



**Western Power**

# **ENVIRONMENTAL REFERRAL**

for

## **CATABY TO ENEABBA 132 KV TRANSMISSION LINE**

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## Cataby to Eneabba Transmission Line Proposal

### THE PROPONENT

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## Cataby to Eneabba Transmission Line Proposal

### NECESSITY OF PROJECT

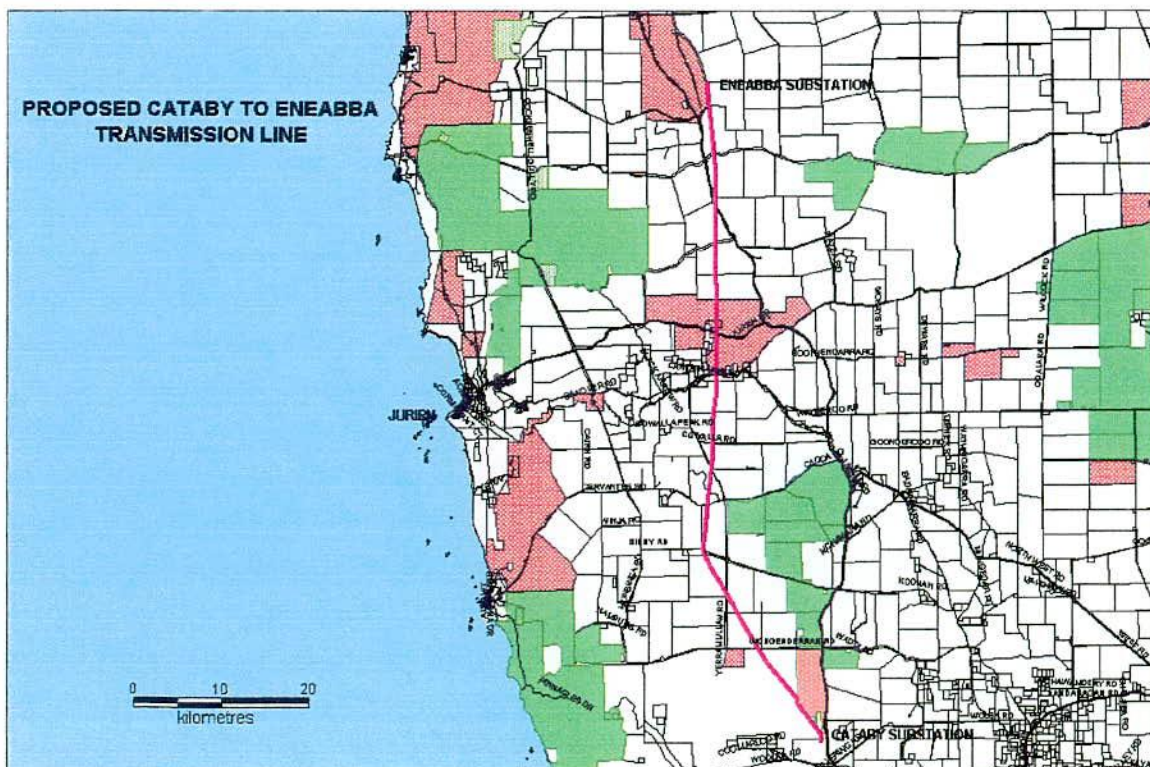
The existing power system in Western Power's Great Northern Region, including areas between Muchea and Geraldton, is presently being supplied by two 132kV transmission lines. Although a number of measures have been implemented to extend the life of the existing transmission lines and their associated equipment, current indication is that the existing Cataby-Eneabba 132kV transmission line will reach the limit of its capacity by the summer of 2004/2005.

To address this problem, Western Power proposes to construct a new overhead 132kV double circuit transmission line approximately 80km in length between the existing Cataby and Eneabba substations (see figure below for overview of proposed line route). The new transmission line will both reinforce and improve the quality and reliability of the power supply in an area that would otherwise experience a decline in reliability and quality of power supply.

### PROGRAM OF WORK

To meet this growth in electricity demand, the proposed transmission line would have to be constructed and commissioned by November 2004. Construction work is programmed to commence in April 2003, however, in environmentally sensitive areas, clearing of vegetation along the line route and constructing the line will be restricted to summer months.

The clearing of vegetation will take approximately 4 weeks and the line construction 18 months.



**Table 1(a) – Summary of the Proposal**

<p><b>Environmental Offsets</b></p>	<p>All efforts will be made to manage the environmental effects associated with the proposal, however, Western Power accepts that there will be an elevated risk of environmental threats to the conservation estate. Western Power submitted this proposal to the Conservation Commission of Western Australia on request from the DEP and has agreed to a set of management and offset commitments. These commitments, outlined in Western Power's November 2001 submission and subsequent letter to the Commission (see Appendix 1) should ensure no net loss of environmental values within the State's secure conservation estate. See Section 3.4.</p>
<p><b>Key Environmental Factors</b></p>	<p><b>BIOPHYSICAL</b></p> <p><b>Land Vested in the Conservation Commission of Western Australia</b></p> <p>The proposed line route traverses <b>Coomallo Nature Reserve</b>, a Class 'C' reserve for conserving flora and fauna. Through consultation with CALM and the Conservation Commission, it was agreed that the proposed alignment traverses the Reserve in a north south direction for 8 kms in a common corridor with an existing transmission line. Minimal vegetation clearing will occur due to the height of the existing vegetation (approx. 1 metre) and because an access track already exist within the Reserve. See Section 3.1.1.</p> <p>The proposed line also traverses the <b>Hill River Nature Reserve</b>, a Class 'A' reserve for conserving flora and fauna. The proposed alignment traverses the Reserve in a north south direction for 50 metres alongside an existing transmission line, however no structures will be located within this reserve. The vegetation within the Reserve along the proposed route is in very poor condition (Woodman Environmental Consulting, 2001). The reserve is unfenced at the proposed site of the river crossing. The clearing of some tall vegetation will be necessary.</p> <p>Western Power will develop an Environmental Management Program (EMP) that will include specific plans and procedures, developed in consultation with CALM and WRC, which address vegetation management within both Reserves. See Appendix 2 for Draft specification for the project's EMP.</p> <p><b>Declared Rare Flora (DRF) &amp; Priority Listed Flora (PLF)</b></p> <p>Flora surveys were conducted along the proposed line route in April, June, August and October 2001 by Woodman Environmental Consulting, see Section 3.6.</p> <p>No DRF were recorded along the proposed line route. A total of 29 PLF were recorded along or near the proposed line route, of which only two PLF species cannot be avoided. CALM's Principal Botanist has been consulted and has agreed that effects on these priority species should <u>not</u> be highly significant, see Appendix 3. Western Power will continue to consult with CALM's Principal botanist to optimise the location of towers and access for construction to minimise the overall effects on the species.</p> <p>A vegetation management plan will be developed prior to construction that addresses the protection of these priority species, including procedures to control the spread of weed and dieback.</p> <p><b>Threatened Ecological Communities (TECs)</b></p> <p>Vegetation surveys were conducted in April, June, August and October 2001 by Woodman Environmental Consulting. None of the plant communities mapped during the surveys are currently listed, or proposed for listing, as threatened communities by the Department of Conservation. See Section 3.1.</p>

**Table 1(a) – Summary of the Proposal continued....**

<p><b>Key Environmental Factors</b></p>	<p><b>BIOPHYSICAL</b></p>
	<p><b>Specially Protected (Threatened) Fauna</b>  Coomallo Nature Reserve is a known breeding site for the Carnaby Black Cockatoo, <i>Calyptorhynchus latirostris</i>. Field surveys indicate that the Carnaby could potentially use Eucalyptus trees growing along the Coomallo Creek at the proposed transmission line crossing for nesting sites. Taller towers have been included in the transmission line design in the vicinity of the Coomallo Creek to ensure no disturbance to these Eucalyptus trees will occur during construction or maintenance, other than that required for tower sites and access to tower sites.</p> <p>The conductors on the transmission line will be clear of the canopy of the trees by 6m and will be installed using a helicopter or any other means that avoids disturbance to the trees. No other habitats of Specially Protected (Threatened) fauna occur along the proposed transmission line route.</p> <p>CALM's Threatened Fauna Branch have been notified regarding the abovementioned strategy, but to date have not responded.</p> <p><b>Wetlands and Water Courses</b>  There are no conservation wetlands that will be impacted upon by the proposed transmission line.</p> <p>The proposed transmission line does traverse two watercourses, one in the Hill River Nature Reserve and the other in the Coomallo Nature Reserve. Western Power will consult with CALM and the WRC regarding management practices associated with traversing the watercourses.</p> <p>As indicated previously, taller line structures have been included in the transmission line design in the vicinity of the Coomallo Creek to ensure no disturbance to Eucalyptus trees during construction or maintenance, other than that required at the structure sites and access to these sites. The conductors for the transmission line will be above the tree canopy by 6m and will be installed using a helicopter or any other means that avoids disturbance to the trees.</p> <p><b>Diseases and Weeds</b>  A <i>Phytophthora</i> species survey was conducted along the proposed line route. No <i>Phytophthora cinnamomi</i> infestation was found along the proposed transmission line route, however at one location on a private property immediately south of the Coorow Green Head Road, Lot 10804, there was one area of <i>Phytophthora cirticola</i> infestation. See Section 3.2.</p> <p>In consultation with CALM, Western Power will prepare and implement a Phytophthora hygiene management plan prior to the construction of the line.</p> <p>Annual weeds were noted along the entire length of the existing transmission line during the spring surveys as a sparse cover along the access track associated with the transmission line. These species did not form a significant component of the flora or provide significant cover along the majority of the route. The distribution of these species was restricted to the access track and extending several metres into the native vegetation, in some locations up to the extent of previous clearing activities associated with vegetation management under the line. No perennial weeds were identified along the route.</p> <p>Two areas along the existing transmission line through Coomallo Nature Reserve have higher weed infestations than the remainder of the line; these area include the Coomallo Creek and an area adjacent to, and on the south side of the Jurien East Road and on the west side of the line.</p> <p>The Coomallo Creek is characterised by ephemeral flows and has a large expanse of open ground for much of the year. The weed infestation within the Creek is not restricted to the transmission line route, indicating that weed seeds are vectored by the Creek and the naturally open ground forms a reservoir of this seed</p>

throughout the creek.

In consultation with CALM, Western Power will prepare and implement a weed management plan prior to the construction of the line.

## **POLLUTION MANAGEMENT**

### **Electromagnetic Fields**

Western Power is committed to the concept of prudent avoidance as a means of controlling public exposures to EMF. It designs, constructs and operates all its plants and facilities in compliance with the guidelines recommended by the NH&MRC of Australia and WHO.

### **Noise**

The closest residence is at least 200m from the proposed transmission line route; therefore construction noise would not generally impact significantly on rural residences. All works will be carried out in accordance with the relevant noise regulations.

### **Dust**

The closest residence is at least 200m from the proposed transmission line route, therefore dust generated as a result of the proposal would not impact significantly on rural residences. However, wherever necessary, special measures for dust control will be employed.

## **SOCIAL SURROUNDINGS**

### **Culture and Heritage Values**

The alignment of the proposed transmission line will be modified to ensure that no Aboriginal and European culture and heritage values are adversely affected by the proposal. Aboriginal archaeological and ethnographic surveys will be conducted prior to the construction of the line.

### **Visual Amenity**

Along some areas of the proposed line route the visual amenity of the area may be impacted upon by the transmission line structures. A landscape architect has been engaged to recommend strategies to minimise impacts on the visual aspects of the area. These strategies will include the optimum placement of transmission structures close to amenities such as major roads, locating the structures in low areas to minimise 'skylining', using low height structures in designated areas and using vegetation to screen or partially screen structures in rural areas. For example, poles rather than towers will be used within Coomallo Nature Reserve for 1.1km north of Jurien Rd and for 2.2km south of Jurien Rd. Poles will also be used 1.1km north and 2.75km south of Bibby Road, Dandaragan. See Section 3.3.

**Table 1(a) – Summary of the Proposal continued....**

<b>Proportions of Land Types Traversed</b>	Private Property : 56 km CALM Managed Land: 8.5 km Tiwest Mining Lease: 13 km Main Roads WA: 2.3 km
<b>Vegetation Clearing</b>	<p>Clearing of vegetation will be minimal, as the majority of the remnant vegetation traversed is approximately 1m in height. As such, clearing of remnant vegetation will only need to occur around tower sites, with no clearing required between the tower sites. Clearing of remnant vegetation will also be minimised due to the utilisation of access tracks already present for the existing 132kV Cataby-Eneabba transmission line.</p> <p><b>Total area of remnant vegetation permanently cleared : 7.72 ha</b></p> <ul style="list-style-type: none"> <li>• 0.47 ha on CALM managed land</li> <li>• 7.25 ha on Non-CALM managed land</li> </ul> <p><b>Total area of remnant vegetation temporarily disturbed : 23.38 ha</b></p> <ul style="list-style-type: none"> <li>• 4.45 ha on CALM managed land</li> <li>• 18.93 ha on non-CALM managed land</li> </ul>
<b>Line Distance</b>	Approximately 80 km
<b>Line Construction</b>	132,000 volt (132kV)
<b>Structure Type</b>	Lattice Steel Towers
<b>Average pole height</b>	47 metres
<b>Minimum phase conductor-to- ground clearance</b>	7 metres
<b>Typical span between towers</b>	550 metres



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## **1.0 DESCRIPTION OF PROPOSAL**

### **1.1 Location of Proposed Transmission Line Route**

The proposed transmission line route has been aligned adjacent to and in a common corridor with the existing Cataby to Eneabba 132kV transmission line. The proposed line route, approximately 80km in length, traverses approximately 8.5 km of nature reserve, 56km of private properties, 2.3km of Main Roads property and 13km within the Tiwest's mining lease Yalgoo Mines.

The proposed line route parallels the existing 132kV transmission line from the Cataby substation through the TiWest mining lease partially on the edge of the Badgingarra Nature Reserve, traverses a number of private properties before traversing both the Hill River Nature Reserve and the Coomallo Nature Reserve then further private properties south of the Eneabba Substation.

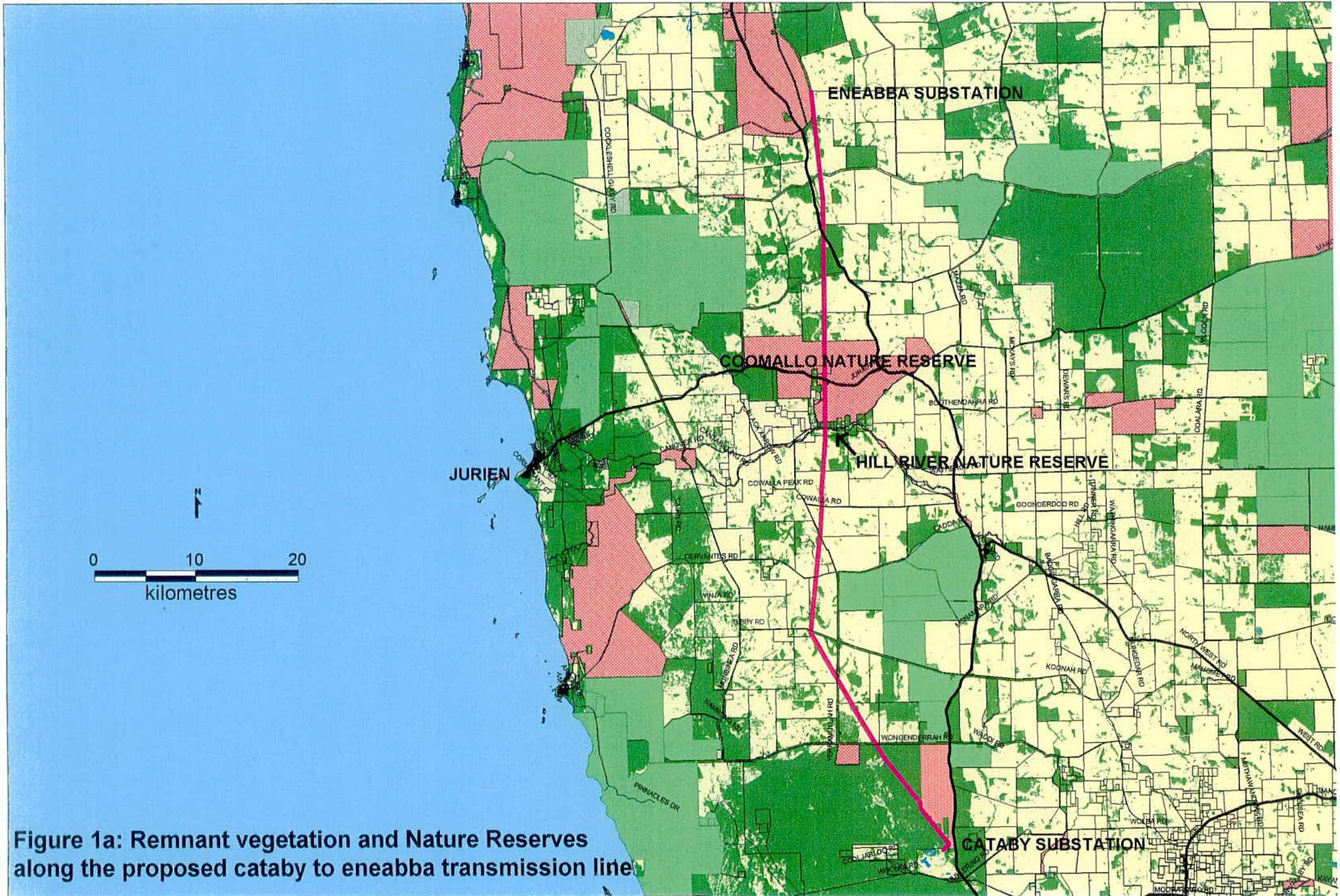
Within the Tiwest mining lease area the proposed line route has been aligned on the western side of the existing 132kV transmission line and on the eastern edge of the TiWest boundary fenceline, which is destined for mining operations. Thus the transmission line will traverse no part of the Badgingarra Nature Reserve that is to be retained for nature conservation purposes. The route through the TiWest mining lease area has been chosen to minimise the effect on proposed and future mining operations and to minimise the effects on the Badgingarra Nature Reserve.

The proposed route alignment within the Coomallo Nature Reserve is a result of extensive consultation with representatives from both CALM and the Conservation Commission, see Appendix 1. The proposed route alignment traverses the Reserve in a north south direction for 8 km in a common corridor with an existing transmission line.

### **1.2 Location of Nature Reserves, Remnant Vegetation and Water-Courses**

Figures 1(a) and 1(b) illustrate the location of some of the environmental factors associated with the Cataby-Eneabba transmission line including:

- 1(a) Remnant Vegetation and Nature Reserves
- 1(b) Water-course crossings



**Figure 1a: Remnant vegetation and Nature Reserves along the proposed cataby to eneabba transmission line**

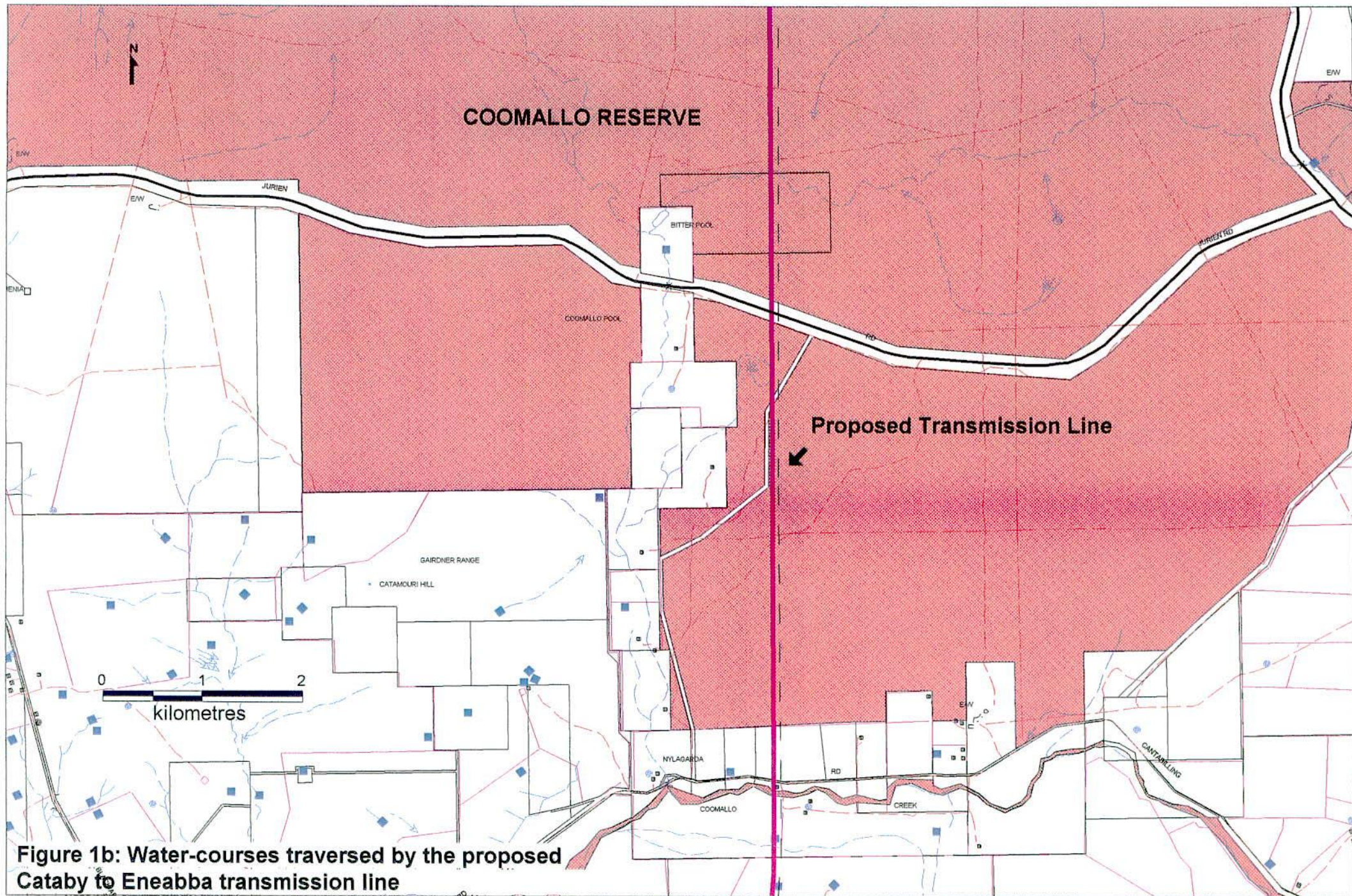


Figure 1b: Water-courses traversed by the proposed Cataby to Eneabba transmission line

## 1.3 Vegetation Clearing

### 1.3.1 Vegetation Clearing for Construction Purposes

It will be necessary to remove or disturb vegetation during the construction of the line; this will involve either permanent clearing and temporary disturbance of vegetation depending on the area. The following provides a description of the type of clearing or disturbance of remnant vegetation that will be necessary.

- *Permanent Vegetation Clearing*

It will be necessary to permanently remove vegetation in some areas of the transmission line corridor during the erection of the line structures and to provide access to the sites of the structures where access tracks do not exist. However the creation of new access tracks will be minimal as the transmission line has been aligned alongside the existing 132kV transmission line, hence existing access tracks will be used. These existing access tracks will be utilised during both the construction and maintenance of the line. Any new access to the structure sites will be provided by constructing spurs from existing tracks and roads. Such spurs will be no longer than 100m in length.

The cut in spurs will initially be 4m wide to enable vehicles and plants to access the structure sites during construction. At the completion of construction the 4m wide spurs will be allowed to regenerate to a width of 2m that will enable 4WD access to the structures for operational purposes.

A 14m x 14m permanent clearing of vegetation for each tower site will be necessary. Such clearing would involve the use of a front end loader to push vegetation over. There would be minimal soil disturbance.

Through consultation with the Jurien CALM office an allowance of 4m x 4m has been included in the 14m x 14m area of permanent clearing around each tower site within CALM managed land. This allowance of 4m x 4m provides fire protection for the tower and would allow CALM fire management activities to occur.

Tower site and access clearing will be achieved by pushing vegetation over and there will be no grading or track construction activities required either within the proposed transmission line corridor or on any access to the tower sites.

The total area of remnant vegetation that will be permanently cleared as a result of this proposal is approximately 7.72ha, of which 0.47ha is on CALM managed land and 7.25ha is on non-CALM managed land.

- *Temporary Vegetation Disturbance*

During the construction phase of the project it will be necessary to temporarily disturb or remove vegetation in some areas along the transmission line route in order to carry out the activities associated with tower erection and stringing of wire (conductors) between towers. After construction, vegetation that has been disturbed or removed for such activities will be allowed to regenerate. However, there are a number of areas within the proposed transmission line corridor in which there will be temporary disturbance of low

growth vegetation with permanent removal of taller vegetation. This area of temporary disturbance will be approximately 5ha within CALM managed land.

Temporary vegetation disturbance will involve driving over vegetation with a 4WD vehicle. Temporary removal of vegetation will involve the selective clearing of vegetation that can not be driven over by a 4WD vehicle.

The total area of remnant vegetation that will be temporarily disturbed as a result of this proposal is approximately 23.38ha, of which 4.45ha is on CALM managed land and 18.93ha is on non-CALM managed land.

### **1.3.2 Vegetation Control for Safety Requirements**

To ensure that the transmission line operates in a safe and secure manner, and to prevent bushfires, vegetation clearing and control will be required within the transmission line corridor. However, the extent of vegetation clearing will be dependent upon local vegetation height and the height of the conductors above the ground.

Clearing will conform to a predetermined 'clearing profile', based on safe operating clearance limits. These limits take into consideration the maximum allowable height of trees, undergrowth and scrub that may be retained within the corridor. As the diagram illustrates, the 'clearing profile' relevant to the proposed Cataby to Eneabba transmission line route allows vegetation to reach a maximum height of 3m. As the majority of the remnant vegetation within the proposed line route corridor is approximately 1m in height, no permanent clearing will be required other than for tower sites and cut in spurs for access to the tower site from existing access tracks.

In several locations, however, where taller vegetation such as eucalyptus species occur, clearing will be required mid span between tower sites in accordance with the clearing profile. Regrowth rates tend to be rapid due to the retention of seed stock in the soil during clearing operations. Understorey species and species up to 3 metres in height will be allowed to regrow within the corridor. Vegetation maintenance would normally be achieved by rolling or slashing operations.

Within the Coomallo Nature Reserve at the crossing of Coomallo Creek, the clearing of taller vegetation will not occur. Tall towers and shorter than normal spans between towers have been included in the transmission line design to ensure no disturbance to Eucalyptus trees in the vicinity of the creek during construction or maintenance, other than that required for the tower sites and access to the tower sites. The wires for the transmission line will clear the canopy by 6m and will be installed using a helicopter or any other means that avoids disturbance to the trees. This will avoid disturbance to Eucalyptus trees whilst maintaining safety clearance requirements.

## 1.4 Vegetation Rehabilitation

All activities associated with remnant native vegetation clearing during construction and maintenance of the transmission line will be managed to ensure no loss of soil seed stock. There will be no removal of topsoil. This should ensure successful vegetation regeneration following clearing and construction activities.

Past experience with transmission line projects that have employed processes that avoid the disturbance of soil seed stock and removal of topsoil indicate that there should be no need for vegetation rehabilitation by planting of seedlings or direct seeding in areas of native vegetation.

Rehabilitation will only be conducted in areas of native vegetation where this is necessary because of lack of natural regeneration. Stakeholders, including CALM and the WRC will be consulted to determine the need for rehabilitation in specific locations such as river crossings.

## 1.5 Line Construction

The construction of the line is generally carried out in three distinct stages, namely:

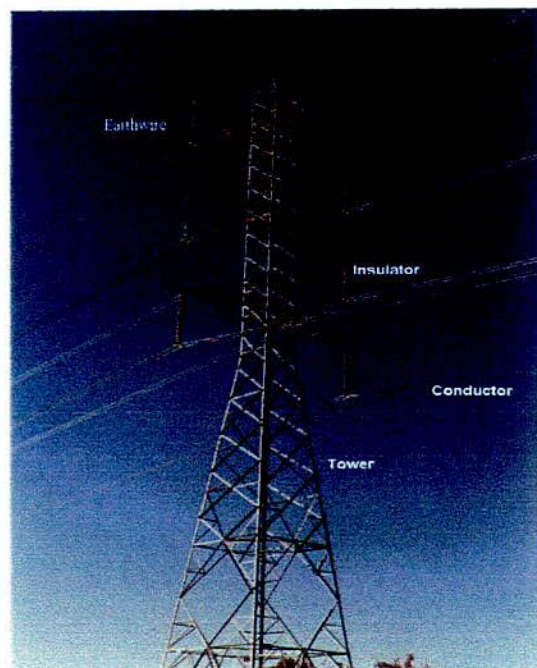
- survey
- vegetation clearing;
- tower installation; and
- the stringing of conductors

The clearing and tower installation stages require heavy vehicle access along the line route to each of the tower locations. Heavy equipment to be used for construction includes pile drivers, 20 tonne all-terrain cranes, trucks and semi-trailers.

Tower installation activities include the transport of materials to sites, the installation of foundations and the erection of the towers.

The stringing of conductors will involve the installation of the line insulators and their associated hardware on the towers, followed by the running out, tensioning and clamping of the line conductors and earthwires onto the insulators and their fittings.

The conductor stringing process requires access along the route to pay out and suspend draw wires and/or conductors. However, as the majority of the remnant vegetation encountered between Cataby and Eneabba is low scrub (approximately 1m in height) and can be traversed by foot or by four wheel drive vehicles, no clearing will be required to string the conductor. The conductors will usually be paid from drums following the hoisting of the



draw wires onto the poles during stringing. Where necessary, special arrangements can be made for conductors during stringing to avoid interference with low vegetation directly under the line path. Stringing will generally be achieved by driving a four wheel drive vehicle pulling a draw wire once through the scrub between respective tower sites. There will be no other construction access between tower sites except on the existing 132kV transmission line access and by the short cut in spurs from this access track to tower sites. Figure 2 illustrates the use of 'cut in spurs' from existing access tracks within Coomallo Nature Reserve.

The transmission line route selected avoids the creation of any new tracks, which could be used by members of the public for 4WD access. Potential access along the existing 132kV-transmission line access route will be limited during and after construction of the new 132kV transmission by the installation of gates, fences and barriers. The installation of such gates, fences and barriers will be subject to negotiation and agreement with the Department of Conservation.

### **1.6 Operation**

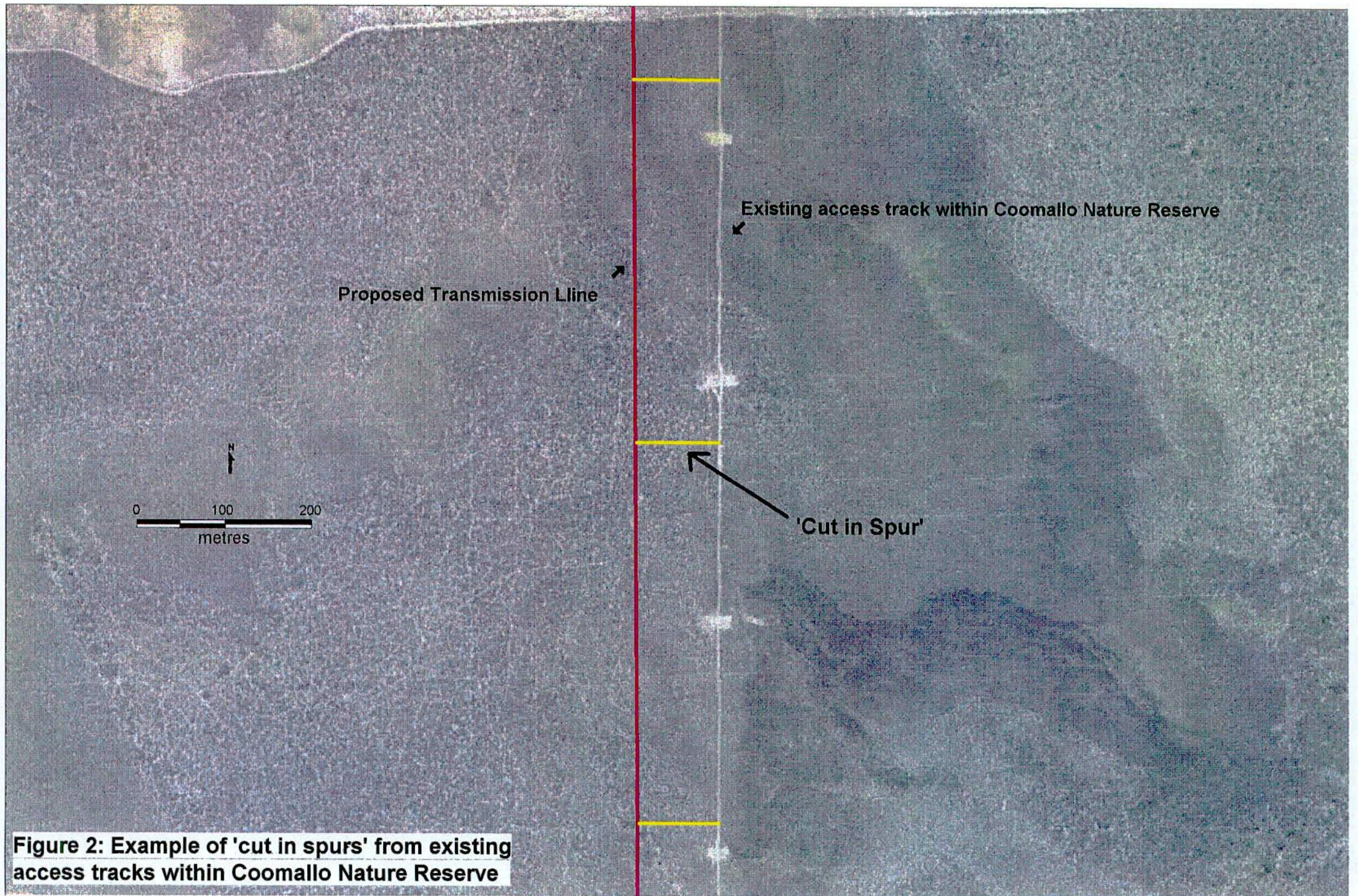
During fault finding it is essential that the entire line be visible from an adjacent access track. The track can, however, be some distance away from the line if visibility is not interrupted by vegetation. Given the nature and type of vegetation along the proposed line route, it will only be necessary to gain access to the line corridor in the immediate vicinity of any fault.

### **1.7 Line Maintenance**

Unplanned maintenance including fault-finding and repair activities would be rare events, requiring access to specific locations along the line route. Planned long-term maintenance access would be infrequent and would generally involve the following line maintenance activities:

- Periodic visual inspection of conductors, insulators and towers from the ground;
- Cleaning and replacement of line components as required; and
- Visual monitoring of easement condition to identify problems such as erosion and weed infestation.







## **2.0 TRANSMISSION LINE ROUTE SELECTION PROCESS**

The identification and investigation process for transmission line route selection involved using a computer-based geographical information system (GIS), consultation with relevant government agencies, affected landowners, and site visits. The government agencies consulted throughout the line route selection process included CALM and the WRC .

### **2.1 Criteria for Selection of the Line Route**

The selection of the line route has involved weighing a number of constraints that operate on any route between Cataby and Eneabba and has been influenced by negotiation with government authorities and local stakeholders.

The following issues and constraints were considered in the determination of possible line corridor locations:

- Current dwellings and present and future housing subdivisions where there are perceived health risks or where visual amenity could be compromised.
- Presence of declared rare flora, priority species, threatened plant communities or National Parks where these cannot be spanned without potential damage.
- Airfields and other areas where transmission lines could pose a threat to low-flying aircraft.
- Areas of mineralisation where there is current mining activity or these are likely to be developed in the future.
- Visibility from major roads and for which no screening vegetation is present.
- Lines coinciding with prominent features in open country or at river crossings where aesthetic values will be impacted.
- Lines on productive farmland where easements will interfere with buildings or agricultural activities.
- Areas where there would be unacceptable impacts from vegetation clearing along the line corridor.
- Potential for soil erosion associated with the construction and maintenance of the transmission line.

### **2.2 Alternative Alignments**

In some past proposals for new transmission lines it has been possible to propose a number of separate options for a line route. However, in this instance only two options were considered in detail, the proposed alignment adjacent to the existing 132kV transmission line, with a diversion within Coomallo Nature Reserve, and an alignment

principally through privately owned land to the east of the Brand Highway. The following describes the alternatives considered and the reasons each was considered unviable.

### ***2.2.1 Diversion within Coomaloo Nature Reserve***

An alternative alignment to the one proposed within Coomaloo Nature Reserve was investigated at the request of CALM representatives. This alignment was submitted to the Conservation Commission as an alternative to the alignment adjacent to the existing 132kV transmission line. The Commission did not favour this option as it regarded the consolidation of two parallel routes as presenting a lower environmental risk than two geographically separate alignments through the Coomaloo Nature Reserve. See Appendix 1.

### ***2.2.2 Further West of Coomaloo Nature Reserve***

Alternative alignments to the west of the proposed alignment would require new clearing in high value conservation areas including the Mt Leseaur National Park or areas of botanically diverse vegetation between Coomaloo Nature Reserve and Mt Leseaur National Park. Western Power decided that such an alignment would not be environmentally acceptable. See Appendix 1: Submission to Conservation Commission, November 2001.

### ***2.2.3 East of Coomaloo Nature Reserve***

A potential alignment to the east of the existing 132kV transmission line and the Brand Highway was evaluated and rejected as being unviable for economic and social reasons. In order to avoid social impacts on small properties and on those already affected by the 100m wide natural gas pipeline corridor, the transmission line alignment would be more than 20% longer than the existing transmission line corridor, with numerous additional angle points. The cost of such an option would make the proposal financially unacceptable even allowing for a long term payback on capital expenditure. See Appendix 1: Submission to Conservation Commission, November 2001.

### ***2.2.4 Replacing Existing Transmission Line***

CALM representatives have requested an explanation as to why the existing wood pole transmission line from Cataby to Eneabba cannot be replaced with a three-circuit tower transmission line instead of the proposed double circuit transmission line adjacent to the existing single circuit wood pole line. The following provides an explanation.

Transmission lines are made up of wires conducting electrical current and structures (poles or towers) supporting these wires. A transmission circuit consists of three phases and generally, one wire or conductor for each phase. Thus, a single circuit transmission line, like the existing wood pole line between Cataby and Eneabba, has three conducting wires.

Such a single circuit line may also have additional earthwires to protect the phase conductors from lightning strikes and other electrical faults.

The existing Cataby to Eneabba transmission line has no such earthwires and has a relatively low security of supply. Multiple circuit transmission towers support three conductors per circuit and may also have earthwires connected above the phase conductors.

Western Power would not favour the use of a three-circuit configuration because of the risk to security of supply associated with such a configuration. From a security viewpoint Western Power would prefer all its transmission lines to be geographically separate single circuit lines to minimise the risk of multiple transmission circuit outages. At present two geographically separate 132kV single circuit transmission lines supply the North Country Region. The proposal for a new transmission line in the North Country Region from Pinjar to Cataby and Cataby to Eneabba is for a double circuit transmission line because of the potential opposition to additional geographically separate single circuit lines. This new double circuit transmission line would supplement the two existing single circuit transmission lines, thus there would be four transmission circuits supplying the North Country Region on three sets of structures. The towers would support two circuits and poles would support two individual geographically separate circuits.

If, three of the four circuits were located on a single tower structure and the fourth circuit was on existing wood poles, then a single contingency, such as a lightning strike or bushfire, could cause three of the four circuits to be tripped out of service. The remaining geographically separate single circuit transmission line would under most loading situations, not be able to supply the energy of the entire region, and would also trip out causing a total shutdown of the North Country System.

The proposed double circuit line would also be susceptible to an outage from a lightning strike or bushfire, but would be less likely to cause a complete North Country System shutdown. Depending on the system loading at the time of the double circuit outage, it is likely that the remaining two circuits could supply the North Country System load.

If a three circuit transmission line were constructed it would be approximately 54m tall compared to 47m tall double circuit structures and would have a more substantial construction to overcome additional wind loading due to the increased tower height and bulk.

A three-circuit transmission line would cost between 65% and 80% more than the equivalent double and single circuit lines.

A series of three circuit transmission structures would have a higher visual impact than double circuit towers although the visual impact of the double circuit option would include the effect of the existing single circuit poles aligned parallel to the double circuit towers.

If a three-circuit configuration were constructed it would be constructed next to the existing transmission line. This is because it would not be possible to de-energise the existing single circuit line until the new circuit is available on the tower. On completion of the three-circuit tower line, power supplied by the existing single circuit line could then be transferred to one of the three tower circuits.

### 3.0 POTENTIAL ENVIRONMENTAL IMPACTS AND MANAGEMENT STRATEGIES

Whilst there appears to be only one viable option for the proposed transmission line between Cataby and Eneabba this proposal does have certain environmental impacts that require management, including offsets to ensure that the overall impact of the proposal is acceptable. Issues of particular concern include minimising the risk of the introduction of *Phytophthora cinnamomi* to the Coomallo Nature Reserve, minimising the threats to significant species and minimising visual impact from the proposal given the high scenic quality of the area.

This section describes the existing biophysical and socio-cultural environmental issues within the project area and the proposed management strategies to minimise any adverse environmental effects. The following environmental issues are considered relevant to the proposal:

- Vegetation Conservation and Clearing Practices
- Weed and Disease Spread
- Declared Rare and Priority Listed Flora and Vegetation Communities
- Visual Amenity
- Proposed Environmental Offsets
- Fauna Impacts
- Impacts on Watercourses
- Land Erosion and Degradation
- Livestock Disease
- Aboriginal and Cultural Heritage
- Electromagnetic Fields

#### 3.1 Remnant Vegetation Conservation

Most of the land through which the proposed corridor traverses is privately owned and has been cleared for agriculture (approximately 70% of the proposed line route is on private property). Some of the private properties traversed have areas of remnant vegetation that will be affected - approximately 15.3km of remnant vegetation on private properties will be traversed. The transmission line also traverses the Coomallo Nature Reserve and the Hill River Nature Reserve.

Woodman Environmental Consulting conducted a vegetation survey of existing large areas of remnant vegetation on or near the proposed alignment to identify all taxa encountered and classify vegetation communities traversed. Woodman Environmental

Consulting vegetation survey report of the project area will be forwarded to the EPA when it is completed.

Within the Coomallo Nature Reserve, 23 plant communities were described and mapped along the existing transmission line during an April and October 2001 survey, and consist of Forests, Woodlands, Heaths on laterite and Heaths on sand. None of the communities mapped within the Reserve are threatened communities as defined by CALM.

Remnant vegetation outside of the Coomallo Nature Reserve along the proposed Cataby - Eneabba transmission line, was mapped in July, August and October 2001.

None of the plant communities mapped are currently listed, or proposed for listing, as threatened communities by the Department of Conservation. However, several of the communities, particularly those within the Zelena Downs property (north of Banovich Road) are very restricted and regionally significant.

- **Remnants on Tiwest Joint Venture lease area**

The native vegetation within the Tiwest mining lease area consists of *Banksia* Woodland, Dwarf *Banksia* Woodland, Heaths on sand, Heaths on laterite and drainage lines. The vegetation is in very good condition over the entire area, with a high diversity of species and plant communities.

- **Remnants on Private Property**

The proposed line route traverses a large number of areas mapped as remnant vegetation. These areas do vary in size and condition, with the majority in poor to very poor condition. Most are unfenced and actively grazed by sheep or cattle. The most significant of these is the Zelena Downs property, with a large remnant immediately north of Banovich Road. This area contained regionally significant plant communities and Priority flora species. It is noted that the majority of remnant vegetation on the private properties consisted of heaths on laterite, the occasional drainage line and small areas of *Banksia* Woodland.

Remnants on Road Reserve have been mapped along the road reserves on Bibby Road, Yeeramullah Road, Coorow-Green Head Road, Banovich Road, Brand Highway, and an un-named road running into the Eneabba sub-station. The vegetation within these reserves is predominantly heath, on either sand or laterite.

- **Hill River Nature Reserve**

The vegetation within the Hill River Nature Reserve along the proposed route is in very poor condition. It consists of *Eucalyptus rudis* and *Corymbia calophylla* trees over pasture grasses and is actively grazed by sheep. The reserve is unfenced at the proposed site of the river crossing. The proposed transmission line would span this reserve so no towers or access would be required within the reserve.

### 3.1.1 *Vegetation Clearing and Management*

The line route through both the Hill River Nature Reserve, Coomallo Nature Reserve and other areas of remnant vegetation parallels the existing 132kV transmission line where clearing has already occurred to provide access to this transmission line. Therefore, the creation of new access tracks will be minimal as the existing access tracks will be utilised during both the construction and maintenance stage of the project. Any new access to tower sites will be provided by cutting in spurs from existing tracks and roads. Such spurs will be no longer than 100m in length.

Minimal vegetation will be cleared between tower sites as the majority of the remnant vegetation traversed is approximately 1m in height. Therefore, any clearing of vegetation along the proposed line route would only be necessary between tower sites where trees or shrubs are taller than 3m. This will involve the removal of Eucalyptus trees and other tall vegetation from within a 30 metre wide strip so as to maintain the required clearance between vegetation and live electrical conductors. Regrowth will be allowed to a height of 3m between periodic rolling to maintain line clearance.



**The Existing 132kV Cataby to Encabba Transmission Line Within Coomallo Nature Reserve**

A vegetation management plan will be developed prior to construction that addresses the protection of priority species along the proposed line route, including procedures to control the spread of weed and dieback. Appendix 2 provides the Draft Specification for the development of an Environmental Management Program for the project, which includes a vegetation management plan.

A vegetation contractor will be engaged to carry out the removal of the vegetation in accordance with the requirements of the DEP, the relevant Local Government Authorities and CALM.

Products recovered from the vegetation clearing will, where possible, be used for commercial timber production, furniture manufacture and woodcraft. Vegetation not used



for commercial timber production, furniture or woodcraft will be windrowed for subsequent mulching, removal or burning in accordance with the wishes of CALM.

Windrowing of vegetation will be carried out using a bulldozer blade raised 5-10 cm above the ground surface, or a front-end loader fitted with a scrub rake. In building transmission lines, it is Western Power practice where machine clearing is employed that the soil remains undisturbed and the seed stock in the soil remains available for germination following construction.

Clearing of vegetation on private properties will be similar, however Western Power will fell and remove vegetation in consultation with the registered landowner.

### 3.2 Dieback – Introduction to uninfected areas

A survey for the presence of *Phytophthora* was conducted by Woodman Environmental Consulting in April 2001. All areas surveyed were traversed either in a vehicle or on foot by personnel experienced in the detection and mapping of *Phytophthora*. Re-sampling of the line route occurred during the spring 2001. Woodman Environmental Consulting's dieback survey report of the project area will be forwarded to the EPA when completed.

The CALM office in Jurien raised concerns that the survey was specifically on *P. cinnamomi*, however Woodman Environmental Consulting have advised that the sampling has also identified any Phytophthora that was present in the dead plants or soil samples. They have also advised that the other Phytophthora species should not be of concern within the area as they do not typically produce disease epidemic symptoms unless the area is affected by very wet conditions in situations that do not typically get that wet, ie, beside road drains.

No *Phytophthora cinnamomi* infestation has been found along the proposed transmission line route, however at one location on a private property immediately south of the Coorow Green Head Road, Lot 10804, there is one area of *Phytophthora cirticola* infestation.

Woodman Environmental Consulting have also advised that Caner fungi are all probably native and are difficult to survey for. They are also unmanageable and therefore not applicable to the project and infrastructure. No symptoms of Armillaria have been observed during the survey. *P. cinnamomi* is the most significant plant pathogen, with other Phytophthora species and cankers not posing any significant threats to flora (Woodman Environmental Consulting, 2001).

The spread of dieback caused by *Phytophthora cinnamomi* has been linked to the movement of the soil and plant material on vehicles, particularly heavy earthmoving machinery, using access tracks adjacent to areas of native vegetation. Safeguards to prevent or minimise the spread of dieback into dieback-free areas of native vegetation include restrictions on clearing and on the movement of vehicles following heavy rainfall, wash down of vehicles before moving from dieback to dieback free areas and a workforce awareness program.

Western Power has in place procedures to address the management of disease on transmission line corridors. The procedures apply to all management activities on CALM managed land and on any other sections of the line subject to 'dieback' controls. Such activities include transmission line inspections and maintenance as well as vegetation clearance and management.

Vegetation and dieback surveys have been conducted in all the areas with remnant vegetation along the proposed line corridor. The significance of vegetation and threats to vegetation from dieback infestation is currently being assessed and a suitable hygiene management plan is being produced.

This plan will incorporate techniques to limit access to the existing 132kV and proposed 132kV transmission lines by members of the general public by any means deemed appropriate by the Jurien CALM District Manager.

### 3.3 Visual Impact

The proposal will impact on the visual amenity of the area traversed because of the scale and type of the transmission line structures used and viewed against the surrounding landscape. The clearing of vegetation from tower sites and for access to the tower sites may also impact on the visual resources and existing character of the region. Minimising clearing between towers and allowing vegetation regrowth and selective clearing in areas of tall vegetation will assist in reducing the impact.

Western Power will employ a range of general strategies to minimise the visibility of the transmission line from frequently used roads, tourist destinations, recreation areas, residences and other areas with significant landscape values.

Such strategies include:

- avoiding the placement of transmission structures close to major roads;
- locating structures in low areas as opposed to tops of ridges to minimise 'skylining' and;
- using existing vegetation, or the promotion of vegetation, to screen, or partially screen, structures in rural areas.

The landscape architect engaged by Western Power on the project has identified two areas along the proposed alignment having relatively high visual impacts and requiring specific mitigation strategies. These are:

- The crossing of Bibby Road, the road connecting the Brand Highway to Cervantes and the Pinacles and;
- The crossing of the Jurien Road within the Coomallo Nature Reserve.

A landscape assessment including visual simulations has determined that the use of poles less than 30m tall will minimise the visual impact of the proposed transmission line in these areas. The visual simulation of poles within the Coomallo Nature Reserve was submitted to the Conservation Commission and formed part of the information considered by the Commission in reaching its conclusion to support an alignment parallel to the existing transmission line within the Coomallo Nature Reserve.

Visual simulations also determined that poles should be located in the vicinity of the transmission line crossing of Bibby Road.

The design for the transmission line is currently being finalised and includes sections in the Coomallo Nature Reserve (1.1km north of Jurien Road and 2.2km south of Jurien Road) and 1.1km north of Bibby Road and 2.75km south of Bibby Road.

### 3.4 Environmental Offsets

Through consultation with the Conservation Commission and the Department of Conservation and Land Management, Western Power proposes the following environmental offset for the Cataby to Eneabba transmission line and the Pinjar to Cataby transmission line which is currently being assessed by the Environmental Protection Authority.

- An allowance of \$200,000 for the purchase of a suitable parcel of conservation land in the area traversed by the transmission line. (It is worthy to note that this sum allows for the purchase of land more than double the area of disturbance;
- An allowance of \$150,000 for all expenses relating to the management of such a parcel of land.

A sum of \$350,000 will be deposited into a trust administered by CALM on behalf of the Conservation Commission. The Conservation Commission will determine how this amount would be spent. It could be spent on any conservation project including purchase of land or funding of conservation initiatives such as Western Shield.

It should be noted that the allowance for land is based purely on a judgement of what is deemed an amount necessary to acquire a property in the affected area that could usefully be added to the secure conservation estate. It is not directly related to the area of land affected, although it would purchase an area more than twice as large as the 71 Ha affected by the proposed Pinjar - Cataby - Eneabba transmission lines, i.e 38.4ha affected by the proposed Pinjar-Cataby transmission line, and the 32.6ha affected by a proposed Cataby - Eneabba transmission line. The allowance for land is also not directly related to any formula or per hectare calculation.

Western Power has chosen to go over and above its commitment to provide funds to offset land affected by the transmission line by providing an additional allowance of \$150,000 for ongoing maintenance of this land.

Western Power will also acquire the property north of the Jurien Road within the Coomallo Nature Reserve (Portion of Victoria Location 2833 being Lot 1 on Diagram 49370, adjacent to Reserve 41933) subject to the successful conclusion of negotiations to purchase the land. Western Power will then arrange for ownership of the land to be transferred CALM or the Conservation Commission.

This offer is additional to the offset offer of \$350,000 to be deposited into a trust administered by the Conservation Commission.

The above environmental offset proposal was endorsed by the Conservation Commission on 16 November 2001, see Appendix 1.

### 3.5 Noxious Weeds

The movement of vehicles along the route of the proposed transmission line corridor during the construction and operation of the transmission line also has the potential to spread weeds that already exist in the area. Western Power will comply with the regulations and hygiene requirements of the Agriculture Department of WA (AgWA) at all times.

Based on advice from AgWA this will involve signage, wash down and brush down procedures to be employed at required locations to limit the potential for seeds to be introduced and transported along the corridor, particularly at points of transition between private agricultural land and conservation lands.

The vegetation survey indicated that within areas of remnant native vegetation annual weeds were present along the entire length of the existing transmission line during the spring surveys. No perennial weeds have been identified along the line route.

Annual weed species including *Briza maxima*, *B. minor*, *Hypochaeris glabra*, *Arctotheca calendula*, *Ursinia anthemoides* and *Anagalis arvensis* have been noted as a sparse cover along the access track associated with the transmission line. These species did not form a significant component of the flora or provide significant cover along the majority of the route. The distribution of these species is restricted to the access track and extending several meters into the native vegetation, in some locations up to the extent of previous clearing activities associated with vegetation management under the line.

Weed species distribution is related directly to areas of open ground or disturbance. Weed seed is most probably spread by wind and fauna movement from surrounding agricultural properties and road verges into areas of native vegetation and only establishes where open ground exists. Weed distribution therefore is probably related to landform, winds and surrounding land uses.

Two areas along the existing transmission line through the Coomallo Nature Reserve have higher weed infestations than the remainder of the line; these areas include the Coomallo Creek and an area adjacent to and on the south side of the Jurien East Road, and on the west side of the line.

The Coomallo Creek is characterised by ephemeral flows and has a large expanse of open ground for much of the year. The weed infestation within the Creek is not restricted to the Transmission line route indicating that weed seeds are vectored by the Creek and the naturally open ground forms a reservoir of this seed throughout the creek.

The other area of weed infestation south of the Jurien East Road appears to be associated with previous disturbance associated with the road, either construction or maintenance activities. This infestation is distributed up to 50m to the west of the existing transmission line.

### 3.6 Declared Rare Flora and Priority Listed Flora

Flora surveys were conducted along the proposed line route in April, June, August and October 2001 by Woodman Environmental Consulting. A total of twenty nine Priority flora species were recorded near the proposed line route. Woodman Environmental Consulting's flora survey report of the project area will be forwarded to the EPA when completed.

Eleven Priority flora species were recorded within the Tiwest lease area. These were *Conostephium minus* (P4), *Dryandra tortifolia* (P3), *Guichenotia alba* (P3), *Hypocalymma serrulatum ms* (P3), *Nemcia axillaris* (P3), *Thelymitra apiculata* (P4), *Verticordia blepharophylla* (P2), *Stachystemon axillaris* (P4), *Lasiopetalum lineare* (P3), *Darwinia sanguinea* (P4), and *Stylidium aeonioides* (P2). No species within this area will be impacted upon as a result of the project as each population will be spanned and towers will be located away from all priority species.

Four Priority flora species were recorded within a road reserve located approximately 4km south of Bibby Rd. These were *Banksia micrantha* (P3), *Daviesia chapmanii* (P4), *Daviesia epiphyllum* (P3), and *Desmocladius elongatus* (P3). No species within this area will be impacted upon as a result of the project as each population will be spanned and towers will be located away from all priority species.

Eleven Priority listed flora species were recorded within the Coomallo Nature Reserve. These were *Georgeantha hexandra ms* (P4), *Stylidium aeonioides* (P2), *Dryandra tortifolia* (P3), *Synaphea aephyrsa* (P3), *Dryandra stricta* (P3), *Verticordia blepharophylla* (P2), *Comesperma acerosum* (P3), *Acacia lasiocarpa var. lasiocarpa* (P2), *Daviesia chapmanii* (P4), *Dryandra sclerophylla* (P4), and *Astroloma sp. Cataby* (P4). No species within this area will be impacted upon as a result of the project as each population will be spanned and towers will be located away from all priority species.

Two Priority listed flora species were recorded within private property approximately 1.5km north of Coomallo Nature Reserve. These were *Daviesia epiphyllum* (P3) and *Banksia micrantha* (P3). These species occur within an area of approximately 623m along the proposed alignment. WPC is currently investigating two options to mitigate any impacts to these species. The options include using taller towers to enable a wider span between tower sites or placing tower structures in already cleared areas if possible.

Eleven Priority flora species were recorded on a private property known as 'Zelena Downs', approximately 6km north of Coomallo Nature Reserve. These were *Synaphea aephyrsa* (P3), *Banksia micrantha* (P3), *Daviesia epiphyllum* (P3), *Dryandra tortifolia* (P3), *Jacksonia anthoclada* (P3), *Loxocarya gigas* (P2), *Banksia chamaephyton* (P4), *Dryandra sclerophylla* (P4), *Isopogon tridens* (P3), *Nemcia axillaris* (P3) and *Phlebocarya pilosissima ssp. pilosissima* (P3).

The extensive distribution of priority species on the Zelena Downs property means that some disturbance to priority species from clearing for tower foundations may occur. Western Power has investigated potential alternative route options to the west and east of the proposed alignment within this area that will avoid these populations, however significant difficulties prevent either of these alternative options to be viable. See Appendix 3.

Western Power has consulted with CALM's Principal Botanist to discuss potential impacts on these priority species, and it has been determined through this consultation that the effects on these priority species would not be significant; particularly, if the transmission towers are located to avoid areas containing the Priority 2 species. See Appendix 3.

Through this consultation it was also suggested that further botanical surveys of the affected priority species be conducted within the local area. Western Power intends to conduct further surveys as requested by CALM, and will continue to consult with CALM's Principal Botanist to optimise the location of towers and access for construction to minimise the overall effects on the species.

Seven priority listed flora were recorded in the road reserve immediately south of the Eneabba substation. This location had the highest species richness and number of Priority flora than any other site along the proposed route. It would not be possible to avoid affecting priority species within this road reserve, therefore the original alignment has been realigned to traverse cleared private property to avoid these species.

### 3.7 Fauna

Impacts that could potentially affect fauna as a result of construction and operation of the proposed transmission line include effects on rare or endangered species or critical habitats and the creation of barriers to the migration or movement of wildlife species.

Western Power has commissioned ecologist Mike Bamford to undertake desktop and field studies to assess the fauna of the project area to determine any locations where the alignment of the proposed transmission line could impact on specially protected, threatened and priority fauna and their habitats.

Coomallo Nature Reserve is a known breeding site for the Carnaby Black Cockatoo, *Calyptorhynchus latirostris*. Field surveys indicate that the Carnaby could potentially use Eucalyptus trees growing along the Coomallo Creek at the proposed transmission line crossing for nesting sites. Tall towers have been included in the transmission line design in the vicinity of the Coomallo Creek to ensure no disturbance to these Eucalyptus trees during construction or maintenance, other than that required for tower sites and access to tower sites. The wires for the transmission line will clear the canopy by 6m and will be installed using a helicopter or any other means that avoids disturbance to the trees.

CALM's Threatened Fauna Branch has been notified regarding the abovementioned strategy, but to date no response has been received.

No other habitats of Specially Protected (Threatened) fauna occur along the proposed transmission line route.

Along the entire proposed transmission line corridor, the clearing profile will be such that it will allow the understorey to regenerate up to a height of 3 metres. This will provide habitat for fauna that occurs in the region and it is expected to allow fauna to cross the corridor under cover, with the exception of the access track.

### 3.8 Water Course Impacts

All permanent wetlands have been avoided, however the proposed transmission line does traverse a number of water courses, one of which is within Hill River Nature Reserve and one within Coomallo Nature Reserve.

The clearing of riparian vegetation has the potential to affect water quality through soil disturbance and increased siltation, as well as the potential for habitat destruction. Within riparian zones as much understorey vegetation as possible will be retained during the clearing process. However taller vegetation will need to be selectively removed, leaving the tree roots in place to bind the soil, and maintain stability of the bank. Ground disturbance will be kept to a minimum and heavy construction vehicles will be excluded from a zone extending at least 50m from wetland dependent vegetation.

Western Power will continue to consult with WRC on appropriate vegetation clearing and management requirements of these water-courses.

### 3.9 Soil Erosion

Aside from riparian zones, the corridor selection process was designed to avoid other areas of high erosion risk. In such areas, disturbance of soils during clearing and construction may result in increased wind or stormwater erosion rates.

Measures to control the potential for erosion due to construction or maintenance activities include:

- Positioning of structures (towers) to avoid sensitive features;
- Placing structures at maximum feasible distance from major drainage crossings;
- Implementing a clearing methodology to minimise the risk of soil erosion; and
- Installing erosion control drains if necessary.

### 3.10 Livestock Disease Spread

Stock diseases such as footrot can occur in agricultural areas of Western Australia. It is a bacterial disease affecting sheep and goats and can easily be spread through the movement of moist soil. Whilst the disease is normally spread from sheep to sheep it is possible for the disease to be mechanically spread via the movement of vehicles along the corridor during the construction and operation of the transmission line. Western Power will ensure that information on the location of areas affected by the disease is obtained from the AgWA and will adhere to their requirements for the control of the disease at all times. It is anticipated that by cleaning vehicles leaving contaminated areas, the potential for introducing or transporting stock diseases would be minimised.



### **3.11 Aboriginal and European Culture and Heritage**

There are no known significant ethnographic and archaeological sites on the proposed line corridor. However, Western Power will undertake a survey of archaeological and ethnographic sites within the line route prior to the commencement of construction and vegetation clearing work.

Generally, it is understood that direct adverse physical impacts to archaeological sites can occur during ground disturbing activities associated with constructions, such as clearing, and the preparation of pole foundations. Indirect impacts can result after construction due to increased erosion or to increased access, making the site more vulnerable to accidental or deliberate disturbance.

Western Power will also engage a Native Title consultant to ensure the appropriate Native Title consultation procedures and notification are adopted.

The final transmission line route will be adjusted to avoid any areas of significance identified in the archaeological and ethnographic surveys.

### **3.12 Electromagnetic Fields**

EMFs are found wherever electricity is used. They are a natural by-product of the use of electricity and occur around all electric wires and electrical appliances. Hence, they are present in domestic and workplace environments as well as near ordinary street distribution lines and high voltage transmission lines such as the proposed line from Cataby to Eneabba.

The National Health and Medical Research Council of Australia (NH&MRC) has adopted the guidelines for human exposure to power frequency EMF as recommended by the World Health Organisation (WHO). These guidelines recommend a set of limits of exposure to EMF based on the WHO environmental health criteria. Western Power accepts and endorses these guidelines implicitly. It designs, constructs and operates all its transmission lines, plants and facilities in compliance with these exposure guidelines and will continue to monitor relevant overseas research.

For most people the greatest exposure to power frequency EMF arises from distribution lines in the street, household wiring and domestic appliances. Living near a transmission line would not substantially increase this exposure.

Western Power also adopts the Electricity Supply Authority of Australia (ESAA) policy of prudent avoidance to ensure transmission lines are not located close to existing dwellings or commercial premises.

### **3.13 Fire Management**

The only situation under which live electrical conductors from the proposed transmission line could cause a fire is where insufficient clearance exists between the conductors and vegetation or other combustible materials. The vegetation traversed by the majority of the Cataby-Eneabba transmission line is sufficiently low for safe clearances to be maintained without removing or pruning vegetation. There are some areas of Eucalyptus, such as at creek crossings, where vegetation is taller, however the fire risk in these areas will be minimised through regular vegetation control.

Western Power will not require the Department of Conservation to alter its fire management in the vicinity of the proposed transmission line. In Western Power's experience, burning at the current frequency would be adequate to maintain the security of the transmission line. A 4m cleared area will be maintained around each transmission tower to ensure that fire does not threaten the structures, insulators or live electrical conductors during controlled burns.

### **3.14 Environmental Management System**

Western Power has an Environmental Management System (EMS) aligned with ISO 14001. All aspects of the planning, design, construction, maintenance and operation of the proposed transmission line interconnections will be carried out in accordance with the conditions and operating procedures of this EMS.

**APPENDIX 1**



**Proposed Cataby-Eneabba Transmission Line**

***Submission to  
Conservation Commission***

**November 2001**



**Western Power**



# WESTERN POWER

## Summary Sheet

### **TITLE: Proposed Cataby to Eneabba Transmission Line Within Coomallo Nature Reserve.**

This proposed 132kV transmission line is an extension of the Pinjar to Cataby transmission line that is currently before the EPA for assessment.

The proposed alignment for the Cataby to Eneabba traverses approximately **3.2 kms** of Coomallo Nature Reserve within an existing firebreak. This alignment has been selected following consultation with Department Of Conservation representatives.

The proposed alignment within Coomallo Nature Reserve would require approx **0.2ha** of **permanent clearing** of vegetation within the firebreak and approx **1.8ha** of **temporary disturbance** of vegetation within the firebreak.

Western Power has investigated alternative alignments including an original proposal to align the transmission line adjacent to the existing 132kV Cataby to Eneabba transmission line. This alignment would have traversed approximately **8kms** of Coomallo Nature Reserve and required approximately **0.47ha** of permanent clearing of vegetation and **4.5km<sup>2</sup>** of temporary disturbance of vegetation.

Other alignments investigated included going around Coomallo Nature Reserve but were considered non-viable for environment, social or economic reasons.

Replacing the existing transmission line with a three-circuit tower transmission instead of the proposed double circuit transmission line adjacent to the existing single circuit wood pole line is not possible due to the risk to security of supply associated with such a configuration.

Western Power proposes the following environmental offset for the Pinjar-Cataby and Cataby-Eneabba transmission line, comprising of two components.

- An allowance of \$200,000 for the purchase of a suitable parcel of conservation land in the area traversed by the transmission line. (Note that this sum allows for the purchase of land more than double the area of disturbance);
- An allowance of \$150,000 for all expenses related to the management of such a parcel of land.

The total amount of \$350,000 would be deposited into a trust administered by the Department Of Conservation on behalf of the Conservation Commission. The Conservation Commission would determine how this amount would be spent. It could be spent on any conservation project including purchase of land or funding of conservation initiatives such as Western Shield.

It should be noted that the allowance for land is based purely on a judgement of what is deemed an amount necessary to acquire a property in the affected area that could usefully added to the secure conservation estate. It is not directly related to the area

of land affected (although it would purchase an area more than twice as large as the 71Ha affected by the proposal) or any formula or per hectare calculation.

Western Power has chosen to go beyond what would be required to provide funds to offset land affected by the transmission line by providing an additional allowance of \$150,000 for ongoing maintenance of this land.

An environmental offset for any future transmission line proposal would be calculated on the basis of the cost of providing conservation benefits to the local area traversed by the proposed transmission line not by a land area formula or calculation.

For further details regarding the proposed alignment through Coomallo Nature Reserve, please see the accompanying document titled 'Summary of the Cataby to Eneabba Transmission Line Proposal within the Coomallo Nature Reserve'.



## ***Summary of the Cataby to Eneabba Transmission Line Proposal within Coomallo Nature Reserve.***

### ***Introduction***

Western Power plans to construct a new 132kV transmission line from Cataby substation to Eneabba substation to ensure the reliability and quality of power supply in the Great North Region. Construction works are programmed to commence in August 2002.

The original line route for this proposed new transmission line was aligned alongside the existing 132kV Cataby to Eneabba transmission line within a common corridor. However, following consultation with Department Of Conservation representatives in relation to the alignment with Coomallo Nature Reserve, the proposed transmission line route has since been modified within the Reserve to address Department Of Conservation's concerns.

This document presents this new proposed alignment within Coomallo Nature Reserve and provides an overview of the environmental factors associated with the proposed transmission line route within the Reserve and discusses the management practices proposed by Western Power to address these factors.

The document also proposes an environmental offset, developed in consultation with the Department Of Conservation to ensure that the project does not reduce the overall area or environmental values of remnant vegetation within the State's secure conservation estate.

### ***Alignment within Coomallo Nature Reserve***

Figure 1 provides an overview of the proposed alignment within Coomallo Nature Reserve. As the figure indicates, the original proposed alignment placed the transmission line within a common corridor alongside the existing transmission line. However, following discussions with Department Of Conservation representatives an alternative alignment within the Reserve was investigated in order to minimise the clearing of vegetation and the potential associated impacts.

As Figures 2 to 5 indicate, the proposed transmission line has been aligned wherever possible alongside the edge of Coomallo Nature Reserve within private property, or in road reserves outside of the Reserve or within firebreaks within the Reserve. Essentially the proposed alignment traverses 3.5km of Coomallo Nature Reserve within a fire break to the north of Jurien Road.

It should be noted that alternative alignments outside of Coomallo Nature Reserve were also investigated, however each was rejected on environmental, social or economic grounds. For example, an alignment to the west of Coomallo Nature Reserve (see Figure 6) was evaluated and determined by Western Power to be environmentally unacceptable as it would have required new clearing in high value conservation areas between Mt Leseaur National Park and Coomallo Nature Reserve.

A potential alignment to the east of Coomaloo Nature Reserve (see Figure 7) was also investigated and found to be non-viable for social and economic reasons. In order to avoid social impacts on small properties and on those already affected by the 100m wide natural gas pipeline corridor, the transmission line alignment would be more than 20% longer than the existing transmission line corridor, with numerous additional angle points. The cost of such an option would make the proposal financially unacceptable even allowing for a long term payback on capital expenditure.

### ***Environmental Factors within Coomaloo Nature Reserve***

#### **Vegetation Clearing**

The need to clear vegetation within the Reserve has been minimised by aligning the transmission line alongside existing access tracks and within fire breaks. Minimal vegetation clearing would also occur due to the height of the vegetation (approx. 1 metre), allowing safety clearance requirements to be met.

Western Power will develop an Environmental Management Program (EMP) that will include specific plans and procedures, developed in consultation with the Department Of Conservation and the Water and Rivers Commission, which address vegetation management within the Reserve.

#### **Declared Rare Flora**

Through the use of digital data of Declared rare and priority listed flora species the proposed line route has been aligned to avoid any recorded populations. A spring survey will be conducted along the proposed new alignment and the line route will be aligned to avoid any identified populations.

A vegetation management plan will be developed prior to construction that addresses the protection of DRF and priority species along the proposed line route, including procedures to control the spread of weed and dieback.

#### **Diseases and Weeds**

An initial *Phytophthora* species survey conducted along the original proposed alignment within the Reserve, i.e. the alignment adjacent to the existing transmission line, indicated that the area is "uninfested". However a *Phytophthora* species survey and weed survey is still to be conducted along the new proposed alignment within the Reserve.

In consultation with the Department Of Conservation, Western Power will prepare and implement a *Phytophthora* hygiene management plan based on the protectable areas protocol prior to the construction of the line.

In consultation with the Department Of Conservation, Western Power will prepare and implement a weed management plan prior to the construction of the line.

#### **Visual Amenity**

Along some areas of the proposed alignment within Coomaloo Nature Reserve the visual amenity of the area may be impacted upon by transmission line structures. A

landscape architecture has been engaged to recommend strategies to minimise impacts, including the optimum placement of transmission structures in low areas to minimise 'skylining' and using vegetation to screen or partially screen structures. Poles are also proposed to replace towers at the crossing of the Jurien Road within Coomallo Nature Reserve. Visual simulations are presently being prepared to demonstrate the effects of this.

### ***Environmental Offsets***

The recommended environmental offset for the Pinjar-Cataby and Cataby-Eneabba transmission line is comprised of two components:

- An allowance of \$200,000 for the purchase of a suitable parcel of conservation land in the area traversed by the transmission line [Note that this sum allows for the purchase of land more than double the area of disturbance];
- An allowance of \$150,000 for all expenses related to the management of such a parcel of land.

The total amount of \$350,000 would be deposited into a trust administered by the Department Of Conservation on behalf of the Conservation Commission. The Conservation Commission would determine how this amount would be spent. It could be spent on any conservation project including purchase of land or funding of conservation initiatives such as Western Shield.

It should be noted that the allowance for land is based purely on a judgement of what is deemed an amount necessary to acquire a property in the affected area that could usefully added to the secure conservation estate. It is not directly related to the area of land affected (although it would purchase an area more than twice as large as the 71Ha affected by the proposal) or any formula or per hectare calculation.

Western Power has chosen to go over and above its commitment to provide funds to offset land affected by the transmission line by providing an additional allowance of \$150,000 for ongoing maintenance of this land.

An environmental offset for any future transmission line proposal would be calculated on the basis of the cost of providing conservation benefits to the local area traversed by the proposed transmission line not by a land area formula or calculation.

### ***Fire Management***

The only situation under which live electrical conductors from the proposed transmission line could cause a fire is where insufficient clearance exists between the conductors and vegetation or other combustible materials. The vegetation traversed by the majority of the Cataby-Eneabba Transmission Line within Coomallo Nature Reserve is sufficiently low for safe clearances to be maintained without removing or pruning vegetation. There are some areas of Eucalyptus, such as at creek crossings, where vegetation is taller, however the fire risk in these areas will be minimised through regular vegetation control.

Western Power would not require the Department of Conservation to alter its fire management in the vicinity of the proposed transmission line. In Western Power's experience, burning at the current frequency would be adequate to maintain the security of the transmission line. A four-metre clear area will be maintained around each transmission tower to ensure that fire does not threaten the structures, insulators or live electrical conductors during controlled burns.

### ***Reasons Why Existing Transmission Line Cannot Be Replaced***

Department Of Conservation representatives have requested an explanation as to why the existing wood pole transmission line from Cataby to Eneabba cannot be replaced with a three-circuit tower transmission line instead of the proposed double circuit transmission line adjacent to the existing single circuit wood pole line. The following provides an explanation.

Power transmission lines are comprised of wires conducting electrical current and structures (poles or towers) supporting these wires. A transmission circuit consists of three wires, one wire for each phase conductor. Thus a single circuit transmission line, like the existing wood pole line between Cataby and Eneabba, has three conducting wires.

Such a single circuit line may also have additional earth wires to protect the conductors from lightning strikes and other electrical faults.

The existing Cataby to Eneabba transmission line has no such earth wires and has a relatively low security of supply. Multiple circuit transmission towers support three conductors per circuit and may also have earth wires connected above the phase conductors.

Western Power would not favour the use of a three-circuit configuration because of the risk to security of supply associated with such a configuration. From a security viewpoint Western Power would prefer all transmission lines to be geographically separate single circuit lines to minimise the risk of multiple transmission circuit outages. At present two geographically separate 132kV single circuit transmission lines supply the North Country Region. The proposal for a new transmission line in the North Country Region from Pinjar-Cataby and Cataby to Eneabba is for a double circuit transmission line because it is realised that opposition to additional geographically separate single circuit lines would be great. This new double circuit transmission line would supplement the two existing single circuit transmission lines, thus there would be four circuits supplying the North Country Region on three sets of structures. Towers would support two circuits and poles would support two individual geographically separate circuits.

If instead three of the four circuits were located on a single tower structure and the fourth circuit was on existing wood poles, then a single contingency, such as a lightning strike or bushfire, could cause three of the four circuits to be tripped out of service. The remaining geographically separate single circuit transmission line would under most loading situations, not be able to supply the energy of the entire region, and would also trip out causing a complete shutdown of the North Country System.

The proposed double circuit line would also be susceptible to an outage from a lightning strike or bushfire, but would be less likely to cause a complete North Country System shutdown. Depending on the system loading at the time of the double circuit outage, it is likely that the remaining two circuits could supply the North Country System load.

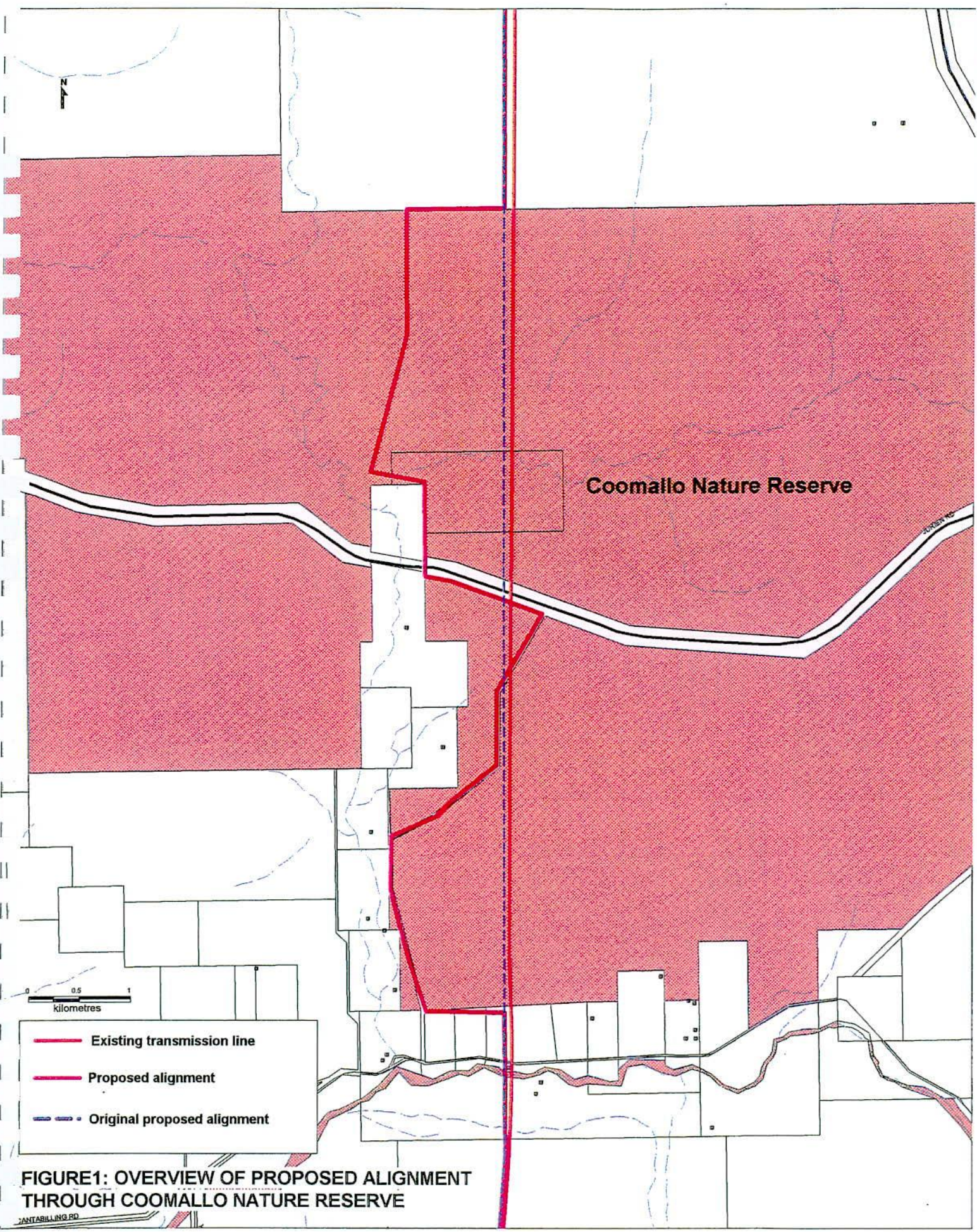
If a three circuit transmission line were constructed it would be approximately 54m tall compared to 47m tall double circuit structures and would have a more substantial construction to overcome additional wind loading due to the increased tower height and bulk.

A three-circuit transmission line would cost between 65% and 80% more than the equivalent double and single circuit lines.

A series of three circuit transmission structures would have a higher visual impact than double circuit towers although the visual impact of the double circuit option would include the effect of the existing single circuit poles aligned parallel to the double circuit towers.

If a three-circuit configuration was constructed it would be constructed next to the existing transmission line. This is because it would not be possible to de-energise the existing single circuit line until a new circuit was available on the tower. On completion of the three-circuit tower line, power supplied by the existing single circuit line could then be transferred to one of the three tower circuits.





Coomallo Nature Reserve

- Existing transmission line
- Proposed alignment
- - - Original proposed alignment

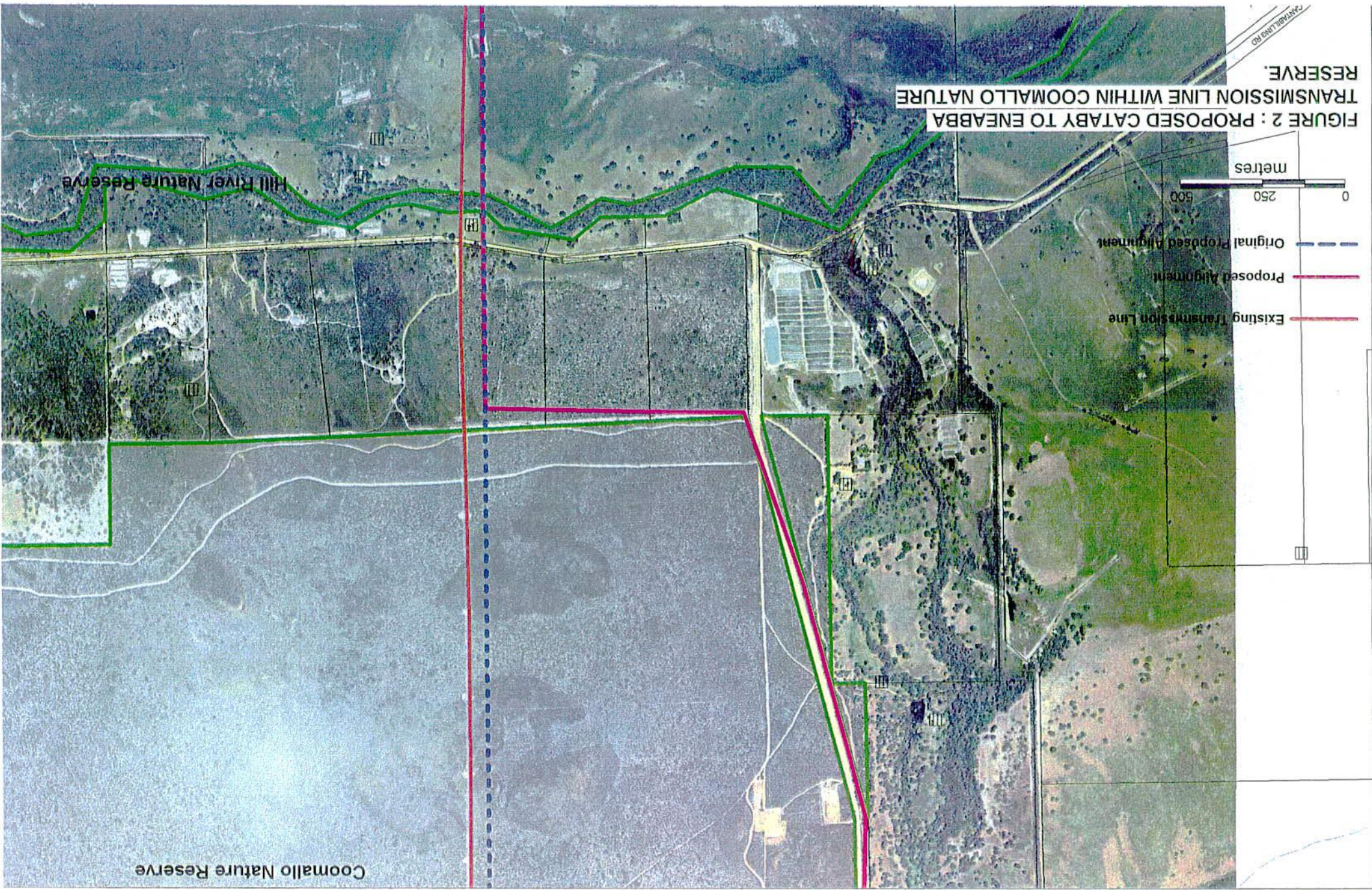
0 0.5 1  
kilometres

**FIGURE 1: OVERVIEW OF PROPOSED ALIGNMENT THROUGH COOMALLO NATURE RESERVE**

SANTABILLING RD









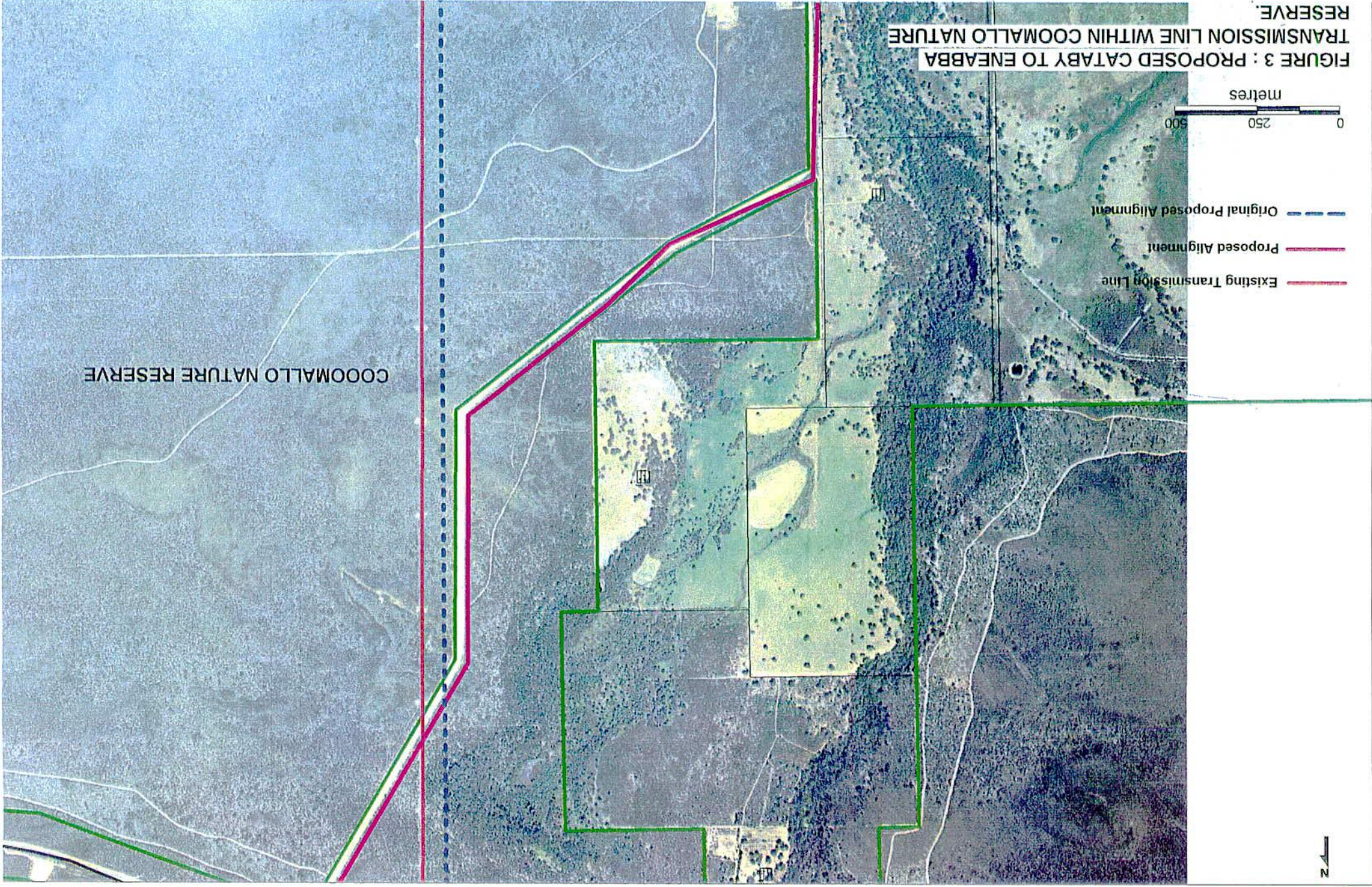


FIGURE 3 : PROPOSED CATBY TO ENABBA TRANSMISSION LINE WITHIN COOMALLO NATURE RESERVE.



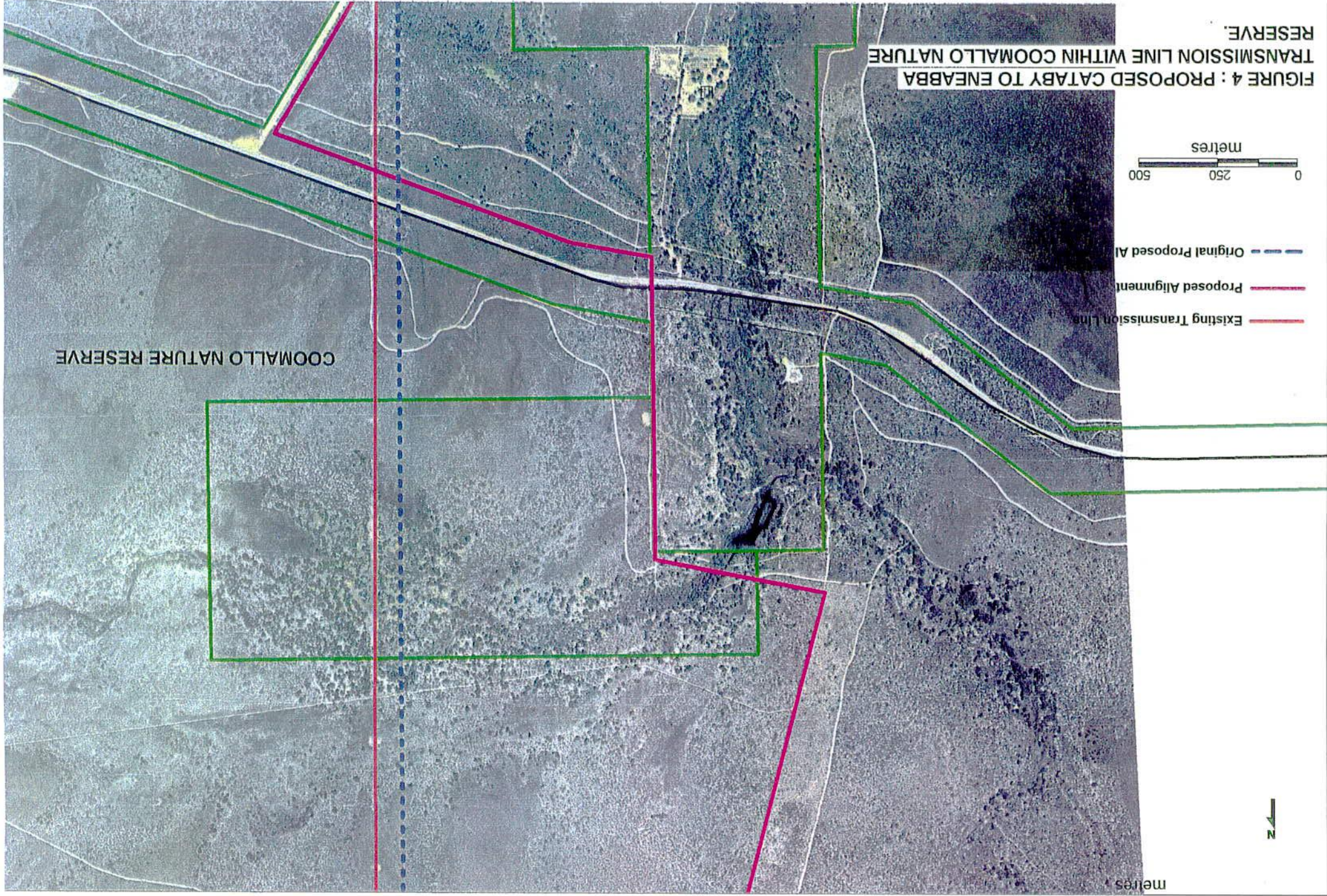
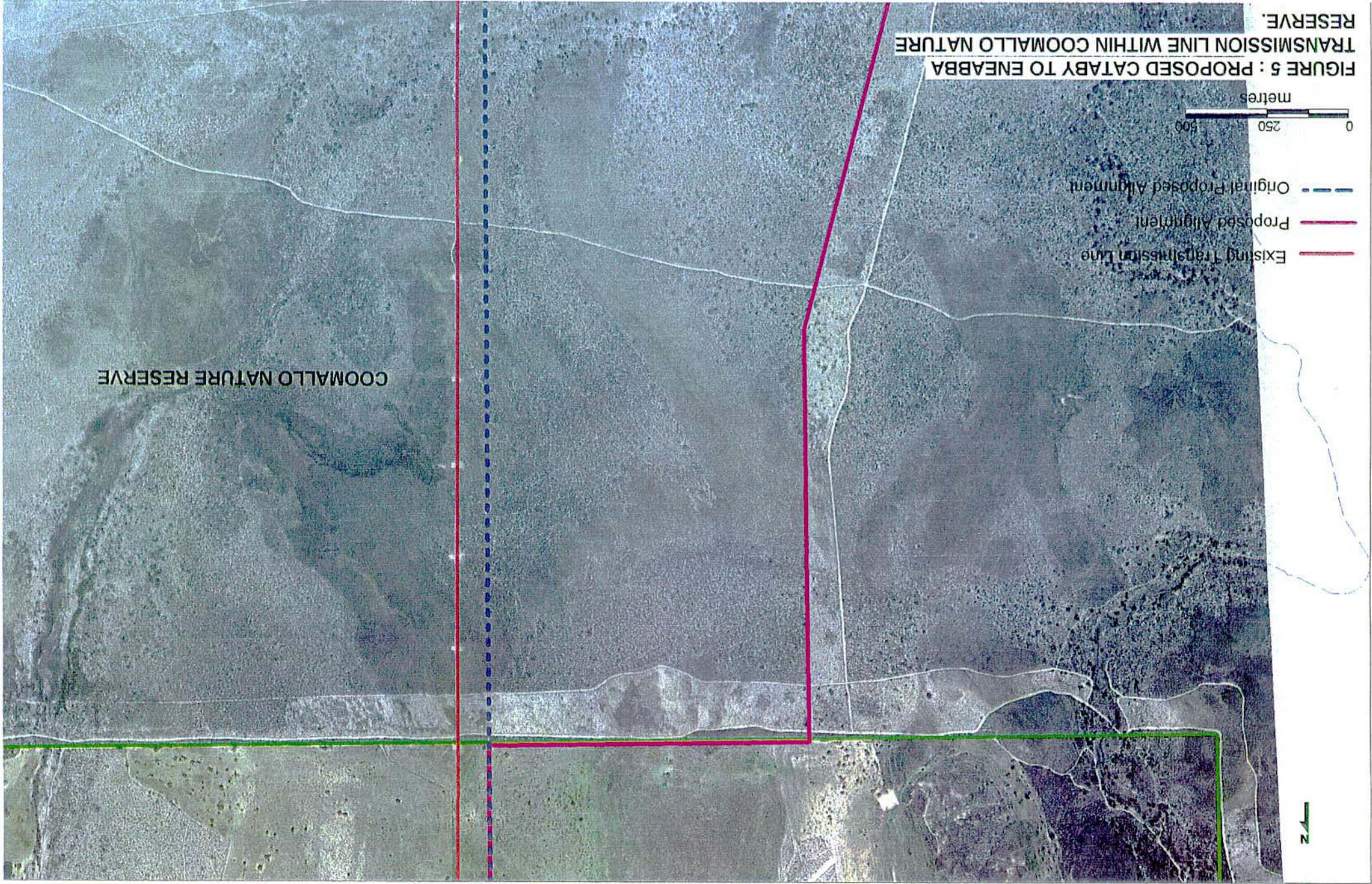


FIGURE 4 : PROPOSED CATABY TO ENABBA TRANSMISSION LINE WITHIN COOMALLO NATURE RESERVE.



FIGURE 5 : PROPOSED CATARY TO ENABBA TRANSMISSION LINE WITHIN COOMALLO NATURE



COOMALLO NATURE RESERVE





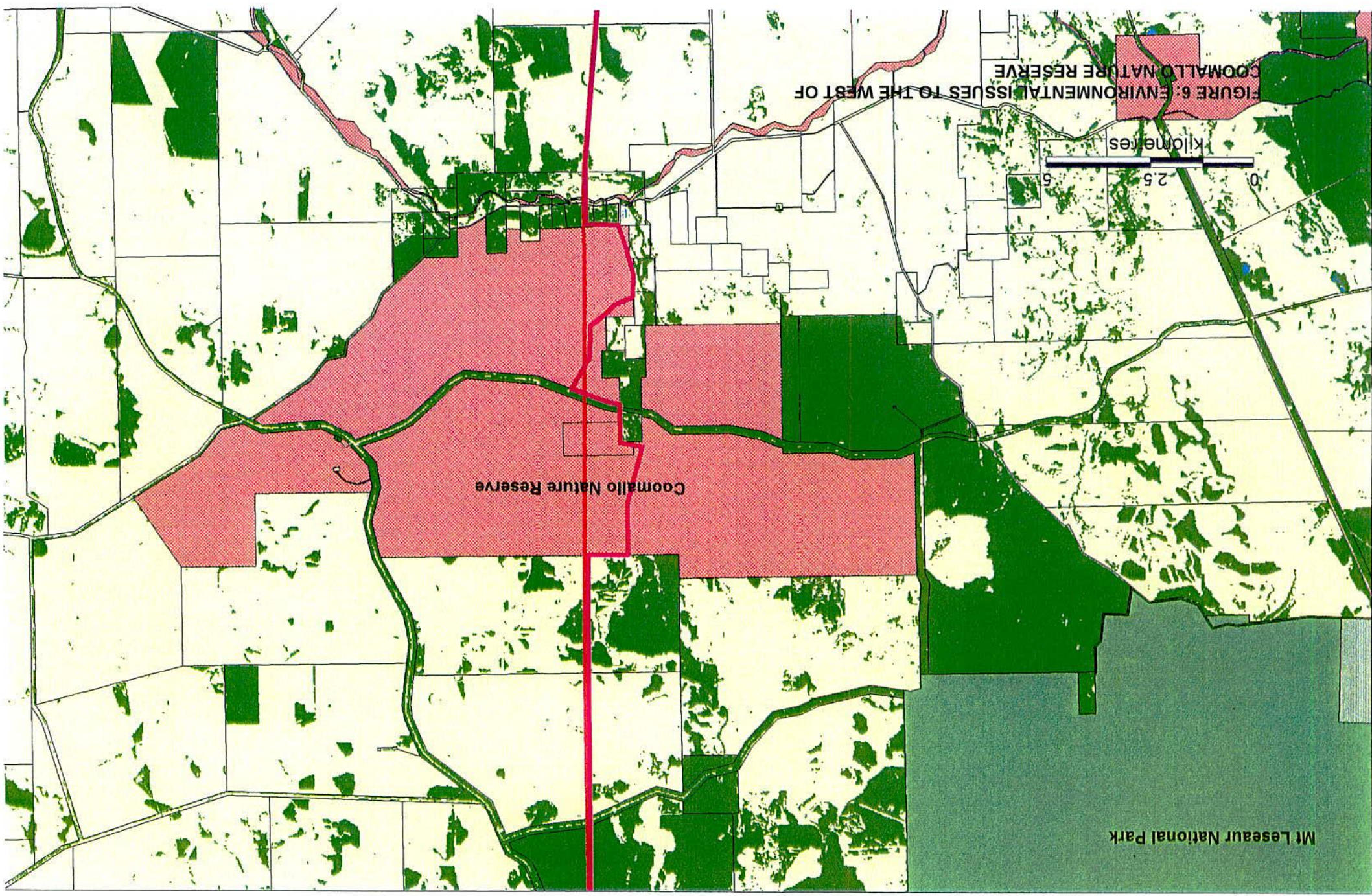
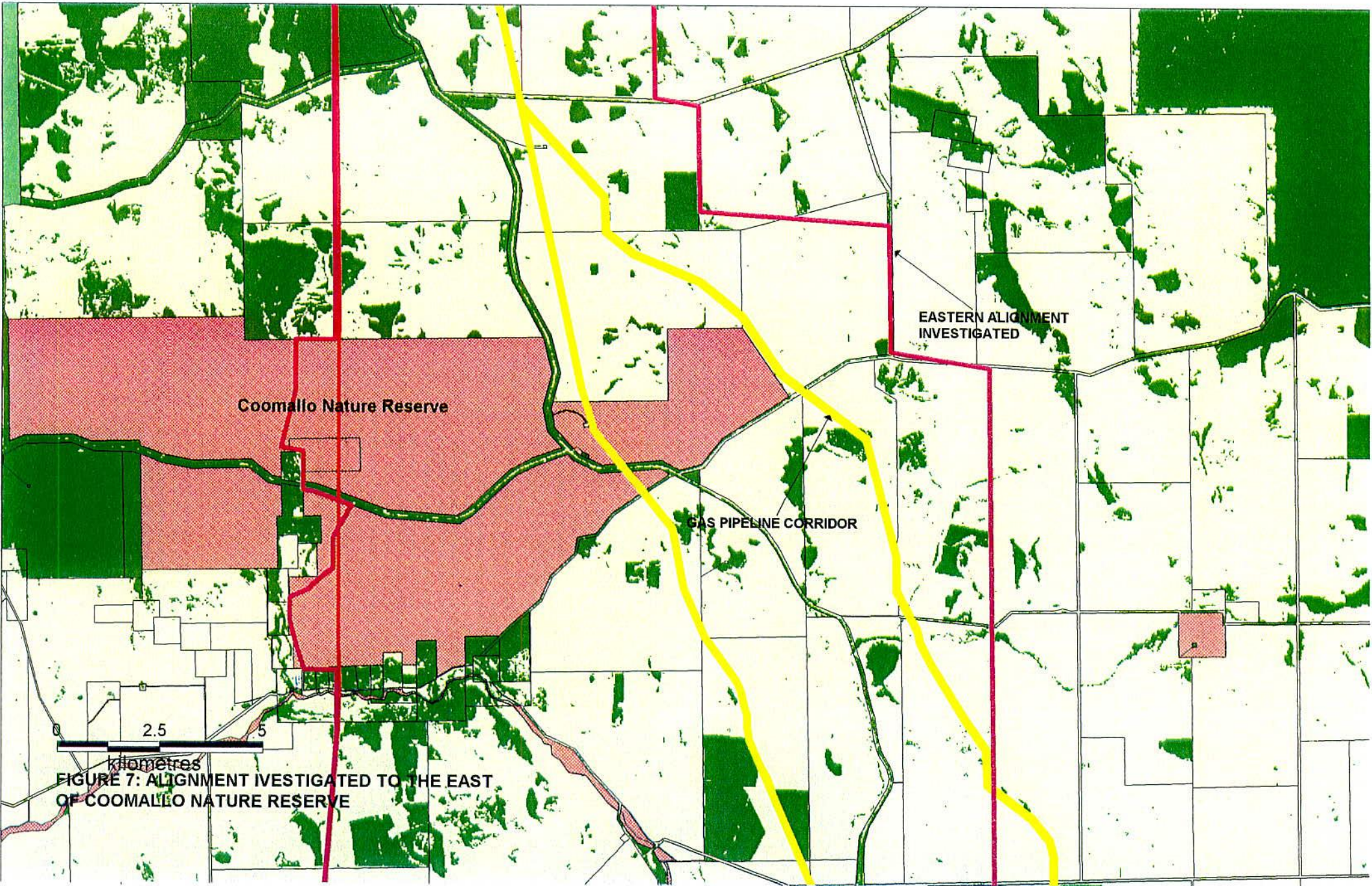


FIGURE 6: ENVIRONMENTAL ISSUES TO THE WEST OF COOMALLO NATURE RESERVE





Coomallo Nature Reserve

EASTERN ALIGNMENT INVESTIGATED

GAS PIPELINE CORRIDOR

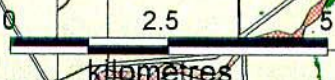


FIGURE 7: ALIGNMENT INVESTIGATED TO THE EAST OF COOMALLO NATURE RESERVE



**APPENDIX 2**



## 1.0 GENERAL REQUIREMENTS

The works required by this specification will satisfy Western Power's requirement to develop and implement an Environmental Management Program (EMP) that:

1. Includes specific plans and procedures developed in consultation with concerned stakeholders through ongoing stakeholder liaison and discussion by the proponent's officers, which addresses construction impacts and stakeholder concerns.
2. Includes monitoring procedures and control of the activities of employees, agents and contractors to ensure adherence to environmental requirements identified in the EMP.
3. Is integrated into the existing Western Power Corporate Environmental Management System and documented in the Environmental Management Information System (EMIS)."

Note that the works include activities associated with the Western Power Environmental Management System (EMS) and Western Power's Environmental Management Information System (EMISWeb). These activities are additional to the preparation of an EMP for the Cataby to Eneabba transmission line and will serve to integrate the EMP into in the EMS.

## 2.0 WESTERN POWER'S EXISTING ENVIRONMENTAL MANAGEMENT SYSTEM

An Environmental Management System (EMS) is a structured approach to identifying and managing project environmental issues and impacts and ensuring continual improvement of environmental performance. The Proposed Cataby to Eneabba Transmission Line will follow the requirements set in the international standard for EMS (ISO 14001).

The Contractor shall be responsible for detailing methods that Western Power will implement to fulfil the requirements of ISO 14001 for the Proposed Cataby to Eneabba Transmission Line. The Contractor will be required to document all details of the EMP and all associated information required for the EMS using Western Power's electronic documentation software EMISWeb in accordance with Western Power Procedures in Table 1.

**TABLE 1: WESTERN POWER ENVIRONMENTAL MANAGEMENT SYSTEM PROCEDURES FOR EMISWeb APPLICATION**

<b>PROCEDURES</b>	
4.1	Western Power's EMS
4.1.1	EMISWeb Implementation and Maintenance Requirements
4.4.4	Environmental Management System Documentation
4.4.5	Document Control
4.4.6	Procedures Development

The Contractor will liaise with Western Power Management throughout the development of the EMS and utilise information from the documents listed in Table 2 in developing the EMS.

**TABLE 2: ENVIRONMENTAL DOCUMENTATION FOR PROPOSED CATABY TO ENEABBA TRANSMISSION LINE**

<b>DOCUMENTATION</b>	
Western Power (2002) " <b>Proposed Cataby to Eneabba Transmission Line Environmental Referral</b> ", January, Perth, Western Australia.	
Woodman Environmental Consulting (2001) " <b>Flora; Vegetation and Dieback (Phytophthora cinnamoni) Survey Along Proposed Cataby to Eneabba Transmission Line</b> " prepared for Western Power, Perth Western Australia.	
???	
???	
Western Power (2002) " <b>Specification Number ??????, Tender Number ?????? (Section H) - Supply and Construction</b> ", Perth Western Australia.	

The Contractor will ensure that the elements listed in Table 3 are addressed in the development of an EMS for the proposed Cataby to Eneabba transmission line.



**TABLE 3: ENVIRONMENTAL MANAGEMENT SYSTEM FOR PROPOSED CATABY TO ENEABBA TRANSMISSION LINE**

<b>EMS Element</b>	<b>Western Power EMS Procedure</b>	<b>Work Required</b>
<b>Environmental Issues and Impacts</b>	4.3.1	<p>The Contractor shall gather and summarise information regarding the identified environmental issues and impacts for the proposed Cataby to Eneabba transmission line from the documents listed in Table 2. The Contractor shall record these summaries in EMISWeb and perform a risk assessment to ascertain environmental significance for all potential impacts at each stage of the project (pre-construction, construction, post-construction and ongoing maintenance). Risk assessment shall take into account legal compliance issues and the scale, severity, duration and probability of impact on the environment.</p> <p>The Contractor shall use EMISWeb to highlight management issues related to significant environmental issues and impacts.</p>
<b>Environmental Legal and Other Requirements</b>	4.3.2	The Contractor shall compile a register of all environmental legislation associated with the Project. The Contractor shall document this legislation on EMISWeb.
<b>Environmental Management Program and Procedures</b>	4.3.4	Refer Section 3: Environmental Management Program.
<b>Environmental Training</b>	4.4.2	<p>The Contractor shall complete a training assessment including training needs assessment that identifies specific training needs related to significant environmental issues arising during project construction and post construction phases. Training needs for maintenance activities shall also be identified. The Contractor shall make recommendations on the implementation of training identified in the needs assessment.</p> <p>The Contractor will document the line training needs assessment using EMISWeb.</p>
<b>Environmental Procedures</b>	4.4.6	The Contractor shall develop project specific environmental procedures identified in Tables 4 and 5 (See Section 3: Environmental Management Program) in accordance with Western Power EMS Procedure 4.4.6.
<b>Environmental Emergency Response</b>	4.4.7	The Contractor shall develop an Environmental Emergency Response Plan (EERP) in consultation with relevant stakeholders addressing project specific environmental emergency issues such as hygiene breaches, destruction of PLF and fire.

**CATABY-ENEABBA TRANSMISSION LINE  
DRAFT JOB SPECIFICATION FOR ENVIRONMENTAL MANAGEMENT PROGRAM**

		<p>The Contractor shall include a communications plan in the EERP for use in the event of an environmental emergency.</p> <p>The Contractor shall document the EERP using EMISWeb and ensure supervisory personnel and management are provided with hardcopies.</p>
<b>Environmental Incidents</b>		<p>The Contractor shall develop an environmental incident management procedure for the project and integrate this with Western Power's standard incident management practices.</p> <p>The Contractor shall develop incident investigation and reporting processes and include these in the environmental incident management procedure.</p>
<b>Environmental Monitoring/Auditing</b>	<p>4.5.1 4.5.4</p>	<p>The Contractor shall investigate various methods of performance monitoring and auditing and develop suitable monitoring and auditing procedures compliant with the EMS and Western Power's requirements, including an appropriate non compliance procedure. The non-conformance procedure shall be integrated with Western Power's EMS Procedure 4.5.4.</p> <p>The audit program shall be developed in consultation with relevant stakeholders to ensure environmental obligations are met and that processes in place are effective in preventing environmental harm.</p>
<b>Management Review</b>	4.6	<p>The Project Manager will review the performance of the EMS and assess compliance with environmental obligations. The Contractor shall develop criteria for this review and assessment.</p>

### 3.0 ENVIRONMENTAL MANAGEMENT PROGRAM FOR PROPOSED CATABY TO ENEABBA TRANSMISSION LINE

The development and implementation of the Cataby to Eneabba Transmission Line Environmental Management Program (EMP) is an integral part of Western Power's formal Environmental Management System. Compliance with Project and EMP conditions will be electronically tracked to ensure a high standard of environmental performance through the use of Western Power's software EMISWeb.

The Cataby-Eneabba EMP will establish the methods and means for Western Power to address the projects environmental issues. The EMP will address stakeholder environmental concerns and include work schedules, accountabilities and responsibilities.

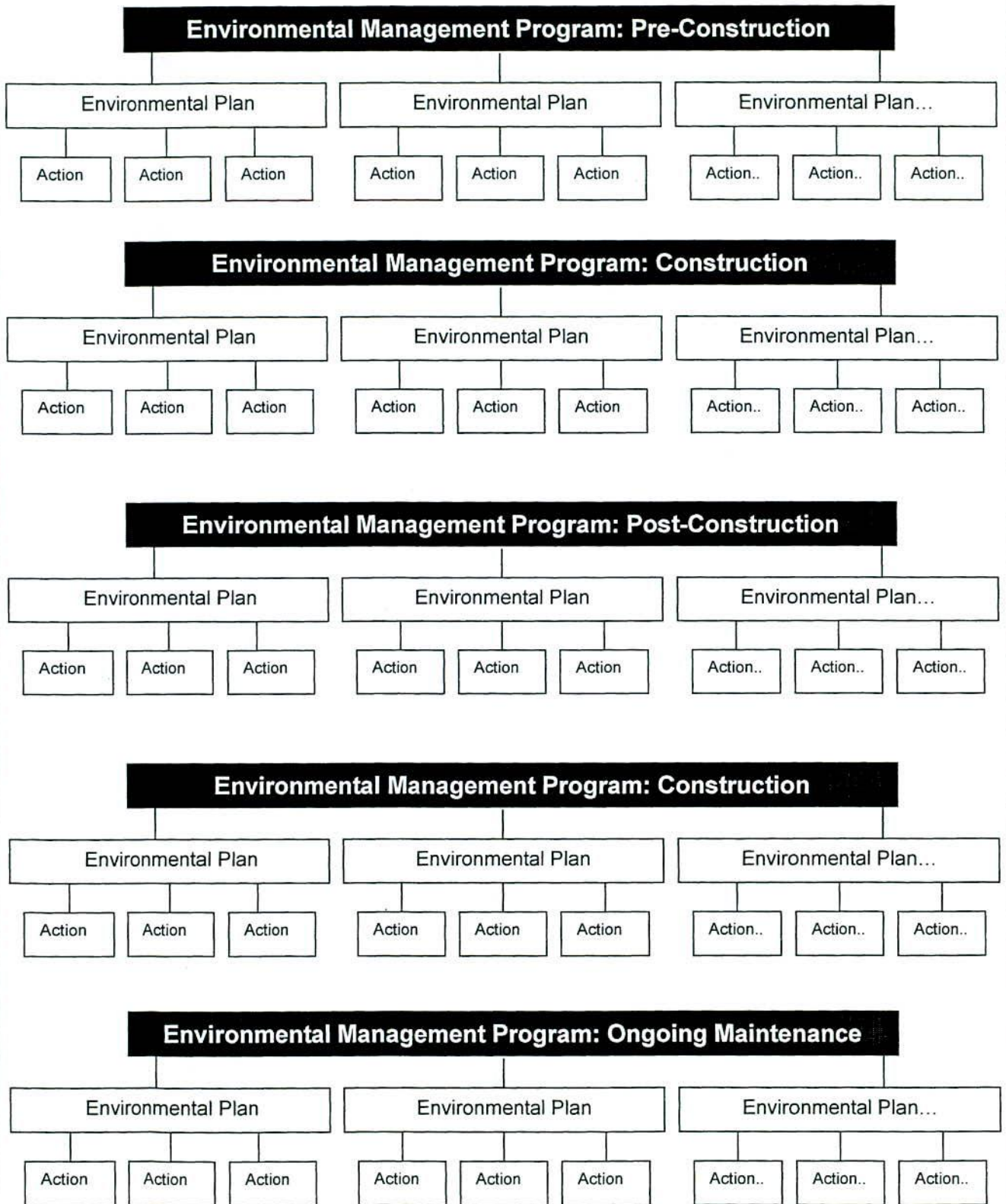
The Contractor shall include background information in the EMP In accordance with Table 4

**TABLE 4: BACKGROUND INFORMATION TO INCLUDE IN THE ENVIRONMENTAL MANAGEMENT PROGRAM FOR THE PROPOSED CATABY TO ENEABBA TRANSMISSION LINE**

<b>BACKGROUND INFORMATION</b>
Project background and current status
Project Timing for the Cataby - Eneabba Transmission Line
Outline of the EMP Structure
Land Tenure Arrangements and Responsibility
Environmental Guiding Principles
Management Responsibility & Accountabilities

The Contractor shall document the EMP using Western Power's electronic EMS software: EMISWeb. The EMP itself will be comprised of a number of environmental plans. Each environmental plan shall address a project environmental issue and/or obligation and set an objective, target, key performance indicator, actions, completion dates and responsibilities In accordance with Western Power Procedure 4.3.4 and Figure 1. Progress in meeting targets and actions as set in each environmental plan shall be monitored by the Project Manager using the EMISWeb monthly report.

**FIGURE 1: STRUCTURE OUTLINE FOR PROPOSED CATABY TO ENEABBA TRANSMISSION LINE ENVIRONMENTAL MANAGEMENT PROGRAM**



**TABLE 5: TASKS AND ISSUES TO BE ADDRESSED IN THE ENVIRONMENTAL PLANS AND OVERALL ENVIRONMENTAL MANAGEMENT PROGRAM FOR THE PROPOSED CATABY TO ENEABBA TRANSMISSION LINE**

<b>PRE-CONSTRUCTION MANAGEMENT</b>	
<b>Stakeholder Management</b>	Establish a full list of environmental obligations and consolidate these by project phase and issue
<b>Environmental Management</b>	Document (summarise findings of) environmental, flora, fauna, aboriginal heritage, unexploded ordinance surveys
	Implement environmental management system
	Identify areas likely to be significantly disturbed during the construction phase and develop a vegetation management plan
	Erect Environmentally Sensitive Area (ESA) signage
<b>Emergency Response</b>	Ensure Hygiene Signs / Facilities Installed
<b>Emergency Response</b>	Document and implement approved environmental emergency response plan
<b>Environmental Procedures</b>	Develop environmental procedures, management practices, plans and methods for construction, post construction and ongoing management
<b>Environmental Training</b>	Complete Training Assessment
<b>CONSTRUCTION MANAGEMENT</b>	
<b>Weed Control</b>	Implement weed control procedure
	Implement weed treatment procedure
<b>Dieback Hygiene</b>	Implement dieback hygiene procedure
	Implement dieback treatment procedure
<b>Vegetation Clearing</b>	Ensure compliance with vegetation clearing methods and specifications
<b>Flora and Fauna and Threatened Ecological Communities</b>	Implement Environmentally Sensitive Area (ESA) management practices
<b>Dust Suppression</b>	Ensure dust suppression methods implemented as appropriate
<b>General Construction Management</b>	
	Undertake regular compliance checks with environmental obligations
<b>Noise</b>	Implement noise management plan
<b>Fire</b>	Implement fire management plan
<b>Wetlands</b>	Implement Coomallo Creek management plan
	Implement wet areas management plan
<b>Waste Management</b>	Implement waste management plan
<b>POST-CONSTRUCTION MANAGEMENT</b>	
<b>Waste Management</b>	Ensure construction area is cleaned up and any waste, spoil material is disposed of appropriately
<b>Community Relations</b>	Implement the post-construction management phase of the stakeholder communications plan
	Restore fences and access ways temporarily disturbed during the project
<b>General Post-Construction Management</b>	Undertake compliance checks to ensure all environmental obligations were met during construction

**ONGOING MAINTENANCE**

<b>Weed Control</b>	Implement weed control practices continue during line maintenance
<b>Dieback Hygiene</b>	Implement dieback hygiene practices continue during line maintenance
<b>Vegetation Clearing</b>	Implement vegetation clearing practices
<b>Flora, Fauna and Threatened Ecological Communities</b>	Implement flora, fauna and threatened ecological community protection and management plan
<b>Fire</b>	Implement fire management plan
<b>Community Relations</b>	Ensure right of entry practices are maintained
<b>General Post-Construction Management</b>	Undertake annual compliance checks to ensure all ongoing environmental obligations are met

**ENVIRONMENTAL MANAGEMENT PROGRAM - COMPLIANCE MONITORING**

<b>Management</b>	Project Environmental Supervisor on site and on call
<b>Communication</b>	<p>Project Environmental Supervisor to undertake weekly inspections and report findings and recommendations to regular safety and environment toolbox meetings held on site.</p> <p>The Contractor will set criteria for inspections, develop audit checklists, determine methods for issuing and communicating non-conformances and outline the process for tracking non-conformances until closed and ensuring preventative recommendations are implemented.</p>
<b>Community Relations</b>	Implement stakeholder communications plan

**APPENDIX 3**





Our Ref: EM/77/TLS247(37)V1  
Enquiries: John Morrell  
Telephone: (08) 9326 6169



11 Januaray 2002

COPY

Dr Ken Atkins  
Principal Botanist  
Department of Conservation and Land Management  
Locked Bag 104, Bentley Delivery Centre, WA 6983

**PROPOSED CATABY-ENEABBA TRANSMISSION LINE – POTENTIAL IMPACT  
ON PRIORITY SPECIES ON LOCATION 10826 BANOVIK RD BADGINGARRA**

Dear Ken,

Thank you for meeting with our John Morrell and consultant botanist Greg Woodman on 17 December 2001 to discuss potential impacts on priority species on Victoria Location 10826 Banovich Rd Badgingarra. As indicated at the meeting, Western Power's proposed route option for the Cataby-Eneabba transmission line traverses an area of remnant vegetation on this property containing populations of Priority 2 and Priority 4 species.

Results from a botanical survey along the proposed alignment indicated that it would not be possible to avoid impacting on some plants within these populations if the proposed alignment is adopted. Western Power has investigated potential alternative route options, to the east and west of the proposed alignment, that would avoid these populations, but has found significant difficulties in implementing each of these alternative options.

A prospective cleared area to the west of the proposed alignment was investigated. The owner of Location 10826, Mr Hodgson advised that he would be strongly opposed to the transmission line being located in this cleared area as he is presently constructing a new house in this area and would be affected by the transmission line. Mr Hodgson also advised that he would not be opposed to the transmission line being located to the east of the proposed alignment in an area of remnant vegetation on Location 10826. However, this alignment would require significant additional clearing to provide access for construction of the transmission line and it is likely that the area would also contain significant species.

An alignment to the east of the Brand Highway avoiding Location 10826 was also considered, but is not favoured as the affected property is also traversed by the natural gas pipeline. Western Power has experienced strong opposition to the presence of a new transmission line from landowners having existing pipelines and powerlines located on their properties.

**Western Power Corporation**

363 Wellington Street, Perth, Western Australia 6000 GPO Box 1921 Perth 6842  
Telephone (08) 9326 4911 Facsimile (08) 9326 4595 Internet [www.wpcorp.com.au](http://www.wpcorp.com.au)

ABN 38 362 983 875

An action group has been formed as a result of a proposal for a more eastern route option, with concerns raised about properties presently affected by gas pipelines and potentially affected by a proposed new transmission line.

Discussion at the 17 December meeting indicated that should the proposed transmission line alignment through Location 10826 be adopted, the effects on priority species should not be highly significant, particularly if the transmission towers are located to avoid areas containing Priority 2 species. It was also suggested that further botanical surveys of the affected priority species should be undertaken in the local area. Western Power intends to conduct further surveys as requested and to optimise the location of towers and access for construction to minimise the overall effects on priority species, and will consult with you to ensure that these actions are effective.

It would be much appreciated if you could confirm your agreement to the proposed alignment through Location 10826, subject to Western Power's adoption of the management principles outlined in this letter. Also please indicate any further measures you believe should be implemented to minimise the overall effects of the transmission line proposal.

Yours sincerely,



**RUDY TEH**  
**NETWORKS SUPPORT MANAGER**

Your Ref: 045454F2001  
Our Ref: Dr KJ Atkins  
Enquires: (08) 9334 0425  
Phone: (08) 93340278  
Fax: kena@calm.wa.gov.au  
Email:

Western Power  
GPO Box L921  
PERTH WA 6842

Attention Mr Rudy Teh, Networks Support Manager

Dear Mr Teh


### PROPOSED CATABY – ENEABBA TRANSMISSION LINE

I refer to your letter dated 11 January 2002 regarding the siting of the above transmission line through remnant vegetation on Location 10826, and its potential impact on priority flora in that bushland.

I agree that this transmission line may be sited within this bushland with minimal impact on the conservation of the priority flora, provided certain measures are undertaken. These include the following actions.

- Undertaking a detailed flora survey of the priority flora within the bushland to ensure that the status and distribution of the priority flora populations is known.
- Planning the location of the transmission towers and related access routes so as to avoid disturbing priority flora that is significant to the local representation of the species (especially priority 2 flora). This Department can provide assistance in this regard once a proposal is developed. This may also require varying distances between transmission towers so that sensitive areas are spanned.
- Minimizing the area required to be cleared, and leaving any temporarily cleared areas in such a manner as to facilitate their regeneration after construction is completed.
- Ensuring that vehicles and equipment entering the area during construction and ongoing maintenance are clean of disease or weeds.
- Providing an assurance that the bushland under the transmission line will not be cleared in the future as part of fire mitigation or maintenance requirements.

Yours sincerely

  
.....  
for Keiran McNamara  
ACTING EXECUTIVE DIRECTOR

17 January 2002

Our Ref: EM/77/TLS247(37)V1  
Enquiries: John Morrell  
Telephone: (08) 9326 6169



15 November 2001

COPY

Ms Christine Shervington  
Director  
Conservation Commission of Western Australia  
Corner Hackett Drive & Australia II Drive  
CRAWLEY WA 6009

**PROPOSED CATABY-ENEABBA TRANSMISSION LINE SUBMISSION TO  
CONSERVATION COMMISSION**

Dear Christine,

As indicated in the telephone conversation of 14 November between you and John Morrell of our Networks Division, Western Power wishes to present an offer additional to that contained in Western Power's November 2001 Submission to the Commission.

During the site visit of 13 November attended by Commissioners, Mrs Patricia Barblett and Mr Graeme Rundle, and Mr Keith Hockey of the Department of Conservation, the option of routing the proposed transmission line adjacent to the existing transmission line through the Coomallo Nature Reserve was discussed. It was also suggested that should this option be adopted Western Power could consider purchasing the private property north of the Jurien Road within the Coomallo Nature Reserve (Portion of Victoria Location 2833 being Lot 1 on Diagram 49370, adjacent to Reserve 41933).

As the above option is Western Power's preferred option, Western Power will be prepared to purchase this property, which is currently on the market, should the Commission support this. Western Power would also then arrange for ownership of the land to be transferred the Commission.

This offer is additional to the offset offer of \$350,000 to be deposited into a trust administered by the Commission contained in Western Power's November Submission to the Conservation Commission.

Yours sincerely,

RUDY TEH  
NETWORKS SUPPORT MANAGER  
**Western Power Corporation**

Mr Rudy Teh  
Networks Support Manager  
Western Power Corporation  
GPO Box L 921  
PERTH 6842

*RDT*  
6/12/01.

Dear Mr Teh

**PROPOSED CATABY – ENEABBA 132KV TRANSMISSION LINE –  
INVOLVEMENT OF COOMALLO NATURE RESERVE**

Thank you for your submission to the Conservation Commission, and your subsequent letter of November 15. These were considered by the Commission at its meeting of November 16, along with a verbal report from two Commission members who had inspected route options both from the air and on the ground at Western Power's invitation and with the assistance of CALM's District Manager.

Western Power's assistance in providing the opportunity to view the proposal from the air, and Mr John Morrell's frank discussion of proposals, options and possible commitments as well as the visual impact graphic simulations were very helpful, both during the field inspection and at the Commission's meeting.

**Decision of Commission**

The Commission has resolved as follows:

Taking into account the following issues

- The existing powerline through the NR cannot be removed or incorporated into the planned new 132Kv transmission line.
- Management requirements within the 1995 – 2005 Lesueur NP/Coomallo NR Management Plan.
- Western Power's willingness to adopt a route deviation and modified design of the conductor supports (ie steel poles), providing 6 options overall.
- And comparing the apparent bio-diversity, aesthetic and social impacts of each option.

***It was concluded that the Commission support an alignment parallel with the existing powerline subject to :***

- ***using lower steel poles as conductor supports to minimise impacts in visually sensitive sections, in consultation with CALM.***
- ***Western Power consulting with CALM on methods to minimise impact on vegetation at the stream crossing north of the Jurien road.***
- ***Western Power's management and offset commitments outlined in Western Power's November submission and subsequent letter of November 15th to the Commission being implemented.***

This alignment also coincidentally conforms to Western Power's preferred alignment, and our acceptance is assisted by the Corporation's preparedness to use lower and less obtrusive steel poles for strategic landscape placements. A more expansive rationale for the Commission's decisions is at Appendix A, while Appendix B is a summary of a verbal report presented to the Commission's meeting by the two Members involved in the field inspection.

### **Route Conditions**

The following conditions apply:

1. Western Power is to consult with CALM in determining the strategic location of transmission line sections to use steel poles for carrying conductors.
2. Western Power is to consult with CALM on fine-tuning the proposed stream crossing north of the Jurien Road, in terms of site and pole/pylon design/siting to reduce impacts on woodland vegetation.
3. Western Power is to abide by its November 2001 Submission commitments to the Commission, regarding:
  - Vegetation clearing,
  - Declared rare flora,
  - Diseases and weeds, especially *Phytophthora* Dieback management during construction, and ongoing inspection and maintenance operations (particularly by Western Power contractors),
  - Visual amenity, including preparation of a visual simulation of the strategic use of steel poles alongside the current powerline route (to assist CALM concerning condition 1 above), as now agreed by the Commission,
  - Fire management and powerline access maintenance. (These are factors that should also be incorporated into the proposed EMP, following consultation with CALM).
  - By siting two powerlines closely parallel, the Commission anticipates Western Power being able to minimise ground access and maintenance through an Integrated Environmental Management Program.

## **Strategic Planning**

The Commission's support is given on the understanding that no further powerline upgrade proposals are within current planning horizons that will impact on the Coomallo Nature Reserve. Additional proposals in the future should seek to avoid both the Lesueur National Park and Coomallo Nature Reserve.

In the future, the Commission and the Department of Conservation and Land Management envisages a connected conservation reserve system stretching from the coast to beyond Brand Highway. (A similar continuous belt of conservation estate is being established along the region's coastal environs, between Lancelin and Dongara and the Commission is seeking to minimise potential impacts of Indian Ocean Drive, including any future upgrades of the highway).

Accordingly, should Western Power consider developing some forward planning for infrastructure in these areas, it should be done in close consultation with the Department of Conservation and Land Management. This particularly includes the location of new or the upgrading of existing Corporation infrastructure to service the growing coastal centres covered by the WA Planning Commission's "Central Coast Regional Strategy"(1966) and related Gingin coast structure plan.

## **Environmental Offsets**

The offer of cash allowances as environmental offsets is considered adequate for the predicted impacts on the nature reserve and loss of vegetation along the Pinjar to Eneabba transmission line route. It is agreed that the funds should be used for conservation estate acquisition or strategic bio-diversity conservation programs.

The Commission considers that the most appropriate way to administer the funds would be as a holding in a special CALM Trust Fund, allocated on the determination of the Commission, considering proposals put forward by CALM.

The Commission will now request the Department to undertake some preparatory work in anticipation of Western Power's allowances becoming available.

## **Lot 1: Victoria Location 2833**

Western Power's offer concerning this property is also appreciated. The report made by the two Commission members involved in the field inspection advocated Western Powers' preferred alignment without this incentive, but recommended its acquisition regardless. If taken out of private use and placed in CALM's management control, the site's high Dieback risk will be managed. The block's remnant vegetation appears to be in good condition and, with its location across the stream course, provides additional bio-diversity values.

The Commission understands the basis of Western Power's additional conditional offer – that large cost savings resulting from the use of its preferred route over any deviation would release some additional funds that could be directed to further enhance conservation benefits for Coomallo Nature Reserve.

### Publicity Opportunities

It is suggested that Western Power, CALM and the Conservation Commission take advantage, as and when opportunities are presented, to indicate that the known and anticipated views of neighbouring landholders were taken into account when considering optional routes for the powerline in and around the Coomallo Nature Reserve.

That consideration was one of the factors that helped determine the Commission's decision to keep the new transmission line's route close to the existing powerline alignment.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Tom Day', with a stylized flourish at the end.

Tom Day  
ACTING CHAIRMAN

4 December 2001

cc: A/ Executive Director – CALM