting to the existing TransGrid 330kV transmission line is unlikely to result in any significant visual impact.

Please refer to the Landscape and Visual Impact Assessment prepared by Green Bean Design landscape architects in Attachment 1 for more details.

## 4.4 Environmental Noise of Substation

The alternative substation would incorporate a single 132/330kV transformer rated at up to 320MVA which would be the only significant noise source at the substation and switchyard. There is a significant separation distance in the order of 2 ½ km between the alternative substation location and the nearest residential dwellings.

The noise from the proposed transformer was modelled using the CONCAWE propagation model within the SoundPlan noise modelling software and sound power levels for the transformer were based on the *Australian/New Zealand Standard AS/NZS 60076.10:2009 Power transformers – Part 10: Determination of sound levels* which derives the maximum sound power level of a transformer unit based on its rating.

The noise associated with the operation of the proposed substation was predicted at all residential locations located within 5km. The noise level at each of the residences was easily below the criteria of 35 dB(A), with the greatest predicted noise level being 12 dB(A) at the nearest dwelling.

Please refer to Attachment 2 of this Supporting Document for the detailed environmental noise assessment prepared by Sonus.

## 4.5 Biodiversity

The preliminary easement corridor for the proposed powerline was selected to minimise the potential impact on flora and fauna habitat using high resolution aerial images of the route. An ecology assessment of the easement corridor (100m wide study area) was then carried out to identify potential ecology impacts and any constraints to the proposed route. The surveys and assessments were carried out as per section 5A of the *Environmental Planning and Assessment Act, 1979* for threatened species, populations and ecological communities.



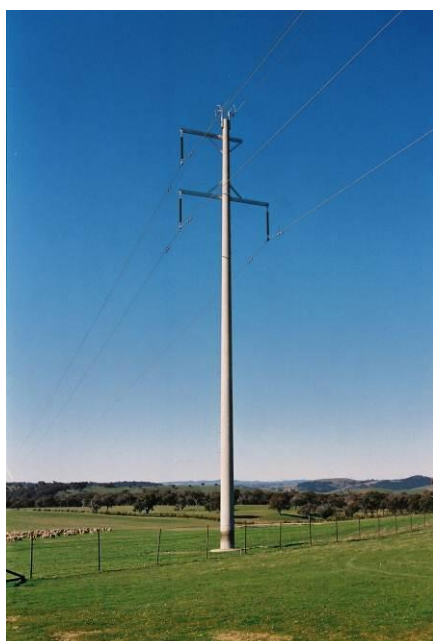
The landscape within the proposed easement is highly disturbed and modified with grazing and cultivation as the dominant land use. No Rare or Threatened Australian Plants were recorded during the assessment. Several threatened species were identified within the study area: Diamond Firetail; Little Lorikeet; and Little Eagle.

Two endangered ecological communities were present within the study area:

- White Box Yellow Box Blakely's Red Gum;
- Ribbon Gum-Mountain Gum-Snow Gum Forest/Woodland; and

The ecology assessment concluded that the proposed 132kV powerline, substation and associated construction access tracks will not have a significant impact on any threatened species or endangered ecological communities. Several mitigation measures consistent with the Statement of Commitments contained within the wind farm Environmental Assessment should be implemented to further minimise the potential impacts on the environment.

The permanent impact of the alternative powerline is limited to small foundation at the base of each powerline pole which will be spaced at intervals of approximately 200 – 250m. The temporary access tracks used for the installation will be reinstated where practical to enable the original grazing or cultivation land use.



**Figure 4-1 Glen Innes to Inverell 132kV line showing impact area of pole foundation**

Within the forested areas of the easement (predominantly White Box Yellow Box Blakely's Red Gum EEC) a corridor approximately 15m wide will need to be cleared to maintain the technical and safety clearances. The maximum conductor clearance for a 132kV powerline is 7.5m.

**Table 4-2 Infrastructure Footprint**

<b>Description</b>	<b>Width (m)</b>	<b>Length (m)</b>	<b>Area (ha)</b>
Study Area	100	13,210	132.1
Powerline Easement	50	13,210	66.1
Powerline Poles (up to 60) Footprint	1	1	0.01
Switchyard/Substation	100	200	2.0

The impact of this alternative powerline on native vegetation has been calculated in Table 4-3 on the following page and demonstrates that this proposed modification can be constructed with a reduced impact when compared to the original 132kV powerline route. The alternative substation location will not have any impact on native vegetation as it has been located on land used for cultivation.



**Table 4-3 Native Vegetation Impact Area Calculation**

Description	Ribbon Gum Mountain Gum Snow Gum Forest/Woodland EEC	White Box Yellow Box Blakely's Redgum EEC	Derived Native Grassland	Possible Derived Native Grassland
Study Area (100m x 13,210m)	0.79 ha	13.84 ha	0.49 ha	1.42 ha
Clearance for 7.5m conductor clearance	0.13 ha	2.0 ha	-	-
Power poles	-	-	-	-

**Table 4-4 Native Vegetation Impact Area Comparison**

Project Component	Typical Dimensions	Quantity	Easement Area (ha)	Impact on Native Vegetation (ha)
Original 132kV powerline easement*	40m	7.88 km	31.52	12.15
Alternative 132kV powerline easement	50m	13.29 km	66.45	2.13
Net change in impact		+5.41 km	+34.93	-10.02

\*Original impact area calculations on page 122 & 123 (section 9.3.4) of the Environmental Assessment of the White Rock Wind Farm.

The biodiversity offset proposal included in the Environmental Assessment for the wind farm included the impact of the approved 132kV powerline and substation. The impact of the alternative powerline route and alternative substation location, including the quantum, biometric vegetation type and condition, has been determined which will allow the alternative powerline to be included in the detailed Offset Plan to be developed in consultation with OEH prior to construction. Two suitable potential offset areas have been identified to offset the White Box Yellow Box Blakely's Red Gum Woodland EEC that will be impacted by the construction of the alternative powerline.

Please refer to the ecology assessment for the alternative powerline and substation prepared by Environmental Assessments in Attachment 3 for more details.

## 4.6 Indigenous and Non-Indigenous Heritage

A heritage assessment was carried out in order to assess the potential impact of the proposed powerline and substation on both indigenous and non-indigenous heritage. The assessment was carried out consistent with the *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (DEC 2005).

Consultation with Aboriginal stakeholders was carried out in accordance with the above guidelines. The consultation included notification and an invitation for registration of interest via an advertisement in the local print media. It also included consultation with the Aboriginal stakeholders who were contacted as part of the original heritage assessment carried out for the wind farm site.

The indigenous heritage assessment was carried out in conjunction with members of the Anaiwan Local Aboriginal Land Council. The assessment did not identify any significant impacts from the proposed powerline or substation but recommended that two scarred trees identified be protected during the construction of the powerline by creating a 30m buffer around these two items prior to the commencement of any works.



No potential impact on items of non-indigenous heritage was identified in the field survey or in the database search of the area. Please refer to the assessment completed by Environmental Assessments Pty Ltd in Attachment 4 for more details.

## 4.7 Stakeholder Consultation

The alternative powerline route and substation location is located on freehold land and covers five landholdings. Epuron has consulted with these landowners and secured their consent for the proposed powerline and substation.

**Table 4-3 Property details**

Landowner	Real Property	LGA
1	Lot 1 DP 624913	Inverell Shire Council
2	Lot 141 DP 753305 Lot 142 DP 753305	Inverell Shire Council
3	Lot 3 DP 1104129	Inverell Shire Council
4	Lot 149 DP753 260	Inverell Shire Council
5	Lot 109 DP753260 Lot 108 DP753260	Inverell Shire Council

In addition, the owners of the neighbouring properties have been contacted to inform them of the proposed powerline and substation and seek input on any particular issues or concerns. The contact included:

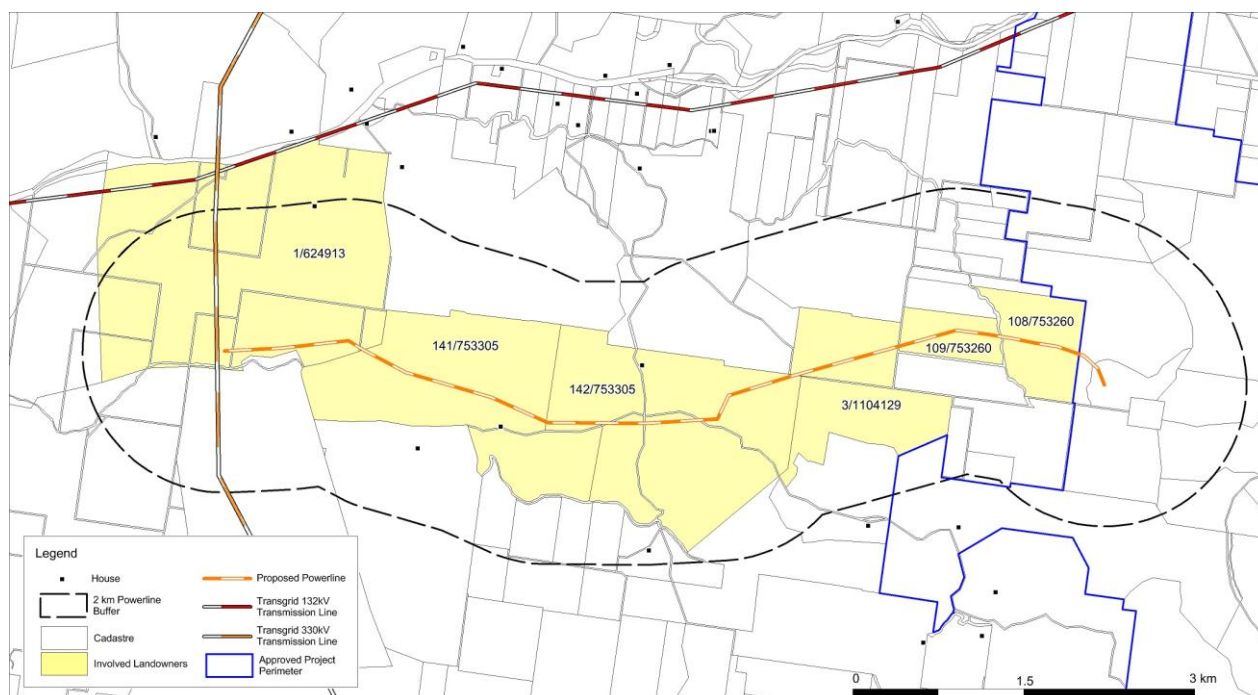
- phone calls;
- written correspondence with route maps & photos; and
- personal visits.

The landowners and neighbours were generally well informed about powerlines and their potential impact due to the recent (2010 – 2012) TransGrid project to replace the 55km 66kV powerline with a 132kV transmission line between Glen Innes and Inverell.

There are five residential dwellings located within 2km of the alternative powerline and substation, three associated landowners and two non-associated landowners. Please refer to Table 4-4 and Figure 4-2 below. No objections have been raised by any of the neighbouring landowners to date.

**Table 4-4 Non-associated residential dwellings within 2km**

Non-associated Residential Dwelling	Distance from powerline	Distance from substation
R132	1.7 km	6.6 km
R124	0.9 km	3.1 km



**Figure 4-2 Landholdings and nearby residences**

The Inverell Shire Council has been informed of the alternative powerline and substation and provided with a map of the route. Council have confirmed the zoning of the land and do not have any objections to the proposed powerline and substation.

As one of the key agencies who will consider the biodiversity impacts of the alternative powerline, the NSW Office of Environment & Heritage (OEH) was contacted to confirm the approach to the assessment in accordance with the original Director-General's Requirements. A map of the route has been provided and a copy of this Supporting Document will be provided to OEH for their review.

The local Aboriginal community has been consulted and were actively engaged in the assessment of the alternative powerline route.

The consultation process with all stakeholders will continue during the planning stage and expected construction phase to keep all stakeholders updated with the status of the proposed powerline and substation.

The proponent has established a Community Consultation Committee (CCC) for the wind farm project with the first meeting held on 19<sup>th</sup> November 2012. The objectives of the CCC include enabling information about the wind farm to be provided to the community and providing an opportunity for the community to express any concerns regarding the potential impacts. The alternative powerline and substation will be included as part of the CCC process.

## 4.8 Health, Safety and Other Issues

### Electromagnetic Fields

Electromagnetic fields (EMF) have both electric and magnetic components and are generated by all electrical devices including household appliances, powerlines and substations. Electric fields can be reduced by shielding and with increased distance from the source. Magnetic fields are reduced most effectively by increasing the distance from the source.

Typical levels of magnetic field under a 132kV powerline range from 2 – 50 mG at a distance of 15 – 35 m from the centreline of the powerline. The magnetic field falls away rapidly as the distance increases. These figures are significantly less than the 1,000 mG limit recommended for 24 hour exposure.



As the nearest residence is 300m away from the alternative powerline and 2 ½ km from the alternative substation location, there will be no impact from electromagnetic fields.

## Aviation impacts

A private airstrip was identified south of the alternative powerline route adjacent to Northcotts Road near the four-way intersection with Spring Mountain Road, however consultation with the landowner and an aerial agriculture operator confirmed that the proposed powerline would not restrict the use of the airstrip.

The impact of the alternative powerline is not likely to be significant as aerial agricultural operators regularly operate in close proximity to other powerlines. The extent of the impact will also not be any different to the impact of the original powerline that has already been assessed as part of the wind farm proposal.

Any planned aerial operations in the immediate vicinity of the alternative powerline will need to be assessed by the aerial agricultural operator once the line has been constructed. The conditions of the project approval require the Proponent to fully fund the affected landowner the reasonable cost difference between pre-construction aerial agricultural spraying and the increased cost of using alternative methods.

## Land use implications

The alternative powerline and alternative substation location will not change the current land use. Although there may be some minor disruptions during the construction phase, existing grazing and crop cultivation will continue as before.

## Bush fire risk

Powerlines have the potential to create a fire or bush fire risks. The alternative powerline route has been selected to avoid trees wherever possible reducing the need for clearing and eliminating ongoing fire risks from tree growth in the event of the breakage of a powerline conductor. Powerline easements and infrastructure would be inspected periodically to monitor regrowth and the condition of the infrastructure.

The alternative substation equipment would include oil in the transformer. The facilities would be banded to ensure the oil is contained in the event of a major leak. The equipment would be inspected and maintained regularly to ensure that the facility does not create a fire hazard. An asset protection zone would be maintained around the substation facility in accordance with the RFS guidelines to minimise the risk of a fire spreading in the event of a fire at the facility. For more details on the assessment and mitigation of the risk of fire from powerlines and substations please refer to section 10.5 of the Environmental Assessment of the White Rock Wind Farm.

## Traffic and Transport Impacts

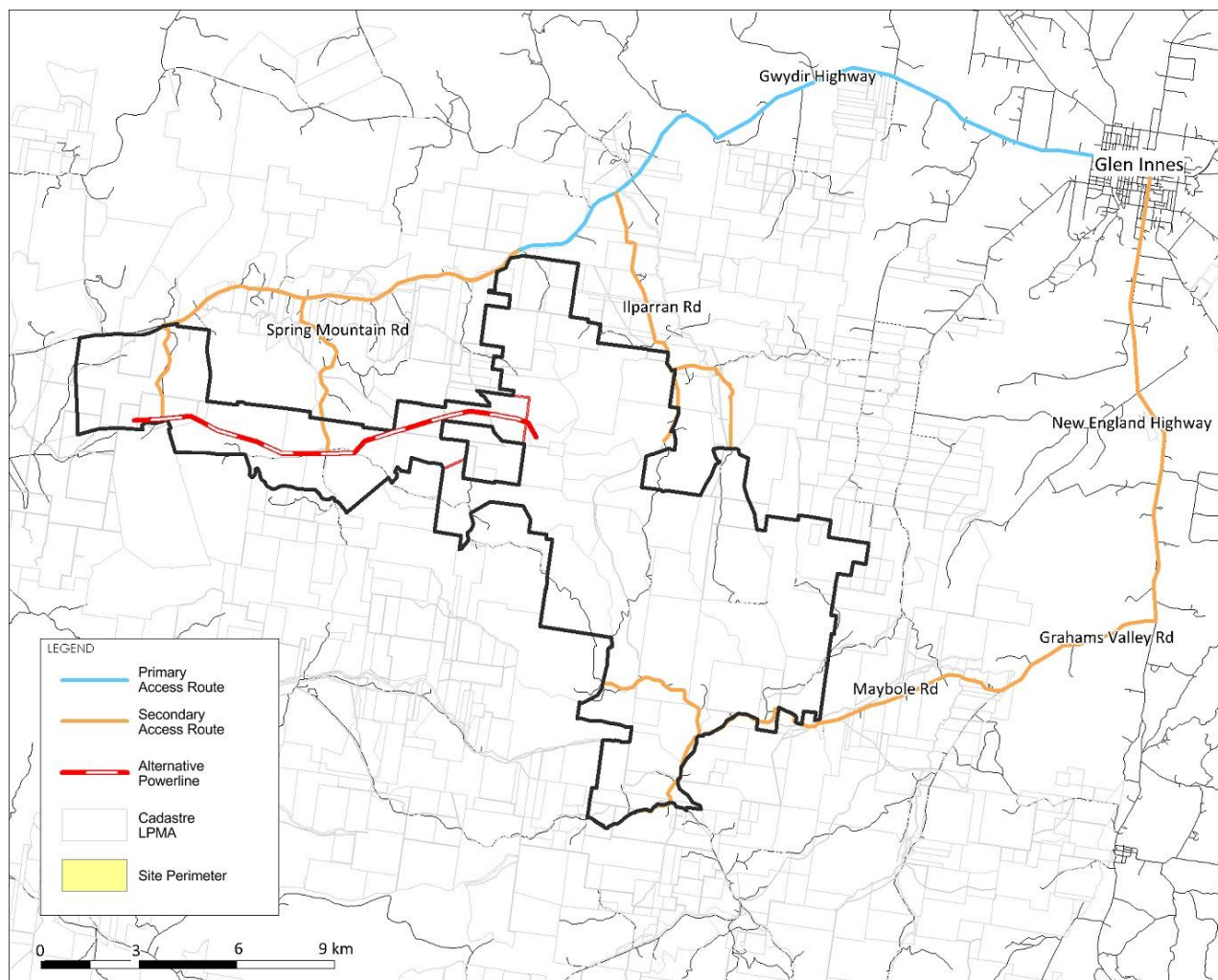
The nature of the traffic generated and the traffic volumes generated by the wind farm project will not be any different as a result of the alternative powerline. The modification will require additional site access points to enable the construction of the alternative powerline and substation as shown on the map in Figure 4-4 below. The two additional access points from the Gwydir Highway will be:

- Spring Mountain Road
- Existing right of way to the proposed substation location

Any upgrades required to the intersection of these two existing roads with the Gwydir Highway will be designed and developed in consultation with the RTA and included in the project Traffic Management Plan. There are no significant constraints with these two existing roads.

No modifications to the roads will be required for installation of the power poles and powerline conductors. Some minor modifications will be required to the substation access road to enable the delivery of the over-mass loads

such as the main transformer, however this will not require any vegetation clearance as the access route passes through an area of cultivated lands.



**Figure 4 -3 Wind farm and powerline access routes**



## 5 Justification and Conclusion

### 5.1 Justification

As part of the ongoing detailed electrical studies the need for an alternative grid connection point was identified. The alternative connection point to TransGrid's 330kV transmission line would allow the wind farm to reduce electrical losses and maximise the energy dispatched to the National Electricity Market.

The turbine models considered for the White Rock Wind Farm range in size from 1.5MW to 3.4MW which results in a wind farm capacity range from 178.5MW to 404.6 MW. The Environmental Assessment for the White Rock Wind Farm took a conservative approach to the potential output of the wind farm using a 2MW wind turbine as the basis of output and emissions savings calculations. This conservative approach aligned with the potential for capacity constraints in the 132kV transmission line. The modification application seeks to connect the wind farm to the 330kV transmission line which has the ability to accept a higher capacity from the wind farm which means that the alternative powerline would enable a larger capacity wind farm within the same footprint with the potential for a more economically viable wind farm to be constructed and operated.

On the understanding of minimal capacity constraints on the 330kV transmission line the benefits of the project have been recalculated using the higher capacity 3.4MW wind turbine. This shows that for the 119 wind turbines in the wind farm the following advantages could flow:

	<b>Original Wind Farm EA 2MW wind turbine</b>	<b>Project Modification 3.4MW wind turbine</b>
Wind farm capacity	238 MW	404.6 MW
Emissions avoided per annum	754,000 t CO <sub>2</sub> -e	1,376,754 t CO <sub>2</sub> -e
Electricity generation	830,000 MWh	1,414,957 MWh
Supplying the average consumption of	130,000 households	193,830 households

### 5.2 Conclusion

The net change to the project is a slightly longer 132kV powerline (13km instead of 8km) to the alternative connection point. The impact of the alternative substation location is similar to the approved substation, although it will have a slightly larger footprint of approximately 200m x 100m (instead of 100m x 100m) to accommodate 330kV equipment rather than 132kV equipment. This Supporting Document has:

- identified and described an alternative 132kV overhead powerline route from the wind farm site to a suitable connection point with TransGrid's electricity network;
- provided an assessment of the potential environmental impacts of the alternative powerline and substation including specialist assessments of visual impact, noise, ecology & heritage;
- documented consultation completed to date and further consultation planned; and
- Defined the need for the modification

Based on the environmental assessment in this Supporting Document the impacts of this alternative powerline and substation are similar to the approved powerline and substation. While the modification results in a larger area of land potentially impacted, the ecology assessment indicates there would be a significantly reduced impact to endangered ecological communities. To ensure any impacts from the proposed modification are minimised, several mitigation measures have been incorporated into additional Statement of Commitments as outlined on the following page.

### 5.3 Additional Statements of Commitments

SoC	Issue	Impact	Objective	Mitigation tasks	Project phase	Auditing
67	Ecology	Loss or modification of habitat	Avoid, minimise impacts	Prior to the commencement of detailed design, an ecologist should locate and clearly mark Blackbutt Candlebark so that a buffer zone should be implemented to ensure that those trees to be avoided are not impacted	Detailed design & construction	CEMP
68	Ecology	Loss or disturbance of habitat	Avoid, minimise impacts	The CEMP should include mapping and on-ground markers to identify a buffer zone around riparian vegetation extending to 50m from the creek bank of Swan Brook as identified in Section 6 of the Supplementary Biodiversity Assessment.	Detailed design & construction	CEMP
69	Ecology	Loss or modification of habitat	Avoid, minimise impacts	Prepare and implement an Offset Plan to offset the quantum and condition of native vegetation to be removed, in order to achieve a positive net environmental outcome for the powerline. Offset areas would reflect the actual footprint of the powerline. (This SOC can be part of SOC 21 for the White Rock Wind Farm) The offset plan would be prepared in consultation with OEH prior to construction.	Prior to construction	CEMP
70	Ecology	Loss or modification of habitat	Avoid, minimise impacts	An ecologist would be present during any tree clearing operations to capture and relocate any fauna present within the tree hollows as well as salvaging and translocating tree hollows. Micro-bat roost boxes would replace the loss of any tree hollows at a ratio of 2:1 and be established outside the powerline easement.	Prior to construction	CEMP
71	Heritage	Disturbance of heritage sites or objects	Avoid impact	Field inspection of sections of easement not already inspected during site assessment between points 8 and 9.	Prior to construction	CEMP



## Attachment 1 – Landscape and Visual Impact Assessment



## Attachment 2 – Environmental Noise Assessment





## Attachment 3 – Biodiversity Assessment



## Attachment 4 – Indigenous and Non-Indigenous Heritage Assessment

