White Rock Wind Farm

Modification Application MP10_160 MOD 3

Environmental Assessment Report

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Prepared by: Goldwind Australia (GWA)

For: White Rock Wind Farm Pty Ltd

White Rock Wind Farm Pty Ltd

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EXECUTIVE SUMMARY

This Environmental Assessment (EA) supports a modification application (MP10_160 MOD 3) for White Rock Wind Farm (WRWF). The application is submitted by the project proponent, White Rock Wind Farm Pty Ltd (WRWFPL). This Environmental Assessment has been prepared by WRWFPL with the input of relevant specialists where applicable.

WRWFPL proposes that the implementation of WRWF be undertaken in two stages and is preparing for commencement of construction of WRWF Stage 1 in the first quarter of 2016. As part of its detailed design for Stage 1, WRWFPL has identified a number of minor variations to the layout which would reduce environmental impact and facilitate a more practical and efficient project. The variations to the layout are considered to be minor but, in several areas, will relocate project components or parts of the project components by more than 100m. This exceeds the micrositing allowance permitted by the Project Approval.

WRWFPL is able to implement the project without proceeding with the modifications proposed in the current modification application. However, the proposed modifications are considered desirable to further reduce environmental impacts (including reduced vegetation clearing and disturbance). The modification would also result in benefits for constructability, operational efficiency and lower resource consumption over the project life.

This Environmental Assessment (EA):

- describes the proposed modifications and differences to the project as proposed in the Epuron Environmental Assessment (EA, 2011) and Submissions Report (Nov 2011);
- provides environmental impact assessment of any changes in impact arising from each of the modifications;
- describes additional mitigation measures proposed for the Stage 1 project; and
- demonstrates that the Stage 1 project, as modified, reduces the project's overall impact.

The project modifications are listed in Section 2 and include:

- minor changes to three site entry points, including an additional easement for an altrernative site entry from Ilparran Road;
- alternative routes for parts of certain access tracks;
- adjustments to the alignment of the 132kV transmission line (maximum lateral movement of approximately 192m);
- a change of one 0.5km section of 33kV overhead transmission line to 33kV underground cable;
- movement of the Operations and Maintenance Facility near the northern entry point;
- an additional Operations and Maintenance facility to be installed at a southern site entrance adjacent Kelleys Road; and
- additional locations for construction compounds, laydown areas and batch plants.

This modification application does not involve any changes to Stage 1 turbine locations. Turbine locations remain within the 100m micrositing allowance.

The updated locations of proposed Stage 1 ancillary facilities, such as construction compounds and laydown areas have now been developed by the Proponent. The Project Approval already provides

flexibility to relocate approved ancillary facilities through Condition E18 and, accordingly, the locations of the ancillary facilities (other than the additional ancillary facilities described in section 2.1) do not form part of the modification application. However, for completeness, information regarding the location of all ancillary facilities is included in this EA.

This EA has considered relevant environmental impacts including visual, flora and fauna, Aboriginal heritage, noise and telecommunications. Section 3 describes the key environmental issues and basis for environmental assessment of the proposed modifications while Section 4 reviews the impacts of each of the respective individual modifications in respect of the applicable environmental issues.

The assessment concludes that the proposed modifications will reduce environmental impacts during construction (including reduced native vegetation clearing and disturbance), improve constructability, result in construction and operational efficiencies and reduce resource use over the project life.

ABBREVIATIONS

AHIMS	Aboriginal Heritage Information Management System
CCAFMP	Construction Compound Ancillary Facilities Management Plan
CEMP	Construction Environmental Management Plan
CTAMP	Construction Traffic Access Management Plan
DALP	Design and Landscape Plan
DPE	Department of Planning and Environment
EA	Environmental Assessment
EEC	Endangered Ecological Community (under NSW TSC Act)
EPA	Environment Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act
EP&A Act	Environmental Planning and Assessment Act
ER	Environmental Representative
EWMS	Environmental Work Method Statement
GISC	Glen Innes Severn Council
Ha	Hectare
IC	Inverell Council
kV	kilovolt
MP	Major Project
MW	megawatt
O&M	Operations and Maintenance
PA	Project Approval
RMS	Roads and Maritime Services
TEC	Threatened Ecological Community (under EPBC Act)
TL	Transmission Line
TSC Act	Threatened Species Conservation Act
WRWF	White Rock Wind Farm
WRWFPL	White Rock Wind Farm Pty Ltd

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1 INTRODUCTION

1.1 Purpose of this document

This Environmental Assessment (EA) supports an application to modify the White Rock Wind Farm (WRWF) Project Approval (MP10_160) that was originally granted under Part 3A (now repealed) of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act). The modification application (MOD 3) will be assessed by the Department of Planning and Environment (DPE) under Section 75W of the EP&A Act (which continues to apply to transitional Part 3A projects).

The modifications addressed in this EA relate only to variations for WRWF Stage 1 project components. Details of Stage 2 have not yet been confirmed. None of the modifications sought relate to Stage 2.

The proponent, White Rock Wind Farm Pty Ltd (WRWFPL), has undertaken pre-construction planning and engineering investigations together with obtaining tenders for the construction phase of the Stage 1 project. These initiatives have identified a number of aspects for the project where an improved layout can reduce environmental impacts, provide benefits for construction, and improve the overall viability of the project.

1.2 Background

On 10 July 2012, the Minister for Planning granted Project Approval under Part 3A of the EP&A Act for the construction and operation of the WRWF. A subsequent modification application (MOD 1) for a 330kV connection was withdrawn. Minor administrative modifications to the Project Approval were subsequently approved on 24 July 2015 under Section 75W of the EP&A Act(MP10_160 MOD 2).

The Project Approval allows for construction of up to 119 wind turbines and associated infrastructure including access tracks, a 33kV/132kV substation, internal 33kV reticulation, 8km of 132kV transmission line to connect WRWF to TransGrid's existing 132kV Glen Innes to Inverell transmission line, ancillary facilities and permanent met masts.

Formulation of the project, its environmental assessment and gaining of Project Approval was undertaken by Epuron Pty Ltd (Epuron) during 2010-2012. The proponent is WRWFPL. Goldwind Capital Australia (GWCA) subsequently acquired WRWFPL and the WRWF project from Epuron. WRWFPL proposes to develop the project in two primary stages. Figure 1.1 shows the general layout from the Epuron EA 2011 involving 119 wind turbines. Stage 1 of the WRWF project (Figure 1.2) involves the construction and operation of up to 70 wind turbines and associated infrastructure. Details for a future Stage 2 that could involve up to 49 additional wind turbines and additional facilities for grid connection are yet to be finalised.

Construction of WRWF Stage 1 is scheduled to start in the first quarter of 2016. The project variations sought as part of this Modification Application relate only to minor adjustments to the layout for Stage 1. The modifications involve movement of project components by more than the 100 metre micrositing allowance permitted by the Project Approval.

This EA will demonstrate that the minor modifications sought under modification application 3 do not increase and in fact reduce the environmental impacts of the project.

The proposed modifications are described in Section 2.1 of this EA. Details of the environmental assessment approach are provided in Sections 3 with specific assessment of each of the modifications described in Section 4. Discussion on project clarifications including Stage 1 ancillary facilities is provided in Section 5.

1.3 Project Description

The Epuron EA, 2011 described the project based on typical equipment considered for the project allowing for a range of turbine models and dimensions and the anticipated associated infrastructure for access, electrical collections, grid connection, the temporary construction activities and operations facilities.

The Project Approval allows for:

- construction and operation of a wind farm with up to 119 wind turbines and associated infrastructure including access tracks, local road infrastructure upgrades, electrical connections between the turbines (both underground cable and aboveground power lines), temporary concrete batching plant, on-site control buildings and equipment storage facilities;
- an on-site substation and transmission connection from the substation to the TransGrid 132 kV transmission line to the north of the site; and
- permanent monitoring masts.

This EA is concerned predominantly with the modifications proposed to Stage 1 of the WRWF project but also provides clarifications on the status of project planning and indicative Stage 1 construction arrangements.

Stage 1 of the WRWF project involves the installation of 70 wind turbines, associated infrastructure and ancillary facilities. For the purpose of Stage 1, WRWFPL proposes to use the Goldwind GW121 2.5MW model. The Stage 1 turbines are proposed to be installed at the sites shown on Figure 1.2. Each Stage 1 turbine will will be finished in off-white/grey and have the following form:

- will be mounted on a tower of approximately 88 metres (m) adjacent to a hardstand;
- the diameter of the wind turbine rotor will have dimensions of approximately 121.4m (blade length approximately 59.5m);
- total height of the wind turbines will not exceed 150m; and
- an external kiosk transformer and two small banks of coolers will be located near the base of the tower.

The GW121 turbines proposed for Stage 1 have specifications within the range described in the EA, 2011.

Design of the grid connection for WRWF Stage 1 has been progressed through consultation and engagement of TransGrid to design, construct and operate the grid connection components of the project.

Three grid connection facilities were identified in EA, 2011, (2 substation options and a 132kV switchyard at the existing 132kV line). Only the southern substation option is now proposed for Stage 1. The 33kV/132kV substation will incorporate a 132kV switchyard negating the need for a switchyard adjacent the existing 132kV transmission line. The existing 132kV line will be turned in at the approved connection point and that the new 8km of 132kV transmission line will be dual circuit, rather than single circuit line.

The northern substation site option shown in EA, 2011 on the western side of White Rock Mountain is not required.

Pre-construction works, prior to commencement of Stage 1 involve the installation of permanent met masts at two locations, designated as MM_2025 and MM_5960. The height of the Met Masts will be approximately 87 metres with an upper level of instrumentation at about 90m, generally consistent with hub height of the GW 121 turbines.

Details for Stage 2, that could involve an additional 49 turbines, have not been confirmed and the current modification application does not relate to Stage 2. Turbine selection for Stage 2 will be undertaken at a future time and could involve models other than the GW121 wind turbine, that are available at the time.

Auxiliary power supply to the northern O&M facilities building may be via an electricity retailer or from the WRWF collections circuit;

Auxiliary power supply to southern O&M facilities building, if approved could be via an electricity retailer or from the WRWF collections circuit;

Power supply to temporary construction site offices may be by a diesel generator or supply from local distribution system.

Emergency night lighting can be required for unscheduled maintenance and though not mentioned in the EA, 2011, this EA notes the need to be able to use such lighting, if emergency night work is required;

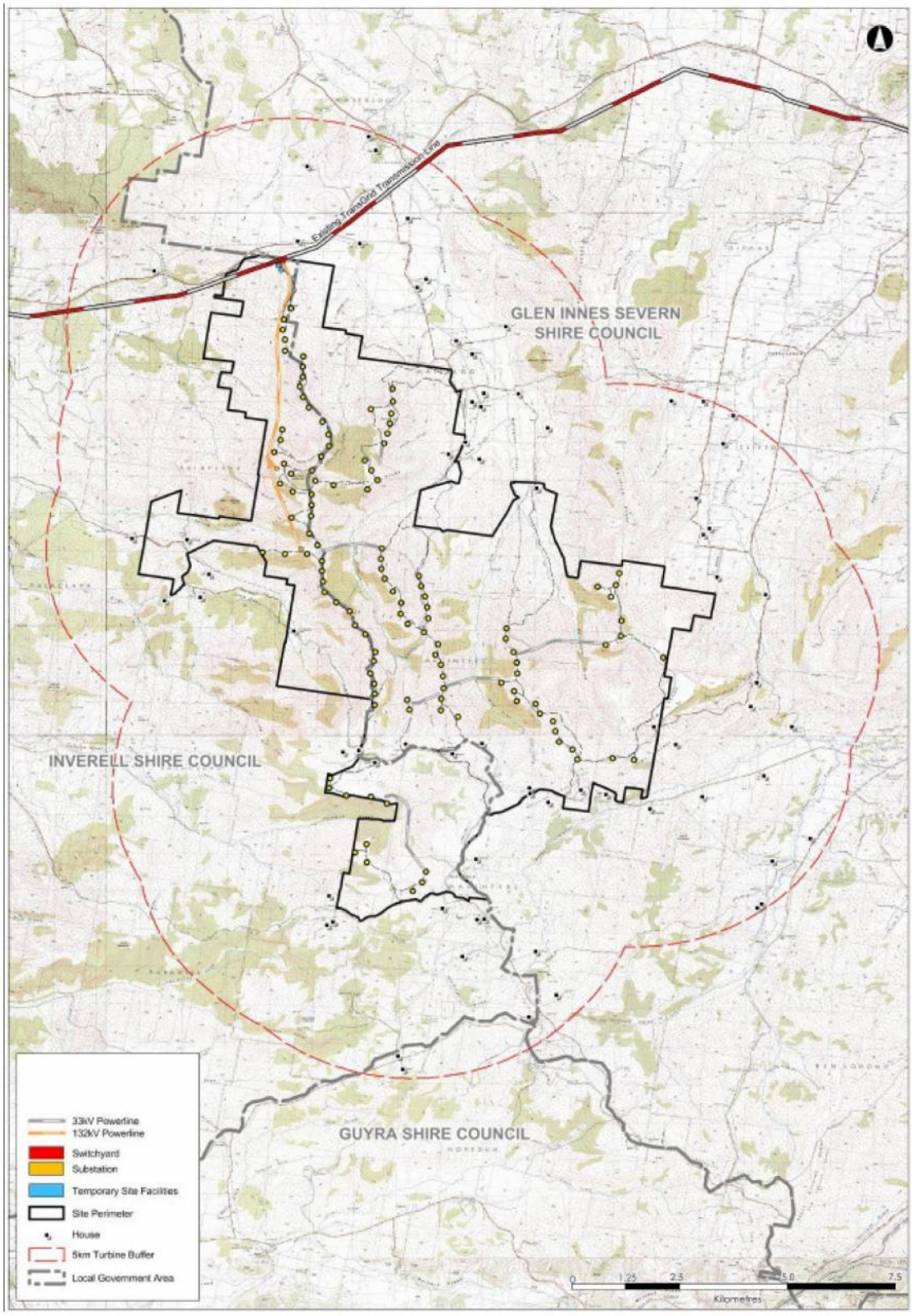

Figure 1-1 Proposed Wind Farm Layout

Figure 1.1 WRWF Proposed Indicative Layout (Source Epuron, WRWF Submissions Report, November, 2011)

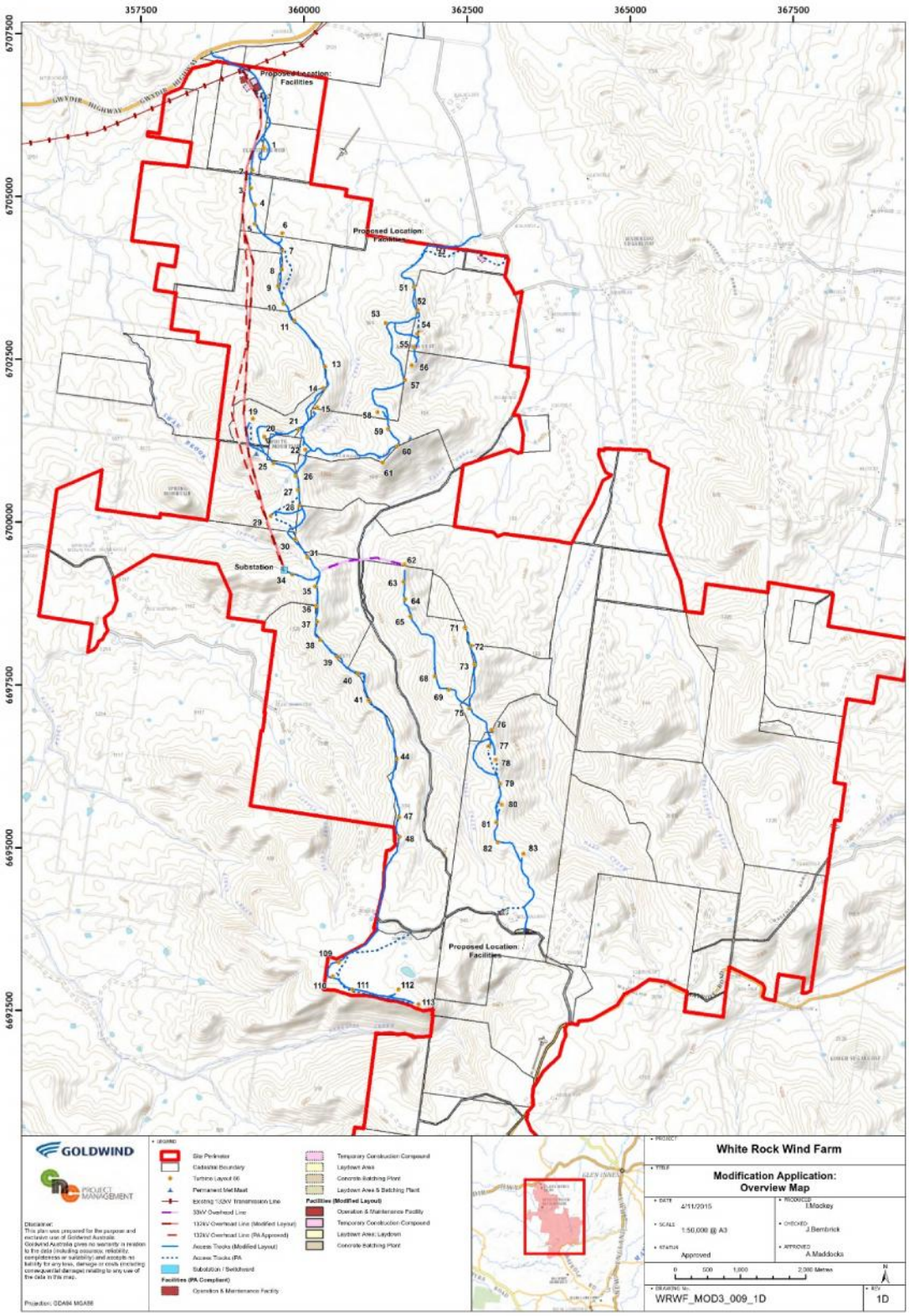

Figure 1.2 WRWF Stage 1 – Indicative Modified Construction Layout

2 DESCRIPTION OF MODIFICATIONS BEING SOUGHT

Modification Application 3 seeks a number of minor modifications to enable practical and efficient implementation of Stage 1 while still achieving project environmental objectives. The changes are considered minor as the project retains the general form presented in EA, 2011 and does not increase environmental impacts.

No modifications are sought or required for changes to turbine locations. All micrositing of turbine locations proposed for Stage 1:

- is within the 100m micrositing allowance permitted by the Project Approval; and
- has been assessed in Annexure I of the WRWF Stage 1 CEMP which demonstrates that the micrositing proposed has not resulted in an increased impact for the project.

Accordingly, no modification of the project approval is required for the micrositing of Wind Turbines. The current modification application and this EA therefore focuses on the modifications proposed to other Stage 1 project components and provides detail of proposed modifications to the layout from that presented in the EA, 2011 (Section 2.1).

Environmental assessment of each of the modifications is provided in Section 4.

Section 5 provides supplementary Stage 1 project clarifications that do not relate to the assessment of the modifications but is provided to inform DPE of other project details and assessment status.

2.1 Description of the modifications sought for the project layout

The modification application seeks to modify the approved Stage 1 project layout by varying the project components listed in Table 2.1

Table 2.1 – List of Modifications sought for Modification 3

Section	Modification sought	Reason for modification
4.1	Alternative 132kV transmission alignment Moves 1.26km of line >100m and up to max. of 192m	Avoid conservation significant vegetation
4.2	Relocated Operations and Maintenance facility (Northern site entrance) Moved 230m to SE.	Avoid construction works conflicts
4.3	Additional Operations and Maintenance facility (Southern entry point – at construction office site).	Provide shelter for staff at distance of 18km from northern office
4.5.1	Alternative access route to Turbine 1	Improved constructability
4.5.2	Alternative access route Turbine 9 to 10	Reduced access track length
4.5.3	Alternative access route to Turbine 19	Improved constructability, reduced impacts
4.5.4	Alternative access route to Turbine 29	Improved constructability
4.5.5	Alternative access route T28 to T30	Improved constructability
4.5.6	Alternative northeast access route Ilparran Road to T51, Requires easement on neighbours land	Reduced vegetation impact, safer and improved constructability. Reduces impact on Ilparran Road

4.5.7	Alternative access route Turbine 53 to 54 following ridgeline and less construction works	Improved constructability, lower vegetation impact
4.5.8	Alternative access route Turbine 79 to Turbine 76	More practical route, avoids steep grades and more efficient transport arrangements over life of project.
4.5.9	Alternative access route Kelleys Road to T83 and additional construction site office, compound and laydown area.	Moved due to landowner preference, alternative track 60m shorter and reduced use of Kelleys Road.
4.5.10	Alternative access route Kelleys Road to T109	Reduced length (400m), better farm management more distant from residence
4.6.1	Change from 33kV overhead line to 33kV underground cable	Reduced vegetation impact
4.7.1	Additional batch plant site near Turbine 20	More practical site for delivery to elevated turbine sites, reduced time for concrete pours with less fleet requirements
4.7.2	Additional batch plant site at southern entry adjacent Kelleys Road	More practical site for delivery to elevated turbine sites, reduced time for concrete pours with less fleet requirements

The environmental impacts of each of these proposed modifications are assessed in Section 4 of this EA Report.

2.2 Project Land

The lands on which the project is to be constructed are identified in Appendix 1 of the Project Approval (Schedule of Land) and in Figure 2.1. The bulk of the modifications relate to minor movements of certain project components and do not require any changes to the Schedule of Land. The exception to this is the proposed additional easement across part of Lot 1/DP 455212 (Figure 2.1) to provide a new entry to the project area. This easement will enable access directly from Ilparran Road and provide the northeastern entry to the WRWF project, specifically direct to Turbines 51 to 61. It is proposed that the Schedule of Land for the Project Approval be updated to include reference to the easement across Lot 1/DP 455212.

The inclusion of the easement will provide a safer, more practical entry to the project area with reduced earthworks and reduced impact on native vegetation. The on-site access track requirement is reduced by about 500 metres and offsite, about 600 metres of a winding unsealed section of Ilparran Road is avoided. Impact assessment by ERM (Aboriginal heritage) and RPS (ecology) have confirmed the suitability of the easement route and the neighbouring landowner is agreeable to establishment of an easement for this purpose.

At the time of the Epuron EA in 2011, many of the neighbouring residences were non-associated with the WRWF project. WRWFPL has approached neighbours within 3km of the project to discuss the interest in the landowners entering into neighbour agreements. A proportion of the neighbours have entered into agreements and the consultation process is still being undertaken with the objective of having agreements with all neighbours within 3km of the project.

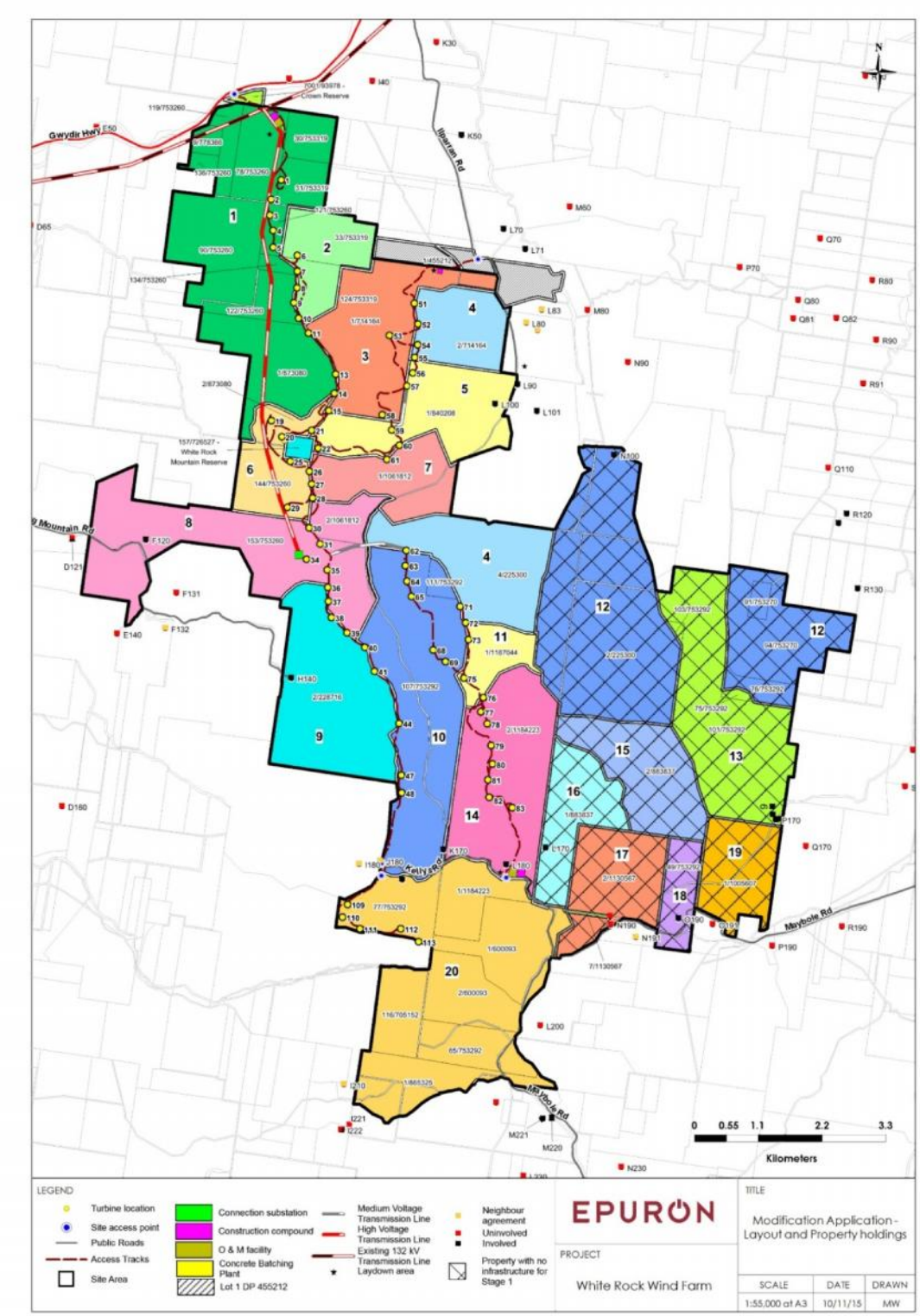

Figure 2.1 White Rock Wind Farm – Properties applicable to Stage 1 development

3 BASIS FOR ENVIRONMENTAL ASSESSMENT OF THE MODIFICATIONS

3.1 Introduction

This modification application seeks a number of variations to the project infrastructure other than the wind turbine locations. The proposed variations to the layout are considered minor in the context of:

- the overall extent and form of the modified project remains essentially the same development as for the approved project. It is on the same land, for the same purpose and with activities and equipment within the ranges approved;
- the modifications do not increase the environmental impacts of the project; and
- the modifications will, in some cases, reduce the project environmental impacts.

This Environmental Assessment provides details of the proposed location of infrastructure to be installed and the change in impacts associated with respective modifications to the project layout.

This EA updates the Environmental Assessment, 2011 to reflect the proposed modifications to Stage 1 listed in Section 2.1.

3.2 Environmental assessment of modifications and issues considered

The Epuron EA, April 2011 and Submissions Report, November 2011 provide the basis of assessments for the project application. The Epuron EA, 2011 identified:

- Key issues as being Visual amenity, Operational and Construction Noise Impacts, Ecology and Aboriginal and European Heritage.
- Additional issues were Aviation, Communication, Electromagnetic fields, Shadow Flicker and Fire and Bushfire risks.

Impacts relating to wind turbines such as shadow flicker and operational noise impacts are not relevant to this EA, as the modifications sought by this MOD 3 application do not relate to changes to turbine specification or locations.

The modifications listed in Section 2.1 of this EA have been assessed (in Section 4) as relevant to the following issues:

- Landscape and visual amenity;
- Noise;
- Ecology – flora and fauna;
- Aboriginal heritage;
- Traffic and Transport;
- Soil and Water Quality;
- Bushfire;
- Air Safety; and
- Telecommunications.

The following parts of Section 3 outline the approach taken to assessing the impact of the proposed modifications for each of the relevant issues. Section 4 contains the results of this assessment for each respective modification.

3.2.1 Landscape and Visual Amenity

The potential changes in impacts on visual amenity arising from the modifications are due to minor movements in the locations of infrastructure such as access tracks, the 132kV transmission line or location of additional or relocated facilities. These aspects of the project generally have low visibility compared to the wind turbines and the changes are expected to be mostly imperceptible and of nil or very low visual impact. Change in visibility of the modified component or part of a component may arise due to change in elevation, slope or aspect and be affected by distance from public viewpoints and intervening screening.

As indicated in Section 2.2, WRWFPL has been negotiating neighbour agreements with residents surrounding the Stage 1 project and where agreements are reached the residents are associated and accept project impacts such as visual and noise impacts.

Of the modifications proposed as part of the current Mod 3 application, the change to the transmission line route was considered to be the main project component that requires detailed visual impact assessment by a landscape architect. Section 4.1.1 outlines the assessment undertaken for the modified 132kV transmission line and Appendix D provides the specialist visual assessment including provision of photomontages. Other modifications are discussed separately in specific assessments in Section 4.

The Operations and Maintenance (O&M) building (Section 4.2) has also been assessed by the WRWF Design and Landscape Plan (DALP) that is required by Condition C30. Details for proposed landscaping for the O&M facility are shown in the DALP. Table 6 of the DALP includes the following statement: "*The Operations and Maintenance Building will be subject to on site landscape works in order to screen potential views from adjoining properties as well as potential longer distance views from the Gwydir Highway road corridor. An indicative layout for planting surrounding the PA approved and PA compliant schemes are presented in Figures 2 and 3."* (PA refers to Project Approval). If MOD 3 is approved, the detail of proposed screening in the DALP will need to be updated for the change in O&M building location.

Should the additional Operations and Maintenance Facility at the Southern Entry be approved as part of Mod 3, then the DALP would updated to address that facility and including a screening plan.

3.2.2 Ecological impacts for native vegetation

The proposed modifications have been assessed in terms of changes to impacts on biodiversity. The assessment undertaken by RPS (Appendix B) has focused on native vegetation impacts for Endangered Ecological Communities (EECs) and habitat features as follows:

- changes to impacts on Ribbon Gum-Mountain Gum Snow Gum Forest/Woodland (RG-MG) EEC;
- changes to impacts on Yellow Box Gum - Blakely's Red Gum Woodland (Yellow Box Woodland) EEC;
- changes to impacts on Scattered Native Vegetation (isolated trees/exotic understorey); and
- identified locations of habitat features including hollow bearing trees to enable impact mitigation.

Wherever possible, the design has sought to utilise areas of non-native pastures but this has not been possible for all parts of the layout. Overall, the objective has been to minimise impacts on native vegetation and reduce the total impacts. Descriptions of the native vegetation communities is provided below.

The Yellow Box – Blakely's Red Gum Woodland vegetation community is limited to the lower lying portions of the disturbance footprint. While this community has been previously identified within the Project area, it was not previously recorded within the disturbance footprint, and is not subject to an approved disturbance limit under the Project Approval. Mapping during 2015 has identified impacts on this community and project planning has sought to reduce those impacts.

This vegetation community is dominated by Yellow Box (*Eucalyptus melliodora*), with Rough-barked Apple (*Angophora floribunda*) and Blakely's Red Gum (*Eucalyptus blakelyi*) also occasionally occurring. Due to historical disturbances to this community, it largely exists as remnant patches of canopy trees only, with limited or no mid stratum present. The understorey is generally dominated by exotic pasture grasses and weeds, with limited native grasses, herbs or forbs present.

Portions of this community are in slightly better condition where lighter grazing occurs, with some native ground covers occurring. This community intergrades with Ribbon Gum – Mountain Gum Woodland at higher elevations, with the presence of Rough-barked Apple (*Angophora floribunda*) often occurring at the ecotones of the two communities.

The presence of Yellow Box was subject to further investigation to determine the presence of a TSC Act Endangered Ecological Community (EEC), namely White Box Yellow Box Blakely's Red Gum Woodland, and an EPBC Act Threatened Ecological Community (TEC), namely White Box – Yellow Box – Blakey's Red Gum Grassy Woodlands and Derived Native Grasslands. Assessments have been conducted for the relevant disturbance areas and are reported in Appendix B.

The Ribbon Gum – Mountain Gum vegetation community occurs extensively throughout the project locale. This community has been previously identified as the dominant community within the disturbance footprint, and has an approved disturbance limit of 22 ha.

The canopy of this community is dominated by Ribbon Gum (*Eucalyptus viminalis*), Mountain Gum (*Eucalyptus dalrympleana subsp. Heptantha*), Rough-barked Apple (*Angophora floribunda*), and Silver Top Stringybark (*Eucalyptus laevopinea*). Black Sallee (*Eucalyptus stellulata*) also occasionally occurs within the canopy. Within the highest elevations of this community, Snow Gum (*Eucalyptus pauciflora*) commonly occurs as a dominant species. The mid-storey of this community is sparse, and comprises species such as Native Cherry (*Exocarpus cupressiformis*), Silver Wattle (*Acacia dealbata*), and Kurrajong (*Brachychiton populneus*). A low shrub layer is dominated by Blackthorn (*Bursaria spinosa*).

The ground cover of this community is generally dominated by exotic pasture grasses, and weed species, with isolated areas that are dominated by native grasses, herbs and forbs. Where native grasses occur, they include Tussock Grass (*Poa sieberiana*), Blady Grass (*Imperata cylindrica*), Kangaroo Grass (*Themeda triandra*), and Wheat Grass (*Elymus scaber*). Where native herbs and forbs occur, they include Kidney Weed (*Dichondra repens*), Common Woodruff (*Galium odoratum*), Many-flowered Mat-rush (*Lomandra multiflora*), and Bracken Fern (*Pteridium esculentim*).

This community is commensurate with the TSC Act listed EEC Ribbon Gum – Mountain Gum – Snow Gum Grassy Forest / Woodland of the New England Tableland, which is characterized by a 20 – 30 m canopy dominated by species that include Ribbon Gum, Mountain Gum, Snow Gum, or Black Sallee. This EEC, in an undisturbed state, has a sparse mid-storey and understory that comprises small trees and shrubs, over a dense to very dense native grassy layer. In some locations, where native grasses dominate and the canopy has been cleared, this EEC can persist as native grassland.

The Ribbon Gum – Mountain Gum community within the disturbance footprint is consistent with the TSC Act EEC Ribbon Gum – Mountain Gum – Snow Gum Grassy Forest / Woodland of the New England Tableland, to the extent indicated in Appendix B. The pasture throughout the project area is largely dominated by introduced pasture species and weeds, with limited native grasses represented. The areas that are void of canopy species are therefore not commensurate with this EEC as a result of the domination by exotic grass species.

The modification of the 132kV transmission line route is proposed to reduce vegetation impacts but will also result in constructability benefits. The proposed alternative access routes are in some cases designed to further avoid or reduce native vegetation impacts. In other cases, the alternative access routes are intended to improve constructability whilst also aiming to minimise native vegetation impacts wherever reasonable and feasibly possible. The proposed additional batch plants and construction compounds avoid EECs.

Scattered Native Vegetation. Much of the project area comprises scattered canopy trees and shrubs over introduced exotic pasture grasses. These areas are resultant of historical and current grazing of cattle and sheep. These areas lack the structure and composition to be considered a woodland community, and primarily comprise isolated trees over introduced pastures.

Where scattered native vegetation is mapped in Appendix B, it comprises species such as Ribbon Gum, Mountain Gum, Kurrajong, Blackthorn, or Silver Top Stringybark. These areas are not considered to constitute an EEC because species composition, structure, and the presence of introduced exotic pasture grasses are not commensurate with a recognized vegetation community, but do comprise native vegetation that should be avoided where possible.

With the benefit of detailed mapping, assessments have been made of the actual change in impacts to native vegetation for the modified layout. The ecological report prepared by RPS (Appendix B) assessed changes in impacts arising from the modified WRWF Stage 1 project and results are summarised in Table 2.1.

Table 2.1 – Change in impacts on Native Vegetation for WRWF Stage 1 Approved and Modified layouts

Native Vegetation	Impact of approved layout (Ha)	Impact of modified layout (Ha)	Impact difference (approved minus modified layout) (Ha)
Yellow Box Gum Woodland EEC	2.090	approx. 1.189	approx. -0.901
Ribbon Gum-Mountain Gum EEC	19.849	approx. 18.675	approx. -1.174
Scattered Native Vegetation	5.276	approx. 5.208	approx. -0.068
Totals	**27.215**	approx. **25.072**	approx. **-2.143**

In summary, there is a net reduction in impact on native vegetation for the modified WRWF Stage 1 project relative to the approved WRWF Stage 1 project of approx. 2.143Ha. This involves reduced impact for both Yellow Box Gum Woodland EEC and Ribbon Gum – Mountain Gum EEC of approximately 0.901Ha and 1.174Ha respectively.

The more intensive pre-construction ecological mapping has identified additional areas of Yellow Box Woodland and additional impacts on that community relative to impacts assessed by the EA, 2011. This has included areas of Yellow Box Woodland associated with the 132kV transmission alignment and the northeastern access route.

In the case of the Yellow Box woodland EEC impacted by the 132kV transmission line, the EEC has a condition that means it is a listed EEC under the NSW Threatened Species Conservation Act, but not sufficient to be listed as a TEC under the Commonwealth Environmental Protection and Biodiversity Conservation Act.

In contrast, there are some areas of Yellow Box Woodland in the vicinity of the northeastern access route that do meet the criteria for listing under the EPBC Act. The modification allows these areas to be almost completely

avoided. RPS has advised that there will not be a significant impact on the EPBC listed Yellow Box Woodland TEC for either the approved or modified layouts.

3.2.3 Ecological impacts for fauna – impact on habit or direct harm to fauna

Changes to impacts on fauna arising from the modifications is most likely to arise from impacts on habitat such as hollow bearing trees. In many instances, the Ribbon Gum-Mountain Gum-Snow Gum Forest/Woodland community that is present over much of the wind farm site does not show a high proportion of hollows but RPS, as part of its vegetation mapping, has identified those trees with habitat features that are close to infrastructure and, where reasonable and feasible these features will be avoided. A Construction Flora and Fauna Management Plan forms part of the Stage 1 CEMP and has been submitted to DPE for review and if suitable, approval of the CEMP. The detail of avoidance for specific impact areas will be confirmed during preparation and approval of the EWMS. Validation of impact areas will occur at completion of construction.

3.2.4 Aboriginal heritage impacts

RPS 2010, identified five Aboriginal sites that have now been registered on the Aboriginal Heritage Information Management System (AHIMS). An additional site was identified by ERM, 2015, as part of a survey of the proposed modifications (Appendix C). The six identified Aboriginal sites are shown in Figure 3.1.

The additional site identified in 2015 is on the neighbouring land to the approved access route for Turbines 51 to 61. The easement for the alternative alignment for the new access route to Turbines 51 to 61 is on the neighbouring land and as a consequence of the newly identified site, the alternative route has been adjusted to be more than 30 metres away from the newly identified Aboriginal site, ERM WR01.

The proposed modifications do not impact the registered Aboriginal sites and there is no increase in impact on Aboriginal heritage values as a result of the modifications.

In accordance with the conditions of the Project Approval, it will still be necessary to respond to chance finds if these occur. The Construction Heritage Management Plan that forms part of the Stage 1 CEMP sets out the process for chance finds.

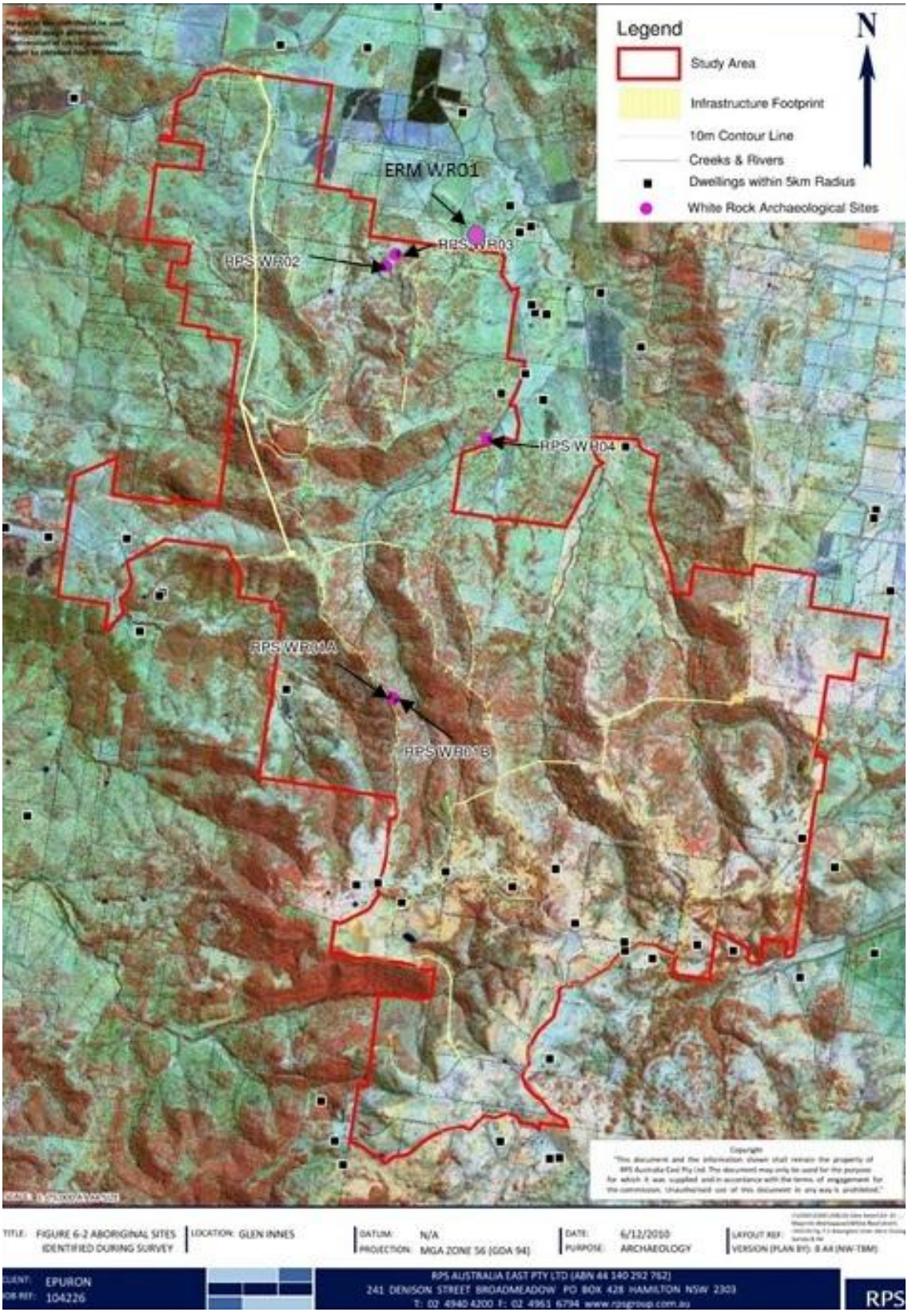

Figure 3.1 – Location of Registered Aboriginal Sites

3.2.5 Noise impacts (Construction and Operation)

The modifications (changes to 132kV transmission alignment, site entry points, access track alignments as well as modified building locations) are not expected to give rise to any significant increase in noise from construction or any noise impacts arising from the wind farm operation.

Construction noise impacts can vary depending on the location of noise sources relative to sensitive noise receptors. As indicated in Section 2.2, WRWFPL has been negotiating neighbour agreements with residents surrounding the Stage 1 project and where agreements are reached the residents are associated and accept project impacts such as visual and noise impacts.

The construction noise impacts of the alternative sections of access tracks that have only been moved short distances is considered to be similar to the approved routes and are unlikely to result in significant changes to noise impacts. Noise impacts of the construction works for access tracks will be managed by the same process, regardless of using approved routes or alternative routes and are not expected to change as a consequence of the modifications. Nevertheless, Section 4 includes review of factors that would affect a change in noise impacts for the alternative access routes. All construction works will remain in compliance with Approval Condition E5.

Construction noise is only a temporary impact during construction works at locations where changes are made and will be undertaken during standard hours. Once the main works have been completed, the frequency of noisy activities, vehicles movements and associated noise levels will decrease markedly. Where the modifications involve reduced track length, this will reduce haulage times at the respective locations and will reduce the construction noise impact for nearby receptors as well as reducing impacts of operational vehicle movements.

Additional temporary facilities such as construction batch plants (near Turbine 20 and the southern entry point adjacent Kelleys Road) are new noise sources that are additional to those considered by the EA, 2011. They have therefore been considered in this EA.

The two additional batch plant sites are described as follows and assessed in Section 4.

- White Rock Mountain (additional - not identified in EA, 2011) (More than 2km from nearest residence and noise impacts are likely to be acceptable); and
- Southern site entry – adjacent Kelleys Road (additional - not identified in EA, 2011) (250m from Residence L180 and approximately 850m from Residence L170) Both Residences L170 and L180 are associated residences and impacts are expected to be acceptable.

The operation of batch plants during standard hours is a key measure to reduce potential for noise impacts but a long drawn out concrete pour could need extended operation of a batch plant to complete a turbine foundation in a single event. The additional batch plant sites will reduce cycling times for concrete agitator trucks and reduces the size of the fleet needed to transport concrete and can also assist with completion of the pour during standard hours or the shortest time practically achievable.

The two batch plants are additional ancillary facilities for Stage 1 and their locations have been assessed against the siting criteria in Condition E18 (Section 5).

Batch plants are operated on a temporary basis, as required. The main purpose is to produce concrete required for turbine footings. For Stage 1, to supply concrete for the 70 turbines will require that one or more batch plants are collectively operated for approximately 70 days, but a much lower number of days for each batch plant site. The batch plants may also be used for supply of concrete in respect of substation footings, temporary construction office areas and drainage controls and associated infrastructure. This could involve additional days of operation.

Alternative access routes that change the distance to neighbouring residences and require review of potential for changes to noise impacts include:

- Alternative access track from Kelleys Road to Turbine 83 – nearest residences are both associated; and
- Alternative access track from Kelleys Road to Turbine 109 – nearest residences are associated.

Section 4 provides details of assessments for specific modifications.

3.2.6 Traffic and Transport impacts

The Epuron prepared EA April 2011 and Submissions Report, November 2011, provided details for WRWF traffic and transport and included a Traffic Impact Assessment. As part of preparation for Stage 1 construction works, WRWFPL has undertaken further traffic assessment including:

- Obtained specialist advice on feasible options for transport of the required equipment and materials to the WRWF Site;
- Reviewed the suitability of the potential transport routes by inspections and consultation;
- Consulted with relevant road authorities, Roads and Maritime Services and Glen Innes Severn and Inverell Councils as to requirements for use of roads pertaining to the respective road authorities;
- Prepared the Construction Traffic and Access Management Plan (CTAMP) (required by Condition E22 of the Project Approval) that sets out details of the likely transport volumes and routes to be used;
- Submitted the CTAMP to the relevant road authorities for their review and comments;
- Is continuing consultation with potential construction contractors, relevant road authorities and, as applicable, landowners; and
- The CTAMP was submitted to DPE as part of the Stage 1 CEMP, for approval of the Secretary. A revised and updated CTAMP has subsequently been submitted to DPE (9 November 2015) that addresses comments from RMS and Councils.

Figure 3.2 shows the main transport routes and site entry points for Stage 1 of the WRWF project. Further details of the respective transport routes is provided in the CTAMP. The modifications addressed by this EA relate only to changes to entries to the project area and within the project area.

Changes to site entry points include:

- Modified entry from Ilparran Road (Entry point 2 in Figure 3.2 and Appendix A, Sheet 17)
- Modified entry from Kelleys Road to Turbine 83 (Entry point 3 in Figure 3.2 and Appendix A, Sheet 16)
- Modified entry from Kelleys Road to Turbine 109 (Entry point 4 in Figure 3.2 and Appendix A, Sheet 10)

The detail of the modified entry points is discussed in Section 4 and shown on layout plans in Appendix A.

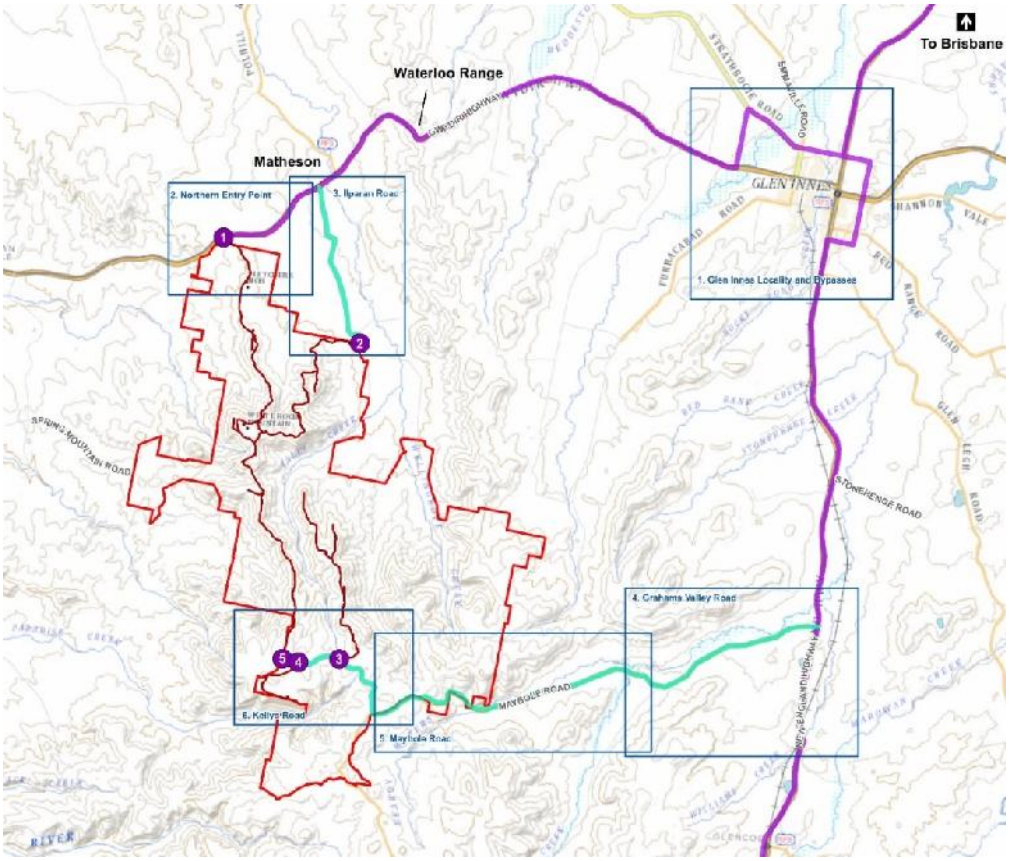

Figure 3.2 – Proposed access routes to WRWF and five site entry points

3.2.7 Soil and Water impacts

The minor changes to the project layout proposed by this application are not expected to change the project's impacts on soil and water quality and can be adequately managed by the controls within the Project Approval and the Stage 1 CEMP including the Construction Soil and Water Quality Management Plan and location specific EWMS.

Where alternative access tracks are proposed, this generally represents improved constructability (one of the factors considered for modifications) and, as such, is likely to require simpler erosion and sediment controls. Examples of alternative access tracks with reduced lengths include:

- modified access from Ilparran Road reduces track length by 500m and uses 600m less of Ilparran Road;
- the alternative route from Kelleys Road to Turbine 109 is 400m shorter;
- the alternative access track to Turbine 83 from Kelleys Road reduces the access track by about 60m.

These three examples indicate a reduction in access track works of approximately 1km and so will reduce the extent of earthworks required, marginally reducing the risks of erosion and sediment transfer.

The additional batch plants proposed also involve additional temporary storage sites for materials and will require controls to manage any risks to water quality. However, all sites will be located in accordance with the siting requirements of E18, which contains siting criteria for ancillary facilities (Section 5) and the CCAFMP.

An assessment of each of the modifications in respect of soil and water impacts is provided in Section 4.

3.2.8 Bushfire Risk

The minor changes to the project addressed by this application are not expected to result in any change to the project's impacts on bushfire risk. Bushfire risks will continue to be managed by the controls set out in the Stage 1 CEMP and in particular, the Bushfire Risk Management Plan that is a sub-plan of the CEMP.

Reduced access track lengths will marginally improve travel times for parts of the site, increasing accessibility. Accordingly, WRWFPL expects that the modifications will not result in any increase in Bushfire Risk.

3.2.9 Hazardous Substances, Wastes and Resource Efficiency

The changes proposed to the project do not introduce any additional hazardous substances or wastes. The same controls as set out in the Stage 1 CEMP will be applicable and WRWFPL does not believe the modifications result in any increased risk.

Changes to access track routes and siting of facilities can improve the efficiency of site activities for construction and/or operations. Benefits accrue from shorter access routes, better graded access tracks, less cycling of vehicles and more direct access without need to leave the site, travel on public road and re-enter from another point. A number of the modifications have benefits for reduced construction works, travel times and reduced fuel consumption and emissions. Overall the modifications will reduce these aspects.

3.2.10 Air safety

The modifications involving alternative access track routes have no impact on air safety risks due to the low level of the access track works.

The proposed relocation of the 132kV transmission line will result in the alignment being located on slightly higher terrain at some points up to 40m on the western side of White Rock Mountain. However, the pole heights will be of similar order, approximately 25 metres, which is below the safe levels for aircraft and reasonably visible. Conductor spans between structures can be less visible and at greater heights above the terrain. The line designers have recommended aerial markers for parts of the line, most likely for the southern section that involves long spans across deep valleys and TransGrid will add markers to the line where a risk exists. Local operators will be informed of the Stage 1 project and made aware of the new infrastructure locations. Accordingly, the modification of the transmission line route is not expected to provide any increased risk to aircraft.

The revised locations of the met masts were clarified in the Met Mast Environmental Management Plan (EMP) and are shown in Table 3.2. The EMP requires notification of the mast locations and structure height details to relevant aviation stakeholders. These notifications were provided in November 2015.

Table 3.2 – WRWF Stage 1 – Met Mast locations

Mast name or location	Easting	Northing	Notes
MM_2025_WEST Intermediate and to west of T20 and T25	359,268	6,701,053	Permanent mast
MM_5960_EAST Intermediate and to east of T59 and T60	361,632	6,701,292	Permanent mast
The temporary mast coordinates (shown below) are the proposed turbine coordinates. The respective temporary masts can be within 18m of the turbine coordinate, therefore allowing some flexibility in siting.			
Turbine 20 – approximately same as proposed turbine site	359,393	6,701,309	Temporary mast
Turbine 25 – approximately same as proposed turbine site	359,536	6,700,901	Temporary mast
Turbine 59 – approximately same as proposed turbine site	361,287	6,701,426	Temporary mast
Turbine 60 – approximately same as proposed turbine site	361,423	6,701,163	Temporary mast

Temporary masts are located at proposed turbine sites and will be removed prior to Turbine construction

3.2.11 Telecommunications

The minor modifications to the WRWF Stage 1 project do not impact any telecommunications facilities within the project area. Accordingly, no assessments of the modifications is required for telecommunications.

4 ENVIRONMENTAL ASSESSMENT FOR EACH OF THE MODIFICATIONS

A summary of the environmental assessment of each of the proposed modifications is provided in Table 4.1 with the following sections providing supporting details of the potential environmental impacts of each of the proposed modifications in respect of relevant environmental issues.

Clarifications of changes to other project details not relating to the modification application are provided in Section 5.

Table 4.1 Proposed Modifications – Summary of Environmental Issues and impacts for each modification

Proposed Modification	Section	Permanent or Temporary	Change in physical extent	Ecology impact	Aboriginal heritage	Landscape and Visual impact	Noise impacts	Soil and Water impact	Fire Risk	Aviation safety impact	Overall impact/Actions
Modified 132kV TL alignment	4.1	Permanent	Reduced number of structures and earthworks	Reduced impact	No increased impact	No increased impact	No increased impact	Reduced due to shorter access track length	Reduced impact	No increase	Reduced earthworks and vegetation impact
Alternative location northern O&M Facility	4.2	Permanent	No change	No change	No increased impact	Screening Plan	No increased impact	No increased impact	No increase	No increase	No change
Additional O&M facility - Southern	4.3	Permanent	Extra facility within Temp construction area	No impact, exotic vegetation	No increased impact	Address visual impact by finishes and screening in DALP	No impact, closest non-associated residence at 3.5km	No increased impact, lesser grade	No increase, equipment stored here	No increase	No increase, Address visual in DALP
Alternative access route to Turbine 1	4.5.1	Permanent	Marginally Increased track length, better grades	No increased impact	No increased impact	Reduced impact	No increased impact	No increased impact	No increase	No increase	No increase
Alternative access route Turbine 9 to 10	4.5.2	Permanent	Reduced extent	No increased impact	No increased impact	Reduced impact	No increased impact	No increased impact	No increase	No increase	Reduced earthworks
Alternative access route to Turbine 19	4.5.3	Permanent	No change	No increased impact	No increased impact	Reduced impact	No increased impact	No increased impact	No increase	No increase	Reduced impact
Alternative access route to Turbine 29	4.5.4	Permanent	Slightly reduced track length	No increased impact	No increased impact	Reduced impact	No increased impact	No increased impact	No increase	No increase	Reduced earthworks
Alternative access route T28 to T30	4.5.5	Permanent	No change	No increased impact	No increased impact	No increased impact	No increased impact	No increased impact, uses part of existing farm track	No increase	No increase	No change
Alternative access route from Ilparran Road via new easement to T51 - 61	4.5.6	Permanent	Reduced access track length and reduced use of Ilparran Road	Reduced impact	Avoid site ERM WR01	Low visibility. No significant change	No increased impact	No increased impact	No increase	No increase	Significant reduction in impacts
Alternative access route Turbine 53 to 54	4.5.7	Permanent	Reduced extent	No increased impact	No increased impact	No increase, some reduction	No increased impact	Reduced impact	No increase	No increase	Reduced impact
Alternative access route Turbine 79 to Turbine 76	4.5.8	Permanent	Increased track length but better grades	Ecological review for EWMS	No increased impact	No increased impact	No increased impact	No increased impact	No increase	No increase	EWMS to minimise vegetation impacts
Alternative access route Kelleys Road to T83	4.5.9	Permanent	Reduced access track length	No increased impact	No increased impact	No increased impact	Reduced impact	Reduced, shorter track length	No increase	No increase	Reduced
Additional construction compound, amenities and, laydown area	4.5.9	Temporary	Increased extent	No increased impact	No increased impact	Visible from Kelleys Road, low impact	No increased impact	Increased area of disturbance managed through EWMS	No increase. Provides for storage of fire fighting equipment	No increase	Additional facility, No increased impact
Alternative access route Kelleys Road to T109	4.5.10	Permanent	Reduced extent	Overall similar, Ecological review of entry from Kelleys Road as part of EWMS	No increased impact	No impact Remote location adjacent associated residences	Reduced impact for Melrose homestead	Reduced, shorter track length	No increase	No increase	Reduced earthworks EWMS to minimise vegetation impacts for entry to property
Alternate 33kV collection T57-58	4.6.1	Permanent	Reduced impact	Reduced impact	No increased impact	Reduced impact	No increased impact	Increased disturbance	Reduced impact	Reduced impact	Reduced impact
Additional batch plant site near Turbine 20	4.7.1	Temporary	Extra facility	No increase	No increased impact	No increased impact	No increased impact	No increased impact	No increased impact	No increased impact	No increased impact
Additional batch plant site at southern entry adjacent Kelleys Road	4.7.2	Temporary	Extra facility	No increase	No increased impact	Visible from Kelleys Road, low traffic volume, low impact	No increased impact	No increased impact	No increased impact	No increased impact	Increased visual impact, to be addressed in DALP

4.1 Modification to 132kV Transmission alignment

The Environmental Assessment (2011) described an 8km section of the 132kV transmission alignment proposed for grid connection of the WRWF. The alignment as shown in the Environmental Assessment (2011) was generally direct from the connection point on the existing 132kV Glen Innes to Inverell transmission line to the southern substation site of two substation options.

As part of pre-construction planning for the project implementation, reviews of 132kV line design identified alternative routes that could minimise impacts on native vegetation. Further assessments of the local ecology were undertaken for the approved and modified alignments and confirmed a reduced impact for the alternative alignment. The more intensive mapping in 2015 has also identified impacts on Yellow Box EEC. The modified 132kV alignment shown in Figure 4.1, reduces impact on native vegetation, including the Yellow Box EEC.

The length of the 132kV transmission line that has been shifted marginally to the east is approximately 4.3km, of which only 1.26km is being moved by more than the 100m micrositing allowance granted by the Project Approval. The maximum relocation of the transmission line from the route approved by the Project Approval is approximately 192m, and occurs in the vicinity of Turbine 19. The proposed change in the transmission route alignment is designed to reduce native vegetation impacts by approximately 1.81 Ha, by:

- reducing the impacts on Yellow Box – Blakelys Red Gum EEC;
- reducing impacts on Ribbon Gum - Mountain Gum Snow Gum Forest/Woodland EEC; and
- reducing impacts on scattered native vegetation, isolated trees.

The revised alignment would be accessed in much the same way as the original alignment, although there is a reduction in the overall length of the transmission line access track requirements (due to the modified alignment being closer to the wind farm access track network and able to utilise sections of those tracks). This also avoids the need for some of the steeper sections of tracks for line installation and reduces the scale of earthworks in some areas.

The following sections address potential environmental impacts arising from the modified transmission line easement relative to the approved transmission alignment.

4.1.1 Review of visual impact for the 132kV TL modification

An assessment of the change in visual impact of the 132kV Transmission Line modification has been undertaken by Green Bean Design (Appendix D). The transmission line has been moved laterally to reduce impacts on conservation significant vegetation. This will mean less clearing of remnant woodland which will reduce the visual impact. However for some parts of the line, the movement from the original alignment has meant that the new line route is more elevated by up to 40m which could potentially marginally increase visual impact of the line. The potential for increased visual impact due to the marginal increase in height of the land where the line would be constructed is reduced by the low settlement density for the transmission line viewfield and the large distances to viewpoints within the viewfield.

To assist the assessment of change in visual impact, two photomontages were prepared one for the original alignment and the second for the modified alignment. Green Bean Design has reviewed the two photomontages and provided specialist opinion on the change in visual impact. The assessment concluded:

"*Based on our desktop study, existing site knowledge and comparison of photomontages prepared for the approved and modified transmission line routes, it is our professional opinion that the modified line route will have a negligible, and no additional discernible visual impact, over and above the visual impact determined in the original LVIA.*"

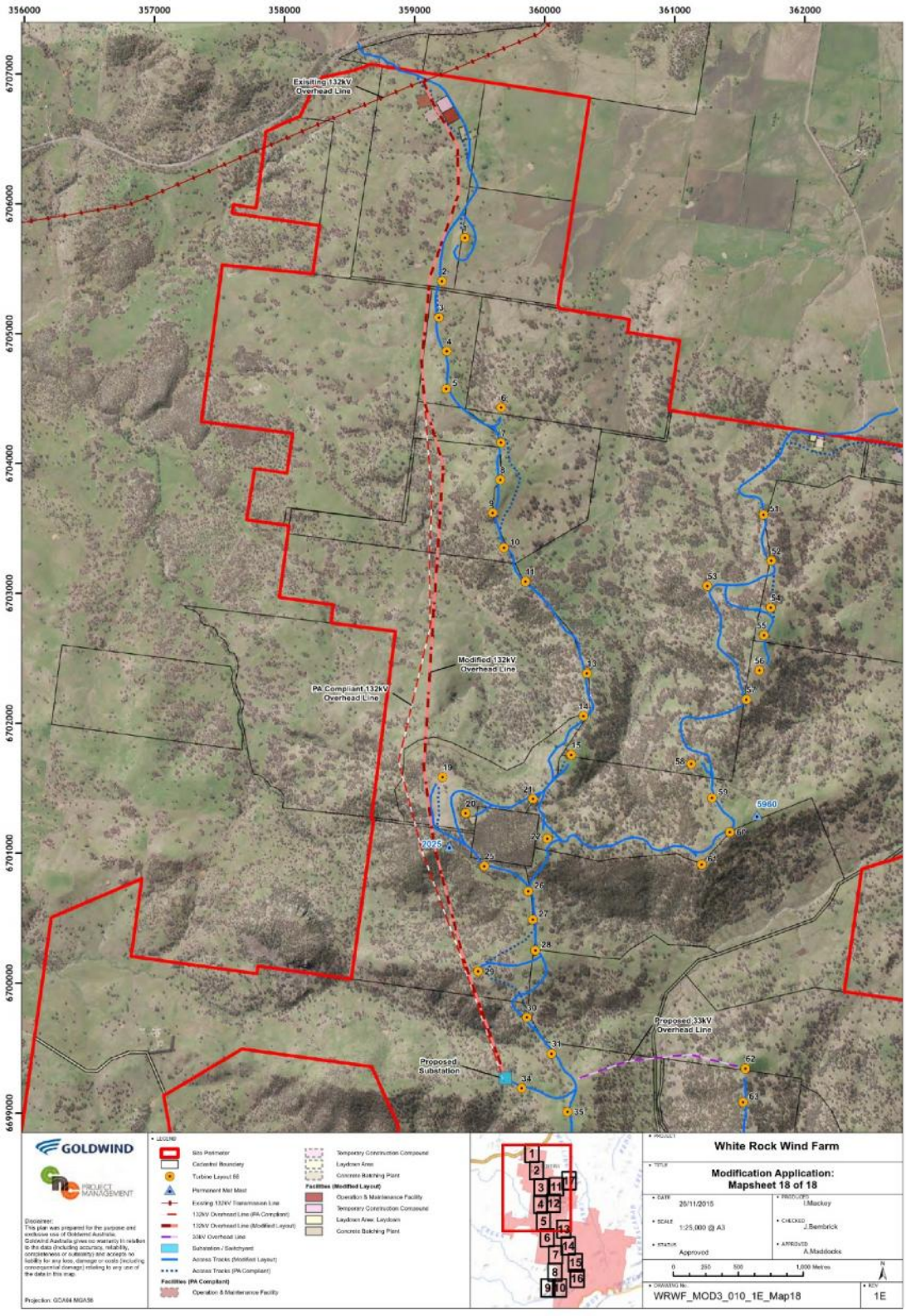

Figure 4.1 – Approved and modified 132kV alignments

4.1.2 Review of native vegetation impacts for the 132kV TL modification

The 132kV transmission line has a length of approximately 8km. As shown on Figure 4.1, approximately 4.3km of the transmission line is proposed to be moved marginally to the east to minimise impacts on conservation significant vegetation. The line route will require vegetation clearing to provide the statutory safe clearances for 132kV overhead transmission power lines. However, for the southern part of the line route where the line spans two deep valleys the vertical clearances are sufficient to avoid the need for vegetation clearing.

The impact of the 132kV transmission line construction on Ribbon Gum – Mountain Gum EEC had previously been assessed by RPS (EA, 2011) as being approx. 17.6 Ha.

Following the sale of the WRWF project by Epuron, WRWFPL carried out pre-construction design studies and further detailed ecological surveys in 2015. These have enabled updated vegetation classification to be carried out and the identification of areas where impacts can be reduced. Additionally, the modification of the alignment, predominantly in its central and northern sections, will enable further reduction in impacts.

The biodiversity impacts of the modifications proposed to the transmission line route alignment are assessed in this EA. The assessment has focused on native vegetation impact for Endangered Ecological Communities (EECs) and habitat features as follows:

- changes to impacts on Ribbon Gum-Mountain Gum EEC;
- changes to impacts on Yellow Box Gum - Blakely's Red Gum Woodland (Yellow Box Gum) EEC;
- changes to impacts on Scattered Native Vegetation; and
- changes to impacts on habitat features including hollow bearing trees.

The Yellow Box Woodland community is listed under the NSW *Threatened Species Conservation Act 1995* but due to poor condition of the understorey, it does not have condition that rates it as a Threatened Ecological Community (TEC) under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). The changed alignment reduces impact on the Yellow Box Woodland EEC relative to the approved alignment.

The RPS ecology report, 2015 contained in Appendix B assessed the changes in impacts arising from the modified transmission line alignment (including on the newly identified Yellow Box Woodland EEC). The results of this assessment are summarised in Table 4.2.

Table 4.2 – Change in impacts on Native Vegetation for 132kV Approved and Modified line routes

Native Vegetation	Impact of Approved line route (Ha)	Impact of Modified line route (Ha)	Impact difference (Approved minus modified line route) (Ha)
Yellow Box Gum Woodland	1.745	approx. 1.039	approx. -0.706
Ribbon Gum-Mountain Gum	6.447	approx. 5.429	approx. -1.018
Scattered Native Vegetation	0.386	approx. 0.299	approx. -0.087
	8.578	approx. 6.767	approx. -1.811

In summary, there is a net reduction in impact on native vegetation for the modified alignment relative to the approved alignment of approx. 1.811Ha. This involves reduced impacts for Yellow Box Gum Woodland EEC of approximately 0.706Ha and Ribbon Gum – Mountain Gum EEC of approximately 1.018Ha.

The residual impacts will be offset through the Biodiversity Offset Package required by Condition C7 of the Project Approval.

Approval of the modified transmission alignment is sought to enable the reduced impact to be achieved. If the modification is not approved then the transmission line will be constructed in the original approved alignment (subject to the 100m micrositing allowance), resulting in a greater impact on native vegetation communities including Yellow Box Gum Woodland and Ribbon Gum – Mountain Gum Woodland.

4.1.3 Review of Soil and Water impacts for the modified 132kV line route

Erosion and sedimentation for construction works will be managed in accordance with the approved CEMP including the Construction Soil and Water Quality Management Plan and as detailed in the location specific Environmental Work Method Statement.

The modified transmission line route also reduces the length of the access tracks required for construction of pole structures and, accordingly, the extent of earthworks for some of the line structures. It is therefore considered that the modified route reduces the risk of erosion and sedimentation for construction works.

4.1.4 Review of Aboriginal heritage impacts from the 132kv line Modification

The transmission line route was assessed as part of the Epuron EA, 2011 and the survey units enable confidence that no Aboriginal heritage sites will be impacted. In places, the movement of the line has meant that it is closer to turbine sites and access track routes that have also been previously assessed. The modified line route will not impact on any of the Registered Aboriginal sites identified for the WRWF Stage 1 area.

4.1.5 Review of Noise impacts for the 132kV line modification

As the line is at considerable distance from neighbouring residences, there are no noise impacts expected from the operation of the transmission line. The construction noise will be managed in accordance with the Construction Noise and Vibration Management Plan.

The modification is not expected to give rise to any significant increase in noise levels from either construction or operation.

4.1.6 Review of Bushfire risk for the 132kV Line modification

The line will have standard clearance zones around the 132kV lines. The modification involves a marginal change in the route alignment, is not expected to increase bushfire risk and may even reduce potential impacts by moving the line into more cleared areas.

4.1.7 Conclusion in respect of modified 132kV line route

The review of impacts for the modified transmission line route demonstrates that it will reduce impacts on native vegetation and will not otherwise result in any increased impacts. Accordingly, the modified line route is regarded as an improved alignment with lower impacts overall.

4.2 Modification of location of Permanent Operations and Maintenance Building

The Epuron EA, 2011 (Figure 3.8) showed an Operations and Maintenance Facility located near the northern entry point. The current design proposes that the facility building be moved 230m to the southeast. This locates the facility on the eastern side of the 132kV line, consistent with the access track route and clear of the area where the 132kV line will be constructed. This takes the facility further from an area of scattered native vegetation into a cleared area of native pasture and also provides for safer and more efficient construction activities.

In terms of visual impacts, the modification is considered to result in no significant increase to the visual impact of the Operations and Maintenance Facility. In particular, there is existing woodland vegetation adjacent to the Gwydir Highway that is about 600m north of the facility. This provides existing visual screening.

Further, the visual impacts resulting from the permanent Operations and Maintenance Facility Building has been addressed by the Design and Landscape Plan (DALP) required by Condition C30 of the Project Approval and prepared by Green Bean Design. In particular, an O&M screening concept plan has been prepared for both the approved O&M location and the modified O&M location.

There are no registered Aboriginal sites for this locality.

There are no factors that increase the bushfire risk for this facility. It is expected that the immediate surrounds of the building will be cleared of vegetation to reduce risk for this facility and that the facility will provide storage for fire-fighting equipment. It is also located close to the northern entrance that provides an egress route in event of fire.

4.3 Additional Operations and Maintenance Facility Building at Southern entry point

The design process for Stage 1 of the wind farm has identified that an additional Operations and Maintenance facility at the southern entry point, adjacent Kelleys Road is warranted predominantly for the purposes of occupational health and safety. The location would be within the area of disturbance for the southern construction compound and laydown area shown in Appendix A, Sheet 16.

This small, single storey building (approximately 200m^2) would provide for wind farm staff operating in the southern part of the site and distant from the Northern Operations and Maintenance Facility. This location is approximately 18km from the northern site office travelling via on-site roads and potentially with a series of boundary gates.

Due to the remoteness of the southern turbine locations, the variable and sometimes extreme weather conditions (including electrical storms and periods of strong winds that give rise to risks from falling branches) it is important that there is a facility that provides shelter for staff and offers minor storage for items needed by operations and maintenance staff including items such as bushfire fighting and spill response equipment. A tank would be provided to collect rainwater from the roof and a Council compliant amenities facility would be incorporated in the design.

The Operations and Maintenance building would be visible from Kelleys Road but would have finishes consistent with requirements of the project approval and a screening plan would be developed as part of the Design and Landscape Plan. It is located at the first of three site entry points reached by vehicles travelling west on Kelleys Road. Kelleys Road has low traffic volumes and the section west of this entry serves only four properties that are all associated with the WRWF Stage 1 project.

4.4 Alternative site entry points

A number of variations to site entry points have been proposed including:

- Alternative entry route from Ilparran Road, requiring a new easement across neighbouring land to the WRWF project (simplifies access using a shorter and safer route and reduces vegetation impacts);
- Alternative entry route from Kelleys Road to Turbine 83 (in response to landowner request and slightly shorter route); and
- Alternative entry route from Kelleys Road to Turbine 109 (shorter access route by 400m and moved away from passing close to landowner residence and stockyards).

These aspects are described and assessed in association with modifications to access track routes discussed in Section 4.5.

4.5 Alternative access track alignments

A number of modifications to access track alignments (and associated entry points) are proposed to improve constructability, provide more practical track alignments and grades, improve efficiency of vehicle movements over the project life, shorten access tracks, avoid or reduce vegetation impacts, move further from residences or respond to landowner preferences. The adjustments to the access track layout represent a relatively small proportion of the 32km of access tracks needed for WRWF project.

The modified access routes considered here include the following:

- Alternative access to Turbine 1;
- Alternative access route direct from Turbine 9 to Turbine 10;
- Alternative access route to Turbine 19;
- Alternative access route to Turbine 29;
- Alternative access route from Turbine 28 to Turbine 30;
- Alternative access for part of the route from Ilparran Road to Turbine 51;
- Alternative access route from Turbine 53 to Turbine 54;
- Alternative access route from Turbine 79 to Turbine 76;
- Alternative access for part of the route from Kelleys Road to Turbine 83; and
- Alternative access route from Kelleys Road to Turbine 109.

WRWFPL seeks approval for each of the above alternative access tracks. Final access tracks will be selected following final constructability assessments and in conjunction with the EWMS development process.

Each of these access routes is separately assessed in respect of any change in impacts.

4.5.1 Alternative Access to Turbine 1

WRWFPL proposes an alternative route for access to Turbine 1 from that in EA, 2011. The original route involved a steep direct approach to the Turbine 1 hardstand that was assessed as not suitable for construction. The design team has proposed the alternative arrangement as being more practical when considering the local terrain, hardstand design and requirements for access during construction. This involves an additional 400m of access track through an area of exotic pasture and can be sited to avoid isolated trees.

Visual Impact: The Turbine site is on the lower slopes of White Rock Mountain and about 1,600m south of the Gwydir Highway that at this location has mature tree screening on its southern side. Views to the turbine site will be filtered, but where there are views to the land where the turbine is located, the visual impact is considered to be reduced by having the access track approaching the hardstand on the southern side of the Turbine site. This modification is not considered to increase visual impact.

Ecological impact: The turbine site is within an extensively cleared area of exotic pasture with occasional scattered trees. The change in access route will not significantly increase the impact on native vegetation. It is proposed that the preparation of the Environmental Work Method Statement (EWMS) for construction at this location, prescribes a route that will minimize impacts on scattered native trees.

Archaeological impact: The locality was addressed by RPS Survey Unit 1 (2010) reported in EA, 2011 with supplementary review by ERM in October 2015. No Aboriginal sites have been identified at the locality and the modification is not expected to increase impacts on Aboriginal heritage.

Soil and Water impacts: The alternative access track route has a reduced grade and therefore less risk for erosion and sedimentation. Nevertheless, this issue will be managed in accordance with the approved CEMP including the Construction Soil and Water Quality Management Plan and as detailed in the location specific Environmental Work Method Statement.

The modification of the access route to Turbine 1 does not increase the project's environmental impacts.

4.5.2 Access route direct from Turbine 9 to Turbine 10;

WRWFPL proposes an alternative route for access to Turbine 10, from that in EA 2011 (Figure 4.2). The EA, 2011 recognised the steep grade from Turbine 9 to Turbine 10 and identified that separate access would be needed to Turbines 8 and 9 on the elevated ridgeline and that the main access route to Turbine 10 and beyond would be via an access route from Turbine 7 to Turbine 10, by following the contour level around the eastern side of the ridge to Turbine 10.

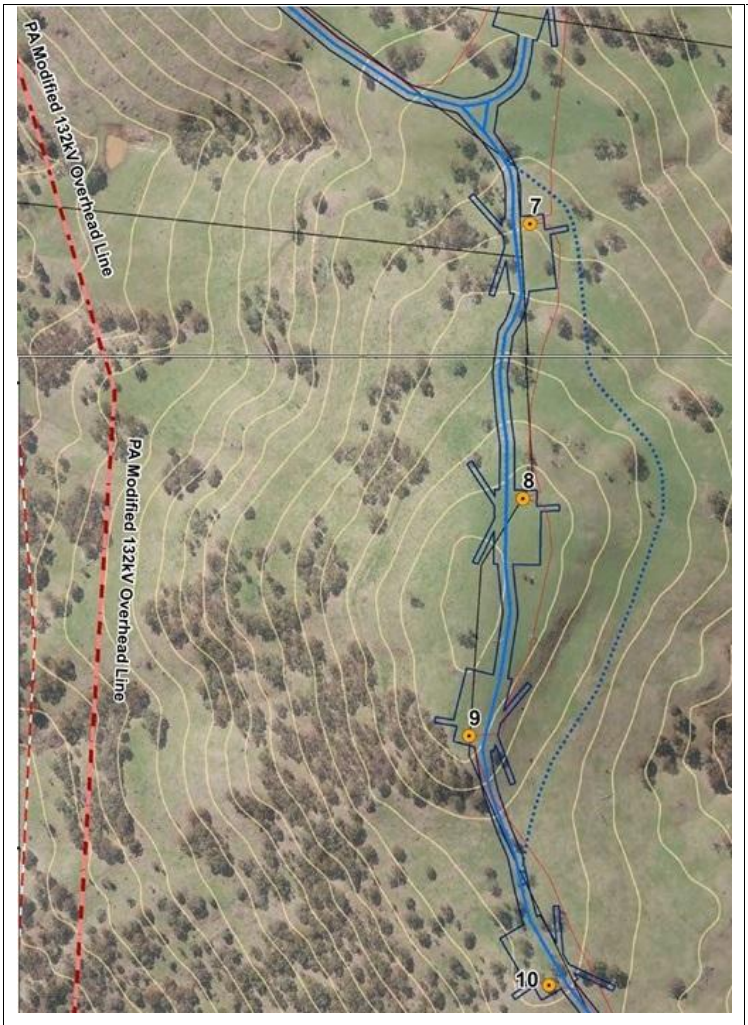

Figure 4.2

access route

Direct route from Turbine 9 to 10 and replacement of EA 2011 route from Turbine 7 to 10

Engineering reviews have indicated that the shorter and more direct route from Turbine 9 to Turbine 10 could be feasible and the modification application seeks to have this route included as part of the project layout. Confirmation of its suitability will only occur following further pre-construction investigations and accordingly, the option to retain the route from Turbine 7 to Turbine 10 as an optional alternative access route is sought.

The modification sought involves an additional 120m of access track directly from Turbine 9 location to the saddle to the north of Turbine 10 which if confirmed as feasible would replace approximately 820m of access track from Turbine 7 to Turbine 10. Assessment of impacts for the route from Turbine 9 to Turbine 10 follows:

Visual Impact: The proposed new access route occurs on a south facing slope (Plate 3.x) that will not be visible from the north and where there are no public viewpoints of this track from the south. As a result the new route should have no visual impact and the modification could result in reduced visual impact if the need for the optional track on the eastern side of the ridge (from Turbine 7 to Turbine 10) is avoided.

This modification is not considered to increase visual impact.

Ecological impact: The slope to the south of Turbine 9 is within an extensively cleared area of exotic pasture with occasional scattered trees (Plate 3.1). The occasional scattered tree may be able to be avoided by the access track construction.

The alternative access route is only about 120m in length and much shorter than the approved section of track that it would replace. At most it may impact an additional isolated tree. Overall, the route will not significantly increase the project impact on native vegetation.

It is proposed that the preparation of the Environmental Work Method Statement (EWMS) for construction at this location, prescribes a route that will minimise impacts on scattered native trees.

Plate 3.1 – View to north towards Turbine 10 and White Rock Mountain.

Archaeological impact: The locality was addressed by RPS Survey Unit 1 (2010) reported in EA, 2011 with supplementary review by ERM in October 2015. No Aboriginal sites have been identified at the locality and the modification is not expected to increase impacts on Aboriginal heritage.

Soil and Water impacts: The alternative access track route has increased grade (relative to the approved route) and therefore higher risk for erosion and sedimentation. However, the access route is also significantly shorter than the approved route and this may counter some of that risk. This location will be managed in accordance

with the approved CEMP including the Construction Soil and Water Quality Management Plan and as detailed in the location specific Environmental Work Method Statement to be prepared before construction and endorsed by the ER.

4.5.3 Alternative access route to Turbine 19

An alternative access track to Turbine 19 is proposed on the lower part of the slope where it may be concealed behind existing vegetation on its western side (Figure 4.3). The proposed alternative access track alignment would be located in an area of exotic pasture and, neither the approved route, or the alternative route would have impacted conservation significant native vegetation. The land where the alternative track route is located is on a more gentle slope and the alternative route is likely to be more stable. There are no registered Aboriginal sites in this locality.

Figure 4.3

Alternative access to Turbine 19

Epuron EA, 2011 route

WRWFPL CEMP route – dotted blue line

Alternative route – Thick blue line

4.5.4 Alternative access route to Turbine 29

The EA, 2011 showed the access route from south of Turbine 27 direct to Turbine 29. However, review of the locality by the design team has indicated that this direct route is less suitable than an alternative route which follows the ridgeline from Turbine 28 to Turbine 29 (Figure 4.4). While it may have appeared that there is a greater impact on vegetation by the alternative route, the vegetation for this route is quite open with an exotic understorey. Plate 3.2 shows the setting for Turbine 29. The alternative route for access to Turbine 29 is unlikely to result in significant increase on native vegetation.

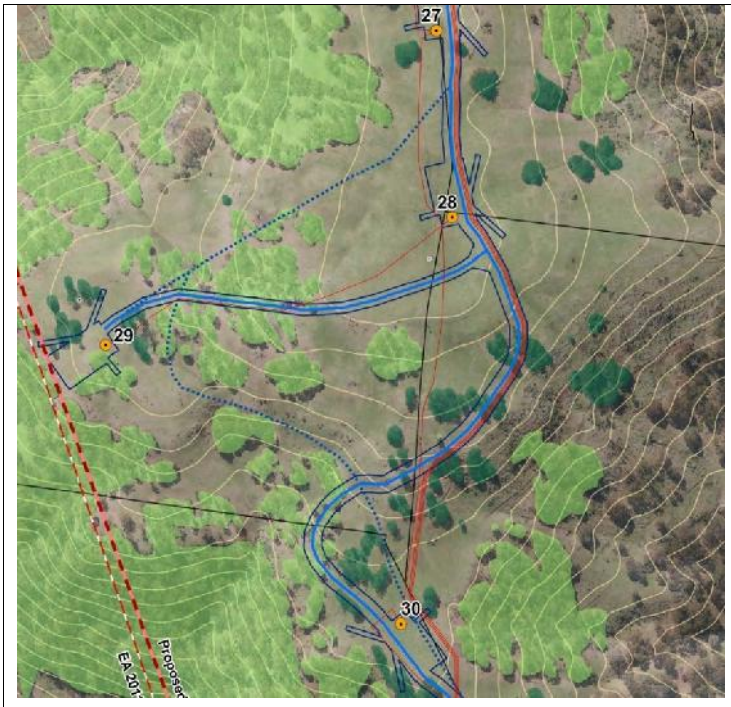

Figure 4.4

Access Tracks T29 and T28 to T30

Proposed Access Route

Approved access route

Scattered Native Vegetation

Ribbon Gum – Mountain Gum

The assessment of the alternative route follows.

Visual Impact: The alternative access route to Turbine 29 and the approved route are both located on a gently west facing slope that would have limited visibility from viewpoints to the west. This is largely due to intervening terrain and woodland vegetation that together will largely screen views of either access track. The modified access track may have slightly more vegetation screening than the approved route. This alternative route to Turbine 29 will not increase the visual impact.

Ecological impact: The alternative access route follows the ridgeline and appears to be the route used by the landowner for accessing the Turbine 29 locality. While it may have appeared on vegetation mapping influenced by canopy extent that there is a greater impact on vegetation by the alternative route, the vegetation for this route is quite open with an exotic understorey. It is considered that the open woodland character will allow construction of the access route with limited impact on scattered trees.

It is proposed that the preparation of the Environmental Work Method Statement (EWMS) for construction of this access track will prescribe a route to Turbine 29 that will minimise impacts on scattered native trees.

Plate 3.2 – Turbine 29 site and open pasture.

Archaeological impact: The locality was addressed by RPS Survey Unit 4 (2010) reported in EA, 2011 with supplementary review by ERM in October 2015. No Aboriginal sites have been identified at the locality and the modification is not expected to increase impacts on Aboriginal heritage.

Soil and Water impacts: The alternative access track route has reduced variation in grade and potentially less cut and fill works (relative to the approved route). It may therefore have a lower risk for erosion and sedimentation. The alternative access route may be marginally shorter than the approved route and this may further lessen risk. This location will be managed in accordance with the approved CEMP including the Construction Soil and Water Quality Management Plan and as detailed in the location specific Environmental Work Method Statement.

4.5.5 Alternative access route from Turbine 28 to Turbine 30

The alternative access track to Turbine 30 has been realigned from the approved route (Figure 4.4). The Epuron EA, 2011 showed the access originating from the access track to Turbine 29 passing through Ribbon Gum - Mountain Gum EEC and descending over 40m down a south facing slope to reach Turbine 30. The steep slope to be negotiated showed signs of seepage and potential to be unstable for access track construction.

An alternative route has been proposed that avoids the poor ground conditions for the approved route. The alternative access track route goes from Turbine 28 around a south eastern facing slope and partly aligns with the existing landowner's access track. This route has been assessed as being more stable and safer in the long term. Both routes pass through areas of native vegetation but the approved route appears to impact more Ribbon Gum – Mountain Gum community. Neither route appears suitable for co-location of 33kV underground cabling due to the steep slope on which the track will occur and the difficulties trenching on one side of the track. At this location, it would be more efficient to install 33kV cable directly between Turbine 28 and Turbine 30, requiring a shorter cable length and where this can be achieved without impacts on conservation significant vegetation. The EWMS will address both the access track route and cable route.

Visual Impact: The alternative access route Turbine 28 to Turbine 30 and the approved route are both located on generally southerly facing slopes. The aspect of the slope for the approved route is more to the southwest while the alternative route is on a southeast facing slope. Both routes will have low visibility for surrounding residences and both could be regarded as having low visual impact.

The alternative route is in the upper part of Falls Creek catchment on the western side of the Ilparran Valley. The enclosed nature of the terrain means that the alternative access track route will have limited or no visibility from residences to the east. Residences to the south are over 5km distant and associated with the project. On this basis, the visual impact of the alternative access track is expected to be low and similar to that for the approved route that ran from Turbine 29 to Turbine 30. Intervening terrain and woodland vegetation will largely screen views of either access track. The alternative route is not considered to increase the visual impact.

Ecological impact: The alternative access route progressively descends around the ridge to the Turbine 30 locality. It passes through scattered native trees and mostly exotic understorey. Some trees will be impacted on this route. In the case of the approved route, that passed through Ribbon Gum – Mountain Gum community that is considered as having higher conservation value than for the alternative route.

It is proposed that the preparation of the Environmental Work Method Statement (EWMS) for construction of this access track, prescribes the route to minimise impacts on scattered native trees.

Archaeological impact: The locality was addressed by RPS Survey Unit 4 (2010) reported in EA, 2011 with supplementary review by ERM in October 2015. No Aboriginal sites have been identified at the locality and the modification is not expected to increase impacts on Aboriginal heritage.

Soil and Water impacts: Both the approved and the alternative access track routes cross steep slopes requiring earthworks to bench in to the steep slopes and giving rise to increased risks for erosion and sedimentation. Regardless of the route selected, these routes will need careful attention to design of drainage and controls to prevent erosion and sedimentation. The selected route will be managed in accordance with the approved CEMP including the Construction Soil and Water Quality Management Plan and as detailed in the location specific Environmental Work Method Statement.

4.5.6 Alternative access route from Ilparran Road and Temporary Construction Facility

The approved access to Turbines 51 to 61 is via Ilparran Road and a host landowner property. An initial 1.2km of the access route goes west on lower slopes of the wind farm site before swinging south and ascending the northeast ridge of the wind farm site (Figure 4.5).

The project design team has reviewed the access arrangements and identified an improved entry point that is regarded as a safer access point, reduced access track length, both on Ilparran Road and also off public roads, has less impact on native vegetation and does not significantly increase visual impact. The alternative access route (Figure 4.5) requires an easement across land immediately north of the project area and where the landowner is already involved with the project in relation to land for turbine sites.

The section of alternative track route on the neighbouring land is about 560m and a further 380m on the project land to the point where it joins the approved route (combined 940m).

It is also proposed to provide a temporary construction compound, an office and amenities building and laydown area adjacent to the modified access track route. These facilities will be located in a cleared area and assist the safe and efficient conduct of construction activities for Turbines 51 to 61.

Figure 4.5 – Alternative north eastern entry, access route and construction facilities

Visual impact:

The alternative access route reduces the length of access track needed to reach Turbines 51 to 61. The access track will be visible from Ilparran Road in the vicinity of the entry point but at distance and being low in the landscape it is likely to have low visibility. There are no residences looking over this area and no trees need to be cleared to install the track. The location is about 4km south of the Gwydir Highway and as traffic movements on Ilparran Road are very low, then overall, visual impact is likely to be low but similar for the alternative and approved access routes.

Ecological impact:

The alternative access route from Ilparran Road using an easement on a neighbouring property will avoid areas of Yellow Box – Blakelys Red Gum EEC. Figure 4.5 shows the change in the north eastern access route and clearly indicates the relocation into cleared pasture and away from the original route that passed through open woodland. The modification avoids impact on native vegetation that is an EEC under the TSC Act and which in places satisfies the criteria for listing as a TEC under the EPBC Act.

Careful selection of the alignment of the western part of the access route will minimise impact on the Yellow Box - Blakelys Red Gum Woodland. An assessment by RPS indicates that the alternative route can be implemented without impact on Yellow Box Woodland EEC. Avoidance of the EEC will be an objective of the flora fauna management, if this modification is approved.

The temporary construction compound and laydown area are located within an area of exotic pasture (Plate 4.3).

It is proposed that the preparation of the EWMS for construction of this access track, prescribes a route that minimises impacts on Yellow Box - Blakelys Red Gum Woodland.

	Plate 4.3 Site of Northeastern Construction compound and laydown area and view along modified access route from Ilparran Road

Archaeological impact: The locality was addressed by RPS Survey Unit 3 (2010) reported in EA, 2011 and by a further assessment of the alternative route by ERM in October 2015. An additional Aboriginal site has been identified at this locality and the alternative access route has been adjusted to avoid impact on the ERM WR01 Site. The modification is not expected to increase impacts on Aboriginal heritage.

Soil and Water impacts: The alternative access track route is on low lying land that has gentle slopes. Earthworks for the alternative route and construction facilities are consequently likely to give rise to low risks for erosion and sedimentation. Regardless of the final route, attention will need to be given to design of drainage and controls to prevent erosion and sedimentation. This location will be managed in accordance with the approved CEMP including the Construction Soil and Water Quality Management Plan and as detailed in the location specific Environmental Work Method Statement.

Construction Noise: Construction noise impacts can vary dependent on the location of noise sources relative to sensitive noise receptors. The construction of access tracks is likely to be similar for the approved route or the alternative route and noise impacts of the construction works for access tracks are not expected to change as a consequence of the modifications. All construction works need to comply with Approval Condition E5.

The new entry point off Ilparran Road provides more direct access across relatively level ground and may allow large vehicles to enter the site more efficiently and quietly, taking less time to reach their destination and with less gear changes and lower noise impact. This route allows access to Turbines 51 to 61. Provision of construction facilities at this location will reduce traffic movements on Ilparran Road and Gwydir Highway between this location and the northern site office location.

The closest residence (L71), is at a distance of 750m from the proposed new site entrance and, is an associated residence.

4.5.7 Alternative access route from Turbine 53 to Turbine 54

Epuron had proposed a lengthy access route from Turbine 52 to Turbines 54, 55 and 56. The CEMP showed a more direct route that was nevertheless compliant (within 100m of the approved route) but also steep and impacted native vegetation. The design team has identified an alternative, improved access route that follows a ridgeline from near Turbine 53 to Turbine 54. Figure 4.6 shows the alternative route (Turbine 53 to Turbine 54).

Figure 4.6

Modified access to Turbines 54, 55 and 56

The alternative route is significantly shorter than the approved route and avoids the east facing slope where the track would have been visible from Ilparran Valley viewpoints. Its location on the mostly cleared ridgeline also is consistent with ecological objectives to reduce native vegetation impacts and for improved constructability of the track and improved approach of the track to the hardstand. The direct route is unsuitable due to vegetation impacts and the steepest section of the direct route rises 30m in just 110m and is unsuitable for the transport involved.

Visual impact: The alternative access route reduces the length of access track needed to reach the three turbines on the elevated ridgeline. Avoidance of the steep slope for the approved route and simpler construction should result in less visibility of the access track and the modified location is between areas of scattered woodland that will partly screen views of the track. The approved route location on an easterly facing slope and the steep slope would have meant that the track would have been quite visible from Ilparran Valley. The modification avoids this impact. The access route location is about 4.5km south of the Gwydir Highway and overall, visual impact is likely to be low and less for the alternative access route.

Ecological impact:

The approved access track route is lengthy, partly to avoid native vegetation impacts and also to enable reduced grades for the access route. The direct route passes through an area of Ribbon Gum – Mountain Gum EEC whereas the alternative track follows a mostly cleared ridgeline that avoids the Ribbon Gum – Mountain Gum EEC. The alternative access route involves less impact on the Ribbon Gum – Mountain Gum EEC than the direct route and has improved constructability. Careful selection of the alignment of the alternative access route will minimise removal of large trees and should be an objective of the flora and fauna management, if this modification is approved.

It is proposed that the preparation of the EWMS for construction of this access track, prescribes a route that minimises impacts on native trees.

Archaeological impact: The locality was addressed by RPS Survey Unit 2 (2010) reported in EA, 2011. No Aboriginal sites have been identified at the locality and the modification is not expected to increase impacts on Aboriginal heritage.

Soil and Water impacts: While the approved access track is crosses a steep slope requiring benching into the slope, the alternative access track route from near Turbine 53 to Turbine 54 follows a ridgeline that may need less earthworks. Earthworks for the alternative route are consequently likely to give rise to lower risks for erosion and sedimentation whereas the approved route is assessed as presenting a higher risk for soil erosion and requiring more controls. Regardless of the final route, attention will need to be given to design of drainage and controls to prevent erosion and sedimentation. This location will be managed in accordance with the approved CEMP including the Construction Soil and Water Quality Management Plan and as detailed in the location specific EWMS.

4.5.8 Alternative access route from Turbine 79 to Turbine 76

Turbines 76, 77 and 78 are on elevated ridges and require careful planning of the access routes to ensure constructability and avoid vegetation impacts. The access routes shown in Epuron EA, 2011, show two steep access routes to Turbine 77 and to Turbine 78 that are considered unfeasible for the type of transport vehicles involved. These steep routes are represented by dotted lines in Figure 4.7.

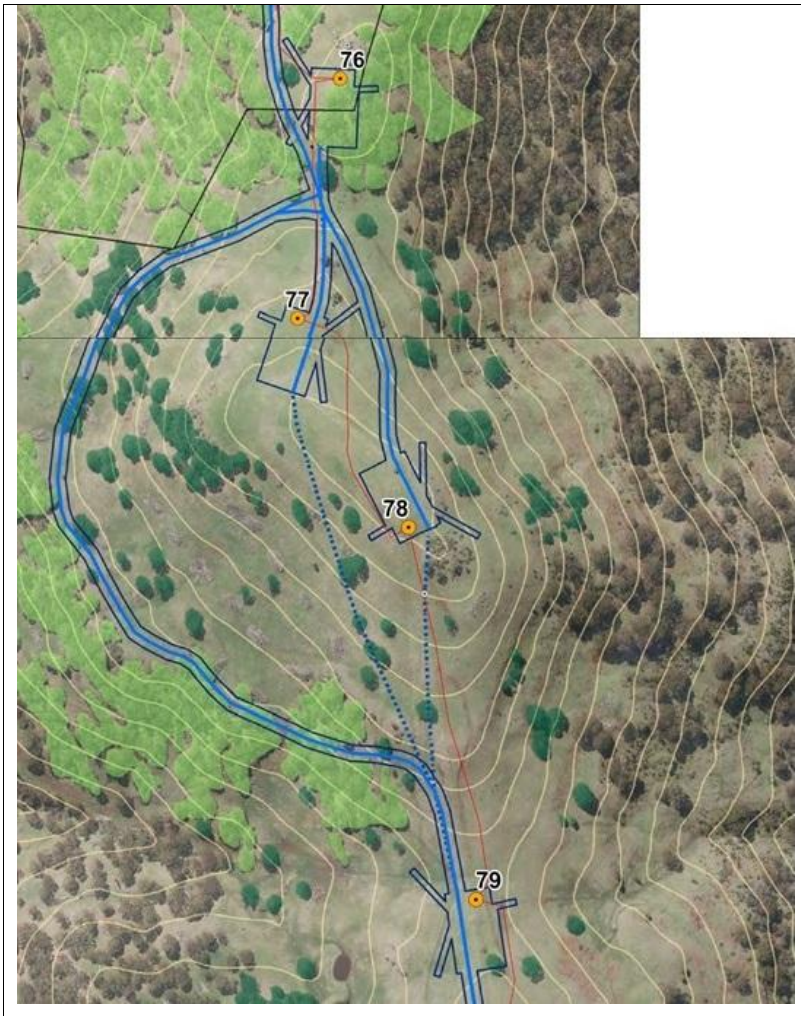

Figure 4.7

Access route Turbine 79 to Turbine 76 and for Turbines 77 and 78

The approved access route from Turbine 79 to Turbine 78 rises about 60 metres between the two turbine sites and represents a very steep grade that required the design team to review and consider alternatives.

The 11 sites to the north of Turbine 76 can also be best reached by detouring around the higher peaks where Turbines 76, 77 and 78 will be located rather than hauling large loads over elevated peaks.

A feasible alternative is to detour to the west of the ridge where Turbine 77 and 78 are located. The landowner's property access route is lower on the slope following a contour around the western side of the ridge where Turbines 77 and 78 are located. The track enables access to a saddle between Turbines 76 and 77 that allows access to three turbines (76, 77 and 78) with less challenging grades on shorter access routes. The modified access routes provide better constructability and are consistent with the landowner's selection of suitable access routes.

Visual impact: The alternative access route from Turbine 79 to 76 and approaches to Turbines 77 and 78 reduce the length of access track that occurs on steep slope and accordingly the amount of benching in the slope for the access tracks. The locations for the approved and alternative tracks have limited viewfields with few residences that are associated landowners. Accordingly, visual impact is likely to be low, regardless of the route adopted.

Ecological impact:

The alternative access track route passes around the western side of the ridge (where T77 and 78 are located) passes through pasture with various degrees of clearing and scattered trees and patches of Ribbon Gum – Mountain Gum woodland. Several routes would be possible and optimising a route with least vegetation removal could be best achieved in conjunction with an ecologist to advise on native vegetation to be avoided.

The alternative and approved access routes are located in similar ecological settings. Careful selection of the alignment of the access route will be needed to avoid removal of large trees and should be an objective of the flora fauna management if this modification is approved.

It is proposed that the preparation of the EWMS for construction of this access track, prescribes a route that minimises impacts on native trees.

Archaeological impact: The locality was addressed by RPS Survey Units 4 and 8 (2010) reported in EA, 2011 with supplementary review in October 2015. No Aboriginal sites have been identified at the locality and the modification is not expected to increase impacts on Aboriginal heritage.

Soil and Water impacts: While the approved access tracks are on steep slopes, the alternative access track route Turbine 79 to Turbine 76 varies from near level to gentle slopes. Earthworks for the alternative route are likely to give rise to low risks for erosion and sedimentation whereas the approved routes are assessed as presenting higher risks. Regardless of the final route, attention will need to be given to design of drainage and controls to prevent erosion and sedimentation. This location will be managed in accordance with the approved CEMP including the Construction Soil and Water Quality Management Plan and as detailed in the location specific EWMS.

4.5.9 Alternative route from Kelleys Road to Turbine 83 and Southern construction compound

A modification is proposed for an alternative access route involving section of the access route from Kelleys Road to Turbine 83 (Figure 4.8). The southern part of the access route from Kelleys Road to Turbine 83 would be moved to the east at the request of the landowner. Instead of passing to the north of the landowner's residence, L180, the landowner has requested that the access route be constructed to the east of the residence running north to a point where it joins the approved route to Turbine 83. This coincides with the revised location for a southern construction compound and laydown area also shown in Figure 4.8 and in Plate 4.4. Both changes are at the request of the landowner.

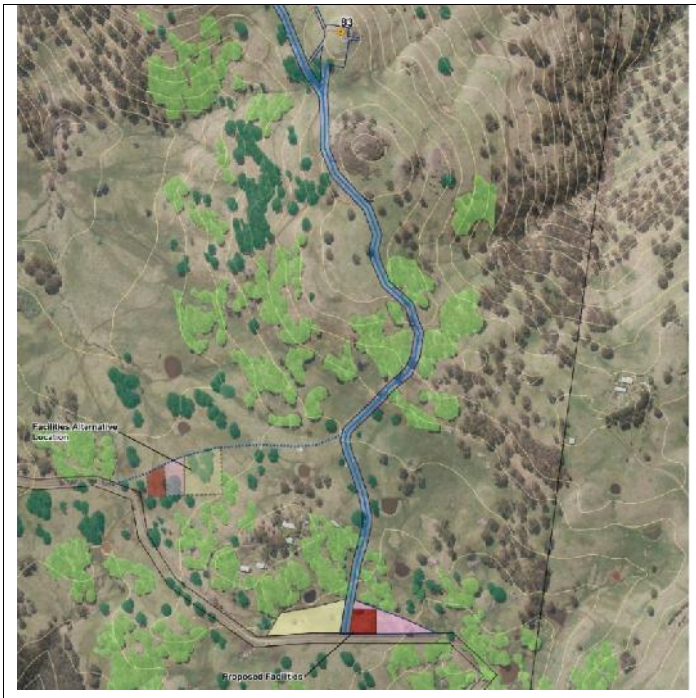

Figure 4.8

Modified access route from Kelleys Road to Turbine 83; and

Additional construction compound and laydown area at southern site entry point

The alternative access route is shorter by 60m than the approved access route and marginally reduces the extent of civil works. Additionally, vehicles travelling to Turbine 83 and other turbines further north (18 turbines in total that are reached via this access) will for each return trip travel 120m less distance on onsite tracks and approximately 1km less on Kelleys Road. Additionally the access now only passes residence L180 on the eastern side whereas the approved arrangement would have had vehicles passing on southern and northern sides of residence L180.

The alternative route is closer to an associated residence to the east (L170), however as the residence is beyond an intervening ridgeline, neither the approved nor modified section of the access route would be visible from the residence. This alternative route is slightly shorter, 60m less than the approved route. Both routes commence from Kelleys Road so would be equally visible from Kelleys Road.

The southern construction facility is the first of three entry points reached by vehicles travelling west on Kelleys Road. Kelleys Road has low traffic volumes and the section west of this entry serves only four properties that are all associated with the WRWF Stage 1 project.

Visual impact: There will be limited visibility of this access track from Kelleys Road or neighbouring properties, particularly residence L170. The location where the track leaves Kelleys Road will be visible from the road but this was the case either for the approved route or alternative route. The alternative route has moved closer to an associated residence to the east (L170). The residence will be about 550m to the east of the alternative access route (further than parts of the approved route to T83) and is beyond an intervening ridgeline. Neither, the alternative section of the access route or, the approved section it replaces would be visible from the residence L170. The southern construction facilities will be visible form Kelleys Road but are temporary and will be removed after completion of construction works.

Plate 4.4

Site of Southern Construction compound and Laydown area

Ecological impact:

The alternative and approved access routes are located in similar ecological settings. Careful selection of the alignment of access route will be needed to avoid removal of large trees and should be an objective of the flora fauna management if this modification is approved and addressed by the location specific EWMS. It is proposed that the preparation of the EWMS for construction of this access track, prescribes the route to minimise impacts on native trees. The construction compound and laydown area are in an area of exotic vegetation.

Archaeological impact: The locality was addressed by RPS Survey Unit 6 (2010) reported in EA, 2011 with supplementary review by ERM in October 2015. No Aboriginal sites have been identified at the locality and the modification is not expected to increase impacts on Aboriginal heritage.

Soil and Water impacts: Both the approved and the alternative access track routes cross areas with gentle slopes and earthworks here are likely to give rise to low risks for erosion and sedimentation. Regardless of the route selected, attention will need to be given to design of drainage and controls to prevent erosion and sedimentation. The construction facilities will need to incorporate drainage controls for areas of disturbed land. This location will be managed in accordance with the approved CEMP including the Construction Soil and Water Quality Management Plan and as detailed in the location specific EWMS.

4.5.10 Alternative route Kelleys Road to Turbine 109

The alternative access track route to Turbine 109 from Kelleys Road is shown in Figure 4.9. The alternative route is about 400m shorter than the approved route. It has been moved away from the route, proposed by Epuron, that went straight past the Melrose residence and nearby stockyards. Apart from the disturbance at the residence, the route had potential to disrupt normal farming activities occurring in the vicinity of the stockyards. The alternative route enters the Melrose property on its western boundary, about 500m west of the location in the application documents. It provides the shortest most direct route from Kelleys Road to Turbine 109.

Visual impact: There will be limited visibility of the alternative access track from Kelleys Road or neighbouring properties. The location where the track leaves Kelleys Road will be visible from the road but this was the case either for the approved route or alternative route. A low ridge on the southern side of Kelleys Road will screen views of the bulk of the access track from Kelleys Road. A row of pines along the western property boundary

of Melrose property, that the access track will run parallel to, will screen views of the access track from the neighbouring property to the west.

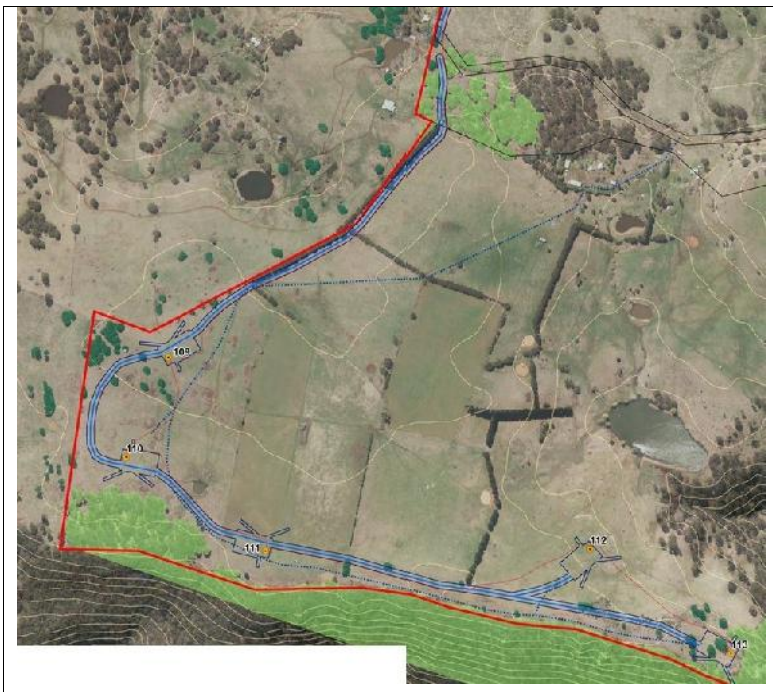

Figure 4.9

Modified access route to Turbine 109 and Turbine 110.

Ecological impact: The alternative access route passes through about 150m of relatively open woodland of the Ribbon-Gum Mountain Gum EEC before passing into the Melrose property that has been extensively cleared and cultivated and supports predominantly exotic vegetation.

The principal area where vegetation impacts can be reduced are for the open woodland area adjacent Kelleys Road. Careful selection of the alignment of access road when leaving Kelleys Road to avoid removal of large trees should be an objective of the flora fauna management if this modification is approved. It is proposed that the preparation of the EWMS for construction of this access track, prescribes the route to minimise impacts on native trees.

Archaeological impact: The locality was addressed by RPS Survey Units 4 and 8 (2010) reported in EA, 2011 with supplementary review by ERM in October 2015. No Aboriginal sites have been identified at the locality and the modification is not expected to increase impacts on Aboriginal heritage.

Soil and Water impacts: Both the approved and the alternative access track routes cross areas with gentle slopes. Earthworks here are likely to give rise to low risks for erosion and sedimentation. Regardless of the route selected, these routes will require design of drainage and controls to prevent erosion and sedimentation. This location will be managed in accordance with the approved CEMP including the Construction Soil and Water Quality Management Plan and as detailed in the location specific EWMS that must be endorsed by the ER prior to construction commencing.

Noise impact: The change to the access route to Turbine 109 moves the track approximately 500m from the Melrose Homestead (J181) and, reduces the access track length by about 400m. This route provides access to five turbine sites, Turbines 109 to 113. The reduced track length will reduce haulage times at this location and

will reduce the construction noise impact for the residence (J181). The access point is closer to (J180) that is also an associated residence. Both residences, J180 and J181 are associated residences.

4.6 Modifications to parts of the 33kV electrical collections circuits

The Project Approval authorised 33kV electrical collections circuits including the following:

- Approximately 46.7km of 33kV underground cables;
- 1.3km of 33kV overhead transmission line from Turbine 62 to a point between Turbine 31 and 35 where the overhead line reverts to an underground cable which connects to the substation; and
- 0.5km of 33kV overhead line from Turbine 57 to a point to the east of Turbines 58 and 59.

The EA, 2011 described the underground cables being generally located alongside access tracks but in places this would result in sub-optimal arrangements, excessive lengths of cabling, overuse of valuable metals and materials to produce the excess amount of cables and greater electrical losses reducing the efficiency of the wind farm. In other cases where access tracks are being cut across steep slopes, then the need to install cables beside the track complicates the access track construction, has greater safety risks and can make drainage design more difficult. As a consequence of these factors, more direct routes for cabling are favoured where this can be done without increased environmental impacts, particularly avoiding increased impact on conservation significant native vegetation.

Underground cables generally require a narrow easement sufficient to enable installation of the cable, involve relatively short periods of disturbance and are generally rehabilitated fairly quickly after the cables have been laid. While the potential cables routes are shown on the layout plans accompanying the modification application, their final locations will only be determined in consultation with contractors and be subject to review and approval of the EWMS by the Project's Environmental Representative.

4.6.1 Modification, alternative 33kV underground cable in place of 33kV overhead line

It is proposed that the 0.5km of 33kV overhead line from Turbine 57 to 59 (Figure 4.10, be replaced with a 33kV underground cable that goes directly from Turbine 57 to Turbine 58. The changed connection route is shorter and is also likely to significantly reduce native vegetation impacts due to the greater clearing required for overhead transmission lines compared to the underground cable. The underground cable route can utilise part of the access route west of Turbine 57 and clearings between Turbine 57 and Turbine 58.

Visual: The modification to substitute underground cable for the approved 33kv overhead transmission line is likely to reduce the visual impact of this project component. This is due to a reduced area for clearing and avoidance of above ground structures and conductors needed for the overhead line. Consequently, there will be no increased visual impact due to this modification.

Ecology: The 33kV transmission line route from Turbine 57 to a point near Turbine 59 passes through areas of Ribbon Gum – Mountain Gum EEC where clearing will be needed to provide safe electrical clearances from the line. It is a project objective to reduce impact on this EEC. By careful selection of the underground cable route, the underground cable will have a lesser impact area than would be the case for the overhead line.

Archaeology: The locality was addressed by RPS Survey Unit 2 (2010) reported in EA, 2011. There were no Aboriginal sites identified for this area and the modification is not expected to increase impacts on Aboriginal heritage.

Soil and Water: Trenching can involve more soil disturbance than for an overhead transmission line. However, the trenching is only left open for a short period, then backfilled and rehabilitated. Most areas of underground cabling are restored much sooner than other project components.

Bushfire risk: The change from an overhead line to underground cable will reduce risk of bushfire at this location.

The changed from 33kV overhead line 33kV underground cable from Turbine 57 is likely to result in decreased environmental impact.

Figure 4.10

Alternative 33kV electrical collections circuit

Potential 33kV overhead line shown in EA, 2011 replaced by 33kV underground cable directly from Turbine 57 to 58. Cable route to be confirmed in EWMS prior to construction.

Reduced clearing for cable route compared to overhead line route.

4.7 Concrete batch plants

Concrete batch plants are ancillary facilities and are temporary for construction phase only.

Portable concrete batch plants are needed to provide the concrete required for the large turbine footings and the location and design of the batch plant sites need to address the nature of the activity and site sensitivities. Condition E18 provides criteria that need to be satisfied or approval of the Secretary obtained for the location. Issues to be managed include, vegetation and heritage impacts, traffic flows, material storage, spillage of materials, noise, visual and hours of operation. An EWMS will be required for each Batch Plant location.

Batch plants are operated on a temporary basis, as required. The main purpose is to produce concrete required for turbine footings. For Stage 1, to supply concrete for the 70 turbines will require that the batch plant(s) is/are operated for 70 days. This will be spread across the three proposed batch plant sites and reduces the number of operating days at each Batch Plant site.

Planning for WRWF Stage 1 has developed three potential batch plant sites as follows:

- Northern entry (shown in EA, 2011) (Approximately 1km from residence H40, far side of Gwydir Hwy;
- White Rock Mountain (additional - not identified in EA, 2011) (More than 2km from nearest residence); and
- Southern site entry – adjacent Kelleys Road (additional - not identified in EA, 2011) (250m from Residence L180 and approximately 850m from Residence L170) Both Residences L170 and L180 are associated residences.

All the Batch Plant sites have been assessed against the criteria in Condition E18, see Table 5.2.

4.7.1 Additional Batch Plant near Turbine 20

An additional Batch Plant is proposed at White Rock Mountain within the Project Area but was not identified in EA, 2011. The proposed location is more than 2km from nearest residence which is associated. The site is close to Turbine 20 and the site access track network. The site is cleared, relatively level and close to an existing large shed. It is not close to any waterways or subject to flooding and does not impact the registered Aboriginal sites within the project area. The location does not require the heavy vehicles to travel through residential areas or affect the land use of adjacent properties. Adequate room is available at the proposed location for storage of raw materials.

4.7.2 Additional Batch Plant at Southern entry adjacent Kelleys Road

An additional Batch Plant is proposed at the Southern entry point adjacent Kelleys Road within the Project Area but was not identified in EA, 2011. The proposed location is close to associated residences, approximately 250m from the nearest residence (L180) which is associated and where the landowner has agreed with the location and approximately 850m from a neighbouring residence that is also associated. The site is at the location of the proposed southern construction compound and on the site access track network. The site is cleared and gently sloping. It is 275m from the nearest waterway and is not subject to flooding. The location does not impact the registered Aboriginal sites within the project area. The location does not require the heavy vehicles to travel through residential areas or affect the land use of adjacent properties. Adequate room is available at the proposed location for storage of raw materials.

5 ADDITIONAL STAGE 1 PROJECT CLARIFICATIONS

Additional to the details of proposed modifications and assessment of the modifications, this EA also provides clarification of a number of other aspects of the project related to Stage 1. These clarifications do not represent modifications being sought for the project but are included for completeness.

These include:

- clarifications of the proposed locations of Stage 1 ancillary facilities and other clarifications to the project description contained in the EA 2011; and
- clarification of the impacts described in the EA 2011, based on more recent information. This has been described in Section 3.

5.1.1 Clarifications of locations of Stage 1 ancillary facilities (temporary for construction)

Pre-construction planning and consultation with potential contractors for the WRWF project has led to clarification of the locations of ancillary facilities.

An ancillary facility, as defined in the Project Approval, is a*: Temporary facility for construction including for example an office and amenities compound, construction compound, batch plant (concrete or bitumen), materials storage compound, maintenance workshop, testing laboratory or material stockpile area*.

Locations of ancillary facilities have been adjusted based on pre-construction planning investigations to improve project constructability, employee safety and compliant environmental performance. Changes to ancillary facilities are not modifications to the project. Rather, they are required to be sited in accordance with the criteria contained in Condition E18. For the purpose of this assessment, ancillary facilities that are additional to those described in EA, 2011 are identified and assessed in this EA.

Table 5.1 lists the proposed ancillary facilities.

Table 5.1 – Details of Ancillary Facilities and any changes to location

Ancillary Facility item	Approval status	Revised or new location	Reason for change
Not subject to modification application, identified in EA, 2011			
Northern construction compound, site office/amenities building and laydown area	Addressed in EA, 2011, Figures 3.2, 3.8. Near northern entry and Gwydir Highway.	Moved to northeast by approximately 130m Appendix A – Sheet 1	Further from scattered native vegetation. Better vehicle access clear of overhead line works.
Northern batch plant (1st of 3 proposed sites)	Addressed in EA, 2011, Figures 3.2, 3.8 Near northern site office.	Minor change, same location, reoriented layout. Appendix A – Sheet 1	Clear of main access track, improved construction access.
Mobile rock crusher	Addressed in EA, 2011, Section 3.7	To be determined by contractor in conjunction with EWMS development and ER review process	No changes, Locations to be confirmed during construction and subject to siting criteria in Condition E18.
Addressed by Modification Application (new facility not addressed by EA, 2011)			

North eastern construction compound, office/amenities building and laydown area.	Not addressed by EA, 2011. Addressed by modification application.	Additional facility accessed from Ilparran Road. Appendix A – Sheet 17	Additional facility and site entry point. Relocated new access route and construction compound are both within exotic pasture. Reduced traffic on local roads.
Batch Plant White Rock Mountain (2nd of 3 proposed sites)	Not addressed by EA, 2011	Additional facility, near Turbine 20 on White Rock Mountain	Batch plant closer to elevated turbine sites, reduces cycling time for concrete agitator trucks and ascent of steep grades with full concrete loads that has risks of spillage.
Southern construction compound, office/amenities building and laydown area. (approx. 18km from northern office via Kelleys Road and site roads)	Not addressed by EA, 2011. Addressed by this EA.	Additional facility, access from Kelleys Road, entry to Turbines 83 to 62.	Facility needed at southern extent of project due to distance (approx. 18km) from northern office, OH&S issues and potential separate access via Kelleys Road. Site entry moved to eastern side of host landowner residence at landowner request
Southern batch plant (3rd of 3 proposed sites)	Not addressed by EA, 2011. Addressed by modification application.	Additional facility, at Southern construction compound	Batch plant closer to southern turbines sites, reduces cycling time for concrete agitator trucks and enables direct delivery of materials via Kelleys Road.

All ancillary facilities are managed in accordance with:

- Condition E18 of the Project Approval which makes provision for changes to locations of ancillary facilities by stipulating criteria for siting ancillary facilities and also setting out a process whereby the proponent identifies the locations of ancillaries in the CEMP and provides the consideration of respective locations in respect of the siting criteria; and
- Condition E22(a) which requires preparation of the Construction Compound and Ancillary Facilities Management Plan (CCAFMP). The Construction Compound Ancillary Facilities Management Plan, a sub-plan of the WRWF Stage 1 CEMP (submitted to DPE on 20 October 2015) includes a review of the proposed locations of ancillary facilities against the siting criteria under Condition E18. Where any of the ancillary facilities do not meet the siting criteria then the proponent is required to demonstrate to the satisfaction of the Secretary that there will be no adverse impact from the facilities construction or operation.
- The ancillary facilities proposed for the Stage 1 project are shown on layout drawings in Annexure A of the CEMP. The modified locations are shown in Appendix A of this EA and are also listed in Table 5.1

with a summary of changes and reasons for the changes. Only the facilities that are additional to those in EA, 2011 are assessed in this EA. An assessment against the siting criteria for ancillary facilities is provided in Table 5.2.

Additional ancillary facilities considered by this assessment in Section 4 have included:

- Additional construction facilities at the northeastern entry point. This enables transport of equipment direct to the location where they are needed, reduces traffic on local roads by avoiding need for construction teams to return to the northern site office on a regular basis or transport equipment from laydown areas at northern entrance to laydown area at northeasten entrance location (Section 4.5.6);
- Additional construction site facilities at the southern site entry, construction compound and laydown area have been moved to the new entry point at landowner request;
- Batch plant near to Turbine 20 site on White Rock Mountain. This reduces cycle times for a fleet of concrete agitator trucks and reduces potential for spillage if hauling up steep grades (Section 4.2.1); and
- Batch Plant at Southern entry point. This provides an appropriate location for delivery of concrete to the southern and south eastern turbine sites reducing cycling times, number of trucks needed in the fleet and improves efficient management of the project (Section 4.7.2).

5.1.2 Other clarifications for the project description from that in EA, 2011

The Epuron EA, April 2011 and Submissions Report, November 2011 provide the basis of assessments for the project. They included the range of equipment specifications and the likely layout for the project. Since GWCA acquired the project in 2014, WRWFPL has undertaken further assessments in preparation for implementation of Stage 1 of the project. The assessments have included, ecological studies, heritage assessments, noise studies, 132kV transmission line visual impact assessment, shadow flicker assessment, air safety consultation, mineral resources consultation, telecommunications interference assessment and consultation with service providers. The Stage 1 CEMP was submitted to DPE on 20 October 2015 and is currently under review to obtain Secretary approval of the CEMP.

The Epuron EA, 2011 provided details of the proposed project. This EA for the proposed modifications described in Section 2.1 has the benefit of additional detail on turbines to be used for Stage 1, recent studies through 2014 and 2015 and results of further consultation with agencies and the community.

Consultation initiatives have included:

- Considerable agency consultation has occurred including with DPE, Councils, Roads and Maritime Services (RMS), Office of Environment and Heritage (OEH), Environment Protection Authority (EPA), Crown Lands, AirServices Australia (ASA) and the Civil Aviation Safety Authority (CASA); and
- The Community Consultative Committee was re-established in 2015 and held meetings in August and November 2015. A series of newsletters has also been distributed.

Table 5.2 - WRWF – Modification Application – Environmental Assessment, November 2015 – Assessment of Ancillary Facilities against Condition E18, Siting Criteria

Facility	Location	*(a) be located more than 50 metres from a waterway*	*(b) be located within or adjacent to the project;*	*(c) have ready access to the road network;*	*(d) be located to minimise the need for heavy vehicles to travel through residential areas;*	*(e) be sited on relatively level land*	*(f) be separated from nearest residences by at least 200 metres (or at least 300 metres for a temporary batching plant);*	*(g) not require vegetation clearing beyond that already required by the project;*	*(h) not impact on heritage sites (including areas of archaeological sensitivity) beyond those already approved to be impacted by the project;*	*(i) not unreasonably affect the land use of adjacent properties;*	*(j) be above the 20 year ARI flood level unless a contingency plan to manage flooding is prepared and implemented; and*	*(k) Provide sufficient area for the storage of raw materials to minimise, to the greatest extent practical, the number of deliveries required outside standard construction hours.*	*Criteria met?*	*Additional actions required*
Northern Construction Compound, site office/amenities Building and Laydown Area 1	Northern end of Project, near access to Gwydir Highway	Yes, more than 200m from ephemeral drainage line	Yes, within project boundary	Yes, access close to Gwydir Highway	Yes, facility is located in rural area.	Yes, located on relatively flat ridgeline with approx. 5% slope.	Yes, approx. 700m	Located within area of exotic pasture in close proximity to scattered native vegetation. Any adjustment in location to avoid isolated trees and minimise impact on native vegetation.	No known sites in immediate vicinity.	Yes, located sufficient distance from adjacent residences and will be rehabilitated following construction.	No flooding data available, but is located on elevated land, approx. 200m from ephemeral drainage line.	Yes, 1ha considered sufficient	Yes	None, although a location specific EWMS will be prepared for this facility.
Concrete Batch Plant (northern site access)	Northern end of Project, near access to Gwydir Highway	Yes, approx. 100m from ephemeral drainage line	Yes, within project boundary	Yes, access close to Gwydir Highway	Yes, facility is located in rural area.	Yes, located on relatively flat ridgeline with approx. 4% slope	Yes, approx. 900m	Located within area of exotic pasture in close proximity to scattered native vegetation. Any adjustment in location to avoid isolated trees and minimise impact on native vegetation.	No known sites in immediate vicinity.	Yes, located sufficient distance from adjacent residences and will be rehabilitated following construction.	No flooding data available, but is located on elevated land, approx. 100m from ephemeral drainage line.	Yes, 0.5ha considered sufficient	Yes	None, although a location specific EWMS will be prepared for construction of the batching plant.
Concrete Batch Plant (Turbine 20)	Adjacent to Turbine 20	Yes, approx. 350m from ephemeral drainage line	Yes, within project boundary	Yes, via Gwydir Hwy or Kelleys Road and site access tracks	Yes, facility is located in rural area.	Yes, located on relatively flat land with <5% slope	Yes, approx. 2.9km	Yes within cleared area of pasture comprising mostly exotic pasture.	No known sites in immediate vicinity.	Yes, located sufficient distance from adjacent residences and will be rehabilitated following construction.	No flooding data available, but is located on elevated ridgeline	Yes, 0.5ha considered sufficient	Yes	Avoid impact on existing storage shed.
Concrete Batch Plant (southern site access)	Southern portion of Project, access from Kelleys Road	Yes, approx. 275m from drainage line	Yes, within project boundary	Yes, adjacent Kelleys Road at entry to site access track	Yes, facility is located in rural area.	Yes, located on relatively flat land with approx. 5% slope	No, approx. 200m. Location requested by host landowner that owns the residence.	Located within area of exotic pasture in close proximity to scattered native vegetation. Any adjustment in location to avoid isolated trees and minimise impact on native vegetation.	No known sites in immediate vicinity.	Yes, located 780m from adjacent residence and will be rehabilitated following construction. Agreement with neighbour for facility location.	No flooding data available, but is located on gently sloping land, approx. 275m from drainage line.	Yes, 0.5ha considered sufficient	Yes	Residence located to the east has been consulted regarding the proposed construction office and laydown facility and has agreed to location. An EWMS would be produced to mitigate potential environmental impacts.
North Eastern Construction Compound, office/amenities building and laydown area.	Eastern portion of Project, near access from Ilparran Road.	Yes, approx. 130m from ephemeral drainage line.	Yes, within project boundary	Yes, access via Ilparan Road, which connects to Gwydir Highway	Yes, facility is located in rural area.	Yes, located on relatively flat land with approx. 5% slope	Yes, approx. 1.2km	No – to be confirmed via ecological assessment prior to construction. EWMS to identify facility extent that avoids clearing.	No known sites in immediate vicinity.	Yes, located sufficient distance from adjacent residences and will be rehabilitated following construction.	No flooding data available, but is located on elevated land, approx. 130m from drainage line. Expected to drain well.	Yes, 0.5ha considered sufficient	Yes	None, although a location specific EWMS will be prepared for laydown facility.
Southern Construction compound, office/ amenities building and Laydown Area.	Southern portion of Project, access from Kelleys Road.	Yes, approx. 120-300m from drainage line.	Yes, within project boundary	Yes, via Kelleys Road, Maybole, Grahams Valley Road and New England Highway	Yes, facility is located in rural area.	Yes, located on relatively flat land with approx. 5% slope	No, approx. 170m	Preliminary ecological assessment indicates site is suitable.	No known sites in immediate vicinity.	Yes, although located 700-800m of neighbouring residence. Will be rehabilitated following construction.	No flooding data available, but is located on sloping land, approx. 120-300m from drainage line.	Yes, 0.5ha considered sufficient	No	Landowner of Residence located to the east has agreed to the proposed office and laydown facility. Confirm no significant increase in impacts to ecology. An EWMS would be produced to mitigate potential environmental impacts.

6 PROPOSED MITIGATION MEASURES

The modifications represent minor changes to the project layout and constitute refinements to the design rather than being alternative designs. In a number of cases, the refinements enable reduced environmental impacts to be achieved.

A Construction Environmental Management Plan (CEMP) has been prepared for WRWF Stage 1 and submitted to DPE for approval on 20 October 2015. The management measures in the CEMP are appropriate to manage all impacts resulting from the modified project, and accordingly no further mitigation measures are proposed. Subject to the Modification Application being approved, the CEMP would be updated by replacement of Annexure A of the CEMP (Set of Layout Plans) with the Layout allowed by a modified approval.

The Stage 1 CEMP also sets out the process for development of location and task specific EWMS that require endorsement by the ER prior to construction works commencing at the respective localities. These provide an additional level of surety that the works will address potential environmental risks and environmental performance requirements.

Approval of the modification will allow the project to be implemented with lower impact.

7 CONCLUSIONS

This EA supports a modification application (MP10_160 MOD 3) for WRWF. It has documented a number of minor changes to the detail of the layout or facilities that will form part of the Stage 1 WRWF project. It also provides assessments of the change in impact for the respective modifications and demonstrates the project, as modified, does not significantly increase the impact of the project and overall marginally reduces the project's impact.

This EA concludes that the proposed modifications do not increase environmental impacts. There is improved constructability, construction and operational efficiencies, reduced resource use over the project life and reduced vegetation impacts during construction from the modifications.

8 REFERENCES

Epuron	White Rock Wind Farm, Environmental Assessment, April 2011
Epuron	White Rock Wind Farm, Submissions Report, November 2011
DPE	Project Approval Conditions, MP10_160 MOD2, 24 July 2015

Appendices

Appendix A - WRWF Stage 1 – Modification Application - Layout Plans, November 2015
Appendix B - WRWF Stage 1 – Modification - RPS Vegetation mapping, November 2015
Appendix C - WRWF Stage 1 – Modification - ERM Aboriginal Heritage Assessment, October 2015
Appendix D - WRWF - Visual Assessment 132kV transmission line modification, November 2015
Appendix E - Letter from TransGrid to DPE re WRWF Modification of Transmission Line Route