

Liverpool Range *Wind Farm*

Response to Submissions Report | May 2017

SSD 6696
(MP10-0225)

EPURON

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Wind Farm

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1 Executive Summary

1.1 Overview

The Liverpool Range Wind Farm is a 282 turbine wind farm project proposed to be located to the east of Coolah and northwest of Cassilis, approximately 325 km northwest of Sydney in Central Western NSW. The proposed site, bounded by the Coolah Cassilis Road to the South and Coolah Tops National Park to the north east, is located on Crown, freehold and leasehold land within and adjacent to agricultural areas which are predominantly sheep and cattle country.

The Planning Process

Epuron commenced developing the project in 2009 under Part 3A of the Environmental Planning & Assessment Act 1979 (EP&A Act). A planning application for the Liverpool Range Wind Farm was lodged with the Department of Planning and Environment (DPE) on 11 February 2011 and Director General's Requirements were issued on 31 March 2011 to outline the work required in assessing the project.

An Environmental Assessment (EA) for the Liverpool Range Wind Farm was submitted to DPE on 7th December 2012, addressing the requirements raised by the Director General. After a number of revisions, the EA was placed on public exhibition from 1 August 2014 to 1 October 2014. In response, DPE received 49 submissions from 32 members of the public and 12 government agencies (noting some individuals lodged multiple submissions). DPE assigned individual identification numbers to each submission and provided copies of those submissions to Epuron for response.



Purpose of this Report

Since providing the EA for exhibition, Epuron has continued to refine the project including input from the involved landowners, neighbouring property owners, government agencies and other stakeholders. This has included continuing consultation with these stakeholders with a focus on submissions received in response to the EA.

This Response to Submissions (RTS) provides the revised wind farm infrastructure layout and responds to each of the submissions to the exhibited Environmental Assessment.

The NSW Planning process was reformed in 2011 and Part 3A of the Act was repealed. As a result the project was reclassified as 'Part 3A transitional' and subsequently Part 4. DPE will now assess the project under Part 4 of the EP&A Act and make its recommendations to the Planning Assessment Commission for determination.

1.2 Proponent

The Proponent for the project is Epuron Pty Ltd, an Australian renewable energy company established in North Sydney in 2003. Epuron is one of the most experienced wind energy development companies in NSW, as well as a significant developer of solar projects across Australia. Our projects include:

- ▶ Cullerin Range Wind Farm (15 turbines, 30 megawatts, operating)
- ▶ Gullen Range Wind Farm (73 turbines, 165 megawatts, operating)
- ▶ 7 megawatts of off-grid solar projects owned and operated by Epuron including:
 - TKLN Solar;
 - Uterne Solar at Alice Springs; and
 - Yulara Solar at Ayers Rock Resort
- ▶ White Rock Wind Farm (up to 119 turbines, 175MW under construction)
- ▶ Silverton Wind Farm (up to 170 turbines, 203MW under construction)
- ▶ Yass Valley Wind Farm (up to 79 turbines, approved)
- ▶ Rye Park Wind Farm (up to 84 wind turbines, recommended for approval)

Epuron is a leader in its field with 573 MW of wind turbines in operation or construction resulting from its development work, significantly more in NSW than any other developer. Epuron also owns and operates more off-grid utility-scale solar power stations than any other Australian company.



1.3 Site Selection

The Liverpool Range Wind Farm site was first identified in 2008 through analysis of wind speed mapping and various constraints across a number of areas of NSW. The site offers an excellent wind resource, as well as proximity to a high capacity existing transmission line, relatively sparse population, interested and engaged landowners who hold large contiguous properties, good access to transport, and the potential for generally low impacts to existing ecological values.

Epuron's ongoing site investigations since that time have confirmed that the site appears commercially viable, and environmental impacts resulting from the project area have been avoided and minimised to an acceptable level based on the findings of independent experts.

1.4 Project Outline

The Liverpool Range Wind Farm will include up to 282 wind turbines, each with a capacity of between 1.5 and 3.6 megawatts. Each wind turbine will have three blades mounted on a tubular steel tower, with a combined height of blade and tower limited to a maximum tip height of 165 metres.

The Wind Farm proposed in this Development Application includes the following:

- ▶ **Turbine Infrastructure:** for each wind turbine, an adjacent pad mounted turbine transformer, crane hardstand area, construction lay down area, access track and underground cabling;
- ▶ **Connection Substation:** a 330 kV switchyard located near Ulan, allowing connection to the existing TransGrid 330 kV Wellington - Wollar transmission line;
- ▶ **Main Powerline:** a single or double circuit overhead powerline of up to 330 kV running from the Connection Substation at Ulan to the wind farm site, and then on to the wind farm Collection Substations;
- ▶ **Collection Substations:** up to 4 collection substations located on the wind farm site to increase the voltage from the wind turbine reticulation voltage (22 kV or 33 kV) to the main powerline voltage (330 kV);
- ▶ **Site Reticulation:** underground and overhead 22 kV or 33 kV electrical reticulation cabling and conductors linking the wind turbines to the Collection Substations;
- ▶ **Access Tracks:** access tracks to connect each of the wind turbines and the related facilities, and for the purpose of building other infrastructure;
- ▶ **O&M Facilities:** operation and maintenance facilities including site parking, a control room, maintenance and equipment storage facilities;
- ▶ **Construction Facilities:** temporary construction facilities including concrete batching plants, rock crushing equipment, laydown facilities, and construction compounds;
- ▶ **Road Upgrades:** minor upgrades to local roads, intersections and street furniture, as required for the delivery, installation and maintenance of the project;
- ▶ **Wind Monitoring:** temporary and permanent wind monitoring masts for wind speed verification, weather and general monitoring purposes; and
- ▶ **Subdivision of Land:** subdivision of land owned by Ulan Coal Mine Ltd (UCML) required for the Connection Substation, and removal of this land from UCML's mining area, as required.

The wind farm has been developed to allow its construction and commissioning to be done in stages. This allows the project to be increased to its full capacity over time to meet the demands of the energy market as renewable energy requirements increase.

1.5 Project Benefits

The Liverpool Range Wind Farm will make a substantial contribution to renewable energy generation in NSW and to the achievement of Federal and State policy objectives. Based on the proposed 282 wind turbines and a capacity of 3.6 MW per wind turbine, the wind farm will:

- ▶ produce 2,948 GWh of clean renewable electricity annually, sufficient for more than 400,000 homes and providing around 4.2 percent of NSW electricity needs (AEMO, 2016) on an annual basis;
- ▶ save 2.5 million tonnes of greenhouse gas emissions in its first full year of operation, and over 50 million tonnes of greenhouse gas emissions over its life (NSW OEH, 2017);
- ▶ offer significant economic benefits at the local, regional and State level, with the potential to inject funds of up to \$1,494 million into the Australian economy (SKM, 2012); and
- ▶ contribute to state, federal and international goals to diversify energy resources, increase renewable energy generation and reduce greenhouse gas emissions.

Local Benefits

The project will create local employment and increased demand and support for local goods and services during both the construction and operation phases. It is estimated to create around 800 jobs in the region during the construction phase. The ongoing operations and maintenance requirements are expected to provide up to 47 jobs locally and up to 78 across NSW once fully constructed (SKM 2012). As a result, new families may come into the area providing additional growth to the community.

The project will also inject funds into the local economy through payments to involved landowners and community funding payments. The wind farm construction also offers indirect benefits and opportunities for improvements in infrastructure (including improvements to the local road network), services, accommodation, tourism and ecology.

Federal and State Benefits

The project will contribute clean, competitively-priced energy to the NSW market. Importantly, while the price of fossil fuels changes rapidly due to Australia's fossil fuel resources being globally traded, the project provides a source of power with a very predictable cost years into the future.

The Liverpool Range Wind Farm will contribute to the NSW Government's target of achieving net zero greenhouse gas emissions by the year 2050 under the NSW Climate Change Policy Framework, and meets the objectives of the NSW Renewable Energy Action Plan.

The project will help the State and Federal Governments achieve their respective target of providing at least 20% of consumed electricity from renewable sources by 2020.

It will also help the Federal Government meet the commitments it made during negotiations of the UN International Panel for Climate Change where the international community signed the Paris Agreement to hold the increase in global average temperature to well below 2 °C above pre-industrial levels.

1.6 Community Consultation

Community consultation has been on-going throughout the process since 2009 with a number of information days held at Coolah and Cassilis, including information sessions for local businesses. The Community Consultative Committee has held 11 meetings, one of which was a workshop for representatives of the community and councils to explore the options for the operation of the community enhancement fund (Epuron, 2017).

Epuron has undertaken an extensive consultation process in relation to the wind farm. This process focussed on two way communication whereby:

- ▶ Epuron outlined its proposed project to the local community and other stakeholders and responded to questions and issues raised by the community;
- ▶ In parallel, Epuron learned from the local community and other stakeholders about the local environment and the issues which may result from the wind farm; and
- ▶ Epuron took on board that feedback to redesign its project to minimise the negative impacts and maximise the benefits of its project.

Initial Consultation

The initial consultation phase included phone calls and face to face meetings with involved landowners, neighbours, and other stakeholders; newsletters; community open days; and various press reports and newspaper articles. The initial consultation is summarised in the EA for the project.

Public Exhibition

The Liverpool Range Wind Farm Environmental Assessment was on public exhibition from 1 August 2014 to 1 October 2014 at the offices of NSW Department of Planning and Environment, and various public locations in the region of the project.



Open House event in Coolah Nov 2012

Local residents were notified of the exhibition period through advertisements placed in the local papers and a newsletter sent to residents within 5 km of the project as well as those who had previously registered their interest in the project. Interested parties were able to secure an electronic copy of the documents by contacting Epuron.

Ongoing Consultation

Since the exhibition period, consultation has been on-going with involved and neighbouring property owners, with a particular focus on changes to the powerline route. This has involved extensive consultation with landowners along the proposed and new section of powerline route, Ulan Coal Mines Ltd, the NSW Office of the Environment and Heritage and the Mudgee Local Aboriginal Lands Council. Ongoing consultation with local Councils has included extensive discussions around road upgrades and potential community funds via a Voluntary Planning Agreement.

1.7 Consideration of Submissions

Submissions and Assessment of Submissions

The Department of Planning and Environment received a total of 49 submissions in response to the exhibition of the EA. Some parties sent in multiple submissions, reducing the number of submitters to 44, 12 of which were from government agencies commenting on the project.

Table 1-1 Summary of submitters

Submitters (Approx. distance from LRWF)	Number	Support	Comment	Object
Less than 5km	13	2	4	7
5 – 10km	8	3	3	2
10 – 50km	1	-	-	1
Greater than 50km	10	-	1	9

In accordance with clause 85A of the *Environmental Planning and Assessment Regulation 2000*, this RTS provides considered responses to the issues raised in submissions received in relation to the EA for the Liverpool Range Wind Farm. Responses to public submissions have been prepared in relation to the issues raised rather than by preparing individual responses to each submission.

Impact on project

Consideration of the issues raised has led to a number of changes and improvements to the project which are described and assessed in this RTS in Section 6.2. In general, responding to the issues raised required relatively minor changes to the project. However, all changes have resulted in similar or lower impacts from the construction and operation of the wind farm. In addition, a number of clarifications from the EA have been addressed in preparing this response.

All issues raised through the exhibition and submissions process have been considered and addressed in this response.

1.8 Wind Farm Design

Number of turbines

When the Liverpool Range Wind Farm site was first identified it was noted that the area had the potential to host up to 550 wind turbines. Since that time, a number of refinements to the project area culminated in the project described in the EA which comprised 288 turbines. The reduction in size occurred as a result of a number of factors including a reduced land area; increasing turbine capacity; better understanding of wind resource; better understanding of local vegetation and input from host landholders.

Design process

The wind farm design process is highly iterative, with a change to any one aspect requiring a change to associated infrastructure. Further, there are many considerations taken into account in the location of each component, including technical, financial, social and environmental aspects.

In reviewing the submissions to the EA, and preparing its final wind farm layout, the Proponent has taken into account all these aspects and undertaken a thorough review of the project layout to ensure it meets all requirements.

This RTS presents the revised infrastructure layout following design development resulting in a final layout of 282 wind turbines. These revisions are a result of ongoing consultation with involved landowners and feedback received through the exhibition and submissions process.

Involved landowners

Based on the final layout, the project will involve 27 properties hosting wind turbines and related infrastructure. A further 15 properties will host other aspects of the project including access tracks, transmission lines, offset areas and related infrastructure.

Neighbouring landowners

Epuron carefully considered the proximity of wind farm infrastructure to local residences, with a particularly focus on neighbouring, non-involved properties.

Based on the final layout, there is one non-involved residence within 2km of a wind turbine location – at 1.8km, and only 7 non-involved residences within 3km of a wind turbine location. Amenity impacts such as visual and noise have been key drivers in the design of the wind farm.

Epuron is committed to mitigating any residual impacts to neighbouring residences in accordance with its Statement of Commitments and best industry practices.

1.9 Key siting issues

Wind speeds

The primary driver of the wind farm layout is the location of a strong, consistent wind resource. Wind speed can vary considerably over a small distance, particularly in areas of hilly terrain. Ridges tend to accelerate wind speed, and as a result the turbine layout is concentrated on the top of ridges where wind speeds are the highest.

Epuron has been collecting wind data around the site since 2008 and regularly updates its analysis of long term wind speed and direction across the site. The final wind farm layout is based on analysis of this long term wind data and consideration of all other project constraints. Its scale is important in ensuring the overall viability of the wind farm which includes a significant grid connection.

Transmission line corridor

The wind farm requires connection to the NSW electricity grid to allow the sale of the power generated. Over the development period, a several grid connection corridors were considered as outlined in Section 3.4 of the EA and Section 5 of the Response to Submissions.

The EA included a Preferred and Alternate powerline route. Key drivers of the powerline route include minimising the length (a straight line is shorter and always preferred but difficult to achieve), securing the land and minimising the impacts.

Following receipt of the submissions to the EA Epuron has undertaken further consultation with landowners and land authorities including:

- ▶ NSW Office of Environment and Heritage which manages the State Conservation Areas through which the powerline will pass;
- ▶ NSW Department of Industry & Lands which manages paper and Crown road corridors and other land;
- ▶ Ulan Coal Mine Limited which is a significant landholder within the corridor; and
- ▶ the Mudgee Local Aboriginal Land Council which holds an undetermined land claim in relation to the powerline corridor.
- ▶ Private landholders for a short new section of powerline
- ▶ Private landholders for a short new section of powerline to enable the State Conservation Area (SCA) impacts to be minimised.

A contiguous powerline route which appears to be commercially, technically and environmentally acceptable has now been identified and is included in the revised layout.

Epuron takes this opportunity to thank all parties for their continuing dialog in relation to the powerline easements required for the Liverpool Range Wind Farm.

1.10 Changes since Exhibition

There have been a number of changes to the project since the exhibition of the Environmental Assessment. While many of these changes were in response to submissions, some were also introduced by Epuron identifying further improvements through its own review processes.

The key changes are as follows:

- ▶ **Wind Turbines:** the number of turbines have been reduced from 288 to 282, and a number of wind turbines has been micro-sited to minimise impacts. The turbine rating has been slightly increased from 3.5 to 3.6MW (turbine dimensions remain the same);
- ▶ **Connection Substation:** a firm location for the connection substation has been identified near Ulan and a proposed subdivision included to allow the required land tenure arrangements and construction of this substation;
- ▶ **Main Powerline:** the main powerline route has been adjusted and a number of options removed, reducing the anticipated length of the main powerline from 94.9km to 81.9km;
- ▶ **Collection Substations:** collection substations have been relocated taking into account the revised main powerline route; reducing the number required from six to four;
- ▶ **Site Access:** considerable thought has gone into improving site access to reduce the number of public roads required to be used, and to reduce traffic movements near dwellings - this has led to changes in site access points; and
- ▶ **Road Upgrades:** a specific proposal for upgrades / improvements to public roads has been included in the project.

Details of these changes, and their justification, are included in Section 6.2. See excerpt below showing an example of changes made.



Changes to wind turbine locations and the powerline route have resulted in a number of refinements to ancillary infrastructure such as access tracks; access points, site reticulation; and locations of O&M and Construction Facilities.

Site boundary

The involved landowners are shown in the map in Attachment 1 along with the included lots.

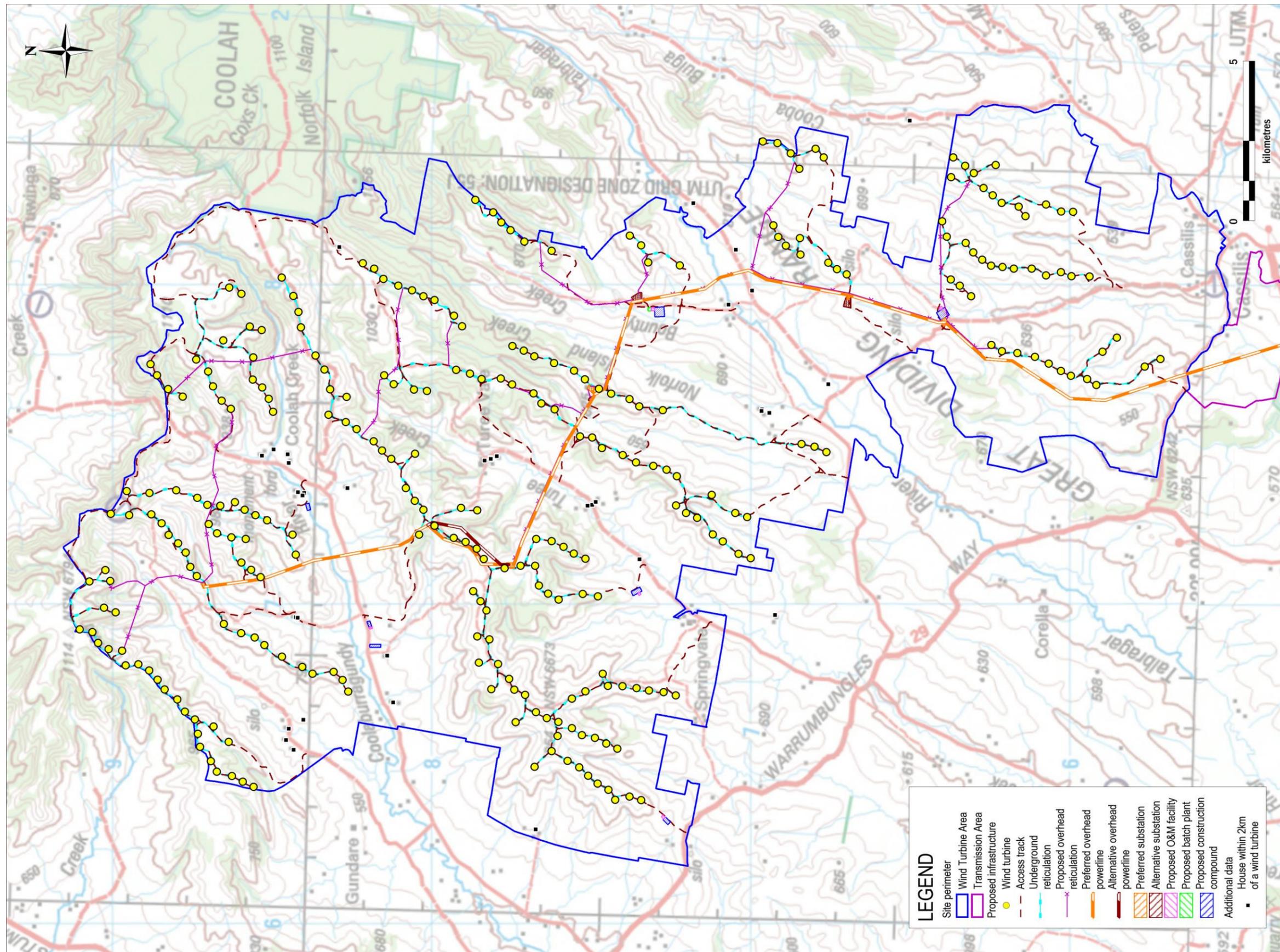


Figure 1-1 Proposed turbine and infrastructure layout

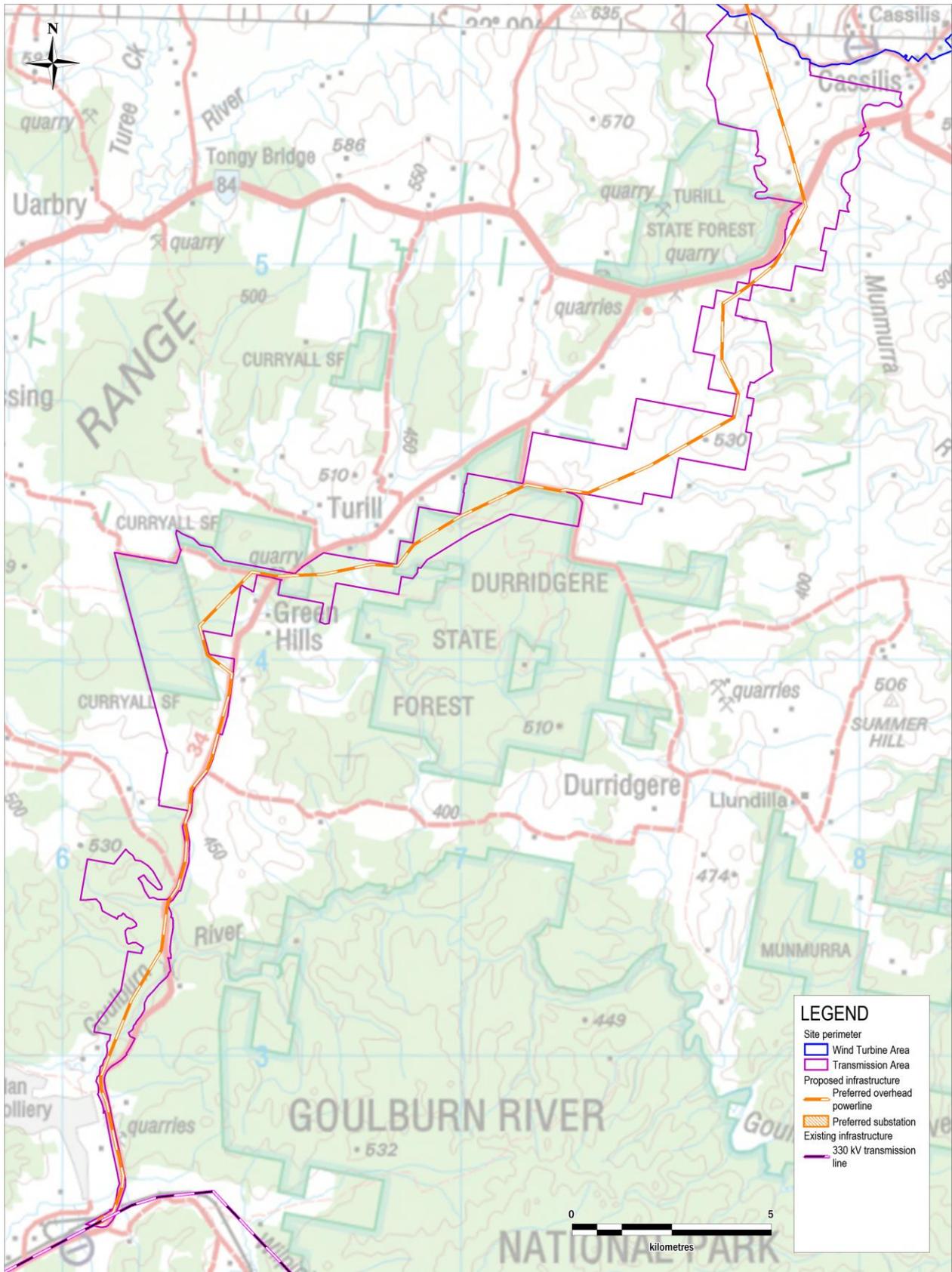


Figure 1-2 Proposed powerline layout

1.11 Impact Assessment

Planning Process

Throughout the planning process and the consultation phases Epuron has identified key issues to be addressed in the development of the Liverpool Range Wind Farm. These issues have been assessed and addressed through the Environmental Assessment process and subsequently in this Response to Submissions. These key issues include:

- ▶ Visual Amenity
- ▶ Noise
- ▶ Biodiversity
- ▶ Land Management
- ▶ Local Impacts
- ▶ Consultation

Through refinement of the wind farm design, Epuron has been able to avoid, mitigate and manage the impact of these issues to an acceptable level, whilst maximising the local and wider benefits. The site for the proposed Liverpool Range Wind Farm offers exceptional potential for wind energy with significant opportunity for avoiding, and minimising impacts resulting in a significant wind farm site which would have an overall low impact on the receiving and surrounding environment.



282 Wind Turbines

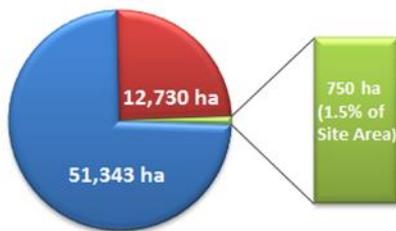


Generating up to 2,948GWh of renewable electricity annually



1 non-involved residence within 2km
7 non-involved residences within 3km

No noise exceedances at any residences
No residences with a high visual impact



Total Site Area = 51,343 ha
Development Envelope = 12,730 ha
Development Footprint = 750 ha (1.5% of Site Area)

Mitigation

Mitigation of impacts has been simpler at this wind farm than in other developments for a number of reasons but significant amongst them is the strength of community around the Coolah and Cassilis area. Involved landowners have been keen to ensure that the wind turbines they host will not have a negative impact upon their neighbours, involved and non-involved and discussions have included potentially impacted neighbours. Host landowners have specifically requested that treed areas and locations of ecological value be avoided. Neighbours who in other projects might have become opponents to the entire project have been keen to point out that they do not object to the project, that they understand and welcome the benefits it will bring to the community but they want specific and particular issues of concern addressed. It has been a pleasure to work with this community to avoid, minimise and mitigate impacts.

1.12 Visual Amenity

A detailed Landscape and Visual Impact Assessment (LVIA) was prepared for the Environmental Assessment (EA) and concluded that the wind farm is likely to be an acceptable development within the viewshed.

While there are 282 wind turbines proposed, due to the size of the site – 36km long by 20km wide – and the undulating topography there is only a small number of public and residential locations from which large numbers of wind turbines may be visible.

The LVIA involved a comprehensive evaluation of the visual character of the landscape and an assessment of the potential significance of visual impacts that may result from the construction and operation of the wind farm. The landscape, broken up into character units, was considered to have a medium sensitivity to accommodate change.



Figure 1-3 View of the proposed wind turbines from Vinegaroy Rd near Coolah



Figure 1-4 View of the proposed wind turbines from Rotherwood Rd

Visual amenity was raised in community consultation and in public submissions received following exhibition of the EA. An addendum to the LVIA was prepared for this Response to Submissions (attached as Appendix A) and assessed the visual impact specifically at 14 non-involved residences. The addendum report determined that 1 neighbouring residence would experience a medium-to-high visual impact and 7 neighbouring residences would experience a medium level of visual impact. Appropriate screening at these residences would have the potential to reduce the impact for the medium to high residence to medium, and for the remaining seven medium impact residences to medium to low visual impact.

Taking into account the mitigation measures outlined in the LVIA the assessment concludes that the Liverpool Range wind farm project would have an overall low to medium visual significance on the majority of uninvolved residential view locations within a 10 km viewshed as well as public view locations.

Consultation on visual impact is on-going with a particular focus on one neighbour who has raised visual impact on their residence as a concern.

Shadow Flicker

Shadow flicker occurs when rotating blades of a wind turbine pass between an observer and the sun, which can only occur under certain conditions at certain times of day. A detailed analysis of the potential for shadow flicker and blade glint to affect dwellings was carried out for the EA. The results showed an exceedance at one dwelling situated to the west of four turbines. The revised layout presented in this Response to Submissions has removed those four turbines. No residences are now expected to have any impact from shadow flicker caused by turbines.

1.13 Noise

Operational Noise

A detailed technical investigation into the operational noise from the wind farm was undertaken for the Environmental Assessment. Noise levels from the wind farm can be predicted by considering; sound power levels from specific turbine models, the wind farm layout, topography of the site, atmospheric conditions and wind speeds. The process followed to ensure the wind farm will comply with the required limits can be summarised as:

1. Measure actual background noise levels at representative residences around the wind farm.
2. Determine compliance criteria based on background noise levels.
3. Review predicted noise levels from wind farm layout to limits determined in step 2

Predictions are inherently conservative, for example, ground cover is assumed to be hard and sound reflective, no screening effects from vegetation or buildings are included and the model assumes the sensitive receptor or residence is downwind from every turbine even though this is impossible.

The operational noise impact assessment predicted noise levels for homes within 6 km of a proposed turbine and compared the predicted level to the limits set out in the South Australian Environmental Protection Authority (SA EPA) Environment Noise Guidelines for Wind Farms (February 2003) and World Health Organization (WHO) limits.

The Proponent has prepared the Noise Impact Assessment Amendment in Appendix B to demonstrate that the proposed turbine layout is compliant with the relevant standards. It shows that there is no exceedance of either standard at any non-involved residence within the area surrounding the wind farm.



Figure 1-5 Background noise monitoring station

The Proponent has committed to a comprehensive Noise Monitoring Program which would run through the duration of construction and continue for 2 years post commissioning.

Construction Noise

The construction period is anticipated to be 24-36 months, with civil works expected to span approximately 12 to 24 months, however, due to the large area of the wind farm site, intensive works will be located within close proximity to individual residential receivers for only very short and intermittent periods of time.

Construction activities associated with the project are planned to be undertaken during standard construction hours as set out in the Interim Construction Noise Guideline (ICNG). Construction traffic noise, blasting impact, vibration impact and transmission line noise have been predicted to fall within acceptable parameters under the Guideline.

1.14 Biodiversity

Ecological surveys have been conducted on site, along powerline corridors and in the vicinity over the past five years and conclude that the project is unlikely to cause any significant impacts on flora and fauna in general, nor on the particular species listed under the NSW Threatened Species Conservation Act 1995 (TSC Act). A referral was made under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) in 2014 and the project is a controlled action under section 18 and 18A, listed threatened species and communities, with further approval required. It is being assessed under the bilateral arrangement between the Commonwealth and State governments.

Biodiversity constraints and mitigation measures have been identified and incorporated into commitments during each stage of the development. A post construction monitoring and management plan will be developed as part of the project.



Figure 1-6 Typical ridgeline with proposed wind turbine locations

Context

The ranges and undulating terrain within the Project Area are characterised by cleared farmland, mostly derived from Box Gum Woodland on the lower slopes and flats, with Norton Box Woodland on the steeper sheltered slopes. Sandstone Forest is common within the flats of the southern half of the Project Area (i.e. Transmission Line Study Area). In particular, the composition and structure of vegetation types have been modified as a result of managed stock grazing as well as grazing by feral goats. Remnant stands of the original vegetation remain as paddock trees or larger scattered patches of forest/woodland throughout the wind farm site.

Survey Effort

Two Spring-time surveys were undertaken as part of the detailed assessment, the first over a 12-day period (the 8th to 19th October 2012) and the second over a nine day period (1st to 8th October 2013). A further survey program was undertaken in October 2016 to address specific changes to the project infrastructure and main powerline route in response to submissions received following public exhibition of the project.

Flora and Fauna

A total of 16 vegetation communities were recorded in total for the LRWF project area. The EA identified impacts to 1,763 ha across the entire development. Following modifications in response to submissions the total impact of the project has been reduced to 753 ha. The bulk of this reduction resulted from two changes: simplifying the overhead powerline from two branches through the site to a single line from north to south; and from reassessing the clearance area over open pasture for the powerline down from 60m to 4m corresponding to the actual footprint and width of the required access track. Of this significantly reduced area of impact 200 ha is Endangered Ecological Community with 88 ha of the 200 ha being classified as pasture (with native tree cover) in poor condition. Ten (10) hectares of CEEC will be impacted and offset accordingly.

Additional and revised assessments of significance for threatened fauna concluded that local population level impacts are unlikely for the species considered likely to occur on site, generally on account of clearing for the wind farm area being relatively minor in any one location; discrete patches would be cleared that are unlikely to include important habitat for a population.

The wind farm would comprise a series of sparsely distributed discrete footprints (turbines, substations and control buildings) connected by transmission lines and tracks. Considering the habitat within and surrounding these areas and the ecological characteristics of the Project Area, the impacts identified appear able to be managed. Significant impacts can be avoided and a maintain-or-improve outcome can be met for the proposal. Residual impacts that cannot be avoided would be offset and suitable offset locations have been identified. Refer to Section 6.5 and Appendix C for further details.

1.15 Land Management

Land Use

The wind farm project infrastructure is located on freehold land that is primarily used for grazing and agricultural purposes. Once operational the wind farm will have a negligible impact on normal farming operations as it would occupy only 1 to 2 per cent of the land.

Hydrology and Drainage

The layout for the wind turbines and associated wind farm infrastructure has been developed to avoid any adverse effect on the hydrological regime of the site. The layout avoids crossing or interfering with streams and ephemeral watercourses wherever possible. Drainage management during construction and operation will ensure there are no negative impacts such as run off and erosion. Water crossings are limited, existing and will be upgraded to ensure there are no adverse impacts.

The water required for construction of this project will be predominantly locally sourced from natural water bodies, for example from Lake Burrendong, or a ground water license subject to availability.

Once the wind farm is completed it will require only a small amount of water to service the operations and maintenance facilities. This will be sourced from rainwater storage tanks at the permanent structures.

Soils and Landforms

The region is largely agricultural, characterised by intensively modified broad floodplains (cereal cropping and grazing) beneath broad basalt ridges (grazing). This existing use of the land has resulted over time in a significant loss of biodiversity within the catchment area. Within this receiving environment the project is not predicted to have any significant adverse environmental impacts on the geology or soils of the site or its surrounds, as the overall surface disturbance is relatively small in size and type.

A detailed geotechnical assessment would be conducted once the turbine locations have been finalised to determine the ground conditions and stability at each turbine site. This assessment would drive the foundation requirements for the wind turbine locations. All impacts have been assessed on the basis of the maximum potential impact from clearing and concrete foundations.

An Environmental Management Strategy (EMS) would be developed in accordance with the Best Practice Guidelines for Wind Energy Projects and the project consent conditions to ensure that issues such as erosion, weed control, air quality (such as dust management) and drainage are appropriately addressed.

1.16 Local Impacts

Traffic and Transport

The construction phase of the project generates the greatest volume of traffic and accordingly presents the most issues. A Traffic and Transport Assessment considered the potential issues associated with the proposed wind farm and provided mitigation measures to minimise and avoid such issues.

Access to the site would be via the Golden Highway and Vinegaroy Road (Warrumbungles Way) and then on to designated local roads. Upgrades to local roads necessary to permit over-sized vehicles would be carried out prior to delivery of turbine components and maintenance of these roads would be ongoing through the construction phase. New unsealed tracks would be constructed to access the temporary construction compounds, operation and maintenance facility, substations and the turbine locations across the site. Additional traffic generated from the project would not constitute a significant or material increase in existing volumes on the Golden Highway.

The delivery route for over-sized and over-mass vehicles will avoid both local towns of Coolah and Cassilis.

A traffic and transport management plan will be developed in consultation with councils and RMS to minimise the disruption to the local community taking into consideration; local school bus routes, time of delivery, designing and implementing modifications to intersections, implementing dust control measures and providing a 24hr telephone contact during construction as well as public notification of upcoming traffic patterns, road changes and modifications to intersections.

The operational phase would have a very minimal impact upon traffic volumes as the turbines would be maintained by a selected crew of technicians likely to be based out of Coolah, Cassilis, Merriwa or Mudgee and travelling in light (4WD) vehicles.

The Traffic and Transport Impact Assessment is attached in Appendix E. It has been updated since the EA was on exhibition to include an assessment of the road structures (culverts, causeways and bridges) and intersections on the proposed access route as well as making commitments to upgrade sections of local roads used during construction of the wind farm.

Consultation is on-going with neighbours who have houses in close proximity to roads to be used for access.

Aviation

The proponent has consulted with the relevant aviation authorities and associations in relation to air safety and potential hazards caused by the construction and operation of turbines. The location of the proposed turbines would not encroach on an Obstacle Limitation Surface (OLS) of any registered or regulated aerodrome. The closest Civil Aviation Safety Authority (CASA) registered aerodrome to the proposed wind farm site is Coolah Aerodrome, which is 17.3 km from the closest proposed wind turbine.

The presence and location of 18 active agricultural airstrips identified within 5 km of the project have been assessed and considered in the design of the wind farm to ensure turbines do not encroach on any of the existing landing areas. Eight (8) airstrips occur within 500 m of a proposed wind turbine and each of these complies with the CASA take-off and approach clearance areas.

1.17 Conclusion

Liverpool Range Wind Farm is a utility-scale project in regional NSW which will contribute significantly to both the investment in renewable energy in New South Wales and also to the local community, area and region through jobs, investment and long term growth in the local and regional economy. The economic benefits will be felt most strongly in the Coolah – Cassilis – Merriwa region of NSW.

The project is located in a sparsely populated area, on ridgelines which support stock grazing and which lie over 7 km from the township of Coolah and around 5 km from the village of Cassilis.

Epuron has undertaken an iterative and thorough design process which has included extensive consultation with involved and neighbouring residents; local and regional community groups; the local business community; independent EA experts; and members of local, state and federal government authorities.

As a result of this consultation, a number of changes and improvements have been incorporated into the final preferred project outlined in this Response to Submissions. These changes are designed to reduce impacts and increase benefits which result from the project, particularly with respect to the local community and environment.

The project is supported by all agencies and by the local community which is proactively seeking to maximise and focus the benefits locally. Epuron notes the strong cohesion of the local community which has been apparent throughout the development of the wind farm.

In developing the project, Epuron has taken every opportunity to understand, avoid or reduce (where possible) negative impacts of the project. In addition to design improvements, Epuron has committed to a stringent set of requirements to mitigate impacts which cannot be avoided. As a result, the final environmental impact assessment finds that all impacts are acceptable, and the benefits materially outweigh any residual impacts.

In conclusion, the Liverpool Range Wind Farm would provide up to 1,000 MW of renewable energy and a scale of investment which would contribute significantly to the local area, the region and the State. Epuron is confident that the Liverpool Range Wind Farm is consistent with NSW State policy, has followed all prescribed processes, meets the reasonable requirements of all stakeholders, has the general support of the local and broader community, and has been developed responsibly and in accordance with NSW and Federal government objectives.

For further information about Epuron and the Liverpool Range Wind Farm please :

- ▶ Visit <http://www.epuron.com.au/>
- ▶ Call 02 8456 7400

2 Consideration of Submissions

2.1 Public Exhibition

The Liverpool Range Wind Farm Environmental Assessment (EA) was on public exhibition from 1 August 2014 to 1 October 2014 at:

- ▶ NSW Department of Planning and Environment, Bridge St, Sydney
- ▶ Nature Conservation Council, Sydney
- ▶ Warrumbungle Shire Council – Coonabarabran office,
- ▶ Warrumbungle Shire Council – Coolah office,
- ▶ Upper Hunter Shire Council – Scone office,
- ▶ Upper Hunter Shire Council – Merriwa office,
- ▶ Liverpool Plains Shire Council – Quirindi office,
- ▶ Mid-Western Regional Council – Mudgee office,
- ▶ Dunedoo Library, and
- ▶ Cassilis Library.

Local residents were notified of the exhibition period through newspaper advertisements placed in the local papers by the Department of Planning and Environment (DPE) and a newsletter was sent to residents within 5 km of the project and those who had registered their interest in the project.

2.2 Clarifications to the Environmental Assessment

Table 2-1 Corrections and Clarifications to the EA

Error	Clarification
Clarification on terminology used in the EA.	<p>Development Envelope – defines the area within which proposed infrastructure (both permanent and temporary) may be located, as distinct from</p> <p>Development Footprint – defines the actual area impacted by the infrastructure of the project</p> <p>Assessment Area or Survey Area – defines the area surveyed by ecologists for the Biodiversity Assessment.</p> <p>Project Corridor - The EA made reference to a Project Corridor; however, for clarity this term has been replaced by Development Envelope to align with the terminology in the Biodiversity Assessment (BA).</p> <p>Figure 6-19 to Figure 6-27 outlines the proposed Development Envelope.</p>
Closest landing strip to proposed wind turbine	The closest landing strip owned by an uninvolved landowner to a proposed wind turbine is 970m. An Aviation Impact Assessment has considered the impact to non-certified aerodromes (landing strips) and the Proponent has provided commitments to mitigate any impacts in the Statement of Commitments (SoC) number 13.
Updated development footprint and site disturbance	The calculations for development footprint and site disturbance have been updated in both the Biodiversity Assessment Addendum report and this Response to Submissions report. Please refer to Table 6-8.
Local Government Instruments & Policies	<p>Section 6.1.8 of the Environmental Assessment lists the Local Environmental Plans that may be considered by the Minister (but is not required to) in determining the project.</p> <p>The Upper Hunter LEP 2013 replaces the former Merriwa LEP 2000.</p>

2.3 Submissions and Assessment of Submissions

The Department of Planning and Environment received a total of 49 submissions in relation to the Exhibition of the Liverpool Range Wind Farm Environmental Assessment. Some parties sent in multiple submissions expressing the same view and taking these into account the effective number of submitters was 44, of which 12 were from government agencies. In accordance with clause 85A of the *Environmental Planning and Assessment Regulation 2000*, this RTS provides considered responses to the issues raised in submissions received in relation to the EA for the proposed Liverpool Range Wind Farm.

The submissions were separated into those provided by community stakeholders and those provided by government agencies. The government agency submissions have been addressed individually for each submission as they reflect specific issues related to the particular technical expertise of the agency. The public submissions have been organised by issues raised, rather than by submission.

The issues raised in each submission were summarised and tabulated in Table 2-2 to identify the areas of most interest from the submissions.

2.4 Summary of Submissions

Of the 37 public submissions that were received:

- ▶ 8 were supportive of the project
- ▶ 10 provided comments on the project
- ▶ 19 were opposed to the project

The public submissions were received from various locations around New South Wales and further afield. A distance breakdown of submitter location to the proposed infrastructure can be seen below and in Table 2-2.

- ▶ 25 submissions within 20 km of project infrastructure (8 supportive, 9 comments & 8 objections)
- ▶ 12 submissions over 20 km from project infrastructure (1 comment & 11 objections)

Of the 12 agency submissions that were received:

- ▶ 12 provided comments on the project

Table 2-2 Summary of Public Submissions

Submission Number	Submission Type	Distance from Project	Visual Impacts	Operational Noise Impacts	Community, Consultation & Funding	Land Value Impact	Ecology Impacts	Archaeology & Indigenous Heritage	Health Impacts	Safety Impacts	Fire Hazards	Strategic Justification	Communications Impacts	Traffic & Transport Impacts	Specific Wind Turbines or Infrastructure	Greenhouse Gases and Efficiency	Decommissioning	Draft Wind Farm Guidelines	Other	
Submissions received from within 1 – 5 km of project infrastructure																				
107775	Opposed	3.0 km													X					
110807	Comment	2.9 km													X					
110811	Opposed	4.0 km	X			X			X											
110815	Opposed	1.7 km		X		X			X											
110857	Support	1.0 km																	X	
110863	Comment	1.6 km	X		X										X				X	
110865	Support	1.3 km	X		X									X					X	
110890	Comment	2.1 km	X	X	X					X	X		X	X					X	
110892	Opposed	2.3 km	X	X	X	X	X		X		X	X				X	X		X	
110894	Opposed	2.3 km	X	X	X	X	X		X		X	X				X	X		X	
114757	Comment	3.0 km					X													
110957	Opposed	2.0 km													X					
PMU037555	Opposed	4.0 km	X																	
Submissions received from within 5 - 20km of project infrastructure																				
105118, 107573, 108341, 110813	Support	7.0 km			X															
106031	Support	7.0 km																	X	
110691	Opposed	7.0 km	X	X	X															
107352	Support	7.0 km			X															
110859, 110861	Comment	7.0 km			X		X												X	
110833	Comment	7.0 km			X															
110888	Opposed	10 km	X	X		X	X									X			X	
110898	Comment	N/A						X												
Submissions received from over 20km of project infrastructure																				
105070	Comment	821 km																		X
110639, 110817	Opposed	360 km				X														X
110684	Opposed	247 km	X		X						X	X								X
110708	Opposed	882 km					X													
110847	Opposed	322 km	X	X	X	X			X		X	X			X		X		X	
110867	Opposed	321 km			X													X		
110878	Opposed	170 km	X	X					X											
110880	Opposed	128 km		X	X	X					X									
110884	Opposed	360 km			X							X							X	
110886	Opposed	40 km			X							X				X		X		
110896	Opposed	285 km	X	X	X			X	X		X	X				X		X	X	

2.5 Consultation on submissions

2.5.1 Community Consultation

Since the exhibition period, consultation has been ongoing with involved and neighbouring property owners, with a particular focus on visual impact to neighbours within 3 km, the structure of the Community Enhancement Fund and changes to the powerline corridor. To keep the public informed with the status of the project the current consultation program has utilised a range of activities including one on one meetings, project newsletters, site visits, an up to date project website, project fact sheets and ongoing Community Consultation Committee meetings.

Neighbouring Landowners

Following the receipt of public submissions the Proponent met with neighbouring landowners and submitters to discuss a range of issues from visual impact to construction traffic and health and safety. A specific Visual Impact Assessment was conducted from the residence of all non-involved landowners within 3 km of a wind turbine and many within 5 km. The results can be found in Appendix A. A formal response to all submissions is included in Section 3.

Issues raised in the submissions following exhibition of the EA and raised during the consultation process have been considered in refining the project layout and preparing this report. Additional work and studies have been undertaken to address the further issues raised including:

- ▶ Refining the wind farm infrastructure layout, including removing 6 and relocating 20 proposed wind turbines;
- ▶ Further biodiversity and cultural heritage surveys;
- ▶ A revised traffic & transport impact assessment including reduced impact on local roads;
- ▶ Relocating temporary construction compounds and batch plants;
- ▶ Further refining the proposed community enhancement funds; and

The Proponent commits to ongoing consultation with key stakeholders and the local community to keep them informed of the project status and to engage with the relevant stakeholders and community on any construction impacts and management plans prior to construction commencement.

Community Enhancement Fund

Through on-going Community Consultation meetings the Proponent has furthered discussions with the CCC and council regarding the Community Enhancement Fund (CEF). One CCC meeting was dedicated to workshopping possible structures for the CEF and subsequently a sub-committee produced a survey of existing CEFs by interviewing grant applicants and decision makers. The survey results are available on the Epuron website.

The development application includes a commitment to establish a Community Enhancement Fund (CEF) and to make annual contributions to it. Grants will be made available from the CEF for projects that benefit the community near the wind farm.

In addition to funding the CEF, the Proponent will also make annual payments to Warrumbungles and Upper Hunter Shire Councils for on-going road maintenance. These payments will be in addition to upgrading and repairing roads directly impacted by the construction of the wind farm.

The annual CEF and road contributions will be detailed in a voluntary planning agreement (VPA) between Epuron, Warrumbungles Shire Council and Upper Hunter Shire Council.

The proposed structure for the CEF is as follows:

- ▶ One Community Enhancement Fund (CEF) developed under a VPA with Warrumbungles Shire Council and Upper Hunter Shire Council.
- ▶ CEF administered through a Local Government Act 1993 section 355 committee:
 - 2 community members (preferably residents within 20 km who have not entered into financial agreements with the wind farm company) from each council area (total 4)
 - 1 Council officer from each area (total 2) (non-voting)

-
- 1 Councillor from each area (total 2)
 - 1 wind farm company representative (non-voting)
 - ▶ Committee would review and recommend grants to the two Councils. When both Councils approve the recommendations, the grants are made.
 - ▶ Eligibility criteria for funding:
 - Incorporated or registered not-for-profit organisation
 - Degree of benefit within an area approximately 20 km from an installed wind turbine, or within 5 km of the new powerline near Turill.
- 

3 Response to Public Submissions

3.1 Visual Impact

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
110691, 110684, 110878, 110811, PMU037555,	General objection on grounds of visual impact	A detailed Landscape and Visual Impact Assessment was prepared as part of the Environmental Assessment. A supplementary Addendum (see Appendix A) was conducted for this Response to Submissions report and included an assessment of all dwellings within 3 km of a proposed turbine and selected others within 5 km as requested by the DPE. The LVIA Addendum confirmed that the Liverpool Range Wind Farm will have an overall low to medium visual significance on the majority of uninvolved residential view locations within the 10 km viewshed as well as public view locations.
110863	Poor location of batch plant on Pandora Road will cause significant negative visual impact.	The batch plant on Pandora Road has been removed. Several options have been presented in Section 6.2 as an alternate location along with the justification for this relocation. The batch plant will be a temporary compound operational only during part of the construction period (estimated to be approximately 12 months).
110865, 110890	There is no reference to the Siding Spring Observatory lighting requirements across the project area.	The Proponent has been in consultation with WSC in regards to the Siding Springs Observatory and will continue to do so. The Proponent also commits to engage with the Australian Astronomical Observatory to discuss the proposal and a possible Light and Dust Management Plan. It is worth noting that the Siding Springs Observatory is approximately 85 km away from the nearest proposed infrastructure.
110888	Wind turbines will adversely affect the visual amenity of the area. It is unclear how long they will remain in situ and when they will be removed, if ever.	Wind turbines will be visible in the area. A visual assessment has been undertaken by Green Bean Design that fully assesses the impact of the proposal on specific viewpoints, both public and private. This includes a visual assessment from the residence on this submitter's property including a wireframe image of the visible turbines. The conclusion of this specific visual assessment is that the impact is low to medium from the residence. The wind turbines have a lifetime of approximately 25-30 years. At which point the turbines could be either decommissioned and removed or recommissioned with replacement components.
110890	Request for a photomontage to be taken from house D7-2.	A photomontage was taken from D7-2 and provided to the landowner who advised they were comfortable with the visual impact of the project.
110892, 110894	The visual impact is not perceived but is a very real fact that people are affected by seeing wind farms close to them. The wind farm will be an eyesore.	A photomontage and visual assessment from the submitter's residence has been undertaken in the supplementary LVIA (see Appendix A). It concludes that the wind farm will have a medium visual impact at this residence.
110847	DPE/PAC needs to recognise the LVIA is not an objective document, as it stands, and exclude it from consideration.	The LVIA was prepared in accordance with the DGRs and good industry practice.
110847	The Landscape and Visual Impact Assessment (LVIA) author is a biased assessor to the extent of the visual impact as they are paid for by the Proponent.	The Proponent is required to undertake a LVIA. The proponent engaged a qualified independent consultant to conduct the LVIA in accordance with the DGRs and good industry practice.
110847	As the LVIA author does not live in the area of	A detailed methodology is provided in the LVIA to remove

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
	the proposal they will have different subjective visual preferences to those of people living in the potentially affected area.	subjective preferences from the assessment. Landscape values were developed using the professional judgement of the landscape architect as well as consultation with the community.
110847	DPE should require that the LVIA be redone using an assessment panel of 3-5 assessors that fairly involves non-aligned locals, transparently chosen, and with all the assessments being reported to the DPE.	The LVIA was prepared in accordance with the DGRs and good industry practice.
110847	The developer should be required to complete an LVIA that complies with best practice using a ZVI of at least 45 kilometres, as recommended in <i>Visual Representation of Wind Farms</i> by Scottish Natural Heritage.	The LVIA was prepared in accordance with the DGRs and good industry practice. The visual impact of wind turbines beyond a distance of 10 km is not significant.
110847	The developer should be required to acquire visual easements from all non-associated property owners within 10 km of the wind farm or, alternatively, offer to acquire the properties at a genuine, independent third-party determined, unimpaired value plus transaction costs.	The Proponent is required to undertake a LVIA. The proponent engaged a qualified independent consultant to conduct the LVIA. The results of the assessment conclude that the impacts from the wind farm will be low.
110847	The LVIA has a caveat from Green Bean Design “GBD has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of Epuron Australia Pty Ltd and only those third parties who have been authorised in writing by GBD to rely on the report.” If either the DPE/PAC or affected residents are unable to rely on this document, then the DPE needs to require the developer to present a LVIA that the consultant stands fully behind for all parties. Until that is done, the developer must be regarded as having yet to provide an LVIA.	The LVIA was prepared by a qualified and experienced firm, in accordance with the DGRs and good industry practice.
110896	The maps provided by Epuron are not clear enough to get a true indication of turbines sites.	A3 sized maps have been included in this report (refer to Figure 6-10 - Figure 6-18) and coordinates of proposed turbine locations are provided in Attachment 3.

3.2 Operational Noise Issues

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
110691, 110815, 110878,	General noise complaints / submissions	A Noise Impact Assessment was completed as part of the Environmental Assessment in accordance with the South Australian Environment Protection Authority's <i>Wind Farms – Environmental Noise Guidelines 2009</i> (noise guidelines) as specified in the DGR's. The assessment shows that the wind farm will comply with the criteria at all residences.
110888	Concerns over noise pollution if all turbines are in operation.	The noise modelling has been undertaken using the methodology specified in the noise guidelines which conservatively assumes all turbines are in operation. The predicted noise from operational turbines is within the allowable limit at all residences and in most cases is significantly below the background noise level.

Submission	Issue	Response
110890	Residences on adjacent properties are also anticipated to be impacted with an estimated construction noise rating of up to 50 dB (A) for residence D7-5, and no notification of this has been provided to the individual property owner. Input from surrounding landholders into the construction noise management plan is requested, and a clearly defined complaints and resolution process with an independent third party involvement if requested.	Any noise from construction activities will need to be managed in accordance with the <i>Interim Construction Noise Guideline (DECC 2009)</i> . Prior to the commencement of construction the Proponent will prepare and Environmental Management Strategy which will include procedures to keep the local community informed and details of how construction noise will be minimised.
110892, 110894	Epuron's information regarding the noise guidelines they are meant to abide by is very ambiguous at best. We were given information that there is a limit of 35dB with a +5 factor or background noise with +5 factor whichever is greater.	The EA clearly sets out the applicable noise criteria and it is clearly discussed in Section 1.13 of this RTS. Broadly speaking the main criteria is that noise from the wind farm at a non-involved residence cannot exceed the greater of; <ul style="list-style-type: none"> ▶ 35dB, or ▶ The existing background noise +5dB
110892, 110894, 110896	The South Australian 2003 (and 2009) noise guidelines used in wind farm development does not require measurement of infrasound but this should be mandatory and a maximum level set.	The Noise Impact Assessment noted that: “Comprehensive review, measurement testing and evaluation are offered in numerous technical reports investigating infrasound and low frequency noise from wind farms” “The consensus drawn by all investigations is that infrasound noise emissions from modern wind turbines are significantly below the recognised threshold of perception for acoustic energy within this range” Additionally, measurements at modern turbines indicate that the levels of infrasound produced are no higher than levels that already exist where people commonly live, work and sleep, caused by air conditioners, vehicular movements, industrial processes and ventilation.
110892, 110894	Epuron admit in their information handouts that there are ‘Special Audible Characteristics of Wind Farms’. Is this not enough admission for further investigation on the impact to residents, before approving any more Wind Farm developments?	The noise characteristics of wind turbines are taken into account within the modelling and assessment in accordance with the noise guidelines. All residences are predicted to be well below the applicable limits.
110847	Unless SLR has given written authority for both the DPE/PAC and all neighbours of the LRWF to rely on SLR’s advice, the report should be rejected and the developer required to produce a noise assessment report from a consultant fully prepared to stand behind their advice tendered to the DPE/PAC in support of the developer’s application.	SLR has provided their professional services to the Proponent in preparing the Noise Impact Assessment in accordance with the DGR’s. The results of the Noise Impact Assessment will form the basis for consent conditions relating to operational noise which the Proponent will be required to comply with.
110847	It is incumbent on the DPE/PAC to ensure that if the LRWF development is approved it is subject to mechanisms that detect all breaches of noise conditions established for the facility and that such events attract quick penalties sufficient to ensure compliance.	It is expected that any consent conditions will impose strict operational noise criteria and operational noise monitoring obligations.
110847	The developer/operator should be required to fund the establish compliance monitoring at 12 locations.	The proponent has made a commitment to establish an operational compliance testing program as part of this proposal. Refer to Statement of Commitment (SoC) 8.
110880	Has adequate research been conducted that proves that the dynamics, noise and vibration from industrial wind developments doesn’t	What is the current position of Australia’s health experts? National Health and Medical Research Council: “Examining whether wind farm emissions may affect human

Submission	Issue	Response
	cause harm?	health is complex, as both the character of the emissions and individual perceptions of them are highly variable. After careful consideration and deliberation of the body of evidence, NHMRC concludes that there is currently no consistent evidence that wind farms cause adverse health effects in humans." February 2015 (NHMRC, 2015) Australian Medical Association: "...The infrasound and low frequency sound generated by modern wind farms in Australia is well below the level where known health effects occur, and there is no accepted physiological mechanism where sub-audible infrasound could cause health effects." March 2014 (AMA 2014)
110896	Certainty of sound effects on a household only eventuates after the wind farm has been erected.	It is expected that any consent conditions will impose strict operational noise monitoring obligations to ensure that actual noise levels are the same or lower than the predicted noise levels.
110896	The allowable background noise measurement is too high at night, In rural areas, background noise at night is often below 20 dB (A).	Actual background noise levels are measured over a period of time at residence locations surrounding the site in accordance with the requirements of the noise guidelines. There is no "allowable" background noise level.
110896	The application also states "Blasting impact has been assessed and found to be acceptable." Since when has blasting been acceptable in any rural setting.	Blasting is a common construction technique used during the construction of roads and other civil infrastructure. It is expected that the consent conditions will impose strict limits on airblast overpressure and ground vibration from any blasting activities.
110896	The cumulative impacts of so many turbines in this project, and in addition to the other planned projects, needs to be taken into consideration. There will also be noise from power lines and the collection and sub stations.	The Noise Impact Assessment has considered the cumulative impact of operational noise from all the wind turbines. Noise impact from transformers at the substations has also been considered.

3.3 Community Consultation

Submission	Issue	Response
110833	General CCC related submissions	In 2013 Epuron established the Liverpool Range CCC. A total of 11 meetings have taken place to date. The minutes of each meeting are publicly available on the project website. The Proponent will continue to hold CCC meetings, aiming for a frequency of 1 every 3 months.
110892, 110894, 110847, 110684, 110867, 110884	The Community Consultation Committees (CCC) that have occurred do not follow DP&E guidelines. The CCC should be reconstituted with an independent chairperson paid for by DP&E.	Although the draft CCC guidelines (Dec 2011) noted that the chairperson should be appointed by the Director General of the Department of Planning & Infrastructure, at the time, the Department instructed the Proponent to appoint a chairperson directly. The current version of the CCC Guidelines (Nov 2016) state that the Department will recruit, appoint and review the performance of all independent chairpersons. The Proponent will continue to consult with the Department and consider reconstituting the CCC at an appropriate time.
110892, 110894, 110847	Epuron has produced surveys that are widely inaccurate when it comes to community opinion of Wind Farms. They are providing surveys that were done as far back as 2009 when little was known or understood about the effect of these turbines	The EA makes reference to an independent survey conducted by the NSW Government (DECCW) in 2010, which confirmed widespread support for wind farms as a source of renewable energy. The NSW Office of Environment and Heritage conducted a follow up survey in 2014 and found the support for wind farms to be similar to that in the 2010 survey. The report found: <ul style="list-style-type: none"> There was almost universal awareness (97%) of the concept of wind farms, wind turbines or windmills

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
		<p>being used to generate electricity.</p> <ul style="list-style-type: none"> 81% of respondents supported the development of wind farms in NSW, and 73% of respondents supported the development of wind farms in their local region.
110892, 110894, 110880, 110896	Not enough consultation has occurred and people in Coolah are only just hearing about the development.	Details of consultation activities were included in the EA and additional consultation materials from activities since the exhibition of the EA are provided in Attachment 5 of this report.
110892, 110894	Two different maps show our dwelling being anywhere from 1.7 to 2.3 km away from the wind farm. There has been no contact from Epuron in 4 years.	The Proponent has met with the owner and confirmed that the location of the closest turbine is 2.3km from the residence. Photomontages have been prepared from the residence and an assessment of the visual impact from the residence can be found in Appendix A.
110896	60 day exhibition period is too short to get through the volume of information contained in the EA.	The Proponent welcomes any comment or feedback after the exhibition period.
110896	The 2022 resident and 300 businesses surveyed in 'Community Attitudes to Wind Farms in NSW' is not a good representation of the 6 Renewable Energy Precincts and a control region.	The survey methodologies used by DECCW and OEH were designed to provide representative views. They were not intended to take the place of local community consultation specific for this project. The Proponent has undertaken a number of project consultation activities including open day events with feedback forms, CCC meetings, newsletter updates and 1-on-1 consultation visits. Refer to Attachment 5 for additional consultation material since the EA was on exhibition.

3.4 Social Impacts and Community Funding

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
107352	The project will be a major boost to the Coolah community and great for the surrounding areas.	A summary of the project benefits can be found in Section 1.5.
PMU037555	The wind farm is located too close to Cassilis school.	<p>The closest turbine to the school in Cassilis is 4.5 km away. Noise and visual impact assessments have been conducted for this location and the conclusion found is that the impacts will not be significant, if noticeable at all.</p> <p>In addition, the wind farm creates an opportunity as a potential resource for the school. The Proponent has provided the school with A1 colour maps showing the layout of the wind farm which may be used as a teaching aid so the students can learn about clean energy generation. Once operational, the wind farm would provide an ideal field trip site to allow the students to see the wind turbine generators up close.</p>
110896, 110684	Please provide a list of position descriptions of the jobs the wind farm will create.	<p>One of the benefits of this project is the direct and indirect jobs it will create in the local and regional area. If the wind farm is built in its entirety, it is expected to create up to 829 jobs in the region during the construction phase and up to 78 ongoing operations and maintenance jobs across the state, 47 of which would be locally based.</p> <p>This economic injection would also contribute to the local economy through:</p> <ul style="list-style-type: none"> use of local contractors (where possible) in construction of the wind farm; use of local services (food and accommodation, fuel, general stores etc.) during the construction period; ongoing use of these local services during the operation of the wind farm;

Submission	Issue	Response
		<ul style="list-style-type: none"> • lease payments to local landholders; and • provision of ongoing local jobs in operating and maintaining the wind farm.
110896 110691	<p>If wind farms are providing the benefits to the community that they claim, please provide evidence.</p> <p>It is not going to benefit our local community in anyway and will not create any employment.</p>	<p>The Clean Energy Council commissioned SKM to produce a report on the investment, jobs and carbon abatement produced by wind farms. The report outlines its findings by summarising the local expenditure and jobs that a 50MW wind farm would create and how that would apply to larger wind farms. A copy of the report can be found at https://www.cleanenergycouncil.org.au/technologies/wind-energy/benefits-of-wind-energy.html</p>
110896	The construction phase will be unlikely to use local companies as they will not be competitive with the Sydney counterparts.	The submitter states in their submission that Divals, based in Goulburn was used on Gullen Range Wind Farm for earth moving works. This is a good example of a local company being used for construction activities and one that would be expected to be sourced locally for the Liverpool Range Wind Farm.
110896	Families will suffer increased insurance costs if turbines are within 1 km of their homes or boundaries.	There are no residences located within 1 km of a proposed turbine location. The Proponent will be required to hold a suitable level of insurance and in the unlikely event of damage being caused by the wind farm infrastructure, the Wind Farm Company would be liable. Therefore, there is no additional risk to neighbouring landowners and no reason for insurance costs to increase.
110865, 110833, 110863, 110859, 110890	A Community Enhancement Fund should be made part of a condition of consent to ensure any future owner of wind farm complies with community expectation to share some of the income benefits from the wind farm.	The Proponent has made a commitment to establish a Community Enhancement Fund (CEF) and is currently negotiating the terms of the fund with the CCC and the Warrumbungles and Upper Hunter Shire Councils. The CEF will be outlined in a Voluntary Planning Agreement between the proponent and both councils. The public will be invited to comment on the agreement when the councils put it on exhibition. The owner of the wind farm will be bound by the agreement as a condition of consent.
110865	The workers in the construction and operation phase should be accommodated in the local community to help the local economy.	The Proponent has made a commitment to liaise with local business and industry representative and visitor information centres to maximise the use of local contractors and hospitality providers.
110888	Limited sustained employment opportunities generated by the wind farm does not compensate for the otherwise adverse effects.	A strategic justification for the project outlining the many benefits it would provide is provided in Chapter 4 of the Environmental Assessment. An update of the project benefits is contained in Section 1.5 of this report.
110886	This wind farm will destroy and cause social disharmony in the rural community into which it is forced for not one sustainable public benefit.	Refer to Section 1.5 for a summary of the project benefits.
110865	There should be a Statement of Commitment to provide the provision of apprenticeship opportunities and/or training for regional youth.	The Proponent has made a commitment to make available employment opportunities and training for the operation of the wind farm where reasonable. The Community Enhancement Fund will also provide the opportunity to allocate funds towards programs such as training or scholarships.
110863	As a part of the DA	The purpose of a CCC is to provide a forum for open discussion between

Submission	Issue	Response
	approval process, build in a firm obligation for the final corporate owner of the wind farm to provide resources to provide assistance, training or skills and capacity to the Community Consultative Committee.	representatives of the Proponent, the community, the local council and other key stakeholders. The Proponent has also committed to providing a Community Enhancement Fund and the resources to administer the fund. The final details of the fund structure will be developed in consultation with the CCC and local councils.
110863	As part of the approval process, the final WF owner be held accountable to provide the community and residents whose property involved should receive a copy of the report detailing the before, during and after benchmark research data which has been conducted for all impacts sectors on their properties; i.e.; environment, visual, auditory etc.	The EA and this Response to Submissions report together with the associated specialist assessment reports are all publically available on the project website http://www.epuron.com.au/project/liverpool-range/downloads/ and on the NSW Department of Planning & Environment website http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6696 All impact assessments reports conducted by the Proponent have been included in the Environmental Assessment and the Response to Submissions reports.
110863	As part of the approval process that the final wind farm owner be held accountable to ensure the proximity of overhead power lines near homesteads have no negative impacts on the residents, visual or otherwise.	The Proponent and any subsequent owner of the wind farm will be bound by the conditions of consent. The potential impact of electro-magnetic fields and visual impacts from the proposed overhead powerlines were assessed as part of the EA.
106031	The proposal will create numerous jobs during construction and ongoing employment	Noted. A summary of the project benefits can be found in Section 1.5.
106031	It will give landowners assured income for the security of their families.	Noted. A summary of the project benefits can be found in Section 1.5.

3.5 Strategic Justification

Submission	Issue	Response
110847, 110884, 110886	The proposal will contribute to the rapid escalation of consumer and business electricity prices that has occurred in NSW in the last 7 years.	The generation of electricity (wholesale generation) accounts for about 19% of a typical consumer bill in NSW (AEMC, 2016). The Renewable Energy Target (RET) accounts for only 3% of a typical consumer bill with the main cost (52%) being attributed to the network (poles and wires). Moreover, the cost of wind is highly predictable and stable and doesn't depend on external forces such as commodity prices. Wind power is currently the cheapest form of new electricity generation in Australia.
110847, 110884	AEMO graphs used in the Strategic Justification section are out of date.	At the time the EA was first submitted to DPE the information was current and correct.
110886, 110892,	NSW does not require the addition of electric power generation. Demand for electricity is	The NSW government has recently made an announcement to achieve net zero emissions by 2050. In order to do this a

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
110894	falling.	transition away from fossil fuelled generation towards renewable energy generation is necessary. This project will provide a significant contribution towards meeting that goal and towards achieving the Federal Renewable Energy Target by 2020.
110896	The Proponent should provide a full lifecycle assessment for the wind farm including construction. How long is it before the recoup CO ₂ e emissions.	As with any form of construction there is energy consumed and CO ₂ emissions created in the manufacturing of materials of the wind farm. Several studies have looked into the payback period of this consumed energy and found that wind energy has one of the shortest payback periods of any energy technology. A wind power plant typically takes only 3-8 months to pay back the energy consumed and CO ₂ emissions created for its fabrication, installation, operation and decommissioning (Haapala & Prempreeda, 2014).
110896	Why should 'industrial' scale wind farms be allowed in rural zones?	Wind farms typically take up around 2% of land which allows existing grazing and cropping to continue. Owners of property can use the revenue generated from wind turbines to further their primary production and diversify their business.
110684	What point is there in having a still wind turbine in a high demand peak period? High cost gas generators will also be required to complement the wind power	Wind resource is variable but predictable which allows accurate determinations of how much wind energy will be generated into the system at any one time. Additionally, a number of studies have shown that having more wind farms that are geographically distributed acts to smooth the output of wind farms such that it is more similar to other base load power.

3.6 Land Value Impacts

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
110811, 110639, 110815, 110880, 110892, 110894 110888 110878	Land values will be significantly reduced if saleable at all. Property values will be adversely affected by the construction of the wind farm. Will developers and/or associated landowners compensate neighbours of the wind farm for damage to their property value.	Wind farms do not negatively impact property prices. Over the past decade, multiple major studies by respected and independent organisations in countries across the world have failed to find any correlation between wind turbines and declining property values. (CEC, 2016) In our experience in regional areas a notable number of new renters or purchasers can assist in driving demand for properties. This is seldom considered in relation to wind farms but in smaller towns wind farm construction and the ongoing operations jobs can provide a notable boost.

3.7 Ecology Impacts

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
110708	The claims in the fauna work done by the Proponent underestimates bird mortality. Macarthur Wind Farm published their bird and bat mortality report and the estimated real kill was 10 birds per turbine, of which 30% were raptors. Concerns over Wedge Tailed Eagles in the area.	The Macarthur Wind Farm report (Mar 2014) estimated the total bird mortality as 13.4 birds/turbine but also noted that the vast majority of these related to introduced species. No threatened bird species were found during carcass searches. Two Wedge-tailed Eagle carcasses were found during the 12 month survey.
110861	The transmission line should not go through sensitive environmental areas.	Through consultation with the NSW Office of Environment and Heritage (OEH), the Proponent has adjusted the transmission line route to minimise the impacts to sensitive areas. Additional studies were undertaken with input from OEH and the results of the supplementary biodiversity surveys can be found in Appendix C.
110861	The NSW Government should consider potential future wind farm developments and should only have one transmission	It is possible that any future wind farm developments in the area could make use of the grid connection assets built for this wind

Submission	Issue	Response
	connection point to reduce environmental impact.	farm.
110888	Concern about adverse impact on livestock and biodiversity in the area.	The wind farm infrastructure takes up a very small (approximately 2%) amount of the site and will not have an impact any impact on livestock or normal farming operations. The infrastructure layout has been refined to minimise impacts on biodiversity.
114757	The proposed 60m wide easement would require the broad scale clearing of high value remnant native vegetation within State Conservation areas, roadside corridors and riparian vegetation on the Goulburn River where it crosses.	The overhead powerline routes have been refined in consultation with OEH to minimise impacts to high value remnant vegetation within State Conservation Areas. All residual impacts will be offset. Refer to Appendix C for the Biodiversity Assessment Addendum which includes an updated Offset Strategy.
114757	The transmission line would fragment the Goulburn River east-west connection corridor. It has been identified by the CMA for its connectivity and biodiversity value.	Fragmentation of woodland and conservation areas has been considered and is the reason for the most significant change to the layout since the exhibition period. The Proponent has undertaken extensive consultation with OEH to address this issue. The Main Powerline has been realigned to the edge of Duridgeriee SCA to avoid fragmentation and the powerline corridor has utilised existing road easements wherever possible. As part of the Offset Strategy the Proponent has sought areas that would add connectivity benefits (in addition to the offset credits) between wooded and conservation areas.
110892, 110894	Provide an overall percentage of 'cleared land' that Epuron are stating the wind farm will be erected upon.	Refer to the estimated Impact Areas in Section 6.4.

3.8 Archaeology & Indigenous Impacts

Submission	Issue	Response
110896	Epuron does not have a good track record in this space.	The Aboriginal Cultural Heritage Assessment (EA Appendix D) and the supplementary assessment included with this report were carried out by a qualified archaeologist in collaboration with local Aboriginal representatives in accordance with the methodologies specified in the DGRs.
110898	Approval should not be given until Epuron can demonstrate compliance with the Native Title Act 1993	<p>Within the Wind Farm Area and the Transmission Area there are currently two active Native Title Claims. One from the Gomerioi People and the other from the Wonnarua Traditional Custodians. Attachment 1 contains a map of the crown parcels that intersect with proposed infrastructure, along with a list of lot/DP numbers. Vacant crown parcels within the Wind Farm and Transmission Areas would be subject to the active Native Title claims.</p> <p>The proponent is seeking a license from the Crown for lawful use and occupation of crown land parcels and to create an easement for electrical infrastructure to transmit electricity from the wind farm. It is understood that the Crown will submit an application pursuant to Section 24KA of the Native Title Act 1993 seeking Ministerial approval to issue such a license.</p>
110898	The DGR's referenced the <i>Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation 2005</i> , but the relevant guideline is the <i>Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010</i> .	The Aboriginal Cultural Heritage Assessment was prepared in accordance with the <i>Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (NSW DEC July 2005)</i> as per the DGR's. The Consultation process as described in Section 3 (Appendix D) was also prepared in accordance with OEH's <i>Aboriginal Cultural Heritage Consultation</i>

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
		<i>Requirements for Proponents 2010 (NSW DECCW 2010b).</i>
110898	Epuron must submit documentation for the ACHA Consultation process.	Section 3 of the Aboriginal Cultural Heritage Assessment includes details of the consultation process in accordance with the relevant guidelines and has been updated with correspondence received from Registered Aboriginal Parties.
110898	Either planning approval be withheld until all areas potentially impacted by the Project are surveyed and analysis completed on the impacts, or conditions be placed on the Project requiring final layout to undergo additional approval mechanisms once these surveys are conducted.	The proponent has continued to refine the design of the project and in particular the powerline route from the site to Ulan. This has resulted in the removal of all alternate powerline routes and presentation of the final location. This proposed route was surveyed in a follow up site survey and analysis was included in the updated ACHA.
110898	A significance assessment should be required to be completed and assessed prior to planning approval being granted.	The ACHA (Appendix D) contains a Cultural Heritage Values and Statement of Significance assessment in Section 5. Three of the Aboriginal objects found during surveys were assessed to have moderate local scientific significance. Two of these objects are now located outside of the proposed impact areas. There were no objects assessed to have high local scientific significance.
110898	Any planning approval should require additional archaeological and cultural values assessment.	The ACHA concluded that the proposal does not warrant further archaeological investigation, however, a number of mitigation measures have been proposed which will be included in the Cultural Heritage Management Plan.
110898	Planning approval should require a Cultural Heritage Management Protocol to be developed.	Noted.
110898	Specific details on the implementation of a site avoidance regime should be defined in the Statement of Commitments	Details on the implementation of site avoidance are included in the ACHA and it is anticipated that these will be incorporated into the consent conditions for the project approval.
110898	Any planning approval should require avoidance of the axe grinding grooves and implementation of a buffer zone.	The grinding groove complex, inclusive of AHIMS #36-3-105 and TLLU2/L3, is no longer within the proposed Development Envelope of the project.
110898	The Statement of Commitments should include a commitment that all relevant staff and contractors should undergo a cultural awareness training programme developed in consultation with traditional owners.	The proponent has included a commitment to establish a Cultural Heritage Management Plan (CHMP) within the Environmental Management Strategy. The recommendations from the ACHA would form the basis for the CHMP including that personnel involved in the construction and management of the project should be trained in procedures to implement recommendations in the ACHA.

3.9 Health Impacts

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
110896	Impacts on individuals only eventuate after the wind farm has been erected. Models used don't acknowledge the whole spectrum of sound and therefore can't be used to predict health impacts.	There were 314,000 wind turbines in operation around the world at the end of 2015. Numerous studies have been conducted on established wind farms to investigate the potential impacts on human health. In February 2015, the NHMRC released its most systematic review of the available scientific evidence relating to wind turbine operation and human health. They concluded that: "the systematic review indicated that there was no consistent evidence that the noise from wind turbines, whether estimated in models or using distance as a proxy, is associated with self-reported human health effects".
110811, 110815, 110878	The wind farm will impact adversely on health. The EA attempts to convey the sense that	The National Health and Medical Research Council's 2013 (NHMRC 2013) report reviewed available evidence on wind farm health and safety and concluded: "The evidence

Submission	Issue	Response
110847	<p>adverse health and sleep effects due to noise are not really a problem, and may indeed be psychological (which would still be a problem).</p> <p>The DPE/PAC will find an extensive list of relevant evidence cited by the Waubra Foundation. That evidence relates to both audible and non-audible (infrasound and low frequency sound) sound.</p>	<p>considered does not support the conclusion that wind turbines have direct adverse effects on human health, as the criteria for causation have not been fulfilled.</p> <p>A similar position has been adopted by:</p> <ul style="list-style-type: none"> • the 2013 Victorian Department of Health's Wind Farms, Sound and Health report • the 2013 South Australian EPA report on Infrasound Levels Near Wind Farms and Other Environments • The May 2014 Statement by the Australian Medical Association that evidence does not support the view that wind farms cause adverse health effects <p>The application of stringent noise criteria as demanded by the <i>Draft NSW Planning Guidelines: Wind Farms</i> provides a precautionary approach to health issues suggested to result from wind farm noise.</p> <p>The Australian Medical Association's statement in 2014 that "The available Australian and international evidence does not support the view that the infrasound or low frequency sound generated by wind farms, as they are currently regulated in Australia, causes adverse health effects on populations residing in their vicinity. The infrasound and low frequency sound generated by modern wind farms in Australia is well below the level where known health effects occur, and there is no accepted physiological mechanism where sub-audible infrasound could cause health effects" (AMA, 2014).</p> <p>A very small number of people in Australia have anecdotally reported that they believe that wind turbines are making them ill. The list of symptoms described is long and all are present in the broader community including in areas not near a wind farm and there is no evidence to link the symptom, however real, to wind turbines. Simon Chapman, Professor of Health at UNSW, offers one explanation for ill health suffered by people living near a wind farm who believe the wind farm is causing their ill health is – that some of these cases could be as a result of the "nocebo" effect which has proven that some people who believe that something is making them ill can actually make themselves ill. They suffer a real illness even though there is no physical cause.</p> <p>Consistent with the NHMRC and Professor Chapman, the September 2013 Planning Assessment Commission Determination Report for Bodangora Wind Farm near Wellington notes that "NSW Health also made it clear that noise levels at distances of more than one km from the turbines would not cause health impacts and the 2 km buffer provided in this instance is highly precautionary". The Victorian Department of Health has issued fact sheets on noise and health (http://www.health.vic.gov.au/environment/windfarms.htm) (Vic Health, 2013).</p> <p>The Australian Medical Association released a statement in 2014 that "The available Australian and international evidence does not support the view that the infrasound or low frequency sound generated by wind farms, as they are currently regulated in Australia, causes adverse health effects on populations residing in their vicinity. The infrasound and low frequency sound generated by modern wind farms in Australia is well below the level where known health effects occur, and there is no accepted physiological mechanism where sub-audible infrasound could cause health effects" (AMA, 2014).</p>
	Wind turbines may exacerbate severe	There is no documented medical or scientific evidence that

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
	asthma.	wind turbines may exacerbate severe asthma.
110892, 110894 110847	Sleep deprivation is common from wind turbines. The United Nations has acknowledged that sleep deprivation is a form of torture. DPE/PAC has an obligation to establish operating conditions and controls that will ensure recurrent sleep deprivation and adverse health effects for residents are not allowed to happen in practice.	NSW has some of, if not the strictest noise requirements for wind farms in the world. These noise requirements are designed to protect neighbouring properties from annoyance and sleep disturbance and compliance monitoring will be part of the consent conditions.
110892, 110894	What happens and who is responsible for fibreglass particles from the turbine blades as they parallel asbestos.	The materials used in the construction of wind turbine blades including glass reinforced plastics (fibreglass) do not pose any health risks to the public

3.10 Safety Impacts

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
110890	Concern over ice forming on wind turbine blades and presenting danger to livestock and people.	Whilst temperatures do drop below zero in the Liverpool Range area, the occurrence of snow and ice is extremely rare. In the unlikely event of it snowing and the turbines being stationary it would be possible for snow to accumulate on the blades. The speed at which the turbines would start up again however, would allow the snow to fall off gently and directly below the position of the blades.

3.11 Fire Impacts

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
110890	The local Rural Fire Service units are from 9 – 25 km away from the Turee Vale Road construction compound. Will the Proponent have provisions and trained staff for bushfire management?	The Proponent has committed to providing appropriate firefighting equipment to be held onsite for use when the fire danger is very high to extreme, and a minimum of one person on site would be trained in its use. The equipment and level of training would be determined in consultation with the local RFS. In addition, fire extinguishers would be stored onsite in the control building and within the substation building. The Proponent's full commitment can be seen in SoC 17.
110684, 110892, 110894, 110896 110684	Concern over the ability to fight fires from the air. Fire fighters will not offer aerial water bombing support in the case of fire. Also heavy machinery operators will not enter the fire area without aerial support. The EA effectively dismisses the bush fire risk resulting from no aerial firefighting support by trying to sell the proposition that the NSW Fire Brigade will benefit from the access tracks running along ridges.	The Proponent developed its Bushfire Impact Assessment in consultation with the Rural Fire Service (RFS) and has incorporated all recommendations into the EA. A letter received from the RFS Assistant Commissioner dated 1 August 2013 states: "It is the position of the NSW RFS that fire moving across the area of a wind farm is generally managed in the same way as any other bush fire. Firefighting strategies by ground-based resources would continue and be subject to prevailing weather and topographic conditions." "... aircraft would avoid wind turbines in the same manner as they avoid other obstructions, such as power lines"
110847, 110880	Recent research has shown that wind turbine fires are 10 times more likely than originally thought. In the case of an industrial wind turbine causing a fire, are there insurances in place to make sure that residents surrounding these developments will be adequately compensated?	The wind farm operator would be required to hold a suitable level of insurance and if the operator was liable for any damage caused by the operation of the wind farm, the affected residents would be compensated.
114757	Extreme risk of fire starting from	The power line connecting the wind farm to the existing

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
	transmission lines on high risk days.	transmission network would be designed and constructed in conjunction with the network operator TransGrid. The power line from the wind farm would pose no additional risk to those already operating in the existing network. In fact, the highest risk days are likely to be during periods of reduced wind (wind acts as a cooling source for transmission lines) and thus a reduced output from the wind farm.
114757	Huge potential cost of bushfires in the proximity to coal mines and coal heaps.	This risk exists regardless of the proposed wind farm. The mitigation to minimise this risk is to work closely with the RFS in developing a Bushfire Management Plan and ensuring all best practice guidelines are followed, something the proponent has committed to doing.
110847	<p>The DPE/PAC should not accept any of the bushfire assessment provided in this EA. The DPE/PAC needs to obtain from RFS, and in particular an identified person in RFS, the answers to the following questions:</p> <ul style="list-style-type: none"> ▶ To what extent will the existence of this wind farm increase the likelihood of bush fires for neighbouring properties, during both construction and operation? ▶ To what extent will the existence of this wind farm increase the difficulty of protecting neighbouring properties in the event of bushfires, whether they are due to the wind farm or other cause, and thus the likelihood of bushfire losses for neighbours? ▶ What guidance will the RFS give to airborne firefighting resources about operating near the wind farm? 	<p>The highest risk period would be during construction and decommissioning since diesel fuel, lubricants and oils would be stored on site and the chance of ignition is higher simply because there is more activity on site. It would therefore form part of the Bushfire Management Plan that firefighting facilities be held on site during high fire danger periods during construction and decommissioning. It would also be a requirement that trained personnel be on site to operate such firefighting equipment. RFS would be consulted in creating the bushfire management plan.</p> <p>The Proponent developed its Bushfire Impact Assessment in consultation with the Rural Fire Service (RFS) and has incorporated all recommendations into the EA.</p> <p>In a letter received from the RFS Assistant Commissioner dated 1 August 2013 states:</p> <p>“It is the position of the NSW RFS that fire moving across the area of a wind farm is generally managed in the same way as any other bush fire. Firefighting strategies by ground-based resources would continue and be subject to prevailing weather and topographic conditions.”</p> <p>“... aircraft would avoid wind turbines in the same manner as they avoid other obstructions, such as power lines”</p>

3.12 Aviation Impacts

<i>Issue</i>	<i>Response</i>
Nil	

3.13 Communications Impacts

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
110890	Radio frequency interference not considered. Concern over impact to local radio station broadcasts, local UHF and other radio transmission quality, including private radio and Wi-Fi networks in the region.	<p>A Telecommunications Impact Assessment was included in section 14.2 and Appendix F of the EA. Telecommunications license holders within 25 km of the Proposal were identified and comments were sought on the project.</p> <p>The assessment concluded that it is unlikely there will be any effect on communication infrastructure, however if there is, the proponent has committed in SoC 14 to arrange for the installation and maintenance of a satellite receiving antenna at the Proponents cost.</p>

3.14 Soil Erosion

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
110896	Have the impacts of 5 – 6m roads and turbine	The impacts of erosion on soils & landforms were assessed in

Submission	Issue	Response
	footings been considered for soil erosion.	section 16.1 of the EA. The NSW Environment Protection Authority's submission for the EA notes that it is able to support the proposal if the Proponent meets their commitments in relation to soil erosion and sediment control measures.
110896	Have watercourses been assessed and what are the potential impacts?	The impacts of erosion on hydrology were assessed in section 15.2 of the EA. All waterway crossings will be designed and constructed in accordance with the following guidelines: <ul style="list-style-type: none"> <i>Water Guidelines for Controlled Activities on Waterfront Land (2012)</i> <i>Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (2004)</i>

3.15 Ground and Surface Water

Submission	Issue	Response
110896	Massive amounts of water will be needed and will place burden on the already stretched water supplies.	Section 15.3 of the EA identifies a number of potential water sources that could be used during the construction of the windfarm, including from the Burrendong Dam. The estimated water requirements for construction represent less than 0.01% of the capacity of the dam and are not expected to have a significant impact on ongoing dam operations.

3.16 Traffic and Transport Impacts

Submission	Issue	Response
110865	A Road Traffic Management Plan should be done prior to commencement of construction.	A detailed Traffic Management Plan will be developed in consultation with RMS and the councils prior to the commencement of construction (SoC 15).
110865	Dust mitigation aids in reducing light reflecting into the atmosphere and could be done to protect the Siding Springs Observatory.	The Proponent has been in consultation with WSC in regards to the Siding Springs Observatory and will continue to do so. The Proponent also commits to engage with the Australian Astronomical Observatory to discuss the proposal and a possible Light and Dust Management Plan. It is worth noting that the Siding Springs Observatory is approximately 85 km away from the nearest proposed infrastructure.
110890	Cattle ramps exist along Turee Vale Road and are the landowners responsibility to maintain, yet no communication has been made with these landowners.	Existing cattle grids on over-dimensional haulage routes would either be upgraded or an access track with a gate would be diverted around the cattle grid. This would be agreed with council and in consultation with the landowner/s.
110890	The heavy loads and increased frequency of the vehicle movements will also impact wear and tear on roads, which includes local, state and regional roads yet there is no assurance that impacted local roads will be maintained to the same standard.	Local and Regional roads will be assessed prior to construction and a dilapidation report prepared. Roads unfit for heavy vehicle movements would be upgraded in accordance with the agreed specification if they are on the designated over-dimensional haulage routes. The Proponent will be required to maintain these roads during construction and make any necessary repairs once construction is complete.
110890	There are a number of bends and corners/turns that will require amendment to enable the heavy vehicle and over-dimension vehicle movements, yet they are not all referenced in the EA, particularly on local roads in the Warrumbungle Shire. There is also no indication of how individual landholders may be compensated if the road	The updated Traffic and Transport report includes an assessment of intersections that need to be upgraded to accommodate the over-dimensional vehicles. This can be found in Appendix E.

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
	modifications to enable these vehicle movements impact their properties.	

3.17 Specific Wind Turbines & Infrastructure Impacts

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
110639	Wind turbine locations are only indicative and therefore the EA should only be considered a draft.	The wind turbine layout is presented in the EA and this Response to Submissions report are the specific locations that the Proponent is seeking approval for. During the detailed design process, it may be necessary to microsite individual turbines for geotechnical or other reasons. It is expected that the conditions of consent will impose tight restrictions on the extent of any micro-siting to ensure that any environmental impacts are no greater than the nominated locations.
110639 110847	Micrositing should be defined as a maximum of 50 m and a \$1,000 per metre movement fee should be in place. There should be no "micrositing" provision. The developer should be required to establish, in advance, exactly where its turbines will go and to have fully evaluated the resultant impact in terms of visual pollution, noise pollution and other considerations, within existing guidelines.	The micro-siting process is a practical means to accommodate relatively minor changes in infrastructure location during the detailed design phase.
110957	UCML oppose Corridor A, in particular the corridor within UCML owned and leased lands as the powerline will impact on biodiversity offset and remediation areas. UCML oppose the location of the preferred 330kV Connection Substation as the site will impact on remediation areas.	The Proponent has undertaken extensive consultation with Glencore and UCML on both these issues. The substation has been relocated as described in Section 6.2.3. The powerline has been realigned to minimise the impact on existing vegetation and biodiversity offset areas. The Proponent will continue to work closely with UCML to ensure that a satisfactory outcome is achieved in relation to their offset and remediation areas. The Proponent will in turn commit to offsetting any impacts to vegetation that cannot be avoided.
107775	Epuron has not consulted with Yancoal or Moolarben Coal Operations (MCO) regarding the project. The proposed transmission line and substation location would impact ongoing mining operations.	Further consultation was conducted by the Proponent with Yancoal and MCO. Infrastructure that was originally proposed on land operated by MCO has been relocated. Feedback from Yancoal and MCO is that the changes are acceptable.

3.18 Greenhouse Gases and Wind Turbine Effectiveness

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
110896	Please provide the figures to date of where the CO ₂ emissions have been saved. I find it curious that we're now 2014 & yet Epuron does not supply actual data from its own developments.	Epuron is a developer and not an owner/operator of wind farms. We are not able to provide our own information on CO ₂ emissions have been saved at operational wind farms. Based on the information provided in the Origin Energy Annual Report 2014, the Cullerin Range Wind Farm, which was developed by Epuron, produced 104 GWh of electricity in 2014. Using this figure and the emissions intensity factor for 2014 in NSW of 0.86 t CO ₂ e per MWh, it can be estimated that the Cullerin Range Wind Farm saved 89,440 t CO ₂ e for 2014. (Origin 2014)
110886, 110888	Wind farms do not reduce greenhouse gas emissions.	This statement is incorrect. The former NSW Department of Environment, Climate Change and Water (now OEH) commissioned a report in 2010 to determine the emissions abatement impact of wind farms located in NSW. The report examined various cases and found that in each scenario the introduction of wind farms would reduce CO ₂ e emissions as it would displace fossil fuel sources from the NEM. http://www.environment.nsw.gov.au/resources/communities/greenhouse-gas-abatement-wind-farms.pdf

Submission	Issue	Response
		<p>Between 2005/06 and 2012/13 wind generating capacity in South Australia increased from 388 MW to 1203 MW. In this same period emissions levels dropped from 9.3 Mt CO₂e/MWh to 6.2 Mt CO₂e/MWh while electricity demand remained static. Therefore, the emission intensity reduced from 0.68 to 0.45 tonnes of CO₂e per megawatt hour (t CO₂e/MWh). This is an emission intensity reduction of 34.5%.</p> <p>http://www.windlab.com/sites/default/files/South_Australian_Wind_Power_Study_2014_Windlab.pdf</p>
110880	The saving of 2,634,800 t CO ₂ e is grossly overstated. Please provide evidence to substantiate these claims.	<p>The figure of 2,634,800 t CO₂e has been generated from the NSW Office of Environment and Heritage Wind Farm Greenhouse Gas Savings Tool (OEH, 2017) using an emissions intensity factor of 0.967 t CO₂e per MWh. While this tool has been available for several years, it appears that the emissions intensity factor for NSW has not been updated to reflect the increased renewable energy sources and decreased reliance on fossil fuels.</p> <p>By using the updated emissions intensity factor for 2014-2015 of 0.84 t CO₂e per MWh (DEE 2015) (and by revising the wind farm size to reflect 282 turbines) a saving of 2,241,074 t CO₂e occurs. This is a change of -15% of the original estimate.</p> $\text{Wind farm size (MW)} \times \text{Capacity Factor} \times \text{Hours per year} \times \text{Emission Intensity} \left(\frac{\text{tonnes}}{\text{MWh}} \right) = \text{CO}_2\text{e saved}$ $846 \text{ MW} \times 0.36 \times 8760 \text{ hours} \times 0.84 \frac{\text{tonnes CO}_2\text{e}}{\text{MWh}} = 2,241,074 \text{ t CO}_2\text{e}$ <p>Where:</p> <p>0.36 is an estimated average wind farm capacity factor</p> <p>8760 is the hours in a year</p> <p>0.86 tonnes/MWh is the CO₂e emissions from the NSW energy generation mix</p>
110892, 110894	Wind farms are not effective and coal fired power stations will always be required.	<p>Wind turbines are more efficient at converting energy to electricity than coal fired power stations. Wind turbines convert 45% of wind energy into electricity compared to 29-37% efficiency for coal power plants in Australia.</p> <p>Many countries around the world generate electricity without the use of coal and CSIRO has recently released modelling that shows a feasible scenario where South Australia could generate 80% of its electricity using renewable sources (CSIRO 2016).</p> <p>http://www.energynetworks.com.au/electricity-network-transformation-roadmap-key-concepts-report-0</p>
110807	The concrete batching plant on Turee Vale Rd is not in an appropriate position. The road is very narrow with thin bitumen and large sections of are unfenced for stock as it travels through properties.	<p>The concrete batching plant on Turee Vale Road has been relocated. See Section 6.2.4 for details. The new location will minimise the number of movements on Turee Vale Road as the batch plant is located within the site entrance. Vehicle movements would be higher during the start and end of construction workday hours and this would be communicated to the landowners. A site induction would include warnings about stock movements on the road and a reduced speed limit would be imposed on construction traffic.</p>

3.19 Decommissioning

Submission	Issue	Response
110880	Will the developer provide bonds to cover the cost of decommissioning?	<p>The Proponent will not provide a bond to cover the cost of decommissioning. As noted in the draft Decommissioning and Rehabilitation Plan (EA Appendix G) the estimated cost of decommissioning the wind farm will be less than the residual value of the equipment and materials at the end of the useful life of the wind farm.</p>

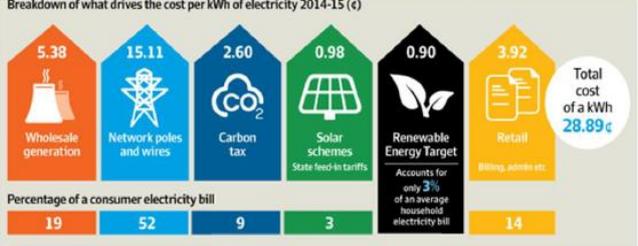
<i>Submission</i>	<i>Issue</i>	<i>Response</i>
110892, 110894	Will the concrete footings be removed after the wind turbines are decommissioned?	Below ground infrastructure will not be removed when the wind farm is decommissioned.
110892, 110894	What happens if the wind farm owner becomes insolvent? Who is responsible for decommissioning?	As noted in the draft Decommissioning and Rehabilitation Plan (EA Appendix G) the estimated cost of decommissioning the wind farm will be less than the residual value of the equipment and materials at the end of the useful life of the wind farm.
110847	The appropriate arrangement is to require the proponent to provide a bank guarantee to the government, to cover removal of the turbines, remediation of the site, and repair of all road and other community damage caused during the decommissioning stage.	As noted in the draft Decommissioning and Rehabilitation Plan (EA Appendix G) the estimated cost of decommissioning the wind farm will be less than the residual value of the equipment and materials at the end of the useful life of the wind farm.
110847	If the proposal is approved, it should be with tightly specified decommissioning requirements, including repair of all community assets that may be damaged in the process, and with the whole to be covered by a bank guarantee that the developer must pay for and tender to the NSW Government before construction can commence.	It is expected that the consent conditions will clearly prescribe decommissioning and rehabilitation obligations.

3.20 Draft Wind Farm Guidelines

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
110896 110886 110884	DP&E have failed to finalise their Draft Wind Farm Guidelines after 2 years. The Draft Guidelines are totally inadequate to protect the health and wellbeing of nearby residents. The proponent has no formal requirement to adhere to the draft guidelines	The draft <i>NSW Planning Guidelines Wind Farms</i> (Dec 2011) have now been replaced with the New Wind Energy Framework. The framework will ensure that NSW has the right settings to attract investment in wind energy, while balancing the interests of the community. The policy framework has been developed in response to issues raised by community and industry around uncertainty in the application of the draft 2011 wind farm guidelines.

3.21 Other / General

<i>Submission</i>	<i>Issue</i>	<i>Response</i>
110896	Were other locations considered (closer to the city) for this project?	The Proponent has an extensive network of wind monitoring masts around the state and has been monitoring wind speeds for several years at these locations. While other locations were considered, the proposed Liverpool Range location has the desired mix of high wind speeds, cleared ridges, ability to connect to the electricity grid and community support as well as a range of other considerations.
110896	Epuron have not done adequate planning to ensure the project will be compliant. The submission makes broad statements that regardless of what Epuron states, will be meaningless as they will on sell the project if approved, and a new entity will make changes after the fact as there are not enough specifics - Model of turbine to be decided, exact placement to be determined etc.	Any consent conditions imposed on the project will pass to any subsequent owner who will decide on turbine model following a commercial procurement process. Any micro-siting of approved turbine locations will need to be within the restrictions imposed by the conditions of consent.
105070	There are other more modern ways to generate electricity from the wind rather than propeller based turbines.	Wind energy is currently the most cost effective form for any new-built electricity generation plant.
110878,	Wind farm developers should not be paid tax	Wind farms in Australia do not receive any direct government

Submission	Issue	Response
110892, 110894	payer subsidies.	<p>subsidies. Like any other form of renewable energy generation, wind farms are able to generate renewable energy certificates for every unit of electrical energy generated.</p> <p>The only incentive that relates to the wind energy industry is the Federal government's Renewable Energy Target (RET).</p> <p>AEMO produced a breakdown of the drivers for the cost per kWh of electricity in 2014-15. The RET accounted for 3% of an average household electricity bill.</p> 
110880	Will adding more turbines to the electricity grid disrupt grid stability? Are these developments adequately scrutinized to assess their physical properties?	The wind farm is required to enter into a connection agreement with the network service provider (TransGrid) in accordance with the National Electricity Rules which will ensure the stability of the grid will not be compromised. The connection agreement is independent to the planning approval process.
110888	Lack of transparency as to the operation of the wind farm as there is the possibility of involved landowners being obliged to enter into commercial-in-confidence agreements and confidentiality agreements.	The commercial details of the lease agreements with the involved landowners are confidential as with any private commercial agreement.
110892, 110894	The Renewable Energy Target (RET) is something that has been rushed into without much thought.	<p>The original RET was introduced in 2001 by the Howard government. It was then increased in 2009 to 41,000 GWh under the Rudd leadership with bipartisan support from the Liberal opposition. In 2014 the RET was reviewed and the target was reduced again with bipartisan support to 33,000 GWh.</p> <p>In addition the State governments are continuing to increase their own individual targets in excess of the RET. NSW itself has announced a plan to reach zero net emissions by 2050 which will require additional renewable energy. If anything, the Federal target is lagging behind.</p>
110847	The DPE/PAC should ensure, in writing, from all consultants whose advice the developer has tendered, that both the DPE/PAC and residents are entitled to rely on the advice given by the consultants. In the event the consultants are unwilling to provide that coverage, the DPE/PAC would have no option but to require the developer to find consultants who fully stand behind their advice.	The consultants engaged by the Proponent have provided their professional services to complete the specialist studies for the project EA in accordance with the DGRs. The consultant reports and advice will be considered in forming the consent conditions and the Proponent will be bound by the consent conditions.
110817	The developer's definition of micro-siting is unclear.	The infrastructure locations provided in the EA and this Response to Submissions report are the preferred locations. Some micro-siting of infrastructure will be required as part of the detailed design process. Any micro-siting will need to be carried out within the tight restrictions provided in the conditions of consent.

4 Response to Agency Submissions

4.1 Civil Aviation Safety Authority

Issue	Response
The DGR Guidelines should include the National Airports Safeguarding Framework (NASF) Guideline D 'Managing the Risk to Aviation Safety of Wind Turbine Installations'. The EA should refer to NASF Guideline D	The updated Aviation Impact Assessment (see Appendix F) now includes consideration of the National Airports Safeguarding Framework (NASF) Guideline D 'Managing the Risk to Aviation Safety of Wind Turbine Installations' – Guideline D.
The DGR Guidelines and the Epuron EA should refer to CASA Advisory Circular AC 139-08(0) 'Reporting Tall Structures'.	The updated Aviation Impact Assessment now includes reference to CASA Advisory Circular AC 139-08(0) 'Reporting Tall Structures'.
The EA Section 14.1.3 'Consultation' advises that Airservices Australia has requested an 'Aviation Impact Survey'. This should be consistent with NASF Guideline D and include an assessment of the requirement for obstacle lighting.	Noted. The updated Aviation Impact Study requested by Airservices Australia located in Appendix F, is consistent with NASF Guideline D and includes an assessment of the risks to aviation safety posed by the development. The assessment concluded that due to the remoteness of the proposed wind farm from aerodromes likely to be used for Night VFR operations, obstacle lighting is not required on the wind turbines.
The EA Section 14.1.4 'Assessment' advises that 'it is not considered appropriate to install obstacle lighting at the Liverpool Range Wind Farm site' due to several reasons. However, CASA cannot provide advice regarding the requirement for obstacle lighting until it has reviewed the Aviation Impact Study.	A copy of the Aviation Impact Study has been provided to CASA for their review.
The EA Assessment provided to CASA did not include the 'Consultation Material' or the Coolah Aerodrome survey document	A copy of all consultation material and the Coolah Aerodrome survey document has now been provided to CASA.
The EA Assessment Section 14.1.4 'Assessment' advises that '...new wind farm developments do not require individual assessments for night time lighting.' This statement is inconsistent with the advice provided in NASF Guideline D.	The updated Aviation Impact Study in Appendix F is consistent with NASF Guideline D and includes an assessment of the risks to aviation safety posed by the development. The assessment concluded that due to the remoteness of the proposed wind farm from aerodromes likely to be used for Night VFR operations, obstacle lighting is not required on the wind turbines.

4.2 Australian Government Department of Environment

Issue	Response
The Department is satisfied that the potential impacts of the proposal on matters of national environmental significance and, in particular, the <i>White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland</i> ecological community, the Swift Parrot (<i>Lathamus discolor</i>) and Regent Honeyeater (<i>Anthochaera Phrygia</i>) have been adequately assessed based on the additional information that was provided in the Biodiversity Assessment Addendum Report (dated July 2014).	Noted.

Issue	Response
<p>The Proponent is required to meet the requirements of the <i>EPBC Act 1999 Environmental Offsets Policy (October 2012)</i> and the <i>Offsets Assessment Guide</i> prior to the finalisation of EPBC Approval. The offset information that is required includes the location of the proposed offset areas, current conditions of the proposed offsets, management actions that are proposed to improve the ecological condition of the proposed offset and in perpetuity funding arrangements</p>	<p>The Proponent has committed to establishing offset areas as required the <i>EPBC Act 1999 Environmental Offsets Policy (October 2012)</i> and the <i>Offsets Assessment Guide</i>.</p> <p>As part of the Biodiversity Addendum an Offset Strategy has been prepared. Refer to Section 1.14 and Appendix C.</p> <p>While approximate areas have been identified, the exact size, location and vegetation type will not be known until preconstruction surveys are performed to determine the exact impact footprint.</p>

4.3 Department of Primary Industries

Issue	Response
<p>Section 15.2.2 of the EA indicates that the proposal to avoid watercourses where possible and adhere to the NSW Office of Water Guidelines for Controlled Activities on Waterfront Land. This approach is supported.</p>	<p>Noted.</p>
<p>Section 15.3 of the EA indicates water demand over the construction period of approx. 59 ML for general construction and dust suppression and 6-7 ML for concrete production is to be sourced from Burrendong Dam. The EA indicates that the proponent has initiated some discussions regarding this extraction, however these is no discussion on the process to acquire the necessary water entitlement which will need to be held within the Macquarie & Cudgegong Regulated River Water Source. The NSW Office of Water recommends the Proponent confirm the advice from State Water on the ability to extract water directly from Burrendong Dam and include a statement of commitment to acquire the necessary water entitlement prior to construction.</p>	<p>In the event that the water is required to be extracted from Burrendong Dam, the Proponent will follow the required process to acquire the necessary water entitlement which will need to be held within the Macquarie & Cudgegong Regulated River Water Source.</p> <p>A Statement of Commitment (SoC 18) has been included to ensure that the correct entitlements are obtained prior to construction.</p>
<p>The Development of a Construction Environmental Management Plan on consultation with the Office of Water which is to include a Soil & Water Management Plan and Erosion and Sediment Control Plan is supported.</p>	<p>Noted.</p>
<p>Crown Lands advises that a review of the EA indicates minimal impact on Crown Land.</p> <p>However, any use, and/or occupation of Crown Lands or roads must be authorised by way of a Crown Lands Act approval prior to any use or occupation commencing. This is of particular importance on R81766 for Public Recreation. This reserve within an area known as 'The Drip' on the Goulburn River and is an area of significant cultural and environmental importance.</p>	<p>The Proponent will continue to consult with Crown Lands and the Department of Primary industries to ensure that any occupation of Crown Lands or roads is correctly authorised.</p>

4.4 Environmental Protection Authority of NSW

Issue	Response
<p>Water</p> <p>Further information/clarification is required regarding the proposed impacts upon and measures to protect surface water and groundwater from pollution. An Erosion and Sediment Control Plan (ESCP) must be prepared in accordance <i>Managing Urban Stormwater – Soil and Construction Volume 1</i> (Landcom, 2004) and <i>Volume 2E</i></p>	<p>Agreed. The Proponent has committed to develop an Erosion and Sediment Control Plan (ESCP) as part of the EMS and in accordance with good industry practice. The ESCP will be prepared in accordance <i>Managing Urban Stormwater – Soil and Construction Volume 1</i> (Landcom, 2004) and <i>Volume 2E</i> (Mines and Construction).</p> <p>All unsealed roads and access tracks will also be addressed as part</p>

<p>(Mines and Construction) (DECC, 2008).</p> <p>All unsealed roads, access tracks and cabling will be part of the ESCP and will be prepared having regard to <i>Managing Urban Stormwater: Soils and Construction: Volume 2C Unsealed Roads</i> (DECC, 2008) and <i>Managing Urban Stormwater: Soils and Construction: Volume 2A Installation of Services</i> (DECC, 2008).</p>	<p>of the ESCP and will be developed with regards to <i>Managing Urban Stormwater: Soils and Construction: Volume 2C Unsealed Roads</i> and <i>Managing Urban Stormwater: Soils and Construction: Volume 2A Installation of Services</i>.</p>
<p>Noise</p> <p>Further information/clarification is required regarding the Noise Impact Assessment and impacts on local amenity.</p> <p>The only non-involved receiver which is expected to be affected by wind farm noise above an integer value of LAeq (10 min) 35 dB is D4-9 in Zone 3, with a maximum predicted level of 37 dB(A) from 6 m/s (hub height). While this level satisfies the derived criteria for Zone 3, further background monitoring does not appear to have been undertaken in Zone 3. The EPA previously recommended additional monitoring in this zone due to the low number of data points obtained and to confirm the derived assessment criteria. Predicted impacts at receiver D4-9 also exceeded the criteria derived for other zones.</p> <p>The EPA recommends that the proponent either be required to undertake the additional monitoring referred to above or provide sufficient justification for not performing further background noise monitoring in Zone 3, as the number of valid data points used is significantly less than that recommended by the SA EPA guidelines and the predicted impact at receiver D4-9 is greater than 35 dB (A) and the criteria derived for other zones.</p>	<p>The Proponent conducted additional background noise monitoring in Zone 3 at the original location D4-6 and at D4-9. The background noise regression curves were updated to incorporate the additional data. Both D4-6 and D4-9 are now involved in the project and the compliance criteria were updated in the regression curves to reflect this. The updated data now also confirms that the wind farm will comply with the criteria at all other non-involved receivers.</p>
<p>Operational Noise</p> <p>The Statement of Commitments in the EA appears to be appropriate for managing the operational noise impacts of the project. The EA commits to developing an Operational Environmental Management Plan (OEMP), which includes specific monitoring programs to assess noise compliance and manage operational noise impacts. Periodic compliance reporting to Department of Planning and Environment (DPE) was also proposed in the EA.</p>	<p>The Proponent agrees with this assessment and has committed to developing an ongoing operational noise compliance testing program in Statement of Commitments (SoC 9).</p>

4.5 Liverpool Plains Shire Council

Issue	Response
<p>Visual Impacts</p> <p>It has been recognised that the structural change to the landscape is somewhat subjective and underpinned by personal opinion and preference. Consequently, it is requested that appropriate fixtures, fittings and finishes be applied in accordance with recognised industry best practice. Appropriate regard should also be given to the feedback received from potentially affected LPSC residences and ameliorative measures implemented on an 'as required' basis.</p>	<p>The Landscape and Visual Impact Assessment was conducted by Green Bean Design and contains a robust methodology to remove personal opinion and preference from the assessment. However, the Proponent is committed to reducing the visual impact to nearby residents wherever possible.</p> <p>Prior to construction vegetation screening would be offered to any residence within 3 km of a wind turbine (SoC 4).</p> <p>To minimise blade glint and reflected sunlight the turbine components would be supplied with appropriate surface finish and colour in line with best practice and as advised by the manufacturer.</p>
<p>Traffic and Transport</p> <p>Technical staff have review the submitted traffic assessment and it is noted that no usage of the local road network, as currently administered by LPSC, is proposed. Council is concerned that contractors will utilise the local</p>	<p>The Proponent has committed to a Traffic Management Plan as part of the EMS in the Statement of Commitments (SoC 15). This will be prepared in consultation with RMS. The TMP will identify and perform an assessment on all routes that have been proposed and will consider any upgrades that will be required, cumulative impacts, mitigation measures and all other</p>

<i>Issue</i>	<i>Response</i>
<p>road network contrary to the EA and Traffic Management Plan (TMP) requirements. Accordingly, appropriate conditions of consent should be put in place to ensure that the use of the local road network is undertaken in line with the EA and the requirements of any future TMP and that these measures and controls be appropriately enforced and monitored through a compliance tracking scheme.</p>	<p>requirement from the RMS.</p> <p>The Proponent will include appropriate conditions in the TMP that the local roads network is only used as described in the EA and the RTS and that there is a suitable compliance tracking scheme.</p>
<p><i>Economic Impacts</i></p> <p>In the absence of a detailed social and economic impact assessment, it is considered that the draft SoC could be further strengthened to provide some further robustness and rigour to the economic predictions made should the project be approved. Such measures would include:</p> <ul style="list-style-type: none"> ▶ Mechanisms to encourage the use of local contractors during the construction phase; ▶ Use of local services (food and accommodation, fuel) during the construction phase; ▶ Ongoing use of local services during the operation phase; and ▶ Establishing a local employment strategy <p>Given the absence of a rigorous social and economic assessment, DP&E may wish to give consideration to requiring the proponents to prepare a Social Impact Management Plan.</p>	<p>The Proponent has made a commitment to prepare a Social Impact Management Plan to identify and assess opportunities for local employment, including a local employment and housing strategy (SoC 19).</p>
<p><i>Community Enhancement Fund</i></p> <p>It is noted that no community enhancement fund is currently proposed for the project. Consultation should be undertaken with the affected local government authorities as a matter of priority.</p> <p>It is recommended that the proponent enter into a formal VPA with Liverpool Plain Shire Council. The VPA funding amount shall be CPI indexed.</p>	<p>The Proponent is currently negotiating terms of a VPA with the two councils that have turbines proposed within their boundaries; Warrumbungles Shire Council and Upper Hunter Shire Council. It should be noted that since the proposal was exhibited the single turbine proposed in Liverpool Plains Shire Council has been removed.</p> <p>While the details of the fund are still to be finalised the proposed structure will allocate funding on a per turbine (commissioned) basis with the condition that the funding is awarded in the immediate vicinity of the wind farm. Non-profit organisations based in the LPSC would have the ability to apply for funding if they met the location criteria.</p>
<p><i>Ecology Impacts</i></p> <p>Council has no specific comments to make in respect of the projected impacts of the proposal.</p>	<p>Noted.</p>
<p><i>Impacts on Quirindi Aerodrome</i></p> <p>Quirindi Airport is located approx. 51 km from the project site. It is utilised for commercial and agricultural aircraft operators. It is noted that an Aviation Impact Study (AIS) is currently being prepared in consultation with Airservices Australia.</p> <p>It is requested that Council be furnished with a copy of the completed AIS to determine if the project will impact future operations.</p>	<p>The Proponent will provide the Council with a copy of the AIS.</p>
<p><i>Radio Communications</i></p> <p>LPSC currently holds ACMA licence No. 201640. The project should not interfere or impact with the ongoing operation or functionality of this service. If the service is impacted, upgrades or rectification work will be undertaken at the full cost to the proponent and to a</p>	<p>A Communications Impact Assessment was performed in section 14.2 of the EA. Telecommunications license holders within 25 km of the Proposal were identified and comments were sought on the project.</p> <p>The assessment concluded that it is unlikely there will be any effect on communication infrastructure, however if there is, the</p>

Issue	Response
standard that is satisfactory to Council. It should be clearly articulated that LPSC will not be financially liable in anyway.	proponent has committed in SoC 14 to arrange for the installation and maintenance of a satellite receiving antenna at the Proponents cost.
Bushfire Management Plan Council is supportive of the development and implementation of a BMP. The BMP should detail generic matters for consideration as detailed and submitted in the EA, and shall also consider the impacts on existing bushfire fighting infrastructure and associated mitigation measures.	Noted. The Proponent has committed to develop a Bushfire Management Plan in consultation with the NSW RFS in the Statement of Commitments (SoC 17).
Pest Management Preparation of a Pest Management Plan (PMP) should be prepared and integrate with the CEMP and OEMP. The PMP should detail mitigation and management measures of pests and noxious weeds and assign responsibility for these works (operator, lease/landholder.	Agreed. The Proponent has committed to include the development of a Pest Management Plan as part of the EMS (SoC 2).
Waste Management The proposed Waste Management Plan (WMP) should detail the licensed facilities that are likely to be impacted as a result of the development. Separate consultation should occur with LPSC if their facilities are to be used. Preclusion of the use of LPSC waste transfer facilities without prior written authorisation from Council.	Noted. The Proponent has committed to include the development of a Waste Management Plan as part of the EMS (SoC 2). The Proponent will engage in consultation with LPSC prior to using any of their waste management facilities.

4.6 NSW Health

Issue	Response
The information provided has been reviewed and there are no concerns in regard to implications to human health.	Noted.

4.7 NSW Rural Fire Service

Issue	Response
Asset Protection Zones (APZ) are to be established around each structure and building to provide a minimum separation distance to prevent direct flame contact from the hazard. APZs are to be calculated in accordance with the requirements of <i>Planning for Bushfire Protection 2006</i> . In grassland vegetation types, a minimum 10m APZ is required.	The Proponent has committed to a Bushfire Management Plan as part of the EMS (SoC 17). This includes a commitment to establish APZ around each structure.
APZs are to be maintained for the operating life of the buildings and structure in accordance with <i>Planning for Bush Fire Protection 2006</i> and the NSW Rural Fire Service document titled <i>Standards for Asset Protection Zones</i>	The Proponent has committed to a Bushfire Management Plan as part of the EMS (SoC 17). These APZs will be maintained for the duration of the life of the wind farm.
Prior to the commencement of the works, the proponent shall, in consultation with the District Fire Control Centre, prepare and implement a Bush Fire Management Plan for the site. The plan shall provide measures which address the following matters: <ul style="list-style-type: none"> ▶ Prevention of fires ignited during the construction and operation phase; ▶ Procedure for an operation response for fire suppression and mitigation in and around the site and the response to emergencies in the broader region; ▶ Maintenance of the required APZ around all 	The Proponent has committed to prepare a Bushfire Management Plan in Consultation with the District Fire Control Centre (SoC 17). It will address each of the issues listed in the NSW RFS submission.

<i>Issue</i>	<i>Response</i>
<p>buildings on the site;</p> <ul style="list-style-type: none"> ▶ Actions to minimise the risk of fire on the site; ▶ Identification of the circumstances in which work which involves the risk of ignition that should not be carried out during a bush fire danger period; ▶ Procedures for the emergency management of staff and visitors to the site; and ▶ A program for the monitoring and reporting of the effectiveness of the above measures 	

4.8 NSW Trade and Investment – Mineral Resources Branch

<i>Issue</i>	<i>Response</i>
<p>The DGRs section on Consultation Requirements includes ‘relevant minerals stakeholders (including exploration and mining title holders).’ Coal and Petroleum Geoscience do not believe this has taken place. Section 7.3.2 of the EA states that Epuron has liaised with ‘identified mineral and petroleum exploration companies’ which had been tabled in Section 16.3. However Table 16.2 does not include coal title holders, most notably Moolarben Coal Mines Pty Ltd. The list on page 251 also does not include coal companies, nor do Figures 16.3 and 16.4. DTI also notes that the Department is not listed as a relevant government agency, nor are the minerals title holders listed as key stakeholders in the Project Consultation Plan (Attachment 7)</p>	<p>During the development of options for the location of the proposed powerline and connection substation, the Proponent conducted consultation with both Ulan and Moolarben Coal Mines. Since the EA was on exhibition additional consultation has been undertaken and as a result, the alignment of the powerline and location of the substation have changed to a more suitable location for all stakeholders. All proposed infrastructure has been removed from land owned or used by Moolarben Coal Mines.</p> <p>Section 5 outlines the consultation that has occurred between the Proponent and both coal mines.</p> <p>The Proponent has been in consultation with Steven Palmer, Senior Geologist from Coal Advice in the Department of Trade and Investment Division of Mineral Resources. A series of emails have been exchanged between 2012 -2014 with maps of the proposed transmission route and substation locations included and property ownership & lot/DP map being provided on 31 October 2012.</p>
<p>Coal and Petroleum Geoscience have been informed that contrary to our advice given by Epuron, there has been no consultation with Moolarben, despite the likely transmission route covering an area of proposed long wall mining</p>	<p>The Proponent maintains its position regarding the level of consultation with Moolarben Coal Mine Pty Ltd. The Proponent initiated contact with Moolarben Coal Mine in early 2012 to raise the possibility of a transmission easement and potential switchyard on their lease land. Further consultation occurred in late 2012 when the Proponent was seeking land access to perform environmental surveys for the proposed transmission line.</p> <p>A senior property officer from Moolarben was also present at the Liverpool Range Open Day in late 2012 to discuss the project.</p> <p>A list of email contact with Moolarben is detailed below:</p> <ul style="list-style-type: none"> ▶ 22 & 27 February 2012 – Attempts between Richard Finlay-Jones to arrange a meeting with Luke Bowden, the Environment and Community Relations Manager for Moolarben Coal Operations. ▶ 5 March 2012 – Email sent from Richard Finlay-Jones to Hans Richter including an attached document that detailed the proposed transmission line and works. ▶ 5 October 2012 – Email contact with Luke Bowden of Moolarben Coal Mine Pty Ltd to discuss possible access for biodiversity and archaeology surveys. ▶ 26 October 2012 – A series of emails were exchanged between the Proponent and Luke Bowden in regards to gaining permission to perform an environmental survey on Moolarben property. Permission was initially granted for certain areas but then revoked in an official letter signed by Frank Fulham – General Manager of Moolarben Coal Operations. ▶ 1 November 2012 – Moolarben Coal Senior Property Officer Hans Richter was present at the Liverpool Range Wind Farm Open Day.

Issue	Response
	<ul style="list-style-type: none"> ▶ 25 September 2013 - Email sent to Luke Bowden to request permission for access for further biodiversity and archaeology surveys. This email was not responded to. ▶ 24 June 2015 – phone call and email to Mark Jacobs to organise a meeting to discuss the Yancoal submission and discuss modifications that have been made to the project for the RTS document. ▶ 26 June 2015 – phone discussion with Mark Jacobs to discuss modifications to the powerline that would remove infrastructure from their active mining lease, not impact their offset areas. Mark seemed satisfied and agreed to meet in the coming weeks to get more detail. ▶ 3 July 2015 – Meeting with Mark Jacobs and Michael Moore to discuss changes to infrastructure that overcome concerns with biodiversity and land use conflict. Feedback indicates that changes are acceptable. <p>Further consultation was conducted by the Proponent with Yancoal and MCO in 2016 after amendments to the proposed layout were made. All infrastructure that was originally proposed on land operated by MCO was removed and relocated. The feedback from Yancoal and MCO was that the changes were acceptable.</p>

4.9 NSW Office of Environment and Heritage

Issue	Response
<p><i>Survey Effort</i></p> <p>That the proponent be required to either –</p> <ul style="list-style-type: none"> ▶ Undertake additional surveys of the fauna of the study area, notably bats on the wind farm and arboreal mammals along the transmission line, to develop local distribution maps of species encountered. Ideally, survey effort should include, but not be restricted to, periods when it may be expected that the Eastern Bentwing-bat may migrate through the area. Map produced should give an indication of species densities, as best as is reasonably possible given the constraints of the methodologies employed, that can then be used to assess the potential impacts of the currently proposed infrastructure; or ▶ Assume that the species listed under the TSC Act EPBC Act that are predicted to occur within the locality of the project are present. These assumptions should be further informed by the OEH Threatened Species Profile Database, and other appropriate references, in regard the suitability of habitat for individual species. 	<p>Please refer to Section 7 of the Biodiversity Assessment Addendum Report (Appendix C) which provides detailed responses to the OEH submission.</p>
<p><i>Assessment of Direct Impacts</i></p> <p>That the proponent consider conducting further assessment of the potential for bird and bat strike and barotrauma within the wind farm. This assessment should consider the comments above and be undertaken prior to approval and be incorporated into the Bird and Bat Management Plan with recommendations as to what mitigating measures, such as buffer areas or reconfiguration of the turbine layout, will be implemented to minimise bird and bat strike and barotrauma.</p>	<p>Please refer to Section 7 of the Biodiversity Assessment Addendum Report (Appendix C).</p>
<p><i>Indirect Impacts</i></p> <p>That the proponent investigates the potential for the current wind farm configuration to</p> <ul style="list-style-type: none"> ▶ disrupt the migratory route of birds and bats, including species not listed in either the TSC Act and EPBC Act; and ▶ reduce the area of habitat available to fauna, in particular seasonal migratory species 	<p>Please refer to Section 7 of the Biodiversity Assessment Addendum Report (Appendix C).</p>

<i>Issue</i>	<i>Response</i>
In order to determine whether reconfiguration of turbines or additional offsets may be required.	
<p><i>Cumulative Impacts</i></p> <p>That the proponent gives genuine consideration of cumulative impacts to migratory fauna in both a regional and state wide context and give all due consideration to reconfiguring the wind farm layout should impacts be unacceptable.</p>	Please refer to Section 7 of the Biodiversity Assessment Addendum Report (Appendix C).
<p><i>Impact Avoidance</i></p> <p>That the proponent be required to:</p> <ul style="list-style-type: none"> ▶ Ensure that all avoidance measures implemented in finalising the location and design of the facility are fully described; ▶ Be required to undertake a more thorough investigation of the transmission line routes, particularly the alternate routes, to identify where modifications can be made to maximise avoidance of high conservation vegetation such as in riparian areas and ▶ Sufficiently justify the level of avoidance implemented. 	Please refer to Section 7 of the Biodiversity Assessment Addendum Report (Appendix C).
<p><i>Monitoring & Mitigation</i></p> <ul style="list-style-type: none"> ▶ That the proponent develop a Flora and Fauna Management Plan in consultation with OEH prior to approval that provides detail of how impacts on bird and bat populations will be mitigated, including details on where these actions will be implemented, performance indicators, monitoring objectives and schedule and adaptive management measures. ▶ That the proponent develop a Bird and Bat Monitoring Plan in consultation with OEH prior to approval that provides detail of how impacts on bird and bat populations will be monitored, including details on survey locations, parameters to be measured, frequency of surveys and analyses and reporting. ▶ That the proponent adequately consider the range of mitigation measures for implementation at the site to mitigate any predicted or observed bird and bat impacts, including information on the level of success of these measures at other sites (where known). ▶ That should the project be approved, the DPE include a condition of consent requiring a monitoring program capable of detecting any changes to the population of birds and/or bats that can reasonably be attributed to the operation of the project. This may require data to be collected prior to the commencement of construction. Data relating to mortality rates should be submitted to OEH on an annual basis for the first five years of operation and every two years thereafter. 	Please refer to Section 7 of the Biodiversity Assessment Addendum Report (Appendix C).
<p><i>Durridgere State Conservation Area</i></p> <p>OEH recommends that further investigations be undertaken regarding the alternate routes with specific attention being made to avoidance measures as detailed in Section 9.1 of the Biodiversity Assessment of the Transmission Line, particularly riparian areas.</p>	Please refer to Section 5 for a summary of the process the Proponent has gone through to reduce and avoid impacts on the powerline route. Full details of the biodiversity impacts can be found in the Biodiversity Assessment Addendum Report (Appendix C).
<i>Offset Proposal</i>	Please refer to Section 7 of the Biodiversity Assessment

Issue	Response
<p>That the DPE request that a detailed offset strategy should be provided prior to approval so that it's likely effectiveness in maintaining or improving biodiversity can be analysed. The offset strategy should:</p> <ul style="list-style-type: none"> ▶ Propose an offset which is supported by a suitable metric and addresses the Department's <i>'Principles for Biodiversity Offsets in the NSW'</i>; and ▶ Locate the offset sufficiently remote from the influence of the turbines. 	Addendum Report (Appendix C).
<p>Offset Ratios</p> <p>That the proponent demonstrate the adequacy of the proposed ratios by either running a BioBanking scenario, using representative data if actual data not be available, or providing OEH with sufficient data to run such a scenario itself.</p>	Please refer to Section 7 of the Biodiversity Assessment Addendum Report (Appendix C).

4.10 Roads and Maritime Service

Issue	Response
<p>Prior to the commencement of construction works, a Traffic Management Plan (TMP) shall be prepared in consultation with Roads and Maritime. The TMP shall identify the proposed route(s) and associated impacts (temporary street closures, removal and replacement of road infrastructure, upgrading of road infrastructure, etc.) which will be required in order for the necessary materials, machinery and personnel to access the site(s). The TMP shall include assessment of high risk locations that prevent safe two-way passage of traffic and how traffic movements are to be negotiated, projected delays experienced by traffic on affected roads (origin to destination), cumulative impacts and mitigation measures to be employed. The applicant is to be accountable for this process rather than the haulage contractor.</p>	The Proponent has committed to a TMP in the Statement of Commitments (SoC 15). This will be prepared in consultation with RMS. The TMP will identify and perform an assessment on all routes that have been proposed and will consider any upgrades that will be required, cumulative impacts, mitigation measures and all other requirement from the RMS.
<p>Prior to any haulage requiring over-size/over-mass vehicles and loads the proponent shall obtain special permits. To obtain a permit, the proponent will need to contact the National Heavy Vehicle Regulator on 1300 696 487.</p>	Agreed. The Proponent will have the correct permits for any over-sized / over-mass vehicle prior to haulage (SoC 15).
<p>If any parts of the proposed transport routes on classified roads are unable to cater for the project related traffic and transport, the proponent is required to improve such part of the road to safely cater for the length, size and volume of vehicles and their loads, and to protect the integrity of the classified road network. This may include the proponent constructing stopping bays (suitable hard stand areas) at distances and dimensions determined by Roads and Maritime. These areas would be required along the proposed routes to allow the following vehicle queue to pass.</p>	The requirement for the proponent to improve such parts of the road to safely cater for the length, size and volume of vehicles and their loads, and to protect the integrity of the classified road network, has been included in the revised Statement of Commitments (SoC 16)
<p>Any disturbances to traffic lanes, shoulders, verges or other disturbance within the road reserve of classified roads are to be reinstated to pre-existing or better condition. This includes any impact on the road pavement, culverts, bridges, causeways, signage and traffic islands.</p>	The Proponent has committed to a road dilapidation report and preparation of a detailed Traffic Management Plan in consultation with RMS and the councils prior to the commencement of construction in SoC 16.
<p>A full and independent risk analysis and inspection of the transport route is required and a copy of the analysis is to be supplied to Roads and Maritime. Further analysis and reporting to assess possible damage to and repair of the route will be required at regular intervals to be determined as part</p>	Noted.

<i>Issue</i>	<i>Response</i>
of the TMP.	
All arrangements for the control of traffic on classified roads are to be in accordance with Roads and Maritime's publication Traffic Control at Work Sites. A Road Occupancy Licence may be required prior to any works commencing within three (3) metres of the traffic lanes of State classified roads.	All traffic control will be performed in accordance with Roads and Maritime's publication Traffic Control at Work Sites and will be included within the TMP framework that will be provided to RMS.
Where the proponent is required to undertake private financing and construction of any works that are to be undertaken on a road in which Roads and Maritime has a statutory interest (State roads), formal agreement in the form of a Works Authorisation Deed will be required between the developer and Roads and Maritime. The Works Authorisation Deed(s) will need to be executed prior to the commencement of any such works.	Noted.
Prior to any utility service (e.g. electricity lines) crossing a classified road (e.g. Highway 27 - Golden Highway) the prior consent of the roads authority with Roads and Maritime concurrence shall be obtained.	Noted.
Adequate facilities shall be made to provide viewing platforms with wind farm information available at strategic locations to allow motorists to safely pull off the road to view wind turbines to deter unsafe viewing and driving practices.	No public viewing areas are proposed.
All works associated with the project, including consultation and planning, are to be at no cost to Roads and Maritime.	Agreed. All works will be at no cost to RMS.

4.11 Upper Hunter Shire Council

<i>Issue</i>	<i>Response</i>
<p><i>Community Enhancement Fund</i></p> <p>That the proponent be required to make an annual contribution (adjusted for CPI) to a Community Enhancement Fund based on a specified amount per turbine installed in each Local Government Area.</p>	The Proponent has committed to establishing a Community Enhancement Fund (CEF) and will consult with both Warrumbungles and Upper Hunter Shire Councils to finalise the details of a Voluntary Planning Agreement (VPA). Details on the structure and criteria for funding through the CEF will be detailed in the VPA and will be made available for public comment following due process.
<p><i>Developer Contribution</i></p> <p>That the proponent be required to make a contribution in accordance with Council's Section 94A Contribution plan (based on the development cost within the Upper Hunter Shire LGA) and or negotiate a Voluntary Planning Agreement with Council.</p>	The Proponent is currently negotiating terms of the VPA with both involved councils.
<p><i>Housing Strategy</i></p> <p>That the proponent be required to submit a housing strategy for the project workforce that deals with both the construction and operational phases of the project.</p>	The Proponent has committed to preparing a Social Impact Management Plan in the Statement of Commitments (SoC 19) which will contain a Housing Strategy.
<p><i>Traffic and Transport</i></p> <p>That the proponent be required to undertake the following:</p> <ul style="list-style-type: none"> ▶ Completion of Infrastructure dilapidation reports pre and post construction of the wind farm on all Council's assets impacted by the development at the proponents cost ▶ Submission of detailed engineering design drawings for proposed works on Council's road network and application under Section 138 of the Roads Act 1993. ▶ Pavement widening, reconstruction and bitumen 	<p>The Proponent has committed to a Traffic Management Plan as part of the EMS in the Statement of Commitments (SoC 15). This will be prepared in consultation with RMS. The TMP will identify and perform an assessment on all routes that have been proposed and will consider any upgrades that will be required, cumulative impacts, mitigation measures and all other requirement from the RMS.</p> <p>As part of this TMP, the Proponent has committed to perform a dilapidation report (SoC 16). The Proponent will also provide all detailed information to the Council once the TMP has been</p>

<i>Issue</i>	<i>Response</i>
sealing of unsealed sections of Coolah, Rotherwood and Yarrowonga Roads at full cost to the developer and ongoing annual maintenance contributions.	completed prior to construction. The Proponent will upgrade sections of the road where it is deemed necessary as a result of detailed road surveys and where commitments have been made to seal sections of the road near residences.
<i>Local Government Instruments & Policies</i> The Environmental Assessment is to be updated to reference the Upper Hunter LEP 2013 rather than the former Merriwa LEP 2000.	Noted. This has been updated in Section 2.2.

4.12 Warrumbungle Shire Council

<i>Issue</i>	<i>Response</i>
<i>Turbine Specifications</i> It appears from the EA that the Proponent proposes to build Vestas V112 3.0 MW turbines however; it appears that the noise assessment has been determined on towers that are only 80 m high, not the planned 101 m. That represents a 21 m height difference and WSC wishes to be informed in detail of the differences this causes to the noise profile and consequential impacts.	The use of Vesta V112 3.0 MW turbines in the EA is indicative only and it has not been selected as the turbine for the project. Once a turbine model has been selected the noise model will be rerun with the specific characteristics of that turbine. The Proponent will be required to prove that the selected turbine is compliant with the conditions of consent.
WSC seeks robust noise impact assessment based on an accurate reflection of the scope and magnitude of the intended infrastructure and that equipment specifications, after the assessment process is complete, will not be altered. If the Proponent wishes to select a different turbine by a different manufacturer or a turbine with larger components then WSC requests that the Development Application be reassessed.	The V112 turbine has been chosen as a representative turbine to demonstrate compliance with relevant noise standards. The noise assessment will be redone by the Proponent prior to construction and with the exact turbine model and locations. This final assessment must demonstrate compliance with relevant standards.
Similarly, the visual assessment, including the photomontages, was made using a turbine with a tip height of 157 m, whereas the tip height for the turbines to be built is expected to be 165 m, some 8 m higher. Warrumbungle Shire Council (WSC) wishes to be informed in detail of the differences this causes to the visual profile and to the number of houses that consequently are likely to have views of medium to high visual significance. WSC seeks robust impact assessment with project decision making based on an accurate reflection of the scope and magnitude of the intended infrastructure and that those equipment specifications will not be altered after the assessment process is complete.	An additional residence specific visual impact assessment (LVIA Addendum, see Appendix A) has been conducted using wireframe montages with a turbine tip height of 165m. The residences used represent the most sensitive viewpoints given their proximity to the turbine locations. The report concluded that the overall visual impact was low to medium within a 10km viewshed of the project. In addition, a comparison of tip height at 157m and 165m is presented in the Addendum and concludes there is no material change to the impact conclusions in the LVIA and EA.
On page 264 of the EA it states ' <i>micro-siting up to 100m in any direction</i> ' is sought for turbine placement. One hundred metres is a lot of latitude and may well have flow-on implications for visual impacts.	The micro-siting process is a practical means to accommodate relatively minor changes in infrastructure location during the detailed design phase. It is expected that the conditions of consent will impose tight restrictions on the extent of any micro-siting to ensure that any environmental impacts are no greater than the nominated locations.
<i>Roads and Traffic</i> The traffic and transport impact assessment is considered by WSC to be inadequate. WSC expects the report to show traffic count data for the local roads over a 12 month period to thus provide an accurate baseline of the local traffic experience and consequentially the true load on local road infrastructure. WSC expects the EA data to show the likely numbers of each category of oversize, heavy and ordinary vehicles for each of the various local roads to be traversed.	The Traffic and Transport report has been updated to include traffic count data where available and likely number of each category of vehicle. Please refer to Appendix E.

<i>Issue</i>	<i>Response</i>
WSC requires the Proponent to undertake at its expense the road alterations and upgrade works, with the planned work requiring the approval of WSC.	Noted. The Proponent will be responsible for alternations or upgrade works that have been identified in the TMP as necessary for the wind farm construction and operation. Any works that are required will be done at the expense of the Proponent and in consultation with WSC.
WSC seeks full details from the Proponent as soon as possible on the different types of vehicles to be present on the local roads and the number of trips of each vehicle type. WSC needs to know, for each of the roads likely to be impacted, the detailed traffic implications associated with the 36 months construction task (civil works spanning up to 24 months).	Once the TMP is completed prior to construction, the Proponent will provide a copy to any relevant stakeholders, including WSC. The TMP will detail the different types of vehicles to be present on the local roads, the number of trips of each vehicle type and the local roads that will be impacted during this period.
WSC seeks information from the Proponent that extrapolates the weight data in Table 13- 1 (turbine component weights), Table 16-6 (road base volumes) and Table 16-7 (concrete materials), etc. into actual truck sizes and movements.	The Proponent will provide this information to WSC once a turbine model has been selected and a TMP has been developed to accommodate the specifics of the turbine. Similarly, road base volumes and related truck movements will be provided once detailed design is complete and the total of road base volume required to be transported to site is known.
Local roads including Rotherwood Road, Bounty Creek Road, Turee Vale Road, Coolah Road, Gundare Road, Pandora Road and Coolah Creek Road will be accessed by wind farm operational traffic over approximately 30 years. This will cause a consequential increase in the maintenance requirements of these roads. WSC therefore requires the Proponent to contribute an agreed sum of money for the annual maintenance of public roads within the wind farm catchment for the operational life of the Project. Such contributions will commence on acceptance by WSC that the subject roads have been returned to, or exceed, the conditions found prior to construction, after completion of the wind farm.	The updated Traffic and Transport report is attached to this report in Appendix E. It includes a table of the proposed upgrades for local roads on the identified transportation routes.
A Voluntary Planning Agreement (VPA) is required by WSC to be negotiated with Epuron to incorporate the upkeep and maintenance of said roads and infrastructure for the life of the project.	The Proponent remains in consultation with WSC over many issues including a VPA. It is the Proponent's intention to have established a VPA with WSC prior to construction.
<p><i>Communications</i></p> <p>WSC has concerns to ensure that the Project does not interfere with various communication systems and navigation aids. Council seeks an unequivocal response from the Proponent that:</p> <ul style="list-style-type: none"> ▶ a) the WSC radio communications, ACMA Site ID Nos 11283, 137597; and ▶ b) Three Rivers Community Radio Mast adjacent to Oakey Trig Station (MT OAKY) ACMA Site ID No 48,392 (three turbines within 500 m) will not be altered in any way. 	<p>A Communications Impact Assessment was performed in section 14.2 of the EA. Telecommunications license holders within 25 km of the Proposal were identified and comments were sought on the project.</p> <p>The assessment concluded that it is unlikely there will be any effect on communication infrastructure. In particular the WSC links identified in this submissions. If there is, however, impact that can be demonstrated to be caused solely by the wind farm, the proponent has committed in SoC 14 to arrange for the installation and maintenance of a satellite receiving antenna at the Proponent's cost.</p>
<p><i>Aerial Agriculture</i></p> <p>On page 136 it is stated that a 500 m no-fly zone will be implemented around each turbine. Can the Proponent please confirm that for the eight (of 18) private air strips within 500 m of proposed turbines this means that no aerial spreading of fertilizer or pesticide will be allowed? Have all the landholders involved been made aware of this restriction? We note 14 of the 18 strips are on property owned by landholders who have signed agreements with the Proponent.</p> <p>WSC seeks an assurance that all rural airstrip users will be</p>	<p>The Proponent has advised all landowners of uncertified aerodromes (private air strips) within 5km of the proposed site of the potential impacts the wind farm development may have on aviation.</p> <p>The eight (of 18) private air strips within 500m of proposed turbines are all on property that is involved in the project. Should aerial agricultural activities be affected by the wind farm the Proponent has committed to compensate the landowner for the additional expense of alternate methods.</p>

Issue	Response
able to continue to operate safely.	
<p>Bushfire Management</p> <p>WSC seeks dialogue with the Proponent when it prepares the Bushfire Management Plan. With regard to the assessment of the bushfire risk of the wind farm, WSC wishes to see an assessment of the impact of 288 turbines and 10 monitoring masts and a new 330 kV transmission line on aerial firefighting activities (e.g. water bombing and surveillance).</p>	<p>The Proponent agrees to develop the Bushfire Management Plan in consultation with WSC and other relevant stakeholders. A full assessment of the impact of the wind farm on aerial firefighting activities will be included.</p>
<p>Draft Wind Farm Guidelines</p> <p>The NSW Government, in its response to the Committee's report in mid-2010, said it was preparing NSW Wind Farm Planning Guidelines and they would be released in late 2010. The guidelines are not yet finalised. When is the NSW Government going to finalise the Guidelines and will there be any changes such that it affects the scope, design and impact of this Project?</p>	<p>The NSW Wind Farm Planning Guidelines have now been finalised. There is no impact to this project.</p>
<p>Baseline Meteorology Data</p> <p>Page 161 of the EA states that 'noise monitoring was conducted by Epuron in the period 19 September 2012 through to 4 November 2012 and 13 August 2013 through to 16 September 2013 at 12 locations to determine baseline conditions and establish indicative criteria for surrounding residential receivers'.</p> <p>This baseline work is considered inadequate as it only covers the three months of August, September and October. Having complete and robust meteorological data is vital as it underpins the noise predictions. Effectively the baseline is devoid of data for summer, autumn and winter. It is recommended the DP&E and OEH require additional baseline meteorological data to be collected to cover the four seasons of the year and that the noise modelling be reassessed based on a full calendar years' worth of baseline data.</p>	<p>The background noise monitoring performed complies with the standard set by the South Australia EPA <i>Environment Noise Guidelines for Wind Farms (February 2003)</i> as required by the DGRs.</p> <p>The Proponent believes it is unnecessary to perform any further monitoring for the purpose of this submissions report and determination by DPE. The Proponent will however commit to establishing an ongoing operational noise compliance program as outlined in SoC 9.</p>
<p>Social and Economic Impacts</p> <p>The EA does not provide a consideration of un-used building entitlements on allotments within the visual catchment of the wind farm. The potential for the physical development of these entitlements in the future will be reduced on land within the project area and on neighbouring land within a two kilometre radius of a wind turbine. It is important that the potential to utilise unused building entitlements is maintained, so as not to constrain permissible development on the land in the future. Where un-used building entitlements cannot be maintained, the associated loss of land value should be considered.</p>	<p>The Proponent does not consider that un-used building entitlements will be impacted by the wind farm. Over the past decade, multiple major studies by respected and independent organisations in Australia and around the world have failed to find any correlation between wind turbines and declining property values.</p> <p>Any un-used building entitlements within the project area that are unable to be developed will be compensated by the rent from the wind farm. This has not been raised as an issue by any involved landowners.</p>
<p>Table 16.4 (page 255) lists the typical expenditure profile for the construction of a comparable wind farm, while Table 16.5 (page 265) lists estimated accommodation, food and fuel expenditures likely in the local or regional context. These numbers appear broad bush and WSC seeks receipt of the background data that underpins these summaries.</p>	<p>The numbers listed in Table 16.5 are drawn from a report titled "<i>Wind farm investment, employment and carbon abatement in Australia</i>" from 2012 (SKM 2012). The report was commissioned by the Clean Energy Council to undertake an independent study that presents an updated snapshot on wind farm investment, jobs and carbon abatement.</p> <p>The report collated information from wind farm assessment reports, industry databases, consultation with developers and actual costs from constructed wind farms. The numbers in Table 16.5 are drawn from this extensive information and provide an accurate reflection of what has happened at other wind farm developments and has been scaled to represent this proposal applying the multiplier provided in the report.</p>
WSC would like to be informed of the Proponent's plans	The Proponent has committed to preparing a Social Impact

Issue	Response
<p>regarding:</p> <ul style="list-style-type: none"> ▶ What proportion of the construction workforce will be 'locals' compared to 'non locals'. These numbers will have resultant consequences on housing and accommodation supply and demand and related services; ▶ How and where the project workforce will be housed. The housing of workers is an important consideration for WSC given the significant number of workers and the limited accommodation options available. Accordingly, WSC requests that the Proponent provide a housing strategy for the project workforce that is satisfactory to Council prior to the project being approved; ▶ How many apprenticeships and traineeships for local persons will be provided in order that local skills and experience are enhanced and developed. Council would like to see the Proponent commit to a minimum of five annual apprenticeships or traineeships during the construction phase of the Project; and ▶ How many employment places would be provided for Indigenous personnel during the construction phase. Council would like to see the Proponent commit to a minimum of five Indigenous staff resources provided per annum during the construction phase of the Project. 	<p>Management Plan to identify and assess opportunities to maximise local employment and other benefits (SoC 19). The SIMP would include a Housing Strategy and Local Employment Strategy.</p> <p>The Proponent has also committed to liaising with local industry representatives to maximise the use of local contractors.</p>
<p><i>Involved & Uninvolved Landowners</i></p> <p>WSC would appreciate the provision of more information that explains what constitutes an 'involved' landholder. For instance, what triggers a farmer moving from 'uninvolved' to 'involved'?</p>	<p>An involved landowner is one who has any proposed infrastructure on their property (wind turbine, transmissions line, access track or temporary construction facilities) or has entered into any commercial arrangements with the Proponent.</p> <p>An uninvolved landowner has neither a commercial agreement with the Proponent nor any proposed infrastructure on any of their land.</p>
<p>How many of the 21 'involved' landholders within a 2 km view shed (page 119) of the wind farm have actually signed legal undertakings with the Proponent? Council understands not all the landholders described in the EA as 'involved' have made legal commitments. How many fit within that category?</p>	<p>The Proponent has received consent to lodge this proposal from every landowner that has proposed infrastructure on their land, a requirement of Development Approval. The specific commercial negotiations and their status is not a planning matter.</p>
<p>What is the status of legal commitments or otherwise with the 20 landholders within 2 km of the preferred transmission line route?</p>	<p>This information is not relevant to the DA or EA.</p>
<p><i>Community Consultation Committee</i></p> <p>WSC requests that the CCC meetings are conducted face to face so as to optimize the effectiveness of discussion and to aid the building of relationships.</p>	<p>Agreed. All of the CCC meetings that have taken place have occurred in a 'face to face' setting.</p>
<p><i>Vegetation Studies</i></p> <p>WSC seeks clarification on some of the contents in Table 3.5, page 68. The table shows that approximately 792 ha of native vegetation will be modified or removed. However the table also indicates that 219 ha of land has been "not assessed" regarding vegetation. Why is this so and what does it mean regarding conducting a thorough assessment of biodiversity impacts?</p>	<p>The impact area calculations have been updated to reflect the current proposal and are displayed in section 6.4. The impacts relating to the footprint of all proposed project infrastructure have been assessed.</p>
<p><i>Biodiversity Offsets</i></p> <p>It is unclear from the EA as to what amount of land in hectares will need to be purchased to offset the biodiversity losses caused by the Project. WSC wishes to be informed prior to any determination of the Project whether lands in the LGA</p>	<p>The Proponent has committed to establishing offset areas as required the <i>EPBC Act 1999 Environmental Offsets Policy (October 2012)</i> and the <i>Offsets Assessment Guide</i>. The proposed maximum offset area requirements have been calculated in Appendix C – Biodiversity Addendum Report.</p>

<i>Issue</i>	<i>Response</i>
<p>will need to be acquired by the Proponent as biodiversity offsets.</p> <p>WSC will be seeking compensation prior to a Determination if any rateable land is likely to be lost by virtue of biodiversity offset areas being transferred to NPWS estate.</p>	<p>While approximate areas have been identified, the exact size, location and vegetation type will not be known until preconstruction surveys are performed to determine the exact impact footprint.</p> <p>The offset area will be secured in perpetuity through appropriate means registered to the land title.</p> <p>The issue of compensation for loss of rateable land is not a relevant planning issue</p>
<p><i>Lighting Impacts</i></p> <p>WSC seeks the assurance of the Proponent and the DP&E that the Project will not result in pollution that would impact on observing conditions at the Siding Spring Observatory, mostly in the form of light and dust pollution.</p> <p>WSC requests that the Proponent meet with Australian Astronomical Observatory (AAO) to discuss this matter and the Department require the implementation of a Light and Dust Management Plan if AAO deems one is necessary.</p>	<p>The Proponent has been in consultation with WSC in regards to the Siding Springs Observatory and will continue to do so. The Proponent also commits to engage with the Australian Astronomical Observatory to discuss the proposal and a possible Light and Dust Management Plan.</p> <p>It is worth noting that the Siding Springs Observatory is approximately 85 km away from the nearest proposed infrastructure.</p>
<p><i>Waste Management</i></p> <p>Table 16-8- 'Waste Streams for the Liverpool Range Wind Farm' is non-specific regarding the quantities of the various wastes likely to be generated or which facilities will be used to manage the wastes. WSC wishes to receive more information on the types and quantities of wastes to be generated during the construction phase and how the Proponent plans to manage this waste. Council has a Waste Transfer Station at Coolah and wishes to know in advance how that facility may be impacted. Thus WSC requests that the Proponent consult with it when preparing the Waste Management Plan as part of the Construction Environment Management Plan.</p>	<p>The Proponent agrees to consult further with WSC in the development of a Waste Management Plan (WMP).</p> <p>The Proponent will provide a copy of the final WMP to council prior to construction.</p>
<p><i>Financial Contributions to WSC</i></p> <p>Council will be seeking a Voluntary Planning Agreement (VPA) with the Proponent where the agreement addresses two aspects, namely:</p> <ul style="list-style-type: none"> ▶ An infrastructure upgrade component: in many ways this is similar to the traditional S 94 approach where there is a nexus, liability or responsibility or where there is a direct demand made by the Project on hard and soft infrastructure. The quantum typically is in the order of 1-2% of capex of the project and is funded prior to construction of the Project; and ▶ Annual financial contributions for public benefit purposes: typically funded projects or allocations are those that add a broader public benefit and may include intangibles. Funding in this category includes a 'social responsibility' element. Often there is some benefit for wind farm workers and their families as well as the local environment and community. 	<p>The Proponent is currently negotiating terms of the VPA with both involved councils.</p> <p>It is the intent of the Proponent to include details for a Community Enhancement Fund with provisions for administration of the fund in the VPA. Infrastructure upgrades and ongoing road maintenance will also be addressed in the VPA.</p>
<p>Under point 1 above WSC will be seeking upfront funding for the upgrade of local roads likely to be impacted by the Project.</p> <p>Under point 2 above WSC will be seeking financial contributions that provide for:</p> <ul style="list-style-type: none"> ▶ The repair and maintenance of impacted roads and intersections for the operational life of the wind farm; ▶ General community enhancement to address social amenity and community infrastructure requirements arising from the Project; and 	<p>The Proponent has committed to performing a road dilapidation study as part of the TMP and will be responsible for any works required to upgrade roads for the construction of the wind farm. Upgrades to local roads will be at the expense of the Proponent and done in consultation with the RMS and WSC.</p> <p>General community enhancement will be addressed in a Community Enhancement Fund (CEF) as discussed in SoC 20. It is the intent of the Proponent that the Community Enhancement Fund will include an allocation for maintenance of local roads.</p>

<i>Issue</i>	<i>Response</i>
<ul style="list-style-type: none"> ▶ Compensation for Project related administration and management costs. Council wishes to see the VPA negotiated before any Project Determination, with the VPA outcome to be included as a condition in any Determination. Hence, WSC requires a VPA with Epuron, the current Proponent. If and when a new owner of the Project appears, the VPA can be signed over to it. 	<p>The issue of compensation of Council administration and management time due to a development within the LGA is relevant for this development application and should be raised with the NSW State Government.</p>
<p>Council does not support the concept of a fund determined and allocated by the Community Consultative Committee (CCC), unless it is secondary to, and in addition to, a VPA. Some of the members of the CCC are part of the Warrumbungle LGA and it is the Council that has statutory responsibility to manage local affairs. Council, as part of its corporate governance, will engage widely with the Proponent, the CCC, neighbours and other key stakeholders and, via the VPA, allocate funds in accordance with the best interests of the LGA.</p>	<p>The Proponent has met with the Liverpool Range CCC and both councils to discuss the structure of the CEF. A survey of existing CEFs for wind farms was conducted by a sub-committee of the CCC. The Survey is available on the Epuron website.</p> <p>Following presentation of the results of the survey at the most recent CCC meeting, Epuron proposed that a s355 committee be established to administer the fund. This approach was broadly accepted by all stakeholders at the meeting.</p>
<p><i>Decommissioning Phase</i></p> <p>WSC wishes to see a robust road and traffic management plan for the 12-24 months of decommissioning and that such a condition is included in any Determination. WSC will require the provision of road condition arrangements similar to those during construction.</p>	<p>Noted.</p>
<p><i>Dialogue with DP&E</i></p> <p>WSC seeks to maintain close dialogue with the Department of Planning & Environment as it deliberates on the proposed Project. To this end we request:</p> <ul style="list-style-type: none"> ▶ Being notified when the Proponent's response to all submissions is available; ▶ Receiving a copy of any Project-related correspondence or reports generated subsequent to receipt of submissions; and ▶ Receiving a copy of any draft consent conditions for comment at the same time that they are forwarded to the Proponent. 	<p>Noted.</p>

5 Connecting the Wind Farm

5.1 Grid Connection Overview

Introduction

One of the key challenges with this project has been securing a feasible and viable route for the main powerline to connect the wind farm to the existing transmission infrastructure. To export power from the wind farm, Epuron assessed a number of potential grid connection options and powerline corridors in the region of the wind farm.

Linear infrastructure is complex to develop over private land. Where in the past authorities could compulsorily acquire land for public purposes such as electricity transmission, today network operators are private enterprises and are more reluctant to use their compulsory acquisition powers than their public authority predecessors. Epuron, as a private company, has no right to compulsorily acquire land and therefore is reliant on working with landowners who are willing to enter into agreements to host powerline infrastructure.

In the consideration of which route to progress the number of private landholders is a key element in the decision. One land owner declining the use of their land to host an easement can result in major deviations to the route, introduce the requirement for multiple new landowners, and result in a route which is no longer optimal from an environmental perspective.

The process followed by Epuron is outlined below and further detail can be found in Chapter 3.4 of the exhibited Environmental Assessment (EA). This approach started with a desktop assessment of route options to determine which appears to have the lowest impact and is theoretically the most likely to be secured, followed by numerous site visits and meetings with landowners to identify an environmentally acceptable corridor which is supported by the hosting landowners.

Preliminary Corridor Selection

In 2010-11 at the same time as preparing the preliminary wind farm layout, Epuron commenced investigations into the various grid connection options and general powerline corridors available for connecting the project. A number of broad grid connection options and powerline corridors were identified for connecting the project to the grid as indicated in the Grid Connection Options and Powerline Corridor Options maps below. [Figure 5-1 and Figure 5-2]

These options and corridors were then assessed in more detail, and preliminary consultation carried out with potentially involved stakeholders to identify a route suitable for further development.

The following grid connection options were identified as being proximate to the wind farm site;

- ▶ Transgrid's Wollar – Wellington 330kV Transmission Line near Ulan.
- ▶ Transgrid's Wollar – Wellington 330kV Transmission Line near Gulgong.
- ▶ Transgrid's Wollar – Bayswater 500kV Transmission Line south of Merriwa.
- ▶ Country Energy's 66kV Substation located at Dunedoo.
- ▶ Country Energy's 132kV Substation located at Beryl (near Gulgong).

Connections to the Country Energy 66kV / 132kV lines were quickly eliminated as these connection points do not have sufficient capacity to connect the wind farm.

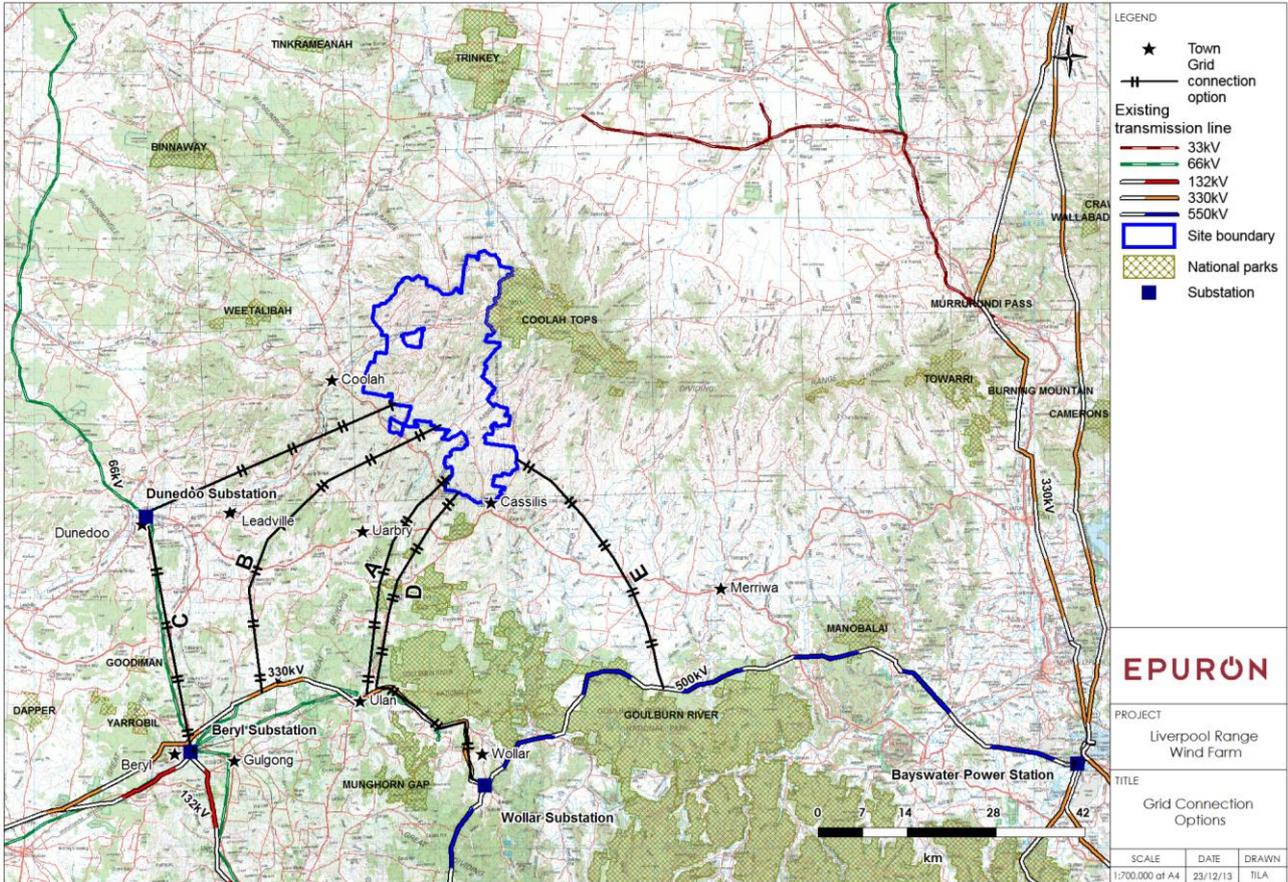


Figure 5-1 Grid Connection Options as presented in the EA

5.2 Powerline Corridors

Alongside the grid connection options a grid connection assessment was carried out for the project which aimed to consolidate the various factors into a ranked order by:

- ▶ Assessing the viability of the identified grid connection options
- ▶ Assessing the various lands, technical and environmental constraints for developing each powerline corridor to connect to the identified grid connection options from the wind farm site boundary.
- ▶ Identifying and selecting a Preferred and Alternate powerline route suitable for further development within an identified corridor.

Preparing an initial concept design of the Preferred and Alternate powerline routes to facilitate consultation with stakeholders and to enable development works to progress.

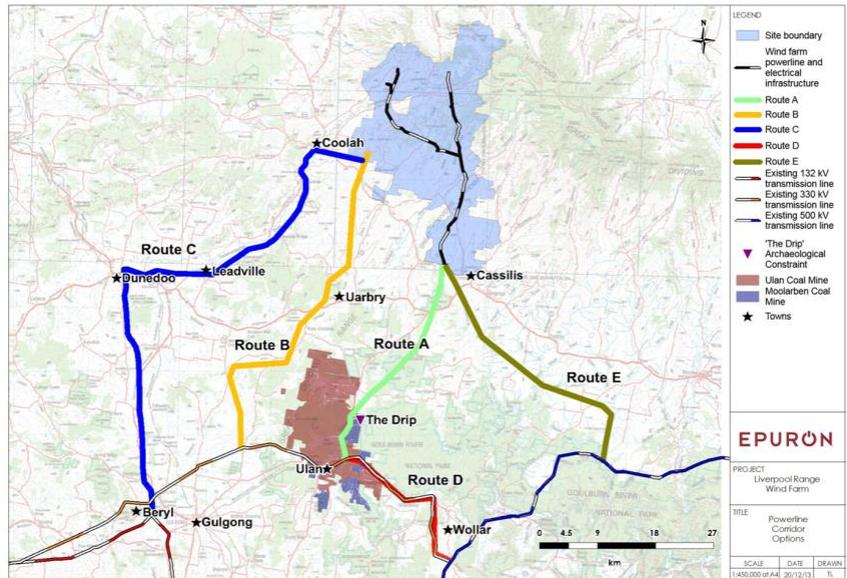


Figure 5-2 Powerline Corridor Options as presented in the EA

The assessment was included in the EA and is tabulated below.

Table 5-1 Summary of possible grid connection corridors considered

Corridor	Overall Length (km)	Number of Land Parcels	Number of Land-owners	Dwellings within 1 km	Est. of Cost (\$M)	Land access constraints	Environmental Constraints	Grid connection & technical constraints	Assessment
Corridor A South to 330 kV line near Ulan	35	57	11	7	65	low	medium	low	Most viable connection corridor overall. Land limitations in vicinity of Ulan and Moolarben Mines. Traversing Durridgere State Conservation Area. Sufficient connection capacity available for wind farm output.
Corridor B South west to 330 kV line via Uarbry	56	87	45	18	85	high	low	low	Close to Uarbry township. Large number of landholdings but unwilling landowners. Long and indirect route increases cost and visual impact.
Corridor C West to Beryl 132 kV substation via Dunedoo 66 kV substation	87	135	50	131	85	high	low	high	Insufficient grid connection capacity for output. Close to population centres at Beryl, Dunedoo and Gulgong Greatest length of all options and lowest viability. Large number of landholdings and unwilling landowners
Corridor D South then east to Wollar 500 kV substation	62	62	18	11	100	high	medium	high	Significantly more expensive and complex than other routes and with greater impacts for no additional benefits.
Corridor E South east to Wollar – Bayswater 500 kV transmission line	45	36	21	3	100	high	low	high	Cost prohibitive due to line length plus requirements for new 500kV substation and technical complexities.

5.3 Two options selected for progression

The assessment identified that the two most suitable options were south to Ulan or south west via Uarbry. These two options pivoted around the key constraint each posed – for Corridor A to Ulan there was a medium environmental constraint and for Corridor B via Uarbry there was a high land access constraint.

Following initial enquiries with landowners on Corridor B it was confirmed that land access would be a high constraint for this route with the potential to make the route longer than initially identified and consequently increase the number of landowners, the cost and the overall constraint level. A number of key landowners were unwilling to negotiating a powerline easement on their land which ultimately made this route untenable.

While the environmental constraints posed by Corridor A are non-trivial, these constraints are manageable through avoidance and mitigation to achieve an acceptable outcome. Conversely, early discussions with landowners on Corridor B, which on paper was longer, indicated that the route would be longer than anticipated due to the need to go around some landowners. This tipped Corridor B from potentially viable and feasible into unviable.

Corridor A was therefore progressed and a Preferred and Alternate powerline route within the broader Corridor A was identified and assessed including mapping of all nearby residences and completing appropriate specialist studies. The Preferred (orange) and Alternate (red) powerline routes proposed in the Environmental Assessment are shown in Figure 5-3. A further variation to this corridor (following Durridgere Rd east from Ulan Rd and skirting to the south and east of Durridgere SCA) was considered as it offered the potential to avoid impacts to the Durridgere SCA, however this corridor passes over a number of constraining land parcels and again key landowners were unwilling to host a powerline easement on their land which ultimately made this route untenable

The powerline route was divided into sections and constraints associated with each were reviewed.

The two feasible options were put on public exhibition enabling stakeholders to flag any reservations or concerns formally through submissions.

Issues raised in submissions included:

- ▶ consent requirements from landowners (including the Crown and the Minister for the Environment);
- ▶ avoiding and minimising impacts on existing vegetation where possible, and particularly any sensitive native vegetation;
- ▶ avoiding and minimising impacts on existing archaeological artefacts and areas of significance where possible;
- ▶ avoiding or minimising impacts where possible in existing vegetation offset areas (e.g. Ulan Coal);
- ▶ avoiding where possible, or minimising impacts to existing reserves (e.g. Durridgere SCA);
- ▶ technical and commercial feasibility considerations (e.g. connection switchyard location).

Following receipt of submissions the sections were reassessed and Table 5-2 which was in the EA was updated to outline the key constraints which were addressed for each section. Sections in **bold** are part of the current proposal.



Figure 5-3 Preferred and Alternate Powerline Routes outlined in the EA

Table 5-2 Summary of review of EA powerline route following submissions

Section	Route Option	Positives	Negatives
Section A - B	Single option (Preferred and Alternate)	Generally follows existing disturbed road reserve corridor and land between road and coal mine.	Minimal. Amended since EA to avoid existing mine infrastructure on and near the road reserve. The location of the switchyard land is on previously disturbed mine land.
Section B - C	Western Option (Alternate)	Follows existing disturbed area of mine infrastructure Increases distance to heritage points (The Drip, Hands on Rock)	More constraints than eastern option, unacceptable to Ulan Coal Mine due to potential impact on mine management. Less favoured by Mudgee Local ALC due to the number of artefacts. Encroaches on sensitive cliff line habitat and existing environmental offset areas.
Section B - C	Eastern Option (Preferred)	Impacts to Reserve and riparian area can be avoided and minimised by micro-siting of easement. Use of road reserve maximised. Impacts to Ulan offset area minimised and offset	Encroaches on and near proposed environmental offset area declared for Ulan Coal Mine.
Section C - D	Western Option (Preferred)	Direct Route over private landholding No longer used - see new route west and north of 'Green Hills' on map below.	Epuron unable to secure land agreement. Landowner has other plans for land. Timing of land sale rules out use of land.
Section C - D	Eastern Option (Alternate)	Route over private landholding No longer used – see new route west and north of 'Green Hills' on map below.	Epuron unable to secure land agreement. Landowner has other plans for land. Timing of land rules out use of land.
Section C - E	New section replacing both previous C–D options and D-F-E option	Lands secured, minimised environmental impacts, creates linkage between two segments of the SCA for offsetting	Includes minimised impacts to additional portions of the SCA along edges. Has taken time to secure.
Section D - E	Eastern Option (Preferred)	Revised route significantly minimises impacts. Most direct route with lower overall environmental impacts than section D – F. Reduced clearing requirements and number of houses nearby	Fragmentation of and impacts to Durridgere SCA in previous route not supported by OEH
Section D - F	Western Option (Alternate)	No longer used.	Impacts to sensitive vegetation (Turill SCA) Proximity to houses in the vicinity of Turill. Complex land tenure issue causing gap in corridor
Section F - E	Eastern Option (Preferred)	No longer used.	Road crossing at Golden Highway and Ulan Road.

			<i>Narrow portions constrain options</i> <i>Clearing vegetation on road reserves.</i> <i>Proximity to houses.</i>
Section F - G	<i>Western Option (Alternate)</i>	<i>No longer used.</i>	<i>Longer and more expensive corridor.</i> <i>Impacts sensitive western edge of Turill State Forest. Terrain poses construction challenges</i>
Section E - G	Single Option (Preferred)	Avoids impacts to sensitive vegetation identified in F – G section. Avoids impacts to a larger number of landowners and residences, further south in the vicinity of Turill.	Minimal. Crosses Golden Highway near Cassilis.

5.4 Key issues to be addressed

The four key issues to be addressed by further exploration of the powerline route were:

1. Ensure that the proposed route could be secured, and is viable and feasible.
2. Minimise impacts to Durridgere State Conservation Area in particular, and to ecological impacts generally,
3. Minimise (assess, liaise and agree) the final route arrangements in the vicinity of the Ulan Coal Mine's proposed Bobadeen East Vegetation Offset Area,
4. Finalise the location of and land tenure arrangements for the switchyard on Ulan Coal Mine's land, and

Secure a viable and feasible route

At the time of submitting the EA, Epuron had held preliminary discussions with potential powerline hosts to confirm that the corridor was likely to be acceptable.

Since submitting the EA, Epuron has actively negotiate with all potential landowners with a view to securing land agreements for the relevant powerline corridor prior to finalising the route and preparing its response to submissions. This is essential to provide certainty of the final corridor.

'Discussions have been held with all relevant landowners including

- ▶ OEH (see below)
- ▶ Ulan Coal Mine Limited (see below)
- ▶ The relevant Local Aboriginal Land Council
- ▶ Crown Lands and
- ▶ All private landowners

A number of private landowners for various reasons were unwilling or unable to enter into land agreements with Epuron which would allow the project to be technically and commercially feasible. Affected land parcels were removed from the corridor and alternate paths pursued. As a result the final route includes a number of changes:

- ▶ The corridor labelled C to D in Figure 5-3 has by necessity been relocated to the west, impacting the western section of the Durridgere SCA;
- ▶ The corridor labelled F to E in Figure 5-3 is unable to be used; and
- ▶ The corridor labelled D to F in Figure 5-3 is no longer tenable, both due to the ability to secure land and due to elevated environmental impacts on approach to the Durridgere SCA (see below).

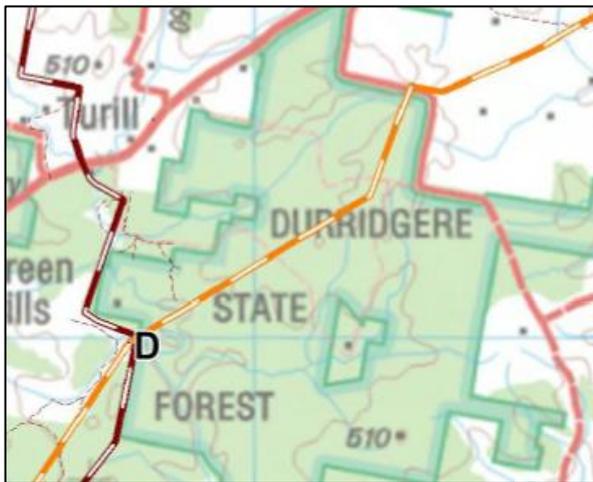
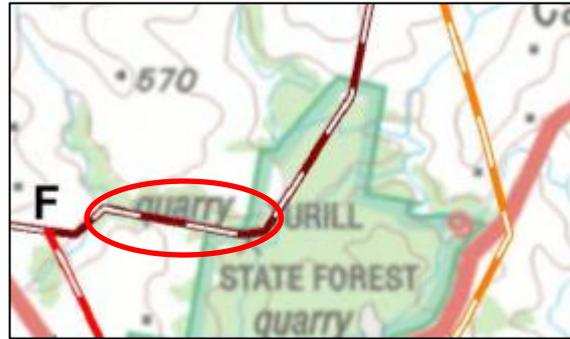
Following significant discussion with private landholders of both new options for the route and revisiting those who had already rejected the option of hosting the powerline, a final route was secured which achieves the key outcomes of minimising impacts yet securing a viable route. Commercial terms are agreed and/or land agreements are in place for all private landholdings on the currently proposed powerline route.

Minimise impacts to Durridgere State Conservation Area

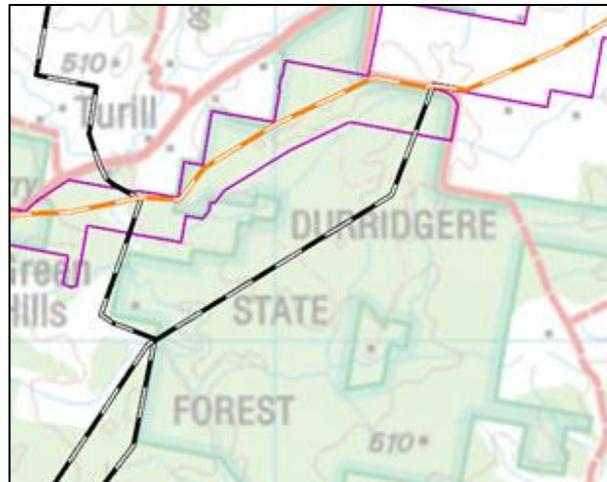
Previously the Powerline was proposed through a central area within the main Durridgere SCA. OEH expressed significant concern at the potential fragmentation resulting from this corridor, and as a result Epuron and OEH reviewed alternates and identified a corridor which more closely follows the reserve boundaries.

The two routes, the preferred and alternate, shown in the EA were the two most promising routes available to connect the wind farm. However, each option had some impacts and challenges:

- ▶ the alternate route shown in the EA which veers north west from the main Durridgere SCA towards the north had a number of issues:
 - over the course of discussions a key signed landowner was found to have an unresolved legal complication on the land title. Negotiations to bypass this landowner through neighbouring land were not progressing.
 - this route required access into Turill SCA along a 44 hectare strip of land owned by The State of NSW (see right). This strip of land has both high ecological values (TSC and EPBC Acts) and also presented a high level of engineering challenge – both constraints associated with the complex riparian corridor within it.
- ▶ The preferred route as shown in the EA dissected the Durridgere SCA (see below left). OEH did not support the location of the transmission corridor noting in their submission that it “constitutes a threat to the natural condition and the special features of the SCA”. The revised route, shown in orange (below right) skirts the edge of the SCA.



EA transmission route through Durridgere SCA



RTS Preferred transmission route

Subject to the Minister’s consent to the revised, minimised impact powerline and powerline easement in Durridgere State Conservation Areas (DSCA), in accordance with the National Parks and Wildlife Act, and the Crown’s consent to the powerline crossing a number of Crown parcels, this powerline is able to be secured.

The current proposed Powerline has minimised the impacts by entering the SCA further north through recently secured landowners and skirting around the north-west section of the SCA. This area was more recently logged and has a reduction of two kilometres in length over the previous route, being 4.8 km in length where the previous route was 6.4 km.

In creating a lower impact route through the main section of the Durridgere SCA this new powerline route:

- ▶ avoids and minimises impacts to higher value biodiversity areas within the Durridgere SCA

- ▶ avoids the powerline going through the section of the SCA which was previously Turill State Forest. The entry point of the previously exhibited alternate powerline into the Turill State Forest was through an area containing EEC and CEEC
- ▶ has reduced biodiversity impacts:
 - the previous preferred powerline route impacted 88.87 Ha of EEC
 - the previous alternate powerline impacted 113.60 Ha of EEC
 - the current proposed powerline impacts 62.66 Ha of EEC
- ▶ avoids fragmentation of areas of the SCA,
- ▶ while the currently proposed powerline includes a short additional section of SCA along the border of the Curryall SCA it also secures an adjoining block of land of 219 hectares as an offset, which creates significantly improved connectivity between two previously unconnected sections of the SCA, and
- ▶ avoids proximity to a number of dwellings in Turill where the previous route crossed the Ulan Road.

The current proposed route for the powerline is shown in orange in Figure 5-5 with previous routes shown in black.

Minimise impacts to Bobadeen East Vegetation Offset Area

The Bobadeen East Vegetation Offset Area is part of Ulan Coal Mine Limited's (UCML) approval conditions. This Offset satisfies a number of mitigation requirements for the mine under both the NSW and Commonwealth legislation. The offset is part of a number of offsets currently being secured by UCML in perpetuity.

Epuron is working with UCML and OEH to ensure that the powerline easement proposed through the Bobadeen East Vegetation Offset Area is consistent with the existing offsetting requirements under UCML's state and federal approvals.

The current proposal is for the impacts caused by the powerline easement to the Bobadeen East Vegetation Offset Area to be addressed by a minor adjustment to the boundaries of the BEVOA within the identified offset lands. These proposed boundary adjustments will ensure that the BEVOA will continue to comply with UCML's approval conditions and UCML's offset requirements despite the powerline easement running through the original location of the BEVOA. Alongside this the impacts of the powerline generally will be offset as part of this application (SSD 6696), thus ensuring a net positive outcome.

Finalise Location and tenure - Switchyard/Substation on UCML land

Epuron and UCML have engaged in a thorough and constructive dialogue to find a location for the switchyard/substation location required by the Wind Farm in proximity to the TransGrid 330kV Wollar to Wellington transmission line. UCML had concerns that some of the previously proposed locations for the switchyard/substation might impact upon the Goulburn River Diversion Remediation Plan approved, following stakeholder consultation, in 2013.

An area of land has been identified, agreed by both parties and assessed as suitable in scale, location and impacts to host the switchyard/substation. Land tenure arrangements are well progressed. The subdivision of this parcel of land is part of the approval sought under this application SSD 6696.

5.5 Impact Area Calculations

The current proposed powerline route has a lower overall environmental impact than the previous preferred and alternate powerline routes detailed in the EA.

The impacts of the two previous options and the current option of the powerline from the existing TransGrid 330kV through the wind farm site are outlined in the table below;

Table 5-3 Impact Area Comparison

Condition class	CEEC	EEC	EA preferred (total length 94.9 km)	EA alternate (total length 99 km)	RTS current powerline (total length 81.9 km)	Reduction in impacts (from EA preferred)
Good	Yes	Yes	1.31	0	1.31	0
Moderate-Good	Yes	Yes	2.64	22.78	9.05	-6.41
Moderate	No	Yes	3.43	5.62	4.03	-0.6
Poor-Moderate	No	Yes	9.16	16.22	5.54	3.62
Poor	No	Yes	72.39	68.98	42.73	29.66
Total EEC			88.93	113.60	62.66	26.27
Total CEEC			3.95	22.78	10.36	-6.41

5.6 Final powerline route

The final powerline route shown in Figure 5-4 has been developed taking into account all submissions, and in particular the key issues identified above. The final powerline route has a number of advantages including:

- ▶ Feasibility – reviewed alongside all other routes, the current proposed powerline provides the best overall outcome when considered against land access, environmental and archaeological impacts, proximity to dwellings, easement length, cost to build, connection availability, local amenity and other environment and amenity impact considerations.
- ▶ Minimised impacts - the current proposed route reduces the impacted area of EEC vegetation by 26.27Ha compared to the EA preferred route and 50.94Ha compared to the alternate.
- ▶ Secured and securable land tenure.

In minimising impacts Epuron has worked with stakeholders to ensure that the final route is likely to achieve both planning consent and secure land tenure. Epuron is appreciative of the significant input of landowners, NP&WS, Glencore and UCML personnel, Crown Lands, the Mudgee Local Aboriginal Lands Council and NSWALC and a number of NSW state government departments in working to achieve the final viable, feasible transmission connection route.

Epuron will continue to consult with the community and all stakeholders in relation to this powerline easement.

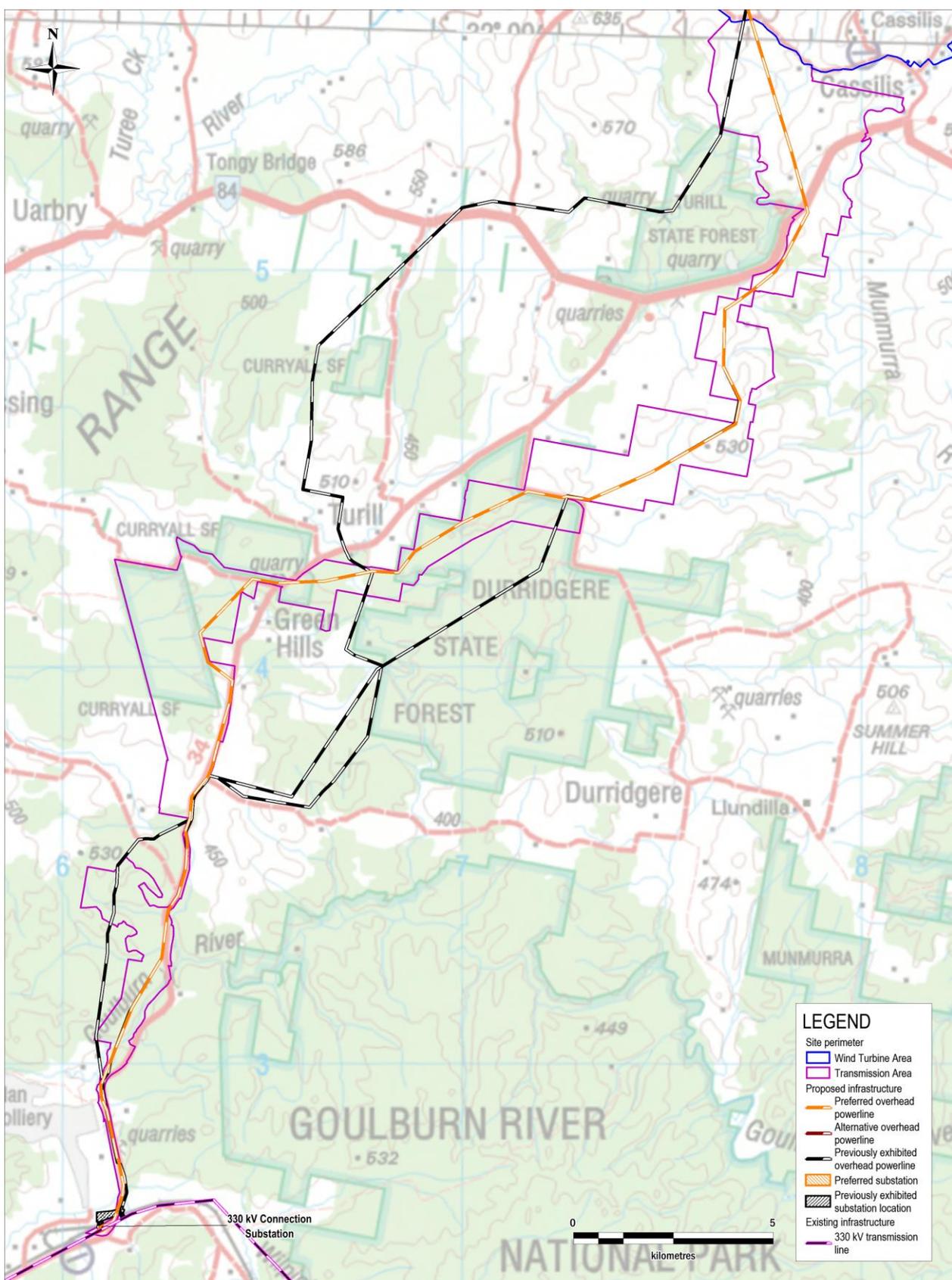


Figure 5-4 Proposed Powerline Route

6 The Project

6.1 Introduction

This section provides an updated description of the Project which reflects the changes made in response to submissions received during the public exhibition of the EA.

The Project involves the construction, operation and decommissioning of a wind farm with up to 282 wind turbines, together with the associated and ancillary infrastructure.

The main components of the Project are:

- ▶ up to 282 wind turbines, each with:
 - a capacity between 1.5 and 3.6 MW;
 - three blades mounted on a tubular steel tower, with a combined height (tip height) of a maximum of 165 meters;
 - an adjacent pad mounted wind turbine transformer (or located within the steel tower), crane hardstand area and related turbine lay down area;
- ▶ a new overhead powerline approximately 43 km in length, rated at up to 330kV capacity, from the connection substation to the wind farm site. The powerline will then continue north within the wind farm site for approximately 39 km to connect all the collection substations on the wind farm site;
- ▶ a new 330kV connection substation located adjacent to the existing TransGrid Wollar to Wellington 330kV transmission line, located near Ulan;
- ▶ up to four new collection substations located across the wind farm site;
- ▶ operation and maintenance facilities incorporating a control room and equipment storage;
- ▶ various construction facilities including; temporary concrete batching plants, rock crushing equipment, temporary lay down facilities and construction compounds;
- ▶ underground and overhead 22kV or 33kV electrical reticulation cabling linking the wind turbines and the collection substations;
- ▶ access tracks required for each wind turbine and the related facilities;
- ▶ minor upgrades to local roads, as required for the delivery, installation and maintenance of wind turbines and the related facilities;
- ▶ the subdivision of land so as to create new lots for the proposed connection substation; and
- ▶ temporary and permanent wind monitoring masts for wind speed verification, weather and general monitoring purposes.

An overview of the revised wind farm layout can be seen in Figure 6-10 with more detail of the site shown in Figure 6-11 to Figure 6-18.

6.2 Changes since exhibition of EA

The wind farm layout and design has been amended to incorporate findings of further site investigations and consideration of issues raised by the community and other stakeholders through the public exhibition of the original EA, and through further consultation with the community.

The following sections outline the key changes made since the exhibition of the EA and should be read in the context of the EA. Figure 6-1 to Figure 6-5 provides an overview of the current layout with a comparison to the layout exhibited in the EA.

6.2.1 Wind Turbine Layout

There have been a small number of changes to the turbine layout. Wind turbine locations were reviewed following the receipt of submissions from public and government stakeholders along with requests from landowners involved in the project. A total of 6 turbines have been removed from the proposal and 20 have been relocated for reasons described in Table 6-1. No additional turbines have been added to the project and the relocated turbines were all moved within the existing survey area, ensuring impacts were minimised within the known ecological values assessed. The changes have also been highlighted in Figure 6-1.

The turbine capacity has been slightly increased from 3.5 to 3.6MW to reflect turbine models currently on the market and to maximise the energy benefit of the project. There would be no increase in the dimensions of the turbine (tower height and blade length).

Table 6-1 Changes to the turbine layout

Turbine No.	Distance relocated (m)	Bearing relocated	Reason for move
2	398	SW	Avoid native vegetation
14	43	NW	Inter-turbine spacing
16	277	W	Improve constructability, avoid native vegetation.
53	80	W	Inter-turbine spacing
69	Deleted		Landowner request to avoid existing airstrip.
77	3218	N	Landowner request to avoid existing airstrip.
78	80	N	Improve constructability, avoid native vegetation.
83	95	NW	Inter-turbine spacing, avoid native vegetation.
90	72	W	Improve constructability
92	Deleted		Landowner request to avoid existing airstrip.
102	199	SE	Improve constructability
117	69	N	Avoid native vegetation
118	29	N	Avoid native vegetation
119	585	W	Reduced Visual Impact for E3-3
120	86	NW	Inter-turbine spacing
155	2065	SW	Relocated the single turbine proposed within Liverpool Plains Shire Council.
168	65	W	Improve native vegetation separation.
179	Deleted		Avoid noise and shadow flicker impacts at residence F7-3
186	523	NW	Improve native vegetation separation. Reduce noise and visual impacts for neighbouring residents.
204	Deleted		Avoid noise and shadow flicker impacts at residence F7-3
214	68	NE	Avoid native vegetation.
216	Deleted		Avoid noise and shadow flicker impacts at residence F7-3
223	1946	SW	Avoid native vegetation.
224	123	SW	Improve constructability
228	Deleted		Avoid noise and shadow flicker impacts at residence F7-3
245	97	W	Avoid native vegetation.

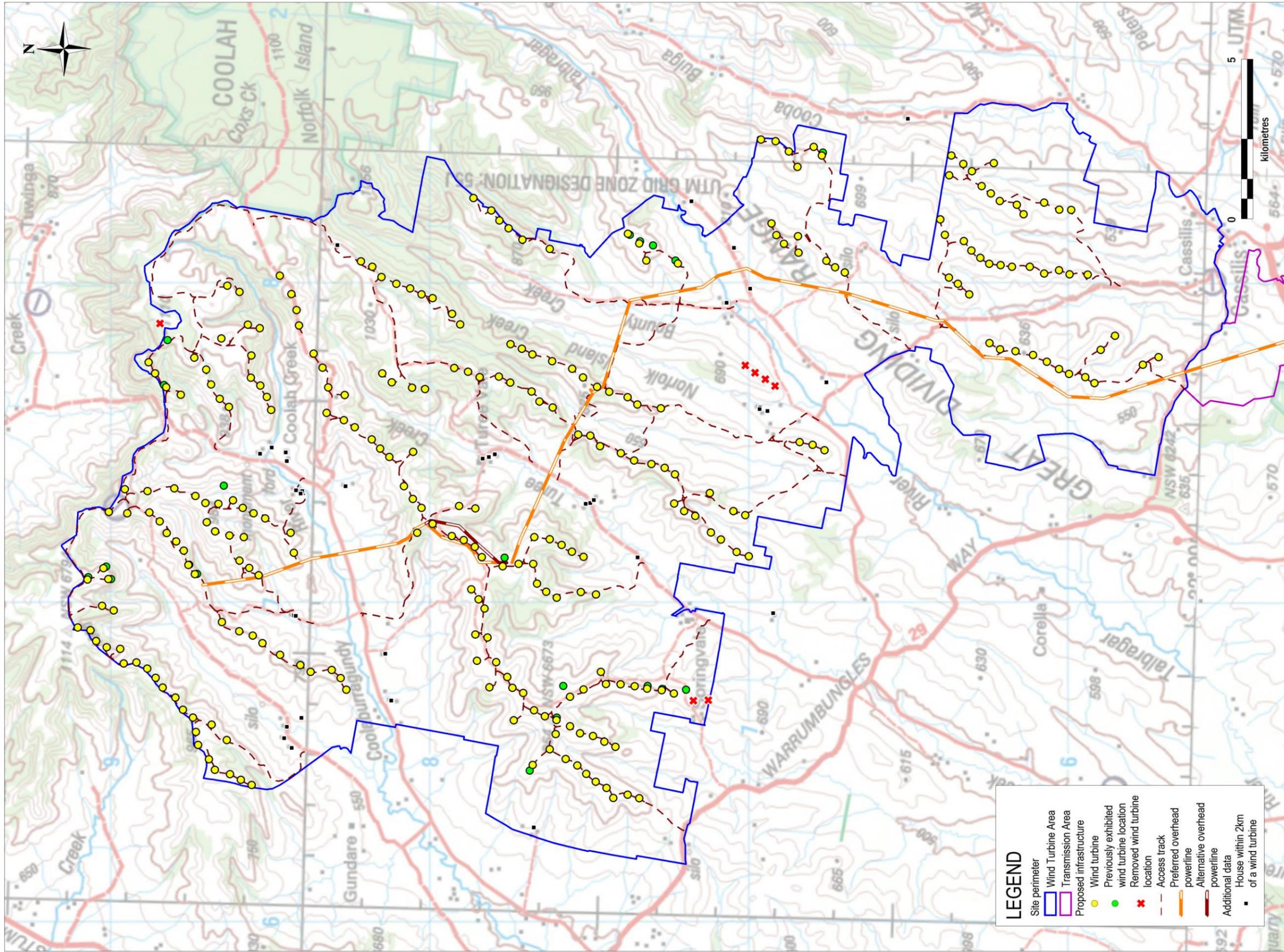


Figure 6-1: Changes to the turbine layout



Figure 6-2: Example of change to wind turbine layout

6.2.2 Powerline Layout

Two branches of the main powerline in the northern section of the site have been consolidated into one continuous line running from north to south. The overall number of substations on site and the temporary site facilities will remain the same, but their locations have been adjusted to accommodate the realignment of the main powerline. Likewise, the onsite overhead reticulation cabling has been adjusted to fit into the new design of one single powerline.

The net result of these changes means an overall reduction in the footprint required, in turn reducing the impact area for vegetation clearing. Some micro-siting of the main powerline has also occurred to ensure that the easement avoids wooded areas wherever practical.

The most noticeable change to the proposal is the alignment of the main powerline running from the southern boundary of the site down to the connection substation at Ulan. While a preferred and alternate route was submitted as part of the EA, this has largely been consolidated into a single route.

The final alignment of the preferred route has been achieved after extensive consultation with landowners and land authorities including:

- ▶ NSW Office of Environment and Heritage (OEH) which manages the State Conservation Areas through which the powerline will pass;
- ▶ NSW Crown Lands - which manages paper and crown road corridors;
- ▶ Ulan Coal Mine Limited - which is a significant landholder within the corridor; and
- ▶ the Mudgee Local Aboriginal Land Council and NSW ALC which holds an undetermined land claim in relation to portions of the powerline corridor.

A contiguous powerline route which is commercially, technically and environmentally acceptable has now been identified.

A detailed summary of the process the Proponent has gone through to minimise the impacts from the main powerline and a summary of the alternate options considered is contained in Section 5.

Table 6-2 Changes to the powerline layout

Item No.	Comment
Changes within the wind farm site	
1	330kV line from proposed Substation - Coolah Tops to Substation - Bounty Creek (Alternate) removed as part of the simplification of the main powerline and to minimised visual impact across the site.
2	330kV line moved between 1-3.5km east to connect the relocated Gundare and Coolah East Substations
Changes to the Transmission Line from wind farm site to connection substation at Ulan	
3	330kV line relocated north-west through Durridgerie SCA to reduce ecological impacts. The route then continues west to cross Ulan road near Cliffdale Road.
4	330kV line relocated to western side of Ulan road between Cliffdale Rd and Durridgerie Rd.
5	330kV line realigned to avoid Square Tail Kite nest (approximately 4km north of connection substation)

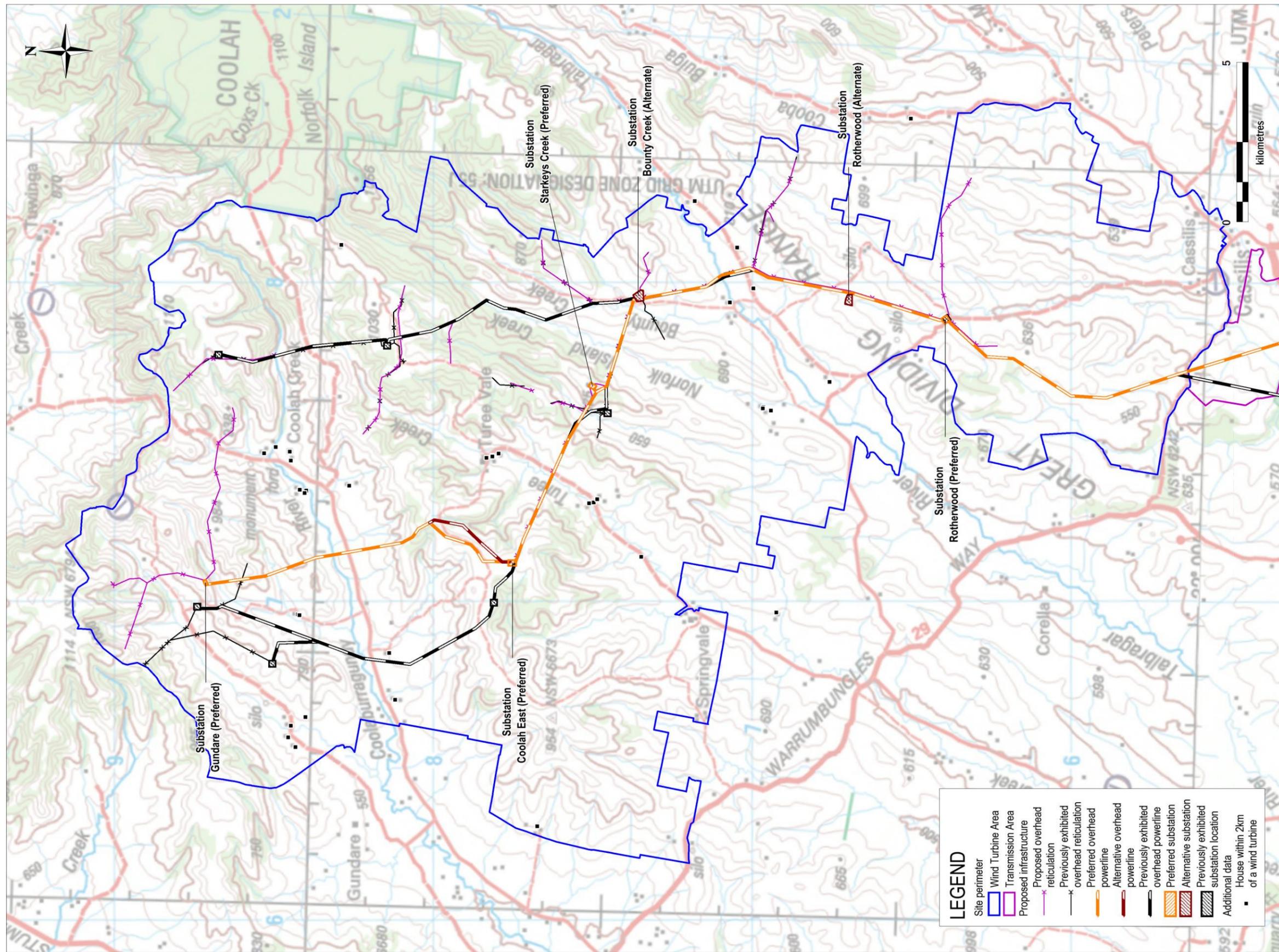


Figure 6-3 Changes to the Powerline layout – Wind Farm Area

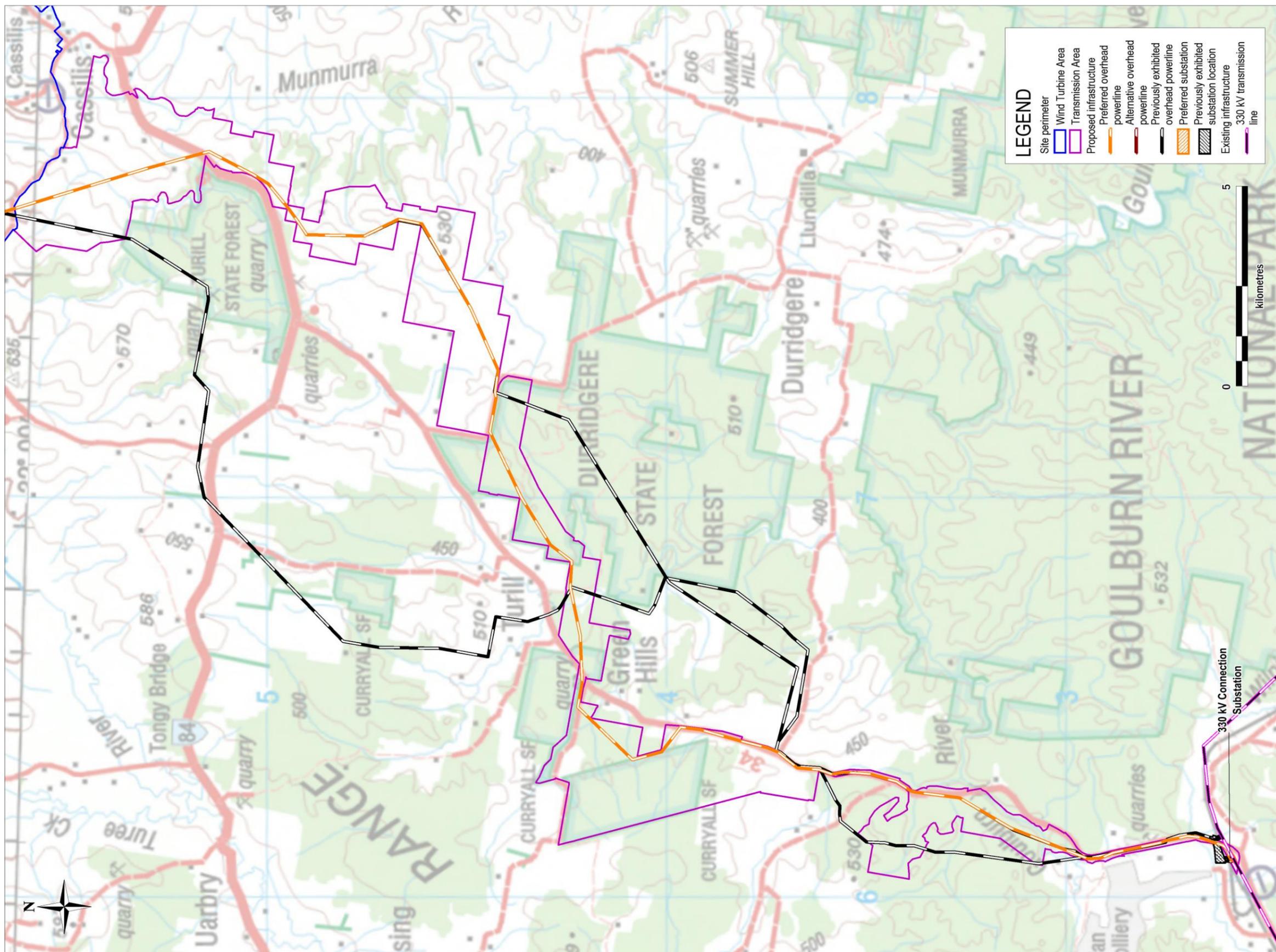


Figure 6-4: Changes to the Powerline layout - Transmission Area

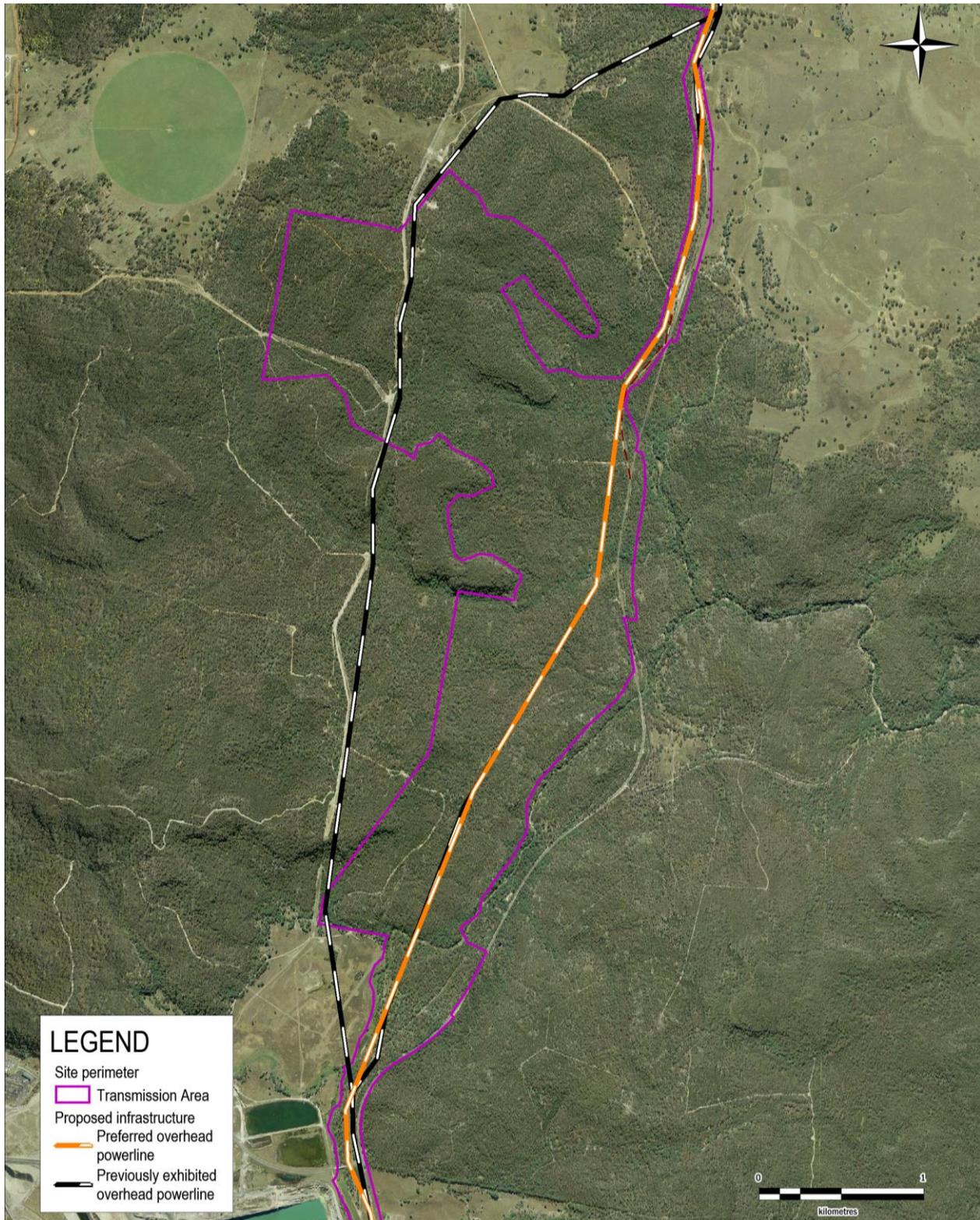


Figure 6-5: Example of changes to the powerline route

6.2.3 Connection Substation

The connection substation has been relocated and is now adjacent to the existing 330kV transmission line from Wellington to Wollar on land currently owned by Ulan Coal Mine Limited (UCML). The Proponent was advised by UCML that the preferred and alternate options presented in the EA created challenges to ongoing and future operations at the mine. In consultation with UCML the connection substation was relocated to a more suitable location south of the rail line.

Land Subdivision

The new location of the proposed substation is shown in Figure 6-6. It is located on Lot 4 in Deposited Plan 1214133 (4/1214133). This proposal also seeks approval to subdivide the land shown in Figure 6-6 to create a new lot for the connection substation and associated facilities.

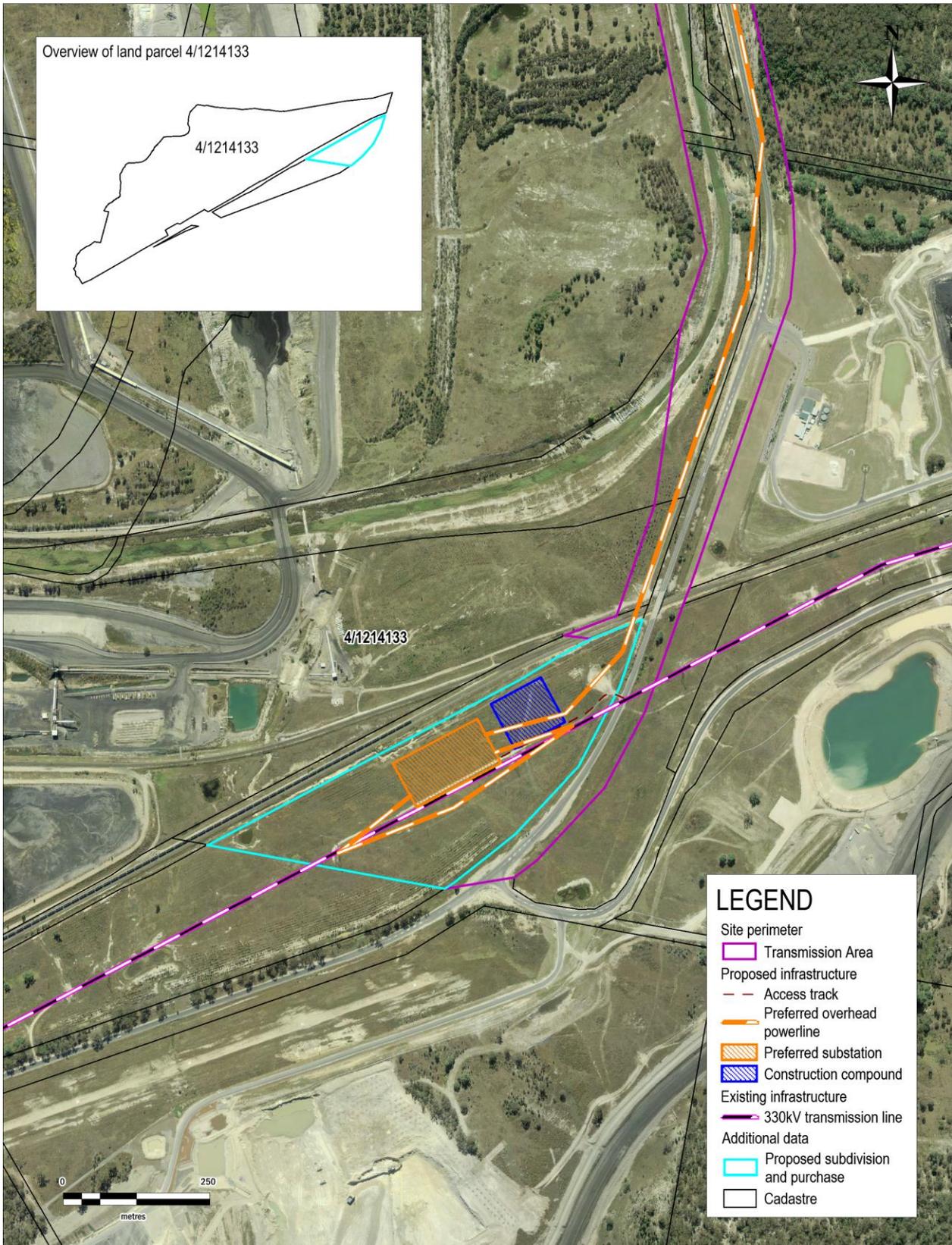


Figure 6-6: Proposed connection substation and subdivision

6.2.4 Collection substations and temporary construction facilities

The EA presented six collection substations on the wind farm site with several alternate options. As part of design development and as a result of simplifying the main powerline, the number of proposed substations has been reduced to four preferred locations with two alternate locations. Figure 6-3 shows how the main powerline simplification has enabled the reduction in substations and the new locations compared to those exhibited in the EA.

Table 6-3 Changes to the O&M facility, substation, concrete batch plant and other infrastructure layout

Item No.	Comment
1	Gundare Substation (Preferred) relocated 785m East to accommodate simplification of the main powerline
2	Turee North Substation (Preferred) removed - redundant substation option removed due to simplification of main powerline.
3	Coolah Tops Substation (Preferred) removed - redundant substation option removed due to simplification of main powerline.
4	Coolah East Substation (Preferred) relocated 1,360m South East to accommodate simplification of the main powerline
5	Gundare Substation (Alternative) removed - redundant substation option removed due to simplification of main powerline.
6	Starkeys Creek Substation (Alternate) relocated 960m North East and reclassified as Starkeys Creek (Preferred) as part of design development resulting from the simplification of the main powerline.
7	Bounty Creek Substation (Preferred) reclassified as Bounty Creek Substation (Alternative) as part of design development resulting from the simplification of the main powerline.
8	Construction compound and concrete batch plant situated between turbines 62 and 139 removed (On Coolah Creek Rd) in response to submissions received by nearby residents.
9	New construction compound location proposed 2,000m south of turbine 115 to replace removed compound on Coolah Creek Rd. New location provides improved screening from local road and nearby residents.
10	Construction compound and concrete batch plant situated between turbines 201 and 126 removed (on Turee Vale Rd)
11	New construction compound and concrete batch plant locations proposed 1,250m S of turbine 44 to replace removed compound on Turee Vale Rd. New location provides improved screening from local road and nearby residents.
12	New site access point with construction compound and concrete batch plant locations proposed 1,000m SW of turbine 23. Improved access to turbine locations. Construction compound would be used for turbine component delivery and would reduce the number of movements for oversized and concrete vehicles on local roads
13	New site access point with construction compound and concrete batch plant locations proposed 1,850m SE of turbine 5. To reduce vehicle movements on local roads by maximising the internal access tracks created for the project.
14	New construction compound location proposed 1,500m SE of turbine 10. Alternate compound location for new site access point.
15	330kV connection substation (Preferred) relocated 650m SW. Relocated at the request of the landowner Ulan Coal Mine Limited for operational reasons.
16	330kV Connection Substation (Alternative) removed. Redundant substation option removed following consultation with Ulan Coal Mine Limited.
17	Construction compound adjacent to 330kV Connection Substation (Alternative) relocated 400m S adjacent to 330kV Connection Substation (Preferred). Relocated along with preferred Connection Substation.

6.2.5 Overhead and Underground Reticulation

Overhead and underground electrical reticulation has been amended as a result of the changes to turbine locations and electrical infrastructure such as the substations and main powerline. Overhead reticulation has been utilised to accommodate the simplification of the main powerline and generally is used when underground reticulation is not practical, for example when crossing rivers or valleys. Underground reticulation generally follows the access tracks between turbines and substations and any changes to the access track layout include relocation of the associated underground reticulation.

Table 6-4 Changes to Overhead and Underground Reticulation

Item No.	Comment
1	33kV preferred and alternate line moved from turbine 45 north to 98 to avoid areas used for aerial agriculture
2	33kV line added from turbine 154 to new proposed northern section substation to allow the removal of 330kV line and associated substation.
3	New 33kV line added to facilitate the simplification of the 330kV powerline between 184 and 207

6.2.6 Site Access

Access tracks across the wind farm have been updated to accommodate the relocation of other infrastructure such as substations and construction compounds. Additional site access points are proposed to address concerns about the location of construction compounds and traffic on local roads. Two new site entry points outlined in Table 6-5 will reduce the number of vehicle movements on Turee Vale Rd and Coolah Creek Rd and enable more suitable locations for construction compounds and batching plants.

Table 6-5: Changes to site access

Item No.	Comment
1	Access track from turbine 262 to Rotherwood Rd relocated to provide direct access to the proposed <i>Substation – Rotherwood</i> .
2	Track from <i>Substation – Rotherwood</i> to turbine 255 removed following design development.
3	Access track to turbine 179 not required after four turbines were removed.
4	Track to <i>Substation - Starkeys Creek</i> removed after substation was relocated.
5	Alternate access track to turbine 200 removed. Access from construction compound at Substation – Bounty Creek through to turbine 200 was redesigned to minimise total distance and vegetation clearing.
6	Access Track between turbine 222 and 158 removed to avoid native vegetation clearing.
7	Track to turbine 69 removed after the turbine was deleted.
8	Access track between turbine 66 and 52 removed to avoid vegetation clearing.
9	Access Track between turbine 131 and 60 removed and surrounding tracks simplified to reduce the overall footprint and vegetation clearing.
10	Access Track between turbine 7, 1 and 3 removed and surrounding tracks simplified to reduce the overall footprint and vegetation clearing.
11	Access tracks from Gundare Road and Site Entry Point 17 to the <i>Substation – Gundare (alternate)</i> no longer required after substation was removed.
12	Access track leading to the previous location for turbine 155 removed after the turbine was relocated.
13	New Access Track from Site Entry Point 10 (Rotherwood Road) to turbine 173 and turbine 17 to improve constructability of associated turbines.
14	New Access Track from Site Entry Point 9 to turbine 23 to improve constructability of associated turbines and minimise the number of turbine components delivered via Turee Vale Road.
15	New Access Track from Site Entry Point 1 to turbine 154 to improve constructability of associated turbines.
17	New Access Track from <i>Substation – Starkeys Creek</i> to turbine 217 and Site Entry Point 14 due to design development following the simplification of the Main Powerline and associated collection substations.
18	New Access Track from Site Entry Point 17 to <i>Substation – Gundare</i> to replace the track removed (Item no. 11) following design development after the simplification of the main powerline and associated substations.
19	New Access Track from Site Entry Point 27 to turbine 136 to provide direct access from batching plant to turbine locations and minimise the number of vehicle movements on public roads.

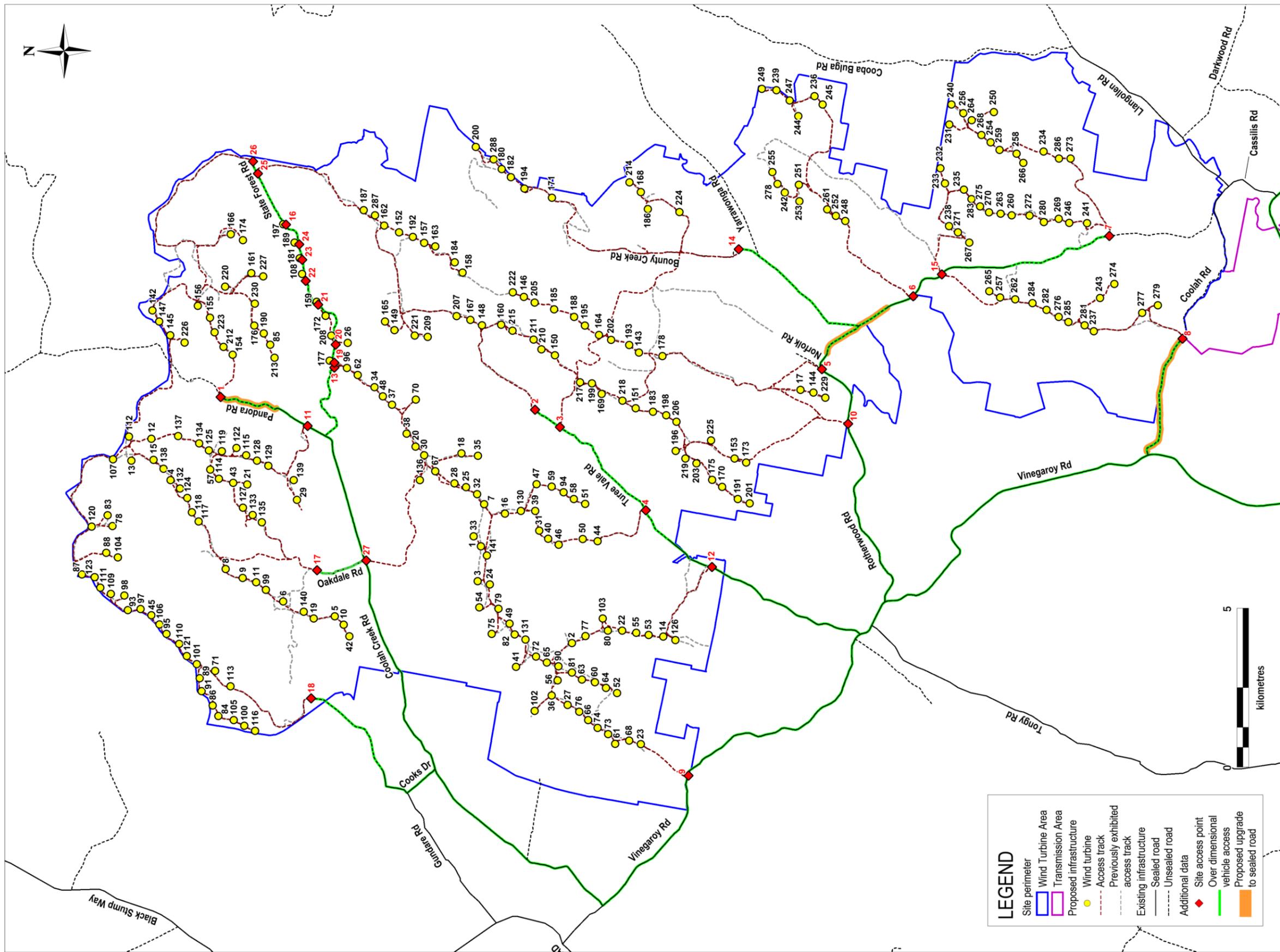


Figure 6-7: Changes to site access and access tracks

6.2.6.1 Upgrades and Maintenance of Local Roads

The proponent has committed to upgrading, widening or sealing sections of the roads identified on the delivery route as necessary to meet design standards for delivery of turbine components. The Proponent will be responsible for repairing any damage caused to local roads as a result of construction traffic by way of pre and post dilapidation reports. A full list of the proposed upgrades can be found in Appendix E in the updated Traffic and Transport Assessment.

Table 6-6 and Figure 6-8 show the roads that have been identified for delivery of turbine components.

Table 6-6: Over-dimensional and over-mass route

Road	Purpose	Start - End	Length (m)	LGA
Vinegaroy Rd	Primary Access Route	Golden Hwy to Coolah Creek Road	31,850	Upper Hunter (UHSC) and Warrumbungles (WSC)
Coolah Rd	Access Point 8	Vinegaroy Rd to Access Point 8	4,010	UHSC
Rotherwood Rd	Access Points 10, 5, 6, 15 & 7	Vinegaroy Rd to Access Point 7	19,580	UHSC and WSC
Yarrowonga Rd	Access Point 14	Rotherwood Rd to Bounty Creek Rd	4,020	UHSC
Bounty Creek Rd	Access Point 14	Yarrowonga Rd to Access Point 14	740	UHSC
Turee Vale Rd	Access Point 12, 4, 3 & 2	Vinegaroy Rd to Access Point 2	13,030	WSC
Coolah Creek Rd	Access Point 11	Vinegaroy Rd to Pandora Rd	18,350	WSC
Cook Drive	Access Point 18	Coolah Creek Rd to Gundare Rd	1,090	WSC
Gundare Rd	Access Point 18	Cooks Dr to Access Point 18	4,660	WSC
Oakdale Rd	Access Point 17	Coolah Creek Rd to Access Point 17	1,620	WSC
Pandora Rd	Access Point 1	Coolah Creek Rd to Access Point 1	3,680	WSC
State Forest Rd	Access Point 13, 16 & 19-26	Coolah Creek Rd to Access Point 26	10,380	WSC
Ulan Rd	Access Point 32	Golden Highway to Access Point 32	29,500	Mid-Western Shire Council

6.2.7 Wind Monitoring Masts

The proponent has installed a number of temporary monitoring masts as outlined in Table 6-7. This proposal seeks the ongoing approval of wind monitoring masts at these locations, as well as further temporary and permanent wind monitoring masts for wind speed verification, weather and general monitoring purposes. All masts would be installed within the development envelope.

Table 6-7 Temporary monitoring mast locations

Mast Name	Mast Height	Easting	Northing
LVP1	71 m	766406	6476283
LVP3	80 m	772864	6480233
LVP4	80 m	781159	6463372
LVP5	80 m	776064	6472822
LVP7	80 m	768418	6490132
COO	40 m	772984	6472178

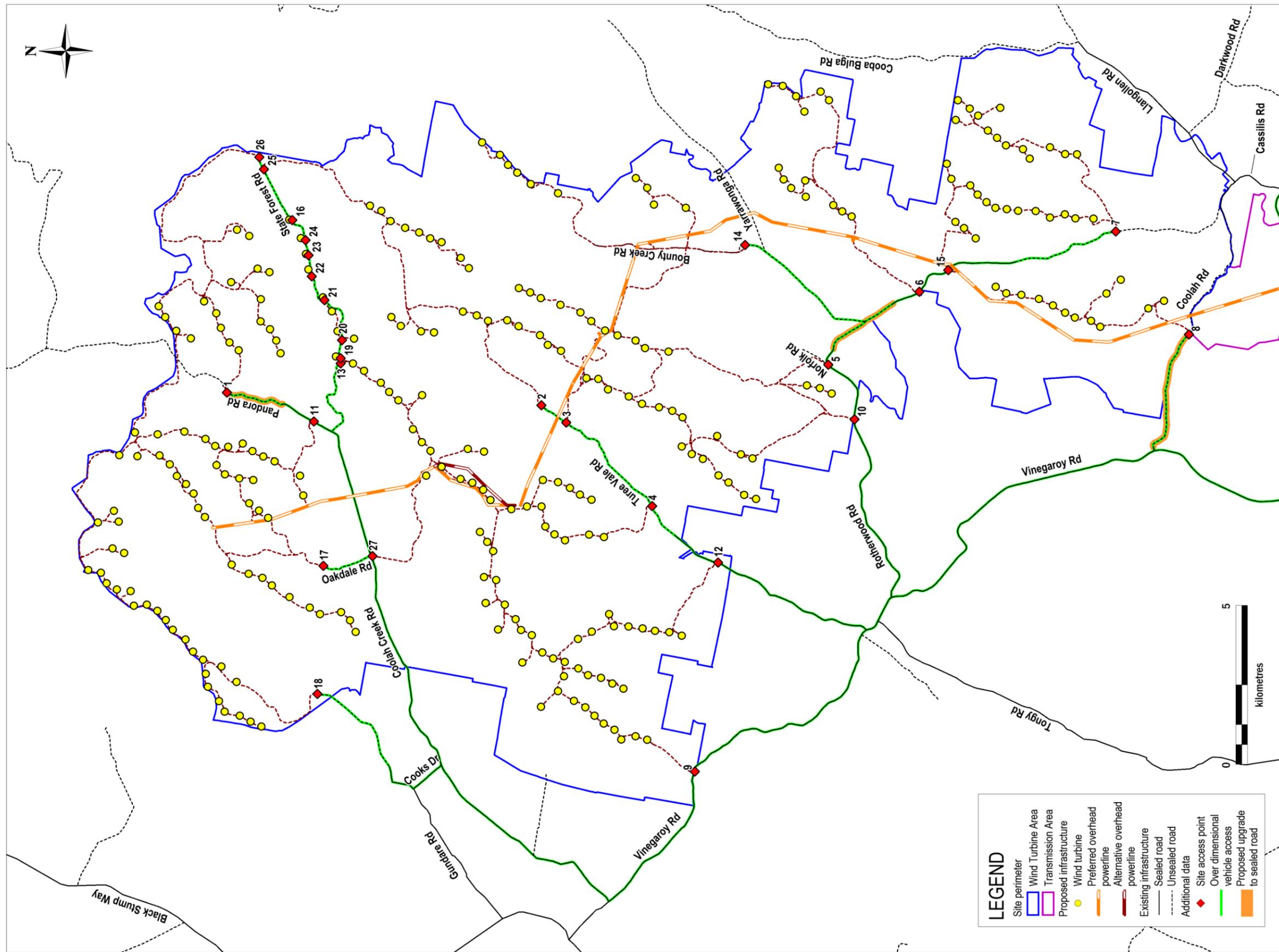


Figure 6-8 Proposed over-dimensional and over-size site access – Wind Farm Area

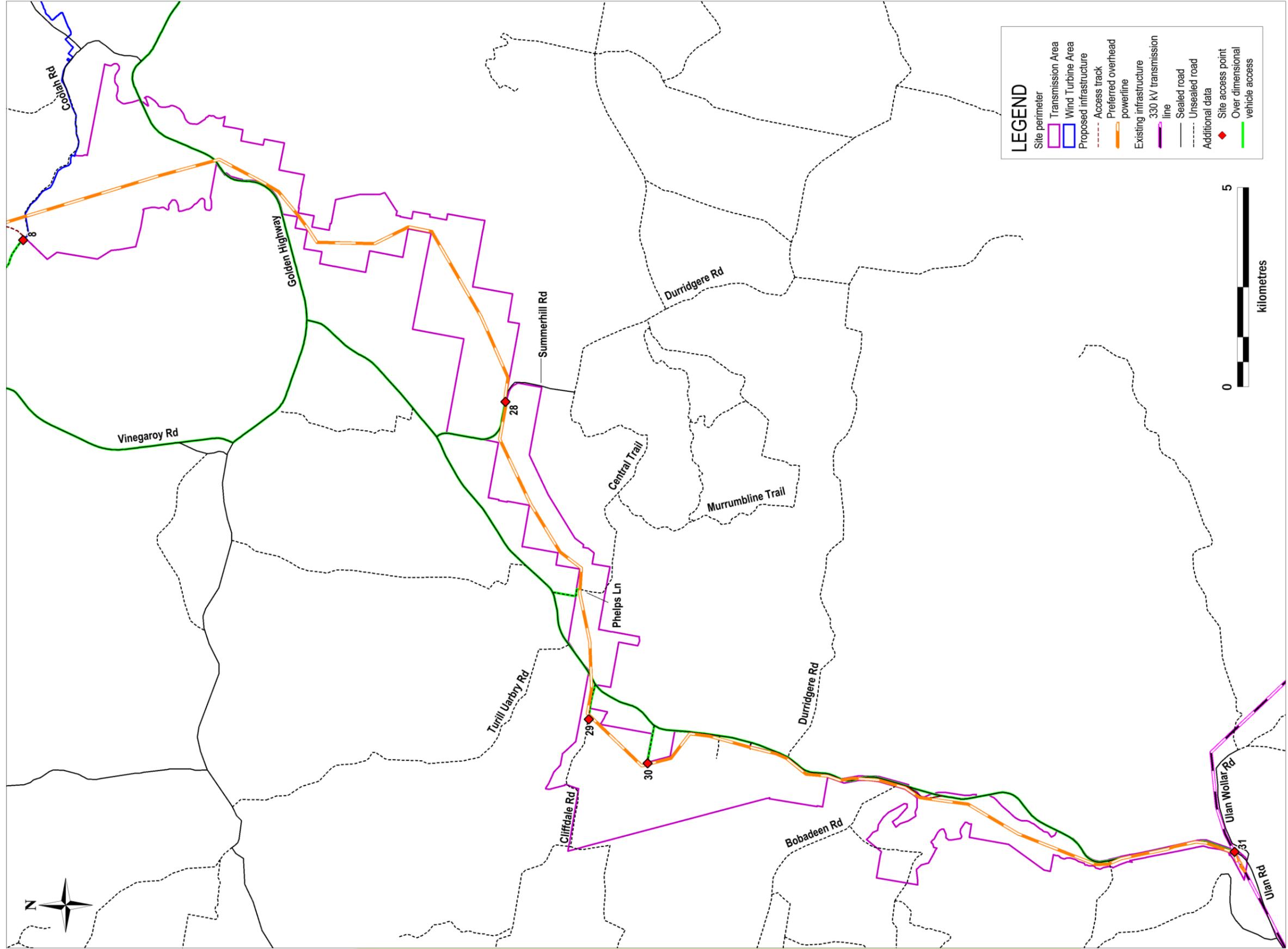


Figure 6-9 Proposed over-dimensional and over-size site access - Transmission Area

6.3 Revised infrastructure layout

The revised infrastructure layout in this report has been through a number of design iterations since the project was displayed on public exhibition in 2014. The design process has focused around four core principles:

- ▶ Minimising and/or avoiding where possible native vegetation and sensitive environmental areas;
- ▶ Maximising positive impacts (clean energy production and greenhouse gas reduction);
- ▶ Incorporating practical limitations in relation to construction and operation of the site; and
- ▶ Responding to feedback from host landowners, community members and stakeholders.

The revised layout includes 282 wind turbine locations together with the ancillary structures, access tracks and electrical infrastructure required to connect the project into the existing national electricity network. The proposed infrastructure layout presents a single option for the main powerline connecting the wind farm site to TransGrid's transmission network, one that reduces ecological impacts from both the preferred and alternate options displayed in the EA.

An overview of the revised layout can be seen in Figure 6-10 and detailed figures showing all proposed infrastructure can be seen in Figure 6-11 through Figure 6-18.

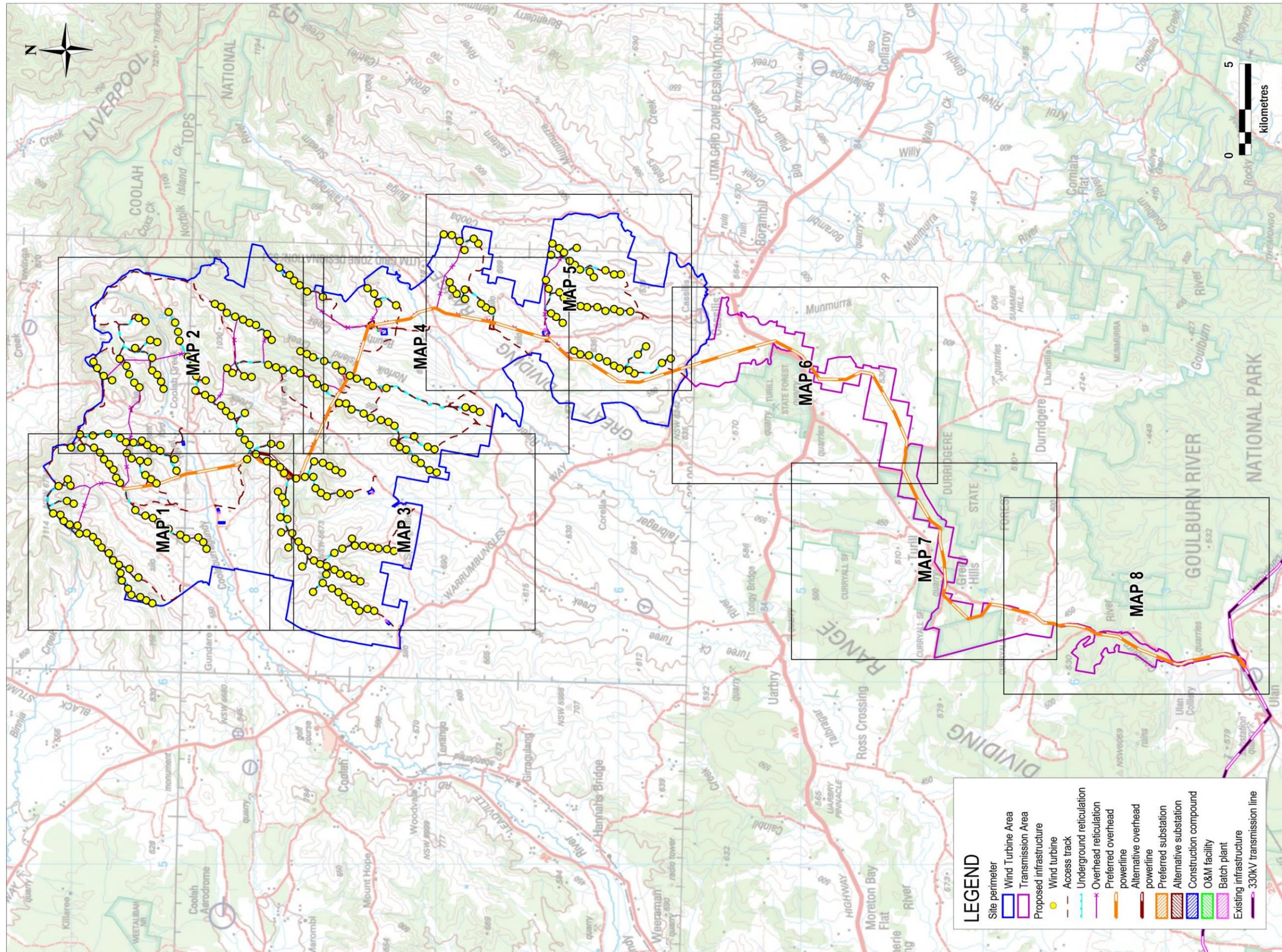


Figure 6-10 Overview of the revised layout for the Liverpool Range Wind Farm

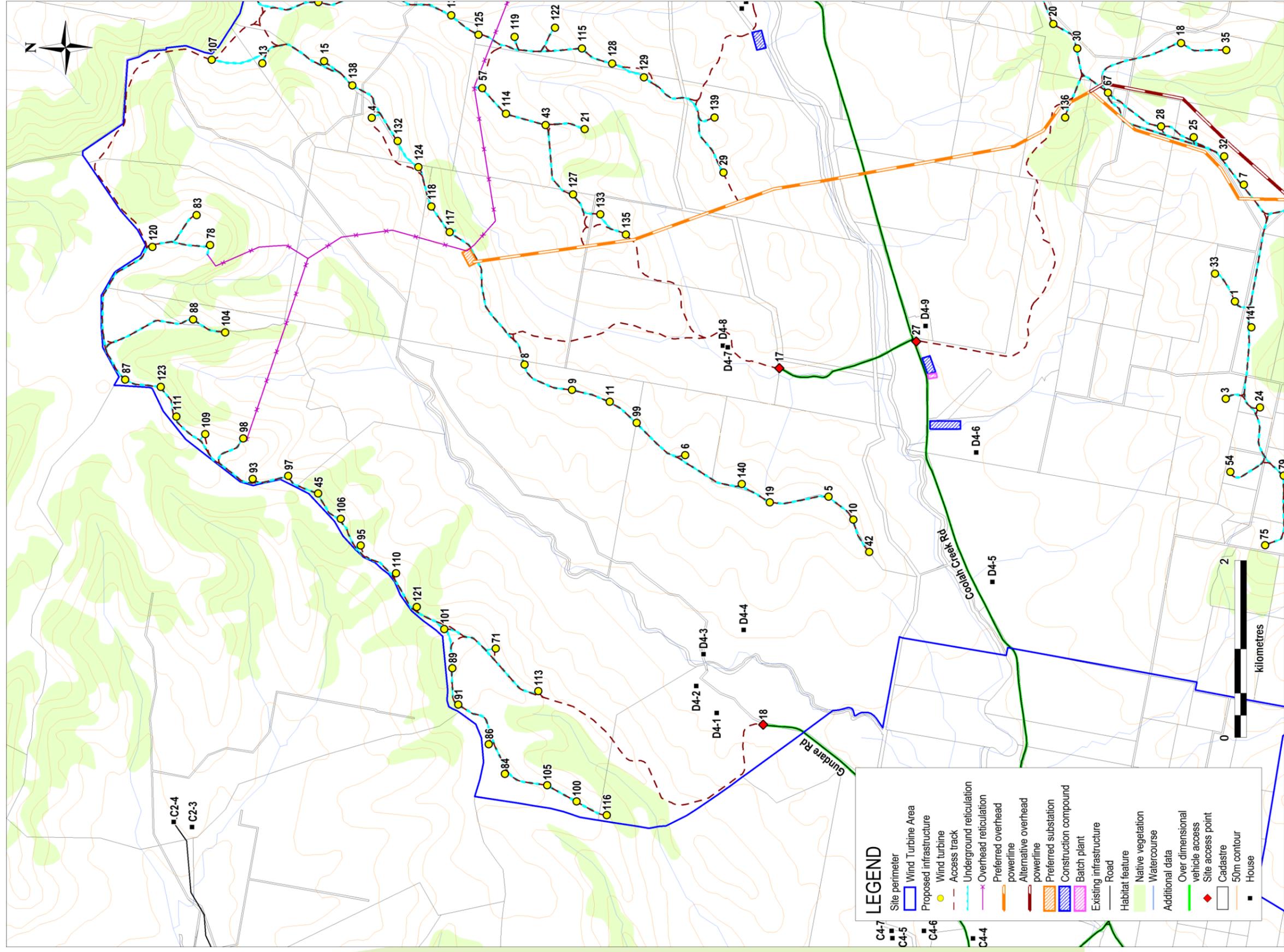


Figure 6-11 Proposed infrastructure layout - Map 1

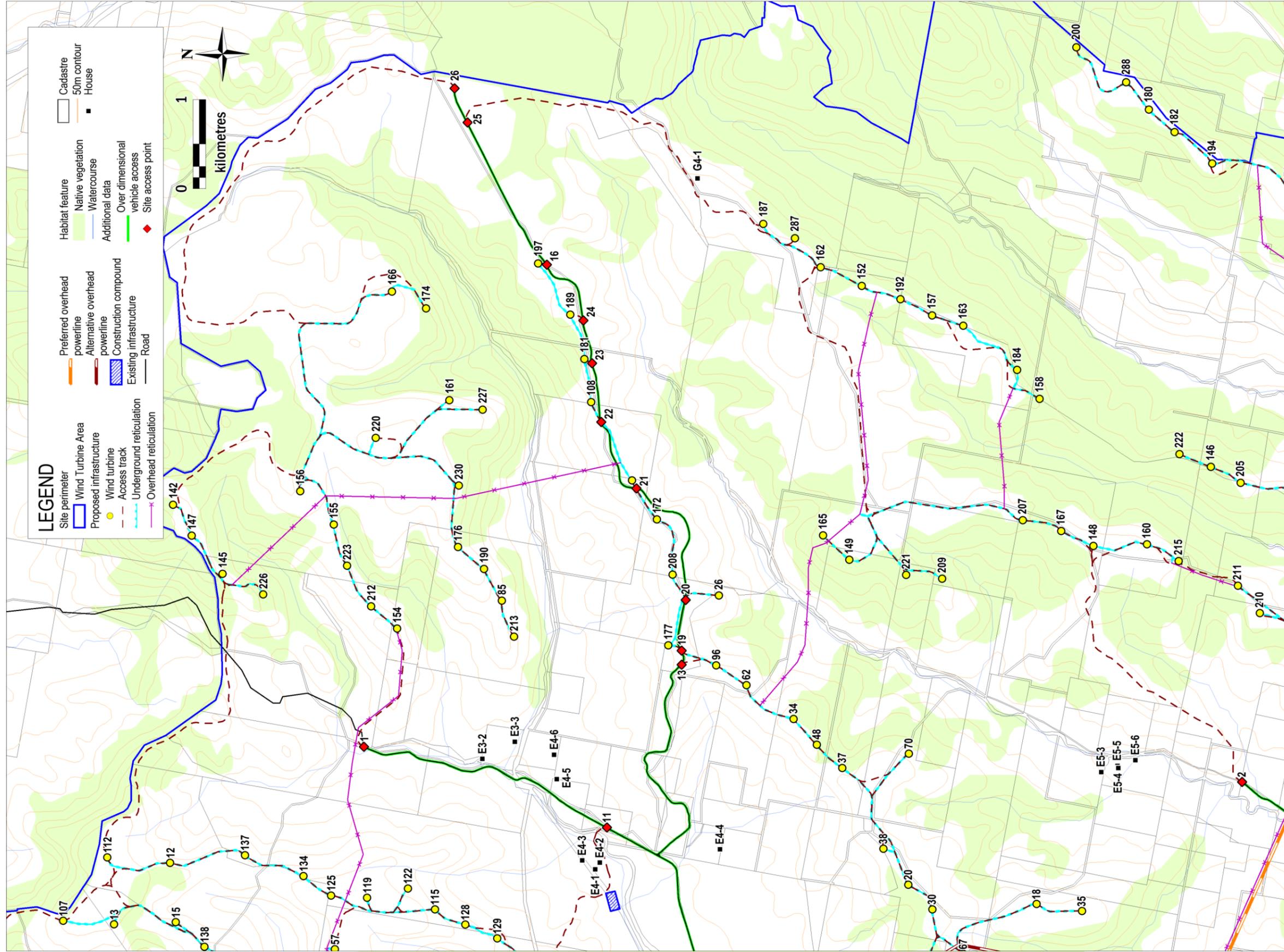


Figure 6-12 Proposed infrastructure layout - Map 2

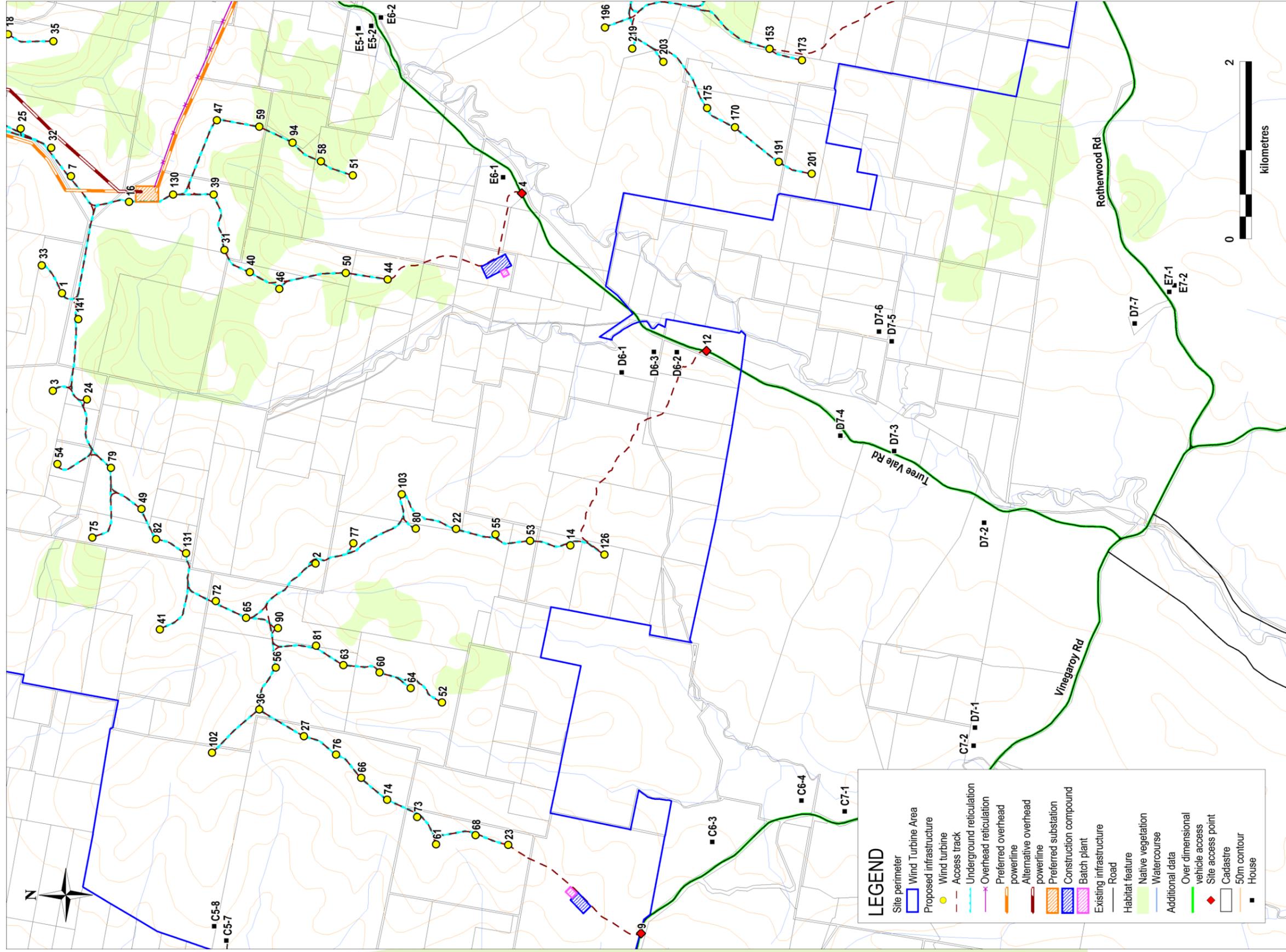


Figure 6-13 Proposed infrastructure layout - Map 3

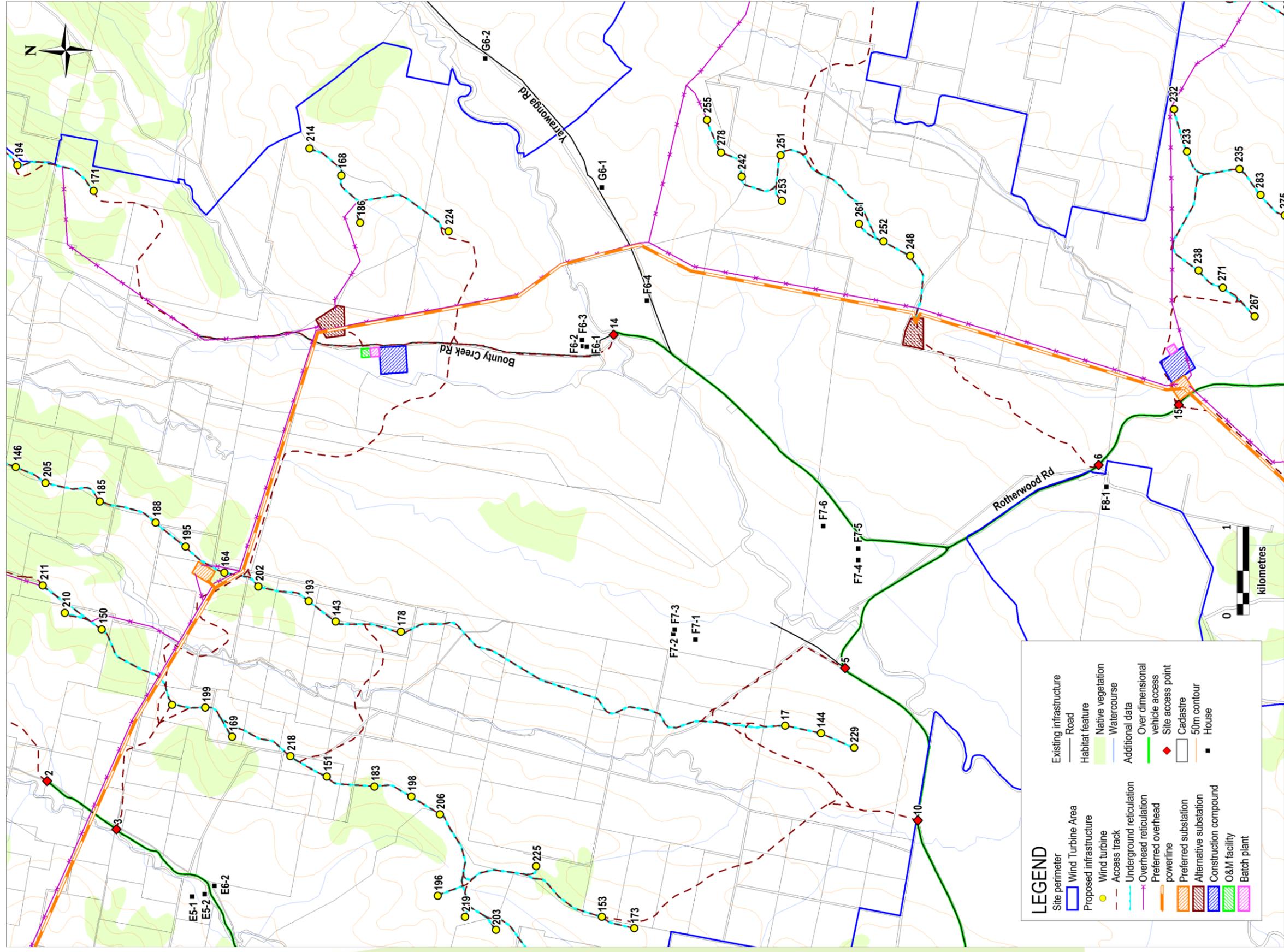


Figure 6-14 Proposed infrastructure layout - Map 4

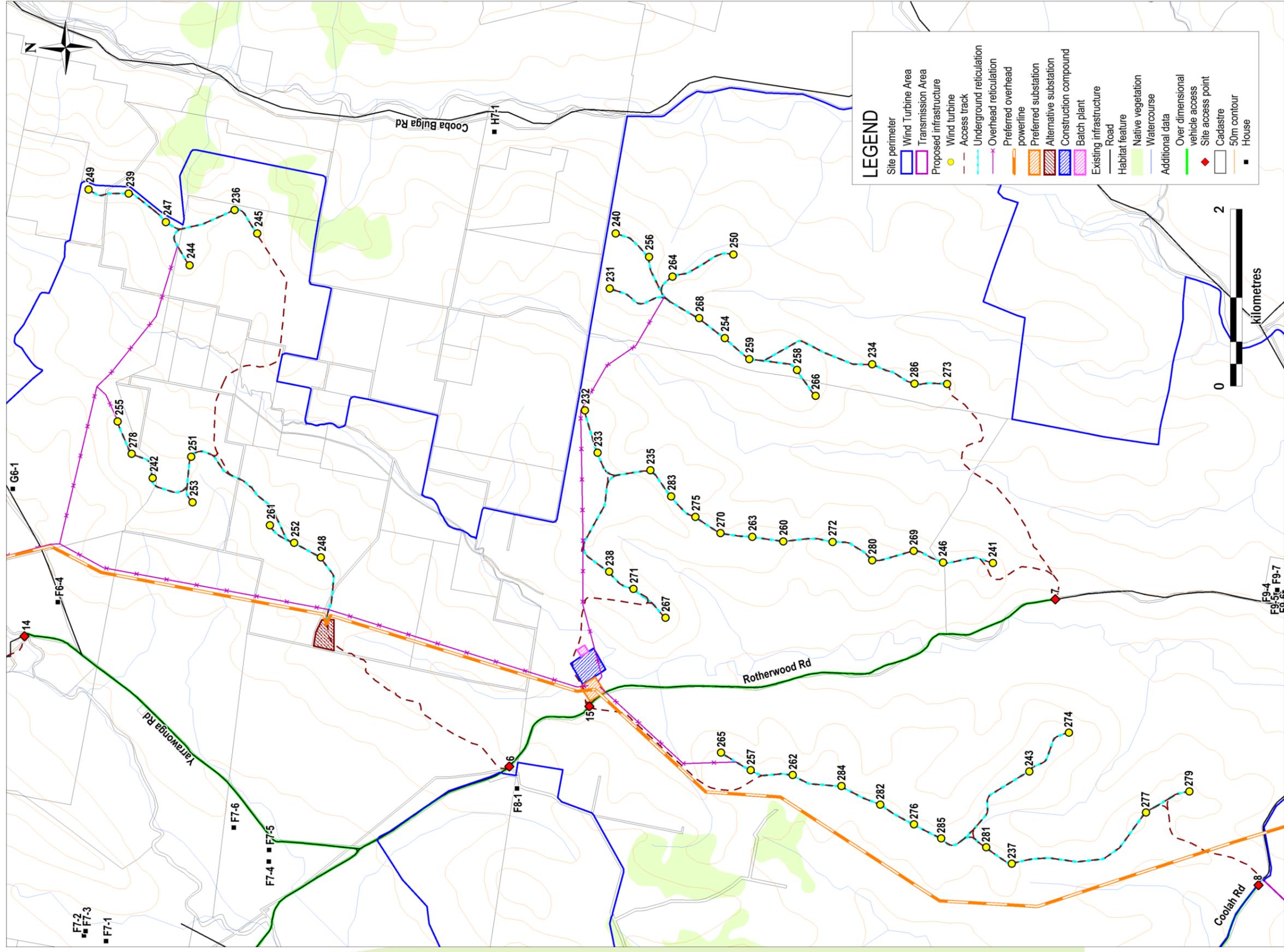


Figure 6-15 Proposed infrastructure layout - Map 5

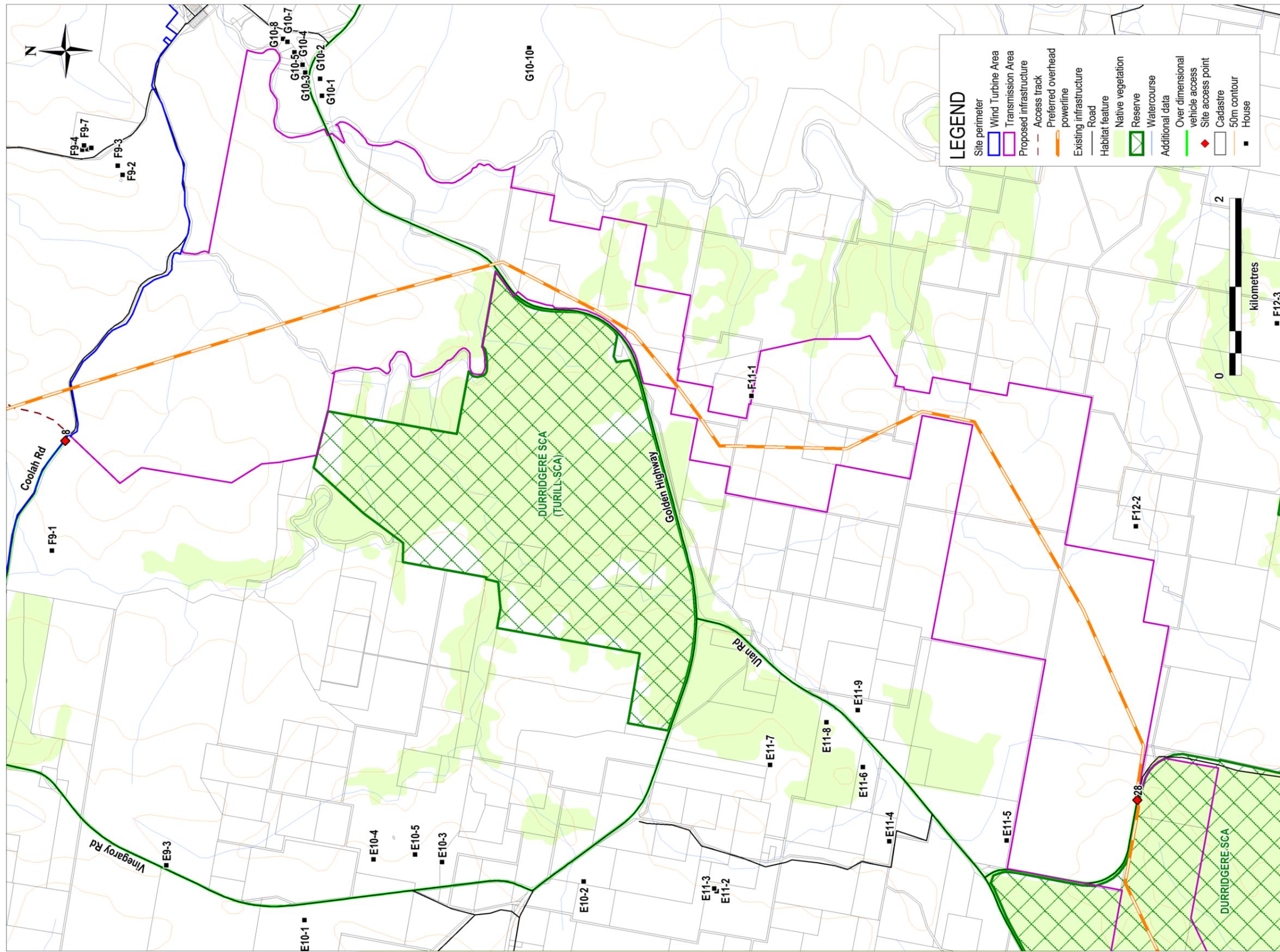


Figure 6-16 Proposed infrastructure layout - Map 6

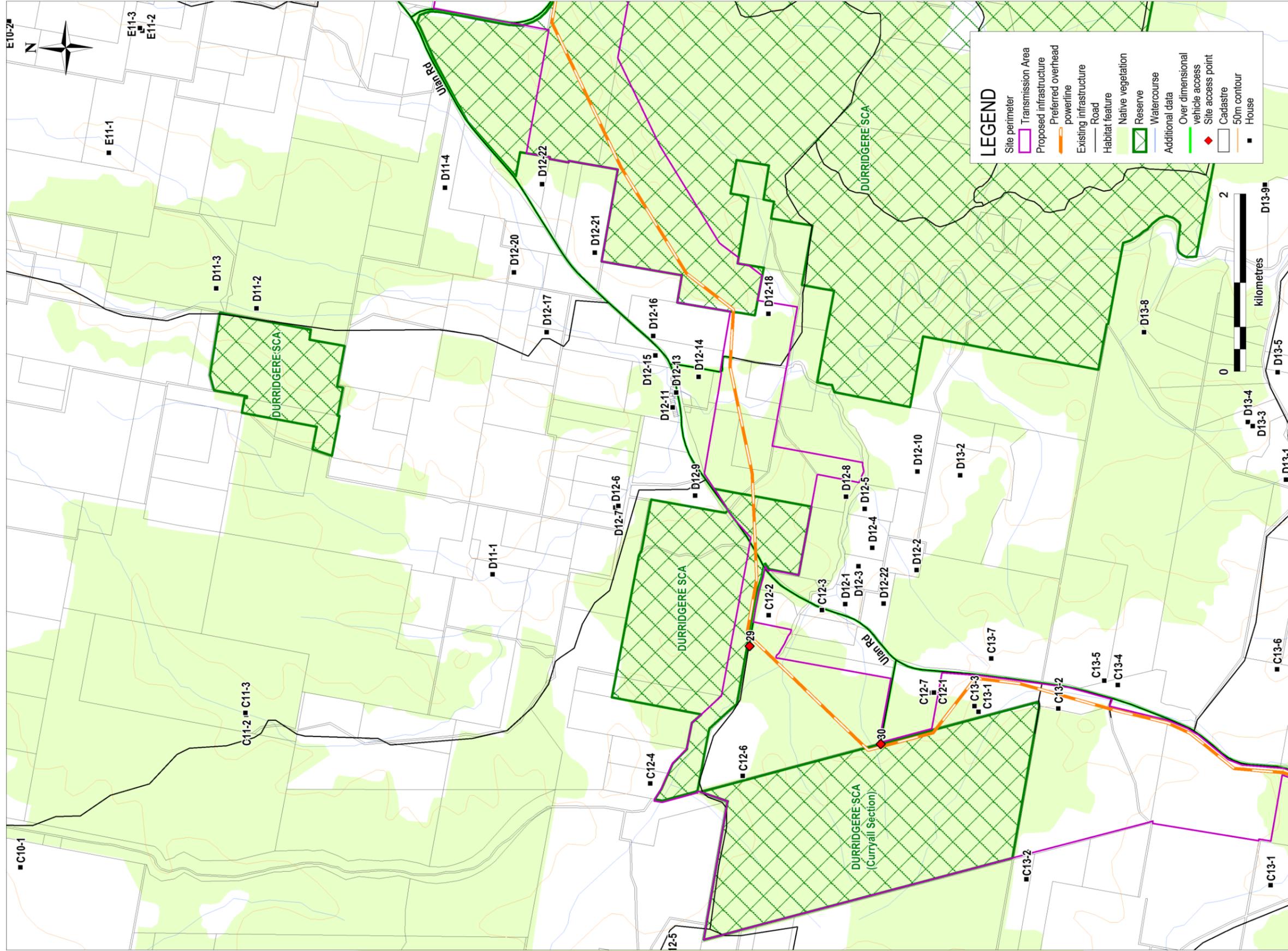


Figure 6-17 Proposed infrastructure layout - Map 7

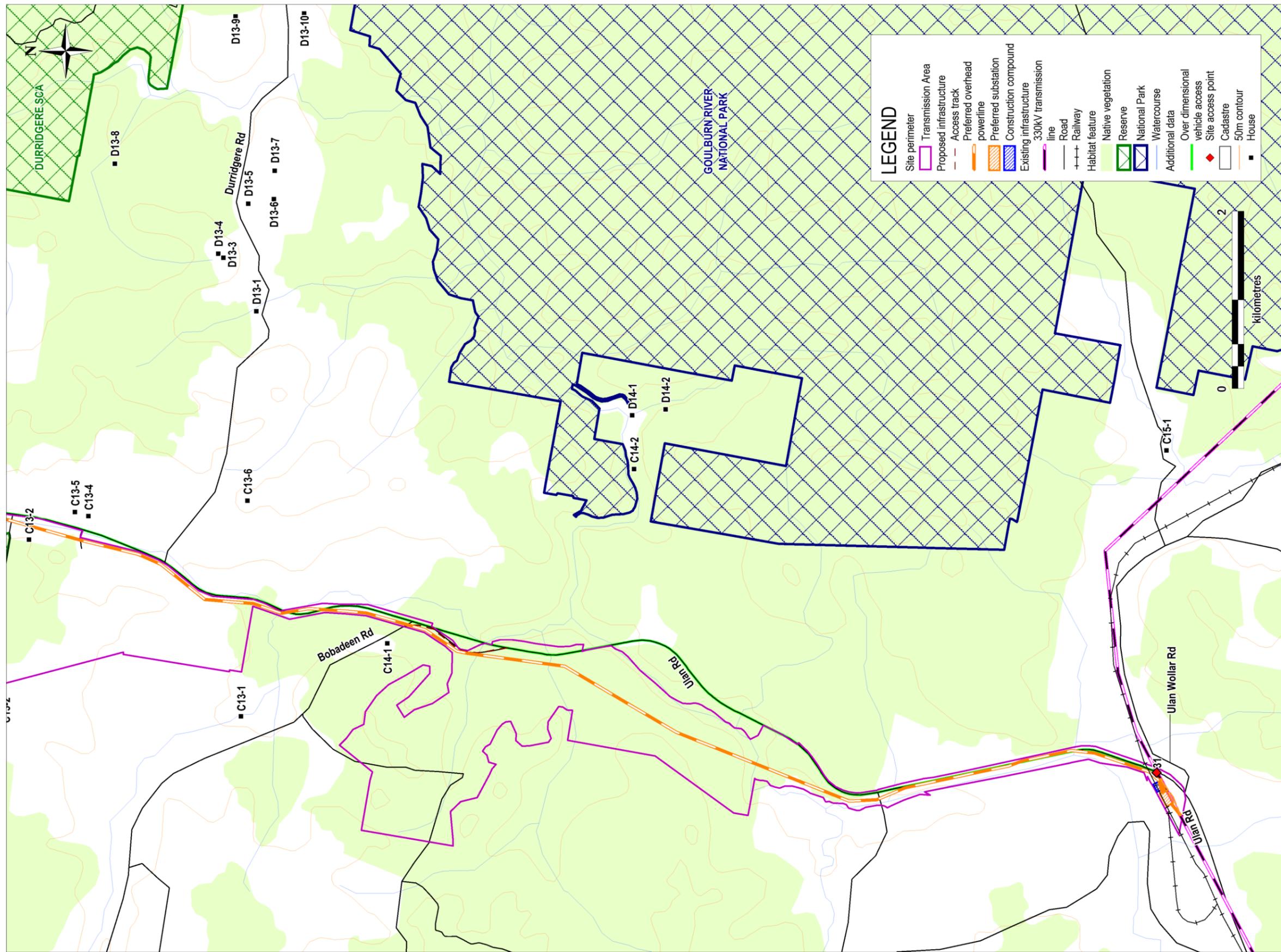


Figure 6-18 Proposed infrastructure layout - Map 8

6.3.1 Development Envelope and micro-siting

In developing the project, allowance has been made for final micro-siting of infrastructure for engineering, commercial or environmental reasons. Micro-siting would be carried out post approval but prior to construction and take into consideration final wind turbine selection and other issues.

To provide greater certainty about the area within which the proponent can micro-site infrastructure, a Development Envelope has been defined within which all equipment is required to be located using the principles outlined below. The Development Envelope maps (Figure 6-19 to Figure 6-27) indicate the area within which the Proponent seeks approval to microsite infrastructure without needing to request a modification to the Development Application. The Development Envelope has been defined in two sections:

- ▶ Area that has been surveyed with the impacts assessed (all infrastructure currently proposed within this area), and
- ▶ Area adjacent to land surveyed that is suitable for micro-siting but would be surveyed and assessed if required (ie. if infrastructure was micro-sited within this area).

The ability to relocate wind turbines within the Development Envelope allows the overall project benefits to be maximised. Wind turbines have minimum spacing requirements between them to optimise energy yield and avoid early degradation of the equipment. These minimum spacing requirements relate to the design and physical size of the selected wind turbine. Accordingly, the final selection of the turbine model and any micro-siting of a turbine location will likely require adjustments to the location of nearby turbines.

In preparing the Development Envelope, wind turbine relocation is limited to movement along ridges where wind turbines have already been proposed:

- ▶ The Development Envelope takes into consideration the topography of the land by following existing ridgelines.
- ▶ Consistent with previous approvals, maximum “sideways” relocation distance (across ridgelines) is 250m from the proposed turbine locations, while the flexibility to relocate wind turbines along ridgelines is retained to ensure minimum turbine spacing requirements can be maintained.
- ▶ The width of the Development Envelope is adjusted to suit the terrain and known environmental limitations - wider where the ridge lines are wider / lower side grades, and narrower where ridgelines are narrower with steeper side grades.

In relation to other infrastructure, the Development Envelope is limited to land which contains proposed infrastructure (both permanent and temporary) and allows a maximum relocation distance of approximately 250m from the centreline of linear infrastructure (access tracks and powerlines) and from the boundary of substations, compounds and batch plants.

A number of constraints were then considered and, where necessary, applied to the Development Envelope:

- ▶ Biodiversity - All areas identified as native vegetation in “Moderate-Good condition” or better were excluded from the Development Envelope except areas where existing turbines have been proposed (noting that such areas have appropriate management commitments). Note, all conditions set out in the SOCs related to protection and management of biodiversity (including offset obligations) will apply at all times to turbines relocated within the Development Envelope.
- ▶ Archaeology - The nature of the site, with low concentration scatter of archaeological items, means that no specific sites were identified with a requirement to be avoided. Accordingly, the Development Envelope is not affected by Archaeology impacts.
- ▶ Visual Impacts - Minor relocations of wind turbines along existing ridgelines within the Development Envelope will in general have minimal visual impact from a distance. However, in order to minimise any visual impacts, all houses within 2 km of the existing wind turbine locations were identified, and the distance to nearest turbine determined. A buffer was then mapped around these houses to ensure that no wind turbine moved more than 5% closer to the relevant residence. Note, 5% at 2km relates to a maximum 100 m micro-siting distance. These buffer areas were excluded from the Development Envelope.

- ▶ Noise Impacts – The final layout for the project will be required to meet the project noise limits contained in any consent, consistent with the existing noise guidelines. The Development Envelope does not therefore include any noise exclusion areas.
- ▶ Project boundary - Wind turbine blades will not be permitted to overhang the project boundary, however access tracks would be permitted adjacent to the project boundary. As a result, the Development Envelope extends to the project boundary.

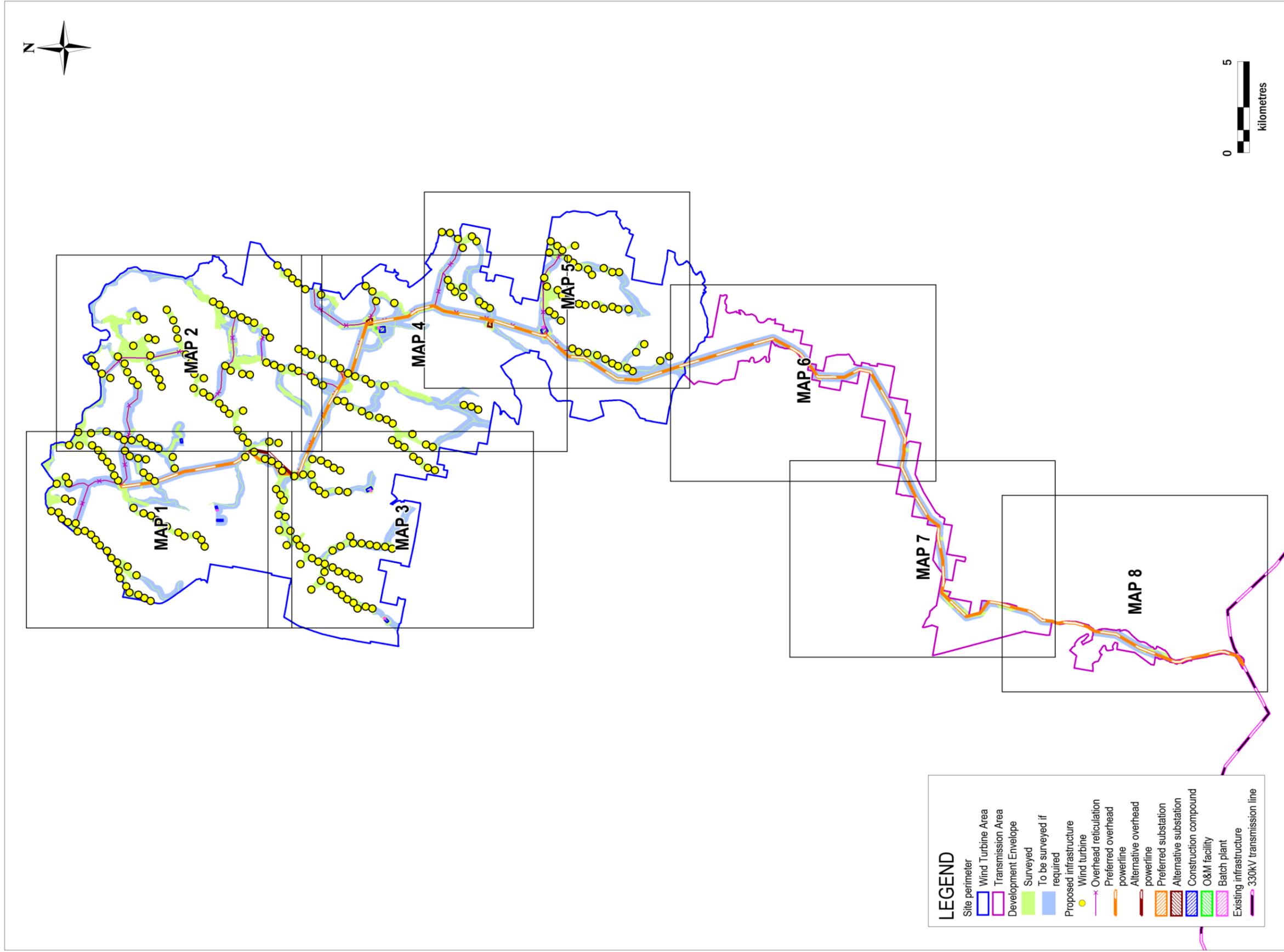
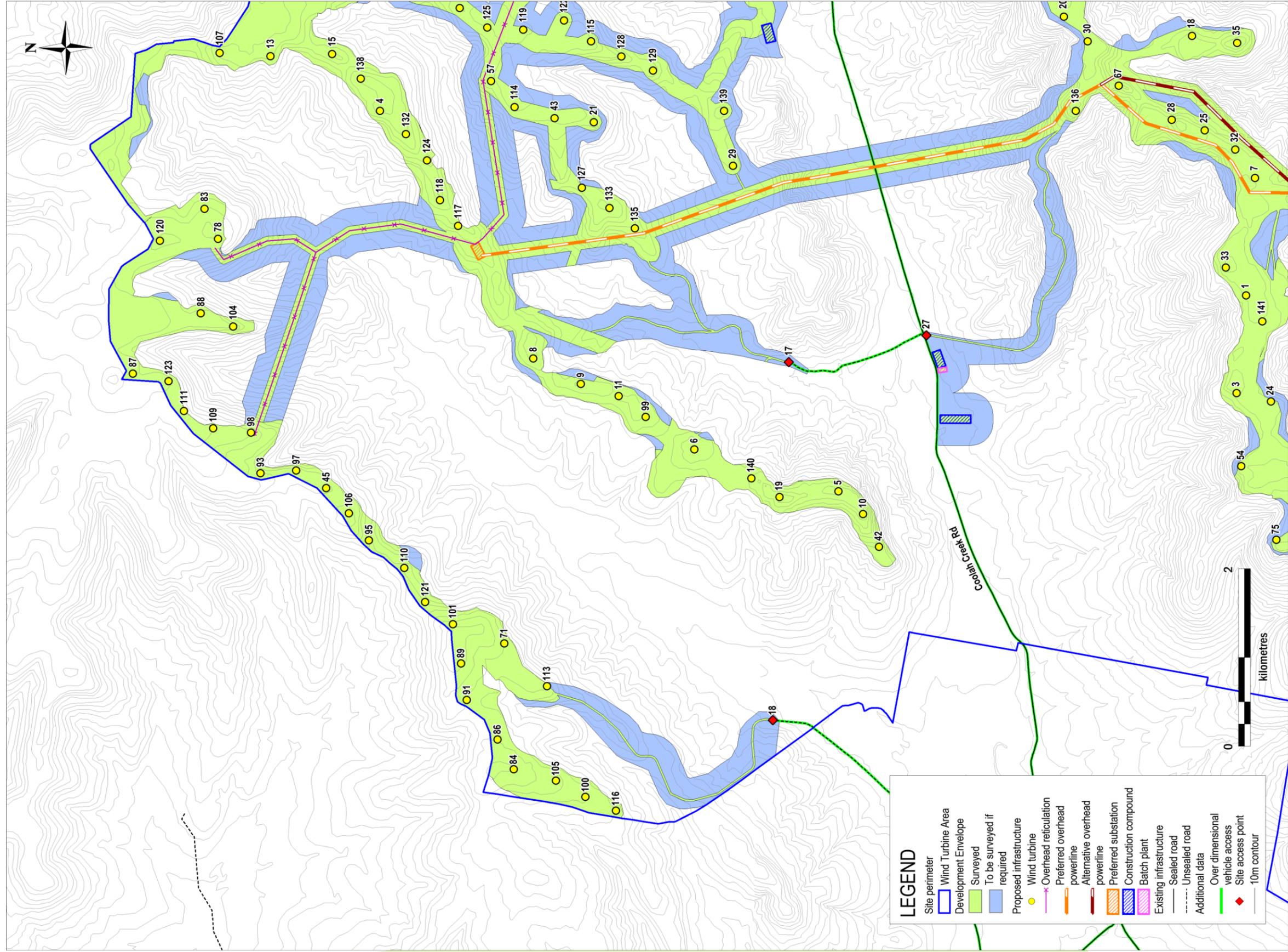


Figure 6-19 Proposed Development Envelope –Overview Map

EPURON



LEGEND

- Site perimeter
- Wind Turbine Area
- Development Envelope
- Surveyed
- To be surveyed if required
- Proposed infrastructure
- Wind turbine
- Overhead re-orientation
- Preferred overhead powerline
- Alternative overhead powerline
- Preferred substation
- Construction compound
- Batch plant
- Existing infrastructure
- Sealed road
- Unsealed road
- Additional data
- Over dimensional vehicle access
- Site access point
- 10m contour

Figure 6-20 Proposed Development Envelope – Map 1

EPURON

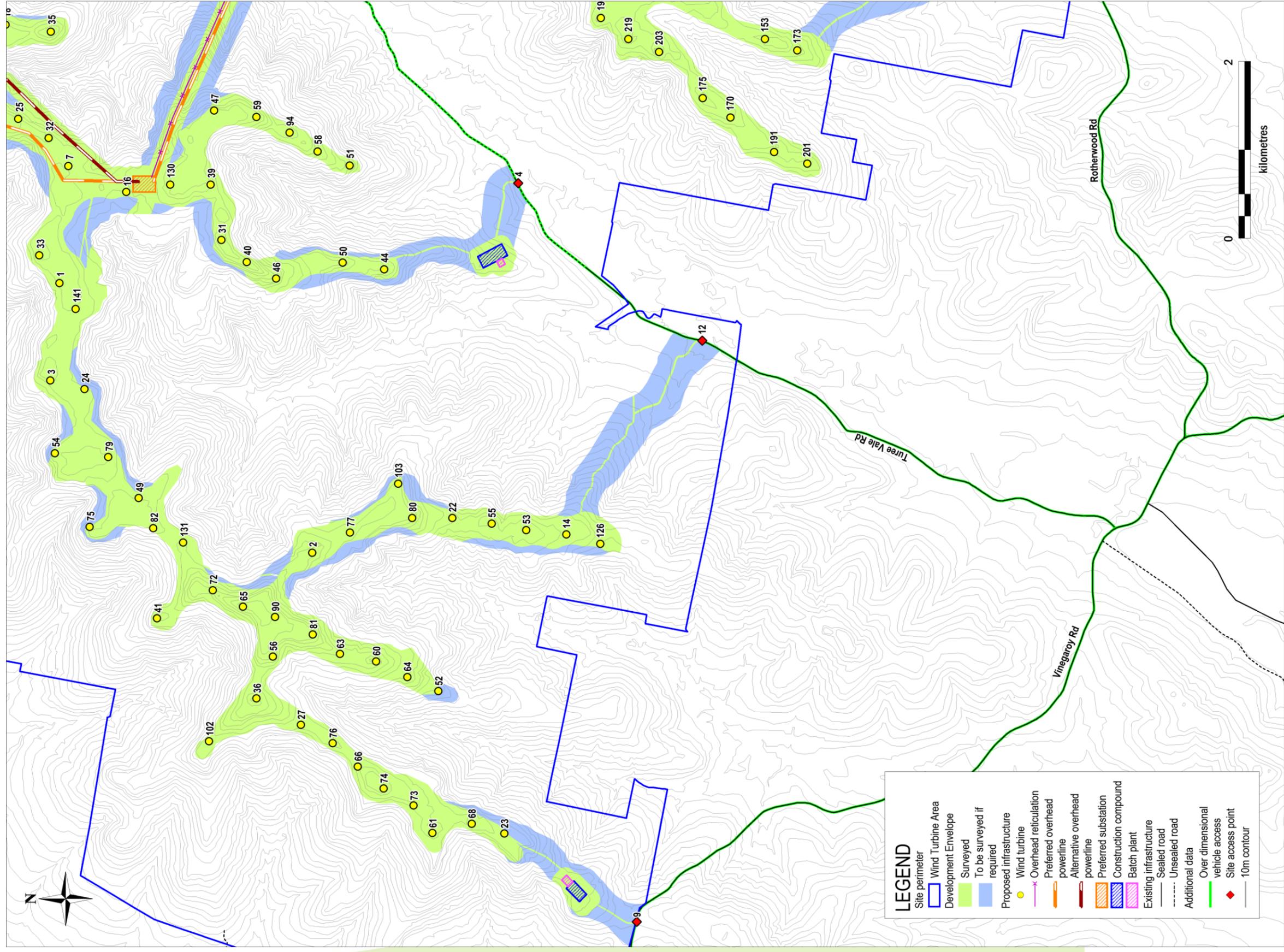


Figure 6-22 Proposed Development Envelope – Map 3

EPURON

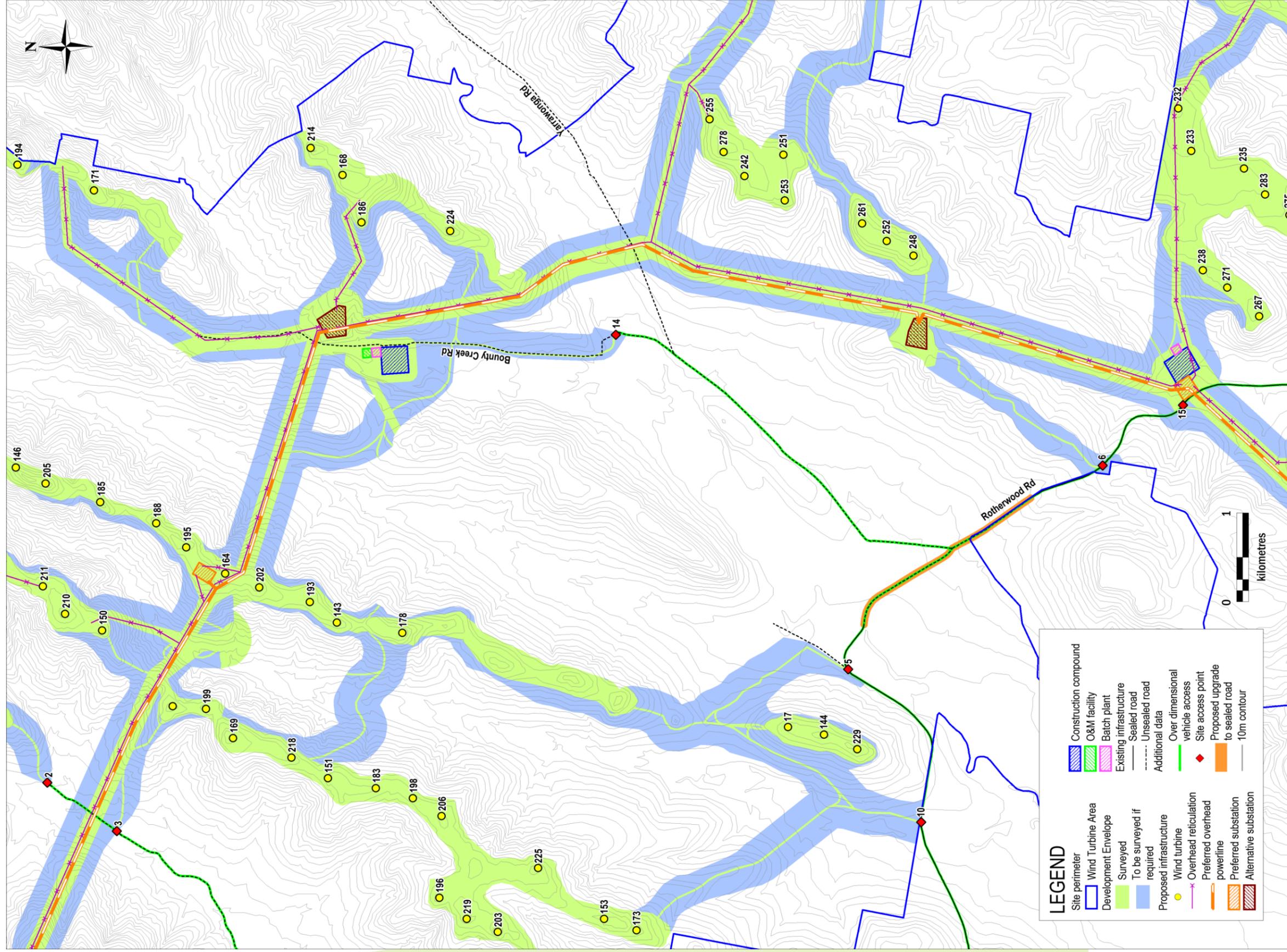


Figure 6-23 Proposed Development Envelope – Map 4

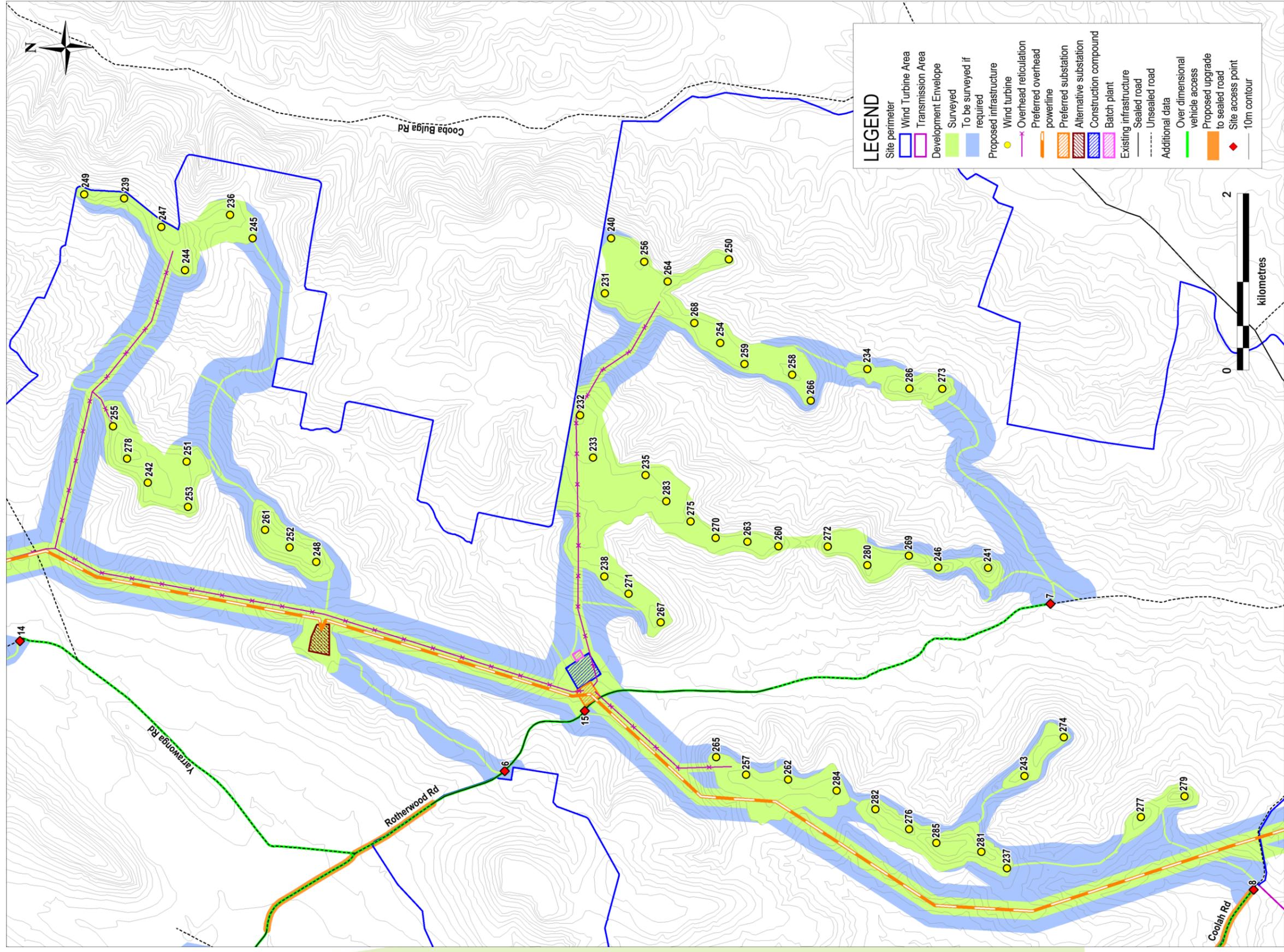


Figure 6-24 Proposed Development Envelope – Map 5

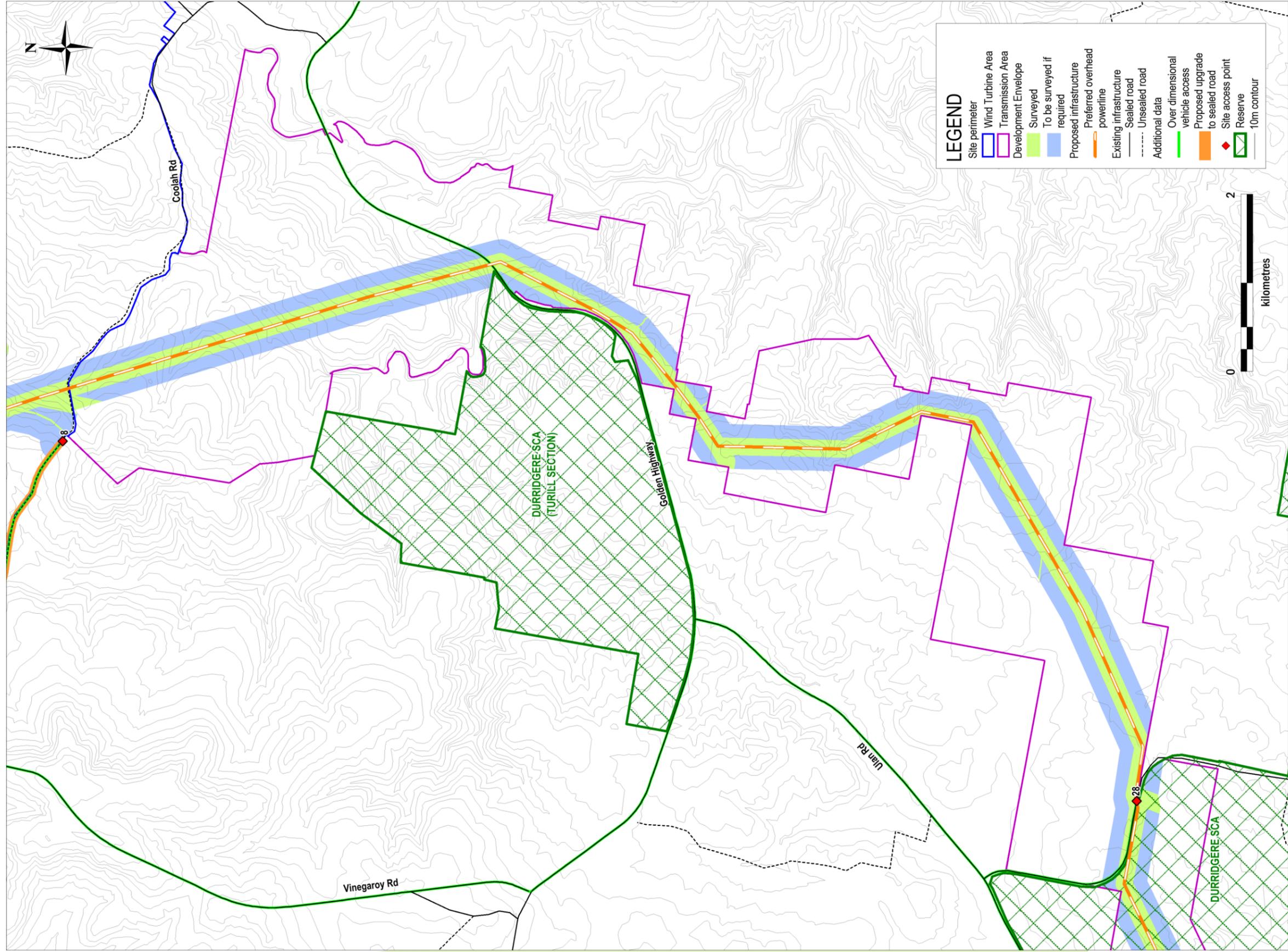


Figure 6-25 Proposed Development Envelope – Map 6

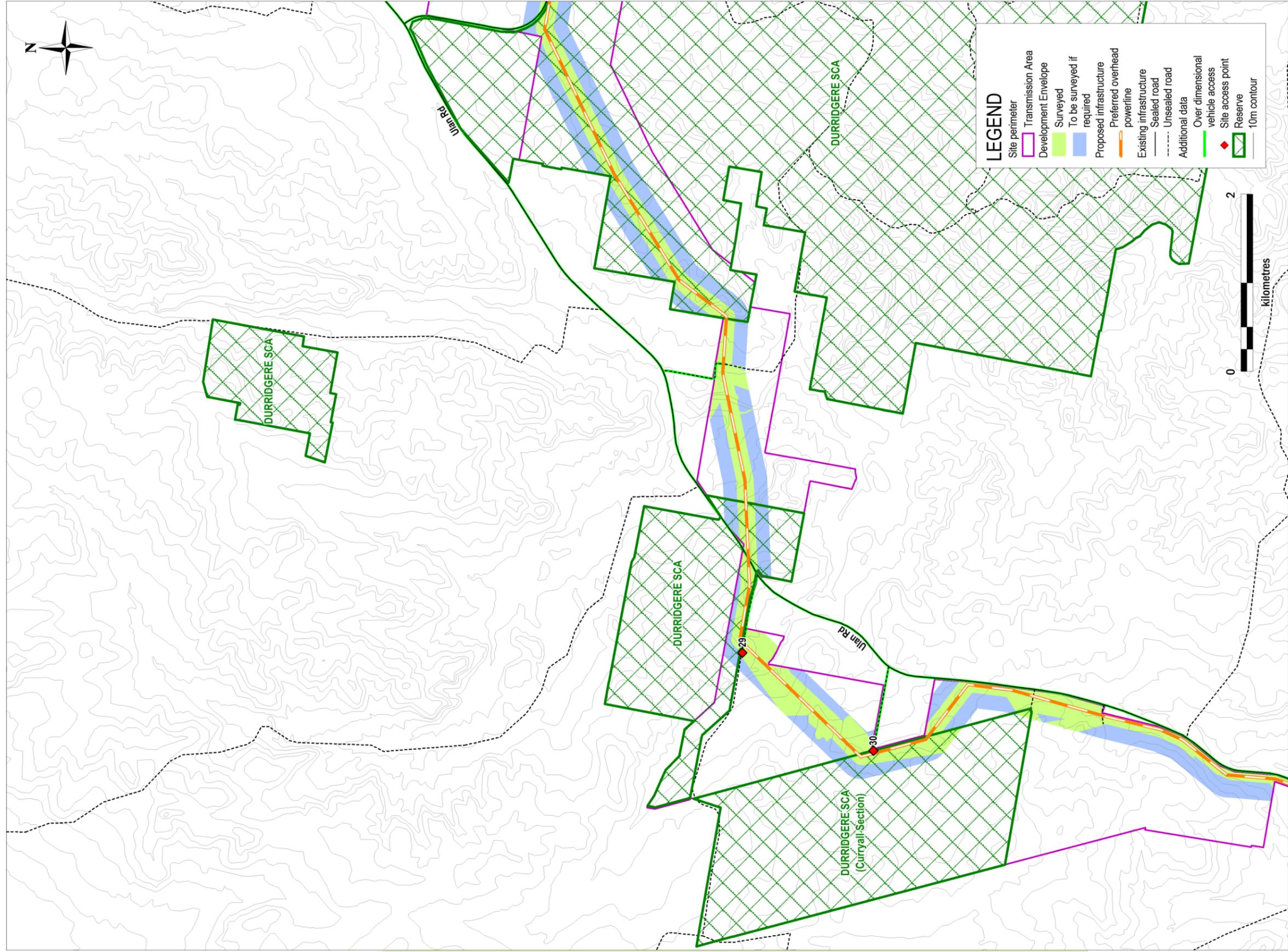


Figure 6-26 Proposed Development Envelope – Map 7

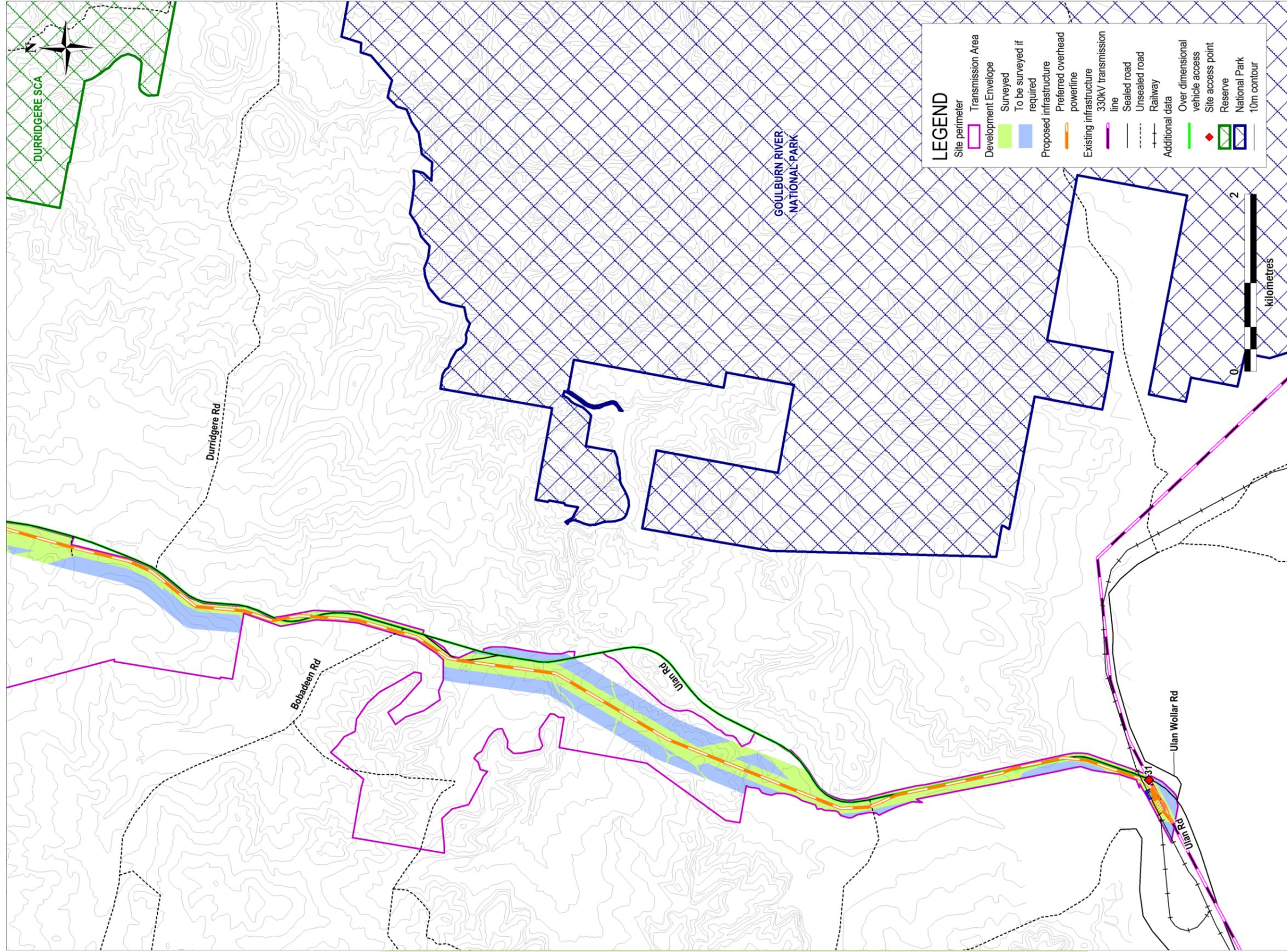


Figure 6-27 Proposed Development Envelope – Map 8

6.4 Revised site disturbance area

The proposed wind farm requires the construction of a number of elements including turbines, turbine foundations, underground and overhead powerlines, substations, control buildings and access roads on the site.

During the construction activities additional areas of the site would be impacted to provide construction compounds, concrete batching plants and storage areas. These areas would be rehabilitated and restored following the completion of the construction program.

Table 6-8 presents the estimated maximum area of the site to be impacted by the project based on the revised layout assuming it is built to its fullest extent. If the project is built in stages the impact area of the initial stages would be less than this estimated maximum impact. The batch plant and construction compound impacts are temporary impacts during the construction phase only.

In calculating the impact area required to construct the revised project it is noted:

- ▶ Revised calculations for new overhead powerlines (both 33kV and 330kV) in pasture areas assume an impact area equivalent to a new track (4m) which would run underneath the line. Where the powerline passes through woodland it is assumed that the full easement width would need to be cleared.
- ▶ Collection substations are generally assumed to be 200 x 200m but topographic constraints have altered the dimensions of some substations bringing down the overall footprint from 16 ha to 13.63 ha for this component.
- ▶ Construction compounds again vary across the site depending on the availability of suitable flat land; the largest one being 300 x 300m and the smallest being 200 x 100m.
- ▶ Underground reticulation is generally assumed to be within the impact area of new tracks and turbine foundations. Where the proposed underground reticulation diverges from the road it has been calculated separately.

Table 6-8 Estimated development footprint and site disturbance areas

Project Components	Approx. width (m)	Approx. Maximum Length (m)	Maximum Quantity	Total Maximum Area (ha)
Permanent Infrastructure:				
Turbine Footing	25	25	282	17.88
Crane Hardstand	22	40	282	24.73
New access tracks	15	274,100	1	391.12
Underground reticulation (outside of tracks)	2	9,029	1	1.61
Overhead reticulation cabling (33kV)	25	46,730	1	34.67
Overhead Powerline (330kV)	60	31,810	1	192.76
New tracks for overhead reticulation connectivity (33kV)	4	46,730	1	17.90
New tracks for transmission connectivity (330kV)	4	56,450	1	19.53
Connection Substation	165	85	1	1.41
Collection Substations	200	200	4	13.63
Operations and Maintenance facilities and Control Building	100	100	1	1.0
Temporary Infrastructure:				
Concrete batch plants	100	100	4	4.13
Construction compounds, staging and storage areas	Up to 300	Up to 300	6	32.45
Total				752.82

6.5 Offset Strategy

The initial biodiversity offset strategy has been refined following consultation with OEH. The updated offset strategy has used the NSW Framework for Biodiversity Assessment (FBA 2016) to calculate the offset requirement and then demonstrate the adequacy of the proposed offsets.

Offset Requirements

In lieu of actual plot data from the site, plot data was derived from benchmark data on the OEH vegetation data base. The median range of the lower and upper benchmarks has been used unless otherwise justified. This approach is considered conservative, with the actual offsets required expected to be below those estimated in this offset strategy.

The final offset requirement is proposed to be calculated using field collected plot data, and would be based on the final impact areas derived from civil construction drawings (not yet available). This will provide a further incentive throughout the detailed design stage to minimise the clearing impacts of the works and thereby reduce the offset requirement.

The offset requirements have been calculated on the basis that the entire project is built. Where the project is built in stages, the reduced impact area of initial stages means a reduced offset area is required for those initial stages. The impact area and resulting offset requirement will be determined for each stage prior to commencement of construction of that stage.

The impact area figures have changed slightly (an addition of 7.8 ha) since the preparation of the Offset Strategy. However, the offset calculations have not been re-done as the process used in preparation of the offset requirement was precautionary and the additional 7.8 ha would not have a material impact to the preliminary offset calculations. A commitment to undertake the final Biobanking calculations based on the approved construction footprint and field data remains and would address any discrepancies.

A summary of biodiversity offset requirements for the project are shown in the table below.

Table 6-9 Estimated Biodiversity Offset Requirements

Entity requiring offsets	Maximum Credit requirement	Maximum Offset area required (ha)
Ecosystem credits		
Northern section ecosystem credit subtotal (Central West Catchment Management Authority - CWCMA)	10,910	1,173
Southern section ecosystem credit subtotal (Hunter Rivers Catchment Management Authority - HRCMA)	19,622	2,163
TOTAL:	30,532	3,336
Species credits		
Northern section species credit subtotal (CWCMA)	912	152
Southern section species credit subtotal (HRCMA)	2,887	468
TOTAL:	3,799	620

Note that the area of land required is not cumulative and an offset area may concurrently satisfy ecosystem and threatened species requirements.

Candidate Sites

With a general preference to secure offset areas within the project boundary, involved landowners within the project boundary are able to be involved in the offset package rather than involving a third party or external site. As they already own the land upon which the site is located, no purchase of a BioBanking site is required.

Mapping and surveys undertaken to date suggest that there is vegetation within the site boundary that is representative of that being cleared and therefore offers a like for like offset. It is noted that some additional sites outside the project boundary have also been identified as they offer strategic benefits for connectivity to existing reserves. These include areas adjacent to existing reserves or protected areas identified in consultation with OEH.

Based on the preliminary assessment of likely credit requirements, ten candidate offset sites have been so far been identified, totaling 3,025 ha. These landowners have been approached and are amenable to further investigation and to having suitable areas managed for conservation in perpetuity. As such, all of the candidate sites so far considered are feasible to include within the offset package for the project.

Implementation

It is proposed that the project's offsets requirement should accurately reflect the project's final impact on biodiversity and not be based on concept drawings, as are currently available. This is particularly important for wind farm projects where the detailed design phase can require adjustments to access tracks and turbine locations. Additionally, this will provide a further incentive throughout the detailed design stage to minimise the clearing impacts of the works and thereby reduce the offset requirement.

The offset plan will be guided by the Biodiversity Offset Strategy (Appendix C) and is summarised as follows:

1. Determine final credit requirement using the FBA in consultation with OEH using final construction drawings.
2. Select final suite of offset sites including accurate calculation of credits.
3. Develop detailed management actions in consultation with landowners.
4. Verify actual post construction impact area.
5. Formally secure offset sites.

7 Statement of Commitments

This Statement of Commitments replaces the statement made in the EA. On the recommendation of DPE, a number of issues have been removed to avoid confusion or conflict where they are addressed by standard conditions of consent.

<i>SoC</i>	<i>Issue</i>	<i>Impact</i>	<i>Objective</i>	<i>Mitigation tasks</i>	<i>Project phase</i>
1	General	Environmental Impacts	Environmental Management	Implement an Environmental Management Strategy to manage the environmental impacts of the development including the obligations under the conditions of consent and this Statement of Commitments.	Construction
2	General	Environmental Impacts	Environmental Management	Implement the construction, operation and management of the wind farm in accordance with the Environmental Management Strategy, and in accordance with good industry practice in relation to environmental impacts including: <ul style="list-style-type: none"> ▶ hydrology ▶ soils and erosion ▶ dust management and air quality ▶ light pollution ▶ health and safety ▶ waste management ▶ pest management, including weeds ▶ Cultural Heritage 	Construction, Operation
3	General	Revisions to approved development	No material increase in impact	In micro-siting of wind turbines and other infrastructure, ensure that: <ul style="list-style-type: none"> ▶ Wind turbines and other infrastructure are micro-sited within the prescribed Development Envelope, and ▶ The revised location of the wind turbine or other infrastructure does not result in any non-compliance with the conditions of consent. 	Detailed design
4	Visual	Deterioration of visual amenity at surrounding residences	Mitigate impact	Prior to the commencement of construction, consult with any residence within 3 km of a wind turbine regarding visual impacts. Consider appropriate mitigation measures and, if required, offer vegetative screening. Planting of any vegetative would be completed within 2 years of completion of project construction.	Detailed Design, Post Construction

<i>SoC</i>	<i>Issue</i>	<i>Impact</i>	<i>Objective</i>	<i>Mitigation tasks</i>	<i>Project phase</i>
5	Noise	Construction noise	Minimise Impact	<p>Implement reasonable and feasible measures to minimise construction noise impacts on nearby residences, including associated traffic noise.</p> <p>Manage noise generated by construction or decommissioning activities in accordance with the best practice requirements outlined in the Interim Construction Noise Guideline.</p> <p>Implement a community consultation process to ensure adequate community awareness and notice of expected construction noise.</p>	Construction
6	Noise	Operational noise	Compliance	<p>Ensure final turbine selection and layout complies with:</p> <ul style="list-style-type: none"> ▶ the SA EPA Noise Guidelines (2009 version) of 35 dB(A) or background plus 5 dB(A) (whichever is higher) for all non-involved residential receivers, other than those which have entered into a noise agreement with the Proponent in accordance with the SA EPA Noise Guidelines; or ▶ the World Health Organisation Guidelines for Community Noise requiring 45 dB(A) or background plus 5 dB(A) (whichever is higher) for all other residential receivers. 	Detailed design
7	Noise	Operational noise	Compliance	<p>Prior to construction, prepare and submit to the DP&E a noise report providing final noise predictions based on any updated background data measured, the final turbine model and turbine layout selected, to demonstrate compliance with the relevant guidelines for all residences.</p>	Detailed design
8	Noise	Operational noise	Compliance	<p>Develop and implement an operational noise compliance testing program. The compliance program will commence 3 months before construction commencement and continue on a permanent basis for 2 years post commissioning. Permanent noise loggers will be installed at a minimum of 10 selected receivers for the duration of the compliance program, with noise data regularly downloaded and any potential exceedances noted for detailed analysis. The selected receivers will include all residences within 2km of a turbine and selected representative residences within 2-4km.</p>	Operation
9	Noise	Operational noise	Mitigate impact	<p>If operational monitoring identifies an exceedance, manage that exceedance via either:</p> <ul style="list-style-type: none"> ▶ negotiating with the landowner to enter into a noise agreement which allows a higher noise level, which may include consideration of providing mechanical ventilation, building acoustic treatments (improving glazing) or other mitigation and/or compensation; or ▶ using turbine control features (including the consideration of turning 	Operation

<i>SoC</i>	<i>Issue</i>	<i>Impact</i>	<i>Objective</i>	<i>Mitigation tasks</i>	<i>Project phase</i>
				turbines off) to manage excessive noise under particular conditions.	
10	Ecology	Environmental impacts	Environmental Management	Implement a post-construction Adaptive Bird and Bat Management Plan in consultation with OEH to determine the impacts of the project on bird and bat populations	Detailed design
11	Ecology	Loss or modification of habitat	Avoid, minimise, offset	<p>Prepare and implement an Offset Strategy, to offset residual impacts to native vegetation and habitat.</p> <p>The offset strategy would:</p> <ul style="list-style-type: none"> ▶ where possible, prioritise offset areas which provide for a reduction in fragmentation of native vegetation (in particular for areas adjoining existing reserves); ▶ allow for the establishment of offset areas in phases as construction commences for each stage; ▶ reflect the actual footprint of the development rather than the maximum impact areas identified in the Environmental Assessment. <p>The Offset Plan would be prepared in consultation with OEH, prior to construction. Actual offset areas would be secured within 2 years of the completion of construction of each stage of the project.</p>	Within 2 year of completion of construction.
12	Aircraft Hazards	Potential hazard	Minimise Impact	Liaise with all relevant authorities (CASA, Airservices, and Department of Defence) and supply location and height details once the final locations of the wind turbines have been determined and before construction commences.	Detailed design
13	Aircraft Hazards: Aerial Agriculture	Potential hazard	Minimise Impact	<p>Consult with affected landowners to discuss alternate measures to aerial spreading in areas affected by the turbines.</p> <p>Add aviation markers to any new powerlines located in areas where aerial agriculture is undertaken.</p> <p>If aerial agriculture activities are demonstrated to be materially disrupted on any property immediately adjacent to the site due to the operation of turbines, consult with the affected landowner and implement appropriate mitigation measures where necessary taking into consideration the history of aerial agriculture activities. This could include funding the cost difference between the pre-wind farm aerial agricultural activities and a reasonable alternative method.</p>	Operation
14	Communication	Deterioration of signal strength	Avoid impact	Make good any disruption to radio or telecommunication services in the vicinity of the wind farm caused by the construction of the wind farm (including any disruption to television reception of nearby residents).	Operation

<i>SoC</i>	<i>Issue</i>	<i>Impact</i>	<i>Objective</i>	<i>Mitigation tasks</i>	<i>Project phase</i>
15	Traffic	Safety and asset protection	Minimise Impact	<p>Develop and implement a Traffic Management Plan (TMP) in consultation with RMS and Councils to facilitate appropriate management of potential traffic impacts.</p> <p>The plan would include use of appropriately licensed haulage contractors with experience in transporting similar loads, who would be responsible for obtaining all required approvals and permits from the RMS and Councils and for complying with conditions specified in those approvals.</p>	Construction
16	Traffic	Safety and Asset protection	Minimise Impact	<p>Implement the road upgrades and repairs as outlined in Section 6.4 of Appendix E Traffic and Transport Report, in consultation with the relevant roads authorities, including:</p> <ul style="list-style-type: none"> ▶ pre- and post- dilapidation surveys and repair of affected roads at completion of construction ▶ minor relocation and upgrade of selected roads, including repair or replacement of culverts ▶ sealing of selected roads prior to turbine delivery ▶ maintenance of upgraded roads during the construction period 	Construction
17	Bushfire	Bushfire risk	Minimise Impact	<p>Prepare a Bushfire Management Plan in consultation with the Rural Fire Service and NSW Fire Brigade to manage bushfire risks during construction, operation and decommissioning. The plan would as a minimum include:</p> <ul style="list-style-type: none"> • During the construction phase, appropriate firefighting equipment would be held onsite for use when the fire danger is very high to extreme, and a minimum of one person on site would be trained in its use. The equipment and level of training would be determined in consultation with the local RFS. • Asset Protection Zones (APZs) established around structures as a buffer to prevent direct flame contact. APZs are to be calculated in accordance with the requirements of <i>Planning for Bushfire Protection 2006</i>. • Substations would be bunded with a capacity exceeding the volume of the transformer oil to contain the oil in the event of a major leak or fire. The facilities would be regularly inspected and maintained to ensure leaks do not present a fire hazard, and to ensure the bunded area is clear (including removing any rainwater). • Appropriate training and bushfire management protocols would be included in the Environmental Management Strategy. 	Construction Operation Decommissioning

<i>SoC</i>	<i>Issue</i>	<i>Impact</i>	<i>Objective</i>	<i>Mitigation tasks</i>	<i>Project phase</i>
18	Hydrology	Water entitlement	Compliance	Obtain all necessary water entitlements required for the extraction of water for construction of the project.	
19	Economic Benefits	Effect on local community	Maximise positive impact	<p>Liaise with local industry representatives to maximise the use of local contractors and manufacturing facilities in the construction, operation and decommissioning phases of the project.</p> <p>Make available employment opportunities and training for the ongoing operation of the wind farm to local residents where reasonable.</p> <p>Prepare a Social Impact Management Plan to identify and assess opportunities for local employment, including a local employment and housing strategy.</p>	Construction
20	Economic Benefits	Community Fund	Continue consultation to maximise benefit	<p>The proponent will establish a Community Enhancement Fund (CEF): via a Voluntary Planning Agreement or similar suitable mechanism prior to the commencement of operation of the wind farm.</p> <p>Regularly make publicly available the details of the fund including its administration processes, funds made available, funding commitments and outcomes.</p> <p>The proponent will pay into the Fund an amount of \$2,500 per annum for each wind turbine operating as part of the project.</p> <p>Grants will be made available from the CEF for projects that benefit the community near the wind farm and pass the following criteria:</p> <ul style="list-style-type: none"> • Applications from incorporated or registered not-for-profit organisations, that can • Demonstrate a degree of benefit within an area of approximately 20km from an installed wind turbine or within 5km of the new powerline. 	Operation
21	Community Consultation	Project Information	Inform Community	Appoint a community liaison officer to be available for consultation by the community and to provide information to the community about the status of the project.	Construction Operation
22	Community Consultation	Project Information	Community liaison	Continue with the Community Consultation Committee as required during various stages of the project life cycle.	Construction Operation

8 References

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9 Glossary and acronyms

<i>Abbreviation</i>	<i>Description</i>
DGP	Development Control Plan
DECCW	NSW Department of Environment, Climate Change and Water
DGRs	NSW Department of Planning's Director General's Requirements. The Environmental Assessment report must address issues as directed in the DGRs.
DoP	NSW Department of Planning
EA	Environmental Assessment report, format dictated by the DGRs
EMF	Electromagnetic fields
GWh	gigawatt-hour, equal to 1,000,000 kWh
kV	kilovolt
LEP	Local Environmental Plan
MW	megawatt, equal to 1,000,000 watts
MWh	megawatt-hour, equal to 1,000 kWh
PFM	Planning Focus Meeting
SEPP	State Environmental Planning Policy

Attachment 1 – Involved Land Parcels

Attachment 2 – Residence coordinates

Attachment 3 – Turbine coordinates

Attachment 4 – Wind monitoring masts

Attachment 5 – Additional Consultation
Material

Appendix A – Landscape and Visual Impact Assessment Addendum

Appendix B – Noise Impact Assessment Amendment

Appendix C – Biodiversity Addendum Report

Appendix D – Aboriginal Cultural Heritage Assessment

Appendix E – Traffic & Transport Assessment

Appendix F – Aviation Impact Assessment

