EIS Volume 1 Chapter 4

Route Selection

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project energy connect

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4. Route Selection

This chapter presents the process followed by ElectraNet to select the proposed alignment for the South Australian portion of Project EnergyConnect. It presents the methodology used by both ElectraNet and TransGrid to identify the initial investigation corridor for Project EnergyConnect and the initial nominal route alignment, the subsequent use of a multi-criteria analysis (MCA) to assess additional constraints and opportunities for a variety of route options, and the selection of a proposed alignment and associated transmission line corridor for the Project.

Although this chapter provides details on the overarching 'whole of project' corridor selection methodology, it primarily focuses on the works undertaken in South Australia.

For the purposes of this chapter:

- **Investigation corridor** refers to the initial 20 km wide investigation corridor and subsequent refined 15 km investigation corridor encompassing all route options assessed in this EIS.
- **Nominal route alignment** refers to the initially identified potential alignment based on initial constraints and opportunities mapping, preliminary environmental studies and early stakeholder consultation.
- **Proposed alignment** refers to the alignment of the transmission line identified through the route selection process described in this chapter.
- **Transmission line corridor** refers to a nominal 1 km wide corridor (500 m buffer either side of the proposed alignment as at January 2021) used as a guide for the assessment of impacts. The final alignment of the transmission line is expected to remain largely within the transmission line corridor.

4.1. Overview

As a 900 km (approximate) proposed transmission line traversing west-east across south-eastern Australia, Project EnergyConnect represents a critical piece of nationally important electricity infrastructure which poses inherent challenges.

Whilst the most cost-effective approach for the Project would be to adopt a straight-line approach from point to point, this option is not viable due to a range of environmental, social, land use and engineering constraints. Many of these constraints alone can impede a linear infrastructure project from progressing or cause realignments which can trigger other impacts. An extensive assessment process has been followed to better understand and evaluate the constraints and opportunities which influence the Project, the results of which were ultimately used to inform the selection of the proposed alignment assessed in this EIS.

ElectraNet undertook high level electrical system studies and connection options assessments which identified four credible options as follows:

- South Australia – Queensland (Davenport to Western Downs)
- South Australia – New South Wales (Robertstown–Buronga–Wagga Wagga)
- South Australia – New South Wales (Davenport to Mount Piper)
- South Australia – Victoria (Tailem Bend to Horsham).

These options were all considered as part of the Regulatory Investment Test for Transmission (RIT-T) process which concluded that an interconnector between Robertstown in SA and Wagga Wagga in NSW (Option C3) was the most feasible alternative (refer Chapter 3 Alternatives to the Project).

ElectraNet, together with TransGrid, commenced studies in mid-2018 to identify an initial investigation corridor between Robertstown and Wagga Wagga. These studies involved a range of technical, engineering, environmental, social and land access investigations to identify potential constraints, as well as opportunities to inform investigation corridor options.

4.1.1. Objectives

The following objectives were established by ElectraNet and TransGrid to inform the route selection methodology for the Project and to ensure that a structured approach was followed when selecting the investigation corridor, route options and proposed alignment. The overall objective of the assessment is to develop a balanced approach to defining the proposed alignment, including due consideration of environmental, social, engineering, schedule and cost factors. This will ensure that the proposed alignment:

- considers and adheres to all relevant regulatory requirements (international, Commonwealth and State)
- is broadly supported by and acceptable to stakeholders
- avoids areas of significant environmental sensitivity or restricted access and reduces environmental disturbance as far as practical
- avoids (if reasonable) or minimises impacts on areas of particular environmental or social (including cultural heritage) sensitivity or where environmental planning approvals are considered complex
- preferentially follows areas of existing disturbance (e.g. roads and tracks, utility easements, fence lines and cadastral boundaries)
- is suitable from an engineering and construction perspective
- maximises buffer distances to residences and other sensitive land uses
- will allow the transmission line to be accessible for ongoing maintenance requirements.

4.2. EIS Guidelines

The EIS Guidelines require an assessment of the alternative routes investigated as set out in Table 4-1.

Table 4-1: EIS Guidelines addressed in the Route Selection chapter

EIS Guidelines and Assessment Requirements	Assessment level
Route Selection *Assessment Requirement 7*: The proposed route alignment is anticipated to be a 60 m to 75 m wide corridor[1] within a wider 15 km assessment corridor.	
• 7.1: With regard to the Assessment Requirements required by this document (such as native fauna, vegetation, conservation values, cultural heritage and hazard risk) provide details, including a multi-criteria analysis, on the alternate routes investigated and rationale as to why the final route was chosen.	Critical
Visual Impacts / Interface with adjacent land users *Assessment requirement 8*: The effect of large number of lattice towers (i.e. approximately 475 towers – typically 50 m in height and spaced 450 – 600 m apart) along an approximately 190 km alignment, which would represent a significant visual element in the landscape.	
• 8.2: Describe alternative measures for minimising potential loss of visual amenity (e.g. structural design and placement, screening) and detail any compensatory and site	Medium

[1] The EIS Guidelines note that the proposed route was originally intended to be a 60 m – 75 m wide easement within a wider 15 km investigation corridor. Following preliminary tower design, ElectraNet has since determined that an 80 m wide easement will be required to adequately incorporate safety clearance margins for the Project.

EIS Guidelines and Assessment Requirements	Assessment level
rehabilitation measures that will be undertaken to minimise visual impacts as a result of vegetation clearance.	

Aspects of assessment requirements identified in Table 4-1 which are not addressed in this chapter are listed in Table 4-2 together with the applicable chapter.

Table 4-2: Aspects of assessment requirements addressed in other chapters

Assessment requirement	Chapter
8.2 Site rehabilitation measures to minimise visual impacts	Chapter 13 Visual Amenity

4.3. Route Selection Methodology

The route selection methodology was developed by ElectraNet and TransGrid, together with a number of specialists. It is aligned with route selection methodologies that have been successfully utilised on many linear infrastructure projects around the world. This methodology was reviewed and endorsed by the Project's steering committee, which includes representatives from the following government departments: SA Department for Energy and Mining (DEM), SA Environment Protection Authority (EPA SA), SA Department of Infrastructure and Transport (DIT), SA Planning and Land Use Services (PLUS-AGD), SA Department for Environment and Water (DEW), NSW Department of Planning, Industry and Environment (DPIE), Commonwealth Department of Agriculture, Water and the Environment (DAWE). It was also presented to key stakeholders for feedback.

A typical route selection methodology for a linear infrastructure project is described in Figure 4-1. The route selection methodology followed by Project EnergyConnect can broadly be summarised into the steps illustrated in Figure 4-2.

4.3.1. Route selection study inputs

The approach used to select a preferred investigation corridor and refine the route options involved a detailed review of the following datasets and reports, which were ultimately used to inform the route selection process:

- SA and NSW geospatial datasets sourced from federal, state and local authorities representing the assessment criteria
- Commonwealth EPBC Protected Matters Search Tool
- SA Aboriginal Affairs and Reconciliation (AAR) and NSW Aboriginal Heritage Information Management System (AHIMS) datasets
- qualitative feedback received from landholders and stakeholders during ongoing in-region engagement undertaken by ElectraNet between November 2018 and November 2020
- existing environmental impact assessment reports undertaken in the area (including the 2002 SNI EIS)
- Project specialist studies, including flora, fauna, avifauna and cultural heritage surveys to inform local site constraints and opportunities
- formal feedback provided by the Project EnergyConnect Steering Committee and working group
- stakeholder and community feedback and social analysis via primary and secondary resources which include: stakeholder surveys, individual and small group meetings, community drop-in sessions, one-on-one meetings with landholders, Traditional Owner groups workshops, engagement with other directly affected parties, and feedback collected through the Project EnergyConnect website and public facing interactive mapping and feedback collection tool.

Using the inputs listed above, a digital spatial assessment platform was developed to evaluate potential constraints and opportunities and allow them to be weighted and applied throughout the route selection process.

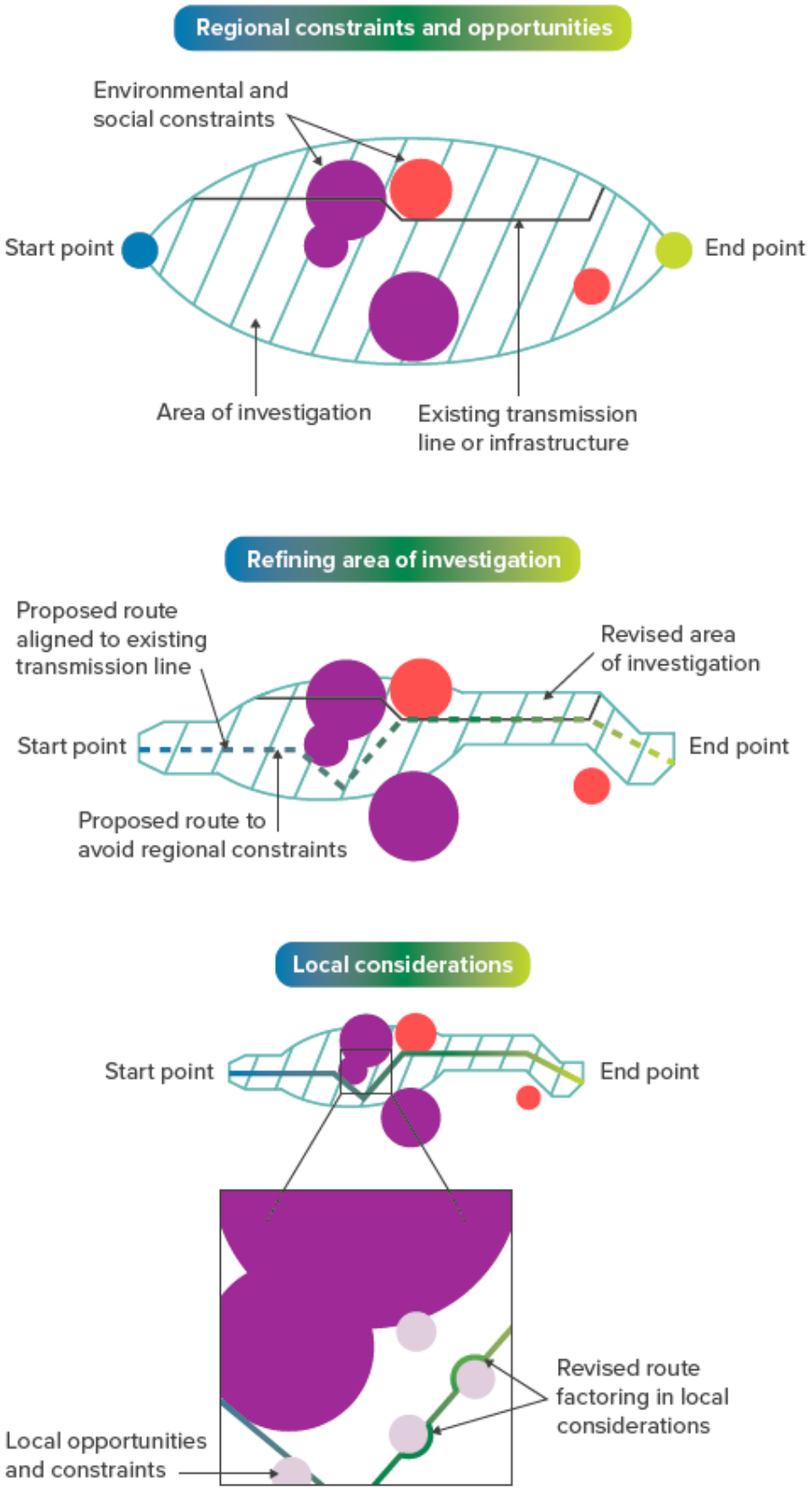


Figure 4-1: Route selection process overview

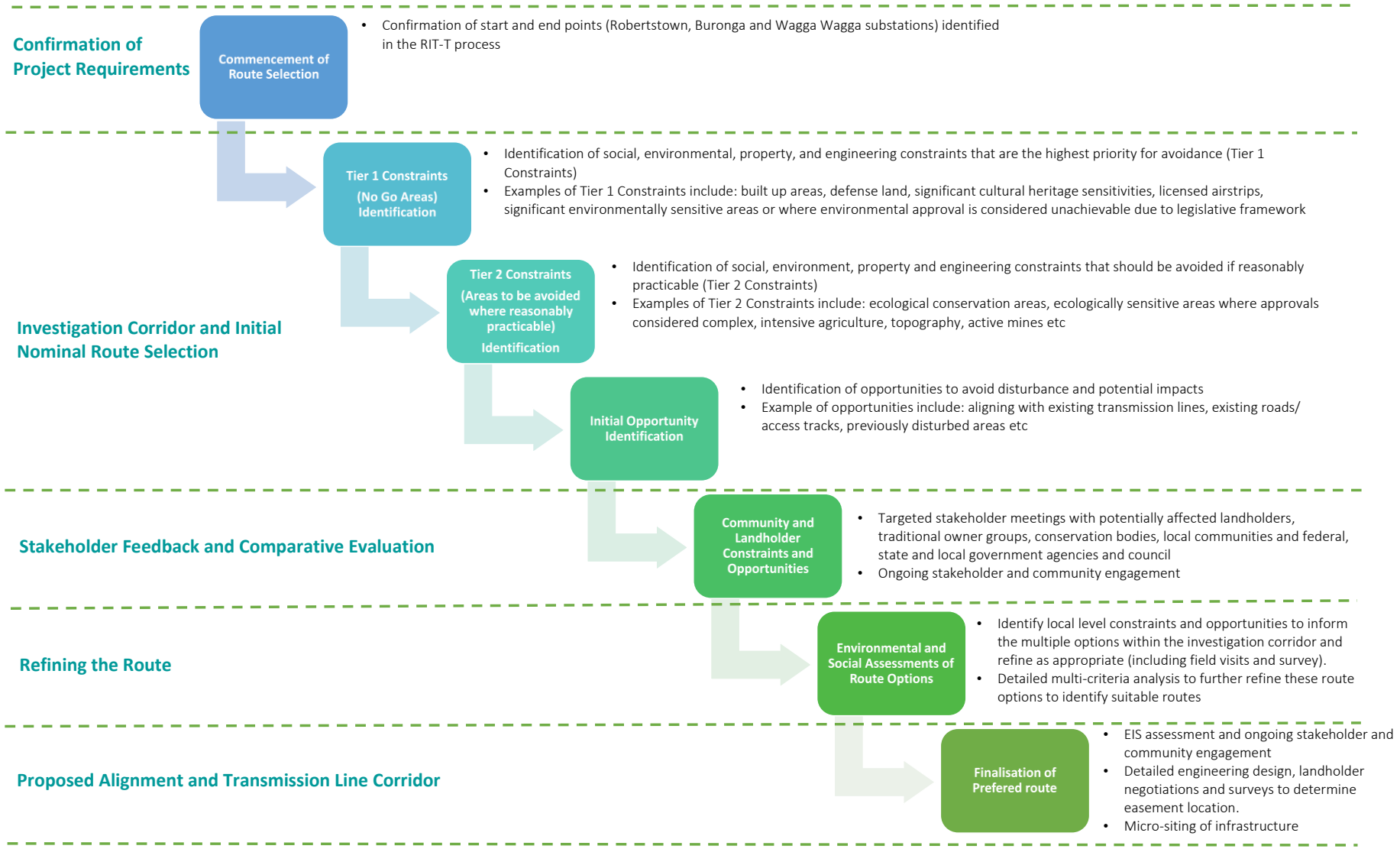


Figure 4-2: Project EnergyConnect route selection methodology

4.4. Project Requirements

As discussed in Chapter 3 Alternatives to the Project (and concluded in ElectraNet's RIT-T Project Assessment Conclusions Report (PACR)), there are a number of Project requirements that need to be met that influenced the selection of a route.

Of all options considered, interconnection of the NEM through the Robertstown (SA), Buronga (NSW) and Wagga Wagga (NSW) substations with an added connection to Red Cliffs (Vic) is expected to deliver the highest net market benefits (Option C.3). The start and end points (i.e. the substations) for the Project are therefore considered fixed, as shown in Figure 4-3.

In addition to the fixed start and end points a key ambition for Project EnergyConnect is to facilitate connections into the national electricity grid for existing, proposed and future renewable energy projects. The primary focus has been those renewable projects that exist within the Renewable Energy Zones (REZs) identified by the Australian Renewable Energy Agency (ARENA) and illustrated in Figure 4-3. The Project's role in supporting the development and growth of renewable energy in Australia is further described in Chapter 2 Project Justification.

In order to meet the required capacity to deliver the maximum benefits of Project EnergyConnect, the proposed Project components described in Chapter 1 Introduction were developed through a joint engineering planning process involving ElectraNet and TransGrid.

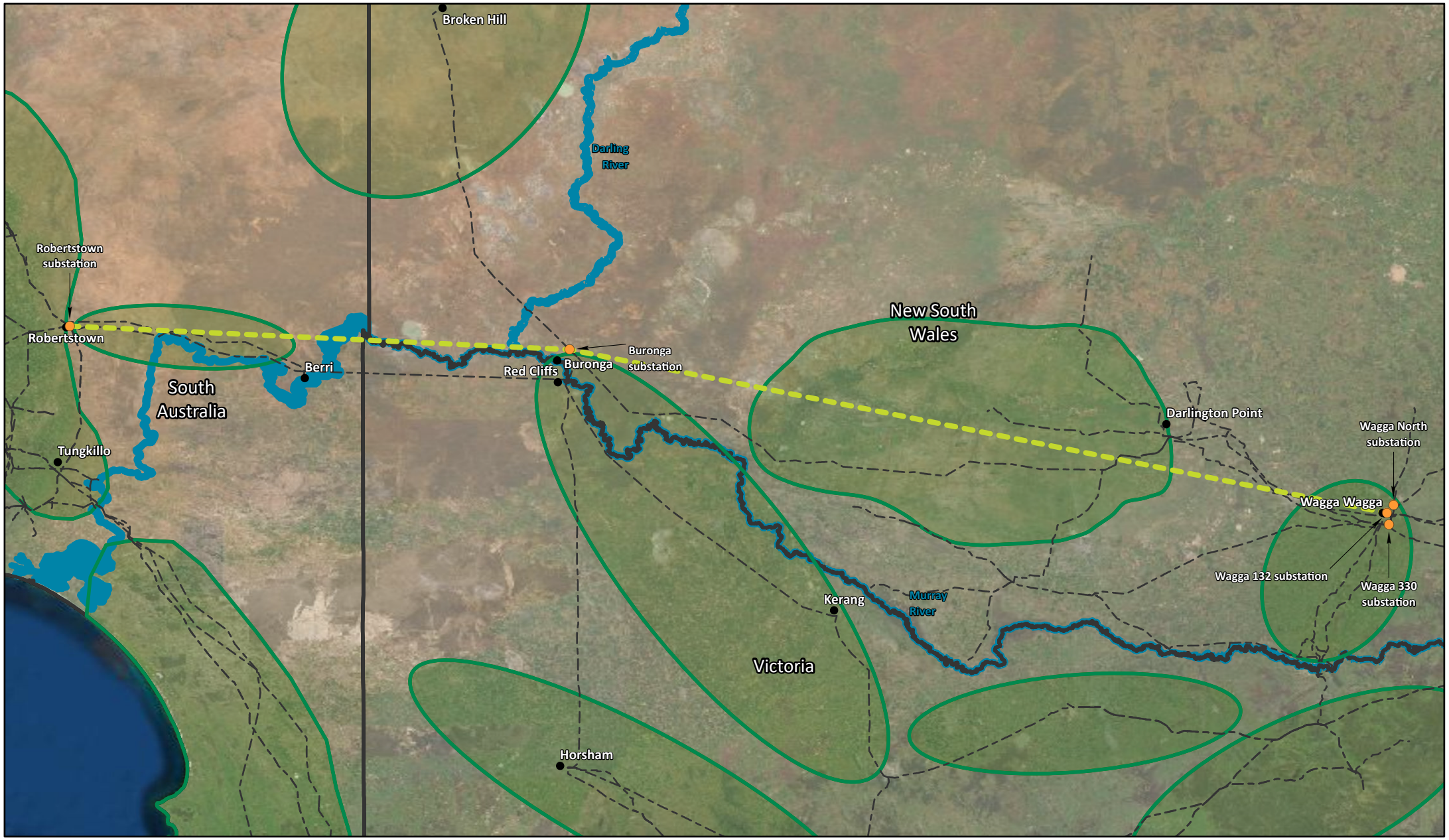


Figure 4-3
Preferred Option C.3 substation locations and REZs

4.5. Investigation Corridor and Initial Nominal Route Selection

The route selection process commenced with a series of comprehensive multi-disciplinary planning workshops with ElectraNet, TransGrid and engineering, land access, environmental and social specialists. The objective of these workshops was to establish a broad investigation corridor, evaluate route options and select an initial nominal route centreline for the transmission line that would connect the fixed-point substations.

Definition of the investigation corridor and nominal route initially identified a broad area of investigation between the known substation start and end points which was further refined by identifying regional constraints and opportunities.

4.5.1. Constraints identification

Constraints for development were identified through the multi-disciplinary workshops and ranked as shown in Table 4-3 and Table 4-4.

Constraints were identified based on environmental, social, land use and engineering aspects. Using Geographic Information Systems (GIS) and trusted existing databases, these constraints were then mapped and classified using a hierarchy of constraints as illustrated in Figure 4-4.

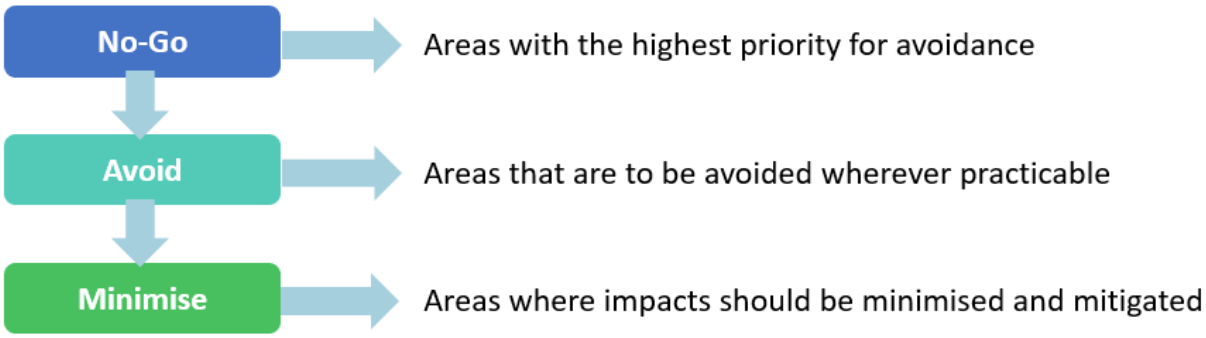


Figure 4-4: Hierarchy of constraints

Constraints were separated into Tier 1 and Tier 2 constraints. Tier 1 constraints were assigned the highest priority for avoidance. Examples of Tier 1 constraints include built up areas, Department of Defence land, licensed airstrips, areas of known significant cultural heritage sensitivities, large water crossings, known significant environmentally sensitive areas or where approvals are considered unachievable due to legislative frameworks. Tier 1 constraints have been summarised in Table 4-3 and illustrated in Figure 4-5.

Tier 2 constraints were classified as areas to avoid as far as practicable whilst recognising that provisions of the *Electricity Act 1996* in South Australia allows for installation of electricity infrastructure on public land. Examples of Tier 2 constraints include ecological conservation areas such as national parks, state reserves and parks, intensive agricultural areas, areas with steep topography and active mines. These areas were identified as potentially sensitive and where approvals are considered likely to be complex. Tier 2 constraints have been summarised in Table 4-4 and illustrated in Figure 4-6.

Using these identified constraints and extensive existing geospatial datasets, ElectraNet and TransGrid mapped an initial 20 km wide investigation corridor for the Project between Robertstown and Buronga. The South Australian portion of this 20 km investigation corridor has been illustrated in Figure 4-5 and Figure 4-6.

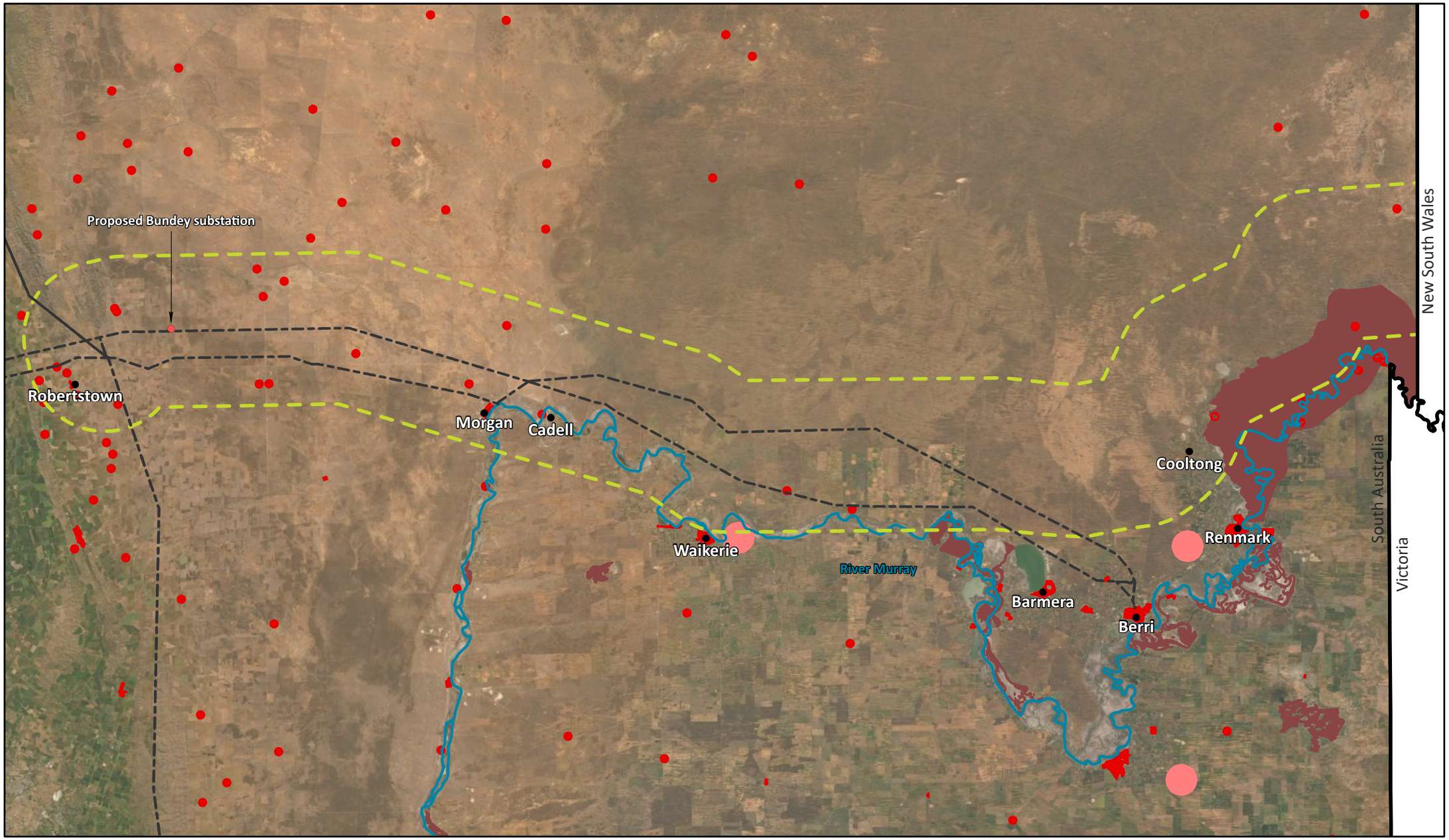
Table 4-3: Tier 1 constraints and justifications

Criteria		Tier 1 / No go areas		
		Aspect	**Reason**	**Comment**
Environment	**Ecology**	Ramsar Wetlands	*Environmental sensitivity – Environmental approval considered unachievable due to legislative framework –*	Due to legislative frameworks for Ramsar Wetlands and associated migratory birds protected by international agreements etc. these areas were considered as high priority for avoidance. Note: may fall within investigation corridor but nominal alignment of corridor avoids.
		Water sources for migratory birds protected by international agreements	*Environmental sensitivity – Environmental approval considered unachievable due to legislative framework–*	Major wetlands and water sources in the SA and NSW study area are associated with the Murray and Darling Rivers and Darling Anabranch. Many of these water sources support wetlands and habitat for species listed under international convention agreements between Australia and Japan (JAMBA), China (CAMBA) and the Republic of Korea (ROKAMBA).
	Cultural Heritage	In NSW, Lake Victoria and the surrounding lunettes (sand dunes) (with 6 km buffer)	*Indigenous heritage sensitivity around Lake Victoria – Environmental approval and land access considered unachievable–*	Studies conducted for the SNI project identified Lake Victoria (NSW) as a particularly sensitive areas with many previously recorded heritage sites and places.
Property	**Land Tenure**	Defence land	*Safety and security concerns – land access considered unachievable–*	Commonwealth Defence lands and areas with the potential to contain unexploded ordinance (UXO) carry significant safety concerns for infrastructure development projects. Access is generally considered difficult and security of tenure for transmission assets is not guaranteed.
	Land Use	Built up areas (townships and residential concentrations)	*Significant public safety and amenity concerns – environmental approvals and land access considered unachievable*	Built up areas and residential concentrations in NSW (such as Buronga, Dareton, Wentworth and at various locations along the Darling River and Anabranch) and in SA (such as Morgan, Renmark, Cooltong and settlements north and south of the River Murray) as they generally pose public safety and amenity concerns to residents
		Licensed airstrips	*Significant safety risk – environmental approvals and land access considered unachievable*	Due to nature of their operations, registered aerodromes and licensed airstrips are generally considered incompatible with high voltage transmission lines.
Technical	**Engineering**	Crossings (e.g. water bodies) greater than 800 m	*Not constructible – Exceeds engineering design limitations*	Large water bodies that exceed the design and engineering capabilities of high voltage transmission lines to span distances of greater than 800 metres. Avoid high-risk flood potential areas due to inaccessibility for construction and maintenance and design cost.

Table 4-4: Tier 2 constraints and justifications

Criteria		Tier 2 / Areas to be avoided		
		Aspect	**Reason**	**Comment**
Environment	**Ecology**	Other wetlands not listed as Tier 1	*Environmental sensitivity – Environmental approvals considered complex*	Wetlands are important habitat for a diverse range of animals including waterbirds, amphibians, invertebrates and fish species as well as aquatic and water loving plants such as sedges and rushes. Tree species such as River Red Gum also rely on these environments. Wetlands are important provide strategic refuge during drought and frequently support threatened species.
		National Parks, ecological conversation areas (including flora reserves, state conservation areas, biosphere; wilderness protection areas)	*Environmental sensitivity – Environmental approvals and land access considered complex*	National Parks are primarily set aside for plant and animal conservation, fire management, sustainable tourism and visitation, research, education. Ecological conservation areas are set aside primarily to conserve threatened species, endangered ecological communities and large, intact areas of habitat. assemblages of flora and fauna
	Cultural Heritage	Listed heritage areas and places Areas of known likely cultural heritage value, particularly along the River Murray riparian zones	*Cultural Heritage Sensitivity – Environmental approvals and land access considered complex*	Listed or defined heritage areas and places are recognised for noteworthy historical or aesthetic character and value. They may be particularly susceptible to impact via visual amenity or character changes in the area.
Property	**Land Tenure**	Commonwealth land	*Environmental approvals and land access considered complex*	Commonwealth land generally constitutes land containing matters of national environmental significance (MNES).
		Areas subject to exclusive Native Title Determinations	*Land access considered complex*	Exclusive Determination grants the rights and interest to the use of the land to the exclusion of all others.
		Freehold land granted under NSW Aboriginal Land Rights Act	*Land access considered complex*	Freehold Aboriginal Land is generally reserved to encourage the commercial value and development by traditional owners and are not compatible with easements.
	Land Use	Intensive agricultural activities and horticultural use (e.g. travelling and pivot irrigation)	*Incompatible activity – land access considered difficult*	Constitutes a significantly higher economic and disturbance impact to landholders and / or significant cost to the Project.
		Active mining	*Incompatible activity – land access considered difficult*	Constitutes a higher risk to security of tenure, risks to infrastructure and personnel, as well as a higher obtrusiveness during construction and maintenance.
		Areas subject to non-exclusive Native Title determinations	*Land access considered difficult*	Native Title may contain significantly higher cultural heritage value, and as such may be more acutely impacted by potential risk factors.

	Criteria	Tier 2 / Areas to be avoided		
		Aspect	**Reason**	**Comment**
Technical	**Engineering**	Slope greater than 15 degrees (considering the placement of structures and whether spans can skip over steep areas) Crossings at water bodies that require spans of greater than 800 m	*Difficult construction (including for associated access tracks) – Increase time and cost*	Represents a higher engineering difficulty and cost to construct the transmission line.



Tier 1 - Airport
Tier 1 - Built up areas
Tier 1 - Wetland
20 km investigation corridor
Existing ElectraNet transmission line
River Murray
Proposed Bundey substation

Figure 4-5
Tier 1 constraints on development

0 20
Kilometres

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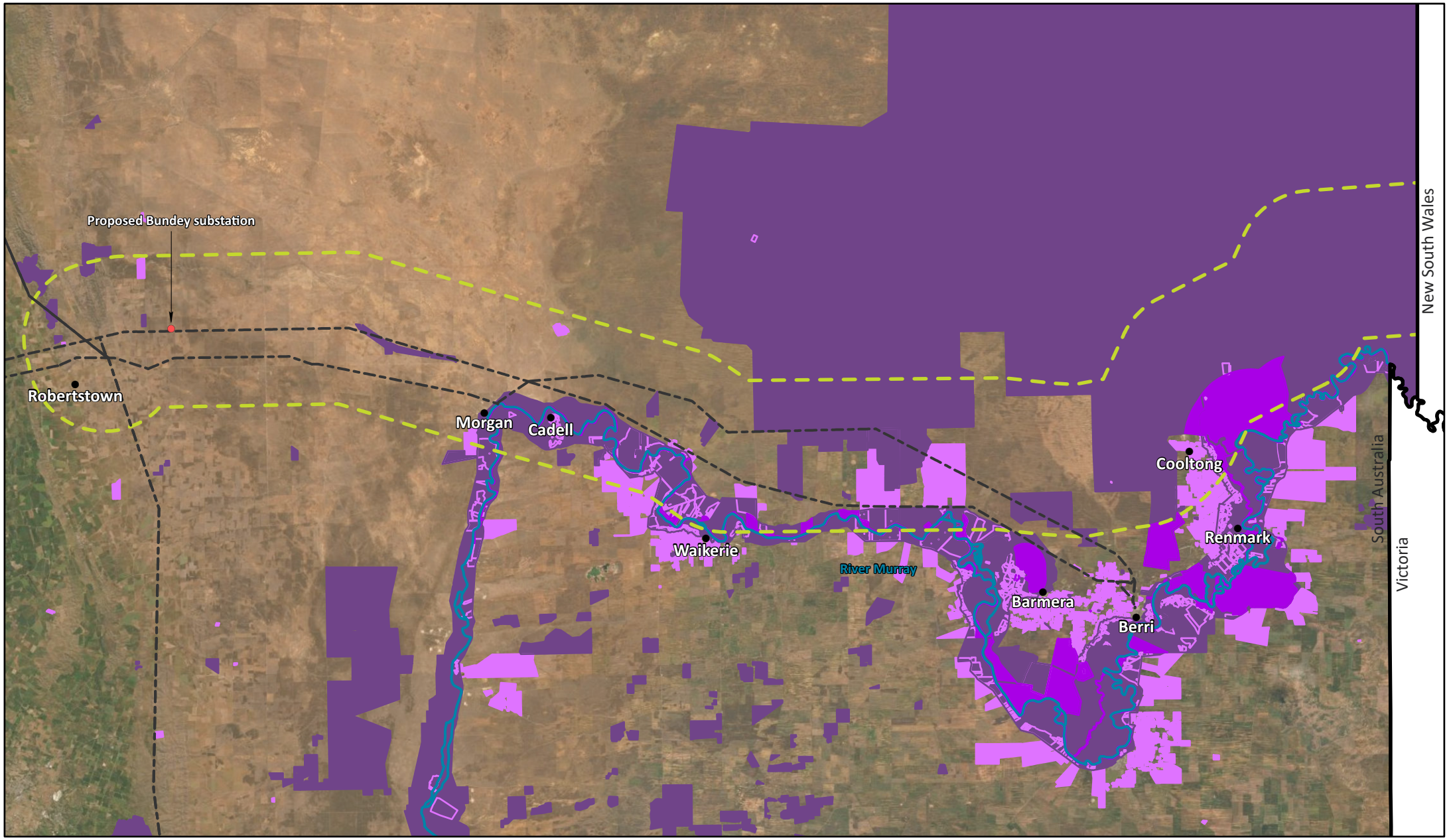


Figure 4-6
Tier 2 constraints on development

4.5.2. Opportunities identification

Following the identification of key Project constraints, and particularly given the significant geographic extent of Tier 2 constraints, opportunities to minimise potential impacts in these areas and improve or benefit the Project outcomes and objectives were identified and assessed. Examples of some of these Project opportunities include, aligning with existing disturbance, which may include:

- existing transmission lines
- existing roads or access tracks
- existing fire breaks
- previously disturbed areas
- fence lines.

The opportunities identified in South Australia have been summarised in Table 4-5 and illustrated in Figure 4-7. By identifying these opportunities, multiple route options were considered in order to avoid Tier 1 constraints and minimise potential impacts to Tier 2 constraints.

Following the identification of the broad opportunities within the 20 km investigation corridor, the Project was able to refine the 20 km investigation corridor to 15 km and allow for more focussed geographic assessment for the route selection process going forward.

In addition to the refinement of the investigation corridor to 15 km, the Project identified an initial nominal route alignment based on a combination of constraint avoidance and utilising identified opportunities or areas of existing disturbance. The 15 km investigation corridor and initial nominal route alignment have been illustrated in Figure 4-8.

Table 4-5: Opportunities and justifications

South Australia Opportunities	
Opportunity	**Reason**
Alignment with existing transmission lines, established tracks, roads and fence lines	• There is an existing ElectraNet 132 kV transmission line which runs from Robertstown to the southern boundary of Taylorville Station, before deviating to the Monash substation. • A route option exists to align with this existing 132 kV transmission line and picking up the existing Powerline Road, Taylorville Station southern boundary track and the Pooginook track. This means that existing access tracks and roads may be utilised for a large portion of the alignment thus significantly reducing greenfield disturbance and potential impacts. • This area also largely comprises of open and cleared paddocks with limited social and environmental receptors present.
Alignment with proposed firebreak / fire access track through Hawks Nest Station	• Fire is a major hazard for the broader Project area. A potential fire break or additional firefighting access has been raised as a potential project benefit through Hawks Nest Station and alignment with existing fire management tracks within Calperum Station. • A route option opportunity exists that may double up as an easement and a fire break / fire access. This would reduce the required clearance for the proposed transmission line by utilising the proposed easement for a dual purpose. Hawks Nest is a pastoral property, primarily used for grazing and feral animal hunting. • Engagement with County Fire Service (CFS), DEW and the landholder is ongoing as this route option is being further evaluated.
Alignment with / utilising existing seismic track, quarry haul road or property boundaries on Calperum Station to reduce disturbance	• There are a number of existing disturbed tracks that traverse Calperum Station, these include a historical seismic shotline / track, a Quarry Road that has been extensively used until 2018, fence lines and existing firebreaks and access roads / tracks. • These areas provide for a number of route option opportunities to traverse from Hawks Nest Station through Calperum Station to the Wentworth Road. Although it is noted that these areas are within the property boundary of Calperum Station, which is considered Critical Habitat for the Black-eared Miner, the opportunity to follow an existing straight cleared track was initially evaluated as being more beneficial than creating new disturbance and tracks for a longer distance in an identical habitat on Calperum or off the property. These options are currently subject to ongoing evaluation, intensive study and engagement with the Australian Landscape Trust, relevant state agencies and other relevant stakeholders. A significant opportunity through Calperum Station was the seismic shotline, as shown in Figure 4-7
Alignment with the existing Wentworth-Renmark Road	• Although the Ramsar wetlands and Calperum Station were identified as Tier 1 and Tier 2 constraints respectively, complete avoidance of Calperum was not feasible from an environmental, social, engineering or cost perspective. • A route option opportunity was identified running alongside the existing Wentworth-Renmark Road that traverses the boundaries of both Calperum Station and the Ramsar wetland. Alignment with the existing Wentworth-Renmark Road allows this area to be traversed whilst minimising potential disturbance and the introduction of new impacts in non-disturbed areas. In addition, this alignment is on the southern-most extent of the designated Critical Habitat area and will allow the Wentworth Road to be used for primary access, significantly reducing the need for additional primary access.

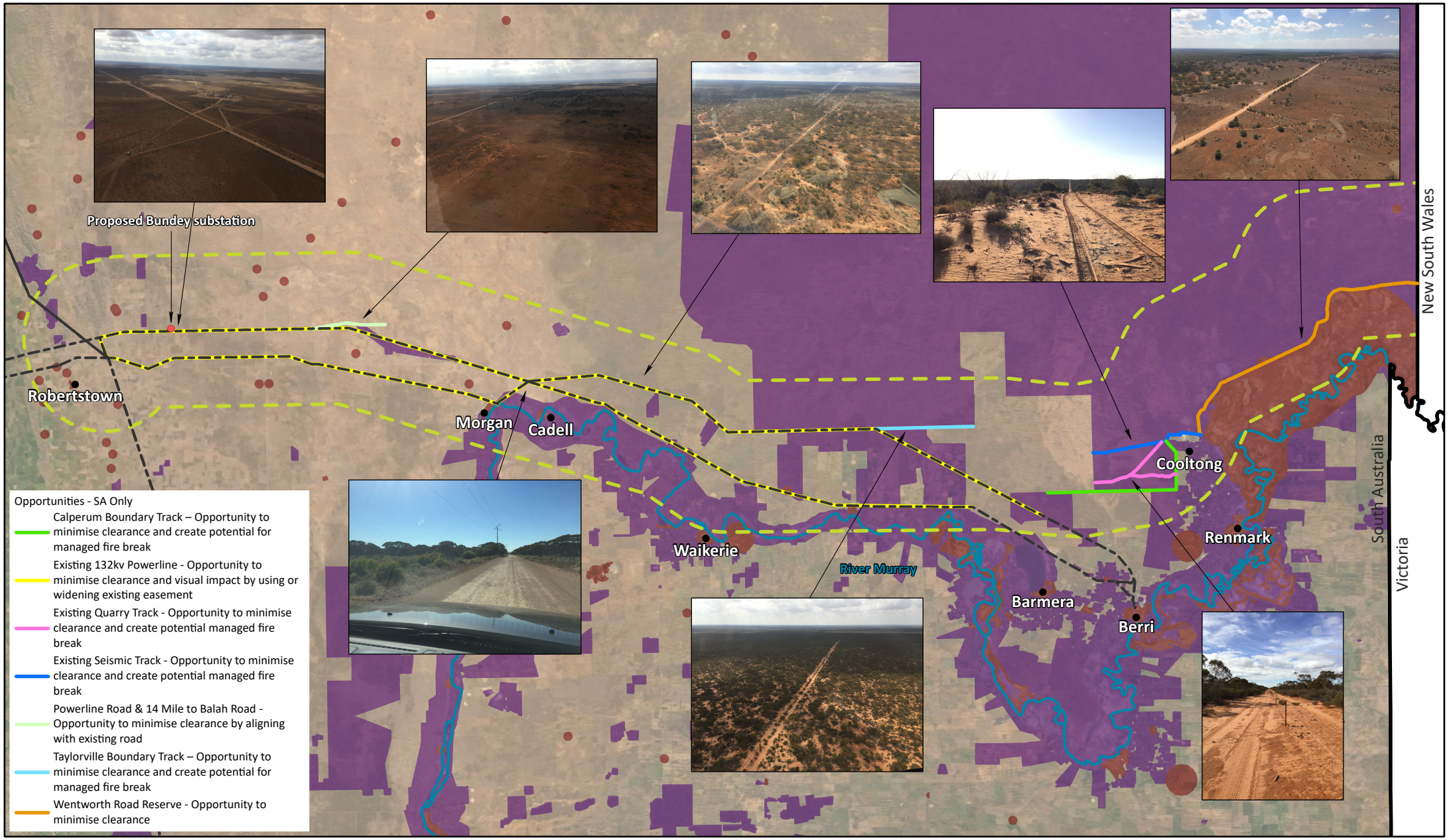
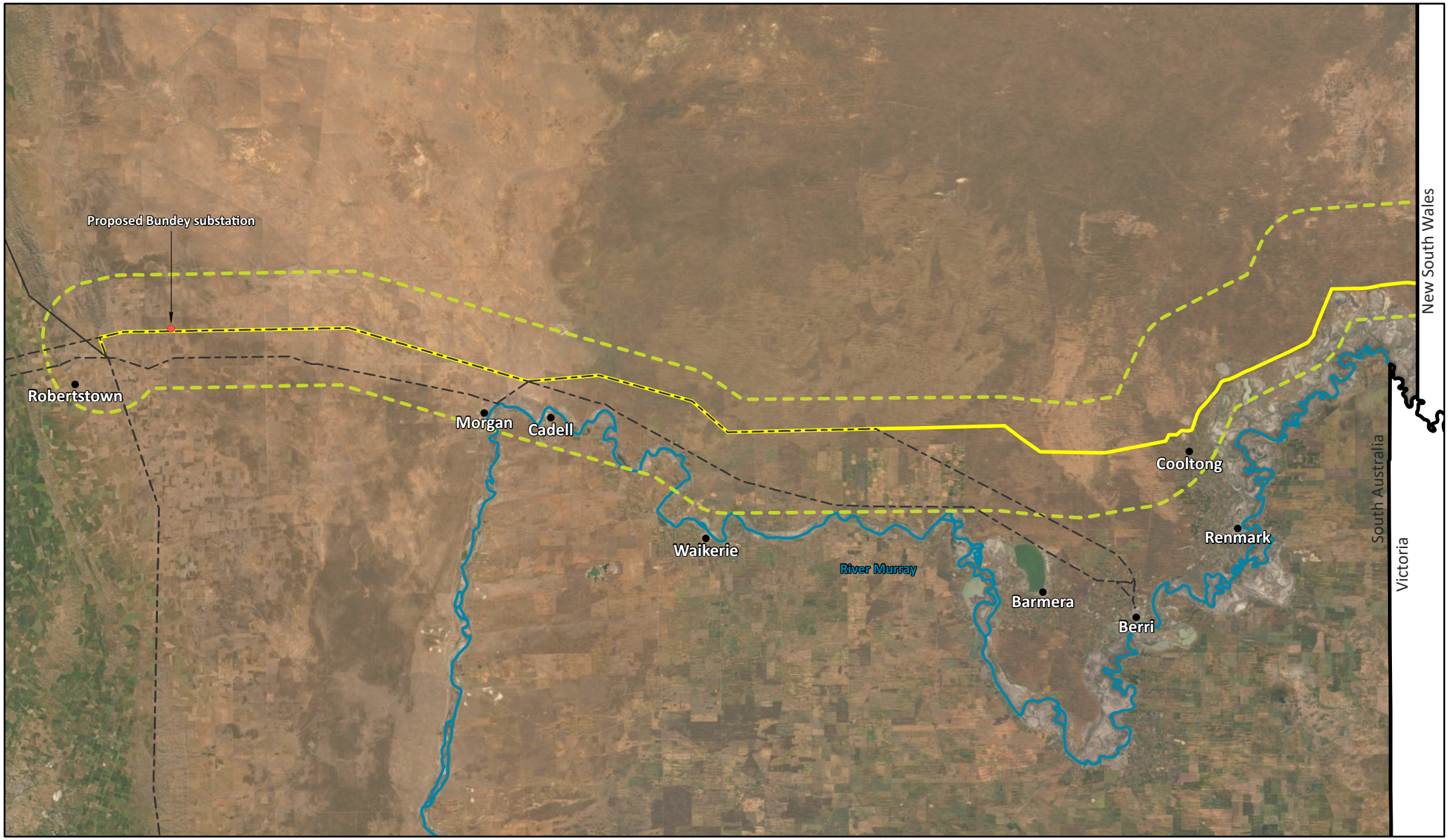


Figure 4-7
Opportunities to minimise impacts of the Project



15 km investigation corridor
Nominal route alignment
Existing ElectraNet transmission line
River Murray
Proposed Bundey substation

Figure 4-8
Refined 15 km investigation corridor and nominal route alignment

0 20
Kilometres

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4.6. Stakeholder Feedback and Comparative Evaluation

Early in the route selection process, the initial 20 km wide investigation corridor was used to commence targeted stakeholder engagement with potentially affected landholders, Traditional Owner groups, conservation bodies, and state and local government agencies. The primary objective of this initial engagement was to obtain stakeholder feedback on the route selection methodology, validation of constraints and opportunities identified at a landscape level, broad investigation corridor and to assist in the identification of any local level constraints and opportunities. A summary of the stakeholder and community engagement process undertaken for route selection is contained in Chapter 6 Stakeholder Engagement.

Through the early stakeholder engagement process, concern was raised in relation to the ecological sensitivity of a number of Tier 2 constraints as illustrated in Figure 4-6, particularly where Calperum and Taylorville Stations were traversed by the investigation corridor. The Project subsequently further assessed potential alternative route options outside of the initial 20 km investigation corridor that would avoid these conservation areas. These have been illustrated in Figure 4-9. This assessment included further detailed GIS mapping, ecology surveys, internal workshops with technical experts, consultation with Commonwealth and State governments, stakeholder engagement and further review of secondary sources. The assessment concluded the following:

- A northern alignment outside of the investigation corridor would increase the need for greenfield disturbance, as it traverses large continuous areas of intact native vegetation (including old-growth Mallee and Black-oak woodland) for more than 300 km. In addition, this alternative alignment would increase potential Project costs by approximately $95 million due to the increased length, engineering requirements, access and construction constraints as well its associated maintenance challenges.
- A southern alignment outside of the investigation corridor would involve multiple crossings of the River Murray, traversing high value intensive agricultural lands, and would introduce numerous environmental, cultural heritage, social and economic impacts. This option was not supported by Traditional Owner groups, local councils, the general community and agricultural bodies south of the River Murray. In addition, this alternative alignment would increase route distance by approximately 60 km and potential Project costs by approximately $85 million due to increased line length, engineering requirements, compensation, access and construction constraints.

Based on additional studies and stakeholder engagement both these alternative alignment options outside of the initial 20 km investigation corridor were deemed not suitable on environmental, economic and technical feasibility grounds. Given the findings of this analysis, ElectraNet, with endorsement of the Project EnergyConnect Steering Committee, retained the initial 20 km and subsequent 15 km investigation corridor as the preferred investigation corridor and continued to progress route options within this investigation area.

As part of the stakeholder feedback and comparative evaluation, further opportunities were also identified, presenting multiple route options within the investigation corridor. In order to refine these route options further, the Project undertook a detailed MCA described in detail further in this chapter. The aim of the MCA was to further evaluate route options to identify the most suitable options for further intensive study and to ultimately identify the preferred proposed alignment.

Following the identification of an initial 20 km investigation corridor and refinement to 15 km based on opportunity identification as shown in Figure 4-8, the Project reviewed further available secondary data and undertook targeted site visits and surveys to validate the constraints and opportunities assessed in developing the investigation corridor. One of the major sources of secondary information

was the previous SA – NSW Interconnector (SNI) EIS, which was subject to extensive environmental study and assessment (SKM 2002).

Although the route selection process for Project EnergyConnect was undertaken independently of the previously proposed SNI, the extensive data collected for the 2002 EIS provided a breadth of detailed information to assist in informing route options within the investigation corridor.

The Project's initial nominal route alignment aligns very closely with the SNI alignment, which provided a level of validation around the process followed to this point.

Figure 4-10 shows the 15 km investigation corridor, an initial preferred nominal route alignment based on opportunities, in relation to the previously proposed SNI route. A significant difference between the SNI alignment and the Project's nominal route alignment is the requirement of the SNI project to connect to the Monash substation. Bypassing this area allows the Project to avoid intensive agriculture areas around Monash, as well as significant ecological and cultural areas such as Lake Bonney and Murray River National Park.

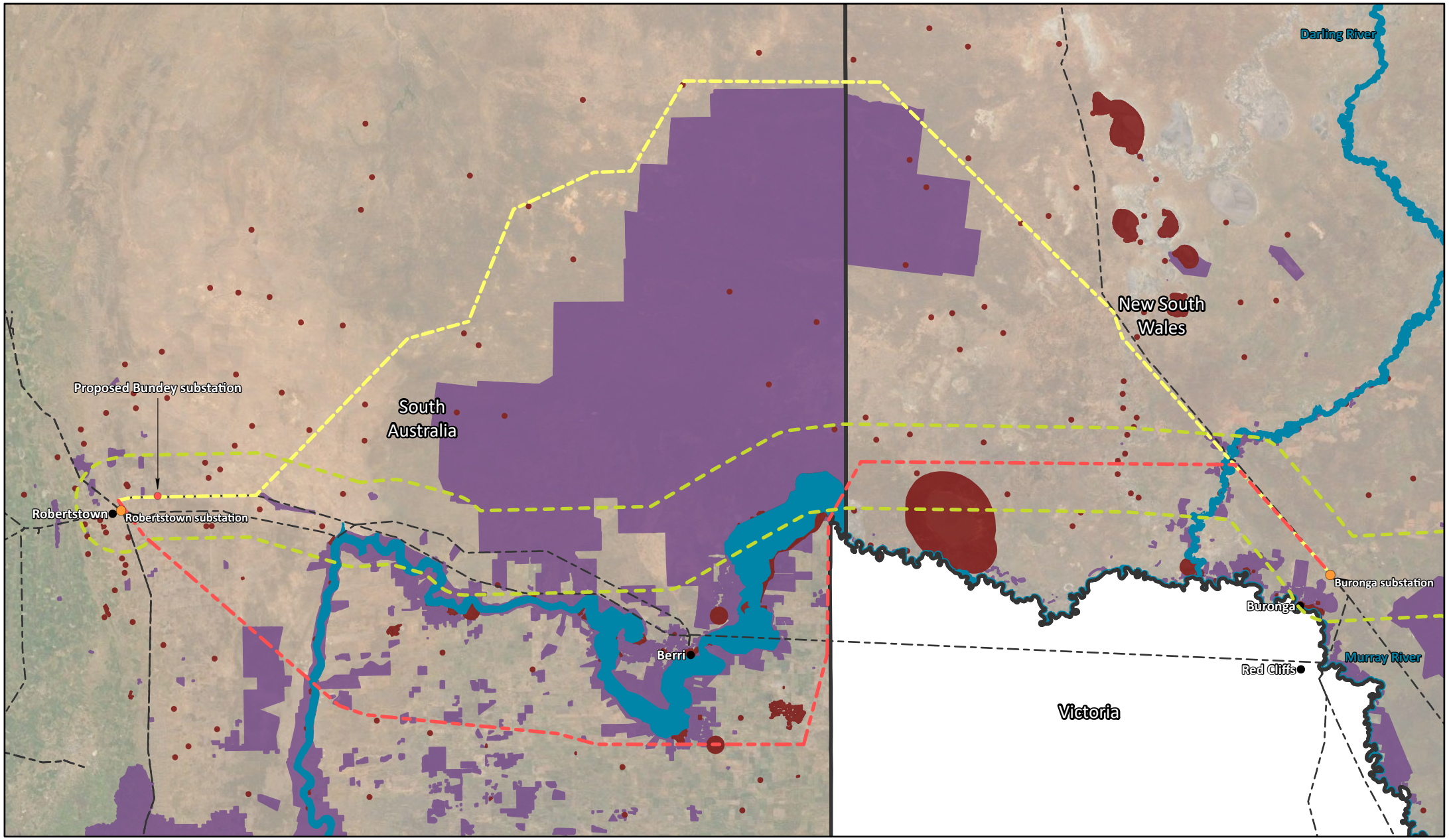

Figure 4-9
Options around Taylorville and Calperum Stations

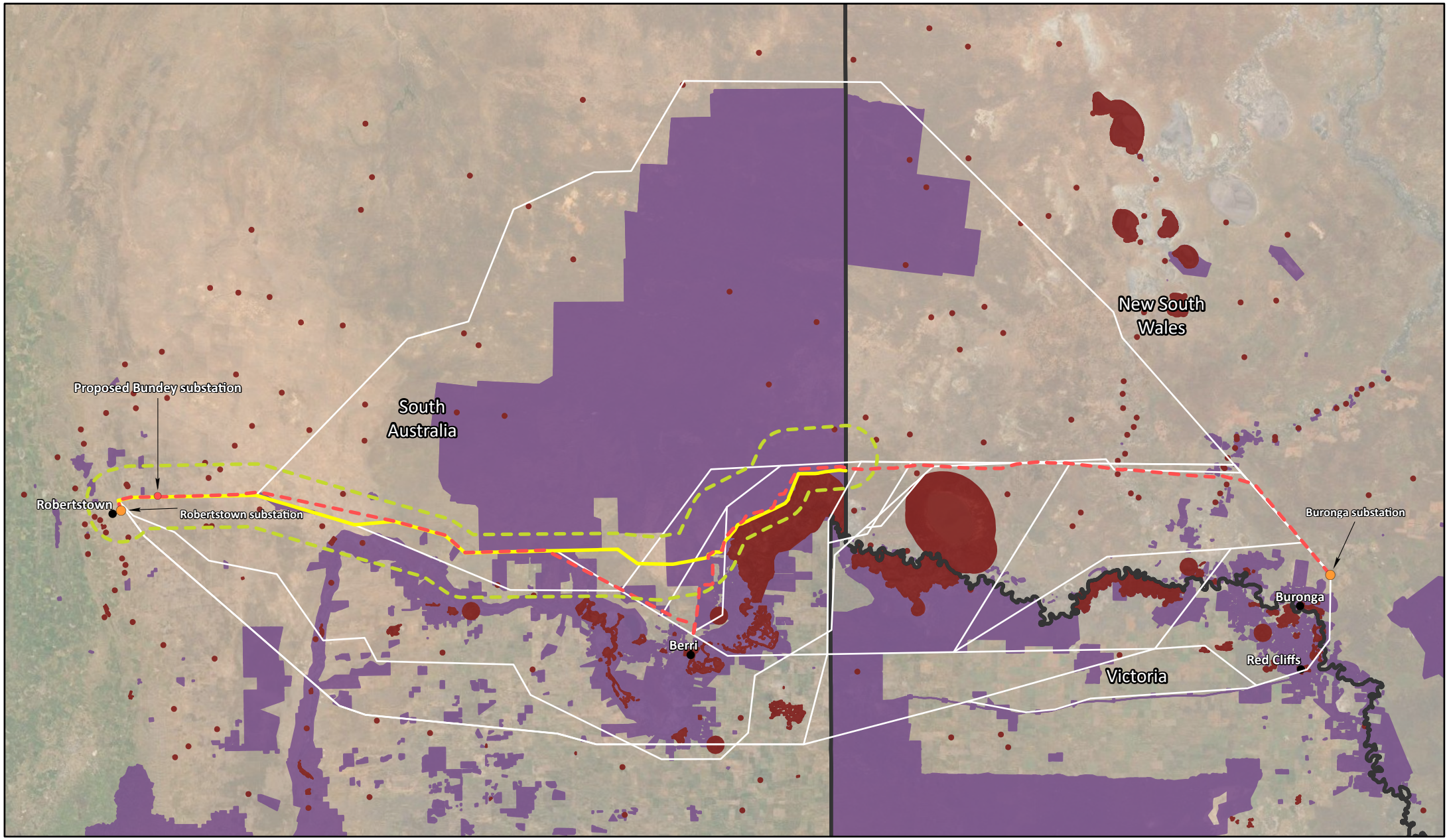

Figure 4-10
Comparisons of proposed route with 2002 SNI

4.7. Refining the Route: Micro-routes and Multi-Criteria Analyses

After identifying the initial investigation corridor, refining this to a 15 km corridor, assessing various route options and following feedback from stakeholders during extensive consultation, ElectraNet opted to investigate detailed alternative route options within the refined investigation corridor. These were particularly relevant with regard to traversing Taylorville and Calperum Stations after taking into account key stakeholder feedback and concerns. Multiple route options were identified based on local constraints and opportunities, and evaluated using MCA methodology. The MCA drew on data collected during on-ground site visits / surveys as well as specialist input with regard to engineering, ecology, cultural heritage, visual, land access and compensation, stakeholder concerns, Project cost and schedule impacts.

The process was iterative as shown in Figure 4-11 and involved:

- structured, facilitated specialist workshops to identify alternatives
- utilisation of data from specialist studies (desktop and field studies) for relevant technical disciplines
- consultation with landholders, government and other stakeholders (Australian Landscape Trust, DEW, Country Fire Services, Birdlife Australia, DiT, local councils, conservation bodies etc.)
- analysis and re-evaluation of multiple alignment opportunities to narrow the alternatives and identify micro-route options.

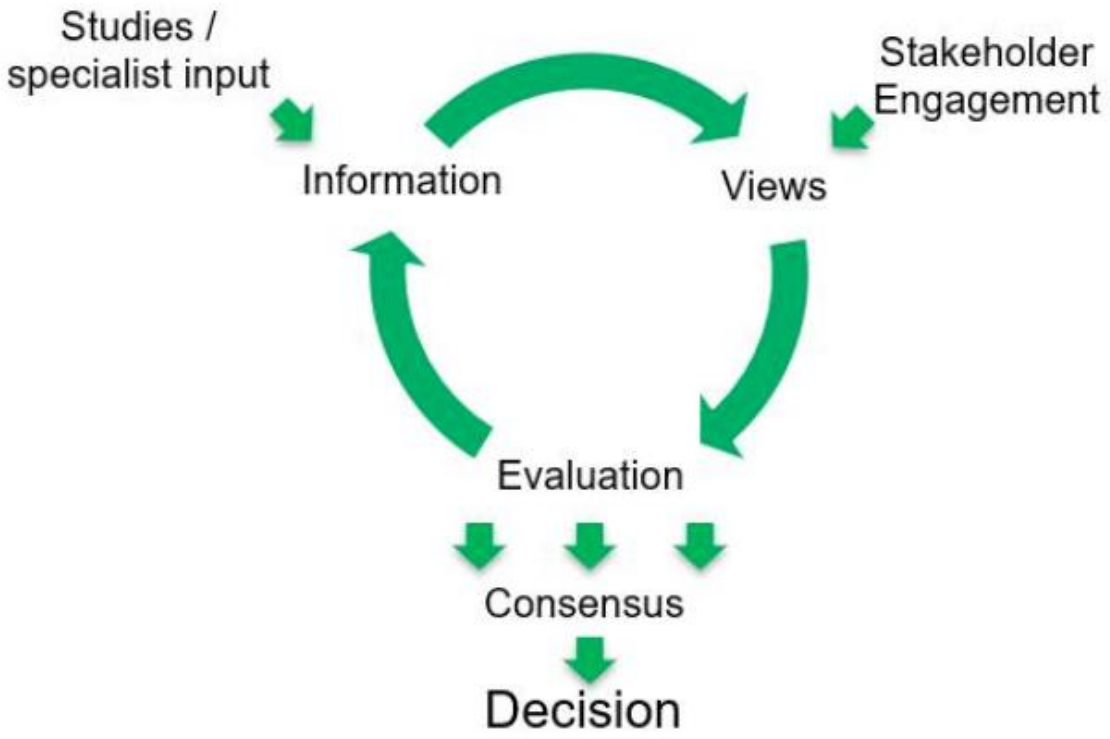

Figure 4-11: Iterative progression of multi-criteria analysis

4.7.1. Multi-criteria analysis methodology

Route option identification

Alternative route options were identified by first breaking the investigation corridor into four sections (from west to east) according to broad terrain and overarching land use, as well as 'pinch-points' where alternative route options were not considered practical. Within the four corridor sections multiple potential micro-route options were identified based on local opportunities such as existing tracks, roads, transmission lines, fire breaks and previously disturbed areas following consultation with specialists and local landholders.

Site inspections were undertaken to ground truth the identified micro-route options and each of the options was tested for feasibility at a high level with specialists. Non-feasible options were ruled out and not considered further. Viable micro-route options for the four corridor sections were then joined to form route options for inclusion and further evaluation in the MCA. Twenty-four combinations of the micro-routes (i.e. 24 route options) were identified.

For the purpose of this section:

- **Corridor sections** are used to describe manageable portions of the investigation corridor separated according to broad terrain and overarching land use. Four corridor sections were identified (refer Figure 4-15)
- **Micro-route options** are the multiple potential routes per corridor section identified based on local opportunities identified during the initial investigations and stakeholder engagement activities. The route options were tested and evaluated in the MCA
- **Route options** refer to the feasible micro-routes joined together across the four corridor sections.

The MCA process is summarised in Figure 4-12.

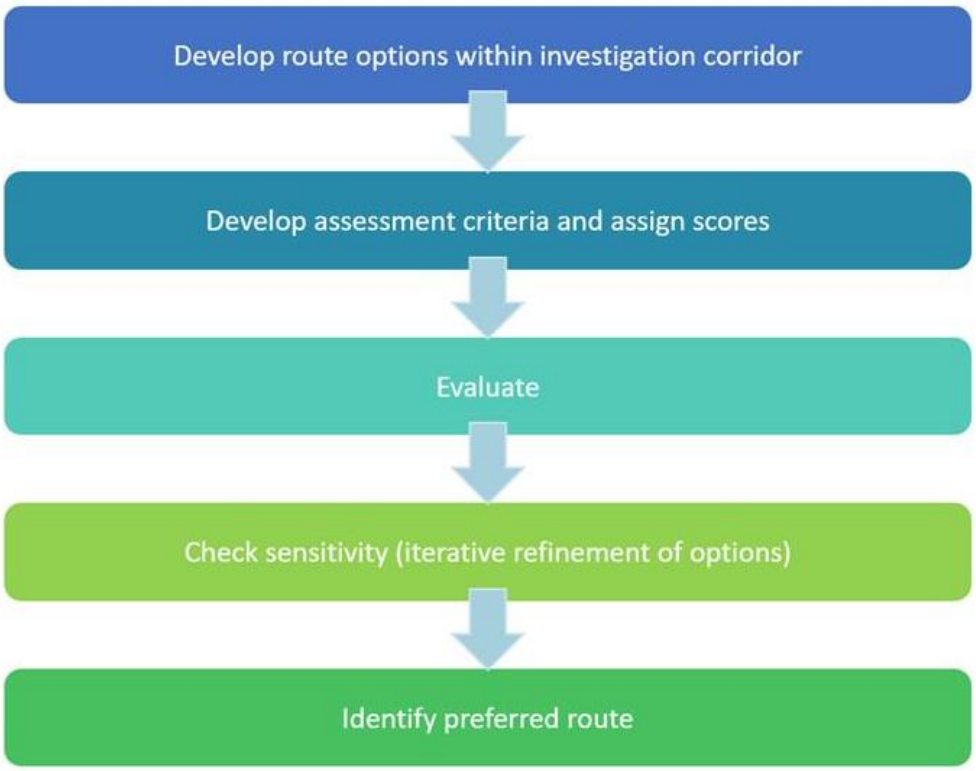

Figure 4-12: Overview of multi-criteria analysis process

Assessment criteria, evaluation and ranking

Criteria and attributes for inclusion in the analysis were identified and assigned at a granular level[2] for each micro-route option by technical specialists in engineering, ecology, cultural heritage, visual impact, land access and compensation, significant environmental benefit (SEB) obligations, stakeholder concerns, project cost and schedule. A range of validated inputs were incorporated into these nine main criteria as summarised in Table 4-6.

Table 4-6: Validated inputs into the nine main criteria

Criteria	Validated inputs
Ecological	Includes consideration of[3]: • number and length of areas managed under Native Vegetation Heritage Agreements and *National Parks and Wildlife Act 1972* (NPW Act) traversed • distance traversed through the EPBC Act protected matter 'Black-eared Miner Critical Habitat' (km) • number of fauna species with a National (EPBC Act) and State (NPW Act) conservation rating recorded within 500 m of each segment • unit Biodiversity Score[4]. Based on field survey data (extrapolated from 49 sites surveyed) and desktop study. The potential of each site to provide suitable habitat for both EPBC and State listed fauna is assessed and incorporated into the score.
Cultural heritage	Sensitivity of the various landscapes was rated by specialist based on: • results of prior surveys and expert knowledge of the area • Native Title determinations, applications or Indigenous Land Use Agreements intersected • presence and nature of water features and whether associated heritage sites could be readily avoided • heritage sites – nature of known sites and the ability to avoid them given the scale and nature of the site descriptions • aesthetic impacts in a heritage context.
Visual impact	Rated by specialist based on: • distance to sensitive receptors • extent of visual shielding • extent mitigated by adjacent existing linear infrastructure
Stakeholder concerns	Rated by specialist based on: • stakeholder feedback and understanding of the social landscape. • consideration of conservation issues such as conservation of mallee bird habitat (i.e. Black-eared Miner)
Engineering and construction cost	• $ value estimate
SEB calculation value	• $ value estimate • based on field survey data (extrapolated) and desktop data. • SEB also acts as an additional proxy for ecological sensitivity.
Land access compensation	• $ value to obtaining easement estimated by specialist
Time to construct	• Project schedule
Schedule risk	• Additional number of months

[2] Granular level - meaning data was assigned to small contiguous segments of each micro-route
[3] These ecological inputs were combined then assigned a rank of 1-6
[4] Unit Biodiversity Score derived for granular segments of potential routes via extrapolating data from 49 sites surveyed using the Bushland Assessment Method (BAM), (approved assessment method for use in study area, under the *Native Vegetation Act 1991*)

Rankings were then allocated against each criterion, for each micro-route option. This allowed both quantitative and qualitative data sets to be analysed equally. Criteria were ranked between 1 and 6 as to how favourable a micro-route option was considered to be in terms of that particular criterion, aspect or attribute. The criteria used to evaluate and rank each of the micro-route options is presented in Table 4-7.

Micro-routes were then scored using the sum of the 9 criterion rankings (out of a total 54) and workshopped with specialists. The evaluation of micro-route options enabled some options to be ruled out and not considered further, often as the result of land access constraints, stakeholder feedback or technical fatal flaws. Only viable micro-route options were then carried through to analysis of the full length of the route.

To enable detailed route comparisons across multiple criteria, scores for each criterion were summed across the four corridor sections (i.e. each possible combination of micro-routes to provide a score out of a possible 24 for the criterion).

The total score for each route option was then calculated as the sum of the scores for the 9 criteria for the route option (out of a possible score of 216).

The route options identified by the MCA as the most suitable (i.e. lowest scores) were then subject to further review and evaluation with stakeholders to identify the preferred route.

Stakeholder consultation

A micro-route selection workshop was held with Working Group representatives from various agencies including PLUS-AGD, DEW and EPA SA. The MCA process was endorsed by the working group.

Micro-routes were tested with landholders and government and workshopped with the Working Group. Refinements were made to the alignment based on ecological and cultural heritage inputs which are discussed further in Section 4.7.3.

This iterative progression enabled the options to be refined and optimised as part of a robust route selection process.

4.7.2. Micro-route options results

The rankings and scores tallied for each of the micro-route options are shown in Figure 4-13 with the total scoring for each of the feasible route options shown in Figure 4-14.

Approximately half of the 24 route options scored very poorly (i.e. high scores) in the MCA and were not considered further in the evaluation (refer Figure 4-14).

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Table 4-7 Criteria used for the MCA process

Consequence		Assessment Criteria				
Rank	Options/Alternative Analysis Outcome/Consequence	Cost/Financial/ Feasibility	Social/landuse/ Cultural Heritage	Stakeholder Response/Reputation	Ecological/Environment	Schedule
6	**Unacceptabale outcome/fatal flaw:** The option does not achieve minimal impact with regard to the assessment criteria, impacts are unlikely to be able to be mitigated and there is potential for significant impact to result.	Very high cost variation from basecase, Unfeasible	Very significant challenges in securing an easement, fatal flaws related to land use and associated impacts	Long term, significant stakeholder outrage, permanent reputational damage, shareholders dissociate themselves with Electranet, international media converage.	Very high long-term environmental impact	Major schedule delays
	Detail of numerical ranking criteria	Engineering/Construction Cost > $91M			SEB cost >$1.5M	More than 6 months
5	**Largely unacceptable/ Very poor outcome::** The option does not achieve minimal impact with regard to the assessment criteria, impacts are likely, but should be able to be mitigated.	High cost variation from basecase, Significant feasibility constraints	Significant challenges in securing an easement, potential fatal flaws related to land use and associated impacts	Medium term, moderate stakeholder outrage, government, shareholders and board involvement, national media coverage.	High medium-term environmental impacts	Significant schedule delays
	Detail of numerical ranking criteria	Engineering/Construction Cost $85-91M			SEB cost >$1.11M	3-6 months
4	**Possibly unacceptable, Poor outcome.** with regard to the assessment criteria, however, impacts are considered easily mitigated.	Moderate cost variation from basecase, Some feasibility constraints	Moderate challenges in securing an easement, possible challenges related to land use and associated impacts	Some stakeholder dissatisfaction, state media coverage for several days, involvement by regulator and shareholders.	Moderate short-term environmental impacts	Some schedule delays
	Detail of numerical ranking criteria	Engineering/Construction Cost $80-85M			SEB cost $1-1.11M	2-3 months
3	**Moderately acceptable outcome:** The option primarily achieves minimal impact with regard to the assessment criteria, resulting in minimal impact to the particular aspect.	Low cost variation from basecase, Minor feasibility constraints	Minor challenges in securing an easement, some minor challanges related to land use and associated impacts	Stakeholder ambivalence, state and local media coverage, regulator involvement	Low short-term environmental impcts	Minor schedule delays
	Detail of numerical ranking criteria	Engineering/Construction Cost $60-80M			SEB cost $900,000-1M	1-2 months
2	**Acceptable, Good outcome:** The option achieves the minimal impact with regard to the assessment criteria by resulting in very low impact to the particular aspect.	Very low cost variation from basecase, Very minor feasibility constraints	Very minor challenges in securing an easement, very minor challenges related to land use and associated impacts	Stakeholder satisfaction, local media coverage only	Very low environmental impact	Very minor schedule delays
	Detail of numerical ranking criteria	Engineering/Construction Cost $50-60M			SEB cost $400,000-$900,000	Less than 1 month
1	**Optimal, Very good:** The option achieves the least negative impact, with optimal positive outcomes with regard to the assessment criteria by resulting in no impact to the particular aspect.	No cost impact variation from basecase, No feasibility constraints	Negligible challenges in securing an easement, negligible, or no challanges related to land use and associated impacts	Stakeholder support, no negative media coverage	Negligible environmental impact	No impact to schedule
	Detail of numerical ranking criteria	Engineering/Construction Cost <$50M			SEB cost < $400,000	None

Section	Micro-route	Ranking (1-6)									
		Visual impact	Cultural heritage	Ecology	Engineering and Construction	SEB	Land Access Compensation	Schedule Impact (approvals, land access)	Stakeholder Outrage/ Reputational Risk	Time to construct	Micro-route SCORE
Section 1	1	3	2	2	1	1	4	1	1	1	16
Section 2	2.1(a)	4	3	3	3	2	3	1	3	2	23
	2.2(b)	3	3	4	2	2	4	2	4	2	25
Section 3	3.1.1	3	1	5	3	3	1	3	6	3	28
	3.1.2	3	2	5	4	4	2	3	5	4	31
	3.1.3	3	1	5	4	5	2	2	3	5	30
	3.2.1	3	1	5	3	2	2	5	6	3	30
	3.2.2	3	2	5	4	3	2	5	5	4	33
	3.2.3	3	1	5	4	4	3	4	4	5	33
	3.3.1	4	1	5	5	5	4	5	5	3	37
	3.3.2	4	1	5	6	4	4	6	6	3	38
	3.4	5	2	4	4	3	6	6	6	5	41
Section 4	4.a	4	5	3	4	3	2	6	6	2	35
	4.b	4	4	4	4	4	2	6	6	2	36

Figure 4-13: Ranking and scoring of identified micro-route options

Routes	Sections	Criterion Score out of 24 - (sum of section averages)									TOTAL SCORE
		Visual impact	Cultural heritage	Ecology	Engineering and Construction	SEB	Land Access	Schedule Impact	Stakeholder Views	Time to construct	
R1	1+2.1+3.1.1+4a	14	11	13	11	9	10	11	16	8	
R2	1+2.1+3.1.1+4b	14	10	14	11	10	10	11	16	8	
R3	1+2.1+3.1.3+4a	14	11	13	12	11	11	10	13	10	
R4	1+2.1+3.1.3+4b	14	10	14	12	12	11	10	13	10	
R5	1+2.1+3.2.1+4a	14	11	13	11	8	11	13	16	8	
R6	1+2.1+3.2.1+4b	14	10	14	11	9	11	13	16	8	
R7	1+2.1+3.3.1+4a	15	11	13	13	11	13	13	15	8	
R8	1+2.1+3.3.1+4b	15	10	14	13	12	13	13	15	8	
R9	1+2.1+3.3.2+4a	15	11	13	14	10	13	14	16	8	
R10	1+2.1+3.3.2+4b	15	10	14	14	11	13	14	16	8	
R11	1+2.1+3.4+4a	16	11	12	12	8	15	14	16	10	
R12	1+2.1+3.4+4b	16	10	13	12	9	15	14	16	10	
R13	1+2.2+3.1.1+4a	13	11	13	10	9	11	12	17	8	
R14	1+2.2+3.1.1+4b	12	10	14	10	10	11	12	17	8	
R15	1+2.2+3.1.3+4a	13	11	14	11	11	12	11	14	10	
R16	1+2.2+3.1.3+4b	12	10	15	11	12	12	11	14	10	
R17	1+2.2+3.2.1+4a	13	11	14	10	8	12	14	17	8	
R18	1+2.2+3.2.1+4b	12	10	15	10	9	12	14	17	8	
R19	1+2.2+3.3.1+4a	14	11	14	12	11	14	14	16	8	
R20	1+2.2+3.3.1+4b	14	10	15	12	12	14	14	16	8	
R21	1+2.2+3.3.2+4a	14	11	14	13	10	14	15	17	8	
R22	1+2.2+3.3.2+4b	14	10	15	13	11	14	15	17	8	
R23	1+2.2+3.4+4a	15	11	13	11	8	16	15	17	10	
R24	1+2.2+3.4+4b	15	10	14	11	9	16	15	17	10	

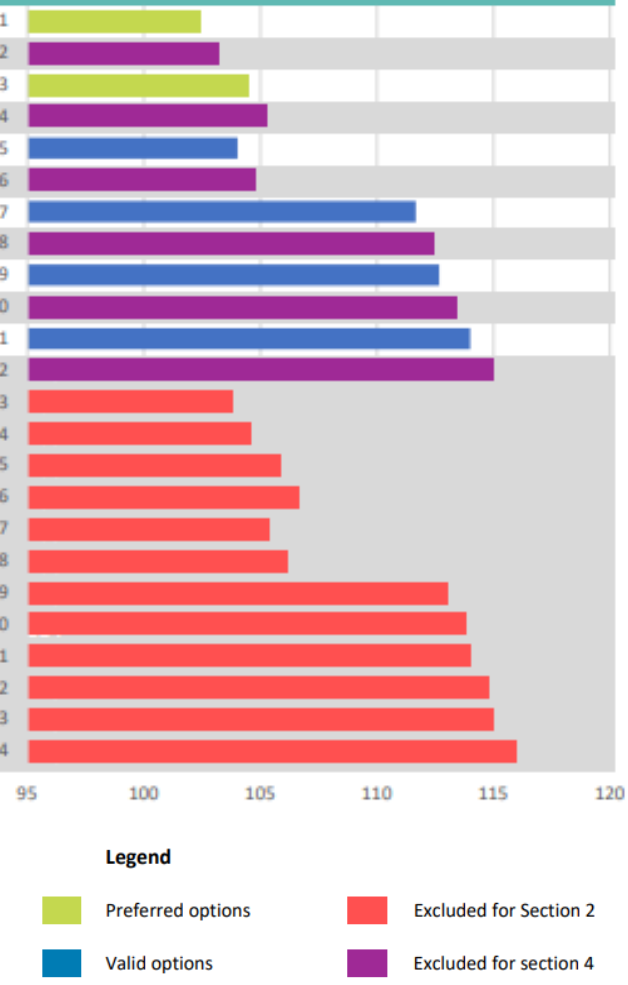

Figure 4-14: Evaluation of feasible routes (MCA outcomes)

4.7.3. Multi-criteria analysis outcomes

The MCA process yielded the following outcomes:

- Corridor Section 1: The micro-route within this section was confirmed, to align with the existing 132kV transmission easement to minimise additional disturbance.
- Corridor Section 2: An optimal micro-route through this section was identified by shifting the nominal alignment further north to bypass North-west Bend substation, reducing route length and minimising impacts (see Figure 4-16 – November 2019 alignment).
- Corridor Section 3: Several options were evaluated within this section (as shown in Figure 4-15) which involved consultation with Birdlife Australia, Australian Landscape Trust (ALT), government agencies and other landowners to develop a least impact solution. Significant constraints in this area included intensive horticultural activities, intact native vegetation, an unregistered airstrip and native vegetation heritage agreements. Evolution of the alignment particularly through this section is shown in Figure 4-16 and discussed further below.
- Corridor Section 4: A preferred route through this section was identified by the MCA, which evolved further following consultation with DEW in addition to inputs from the outcomes of cultural heritage survey (incorporated into the proposed alignment Figure 4-16).

Preferred alignments through corridor sections 1, 2 and 4 were identified as a result of the MCA. This excluded several route options from further assessment (Figure 4-14 identifies the remaining options).

The results of the initial MCA on the remaining routes indicated that two route options (route options 1 and 3) scored best (i.e. lowest scores) in terms of preference from a combination of environmental, social, technical and economic perspectives. The primary difference between these routes is the option through or around Calperum Station (shown as micro-routes 3.1.1 and 3.1.3 in Figure 4-15). The next lowest-scoring remaining route (Route 5), also traversed Calperum Station, therefore was not considered a viable option.

Although the route through Calperum Station for this section was the preferred option from an overall economic and technical perspective (i.e. had lowest MCA score - refer Route Option 1 in Figure 4-13), further stakeholder consultation revealed this option was not preferred by ALT, the primary stakeholder affected by this alignment. For this reason, ALT was consulted further on possible options and an alternative preferred route was selected which aligned with existing access tracks and fire breaks and skirted the southern and eastern boundaries of Calperum Station. This Route Option 3 route is shown in Figure 4-16 and the MCA score shown in Figure 4-14.

The Route Option 3 increased the length of the transmission line through habitat with no existing access track or other linear disturbance within Hawks Nest Station, and incurred additional cost. However, this route was considered the most feasible alternative of the 24 combinations of micro-route options considered within the MCA, predominantly owing to the overall low relative cost of each option and the stakeholder support provided for this route option over the others considered.

4.7.4. Preferred alignment to January 2021

The preferred November 2019 alignment (Route Option 3) was tested with landholders and government and workshopped with the working group. Subsequent refinements were made to this alignment based on ecological and cultural heritage inputs throughout 2020.

The evolution of the alignment refinement to January 2021 is presented in Figure 4-16 and includes:

- shifting the alignment within Hawks Nest Station slightly west to maximise use of the southern boundary and further minimise traversing higher quality Black-eared Miner habitat within the station that was identified by DEW and further ecological surveys

- a small northward deviation of the alignment where it follows Wentworth -Renmark Road near the border with NSW which seeks to avoid the potential for cultural heritage impacts and a DEW revegetation trial area.

The January 2021 proposed alignment and 1 km transmission line corridor were used for the assessment in this EIS unless otherwise noted. Section 4.7.5 provides detail on the recent adjustment to the alignment that has occurred since January 2021 in response to the results of Aboriginal cultural heritage surveys.

4.7.5. Cultural Heritage Avoidance Alignment – Hawks Nest Station

Cultural heritage surveys were undertaken with the First Peoples of the River Murray and Mallee (First Peoples) in February 2021 as part of the alignment refinement process. These surveys resulted in the identification of several sites of cultural significance within the January 2021 1 km transmission line corridor on Hawks Nest Station.

To avoid disturbance to these sites, ElectraNet has moved the proposed alignment in this area further to the west to follow the fenceline on the western boundary of the Hawks Nest Station pastoral lease to its intersection with the existing 132 kV transmission line easement (refer Figure 4-17). The adjusted alignment will follow the easement for approximately 5km before turning east along the Hawks Nest Station southern boundary.

Specialist studies have been reviewed in light of this change to the alignment to determine whether material changes to the impact assessment would be required. Table 4-8 provides summary of this review.

This alignment is the proposed alignment for the purposes of the EIS and will be subject to ongoing refinement at the local level as the design phase progresses and engagement continues with landholders, Traditional Owners and other stakeholders. Ongoing refinement of the alignment is discussed further in Section 4.8

Table 4-8: Summary of potential impacts of cultural heritage avoidance alignment

Environmental aspect	Impact of adjustment to the proposed alignment	Chapter / Section
Land use and tenure	The adjustment will maximise the use of disturbed areas on the Hawks Nest station western boundary and existing 132kV transmission line, minimising impacts to areas of higher quality habitat on the property identified in ecological surveys for the Project. It is noted that there is an unregistered airstrip on the property west of Hawks Nest Station. ElectraNet have engaged with the landholder are working to ensure potential impacts on the airstrip are suitably managed	Section 9.3.2 Section 9.4.2
Physical environment	The adjusted alignment is within the 10 km wide corridor centred on the January 2021 alignment that was used for the assessment of impacts to soil and water. The physical environment is consistent with the transmission line corridor and the proximity to significant features (e.g. the River Murray) is not materially altered. No changes to the impact assessment are required.	N /A
Flora and fauna	The adjusted alignment traverses the same vegetation communities as the transmission line corridor. It is slightly longer (approx. 1.3 km), however as it follows existing disturbance to a greater extent (along the boundary fence and the ElectraNet transmission line), the overall level of impact to vegetation and habitats is expected to be lower. The adjusted alignment is within the Ecological Study Area used for the assessment. A desktop review of database records has indicated that the adjusted alignment does not increase the likelihood of presence of any listed species and Appendix I-1 remains unchanged.	Section 11.3.2 Section 11.4.1 Section 11.4.2 Section 11.4.7 Section 11.4.8 Appendix I-6

Environmental aspect	Impact of adjustment to the proposed alignment	Chapter / Section
	As the adjusted alignment is further from the core areas of mallee habitat and further reduces the potential for impact on habitat for threatened mallee birds (e.g. Black-eared Miner) the specialist assessment (Appendix I-4) and its conclusions remain valid. Similarly, the significant impact assessments (Appendix I-3) also remain valid. The native vegetation clearance data report has been updated to account for the adjusted alignment (refer Appendix I-6).	
Cultural heritage	Potential impacts to sites of Aboriginal cultural significance on the January 2021 transmission line corridor will be avoided by moving the alignment west to follow the Hawks Nest pastoral lease boundary and the existing 132kV transmission line. The cultural heritage avoidance alignment has been fully surveyed and agreed with the First Peoples.	Section 12.4
Visual amenity	The visual impact assessment established the Project theoretical zone of visual influence (TZVI) as a 6.2 km radius from each nominal tower location on the January 2021 alignment. The TZVI was adjusted to accommodate the cultural heritage avoidance alignment. The small number of additional social receptors were identified as experiencing Negligible Visibility (refer Appendix L-2).	Section 13.4
Air quality	No additional receptors due to the realignment to avoid Aboriginal cultural heritage have been identified. No changes to the impact assessment are required.	N / A
Noise	No additional noise receptors due to the realignment to avoid Aboriginal cultural heritage have been identified. No changes to the impact assessment are required.	N / A
Traffic and transport	The adjusted alignment is within the 10 km wide corridor buffering the January 2021 alignment used for the assessment of impacts to traffic and transport. No changes to the assessment are required.	N / A
Socio-economic environment	The adjusted alignment is within the 10 km wide corridor buffering the January 2021 alignment used as the local Project context for the assessment of impacts to the socio-economic environment. No changes to the assessment are required.	N / A
Hazards and risk	The adjusted alignment does not introduce any additional hazards that have not been addressed in the assessment. No changes to the assessment are required.	N / A
Waste	The adjusted alignment does not introduce any additional issues of waste management that have not been addressed in the chapter. No changes to the assessment are required.	N / A

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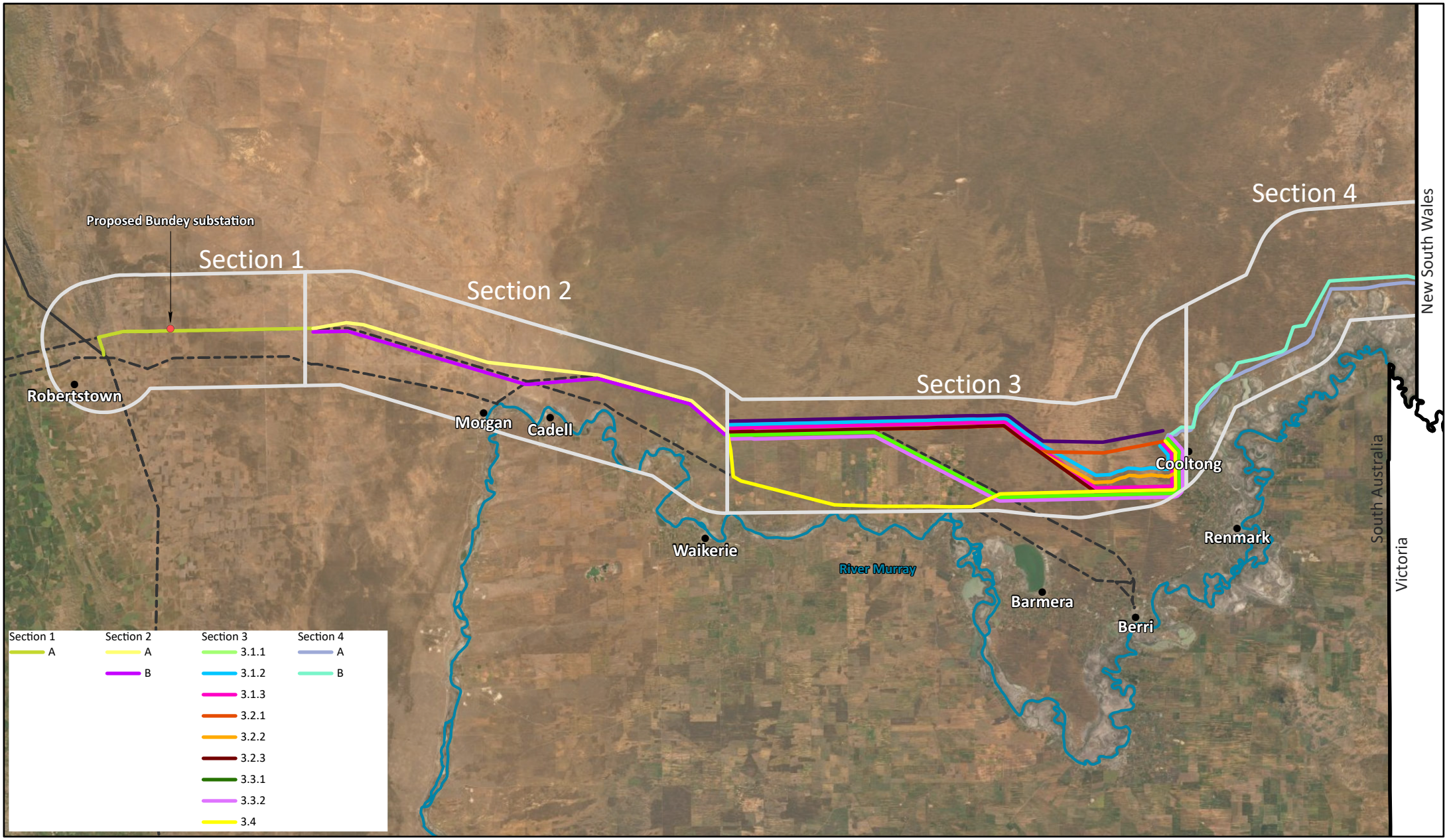


Corridor section

River Murray

Proposed Bundey substation

Figure 4-15
Micro-routes per section

0 20
Kilometres

N

ElectraNet

energy connect

JBS&G

Note: graphic offsets applied to section data for visualisation purposes. Therefore, this figure is for illustrative purposes only.

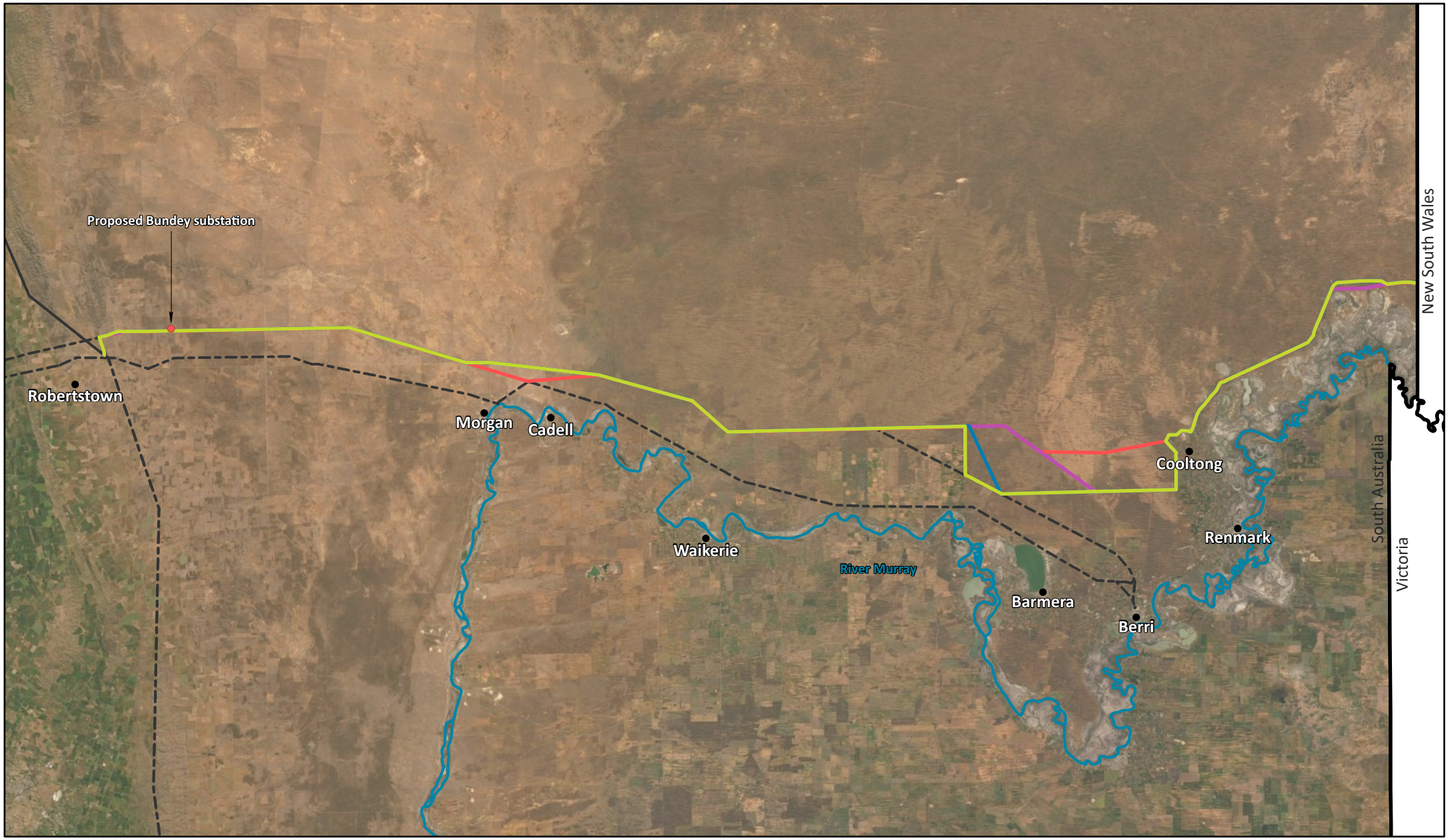


Figure 4-16
Evolution of the route alignment

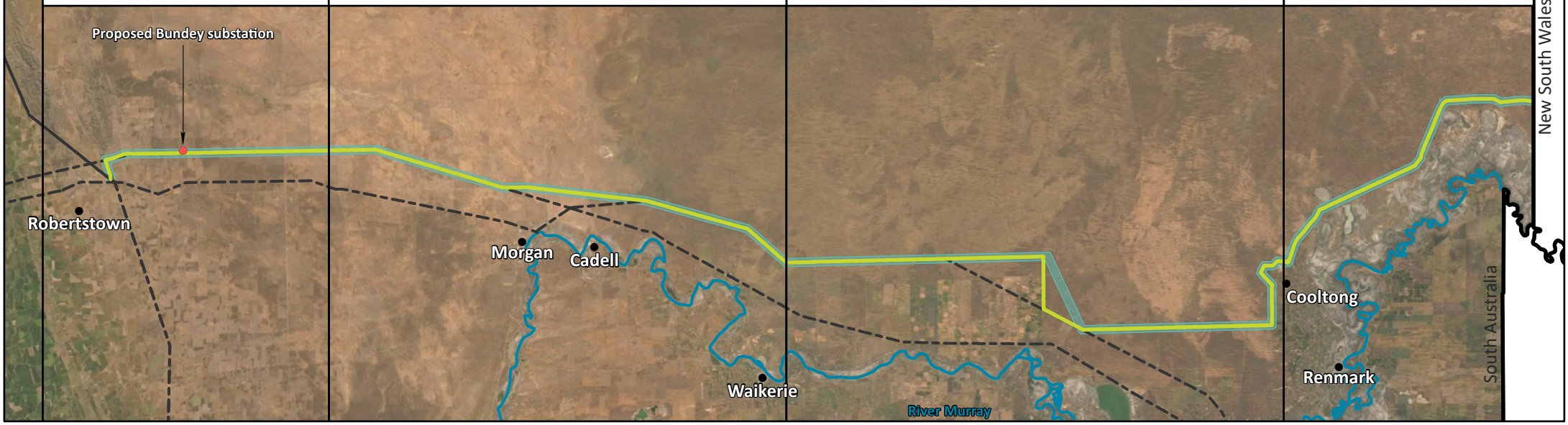
4.8. Ongoing Refinement of the Proposed Alignment and Transmission Line Corridor

The rigorous route selection process described in this chapter demonstrates how all options to develop a proposed alignment have been considered and assessed against a combination of technical, engineering, environmental, social, land access, and economic factors.

The proposed alignment will be subject to ongoing refinement at the local level as the design phase progresses and engagement continues with landholders, Traditional Owners and other stakeholders on the location of transmission line infrastructure (e.g. towers), areas required for construction facilities (e.g. temporary camps and staging areas) and access to construction sites.

Minor realignment outside the 1 km transmission line corridor is possible as part of the Project design and stakeholder engagement process that will be ongoing during the consultation phase of the EIS, however significant changes are not expected. These adjustments to the alignment would generally be to reduce or avoid impacts that have been identified as a result of stakeholder engagement, evolution of Project design and delivery options and in response to findings of on-ground surveys and assessments. Any potential impacts of any future refinements would be confirmed by additional study or assessment as required.

Section 1: Roberstown substation - Powerline Road to Goyder	Section 2: Goyder Highway to Taylorville Station	Section 3: Taylorville Station to Wentworth-Renmark Road	Section 4: Wentworth-Renmark Road to SA-NSW
• Largely traverses open and cleared paddocks following existing 132kV ElectraNet transmission line along Powerline Road. • This portion of the alignment has limited social and environmental receptors.	• Traverses White Dam Conservation Park • Alignment follows existing 132kV transmission line • The alignment deviates north from the existing 132kV line as there is no requirement to connect to the North-west Bend substation. • This will also optimise the crossing of Burra Creek. • Alignment then follows existing 132kV transmission line easement to the south east corner of Taylorville Station • This portion of the alignment has limited social and environmental receptors.	• Alignment follows existing track and 132kV transmission line easement along southern boundary of Taylorville Station • Halfway along the southern boundary of Taylorville, the existing ElectraNet easement diverts to head south-east and the proposed alignment continues east along the existing Taylorville boundary track • At the intersection of the southern boundary of Taylorville and the western boundary of Hawks Nest Station, the proposed alignment turns south to follow the Hawks Nest property boundary until it intersects with the existing 132 kV transmission line easement. The alignment continues south-east along the easement before turning east along the southern boundary of Hawks Nest Station to reach the southern boundary of Calperum Station. • The alignment skirts the southern boundary of Calperum Station to avoid critical habitat of the Black-eared Miner and remains to the west of the community of Cooltong.	• Alignment follows Wentworth- Renmark Road to the SA-NSW border, through Chowilla Game Reserve. • Alignment runs adjacent to Wentworth Road, avoiding the introduction of new impacts in non-disturbed areas. • Alignment diverts from Wentworth-Renmark Road to avoid the potential for cultural heritage impacts and a DEW revegetation trial area.



Transmission line corridor
Proposed alignment
Existing ElectraNet transmission line
River Murray
Proposed Bundey substation

Figure 4-17
Proposed Project EnergyConnect alignment and transmission line corridor

0 20
Kilometres

N

ElectraNet
energy connect
JBS&G

4.9. Conclusion

Building on the extensive network planning process undertaken in the Integrated System Plans prepared by AEMO (AEMO 2018a and 2020a) and the alternatives evaluated in detail in the SAET RIT-T process, ElectraNet has undertaken a detailed evaluation of the investigation corridor and multiple route options, to achieve the objectives of Project EnergyConnect.

Recognising the complexity of a nationally significant infrastructure project traversing east-west across approximately more than 200 km of South Australia, a robust route selection methodology has been followed to ensure that technical, engineering, environmental, social, land access, and economic factors have been appropriately considered when determining the optimal alignment for the proposed transmission line that has been assessed in this EIS.

The assessment, as described in this chapter, involved detailed consultation with local landholders, Traditional Owners, government, special interest groups and potentially affected individuals along the route options that were evaluated. The Project Steering Committee, working group and technical specialists have been actively engaged when evaluating the various route alternatives.

The MCA involved extensive study and consultation to ensure the ultimate route is selected based on a balanced approach, is broadly supported by stakeholders and reduces, as far as possible any potential environmental and social impacts.

Subject to receiving the required Project approvals, detailed design will be undertaken on the basis of the technical studies to select, refine and micro-site Project infrastructure to further minimise impacts on environmental and social receptors. The detailed design process will be iterative and continually informed through the ongoing landholder negotiations, stakeholder engagement and environmental management planning.