ElectraNet Transmission Network Revised Revenue Proposal

Appendix I Strategic Land Acquisition Business Cases

ElectraNet Transmission Network Revised Revenue Proposal

EC 11132 Project Business Case Summary

Fleurieu Peninsula Land and Easement Acquisition

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Fleurieu Peninsula Land and Easement Acquisition

Project Number: EC.11132 **Category:** Easements/Land

Estimated Cost: **Required Completion Date:** 2015

Total project cost: $7.9 million ($12-13)

2013-2018 project cost: $7.2 million ($12-13)

1. Introduction and purpose

The towns located in the Fleurieu Peninsula region, to the south of Adelaide and located between Willunga to the north, Goolwa to the east and Yankalilla to the west are rapidly increasing in population. This has been particularly so for the towns of Victor Harbor, Port Elliot, Middleton and Goolwa in the last 15 years. This urban growth will continue as the new regional housing targets contained in the 30 Year Plan for Greater Adelaide are realised.

The corresponding growth in electricity demand will see forecast peak demand and load exceed the capacity of the distribution network. The Distribution Network Service Provider (DNSP), SA Power Networks, has already reported rapid increases in loads at the major settlements of Victor Harbor and Goolwa both of which are supplied by a radial 66 kV sub-transmission line from Willunga.

The existing network infrastructure in the area consists of a transmission connection to the lower southern suburbs at Morphett Vale East 275 kV substation. From this point, SA Power Networks operates a 66 kV sub-transmission system that currently supplies Goolwa, Victor Harbor and Yankalilla via single radial 66 kV sub-transmission lines that emanate from Willunga. There is also an underlying 33 kV distribution system that ultimately provides power supply to Kangaroo Island via a single 33 kV undersea cable.

SA Power Networks have reported that if planned distribution augmentations are completed and the rate of load growth does not increase above current rates, the distribution system will exceed its capacity in the summer of 2025.

Joint planning studies between ElectraNet and SA Power Networks have indicated that a new transmission injection point will be required at this time as a prudent and long term solution to reinforce supply to the Fleurieu Peninsula.

When the trigger event occurs (e.g. forecast load exceeds the thermal rating of the 66 kV sub-transmission line from Willunga to Square Water Hole), the proposed transmission contingent project would be required to meet the National Electricity Rules (NER) capital expenditure objectives in order to efficiently meet expected demand for prescribed transmission services and to comply with all applicable regulatory obligations associated with the provision of prescribed transmission services.

1.1 Project description

The scope of this project is as follows:

- Detailed investigations and studies to select suitable substation sites and a feasible transmission line route with due consideration to the environment, social, political, economic and technical constraints.
- Acquisition of land for substation sites at Kanmantoo North and Currency Creek.
- Negotiations to secure the purchase of approximately 68 km of easements between Kanmantoo and Currency Creek.

The most efficient transmission solution as identified in the Regulatory Test by SA Power Networks would involve the construction of a double circuit 275 kV transmission line connecting into the existing 275 kV network near Kanmantoo North and a new 275/66 kV injection point near Currency Creek, a distance of approximately 68 kilometres.

ElectraNet has commenced a project to identify the optimal locations for the two substation locations (Kanmantoo North and Currency Creek) and the most efficient transmission corridor between them.

The transmission corridor would pass through and nearby to environmentally, economically and socially sensitive areas such as the Adelaide Hills, primary production areas, mining operations and scenic townships. All of these factors contribute to increasing the complexity and risk of obtaining the final development approval for the construction of the project.

In order to mitigate project delay risks, ElectraNet intends to continue this detailed corridor assessment to refine and validate the preliminary corridor and to provide an optimal line route based on known environmental, social, technical and economic criteria.

These early works will ensure that the proposed transmission line route will meet all relevant statutory and environmental requirements, community expectations and provide the impetus for the acquisition of easements and development rights for the future transmission line in the next phase.

Extensive stakeholder and community engagement will be required to ensure that all issues and concerns are taken into consideration during the site and route selection and easement acquisition processes. A failure to undertake genuine consultation (which is very time consuming) will inevitably lead to significant community discontent and a heightened risk of organised opposition, which is likely to introduce lengthy delays in obtaining development approval. A corollary to this is the increased risk and cost of contested land/easement acquisitions and project delays.

A comprehensive project stakeholder and community engagement plan targeting key stakeholders and relevant community segments is required to support the easement acquisition and secure future development rights.

Early commencement of the process has started to minimise risks of delay so that ElectraNet could meet its obligations in accordance with the:

- Electricity Transmission Code (ETC) 6.3.1. Planning Approval and Easement Acquisition
- Strategic Land Acquisition Policy, which includes the following objectives:
  - Minimise network costs
  - Minimise land costs.

- Secure land availability.

The project is required to meet the Rules expenditure objective to meet the expected demand for prescribed transmission services and comply with all applicable regulatory obligations or requirements associated with the provision of prescribed transmission services. The objective is to ensure that the quantum and timing of easement and land procurement minimises the total project costs, including network costs, in present value terms.

The ETC requires that ElectraNet must use its best endeavours to complete all necessary design work, obtain approvals and acquire land and easements based on the forecast agreed maximum demand three years prior to the expected breach of the reliability standards.

This suggests that in order to meet the anticipated required completion date of 2025, the substation sites and transmission line easement would need to be secured prior to 2022 to allow sufficient time to obtain development approval and carry out tendering, design, construction and commissioning of the project.

1.2 Anticipated time taken to deliver Fleurieu Peninsula Reinforcement Project by 2025

The estimated program below illustrates that to deliver the Fleurieu reinforcement project by 2025, the site and easement acquisition process will need to continue from the current reset period in order to be completed by mid to late 2019 to allow enough time to obtain development approval, carry out tender, design, procurement, construction and commissioning to deliver the project by 2025. It is noted that the timeframe below does not allow for significant headroom to accommodate slippage.

Activities/Tasks	Estimated time required	Planned Start	Planned Finish	Regulatory period	Comments
Sites and route selection process	24months	already started	Jun 2014	2008 –2013 and 2013-2018	Environmental impact assessment and stakeholder engagement to determine a feasible and acceptable route. Project commenced in 2011
Sites and easement negotiation and acquisition	18 months	Jul 2014	Dec 2015	2013-2018	Assuming there is no compulsory acquisition required
Obtaining development approval and other relevant statutory approvals	18 months	Jan 2016	Jun 2017	2013-2018	Assuming that the RIT-T has been completed or carried out in parallel with development approval process and no major delay in obtaining the development approval
Preliminary Design and Tendering process	12 months	Jul 2017	Dec 2018	2013-2018	This is dependent on the procurement strategy e.g. open tender or using existing contracting panel
Detail Design process (substation and transmission line)	18 months	Jan 2019	June 2020	2019-2023	Survey and detailed design
Procurement (plant and equipment)	18 months	Jan 2021	June 2022	2019-2023	Lead time for major plant purchase such as transformer/switch gear and transmission line such as steel work and conductor may take longer than 12 months
Substation and transmission line construction and commissioning	24 months	Jul 2022	Jun 2024	2019-2023 and 2023-2028	A 24 month construction period for 2 substations and 60km of transmission line is potentially optimistic.

2. Background - network options and easement considerations

The following provides additional background information on the network project options and specific issues arising in relation to easement acquisition. This background information forms an important input to the risk assessment under the Strategic Land Acquisition Policy, and cost benefit analysis presented in sections 3 and 4, and the recommendation that follows.

2.1 Credible Network Options

All electricity supply for the Fleurieu Peninsula is currently provided by SA Power Network's 66 kV sub-transmission system via the Willunga Zone Substation, which is in turn supplied from ElectraNet's Morphett Vale East 275/66 kV substation as shown in Figure 2-1.

The Western Peninsula is supplied by a single radial 66 kV line from Willunga to Cape Jervis via Zone Substations at Myponga and Yankalilla. Willunga is supplied from Morphett Vale East Connection Point via two 66 kV lines, one via McLaren Flat and the second via Port Noarlunga and Aldinga.

Kangaroo Island is supplied via a short 33 kV line from Cape Jervis substation to a single 33 kV undersea cable and a long 33 kV line to Kingscote with a number of 11 kV and 19.1 kV Single Wire Earth Return (SWER) lines attached.

The Eastern Peninsula is supplied by a single radial 66 kV line from Willunga to the Square Water Hole Zone Substation near Mount Compass. From there, two radial 66 kV lines supply Victor Harbor and Goolwa Zone Substations.

It is clear that any outage or damage to a radial distribution line such as by a bushfire, particularly on the line from Willunga to Victor Harbor and Goolwa, will have severe consequences for these major load centres. Even without a network contingency, limitations on the distribution network have resulted in power rationing in this area in past summers, with significant resultant community agitation.

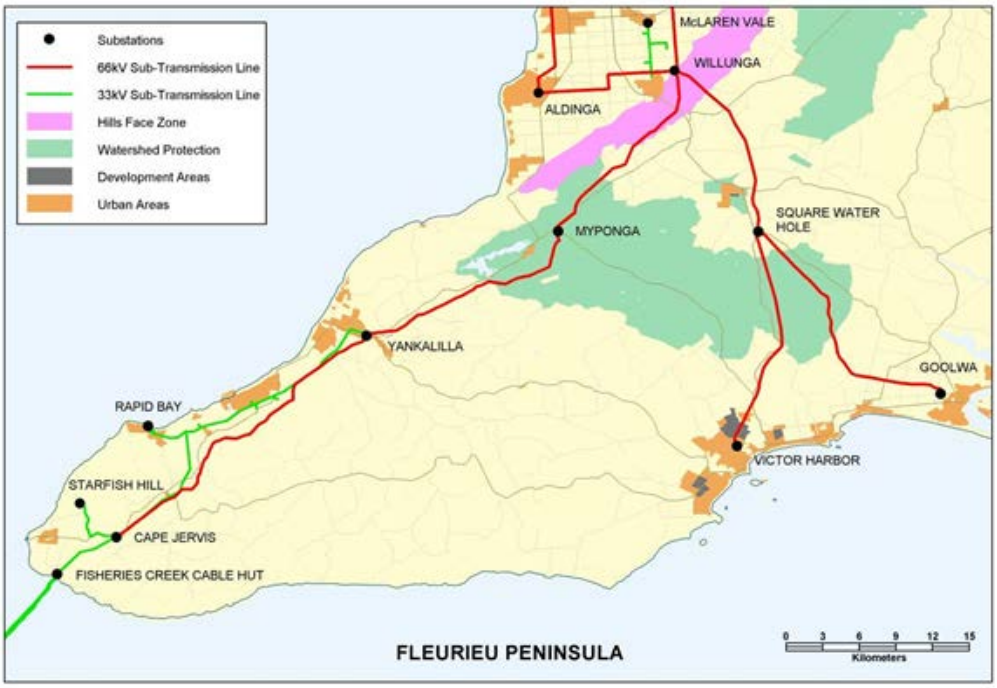

Figure 2-1 Current Fleurieu Peninsula Electricity Network

The results of the Regulatory Test[1] conducted by SA Power Networks with ElectraNet's involvement have indicated that installation of local generation near Victor Harbor and a distribution network upgrade followed by the transmission network solution will provide the lowest cost development pathway. This interim solution will temporarily defer the need for the new transmission injection into the region. The studies concluded that a transmission line solution to inject an additional independent 275 kV supply is the lowest long-term cost solution to provide secure and reliable electricity supply to the Fleurieu Peninsula.

ElectraNet has carried out a desktop investigation and has identified a potential corridor for the transmission line between Kanmantoo and Currency Creek (Figure 2-2). Further detailed studies and investigation would be required to determine a feasible specific line route.

[Please refer to confidential Appendix]

Figure 2-2 Kanmantoo to Square Waterhole and Currency Creek Preliminary Recommended Route Alignment (source: Google Earth)

2.2 Easement Considerations

When implementing a project of this nature, it is imperative to consider and acknowledge the many challenges that lay ahead in order to achieve a successful outcome. These range from, but are not limited to, the physical logistics of the proposal, State and Local Government requirements, topographical profile of the area in question and of course the economic considerations.

[1] Request for Information/Request for Proposals RFI 001/10 & RFP 001/10 issued in March 2010.

The design of a transmission line is influenced predominantly by the topography of the land over which it traverses. Not all land is suitable for the construction of transmission towers. In determining land that may be appropriate, aerial imagery and topographic mapping is used to identify potential obstacles which could affect the design process such as culturally sensitive land, dwellings and watercourses to name a few. What this often means is that line designs and corridor selection are required to be revised, which ultimately can add significant cost to a project or in some cases prevent the build in certain areas altogether.

On its intended route between Kanmantoo North and Currency Creek the new line will pass through several distinct land use precincts which include mixed farming, cropping, cereals and sheep, livestock (thoroughbreds) and rural living.

Each land use carries with it its own risk of availability and contributing factors which will influence both the timing and the cost of easement acquisition. As a rule the risk of corridor availability and the cost escalate with increases in urban density.

Table 1 below details the current land uses and approximate length of line within each sector.

Table 2-1 Existing Corridor – Sectors, Land Use and Line Length

Sector	Current Zoning	Length km	% of total
1	Hd. Kanmantoo - Mixed Farming	10	14.7
2	Hd. Strathalbyn Cereals and Sheep	17	25.0
3	Hd. Bremer - Mixed Farming	35	51.5
4	Hd. Nangkita - Mixed Farming	6	8.8
	Total	68	100.0

The Fleurieu Peninsula region consists of:

- The Western Peninsula being bounded by the Gulf of St Vincent, the Hills Face Zone south of Sellicks Beach and the South Mount Lofty Ranges. It includes among others, the townships of Myponga, Yankalilla, Normanville and Cape Jervis.
- The Eastern Peninsula being bounded by the Western Peninsula, the Hills Face Zone south of Willunga, the eastern foothills of the South Mount Lofty ranges and Encounter Bay. It includes among others, the townships of Victor Harbor, Goolwa, Currency Creek, Middleton, Port Elliot and Mount Compass. It excludes Strathalbyn.

- Kangaroo Island which is electrically supplied as part of the Western Peninsula and is therefore included in the electrical demand calculations. It will be considered as a point load at Cape Jervis.

The Fleurieu Peninsula land form is distinctively separated east-west by the Mount Lofty Ranges. The land form of the eastern half is mainly gently undulating, primarily cropping land with some remaining stands of native vegetation. The land form of the western half comprises rolling hills through the Mount Lofty ranges with substantial areas of native vegetation. The western half includes a large area of land zoned for water catchment. Much of this region is designated by the Country Fire Service (CFS) as a High Bush Fire Risk Area (HBFRA).

The economy of the Peninsula is based chiefly on service related activities along with substantial tourist and specialist agricultural sectors. There is currently low level industrial and mining activity across the region. However, based on information derived from the Department of Manufacturing, Innovation, Trade, Resources and Energy (DMITRE) it is anticipated that intensive mining activities will increase in the 2013-2018 regulated period.

A substantial portion of the Peninsula is addressed in the 30-year Plan for Greater Adelaide as being of either 'High Environmental Significance' or as being of 'Environmental Significance'. Development, particularly in the southern Mount Lofty Ranges, is therefore highly sensitive.

The Fleurieu Peninsula is a region that is also characterised by strong population growth. In 2010, the Estimated Resident Population was 42,500, an increase of 2.7 per cent on 2009. This compares with a figure of 1.2 per cent for South Australia. Alexandrina (3.0 per cent) and Victor Harbor (2.6 per cent) were amongst the fastest growing municipalities in South Australia in 2009-2010 – in fact, the only LGA that grew at a similar rate was the outer northern Adelaide municipality of Playford, which also grew by 3.0 per cent. These figures of course fluctuate significantly due to its reputation as a holiday destination for many South Australians, particularly during the summer months.

Some estimates suggest Victor Harbor's population trebles during this period, placing significant additional pressures on services and infrastructure alike. Based on current trends, it is anticipated that the Fleurieu's population will increase to approximately 58,000 by 2021 (2006 data from Australian Bureau of Statistics, Population by Age and Sex, South Australia - Electronic Delivery, ABS Catalogue No. 3235.4.55.001).

Though the region is largely rural, there are a number of historical towns along the southern coastline of the Peninsula which have since grown to the extent that urban development is virtually contiguous from Goolwa in the east to Victor Harbor, some 25 km to the west. In so far as townships go, Victor Harbor is the largest of these, with a 2011 census population of 13,841. There are a number of small towns located along the many waterways in the region, such as Cape Jervis, Normanville (on the west coast), historic Port Elliot (southern coastline) and Milang (Lake Alexandrina). Aside from this, much of the Peninsula is rural in nature, with the only other major settlements being Strathalbyn and Mount Compass in the northern part of Alexandrina Shire. These towns have grown rapidly in recent years as they are increasingly becoming part of Adelaide's commuting belt. There are new housing estates on the fringes of both towns and the influx of new residents, primarily families, is placing increased demand on the regions current electricity supply capability.

The legislative planning process itself can also present significant challenges to the implementation of electricity infrastructure, particularly at State and Local Government levels. Although land may be physically suited to accommodate transmission infrastructure, legislative constraints such as zoning may prevent its use. ElectraNet has been prudent in working with local councils to highlight the need for critical public infrastructure of this nature to be incorporated into future Development Plans. The intent being that it will allow for the optimum location of critical public infrastructure by the reservation of suitable land in advance of need before it is used and/or purchased for those land uses that may be considered to be incompatible with electricity infrastructure (i.e. dwellings).

An additional physical constraint that the project could be faced with involves mining and its associated exploration activity. As indicated in Figure 2-3, it is identified as a land use that can potentially have huge impacts on where and when a line is positioned. Acquiring land in the Kanmantoo region now for example, is imperative due to resurgence in the mining sector with the expansion and further exploration of mining activity at the Hillgrove Resources owned Kanmantoo Copper mine, currently underway.

[Please refer to confidential Appendix]

Figure 2-3 Fleurieu Peninsula Generalised Land Use 2010

3. Strategic land acquisition policy/assessment framework

This section considers the relevant parameters set out in the assessment framework in ElectraNet's Strategic Land Acquisition Policy as relevant to this specific project.

ElectraNet is required to deliver its project "at the lowest long-run costs to customers".

3.1 Efficient total network costs

Due diligence, detailed investigation and extensive stakeholder and community engagement to determine a feasible transmission route and substation sites will minimise community objection, avoid lengthy delay in obtaining timely development approval that would lead to increased cost to deliver the required network infrastructure.

By commencing this project early, ElectraNet has the opportunity to work with stakeholders early to identify issues and opportunities and manage them satisfactorily. By working with the community, the route selection process could be optimised to reduce costly re-routing or the even more expensive option of undergrounding the transmission line.

3.2 Minimise Land Cost

The timing of the land and easement acquisition will influence the cost to acquire land and easements due to changes in land use and the escalation of land value. Commencing this task early would negate the land cost increase and minimise land acquisition cost.

The baseline cost estimates for the easement compensation on this project were provided to ElectraNet by the valuation firm Maloney Field Service in May 2011.

In preparing the financial analysis used in this business case, land sales records were researched on a precinct basis to calculate a $/m² value for arm's length transactions representative of typical landholdings within each sector.

Each sale price was then adjusted to CPI (Australian All Groups) indexed to the September quarter of 2012. This ensured the $/m² values and subsequent annual growth rate calculations would be compared on a like for like basis and remain conservative.

In most localities the departure from the real cost escalators provided in Table 1 of the AER draft decision is considerable. Adoption of the AER rates presents an increased risk that the net present value (NPV) calculations provided in this report will significantly underestimate the future cost of easement compensation.

The AER's tabled rates and the compound annual growth rates calculated for each sector are summarised in Table 2 below:

Sector	Precinct Description	AER	Actual
1	Kanmantoo North Substation	4.9	8.23
2	Currency Creek Substation	4.9	12.48
3	Hd. Kanmantoo Rural Zone	4.9	10.30
4	Hd. Strathalbyn General Farming	4.9	12.91
5	Hd. Bremer Mixed Farming	4.9	10.40
6	Hd. Nangkita – Mixed Farming	4.9	12.48

Table 2 : Growth Rate Comparison (per cent)

A comparison of the impact of the different growth rate assumptions for each sector is provided in Table 3 below. It is important that the low growth rate assumptions adopted in the business case are taken into account in considering the recommendations.

Sector	Easement 2012	Easement 2021 (AER growth rates)	Easement 2021 (Actual growth rates)
1	135,000	207,641	275,082
2	135,000	207,641	389,055
3	1,419,511	2,183,324	3,430,192
4	702,783	1,080,937	2,096,103
5	4,841,734	7,446,983	11,795,670
6	265,972	409,086	647,973

Table 3 Comparison of Easement Costs Calculation Approaches

3.3 Managing Project Delivery Risk

The construction of substations and transmission lines in environmentally and politically sensitive greenfield locations carries a heightened risk of community opposition and outrage which could delay a project or ultimately bring development to a halt.

Albeit invoking compulsory acquisition will provide certainty of tenure for non-government stakeholders, it is not a preferred solution and carries with it the risk of the project becoming further embroiled in a political dispute.

Project risk is best reduced by allowing the sufficient time to negotiate agreements with landowners ahead of project construction deadlines. Certainty of location and the early commencement of landowner negotiations are key to cost effective and timely delivery of property requirements for this project.

Given the open nature of the terrain the availability risk is low to moderate, the open landscape used predominantly for cropping, grazing and horticultural uses provides opportunity for moderate re-alignment of the route.

This flexibility however needs to be balanced against the real cost of detours which will include additional easements, towers and lines which would not otherwise be required if the optimal route were available for construction.

4. Cost benefit assessment

Methodology

The feasible network and easement options and specific risk factors identified above have been evaluated based on the following assumptions:

- Analysis period – the analysis has been undertaken over a 13 year evaluation period.
- Discount rate – the sensitivity of the results to changes in discount rate has been tested through the adoption of a lower bound discount rate of 7.42 per cent reflective of the (pre-tax, real) WACC for the forthcoming regulatory period and an upper bound discount rate of 13 per cent.
- Land values – ElectraNet has applied the land escalation rates adopted by the AER in its Draft Decision. The sensitivity of the results to changes in land valuations has also been tested.
- Network project timing – network project timing has been assessed based on current demand projections and anticipated replacement project timeframes. The sensitivity of results to changes in network project timing has also been tested.
- Network options costs – the cost of network options has been estimated in accordance with the methodology described in section 5.8.8 of ElectraNet's Revenue proposal (May 2012). The sensitivity of the results to network project costs has also been tested.

Option 1- Do nothing - Deferring acquisition to 2022 and re-routing required

In this 'do nothing' option ElectraNet would defer easement acquisition until 2022, which is consistent with the ETC obligations based on current project timings.

The preliminary identified transmission line route traverses a number of areas that would be subjected to future development, in particular copper mining activities near Kanmantoo. Failure to secure a direct route through this area before 2022 would force ElectraNet to divert the route towards the Southern Mount Lofty Ranges in the east. This would add additional length to the proposed 275 kV transmission line.

It is estimated that up to 5 km of extra route length would be needed for an additional cost of $12.0m in easements and $14.5 million for lines. Other technical complications associated with the re-routing include crossing other 275kV and 132 kV power lines in the area which would also add to the overall project cost and delivery timeframes.

The costs of this option (nominal) are:

- Easement costs for 68km of Original Line (2022) $11.1 million
- Easement costs for additional 5 km (2022) $12.0 million
- 5km additional Double Circuit line costs (2025) $14.5 million

Option 2-Acquiring Land & Easements in 2013-2018 period

This option is to continue to carry out site and route selection activities and acquire the preferred substation sites and easement for the proposed transmission line route from Kanmantoo to Currency Creek in the 2013-2018 regulatory period. In this option ElectraNet will carry out the sites and route selection process, engage with the stakeholders and community as required, and acquire preferred sites and easement for the transmission line route determined in the route selection process.

This option would secure the preferred sites and easement to avoid re-routing costs and mitigate the risk of further escalation in land value and potential unavailability of land/easement.

The cost of this option is estimated at $7.9 million ($12-13).

A variation of this option was considered which involved deferring easement acquisition until 2019. This variation, however, was considered likely to result in the same circumstances as described in Option 1, but with the costs of procurement brought forward compared to that option. As a result, this variation was regarded as less risky than Option 1 in terms of project delivery, but likely to result in higher costs in present value terms.

Evaluation

Table 4 presents the results of the economic analysis demonstrating the present value cost of the options and sensitivities considered.

Table 4 – Quantitative assessment of options and sensitivity analysis

Parameter	Range	Option 1 Deferring acquisition to 2022 and re-routing required		Option 2 Acquiring Land & Easements in 2013-2018 period	
		PV Cost ($m)	**Rank**	**PV Cost ($m)**	**Rank**
Discount rate	7.42%	(19.6)	2	(15.2)	1
	10.00%	(15.8)	2	(14.6)	1
	13.00%	(12.4)	1	(13.9)	2
Land Escalation	80%	(16.9)	2	(14.7)	1
	100%	(17.9)	2	(14.9)	1
	120%	(19.0)	2	(15.2)	1
Network Project timing	2020	(20.0)	2	(14.6)	1
	2025	(17.9)	2	(14.6)	1
	2030	(16.4)	2	(14.6)	1
Network Project cost	80%	(16.8)	2	(14.6)	1
	100%	(17.9)	2	(14.6)	1
	120%	(19.0)	2	(14.6)	1

On the basis of the quantitative cost benefit analysis, Option 2 involving the acquisition of easements has been identified as the most prudent and efficient option under all sensitivities investigated except under the high discount rate. For a discount rate of 7.42 per cent, the cost of Option 2 is $15.2 million compared to $19.6 million for Option 1. Furthermore, the project delivery risks associated with Option 2 are substantially lower.

On balance, it is ElectraNet's view that Option 2 is the most prudent and efficient option that balances long-run cost and the maintenance of ongoing supply reliability to consumers.

5. Recommendation

On the basis of the quantitative cost benefit analysis, Option 2 involving the acquisition of easements has been identified is the most prudent and efficient option that balances long-

run cost and the maintenance of ongoing supply reliability to consumers. There are no particular qualitative considerations that would suggest that the other options should be preferred despite the NPV analysis presented above.

The total cost of this option in the forthcoming regulatory control period has been estimated at $7.2 million ($2012-13).

The proposed scope of works comprises:

- Route assessment and investigations.
- Identify suitable location for substations
- Acquisition cost of 50m easement for 68 km and substation land = $7.2 million ($2012/13).

ElectraNet Transmission Network Revised Revenue Proposal

EC 11383 Project Business Case Summary

Mount Barker Triple Circuit Easement Acquisition

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Mount Barker Triple Circuit Easement Acquisition

Project Number: EC.11383 **Category:** Easements/Land

Estimated Cost: **Required Completion Date:** 2015

Total project cost: $5.97 million ($12-13)

2013-2018 project cost: $4.3. million ($12-13)

1. Introduction and purpose

This project will secure a widened easement corridor through the urban growth area of Mount Barker, to enable the replacement of the existing 275kV transmission line at the end of its life, adjacent to the existing line.

The acquisition of easements and property rights before the land is developed mitigates the cost of purchase and provides the impetus for subdivision designs that efficiently provide for the future needs of the transmission network.

This approach is aligned with the:

- Electricity Transmission Code requirement under 6.3.1 Planning Approvals and Easement acquisition.
- Strategic Land and Route Acquisition Policy, which includes the following objectives:
- Secure Land Availability
- Minimising total network costs.

The new Mount Barker South substation is a key hub for electricity supply to the Eastern Hills Region and the triple circuit 275kv / 132kV connection to it is a critical part the South Australian Transmission Network.

Urban growth in the Mount Barker Area is expected, following the Mount Barker Urban Growth Ministerial Development Plan Amendment (MDPA) gazetted in 2010. The 2010 rezoning places the new Mount Barker South substation well inside the expanded residential zone.

Whereas the MDPA recognises that development should consider the future needs of the transmission network, it does not provide the security of tenure to offset the risk of the urban development compromising a future line rebuild or augmentation.

With the land re-zoned and already contracted to development consortia, the preservation of corridor sufficient for future network needs is a priority.

2. Background - network options and easement considerations

The following provides additional background information on the network project options and specific issues arising in relation to easement acquisition. This background information forms an important input to the risk assessment under the Strategic Land Acquisition Policy, and cost benefit analysis presented in sections 3 and 4, and the recommendation that follows.

2.1 Credible Network Options

The current 275kV triple circuit transmission line that passes through Mount Barker will at some point in the future require replacement, due to asset condition. This is anticipated to occur sometime in the next 20-30 years.

Although this date remains relatively far off, the growth of residential development in the Mount Barker area means that a failure to secure a widened easement along the existing corridor in the near future would result in a requirement for substantial undergrounding of the replacement line. This would substantially increase the project costs.

There are very limited viable network options for replacement of the existing 275kV triple circuit transmission line. The most economic and efficient future replacement will involve building adjacent to the existing line and decommissioning the current triple circuit line when the replacement line has been commissioned.

It would not be possible to de-energise this power line to facilitate an in situ rebuild within the existing 50m easement, given that it forms a integral part of the South Australian transmission network and the need to maintain continuous electricity supply.

The risk of future land unavailability is the key driver of this project, to ensure that two of the most important 275 kV circuits in the system are able to be replaced in the most efficient manner when required.

2.2 Easement Considerations

Table 1 details the current land use zones and approximate length of the current 275 kV transmission line. All of the line is now zoned as Future Urban Growth – Residential.

Table 1 Existing Corridor –Sectors, Land Uses and Line Length

Sector	Current Zoning	Availability Risk	Length km	% of total
1	Future Urban Growth – Residential	High	4.1	100.0

The 30 Year Plan for Greater Adelaide released in 2009, signalled the Mount Barker area as one of the earliest earmarked for significant residential development to accommodate Greater Adelaide area forecast population increase of 1.85 million people by 2036.

To facilitate the rezoning and planning process the State Government released a Ministerial Development Plan Amendment (DPA) in 2010. The DPA has now been gazetted rezoning of approximately 1310 hectares of land on the urban boundary of the

township of Mount. Barker for the purpose of accommodating an additional 10,000 people over the next 15 years. Developer interest is strong with a number of land division applications recently having been received by the local council intending to establish large residential developments in the vicinity of the existing power line.

ElectraNet has proactively worked with the State government and local council to establish land use policy that anticipates the need for an expansion of the existing easement corridor on the southern side of the transmission line to facilitate orderly, efficient and sustainable replacement of the line in the future. ElectraNet's involvement has included actions to influence both future land use zoning and to ensure compatible development is planned for land adjacent to both the existing and proposed future transmission lines.

Through these actions ElectraNet has pursued all available regulatory and legislative options available to it in order to manage network risks in the absence of easement requirements not being met. As an outcome of ElectraNet's proactive efforts in the land use planning area, support for future network needs has been acknowledged in local planning policy.

The District Council of Mount Barker Development Plan acknowledges the need for development in proximity of the existing power line to be cognisant of the future need to replace this infrastructure. Figure 1 illustrates the extended urban growth area in relation to ElectraNet's existing and proposed future infrastructure needs.

In addition, the Mount Barker Development Plan includes Principles of Development Control in recognition of need for development to consider the provision for the duplication of the powerline:

> 55. Development in proximity to infrastructure facilities should be sited and be of a scale to ensure adequate separation to protect people and property.
>
> 56. Development should make provision for the duplication of high voltage power lines south of the existing easement.

Whilst the above policy supports the intention to preserve a corridor for future replacement of the transmission line, it does not guarantee that the land will be put to that purpose. Planning policy in this respect provides conceptual guidance as to intent but it does not, and cannot, confer development rights for such purpose. Without ownership of an expanded easement in the urban growth area ElectraNet is not afforded reasonable expectations of use entitlement to the proposed corridor despite development plan designation. It is only with ownership of the expanded easement, as proposed, that ElectraNet and consumers can be offered reasonable expectations that the corridor will be available for replacement of the transmission line, when the need arises.

Developers have already lodged or are currently very active in drafting land division plans for several large parcels of land that have the potential to impact upon ElectraNet's ability to acquire easements for future line replacement in the urban growth area[1] . Without provision of an expanded easement, developers will seek to maximise developable land ratios in sub divisions including creating building parcels in the area immediately adjacent to the current transmission line easement. Without an easement over this corridor there are no legal means by which a developer can be prevented from following such a course of action.

[1] See attachment – Flaxley Road Development Proposal.

In summary, there is a material risk that the land rights necessary to allow the future replacement of the Mount Barker 275 kV transmission line adjacent to the existing line will be unavailable beyond the forthcoming regulatory control period, leading to a need for a more expensive network option for the eventual replacement of this line.

[Please refer to confidential Appendix]

Figure 1 Mount Barker urban growth area and ElectraNet / SA Power Networks infrastructure

3. Strategic Land Acquisition Policy – assessment framework

This section considers the relevant parameters set out in the assessment framework in ElectraNet's Strategic Land Acquisition Policy, as relevant to this specific project.

3.1 Land Availability Risk

The key driver for this project is land availability risk.

Current and projected development within the rezoned urban boundary of Mount Barker is aimed at supporting a population increase of 10,000 people over the next 15 years. In anticipation of this development large land holdings in proximity of the existing transmission line have been acquired by developers over recent years and are now subject of land division proposals and applications.

It is critically important that ElectraNet continue the process of identifying and acquiring easements in the 2013-2018 period to avoid urban encroachment upon the transmission line corridor. Easements acquired over land being developed for housing will provide ElectraNet with secure rights to rebuild the existing power line within the widened easement when the network need arises. Delaying acquisition of the required easement beyond 2018 is highly likely to result in the land not being available for an overhead line replacement option.

3.2 Efficient total network costs

ElectraNet is required to satisfy the capital expenditure objectives in clause 6A.6.7 of the Rules efficiently and prudently. In particular, ElectraNet seeks to minimise the total costs of satisfying the capital expenditure objectives, including the cost of easement acquisition. For each transmission project, it is important to manage the risks arising from the interplay between network expenditure and easement acquisition costs, particularly in relation to the timing of easement acquisition. In the case of this specific project, land availability risk means that a failure to acquire the easements in the near future would lead to an increase in the ultimate costs of the network project.

In particular, network costs may increase as a result of:

- **Undergrounding**. It would be necessary to underground sections of the replacement transmission line, in the absence of secure easement rights. Based on recent cable installation undertaken by ElectraNet the cost of undergrounding is $4.95 million per kilometre plus $2 million for each transition station. In this particular

case 4 circuits would be required to be undergrounded, substantially increasing the overall network project cost.

- **Longer line route**. Due to high density development in this area, ElectraNet may not be able to secure an easement through the shortest distance for the line under deferred acquisition options. This poses a risk that additional costs will result under deferred easement acquisition options as a consequence of selecting line routes through available land parcels, resulting in increased distance. However, in the case of this specific project, the availability of feasible alternative overhead transmission line route is extremely problematic, due to urban development, surrounding areas of native vegetation and the network connection point established by the Mount Barker South 275/66kV substation. Essentially the only feasible power line rebuild route through the Mount Barker area is adjacent to the existing easement.

Easement costs may be higher than necessary as a result of:

- **Changing network requirements.** The early acquisition of easements may prove unnecessary if the network project requirements change. However in the case of this specific project, the eventual replacement of the existing 275kV line is inevitable, due to its finite asset life.
- **Holding costs.** The early acquisition of easements is not costless. In addition to requiring management time and resources to negotiate easement acquisition, there is a holding cost in acquiring the easement in advance of the project requirements. However, where land prices are expected to increase rapidly, the holding costs may be offset by lower acquisition costs. The risk of land use changes and rezoning poses a risk of step increases in land value under deferred acquisition options.

3.3 Cost benefit analysis

Methodology

The feasible network and easement options and specific risk factors identified above have been evaluated based on the following assumptions:

- Analysis period – the analysis has been undertaken over a 30-50 year evaluation period.
- Discount rate – the sensitivity of the results to changes in discount rate has been tested through the adoption of a lower bound discount rate of 7.42 per cent reflective of the (pre-tax, real) WACC for the forthcoming regulatory period and an upper bound discount rate of 13 per cent.
- Land values – ElectraNet has applied the land escalation rates adopted by the AER in its Draft Decision. The sensitivity of the results to changes in land valuations has also been tested.
- Network project timing – network project timing has been assessed based on anticipated replacement project timeframes. The sensitivity of results to changes in network project timing has also been tested.
- The cost of underground cable has been established from the recently completed Adelaide Central Reinforcement Project.
- Network options costs– the cost of network options has been estimated in accordance with the methodology described in section 5.8.8 of ElectraNet's

Revenue proposal (May 2012). The sensitivity of the results to network project costs has also been tested.

Option 1 - Acquiring Full Easement by 2018

This option involves continuing to secure the easement through the designated urban growth area by 2018 to permit the future construction of an overhead 275 kV double circuit line. This will require 4.1km of easement to be secured traversing the land types identified in Table 1 above at their associated land values.

The cost and timing of this option is estimated as follows:

- Acquisition cost of 50m easement for 4.1km = $5.7 million ($12-13)

Option 2 – Deferred easement & underground cable

This option is the 'do nothing' option and involves deferral of easement acquisition until the time of replacement (estimated as 2050 in the central case). Under this option, the transmission line will need to be undergrounded due to urban development and other incompatible land uses occurring. This projected development will make it unviable for ElectraNet to secure an overhead easement for this portion. This will require approximately 6 km of line to be constructed underground.

ElectraNet has assumed that the length of cable required will be approximately 20% longer than its overhead line equivalent. This is to account for minor deviations in alignment and variances in topography and elevation. An additional 1km (2 x 500m) is included in the cable estimate to provide for the residential buffer interface between the transition station ends.

This rate is consistent with the cable requirements experienced in the Adelaide Central Reinforcement project over relatively flat terrain. It is also conservative as it presumes the convenient siting of overhead/underground transition points at each end and that only minor route deviations will be required.

Current costing based on recently completed cable installations by ElectraNet indicates that cost of undergrounding each circuit is approximately $4.95 million per kilometre plus $2 million for each transition station. This option would require four 275kV circuits.

The cost and timing of this option is estimated as follows:

- Incremental cost of 6 km 275 kV Triple circuit underground line in 2050 = $194.5 million (inclusive of underground easement cost and transition stations).

Evaluation

Table 2 presents the results of the economic analysis demonstrating the present value cost of the options and sensitivities considered.

Table 2 – Quantitative assessment of options and sensitivity analysis

Parameter	Range	Option 1 Acquiring Full Easement by 2018		Option 2 Deferred easement & underground cable	
		PV Cost ($m)	Rank	PV Cost ($m)	Rank
Discount rate	7.42%	(5.7)	1	(20.1)	2
	10.00%	(5.5)	1	(9.9)	2
	13.00%	(5.2)	2	(4.9)	1
Land Escalation	80%	(5.3)	1	(9.0)	2
	100%	(5.5)	1	(9.9)	2
	120%	(5.6)	1	(11.1)	2
Network Project timing	2040	(5.7)	1	(16.8)	2
	2050	(5.7)	1	(9.9)	2
	2060	(5.7)	1	(6.8)	2
Network Project cost	80%	(5.7)	1	(8.8)	2
	100%	(5.7)	1	(9.9)	2
	120%	(5.7)	1	(11.0)	2

On the basis of the quantitative cost benefit analysis, Option 1 has been identified is the most prudent and efficient option under all sensitivities investigated except the high discount rate. For a discount rate of 7.42 per cent, the cost of Option 1 is $5.7 million compared to $20.1 million for Option 2.

On balance, it is ElectraNet's view that option 1 is the most prudent and efficient option that balances long-run cost and the maintenance of ongoing supply reliability to consumers.

4. Recommendation

On the basis of the quantitative cost benefit analysis, Option 1 involving the early acquisition of easements has been identified as the most prudent and efficient option that balances long-run cost and the maintenance of ongoing supply reliability to consumers. While the early acquisition of the easement is well in advance of the network project, the difference in the cost of the options is highly material in net present value terms. On this basis, the early procurement of the easement is justified.

The total cost of this option in the forthcoming regulatory control period has been estimated at $5.7 million ($2012-13).

The proposed scope of works comprises:

- Acquisition cost of 50m easement for 4.1 km = $5.7 million ($2012-13).
- Acquisition of the required rights of way to access towers for construction and ongoing maintenance.

ElectraNet Transmission Network Revised Revenue Proposal

EC 11461 Project Business Case Summary

Cultana to Stony Point Easement Acquisition

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Cultana to Stony Point Easement Acquisition

Project Number: EC.11461 **Category:** Easements/Land

Estimated Cost: **Required Completion Date:** 2016

Total project cost: $1.1 million ($12-13)

2013-2018 project cost: $0.8 million ($12-13)

1. Introduction and purpose

The load in the Eyre Peninsula region is primarily related to small scale mining, residential and commercial activities, with seasonal primary industry activity (grain handling). The load in the Port Bonython area is however primarily industrial with a small amount of residential located at Point Lowly.

State government mineral resources forecasts indicate that the balance of load on the Eyre Peninsula will move towards large scale mining activities, dominated by iron ore extraction and handling over the next 5-10 years. Recent announcements by the State government[1] and also Flinders Ports[2] regarding the progress of the application to establish a deep water port at Port Bonython indicate approvals to proceed to Environmental Impact Statement (EIS) and planning approval have been granted and that construction of the jetty, ore loading facilities and other port amenities will be complete by around 2016/17.

The recent Resources and Energy Infrastructure Demand Study published by the Resources and Energy Infrastructure Council (RESIC) supports the view that there will be significant industrial development around Port Bonython. The Study highlights a positive economic outlook in the longer term and prospect of significant new mining loads, requiring connection to the transmission network[3].

SA Power Networks' high load growth forecasts include a step load increase at the Port Bonython connection point in 2016/2017. Several other connection inquiries have also been received for the Port Bonython region, which could increase the demand requirements to in excess of 200 MW.

Existing network infrastructure in the area consists of a double circuit 275 kV line from Davenport to Cultana and a radial 132 kV circuit from Cultana to Stony Point 132/11 kV substation. The underlying distribution network consists of a few 11 kV distribution lines that radiate from and are fed from the Stony Point 132 kV substation, which is located on land owned by SANTOS.

Increasing load growth at Stony Point in the near term will lead to network limitations as the load approaches the thermal capability of the existing 132 kV circuit to Stony Point. It is

1 http://www.flindersports.com.au/pdf/09082012SAGovernmentMediaReleaseProposedDeepSeaPortFacilityToUndergoEnvironmentalAssessment.pdf, November 2012, accessed December 2012

2 http://www.flindersports.com.au/pdf/09082012MediaReleaseAnotherMajorMilestoneReachedForCrucialSAInfrastructureProject.pdf, November 2012, accessed December 2012

3 *Resources and Energy Infrastructure Demand Study*, Resources and Energy Infrastructure Council (RESIC), November 2011

recognised that a major transmission system augmentation and a replacement substation will be required in order to accommodate these projected step-load increases. The existing Stony Point substation, with its two 15 MVA 132/11 kV transformers does not have sufficient capacity to support the higher calculated demand at Stony Point. The identified network project EC.12802 Cultana to Stony Point 275 kV Augmentation includes the following elements:

- Construct a double circuit 275 kV line from Cultana to Stony Point;
- Establish a substation with 2 x 275/132 kV transformers;
- Retire the Cultana to Stony Point 132 kV line.

1.1 Project description

The scope of this project is as follows:

- Acquisition of a new easement corridor covering a distance of approximately 25km, which closely follows the alignment of the existing 132 kV transmission line in order to minimise the required length of the new line.
- The easement corridor will be a minimum of 50m in width to ensure compliance with the prescribed safe clearance distances for a 275kV line are maintained, including in relation to the underground high pressure gas pipeline, existing industrial improvements and Defence land to the north.
- Acquisition of land on which to site a new substation.

ElectraNet is required to comply with the:

- ETC requirement under 6.3.1 Planning Approvals and Easement Acquisition, and
- Strategic Land Acquisition Policy, of which the following assessment parameters are the most relevant for this project:
  - Manage project delivery risk
  - Minimise network costs
  - Minimise land costs
  - Secure land availability.

Compliance with these two documents helps to minimise risks inherent in the locality that are associated with the limited availability of suitable land, the timing of land acquisitions and development approval process in sensitive coastal areas.

The project is required to meet the Rules expenditure objective to meet the expected demand for prescribed transmission services and comply with all applicable regulatory obligations or requirements associated with the provision of prescribed transmission services.

Securing an optimal easement route now will provide the most cost effective network solution. Should the acquisition of this easement be deferred it is probable that a portion of the transmission infrastructure will need to be delivered as an underground cable to avoid

the rebuild or relocation of incompatible industrial plant likely to be established in the area[4]. The costs of the over-under transition stations and the underground cable will significantly increase network costs. Securing an optimal easement route now will also result in the shortest possible route, minimising the resultant network costs.

In addition, there is limited availability of land suitable for industrial development in this precinct. As the density of land use increases, the scarcity of available land will drive up the value of the land that remains, increasing easement compensation and project capital costs.

2. Background - network options and easement considerations

2.1 Credible Network Options

The existing transmission infrastructure supplying the Port Bonython area (i.e. a radial 132 kV line from Cultana, and a 132/11 kV substation at Stony Point located on land leased from Santos) has inadequate capacity to supply the multiple future developments that are projected there in the medium term.

Port Bonython is identified as the location of several major infrastructure investments which will underpin the expansion of mining activity on the Eyre Peninsula and the expansion of Olympic Dam. These include *inter alia* Flinders Port's proposed bulk iron ore port, the Port Bonython Diesel Fuel terminal and BHP Billiton's desalination plant for the Olympic Dam expansion. In turn these major projects will give rise to ancillary industrial users relocating to provide support to the mining sector. The proximity of existing transport corridors and the new deep water port are fundamental to the choice of location.

The proposed new transmission line and substation will service both the existing load and the new industrial projects planned for the area.

As the existing load is at the end of a radial line, decommissioning the existing line and rebuilding in-situ is not a valid solution as it would leave end users without supply. As a consequence, an additional easement will need to be acquired.

The likely timing of these developments strongly suggests that the land and easement acquisition should be completed prior to 2016 to preserve the ability to undertake such supply reinforcement. 2016 is the date when the increased industrial activity in the locality is expected to occur, beyond which the cost of easement compensation and/or alternate network solutions will escalate. The industries proposing to establish a presence at Port Bonython are both the catalysts for augmented transmission infrastructure, but are also competitors for suitable land in the most viable locations. Securing land and easements now will ensure that ElectraNet is able to meet regional power supply needs with the most cost-effective locational solutions.

The existing substation is located inside the Santos petroleum facility. Notwithstanding the unsatisfactory network security issues that stem from the existing location, the opportunity

[4] Safe clearance distances prescribed in the Electricity (General) Regulations SA 2012 prohibit the erection of structures or improvements within a 50m wide horizontal corridor determined by the centreline of an overhead 275 kV transmission line. Legislation prevents ElectraNet from erecting a new line that would create encroachments on these mandatory setback distances

to expand or augment the existing substation is constrained by the Santos plant and equipment.

In short there is no room to expand on the existing site should it be required. Contemporary safety and setback requirements exacerbate the issue with greater separation distances now required between plant and equipment.

The optimal location for a new substation is at Stony Point.

2.2 Easement Considerations

The required transmission line easement would be 50 metres wide and 25 km long.

The line will traverse a mix of land uses and zones, the dominant and most highly valued area is at the eastern end where the line will pass through a highly industrialized area which includes the existing substation and petrochemical plant. Land in the vicinity of Port Bonython is zoned Special Industry (Hydrocarbons). This zoning would support the development of substation infrastructure, provided that a suitable site is available.

The Cultana Defence Training Area is the dominant land use north of the existing line. A rebuild through the Defence land is not available to ElectraNet. The area is used for training exercises and has restricted access. It is understood some portions of the land include unexploded ordinance and are unsuitable for transmission line development.

The Eyre and Western Region Strategy Plan is a high level guide to development produced by the Department of Planning Transport and Infrastructure (DPTI). The plan has recognised existing high voltage electricity power lines in the region, nominating corridors over some of the existing easements on the Peninsula. No corridor was nominated in this plan for the existing Cultana to Stony Point easement. Furthermore, such a corridor, if it were in place, would indicate conceptual intention only and would not secure development rights for any future transmission line.

As mentioned in section 1.2.1, a new line must be built and commissioned before the existing line can be switched off and decommissioned. Hence, a new easement must be acquired now to preserve the necessary strategic easement for the future development.

On its 25 kilometre route between Cultana and Stony Point the line passes through several distinct land use precincts and planning zones varying from open rangelands and grazing to light industrial and industrial activities. These are identified on Figure 1 below.

[Please refer to confidential Appendix]

Figure 1: Land Uses Cultana to Stony Point

Each of these land use activities carries its own risk of availability and special considerations that contribute to the cost of easement compensation. As a general rule the risk of corridor availability and the cost of easement compensation escalate with increases in the intensity and density of land uses.

For the purpose of understanding and qualifying the threats, risks and vulnerabilities of the network applicable to each precinct, the line route has been reviewed and assessed in four

sectors. Table 1 details the current dominant land use and approximate length of the transmission line within each sector.

Table 1: Existing Corridor –Sectors, Land Uses & Line Length

Sector	Dominant Land Use	Availability risk	Length km	% of total
1	Cultana Pastoral Rangelands	Low	8.9	35.6
2	Cultana Pastoral Rangelands	Low	8.8	35.2
3	Industrial 1	High	5.6	22.4
4	Industrial 2	High	1.7	6.8
	Total		25.0	100.0

3. Strategic land acquisition policy/assessment framework

This section considers the relevant parameters set out in the assessment framework in ElectraNet's Strategic Land Acquisition Policy, as relevant to this specific project.

3.1 Satisfy regulatory obligations

This project is linked to network project 'EC.12802 Cultana to Port Bonython 275 kV Augmentation'. The new line will be required when there is a non-Santos related load increase in this area. The current expected timing of the network development could be as early as 2016, but will depend on the spot load development.

3.2 Manage project delivery risks

Sector	Easement 2012	Easement 2021 (AER growth rates)	Easement 2021 (Actual growth rates)
1	135,000	207,641	275,082
2	135,000	207,641	389,055
3	1,419,511	2,183,324	3,430,192
4	702,783	1,080,937	2,096,103
5	4,841,734	7,446,983	11,795,670
6	265,972	409,086	647,973

Table 3 Comparison of Easement Costs Calculation Approaches

3.3 Managing Project Delivery Risk

Should the acquisition of easements not proceed in the near future, there is a risk that the easement corridor and the site required to deliver the most efficient transmission solution will not be available when construction of the transmission line is required.

This will add additional cost and risk of delay to the network project, as a new line design solution will be required in order to address incompatible land uses and route constraints, likely to be established in the hiatus.

3.4 Efficient total network costs

ElectraNet is required to deliver its project at lowest long-run costs to customers. Delays in initiating easement acquisition will compromise the availability of the easement corridor, with additional costs both for the easement and for the network installation.

In particular this may result in a section of the transmission network being installed as an underground cable, with transition infrastructure required at each overhead to cable interface.

Based on recent cable installation undertaken by ElectraNet the cost of undergrounding is approximately $4.95 million per kilometre, plus $2 million for each transition station. In comparison, the cost of a double circuit overhead 275 kV line with lattice steel towers is currently $2.4 million per kilometre.

In addition, where a delay in easement acquisition would mean that the Stony Point site is no longer available for the substation, alternative sites on which the substation could be located are likely to be some distance from the bulk of the load requirements and add additional length to the line. This would again raise the overall cost of the option.

3.5 Minimise land costs

The timing of the land and easement acquisition will influence the cost of those acquisitions, due to potential changes in land use leading to a step-change in land values, as well as future escalation of land values.

Land costs are a determinant of the easement compensation a landowner is entitled to receive. Though specific to each case, the heads of compensation – injurious affection, severance, and diminution of value are inextricably linked to underlying land values. An escalation in the cost of easement compensation is a natural consequence of increases in land values. While an easement purchase has opportunity costs, in South Australia easements are not subject to rates or land taxes and therefore not burdened by ongoing operational costs.

The baseline cost estimates for the easement compensation on this project were provided by the valuation firm Maloney Field Service in May 2011.

ElectraNet has also researched land sales records on a regional basis, in order to calculate a $/m² value for arm's length transactions representative of typical landholdings within each sector.

Each sale price was then adjusted to CPI (Australian All Groups) indexed to the September quarter of 2012. This ensured the $/m² values and subsequent annual growth rate calculations would be compared on a like-for-like basis.

In most localities the departure from the real cost escalators provided in Table 1 of the AER draft reset decision is considerable, as shown in Table 2

Table 2 Growth Rate Comparison

Precinct Description	AER	Actual
Cultana Pastoral Rangelands	4.9	5.06
Industrial 1	5.9	15.30
Industrial 2	5.9	8.80

ElectraNet has adopted the AER escalation rates for the purpose of net present value (NPV) calculations presented in Section 1.4. ElectraNet notes that this is a conservative approach, which is likely to underestimate the future costs of easement compensation.

3.6 Secure land availability

Route options are constrained by pre-existing infrastructure and competing land uses, including the Cultana Defence Zone. The increase in mining activity in the area and its accompanying infrastructure requirements have the potential to lock out a route for the new line.

Structures, railway lines, conveyors, above ground pipelines, stockpiles, etc. built in the path of a new line could result in costly line diversions or prohibit the construction a new line in that location.

Should these developments occur before ElectraNet has acquired the easements there would no longer be a corridor available for an above ground transmission line. A viable transmission corridor must be obtained early to ensure competing land uses do not compromise the ability to provide a cost effective design solution for the new line.

Additional risks associated with this acquisition include approvals for native vegetation, flora / fauna and cultural heritage. Sensitivities associated with the coastal alignment present high project delivery risk, through the potential for some areas of high ecological value being off limits for infrastructure development or adding extraordinary capital costs to mitigate potential environmental impacts.

Research related to these issues will direct the final route of the easement. Commonwealth Government interests in Cultana may also result in delayed or lengthy timeframes required for decision making. These issues contribute to the critical need to continue progressing easement acquisition in the 2013-18 period.

The assessed availability risk for each sector is summarised in Table 3 below.

Table 3 Sector availability risk

Sector	Dominant Land Use	Risk
1	Cultana Pastoral Rangelands	Low
2	Cultana Pastoral Rangelands	Low
3	Industrial 1	High
4	Industrial 2	High

4. Cost benefit assessment

Methodology

The feasible network and easement options and specific risk factors identified above have been evaluated based on the following assumptions:

- Analysis period – the analysis has been undertaken over a 9 year evaluation period.
- Discount rate – sensitivity of the results to changes in discount rate has been tested through the adoption of a lower bound discount rate of 7.42% reflective of the (pre-tax, real) WACC for the forthcoming regulatory period and an upper bound discount rate of 13%.
- Land values – ElectraNet has applied the land escalation rates nominated by the AER in its Draft Decision for the purpose of NPV analysis. The sensitivity of the results to changes in land valuations has also been tested.
- Network project timing – the most likely timing of network project timing is 2021, but it could be earlier depending on the timing spot load developments. The sensitivity of results to delays in network project timing has also been tested.
- The cost of underground cable has been established from the recently completed Adelaide Central Reinforcement Project.
- Network options costs– the cost of network options has been estimated in accordance with the methodology described in section 5.8.8 of ElectraNet's Revenue proposal (May 2012). The sensitivity of the results to network project costs has also been tested.

Option 1 – Easements & Substation Land Acquired in 2013-18 Period

This option involves securing easements from Cultana to Stony Point for its full length as well as the associated substation land by 2016, to permit the construction of an overhead 275 kV double circuit line and associated substation.

The acquisition would be preceded by route investigations and negotiations with third parties, especially the State government and other landowners in the area. The current master planning process being undertaken for this area by the State government will include input and negotiations from ElectraNet.

The cost of this Option is $1.1m ($12-13).

Option 2 – Defer Easement Acquisition & Partial Underground Cable

Under this 'do nothing' option, ElectraNet will defer securing the easement until 2019 in accordance with the ETC obligations and the likely timing of the network project.

As discussed above, it is likely that there will be significantly increased development in this region. This will both increase the cost of the easement and land acquisitions, and also potentially require the undergrounding of sections of the line.

Specifically, the consequences of an overhead line route not being available could mean a 7.3km section of the power line would need to be undergrounded at a current cost of $4.95m per kilometre per cable, plus $2m for each transition station adding considerable costs to the network project. The length of this cable section relates to the restricted access anticipated in the vicinity of the Stony Point substation and immediate surrounds.

The cost of this option is estimated as follows (nominal):

- The incremental cost of 7.3 km 275 kV double circuit underground cable is $29.2 million (inclusive of underground easement cost and two transition stations) in 2021
- Remaining easement costs for overhead sections of $1.2 million in 2019.

Evaluation

Table 4 presents the results of the economic analysis demonstrating the present value cost of the options and sensitivities considered.

Table 4 Quantitative assessment of options and sensitivity analysis

Parameter	Range	Option 1		Option 2	
		Easement & Substation Land Acquired in 2013-18		Defer Easement Acquisition & Partial Underground Cable	
		PV Cost ($m)	Rank	PV Cost ($m)	Rank
Discount rate	7.42%	(1.0)	1	(17.5)	2
	10.00%	(1.0)	1	(14.5)	2
	13.00%	(1.0)	1	(11.8)	2
Land Escalation	80%	(1.0)	1	(14.5)	2
	100%	(1.0)	1	(14.5)	2
	120%	(1.0)	1	(14.6)	2
Network Project timing	2020	(1.0)	1	(15.6)	2
	2021	(1.0)	1	(14.5)	2
	2022	(1.0)	1	(13.5)	2
Network Project cost	80%	(1.0)	1	(11.8)	2
	100%	(1.0)	1	(14.5)	2
	120%	(1.0)	1	(17.2)	2

5. Recommendation

On the basis of the quantitative cost benefit analysis, Option 1 involving the early acquisition of easements from Cultana to Stony Point has been identified as the most prudent and efficient option that balances long-run cost and the maintenance of ongoing supply reliability to consumers. In particular, Option 1 is materially lower cost across all sensitivities.

The total cost of this option in the forthcoming regulatory control period has been estimated at $0.8m ($2012/13).

The proposed scope of works comprises:

- Route assessment and investigations.
- Identify suitable location for substations
- Acquisition cost of 50m easement for 25 km and substation land = $0.8million

6. Attachment

Appendix A Port Bonython Proposed Infrastructure

[Please refer to confidential Appendix]

ElectraNet Transmission Network Revised Revenue Proposal

EC 11630 Project Business Case Summary

Eyre Peninsula Reinforcement-Land and Easement Acquisition

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Eyre Peninsula Reinforcement - Land and Easement Acquisition

Project Number: EC.11630

Category: Easements/Land

Estimated Cost:

Total project cost - $12.4m ($12-13)

2013-18 project cost - $10.4m ($12-13)

Required Completion Date: 2015

1. Introduction and purpose

The load in the Eyre Peninsula region is primarily related to small scale mining, residential and commercial activities, with seasonal primary industry activity (grain handling). The towns located in the Eyre Peninsula region to the west of Adelaide are experiencing slow growth, particularly in the regional service centres of Whyalla, Cowell, Port Lincoln and Ceduna.

State government mineral resources forecasts indicate that the balance of loading on the Eyre Peninsula will move towards large scale mining activities, dominated by iron ore extraction and handling over the next 5-10 years. The rate of growth on the Peninsula is forecast to increase strongly, particularly in Whyalla, Cowell and Port Lincoln as the anticipated mining developments in that region proceed.

The recent Resources and Energy Infrastructure Demand Study published by the Resources and Energy Sector Infrastructure Council (RESIC)[1] highlighted the positive economic outlook in the longer term and prospect of significant new mining loads requiring connection to the transmission network.

The existing network infrastructure in the area consists of a double circuit 275 kV line from Davenport to Cultana and two single circuit 132 kV lines from Cultana to Whyalla 132 kV substation. In addition, radial 132 kV circuits lead from Cultana to Stony Point and from Cultana to Yadnarie and then to Port Lincoln 132 kV substations. A further 132 kV radial line runs west from Yadnarie to Wudinna 132 kV substation.

The underlying distribution network consists of a mixture of 66 kV and 33 kV sub-transmission lines on the Peninsula that radiate from and are fed from the Whyalla, Stony Point, Yadnarie, Wudinna and Port Lincoln 132 kV substations. In addition, there is a diesel fired gas turbine power station located at Port Lincoln which is contracted to provide network support to the transmission network with three units (two located on the 132 kV bus and one located on the 33 kV bus) with a nominal rating of 25 MW and a maximum contracted summer output of 49.5 MW.

It is anticipated that section of the existing 132kV radial line from Whyalla to Port Lincoln will require replacement due to age and condition from around 2024.

[1] *Resources and Energy Infrastructure Demand Study*, Resources and Energy Infrastructure Council (RESIC), November 2011

A RIT-T assessment is currently in progress to assess options to address identified network limitations on the Eyre Peninsula. A new 275/132kV substation is proposed to be built north of Port Lincoln (currently named Port Lincoln North).

On its 285 km route between Cultana and Port Lincoln the existing line passes through several distinct land use precincts which include rangelands, conservation parks, cereal cropping and grazing country, the expanding urban areas of Port Lincoln through rural living and residential zones.

Each land use carries with it its own risk of availability and contributing factors which will influence both the timing and the cost of easement acquisition. As a rule the risk of corridor availability and the costs escalate with increases in urban density. On this project additional risks of delay and availability are presented by the large tracts of conservation parks and reserves which may trigger the need for seasonal based environmental assessments as part of the development approval process.

Table 1 below details the current land uses and approximate length of line within each sector. For the purpose of understanding local issues of risk specific to locality, land values in the cereal and grazing lands were assessed on the basis of survey hundred boundaries.

Sector	Current Zoning	Length km	% of total
1	Pastoral & Rangelands	98.0	6.9
2	Hd. Yadnarie - Hd. James	64.9	27.9
3	Hd. Verran	29.8	23.4
4	Hd. Butler	23.9	1.0
5	Hd. Stokes	18.8	2.7
6	Hd. Koppio	20.7	8.7
7	Hd. Louth	18.6	3.1
8	Hd. Lincoln - Farming	6.1	5.6
9	Hd. Lincoln - Rural Living	4.5	20.7
	Total	285.3	

Table 1 Existing Corridor – Sectors, Land Use and Line Length

1.1 Project Description

The scope of this land and easement project is as follows:

- Corridor investigations to identify topographic, engineering, environmental, cultural heritage, political and community constraints relevant to the replacement of the 132kV transmission line
- Acquire easements for a new Cultana to Yadnarie 275 kV line;
- Acquire land at Yadnarie for substation replacement
- Acquire easements for a new Yadnarie to Port Lincoln Terminal 275 kV line
- Acquire land at Port Lincoln North for new 275/132kV substation

This project is to provide the land and easements necessary for the construction of a new double circuit 275kV line from Cultana to Yadnarie, a new substation site at Yadnarie and a new 275kV line from Yadnarie to Port Lincoln. This project is required to facilitate network augmentation to meet the network performance requirements in accordance with the terms of the ETC.

From end to end the project requires a new or extended easement corridor approximately 285 km in length involving around 170 different landowners.

The lead time required to undertake such a large acquisition project means that this acquisition must begin substantially prior to the forecast energisation date.

This will require the land, easement and corridor investigation works to continue from the current Revenue Period. Figure 1-1 illustrates an indicative timetable for easement acquisition, in order to address current and impending constraints. As noted above, the easement traverses a number of regions with particular cultural and environmental issues which ElectraNet expects to involve substantial liaising and negotiating with landowners and other stakeholders. ElectraNet anticipates this to take in excess of 3 years.

		Reset 2013-18					Reset 2018-23				
Task	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Route Selection											
Community Engagement											
Land Acquisition and Approvals											
Detailed Engineering Design											
Construction											
Commissioning											

Figure 1-1 Current High Level Project Schedule

The project is required to meet the Rules expenditure objective to meet the expected demand for prescribed transmission services and comply with all applicable regulatory

obligations or requirements associated with the provision of prescribed transmission services. The objective is to ensure that the quantum and timing of easement and land procurement minimises the total project costs, including network costs, in present value terms.

The ETC requires that ElectraNet must use its best endeavours to complete all necessary design work, obtain approvals and acquire land and easements based on the forecast agreed maximum demand three years prior to the expected breach of the reliability standards.

2. Background-network options and easement considerations

2.1 Credible Network Options

The Eyre Peninsula is a region of South Australia bounded by Whyalla, Port Lincoln and Ceduna. The Lower Eyre Peninsula region has a main radial transmission supply of 132kV extending from Whyalla to Yadnarie substation (approximately 8.5 km west of Cleve) as illustrated in Figure 1-2. A radial 132kV line also extends west to Wudinna and another south to the Port Lincoln substation. Supply to Port Lincoln is supported by a network support agreement with Synergen that allows ElectraNet to call upon the services of three distillate fired gas turbine generators located at Port Lincoln when needed.

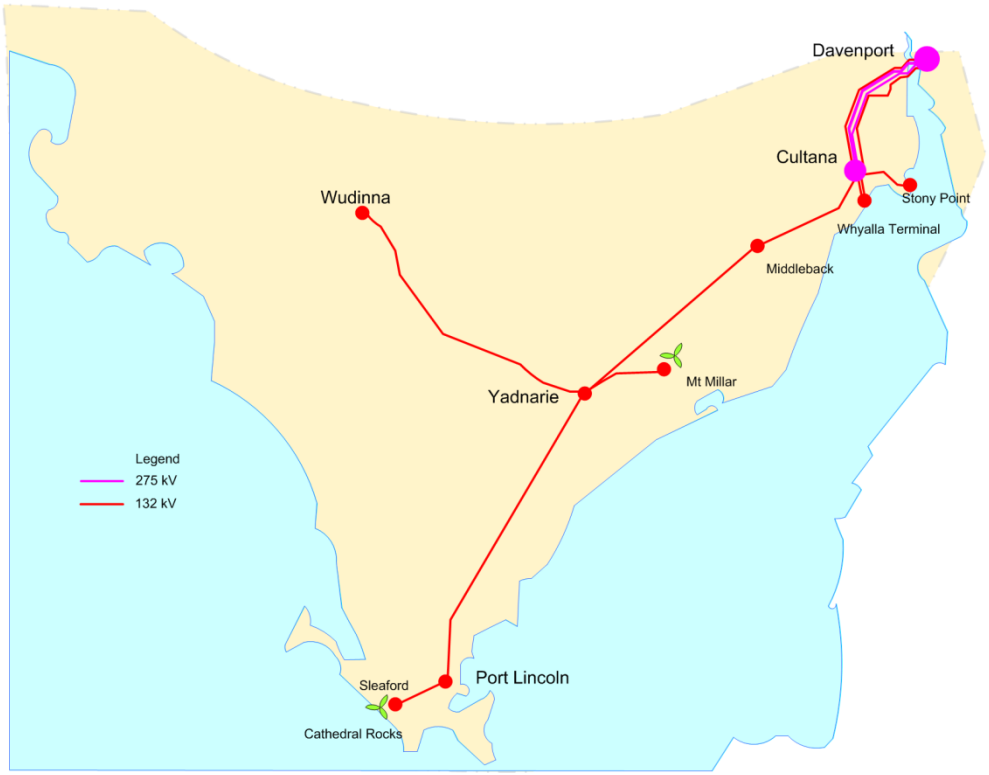

Figure 1-1 Eyre Peninsula Network

Electricity demand on the Lower Eyre Peninsula transmission system has grown steadily over the years as a result of agricultural, residential, commercial, mining and industrial development. The Lower Eyre Peninsula is also experiencing a significant increase in

forecast demand (refer Figure 1-3) associated with mining development and associated infrastructure such as new ports and processing facilities. ElectraNet has received five formal connection enquires to date, covering six separate spot load developments. On 20 December 2012, the South Australian Government approved a deep water port on the east coast of Eyre Peninsula for Centrex Metals which significantly strengthens the feasibility of the mining projects on Eyre Peninsula.

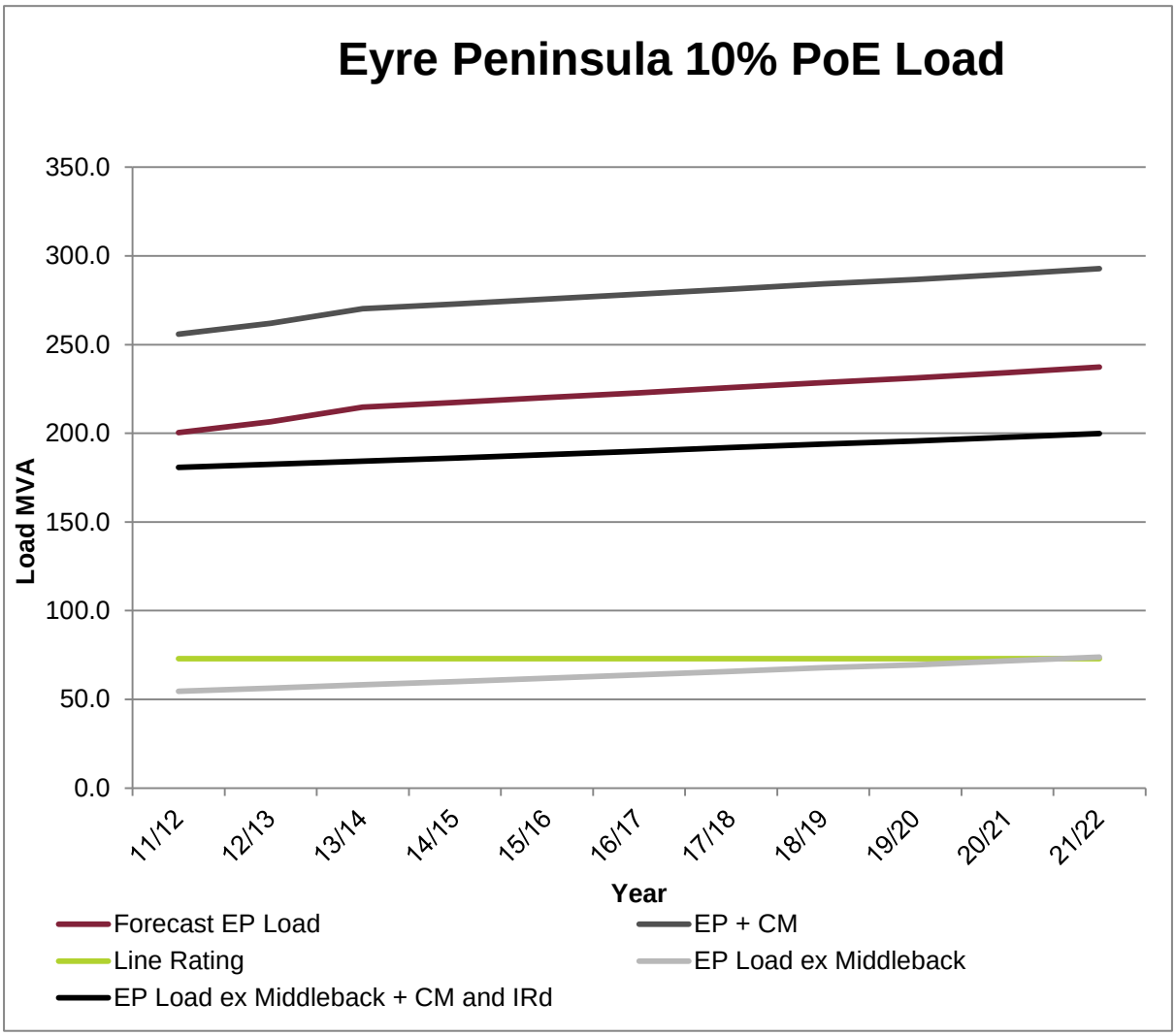

Figure 1-2 Load Scenarios Eyre Peninsula

In addition, the age and condition of the existing 132kV radial line means that it is expected to be in need of partial replacement from around 2024.

These two scenarios from a land and easement perspective require the identification and acquisition of a new corridor to enable the future construction of a transmission line, be it a straight replacement of the existing line or a larger capacity line to cater for increased load requirements. Given that the existing 132kV line is a radial line, a new line must be built and commissioned before the existing line can be switched off and decommissioned. Therefore a new easement must be acquired to enable the future development of a new transmission line.

2.2 Easement Considerations

Eyre and Western Region Strategy Plan

The existing 132 kV line is indicated in the Eyre and Western Region Strategy Plan with a power line corridor following the same alignment (refer Figure 1-4). However there is no width assigned to this corridor and therefore this can be interpreted as being the existing 132 kV easement.

It is important to note that the Region Strategy Plan is a vision document and the identification of corridors in the plan does not grant development rights or security of easement. As indicated in Figure 1-4, the plan identifies potential areas for wind energy generation and marine ports, but this does not mean these developments are approved or developers have rights to this land.

Figure 1-3 Eyre and Western Region Strategy - Economic Development Map C2 extract

Greater Port Lincoln Structure Plan

The Department of Planning, Transport and Infrastructure (DPTI), the District Council of Lower Eyre Peninsula and the City of Port Lincoln are investigating future growth areas in the Greater Port Lincoln area as shown in the study area in Figure 1-5 (red dotted line). This study is considering an expansion of rural living zoning north-west of the Port Lincoln township, an area traversed by ElectraNet's existing 132kV transmission line.

Recent discussions with some landowners in this area as part of ElectraNet's preliminary acquisition activities indicate a strong desire to subdivide in the near future, and negotiations are underway with local authorities to commence the rezoning process to allow for such developments. Figure 1-5shows rural living encroachment immediately north of the Port Lincoln Terminal Substation.

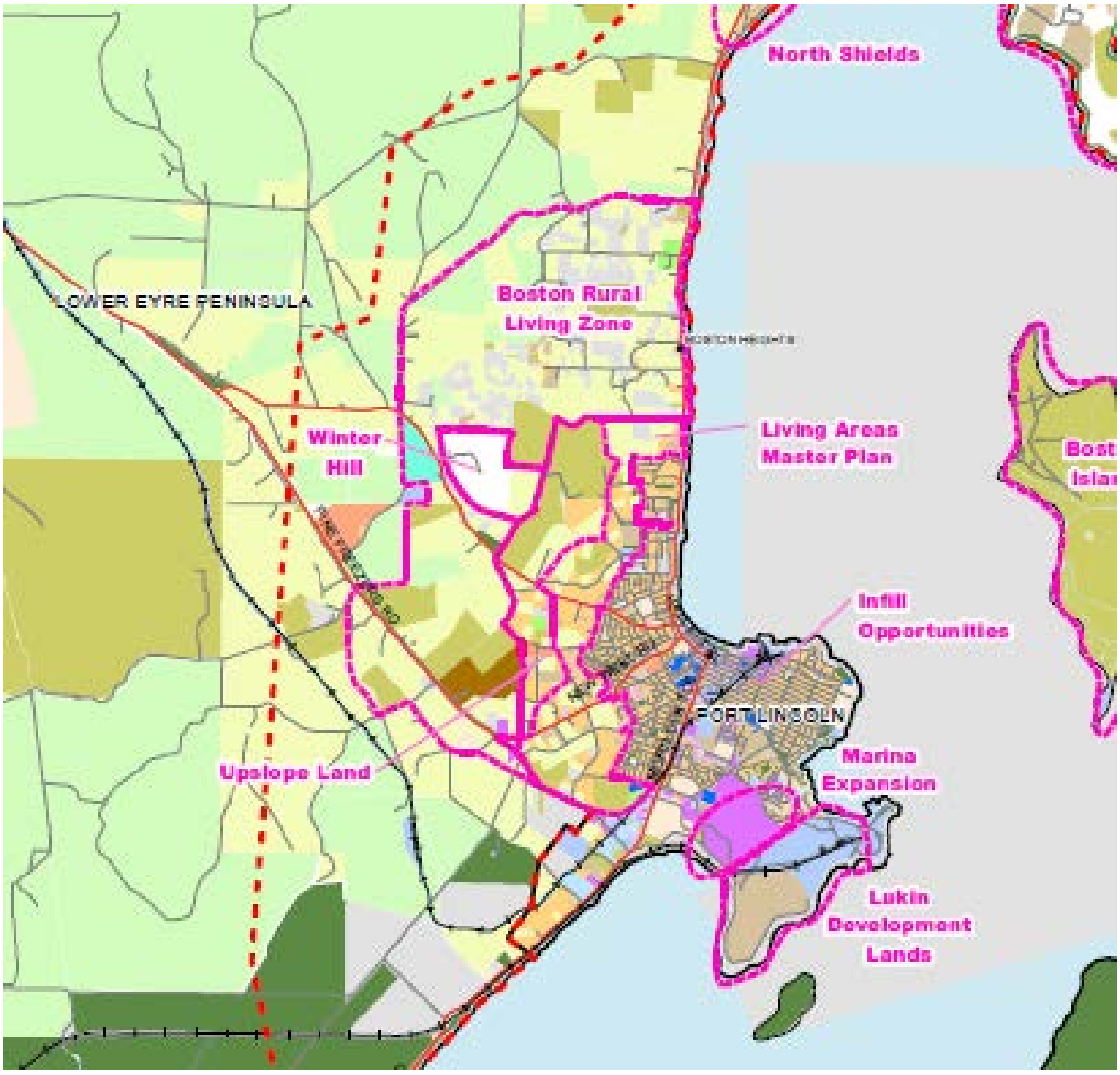

Figure 1-4 Greater Port Lincoln Study Area

[Please refer to confidential Appendix]

Figure 1-5 Rural Living Subdivision encroachment near Port Lincoln

Further north (as indicated in Figure 1-7 and Figure 1-8), the existing easement is experiencing pressure from development encroachment, not within the current building clearance restrictions, but either side of the existing easement which will make duplication of the easement increasingly difficult. Many of these structures, including dwellings, have been erected since the 2005 bushfires and some landowners opted to reposition closer to the transmission line. This reconstruction process continues and there is a need to provide the community with some certainty in terms of where a new transmission line route will pass in the future so that local communities and landowners can plan around this critical infrastructure requirement.

Not securing easements at this stage through this section north of Port Lincoln Terminal out to around Whites Flat (approximately 25km) will result in the need to find a completely new alignment in the future. ElectraNet would be forced into creating a corridor to deviate around this section resulting in longer distance and therefore both higher network costs and easement acquisition costs. The alternative would be for ElectraNet to consider vastly more expensive technical options, which would again add significant costs to the future project.

Furthermore, a new route alignment which deviates away from the existing transmission line will result in range of social and environmental effects, including:

- New visual impacts
- New communities / landowners
- New environmental impacts through vegetation and access track clearance
- [Please refer to confidential Appendix]

[Please refer to confidential Appendix]

Figure 1-6 Line Encroachment

[Please refer to confidential Appendix]

Figure 1-7 **New Structures either side of existing Transmission Line at Whites Flat**

Cultana to Yadnarie Section

When the 132kV line was constructed in the late 1960s, there were few environmental constraints by way of legislation and formal conservation reserves. As a result, the former Electricity Trust of SA was able to construct a very straight (and therefore economic) transmission line, as illustrated in Figure 1-9.

[Please refer to confidential Appendix]

Figure 1-8 Cultana to Yadnarie

Today, following the existing alignment poses a number of constraints.

Located approximately half way between Cultana and Yadnarie substations is the Middleback Ranges, Iron Stone Hill Conservation Park and Sheoak Hill Conservation Reserve (refer Figure 1-9). This region has some of Eyre Peninsula's most intact native

vegetation which provides habitat to a large range of flora and fauna species, some of which are threatened at a State and National level. Numerous properties are also subject to native vegetation Heritage Agreements (indicated in Figure 1-10 as hatched properties).

Negotiating and acquiring easement through this section (approximately 55km) now, is critical as environmental constraints will become increasingly difficult. This section of the line represents a significant 'bottleneck' as creating a corridor to deviate around this region will add around 20 to 40 km to the line route and therefore significant costs to the future network project.

[Please refer to confidential Appendix]

Figure 1-9 Middleback - Sheoak Hill Conservation Reserve section (including Heritage Agreements)

3. Strategic Land Acquisition Policy – assessment framework

This section considers the relevant parameters set out in the assessment framework in ElectraNet's Strategic Land Acquisition Policy, as relevant to this specific project.

3.1 Satisfy Regulatory obligations

This project is linked to the network project EC.11201 Lower Eyre Peninsula Reinforcement.

3.2 Manage Project Delivery risks

From end to end the project requires a new or extended easement corridor approximately 285 km in length involving around 170 different landowners. The scale of this project brings with it the risk of project delay caused by landowners contesting the alignment

Project risk may be reduced by ensuring sufficient time to negotiate agreements with landowners ahead of project construction deadlines. Certainty of alignment and the early commencement of landowner negotiations are key to cost effective and timely delivery of property requirements for this project

ElectraNet notes that the opportunity to seek Ministerial approval for the compulsory acquisition of easements is provided under the Electricity Act. However the Government has demonstrated reluctance in granting their use and as a general rule this authorisation is only granted once all other avenues can be demonstrated to have been exhausted.

The prospect of extended delays to the procurement of contested easements and the significant legal costs associated with each contest mean that an acquisition strategy which relies on the ability to compulsory acquire easements carries with it an elevated risk of substantial project delays, easement costs and development approval. In this regard it is not a preferred solution and carries with it the further risk of the project becoming embroiled in a political dispute

3.3 Efficient total network costs

ElectraNet is required to deliver its project at lowest long-run costs to customers.

For this Project, any need to investigate alternative, longer corridor routes as a consequence of the inability to obtain easements along the preferred route would add substantially to the network costs of the future project.

In addition, a delay in easement acquisition around Port Lincoln is expected to lead to the need to underground a portion of the transmission line, as a result of increased residential development in the area. This would again lead to higher project costs.

3.4 Minimise land costs

The cost of land and therefore easement compensation is highest at the southern end of the line around Port Lincoln and lowest in the pastoral range and conservation areas between Whyalla and Yadnarie.

Deviations in the alignment through the open cropping areas and rangelands may increase the length of the line (and therefore the cost of the easement), unless the deviation is substantial the difference in the cost of easements will be minor in comparison to the actual cost of constructing the line.

Following the existing alignment will yield efficiencies over a new greenfield route. The access tracks used for maintenance of the existing line may be used to a large extent for the construction and maintenance of the new line, reducing both the environmental impact and the cost of same. Construction on a new greenfield route would require new access tracks for construction purposes as well as the additional costs and reparations associated with decommissioning the old line and surrendering access.

The baseline cost estimates for the easement compensation on this project were provided by the valuation firm Maloney Field Service in May 2011.

ElectraNet has researched historic land sales records on a sector by sector basis, to calculate a $/ m² value for arm's length transactions representative of typical landholdings within each sector. Each sale price was then adjusted to CPI (Australian All Groups), indexed to the September quarter of 2012. This ensured the $/ m² values and subsequent annual growth rate calculations would be compared on a like-for-like basis.

In some sectors the departure from the real cost escalators provided in Table 1 of the AER draft reset decision is considerable. The AER rates have been used in NPV calculations presented in the cost benefit analysis (see section 1.4). However the analysis of historic costs shows that this is a conservative approach, as the actual escalation of land values may be substantively higher than those assumed by the AER. The AER's tabled rates and the compound annual growth rates calculated for each sector are tabled below:

Sector	AER Escalator Category	AER Escalator Rate %	Sector based Rate %
1	Pastoral & Rangelands	4.9	5.06
2	Hd Yadnarie - Hd James	4.9	4.22
3	Hd Verran	4.9	8.46
4	Hd Butler	4.9	10.03
5	HD Stokes	4.9	16.20
6	HD Koppio	4.9	8.77
7	Hd Louth	4.9	16.75
8	Hd Lincoln - Farming	8.1	11.70
9	Hd Lincoln - Rural Living	8.1	19.6

Table 2 Existing Corridor – Sectors, Land Use

3.5 Secure land availability

The construction of new transmission line through environmentally sensitive and built up areas has high risk of community opposition and outrage.

The greatest risk to availability of the land for the rebuild of the transmission line occurs at the southern end around Port Lincoln. The township has experienced urban growth in the last 10 years and studies undertaken by Local Government indicate the further subdivision of land near the Port Lincoln Terminal substation will continue.

This is problematic for the replacement of the line, as the threat of urban crowding raises a substantive risk in relation to land availability, and may require the undergrounding of sections of the transmission line.

4. Cost benefit analysis

Methodology

The cost benefit analysis of alternative options for easement acquisition, reflecting the specific risk factors identified above, has been evaluated based on the following assumptions:

- Analysis period – the analysis has been undertaken over a 15 year evaluation period.
- Discount rate – the sensitivity of the results to changes in discount rate has been tested through the adoption of a lower bound discount rate of 7.42% reflective of the (pre-tax, real) WACC for the forthcoming regulatory period and an upper bound discount rate of 13%.

- Land values – ElectraNet has applied the land escalation rates adopted by the AER in its Draft Decision. The sensitivity of the results to changes in land valuations has also been tested.
- Network project timing – network project timing has been assessed based on current demand projections and anticipated replacement project timeframes. While a network project date of 2027 has been assumed the sensitivity of results to network project timings of 2024 and 2030 have also been tested.
- The cost of underground cable has been established from the recently completed Adelaide Central Reinforcement Project.
- Network options costs– the cost of network options has been estimated in accordance with the methodology described in section 5.8.8 of ElectraNet's Revenue proposal (May 2012). The sensitivity of the results to network project costs has also been tested.

Option 1- Acquire Easements in 2024 & Underground Cable at Port Lincoln

This option is to defer the sites and principal easement acquisition to 2024 ie three years ahead of an expected network development in 2027.

Under this option, the section of transmission line passing through sectors 8 and 9 as outlined in Table 1-2 above, will need to be undergrounded due to easements not being secured in advance of this time, and as a consequence incompatible land uses occurring. This projected development in the Port Lincoln area will make it unviable for ElectraNet to secure a 50 metre overhead easement for this portion if left to this date.

This will require approximately 10.6 km of above-ground line to be constructed underground.

ElectraNet has assumed that the length of cable required will be approximately 20% longer than its overhead line equivalent. This is to account for minor deviations in alignment and variances in topography and elevation. This rate is consistent with the cable requirements experienced in the Adelaide Central Reinforcement project over relatively flat terrain.

This rate is conservative as it presumes the convenient siting of overhead/underground transition points at each end and that only minor route deviations will be required. Current costing based on recently completed cable installations by ElectraNet indicates that cost of undergrounding is approximately $4.95 million per kilometre plus $2 million for each transition station.

The cost of this option is estimated as follows:

- The incremental cost of 10.6 km (and allowing for the 20% extra cable) 275 kV double circuit underground cable is $123.1m million (inclusive of the cost of easements for the underground cables and transition stations) in 2027:
- Remaining easement costs for overhead sections of $18.3m in 2024 (nominal $).

In addition to the need to underground the section of transmission line in the Port Lincoln area, the discussion in sections 1.2.2 and 1.3.2 has highlighted the substantial risk that a delay in engaging with landowners and beginning acquisition activities raises a substantial risk that easements along the preferred option route will not be available, and alternative

routings may need to be considered, which would substantially increase the cost of the network project.

As discussed in Section 1.1, given the size of this project, construction of the transmission line and substations is expected to take up to 3 years. This option runs an extremely high risk that ElectraNet is unable to deliver the project in 2027.

Option 2-Acquisition of all required easements during 2013-18

This option is to proceed to the acquisition phase of 285 kilometres of easements and substation land required at Yadnarie and Port Lincoln.

The cost of this option is estimated as $12.4m ($12-13).

ElectraNet has already commenced preliminary work in accordance with this Option in order to minimise the project delivery risks. These are risks associated with community and stakeholder consultation, negotiations with landowners, environmental issues and obtain development approval. The preliminary work stops short of acquisition of rights.

A further variation of Option 2 was considered, which delayed procurement until at least 2019. However, ElectraNet considered that by 2019 the threat of urban crowding raises a substantive risk in relation to land availability, and the need to underground sections of the transmission line. On this basis, this variation was regarded as involving substantially higher cost and not considered further.

Evaluation

Table 3 presents the results of the economic analysis demonstrating the present value cost of the options and sensitivities considered.

Table 3 Quantitative assessment of options and sensitivity analysis

Parameter	Range	Option 1 Acquire easements in 2024 and underground at Port Lincoln		Option 2 Acquire easements in 2013 to 2016	
		PV Cost ($m)	Rank	PV Cost ($m)	Rank
Discount rate	7.42%	(57.3)	2	(12.4)	1
	10.00%	(42.8)	2	(12.0)	1
	13.00%	(31.0)	2	(11.6)	1
Land Escalation	80%	(42.0)	2	(11.8)	1
	100%	(42.8)	2	(12.0)	1
	120%	(43.7)	2	(12.2)	1
Network Project timing	2024	(51.5)	2	(12.0)	1
	2027	(42.8)	2	(12.0)	1
	2030	(10.4)	1	(12.0)	1
Network Project cost	80%	(36.3)	2	(12.0)	1
	100%	(42.8)	2	(12.0)	1
	120%	(49.3)	2	(12.0)	1

4.1 Recommendation

On the basis of the quantitative cost benefit analysis, Option 2 involving the early acquisition of easements in the 2013-2018 period has been identified as the most prudent and efficient option that balances long-run cost and the maintenance of ongoing supply reliability to consumers.

There are qualitative considerations that also support this option.

A delay in engaging with landowners and beginning acquisition activities raises a substantial risk that easements along the preferred option route will not be available, and alternative routings may need to be considered. A delay in the site and route selection and easement acquisition beyond the 2013-2018 period would create serious project delivery risks, as indicated in Figure 1-1 above. It would only allow a one (1) year window to complete the route selection, community engagement, development and environmental approvals, easement acquisition, engineering design, tendering and procurement. As discussed in Section 1.1, given the size of this project, construction of the transmission line and substations is expected to take up to 3 years.

In addition, the potential for increased spot load in the area leading to network investment being needed prior to 2027. In particular, State government mineral resources forecasts indicate that the balance of loading on the Eyre Peninsula will move towards large scale mining activities, dominated by iron ore extraction and handling over the next 5-10 years. The rate of growth on the Peninsula is forecast to increase strongly, particularly in Whyalla, Cowell and Port Lincoln as the anticipated mining developments in that region proceed. The recent Resources and Energy Infrastructure Demand Study published by the Resources and Energy Sector Infrastructure Council (RESIC) has also highlighted the positive economic outlook in the longer term and prospect of significant new mining loads requiring connection to the transmission network.

The total cost of this option in the forthcoming regulatory control period has been estimated at $10.4m ($2012/13).

The proposed scope of works comprises:

- Route assessment and investigations.
- Acquisition cost of 50m easement for 285 km and Associated Substation Land = $10.4million.

ElectraNet Transmission Network Revised Revenue Proposal

EC. 11738 Project Business Case Summary

Para to Mallala Easement Acquisition

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Para to Mallala Easement Acquisition

Project Number: EC.11738 **Category:** Easements/Land

Estimated Cost: **Required Completion Date:** 2015

Total project cost - $9.1 million ($12-13)

2013-18 project cost - $8.6 million ($12-13)

1. Introduction and purpose

The load in the northern metropolitan region of Adelaide consists of a mixture of residential, commercial and light industrial load. The State Government's 30 Year Plan for Greater Adelaide[1] envisages significant urban development in the northern suburbs over the next three decades which, along with the expansion of the townships of Roseworthy and Gawler into significant population centres, is expected to drive significant ongoing load growth.

The existing network infrastructure in the area consists of a single circuit 275 kV line connecting the Para and Bungama substations (west circuit) and a second single circuit 275 kV line connecting the Para and Brinkworth substations (east circuit) which will also provide supply to the Munno Para 275 kV substation en route, presently under construction. Para substation is supplied via four 275 kV lines from Torrens Island (also supplying Parafield Gardens West substation en route). These lines represent a key component of the Main Grid 275 kV transmission network, linking major generation sources and bulk supply substations.

The load in this region of the metropolitan network is or will be jointly served by the Para, Parafield Gardens West and the (as yet uncommissioned) Munno Para substation, which are classified as grouped connection points under the ETC.

Under ETC Category 4 connection point reliability requirements, these connection points must have N-1 equivalent line and transformer capacity to meet 100 per cent of Agreed Maximum Demand.

The projected load increases in this region will trigger the need to reinforce the backbone of the 275 kV transmission system, as anticipated loading levels exceed the thermal limit of the existing lines. The need to reinforce the backbone network is currently projected to occur by 2032, although the investment could be brought forward if the rate of urban development increases.

In addition to reinforcing the backbone of the 275 kV transmission system, the replacement of these lines based on asset condition is reasonably expected to be required over a similar timeframe. It should be noted that these lines will have significantly exceeded their standard asset life of 55 years.

[1] A copy of this report is available at http://www.dplg.sa.gov.au/plan4adelaide/index.cfm.

Significant limitations are also emerging on the underlying 66 kV distribution network which are projected to require the establishment of an additional transmission connection point within the same timeframe.

1.1 Project description

Easements acquisition will be required to enable the rebuild of the 275kv Para to Bungama line from Para to Mallala as a double circuit (a distance of approximately 40km) and the establishment of an associated substation in this vicinity. The ETC requires that ElectraNet must use its best endeavours to complete all necessary planning approvals and acquire all necessary land and easements on the basis of forecast agreed maximum demand so as to ensure it is in a position to meet its reliability standard obligations.

The purpose of this business case is to determine the optimal timing and quantum of easement acquisition that satisfies the ETC requirements and delivers the most efficient and prudent outcome for customers.

This project complements the Templers to Para easement expansion project, and will enable the establishment of a double circuit 275 kV loop connecting the Para, Mallala and Templers substations to address the projected supply needs of this region.

In light of the risk associated with obtaining suitable land and associated approvals in a timely manner in accordance with ElectraNet's obligations, the timing of this project accords with the:

- ETC Code requirement under 6.3.1 Planning Approvals and Easement Acquisition
- Strategic Land Acquisition Policy:
    - Minimise network costs
    - Secure land availability.

The project is required to meet the Rules capital expenditure objective to meet the expected demand for prescribed transmission services and comply with all applicable regulatory obligations or requirements associated with the provision of prescribed transmission services.

2. Background - network options and easement considerations

The following provides additional background information on the network project options and specific issues arising in relation to easement acquisition. This background information forms an important input to the cost benefit analysis presented in section 3 and the recommendations that follow.

2.1 Credible Network Options

Given the emerging network limitations identified are driven by localised load growth, reinforcement of the Main Grid at other locations will not assist in supplying this load.

Owing to ongoing residential expansion in the northern suburbs of Adelaide, there are no viable alternative transmission routes left available between Para and Templers West and

Para and Munno Para/Mallala other than those that follow routes in the vicinity of the existing transmission lines. The surrounding areas have effectively been built out.

This being the case, there are no alternative network options available to provide the functionality required to be delivered by the proposed reinforcement of the east circuit to Templers West and the west circuit to Mallala.

Additionally, given that these lines are an integral part of the Main Grid connecting major generation and load centres, the lines cannot be de-energised for any length of time in order to facilitate the removal and rebuild of the line in situ.

This leaves the only feasible above ground option as the duplication of the line along its length as a double circuit along a wider easement.

The only possible alternative to an overhead network solution is to pursue an underground configuration in a future built environment. This also requires consideration of the potential need for over-under transition stations and reactive compensation due to the long cable lengths required.

2.2 Easement Considerations

The plains stretching north of the City of Adelaide are of vital economic and strategic importance to the State. With access to major transport routes and reliable water[2] the loamy flood plains of the Gawler River are home to the majority of South Australia's market gardening and intensive horticultural industries. Further to the north and east and closer to Mallala are areas that rank among the states most valuable and productive regions for cereal crops.

The completion of the Northern Expressway in 2010 and the re-vitalisation of transport connections through this district have also opened the region to further urban expansion. The creation of new green field settlements and the expansion of existing townships in this region are dominant features of the State Government's 30 Year Plan for Greater Adelaide.

On its route between Mallala[3] and the Para substation the line passes through several distinct land use precincts ranging from cereal production, grazing, horticulture, viticulture, market gardening, rural living to residential land uses.

Each land use carries with it its own risk of availability and contributing factors which will influence the cost of easement compensation. As a general rule both the risk of corridor availability, the cost of land and easement compensation escalates with increases in the intensity and density of land use. These issues are considered in detail in confidential attachment Risk Analysis EC11738 Mallala to Para.

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2 A reticulation scheme provides reclaimed water from the Bolivar waste water treatment plant to growers. The scheme covers an area of approximately 200km² and within this zone land with access to reticulated water is highly valued.

3 Note there is no substation at Mallala other than a conceptual new node in the vicinity of Redbanks. However it is south from this point that land use changes and urban constraints significantly increase the risk of corridor availability in the short – medium term.

Table 1 below details the current land use zones, their availability risk and approximate length of line within each sector.

Sector	Current Zoning	Availability risk	Length km	% of total
1	Primary Industry (Light Regional Council)	Moderate	2.6	6.9
2	General Farming (Mallala DC)	Low	10.5	27.9
3	Primary Industry Policy Area 2 –Market Gardening	Moderate	8.8	23.4
4	Metropolitan Open Space Scheme – North	Low	0.3	1.0
5	Primary Production (Expressway North)	Low	1.0	2.7
6	Primary Industry Policy Area 6 – Urban Buffer	High	3.3	8.7
7	Metropolitan Open Space Scheme – South	Moderate	1.2	3.1
8	Residential – Playford (Blakeview)	High	2.1	5.6
9	Hills Face Zone	Low	7.8	20.7
	Total		37.6	100.0

Table 1 Existing Corridor –Sectors, Land Use and Line Length

The optimal timing for easement acquisition may vary across sectors depending on the particular drivers such as land costs and the risks of encroachment. This approach ensures that the overall easement acquisition plan is optimised, having regard to the sector-specific issues and risks.

3. Strategic land acquisition policy/assessment framework

This section considers the relevant parameters set out in the assessment framework in ElectraNet's Strategic Land Acquisition Policy as relevant to this specific project.

3.1 Efficient total network costs

ElectraNet's is required to satisfy the capital expenditure objectives in clause 6A.6.7 of the Rules efficiently and prudently. In particular, ElectraNet seeks to minimise the total costs of satisfying the capital expenditure objectives, including the cost of easement acquisition. For each project, it is important to manage the risks arising from the interplay between network expenditure and easement acquisition costs, particularly in relation to the timing of easement acquisition.

In particular, network costs may increase as a result of:

- **Undergrounding** It may be necessary to underground sections of the proposed transmission line in the absence of secure easement rights. Based on recent cable installation undertaken by ElectraNet the cost of undergrounding 275kV double circuit cable is approximately $4.95 million per kilometre plus $2 million for each transition station.
- **Longer line route**. Due to high density development in this area, ElectraNet may not be able to secure an easement through the shortest distance for the line under deferred acquisition options. This poses a risk that additional cost will result under deferred easement acquisition options as a consequence of selecting line routes through available land parcels, resulting in increased distance.

For this particular project, the following points are worth noting:

- There are no alternative network options available to provide the functionality required to be delivered by the proposed reinforcement of the east circuit to Templers West and the west circuit to Mallala. Therefore, there are no material risks of changing network requirements.
- An analysis of land sales in sectors 1 and 2 between 2001 and 2012 confirms that, in real terms, the value of cropping and grazing land in the area increased at an annual compound rate of 10.2 per cent. This trend suggests that the opportunity costs associated with early easement acquisition will be more than offset by the lower acquisition costs.

3.2 Securing land availability

ElectraNet's approach is to engage actively with planning authorities with the objective of minimising encroachment risks as a result of urban development or rezoning. By working actively with planning authorities ElectraNet seeks to minimise easement acquisition costs on behalf of transmission customers.

Through ElectraNet's active engagement in strategic land use processes it is evident that over the next 10-15 years the area within which the proposed Para to Mallala easement route is proposed will be subject to considerable rezoning and residential development in accordance with the 30 Year Plan for Adelaide and DPAs either recently released, approved or proposed by State and Local Governments.

ElectraNet's involvement has included actions to influence both future land use zoning and to ensure compatible development is planned for land adjacent to both the existing and proposed future transmission lines.

Through these actions ElectraNet has pursued all available regulatory and legislative options available to it in order to manage the risk of identified easement requirements not being met.

However, it is important to note that these actions cannot guarantee development rights unless ElectraNet acquires easements in the required corridor.

Therefore in the absence of full acquisition of the high risk sections of the required easement (i.e, sectors 6 to 8) in immediate proximity to encroaching urban developments, there is a material risk that land rights will be unavailable beyond the forthcoming regulatory control period, leading to a need for more expensive underground transmission network options.

4. Cost benefit assessment

Methodology

The feasible network and easement options and specific risk factors identified above have been evaluated based on the following assumptions:

- Analysis period – the analysis has been undertaken over a 20 year evaluation period.
- Discount rate – the sensitivity of the results to changes in discount rate has been tested through the adoption of a lower bound discount rate of 7.42 per cent reflective of the (pre-tax, real) WACC for the forthcoming regulatory period and an upper bound discount rate of 13 per cent.
- Land values – ElectraNet has applied the land escalation rates adopted by the AER for the purposes of its Draft Decision based on independent land valuations secured from Maloney Field Services. The sensitivity of the results to changes in land valuations has also been tested.
- Network project timing – network project timing has been assessed based on current demand projections and anticipated replacement project timeframes. The sensitivity of results to changes in network project timing has also been tested.
- Network options costs– the cost of network options has been estimated in accordance with the methodology described in section 5.8.8 of ElectraNet's Revenue proposal (May 2012). The sensitivity of the results to network project costs has also been tested.

Option A - Do Nothing-deferred easement and acquisition of rezoned developed and undeveloped land

This option involves deferring easement acquisition until closer to the time of network augmentation in accordance with ElectraNet's obligations under the ETC. Current load growth projections require the construction of this line by 2032. To meet the ETC obligations the easement acquisition must commence by 2029.

As illustrated in Appendices 1 and 2, areas immediately north and west from Para Substation have been undergoing rapid urban growth as the primary greenfield focus for creation of large new urban communities associated with the 30 Year Plan for Greater Adelaide and the State's Population Growth targets. Developments in the Blakeview, Munno Para and Evanston Gardens areas all within 10 km of Para substation are part of the State Governments planned urban growth currently underway and to be continued over the period to 2020.

In addition urban, commercial and industrial growth is being planned as a priority in the Roseworthy Gardens area immediately north of Gawler with expectations that the first housing developments will commence construction in 2014. The Roseworthy Gardens and Templers area is earmarked to accommodate over 100,000 residents at full build representing some 42,000 homes.

Therefore, it is highly likely that the land along the optimal route for the transmission line would be developed into housing and other sensitive and high value land uses by 2018. To proceed with the preferred overhead line network solution after this date would require the acquisition and possible demolition of developed sites to comply with the prescribed safe clearance zones. Median sale price for developed residential properties in Munno Para West in November 2012 was $272,500.[4] It is self-evident that the acquisition of housing in 2029 to give effect to the preferred overhead line project is not a commercially viable option.

Option 1- Deferred easement & partial underground cable

This option also contemplates deferral of the easement acquisition until 2029 in accordance with the ETC obligations, but recognises that the preferred network solution would now include partial undergrounding. Compared to the 'do nothing' option, which assumed that the overhead line option would continue to proceed, this option is potentially feasible because the network cost of undergrounding is lower than the costs of obtaining the necessary easements for an overhead line solution.

Under this option, the transmission line for sectors 6 to 8 of its length, as outlined in Table 1 above. will need to be undergrounded due to easements not being secured in advance of this time, and consequent urban development and other incompatible land uses occurring. This projected development will make it unviable for ElectraNet to secure a 50 metre overhead easement for this portion (as addressed in Option A above).

This will require approximately 6.6 km of above-ground line to be replaced with underground cable.

ElectraNet has assumed that the length of cable required will be approximately 20 per cent longer than its overhead line equivalent. This is to account for minor deviations in alignment and variances in topography and elevation. This rate is consistent with the cable requirements experienced in the Adelaide Central Reinforcement project over relatively flat terrain.

This rate is conservative as it presumes the convenient siting of overhead/underground transition points at each end and that only minor route deviations will be required. Current costing based on recently completed cable installations by ElectraNet indicates that cost of undergrounding is approximately $4.95 million per kilometre plus $2 million for each transition station.

The cost and timing of this option is estimated as follows:

The incremental cost of 6.6 km (and allowing for the 20 per cent extra length) 275 kV Double circuit underground cable is calculated to be $50.4 million (inclusive of underground easement cost and transition stations) in 2032. Future (2029) acquisition cost of 50m easement for 31km = $3.6 million.

[4] RP Data-Property System statistics accessed 3/1/2013.

A further variation of this option was considered, but ultimately rejected. This variation involved securing the required easements consistent with undergrounding sectors 6 to 8 in 2019, rather than 2032. This variation would reduce the costs of this option in present value terms, if the average land escalation rates from 2019 to 2032 exceeded the discount rate. However, the assumed escalation rates are lower than the discount rate. This variation was therefore regarded as higher cost in net present value terms than Option 1, and rejected.

Option 2 - Acquiring Full Easement during 2013-2018

This option involves securing the easement from Para to Mallala for its full length by 2015 to permit the future construction of an overhead 275 kV double circuit line.

This will require approximately 38 km of easement to be secured traversing the land types identified in Table 1 above at their associated land values.

The cost and timing of this option is estimated as follows:

- Acquisition cost of 50m easement for 38 km in 2015 = $10.6 million

Option 3 - Staged Easement Acquisition

This option involves securing high risk easements along the route where the land is currently undeveloped but earmarked for re-zoning for residential land use in the 0-15 year period, or where there is significant risk of a further step change in property values in response to rezoning investigations.

This corresponds to sectors 6 to 8 of Table 1 above, comprising targeted easement acquisition by 2015 totalling approximately 6.6 kilometres. Easements for the remaining sectors (31 km line length in total) would be acquired in the 2023-2028 regulatory period to minimise any further risk that the necessary easements for the overhead line cannot be secured cost effectively.

The cost and timing of this option is estimated as follows:

- Acquisition cost of 50m easement for 6.6 km in 2015 = $8.6 million
- Future (2026) acquisition cost of 50m easement for 31 km = $3.3 million

It is noted that the costs of this option in present value terms could potentially be reduced if the remaining 31 km of easements are procured in 2029. This potential cost saving could be assessed during the 2023-2028 regulatory period. In present value terms, however, the potential savings are not likely to be significant to the option selection.

A further variation of this option was considered, which procured the 6.6 km easement in 2019, rather than 2015. As already noted, however, the cost of acquiring the necessary easement for the overhead line option beyond 2018 is likely to include the acquisition and demolition of housing. Consequently, this variation was regarded as involving substantially higher cost and not considered further.

Evaluation

Table 2 presents the results of the economic analysis demonstrating the present value cost of the options and sensitivities considered.

Table 2 Quantitative assessment of options and sensitivity analysis

Parameter	Range	Option 1		Option 2		Option 3	
		Easement and Partial underground cable		Acquiring full easement by 2015		Staged easement Acquisition	
		PV Cost ($m)	Rank	PV Cost ($m)	Rank	PV Cost ($m)	Rank
Discount rate	7.42%	(14.1)	3	(9.2)	2	(8.8)	1
	10.00%	(9.0)	3	(8.7)	2	(8.1)	1
	13.00%	(5.5)	1	(8.3)	3	(7.4)	2
Land Escalation	80%	(8.9)	3	(8.5)	2	(7.8)	1
	100%	(9.0)	3	(8.7)	2	(8.1)	1
	120%	(9.2)	3	(9.0)	2	(8.4)	1
Network Project timing	2027	(13.0)	3	(8.7)	2	(8.1)	1
	2032	(9.0)	3	(8.7)	2	(8.1)	1
	2037	(6.3)	1	(8.7)	3	(8.1)	2
Network Project cost	80%	(7.4)	1	(8.7)	3	(8.1)	2
	100%	(9.10)	3	(8.7)	2	(8.1)	1
	120%	(10.7)	3	(8.7)	2	(8.1)	1

For this particular business case, the results are found to be sensitive to the underlying assumptions. Specifically, either option 1 or option 3 are always ranked 1st across the sensitivities assessed and option 2 is always ranked 2nd or last.

However, across the majority of scenarios – 8 out of 12 – option 3 is preferred. Option 1 is preferred in the remaining 4 scenarios, but it is ranked as the worst option in 3 cases. Assuming a regulated WACC of 7.42 per cent, the central cost estimate for Option 3 is $8.8 million compared to $14.1 million for Option 1, expressed in present value terms.

4.1 Recommendation

On the basis of the quantitative cost benefit analysis, Option 3 involving the staged acquisition of easements has been identified as the most prudent and efficient option that balances long-run cost and the maintenance of ongoing supply reliability to consumers. Furthermore, the cost of Option 3 may be further reduced if the overhead line easements are obtained in 2029 rather than 2026 as modelled. This further benefit can be assessed at a later time, but as already noted is unlikely to be significant in present value terms.

There are no particular qualitative considerations that would suggest that the other options should be preferred despite the NPV analysis presented above. For example, there are no customer or management issues associated with the staged acquisition of the easements. The clear advantage of Option 3 is that it secures the preferred network solution by obtaining the minimum easement requirements in a timely manner, in advance of the expected urban development in sectors 6 and 8.

The cost of acquiring the easement in 2015 in accordance with Option 3 is estimated to be $8.6 million ($2012-13). This cost estimate is consistent with the evaluation analysis set out in this business case, which is expressed in present value terms.

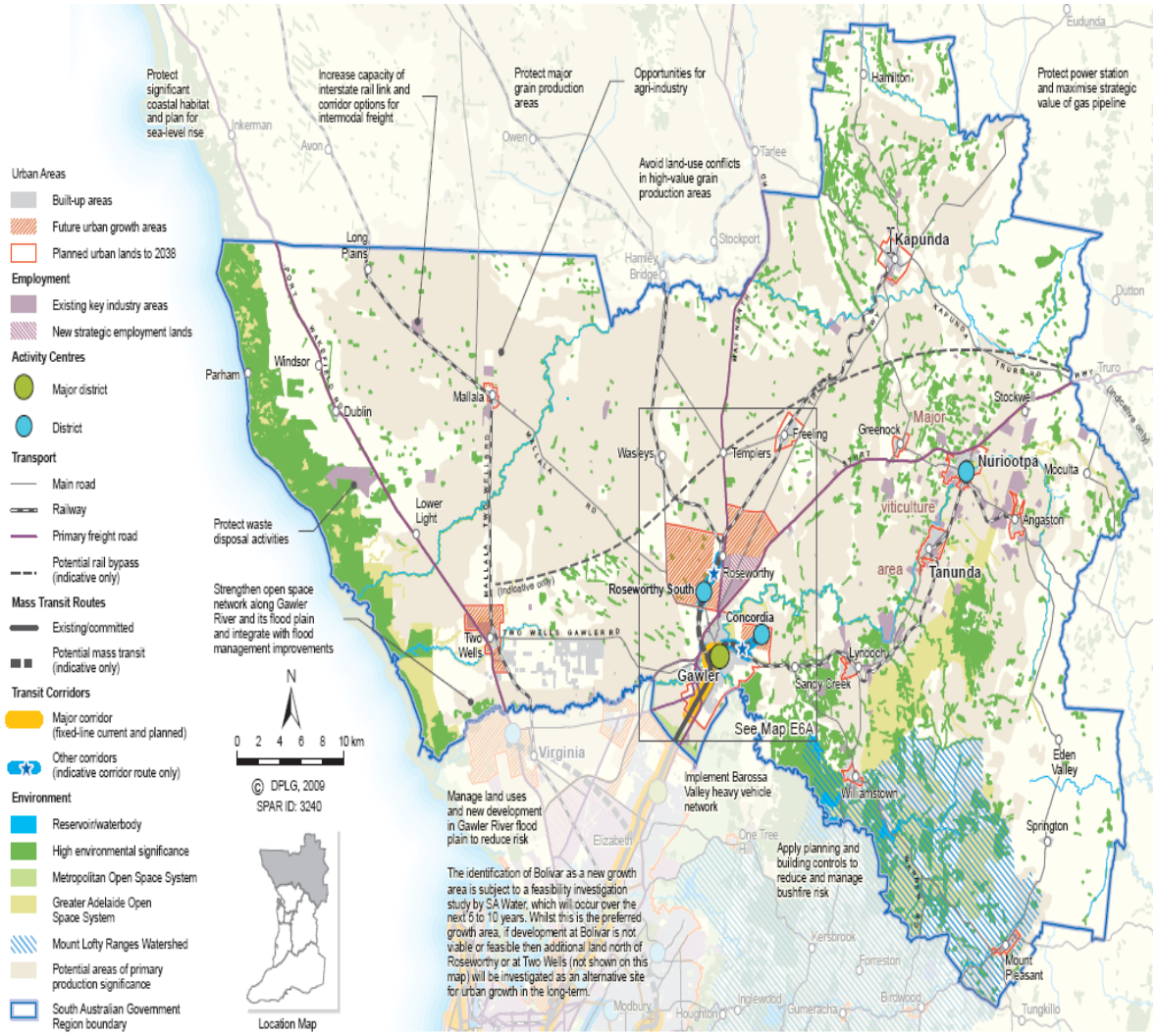
The proposed scope of works comprises:

- Route assessment and investigations.
- Acquisition cost of 50m easement for 6.6 km = $8.6 million

Attachment 1 Proposed Line Route Mallala Templers - Para

[Please refer to confidential Appendix.]

Attachment 2. Barossa and Northern Areas Strategic Land Use Planning (Source: 30 Year Plan for Greater Adelaide)



ElectraNet Transmission Network Revised Revenue Proposal

EC 11739 Project Business Case Summary

Templers to Para Easement Expansion

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TEMPLERS TO PARA EASEMENT EXPANSION 1

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Templers to Para Easement Expansion

Project Number: EC.11739

Category: Easements/Land

Estimated Cost:

Total project cost - $7.2 million ($12-13)

2013-18 project cost - $7.2 million ($12-13)

Required Completion Date: 2015

1. Introduction and purpose

The State government's 30-Year Plan for Greater Adelaide[1] provides for significant urban infill developments and population increases in the northern suburbs of Adelaide together with the major expansion of the townships of Roseworthy and Gawler. Whereas the existing transmission network is adequate to supply the existing load, the Distribution Network Service Provider (SA Power Networks) advise that a major expansion of the 66 kV system will be required in this area by 2022 along with the establishment of an additional transmission connection point. Any additional loads that materialise in the interim will cause thermal overloads on the 66 kV sub-transmission and 33 kV distribution systems and bring forward this augmentation requirement.

The existing network infrastructure in the area consists of the single circuit 275 kV line from Para to Templers West, the 275 kV single circuit line from Para to Bungama (which will provide supply to the Munno Para 275 kV substation that is presently under construction) and a 132kV single circuit transmission line between Roseworthy and Para substation.

The residential load increases in the vicinity of Munno Para, Gawler and Roseworthy predicted in the State governments 30-year Plan for Greater Adelaide and coupled with the resulting limitations on the already constrained 66 kV sub-transmission network operated by SA Power Networks (SAPN) will trigger the need to establish a 275/66 kV connection point at Kingsford (Roseworthy) and to rebuild the Templers West to Para 275 kV line as a double circuit 275 kV line.

This need to reinforce the network is anticipated to occur by 2032, although this could be required earlier if the rate of urban development increases.

1.1 Project description

The scope of this project is as follows:

- Corridor investigations to identify topographic, engineering, cultural heritage, environmental and political constraints relevant to construction of the 275 kV line.
- Acquisition of approximately 35 km of easements between Templers and Para.
- Acquisition of the required rights of way to access towers for construction and ongoing maintenance (topography dictates in some areas transmission easement won't be viable access).

[1] A copy of this report is available at http://www.dplg.sa.gov.au/plan4adelaide/index.cfm

Specifically, this project deals specifically with either widening the existing easement or acquiring an alternative alignment to enable the rebuild of the existing single circuit 275 kV line between Templers West and Para to a high capacity double circuit line over a distance of approximately 35 km.

The planned residential expansion of Roseworthy, Concordia, Evanston South, Gawler East and the industrial developments earmarked for Kingsford increases the risk and urgency associated with this project.

Detailed corridor investigations and negotiations with stakeholders are required to ensure that the space needed for line reconstruction is still available when action is required.

The need to pass through residential and urban growth areas increases the risk and complexity of obtaining Development Approvals required for the line construction project. This is likely to involve extensive community consultation and liaison with stakeholders. Long lead times will be required to deliver an accessible line corridor in time to meet these network trigger dates.

Early commencement and action is necessary to ensure all necessary design work is complete, planning approvals are in place and all necessary land and easements are secured prior to the change in forecast agreed maximum demand foreshadowing a future breach of the ETC reliability standards.

Easement acquisitions will be required to enable the rebuild of the 275 kV Para to Templers West line as a double circuit (a distance of approximately 35 km) and the establishment of new 275 kV substation at Kingsford. The ETC requires that ElectraNet must use its best endeavours to complete all necessary design work, obtain all necessary planning approvals and acquire all necessary land and easements on the basis of forecast agreed maximum demand so as to ensure it is in a position to meet its reliability standard obligations.

The purpose of this business case is to determine the optimal timing and quantum of easement acquisition that satisfies the ETC requirements and delivers the most efficient and prudent outcome for customers. This project complements the Templers West to Para easement expansion project, and will enable the establishment of a double circuit 275 kV loop connecting the Para, Mallala and Templers substations to address the projected supply needs of this region.

In light of the risk associated with obtaining suitable land and associated approvals in a timely manner in accordance with ElectraNet's obligations, the timing of this project accords with the:

- ETC Code requirement under 6.3.1 Planning Approvals and Easement Acquisition
- Strategic Land Acquisition Policy, which includes the following objectives:
  - Manage project delivery risk
  - Minimise network costs
  - Minimise land costs
  - Secure land availability

The project is required to meet the Rules capital expenditure objective to meet the expected demand for prescribed transmission services and comply with all applicable

regulatory obligations or requirements associated with the provision of prescribed transmission services. The objective is to ensure that the quantum and timing of easement and land procurement minimises the total project costs, including network costs, in present value terms.

2. Background –network options and easement considerations

It is helpful to provide additional background information on the network project options and any specific issues arising in relation to easement acquisition. This background information forms an important input to the cost benefit analysis and the recommendations that follow.

2.1 Credible Network Options

Given the residential expansion into rural areas that has already occurred in the northern suburbs of Adelaide, there are no viable alternative routes available between Para and Templers West other than those that follow these existing lines. The existing line route is straight and therefore represent the least cost path for any new transmission line (i.e. as many suspension towers as possible, with fewest number of angle and strain towers) thus in presenting the minimum amount of easements required it also requires the least amount of infrastructure.

To date the developments built proximate to these line have taken its presence into account and the areas that may accommodate an alternate alignment have effectively been built out. This prevents the development of low cost route alternatives.

There are no alternative network options available to provide the functionality that will be delivered by the proposed double circuit rebuild of this line. This is because this network development is proposed in response to increased and localised residential, commercial and industrial loads concentrated in the northern areas of Adelaide, rather than the more general issue of the loading on the main grid circuits between Adelaide and Port Augusta. Reinforcement of the main grid from other locations with additional 275 kV lines or circuits at a higher voltage will not assist in supplying that load.

In addition as that these lines are an integral part of the connection between Adelaide and the north of areas of the State, they cannot be turned off to facilitate such a rebuild (which will be eventually be required in any event given that the lines are already over 50 years old).

The existing easement alignment provides the most practical and viable routes for the replacement of the line. The localised concentration of load requires these specific circuits to be re-built to reinforce the area, the only possible variation of an overhead network solution is to pursue an undergrounded configuration in a future built environment.

This will prove technically very difficult to achieve in practice within the existing corridors, and require over-under transitions to ensure any underground section is not overloaded by any parallel overhead section, in addition to reactive compensation due to the long cable lengths required.

The undergrounding of cables increases the costs of the Project. Based on the recent ACR Project completed by ElectraNet the cost of undergrounding is approximately $4.95 million

per kilometre plus $2 million for each transition station, compared to $2.39 million per kilometre for overhead line.

2.2 Easement Considerations

The proposed easement stretches over four different local government areas; Playford Council, Gawler Council, Barossa Council and Light Regional Council. Each of these councils is responsible for maintenance of its Development Plan to ensure land use policy is consistent with State strategic land use frameworks and other over-riding legislative provisions. Councils achieve this through producing Development Plan Amendment (DPA) reports which are subject to various levels of public and agency consultation. A key aspect of these reports is to identify zoning and policy provisions catering for acceptable or desired future land uses in certain areas or proposed changes in land use to reflect evolving community needs and developments.

ElectraNet participates in reviewing and commenting on these DPAs. This is one avenue where ElectraNet's future needs can be recognised and acknowledged in State and Local Government planning instruments. However as stated previously planning policy does not confer developments rights for future transmission infrastructure to ElectraNet, it only serves to identify a conceptual likelihood of such future development. Without acquisition of an easement an electricity transmission corridor identified in a local council development plan affords no guarantee of development rights exclusively to ElectraNet nor does it provide ElectraNet with reasonable expectation of any rights to the subject land.[2]

In respect to the proposed Para to Templers easement route ElectraNet has been involved in various strategic planning processes including the 30-Year Plan for Greater Adelaide and a number of DPAs.

This activity complements ElectraNet's intended strategic easement acquisition and endeavours to influence land use zoning to ensure compatible development is planned for adjacent to both existing and proposed transmission lines. ElectraNet's involvement in these strategic planning processes also assists in identifying the rate of land use development and potential constraints to ElectraNet's economic and orderly ability to secure easements for future network needs.

The concentration of broad scale residential development in the growth areas of Evanston South, Gawler East, Concordia and Roseworthy presents a rapidly changing landscape associated with the significant urban developments identified in the 30-Year Plan for Adelaide. It is evident that over the next 5-15 years the area within which the easement route is proposed will be subject to considerable rezoning and residential developments contemplated in the State Government and Local Government plans for the large scale urban expansion in the area.

The region known as the Gawler Belt is of vital economic and strategic importance to the South Australian economy.

[2] Refer to *Report Strategic Land Acquisition Programme Process to Acquire and Obtain Development Rights.*

Reliable rainfall and the availability of major transport routes and reticulated water make the Templers, Roseworthy and Gawler districts among the most productive cropping areas of the State. South of the Sturt Highway the upper reaches of the Gawler River wind through the start of the Barossa Valley an area highly valued for viticulture and horticultural activities.

The re-vitalisation of transport connections through this district, including the opening of the Northern Expressway in 2010 has opened the region to further urban expansion. The township of Freeling has expanded its urban boundaries, however the majority of urban growth North of Adelaide will occur around Gawler in the Concordia district and the town of Roseworthy.

The Department of Planning and Local Government's 2010 "30-Year Plan for Greater Adelaide" earmarks Roseworthy as key growth hub in a strategy that would see an additional 46,400 dwellings constructed in the Barossa region and a further 110,000 new residents.

Development consortia, including the Hickinbotham Group have been active in the area securing agreements with the landowners who hold the balance of the 5,440 hectares of new residential and 600 hectares of new employment lands identified in the report.

The ageing single circuit 275 kV Templers to Para 275 kV line is one of three ElectraNet transmission lines that pass through the Gawler Belt.[3]

On its 35 km route between Templers and the Para substation the line passes through several distinct land use precincts varying from cereal production, intensive animal keeping, grazing, horticulture, viticulture, rural living and residential land uses together with Future Residential and Industrial ("Employment Lands") growth zones.

Each of these land use activities carries with it its own risk of availability and special considerations that contribute to the cost of easement compensation. As a general rule the risk of corridor availability and the cost easement compensation escalate with increases in the intensity and density of land uses.

For the purpose of understanding and qualifying the threats, risks and vulnerabilities of the network applicable to each precinct, the line route has been reviewed and assessed in nine sectors.

Table 1 details the current land use zones and approximate length of the transmission line within each sector.

[3] The other two lines are the 275kV Mallala to Para Line (West Cct F1960) and 132kV Para to Roseworthy (F1822).

Sector	Current Zoning	Availability risk	Length km	% of total
1	Primary Industry (Light Regional Council)	Low	6.1	17.4
2	Future Urban Growth – Residential	High	3.5	10.0
3	Future Urban Growth – Employment	High	1.0	2.9
4	Primary Industry Policy Area 3 – Horticulture	Low	1.7	4.9
5	Primary Production	Low	3.5	10.0
6	Future Urban Growth – Concordia	High	0.6	1.7
7	Residential – Wheatsheaf Policy Area	High	0.8	2.3
8	Residential Gawler East	High	1.2	3.4
9	Primary Production	Low	0.5	1.4
10	Hills Face Zone	Low	16.1	46.0
		Total	**35.0**	**100.0**

Table 1: Existing Corridor –Sectors, Land Uses and Line Length

2.3 Strategic land acquisition policy / assessment framework

This section considers the relevant parameters set out in the assessment framework in ElectraNet's Strategic Land Acquisition Policy as relevant to this specific project.

ElectraNet is required to satisfy the capital expenditure objectives in clause 6A.6.7 of the Rules efficiently and prudently. In particular, ElectraNet seeks to minimise the total costs of satisfying the capital expenditure objectives, including the cost of easement acquisition. For each project, it is important to manage the risks arising from the interplay between network expenditure and easement acquisition costs, particularly in relation to the timing of easement acquisition.

For example, network costs may increase as a result of:

- **Undergrounding**. It may be necessary to underground sections of the proposed transmission line in the absence of secure easement rights. Based on recent cable installation undertaken by ElectraNet the cost of undergrounding 275 kV double circuit cable is approximately $4.95 million per kilometre plus $2 million for each transition station.
- **Longer line route**. Due to high density development in this area, ElectraNet may not be able to secure an easement through the shortest distance for the line under deferred acquisition options. This poses a risk that additional cost will result under deferred easement acquisition options as a consequence of selecting line routes through less developed areas, resulting in increased distance for this particular project, the following points are worth noting:

- There are no alternative network options available to provide the functionality required to be delivered by the proposed reinforcement of the Para to Templers West and the Para to Mallala. Therefore, there are no material risks of changing network requirements.
- An analysis of land sales over the past ten years highlights that the value of land in this region is escalating at around 7.7 per cent in rural land and 10.4 per cent in residential land, which is higher than the real cost escalation rates in Table 1.1 of the AER draft decision.

2.4 Minimise land costs

Along the length of the proposed line route, there are sectors where the land-use has already changed resulting in a step change in the value of land. As stated in the section above, the escalation of this land has already surpassed the current proposed cost escalation rate in Table 1.1 of the AER draft decision. For example, the escalation cost for "Residential Land" has been estimated at 8.1 per cent which, when compared to the WACC of 7.42 per cent, means that the costs of easement in residential sectors can be expected to escalate at a higher rate resulting in higher real land costs in future.

Should this trend continue then the cost of purchasing easements in this sector in the future will, in real terms, be more expensive than it is today.

2.5 Securing land availability

ElectraNet notes that there is a risk of land availability for this particular business case, despite the range of planning initiatives undertaken by ElectraNet

The rebuild of transmission lines through settled and rapidly developing urban growth areas carries an elevated risk of community opposition. The high density of residential land uses and the high values associated with urban land increases each stakeholder's interest in opposing development that are perceived to diminish the value of their land holding. To this end the early commencement of corridor investigations and landowner negotiations is a key risk control, particularly in the settled and urban areas experiencing rapid growth and development. Project risk is best reduced by allowing sufficient time to negotiate agreements with landowners ahead of project construction deadlines. Certainty of alignment and the clarity of what is proposed are keys to cost effective and timely delivery of property requirements for this project.

ElectraNet's approach is to engage actively with planning authorities with the objective of minimising encroachment risks as a result of urban development or rezoning. By working actively with planning authorities ElectraNet seeks to minimise easement acquisition costs on behalf of transmission customers.

Through ElectraNet's active engagement in strategic land use processes it is evident that over the next 10-15 years the area within which the proposed Para to Templers easement route is proposed will be subject to considerable rezoning and residential development in accordance with the 30 Year Plan for Adelaide and DPAs either recently released, approved or proposed by State and Local Governments.

ElectraNet's involvement has included actions to influence both future land use zoning and to ensure compatible development is planned for land adjacent to both the existing and proposed future transmission lines.

As illustrated in Appendices 2 and 3 the areas immediately north and west of Para substation have been undergoing rapid urban growth as the primary greenfield focus for creation of large new urban communities associated with the 30-Year Plan for Greater Adelaide and the State's population growth targets.

Developments in the Blakeview, Munno Para and Evanston Gardens areas, all within 10 km of Para substation, are part of the State government's planned urban growth currently underway and to be continued over the period to 2020. In addition urban, commercial and industrial growth is being planned as a priority in the Roseworthy Gardens area immediately north of Gawler with expectations that the first housing developments will commence construction in 2014.

Recent consultations with Department of Planning Transport and Infrastructure have included SA Power Networks in round table talks on project and power supply needs. SA Power Networks advised ElectraNet through Joint Planning that they would likely establish a new 66 kV network throughout Roseworthy Gardens with new distribution substations to service an initial population of up to 60,000. The network would be established as the subdivisions were developed from south to north through the growth area. However a new 275/66 kV injection point to service growth at Kingsford would be required in near future. On basis of this network planning scenario a site for a new 275/66 kV substation was identified east of Main North Road in the area earmarked for Industrial rezoning, this acquisition has been completed.

Also impacting upon security of the network is the industrial growth anticipated for the Kingsford area and further urban growth immediately north towards Templers as depicted in Appendix 2. The Para –Templers 275 kV transmission line traverses this area north to south. In order to preserve ElectraNet's rights to replace the line on the same alignment a proposal to widen the easement has been included in 2013-2018 revenue proposal.

This, together with efforts to influence Land Use Structure Planning to designate corridors and sites for critical electricity infrastructure, will be pursued in collaboration with DPTI, Light Regional Council and Developers including Alliance Members. However, in the absence of any legislative means in South Australia to have transmission corridors exclusively preserved for future network needs, Development Plan policy in isolation from acquisition will not secure land availability. The only sustainable solution to securing land availability given the clear risks posed by urban, commercial and industrial growth is the acquisition of easements and in particular timed prior to land being rezoned to both save costs and allow for orderly planning of both transmission corridors and surrounding environments.

Through these actions ElectraNet has pursued all available regulatory and legislative options available to it in order to manage the risk of identified easement requirements not being met. However, it is important to note that these actions cannot guarantee development rights unless ElectraNet acquires easements in the required corridor

Therefore, in the absence of full acquisition of the high risk sections of the required easement in immediate proximity to encroaching urban developments, there is a material risk that land rights will be unavailable beyond the forthcoming regulatory control period, leading to a need for more expensive underground transmission network options.

3. Cost benefit assessment

Methodology

The feasible easement options and specific risk factors identified above have been evaluated based on the following assumptions:

- Analysis period – the analysis has been undertaken over a 20 year evaluation period.
- Discount rate – the sensitivity of the results to changes in discount rate has been tested through the adoption of a lower bound discount rate of 7.42 per cent reflective of the (pre-tax, real) WACC for the forthcoming regulatory period and an upper bound discount rate of 13 per cent.
- Land values – ElectraNet has applied the land escalation rates adopted by the AER for the purposes of its Draft Decision based on independent land valuations secured from Maloney Field Services. The sensitivity of the results to changes in land valuations has also been tested.
- Network project timing – network project timing has been assessed based on current demand projections and anticipated replacement project timeframes. The sensitivity of results to changes in network project timing has also been tested.
- Network options costs– the cost of network options has been estimated in accordance with the methodology described in section 5.8.8 of ElectraNet's revenue proposal (May 2012). The sensitivity of the results to network project costs has also been tested.

Option 1- Deferred easement & partial underground cable

Under this option, ElectraNet will be forced to underground sections of the transmission line (Sectors 2 to 8 in Table 1) due to high build areas or other incompatible land uses. These sectors will be significantly developed making it difficult for ElectraNet to secure a 50 metre easement.

Although the line route traversing high risk residential sectors is 7.1 km, this option will require approximately 12.3 km of above-ground line to be replaced with underground cable continuous between sectors 2 to 8. This is the most cost effective solution as the cost of the additional transition stations to span the non-residential sectors with overhead line would exceed the cost of cable.

ElectraNet has assumed that the length of cable required will be approximately 20 per cent longer than its overhead line equivalent. This is to account for minor deviations in alignment and variances in topography and elevation. This rate is consistent with the cable requirements experienced in the Adelaide Central Reinforcement project over relatively flat terrain.

This rate is conservative as it presumes the convenient siting of overhead / underground transition points at each end and that only minor route deviations will be required. Current costing based on recently completed cable installations by ElectraNet indicates that cost of undergrounding is approximately $4.95 million per kilometre plus $2 million for each transition station.

The cost of this option is estimated as follows:

- The incremental cost of 12.3 km (and allowing for the 20 per cent additional cable) 275 kV double circuit underground cable is $86.4 million (inclusive of underground easement cost and transition stations) in 2032.
- Remaining easement costs for overhead sections of $3.3 in 2029.

Option 2- Acquiring Easement in 2015

This option is to entirely secure the easement from Para to Templers West in 2015. The timing of the easement acquisition is focused on addressing risks associated with further step change in the value of land and avoiding the expected encroachment from building developments and incompatible land uses.

It is already evident that the 30-Year Plan for Adelaide and various council strategic land use policy instruments have anticipated land-use change to cater for residential, commercial and industrial growth in the northern suburbs. This will trigger a step change in the value of land. Where this change has already occurred long-term sales evidence indicates an annual escalation rate of land is estimated at 10.3 million which is well above the assumed increases in Table 1.1 of the AER draft decision.

The cost of this option is estimated as $8.4 in 2015 for the 35 km easement.

Option 3-Staged Acquisition

Under this option ElectraNet will seek to secure easements along the route where the land is currently undeveloped but earmarked for re-zoning for residential land use in the 0-15 year period or there is significant risk of a further step change in property values in response to rezoning investigations.

Table 1 above identifies the sectors where ElectraNet will seek to secure the easements to avoid the risk of being locked out in future due to land-use changes, i.e. sectors 2, 3, 6, 7 and 8. Therefore, this option includes the targeted easement acquisition in 2013-2018 period of these sectors where the risk of obtaining easement in future is “high” totalling approximately 7 km. Easements in the rest of the sectors will be acquired in the 2019-2023 regulatory period.

The total cost of this option is estimated as $7.2 million ($12-13), broken down between the next two regulatory periods as follows:

Regulatory Period	Easement Acquired	Estimated Costs ($12-13)
2013 – 18	7 km	$6.0 million
2019 – 23	28 km	$1.2 million

Option 4- Do nothing-extended line route and compulsory acquisition of easements

This option is to defer the easement acquisition close to when the line is to be built. Currently ElectraNet’s strategic plan allows for construction of this line by 2032. To meet this timeline the easement acquisition must commence by 2029 consistent with the ETC requirement.

If the acquisition of the easement is deferred to 2029 it is probable that longer line route will be needed to avoid high build up areas where the easements cannot be secured. The costs of an alternative route (passing through highly developed sectors and longer than the route we have considered) render this option not economically credible. Further, compulsory acquisition of easements will require lengthy negotiation period as well as may lead to litigation by private landowners.

By 2018 the land along the optimal route for the transmission line is likely to be developed into housing and other sensitive and high value land uses. Consequently, securing easements necessary for the overhead line will not be economically viable. Such an approach would expose transmission customers to the risk of substantially higher easement acquisition costs, and has not been evaluated further. An alternative 'do nothing' option is Option 1 above, which involves undergrounding sections of the transmission line, which is a lower cost approach.

Table 2 presents the results of the economic analysis demonstrating the present value cost of the options and sensitivities considered.

Parameter	Range	Option 1		Option 2		Option 3	
		Easement & Patrial Undergrounding		Acquiring Easements in 2015		Staged Easement Acquisition	
		PV Cost ($m)	Rank	PV Cost ($m)	Rank	PV Cost ($m)	Rank
Discount rate	7.42%	(23.2)	3	(7.2)	2	(7.2)	1
	10.00%	(14.9)	3	(6.9)	2	(6.5)	1
	13.00%	(8.9)	3	(6.5)	2	(5.9)	1
Land Escalation	80%	(14.7)	3	(6.7)	2	(6.2)	1
	100%	(14.9)	3	(6.9)	2	(6.5)	1
	120%	(15.0)	3	(7.1)	2	(6.9)	1
Network Project timing	2027	(21.7)	3	(6.9)	2	(6.5)	1
	2032	(14.9)	3	(6.9)	2	(6.5)	1
	2037	(10.3)	3	(6.9)	2	(6.5)	1
Network Project cost	80%	(12.0)	3	(6.9)	2	(6.5)	1
	100%	(14.9)	3	(6.9)	2	(6.5)	1
	120%	(17.7)	3	(6.9)	2	(6.5)	1

Table 2 Quantitative assessment of options and sensitivity analysis

3.1 Recommendation

For each sensitivity case, Option 3 – staged acquisition - is the lowest cost option in present value terms. However, Option 2 – which is easement acquisition in 2015 – is only marginally more expensive than Option 3 (the present value costs being the same to 1 decimal place in three instances). Although these two options are closely aligned in terms of outcomes, there is no qualitative or quantitative reason to adopt Option 2 in preference to Option 3. It should also be noted that both Options 2 and 3 are materially superior to Option 1, which is a 'do nothing' option as it maximises the deferral of the easement acquisition.

On the basis of the cost benefit analysis, Option 3 involving the staged acquisition of easements has therefore been identified as the most prudent and efficient option that balances long-run cost and the maintenance of ongoing supply reliability to consumers.

The total cost of this option in the forthcoming regulatory control period has been estimated at $7.2 million ($2012-13).

The proposed scope of works comprises:

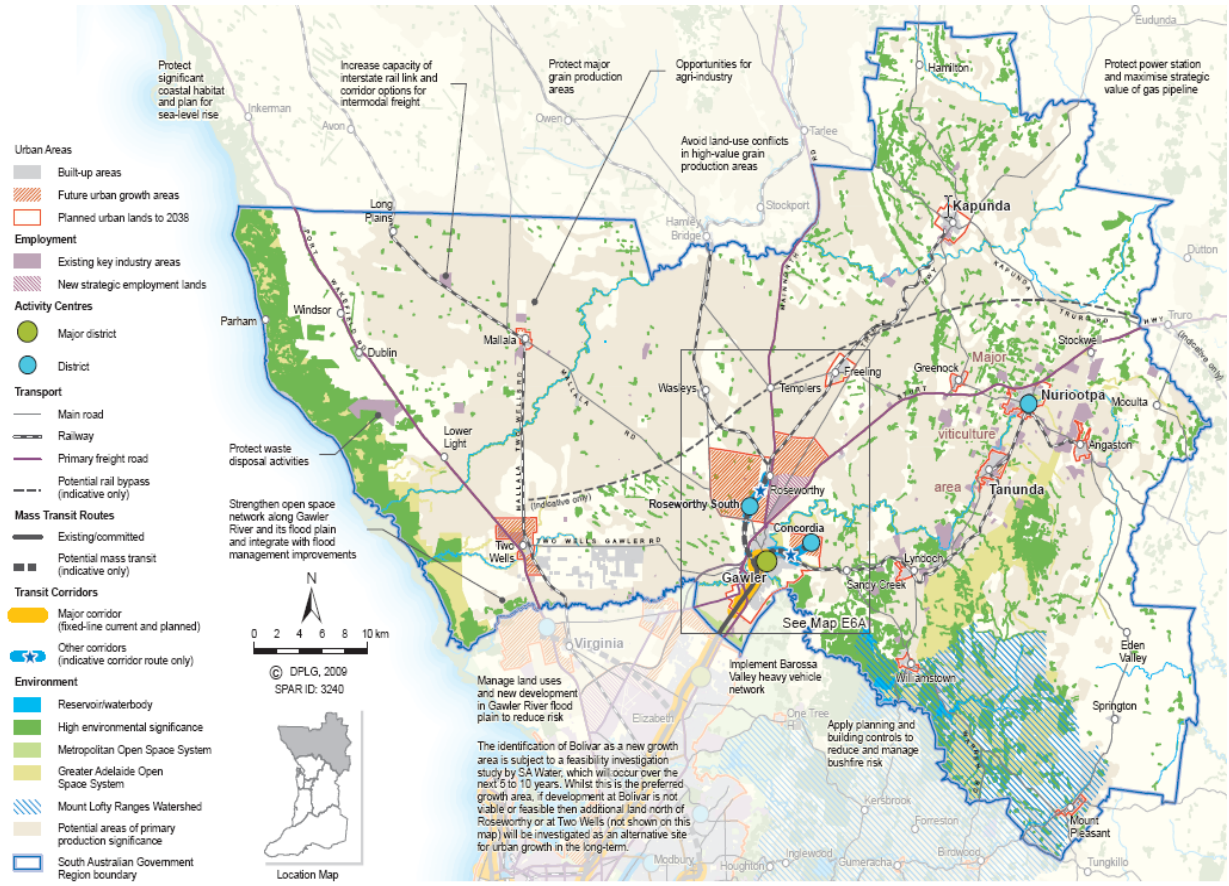
- Route assessment and investigations.
- Acquisition cost of 50m easement for 7 km = $7.2million.

3.2 Attachments

1. Proposed line routes Mallala-Templers-Para
2. Barossa and Northern Areas Strategic Land Use Planning Source 30 Year Plan for Greater Adelaide SA Govt.
3. Roseworthy Gardens Structure Plan-Energy (Dept. Planning Transport and Infrastructure).
4. Background Report.

[Please refer to confidential Appendix]

Attachment 1 Proposed Line Route Mallala-Templers-Para



Attachment 2 Barossa and Northern Areas Strategic Land Use Structure Plan source 30 Year Plan for Greater Adelaide SA Government

Attachment 3 Roseworthy Gardens Structure Plan-Energy

ElectraNet Transmission Network Revised Revenue Proposal

Appendix I- Strategic Land Acquisition - Process to Acquire and Obtain Development Rights

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Glossary of Terms

Term	Description
APR	Annual Planning Report
BP	Business Plan
DAC	Development Assessment Commission
DMITRE	Department of Manufacture Innovation Trade Resources and Energy
DPA	Development Planned Amendment
DPTI	Department of Planning Transport & Infrastructure
ESCOSA	Essential Services Commission of South Australia
ETC	Electricity Transmission Code
HSI	Hot Spot Initiative
ICC	Infrastructure Co-ordination Committee
Network 2035	Network 2035 Vision
NMP	Network Master Plan
SLAP	Strategic Land Acquisition Programme
TNSP	Transmission Network Service Provider
30-Year Plan	30-Year Plan for Greater Adelaide

Abstract

In order to have the ability to replace and extend its transmission network in the future at the lowest long-run costs to its customers, ElectraNet, under its Strategic Land Acquisition Programme (SLAP), will typically acquire land and easements 5 to 15 years ahead of project delivery need.

The decision to strategically acquire land or easements, and the timing of the acquisition, will depend on a number of influencing factors. These include but are not limited to: expected changes in land use and costs of acquisition; future land and easement availability and its cost implications for the associated network project; length of the negotiating period; sensitive environmental issues; and time needed to obtain development and other statutory approvals.

This paper outlines the processes ElectraNet has in place to influence the South Australian land use planning system and the relationship this activity has to the SLAP. The combination of both these core activities supports prudent capital expenditure and maximises opportunities to develop the network in the most efficient manner by integrating strategic land use and infrastructure planning. This paper illustrates how ElectraNet interacts with various government departments, agencies and other relevant stakeholders to influence land use policy and how this complements easement and site acquisition.

Executive Summary

ElectraNet provides high voltage electricity transmission services to South Australia and is required, as a condition of its electricity transmission licence, to comply with the Electricity Transmission Code (ETC) made by the Essential Services Commission of South Australia (ESCOSA) pursuant to section 28 of the Essential Services Commission Act 2002 (SA). The ETC places certain obligations on ElectraNet to meet certainty reliability and service standards, and ElectraNet must plan and operate its network in a manner that is consistent with these standards.

Access to land which enables ElectraNet to meet its licence obligations, including those to comply with the ETC, is obviously essential to ElectraNet's role as the operator of the electricity transmission network in South Australia. Obtaining access to that land in a prudent and efficient manner is obviously a central part of the regulatory obligations to which ElectraNet is subject under the ETC and National Electricity Rules.

Being a privately owned company, ElectraNet has no formal legal authority within the South Australian land use planning system; this is only afforded to Government departments, agencies and corporations. Government authorities are formally engaged in master planning for urban and regional growth areas and as such have considerable influence on the broad allocation of land and its intended use prior to release of Development Plan Amendments (DPA). The fact that Government authorities have a "seat at the table", coupled with the Government's ability to provide crown land or secure private land through compulsory acquisition for Government purposes, gives a strong advantage to such authorities in comparison to privatised developers of public infrastructure.

Unlike a Government authority which is able to influence land use and land allocations at master planning phases, ElectraNet is only formally engaged in discussions on land use and allocation at DPA stage and can only provide comment and seek to influence outcomes through limited means available to it. ElectraNet cannot demand that provision be made in the State strategic land use planning system for future power line corridors and major substation sites. This report highlights the key actions that ElectraNet takes to influence the State land use planning system to ensure that sites and corridors for future transmission infrastructure are at least acknowledged by that means.

In the absence of any legislation giving ElectraNet preserved sites and corridors for future transmission network development, it is imperative that ElectraNet acquires key substation sites and easement corridors where there is a material risk of being effectively 'locked out' of future access through changes in surrounding land use. These circumstances might include changes in land use such as urban or industrial growth, establishment or expansion of conservation areas, commercial or recreational rezoning, etc. In order to ensure maximum opportunity to develop the transmission network as envisaged by the Network Master Plan (NMP), a combination of proactive land use planning initiatives in combination with strategically timed land and easement acquisition is critical to securing access to land in a prudent and efficient manner that, in the long term, minimises overall expenditure on land access and network solutions.

Development rights may only be secured through land and easement acquisition. Influencing of the State's strategic land use planning system is also pursued by ElectraNet on an ongoing and active basis to encourage compatible land uses in areas adjacent

existing and future electricity power lines and substation sites and to minimise possible future interface conflicts.

1. Introduction

This paper outlines the processes and practises ElectraNet uses to obtain rights to develop future electricity transmission corridors and substation sites with the aim of minimising the long term costs of the land and easements it needs to augment or replace the network.

The paper demonstrates the relationship between strategic land use planning and the acquisition of land and easements strategically ahead of the time when the land is actually physically required for the development of ElectraNet's network. It also illustrates how ElectraNet interacts with various stakeholders to ensure that these acquisitions reflect prudent and timely transactions made in accordance with ElectraNet's obligations as a TNSP.

2. South Australian Planning Process

The South Australian Development Act 1993 (SA) (Development Act) and the Regulations made under that Act provide for public infrastructure development in South Australia.

The Development Act is administered by the Department of Planning Transport and Infrastructure (DPTI) and authorises the Development Assessment Commission (DAC) and Local Governments to act as relevant authorities for development approval.

Section 49A of the Development Act deals with development (which includes building work) for the purposes of the provision of electricity infrastructure and sets out the process to be followed to obtain approval for a proposed development. Section 49A broadly reflects the provisions that relate to Crown development in section 49.

The South Australian government has various departments and agencies that undertake long term infrastructure planning for State's transport, water and residential growth, but not for electricity transmission corridors.

Since the privatisation of the electricity industry in South Australia, infrastructure planning for transmission and distribution networks has been virtually exclusively the responsibility of ElectraNet and SA Power Networks in liaison with AEMO. From a strategic land use planning perspective, ElectraNet does not have any statutory authority and, hence, has very limited access to the State government's Infrastructure Co-ordination Committee (ICC) (a formal departmental and agency committee under the Minister for Planning) and planning processes. The ICC was established in 2010 to ensure whole of government co-ordination of land use planning and allocation for infrastructure needs associated with the 30 Year Plan for Greater Adelaide. Membership of the committee is limited to government department and agency Chief Executives and their delegates. There is no means for private developer representation on the ICC. As such ElectraNet is no different to any other private developer of public infrastructure. ElectraNet uses various other means to keep the State government informed of its long term infrastructure development

requirements and attempts to influence the planning system and its outcomes through a number of proactive initiatives.

2.1 ElectraNet Input into Planning Process

ElectraNet uses a variety of means available to it within the framework of the State strategic land use planning system and associated processes to complement and support the future infrastructure planning of its transmission network as discussed below.

Department Planning Transport and Infrastructure Meetings

ElectraNet conducts regular briefings with the management and staff at various levels within the Department of Planning Transport and Infrastructure (DPTI), which includes the Department's Chief Executive and various Directorates within the Department.

The purpose of these briefings is to make the department aware of the transmission network's long-term infrastructure requirements. ElectraNet use the NMP, the Annual Planning Report (APR), its Network Vision 2035 (Network 2035) and the Business Plan (BP) to keep the department informed on the current direction of transmission planning and what the future requirements will be.

ElectraNet's urban planning staff have the responsibility of dealing regularly with their counter-parts in DPTI. This liaison occurs as frequently as is required but at least on a monthly basis.

Through these meetings ElectraNet has been able to provide significant input into the States' strategic land use planning processes associated with the 30-Year Plan for Greater Adelaide (30-Year Plan). This has resulted in the inclusion in that plan of high level policy which requires identification of major existing and planned electricity transmission corridors and substation sites in all State, Regional and Local Government Structure Planning associated with urban growth areas.

Ministerial Development Plan Amendments

Occasionally, the government will release a Ministerial Development Plan Amendment (DPA) for agency and public consultation. ElectraNet takes the opportunity to consider any potential implication for existing and planned network development and make an informed response to the DPA where it has relevance to the transmission network. It should be noted that ElectraNet's status as a referral agency for DPAs was granted by the State Government in 2011 following strong lobbying by ElectraNet. Prior to this status being granted, ElectraNet's involvement in commenting on land use changes with potential to impact upon its existing and proposed infrastructure was frequently at the land division application stage. Consequently ElectraNet had minimal ability to influence significant changes to proposed divisions or land uses in such circumstances.

Through ElectraNet's proactive efforts to increase its influence on strategic land use planning in SA there is an increasing level of interaction between ElectraNet and State government planning authorities. As a result of ElectraNet's recent liaison with DPTI it is anticipated that future Ministerial DPAs for urban growth areas, such as in Adelaide's northern suburbs, will make provision for replacement of existing transmission lines which dissect an area earmarked for residential growth. As a result, a transmission line corridor

will be designated within the relevant Council Development Plan. This designation will support orderly, economic and sustainable development in the proximity of the existing high voltage power lines without compromising the intended future replacement of these lines by ElectraNet.

Importantly however, land use policy provisions on their own will not guarantee future development rights for ElectraNet. To secure exclusive use of this infrastructure corridor, ElectraNet is required to invest in the acquisition of easements for future network augmentation.

Local Government Development Plan Amendments

ElectraNet's transmission network stretches over 32 local government regions. Under the Development Act councils are required to prepare and release for public consultation DPAs and to conduct periodic reviews of their Development Plans.

Currently ElectraNet has an Urban Planner responding to strategic land use planning referrals to ensure that these proposals do not adversely affect existing or planned future transmission network development.

Recently ElectraNet has had success on the Eyre Peninsula, in the City of Onkaparinga and various other council areas where the councils accepted ElectraNet's submissions on proposed DPAs and included policy and constraints mapping highlighting existing and planned future electricity transmission corridors in their respective Development Plan.

Case Management Service

Through the Department of Manufacture Innovation Trade Resources and Energy (DMITRE) the South Australian government offers case managers to projects that are valued in excess of $10 million and are considered to be of State significance as a dedicated internal resource within the Department that assists in dealings with the various government agencies that may have an interest or involvement in a particular project.

ElectraNet has previously used case managers for projects that meet this criterion on several occasions. Case managers add value by making it easier when dealing with multiple SA government departments that each has influence over the development and other statutory approval processes.

Currently ElectraNet has been assigned a case manager for the Eyre Peninsula project.

Hot Spot Initiative

The Hot Spot Initiative (HSI) is an internal business process that is largely aimed at ensuring that ElectraNet has up to date intelligence on land use changes around key existing and future corridors and sites. The HSI gathers information on locations where the high potential for conflicting land use trends might present a risk to a proposed future network development.

The initiative is managed by ElectraNet's urban planning staff and links information gathered on land use trends into ElectraNet's SLAP and the Network Planning processes.

There exists a flow of information between these three functions of the business that allows for regular review of the risks associated with the timing of capital projects and land and easement acquisitions.

By ensuring that attention is focused on the environments surrounding future network sites, ElectraNet has the ability to adjust the timing of its acquisition strategies to avoid being locked out of a site. Furthermore, this proactive monitoring can avoid serious compromise in terms of ElectraNet's ability to grow the network as required, in an orderly, economic and sustainable manner.

3. Property - Land & Easements

ElectraNet's transmission infrastructure is designed for a long and reliable service life, often spanning 40 to 50 years. During this time the land uses around transmission infrastructure can change significantly as urban areas grow, mature and renew.

If unsuitable forms of development are permitted to occur alongside or on both sides of an existing or proposed transmission line it can 'crowd in' the line and complicate the rebuilding or establishment process. Rectifying the consequences of unsuitable development imposes a considerable social and economic burden on affected communities and electricity consumers. In some circumstances it can result in an unsuitable land use that creates an unintended risk to public safety or an unforseen threat to the reliability and continued operation of the infrastructure.

ElectraNet's urban planning activities are the first steps in mitigating these risks. By identifying current transmission lines and earmarking future transmission corridors in government planning references ElectraNet may be consulted by planning authorities prior to development occurring.

As a privately owned company, ElectraNet has no automatic power to compel any landowner or interest holder to surrender land (and/or easements) for its requirements. For the most part, ElectraNet's property interests may only be obtained through direct and cooperative negotiations with landowners.[1]

Transmission land and easements are not obtained without cost. The easements for distribution networks, water and gas reticulation are often volunteered by landowners and developers as part of negotiations to obtain approval for urban developments. However, transmission easements, which pass through developments as opposed to connecting them, lack the perceived relationship in the eyes of the developer with the development activity for the grant of easements at nil or nominal compensation.

Whether taken by compulsion or purchased by negotiation, landowners and interest holders are entitled to compensation for land and the consequential losses that may result. Because of the scale of the transmission network within urban settings, this cost is significant.

1 Under exceptional circumstances ElectraNet may, at the sole discretion of the Minister for Energy, seek authorisation to use the compulsory acquisition provisions of the Electricity Act. Their grant and use is limited, assessed on a case by case basis and without guarantee. As a business practice compulsory acquisition is politically and socially unsustainable and unsuited for long term strategic acquisitions.

The heads of compensation provided under land acquisition statute and case law represent an interest holder's minimum entitlement at law. In negotiated settlements this forms the basis of the bid, and in contested acquisitions, the starting point for a court ruling.

The key point is that the value of the land taken is not necessarily representative of the total compensation that may be awarded.[2] The purpose of the compensation is to provide the interest holder with the full money equivalent of that which they have been deprived.

> *"prima facie means recompense for loss, and when owner is to receive compensation for being deprived of real or personal property his pecuniary loss must be ascertained by determining the value to him of the property taken from him. As the object is to find the money equivalent for the loss or, in other words, the pecuniary value to the owner contained in the asset, it cannot be less than the money value into which he might have converted his property had the law not deprived him of it".*
>
> (Nelungaloo Pty Ltd v Commonwealth (1948) 75 CLR at 571)

In the Walker case[3], land earmarked for development was compulsorily acquired by the State government. The landowner, Caltex, received the value of the land ($14.8 million) agreed under the $800k option contract undertaken with Walker Corporation. Walker Corporation received from the tax payers a total compensation of $43.5 million for the loss of profit that they may have received had they been able to develop the land as per their intention.

The Walker Corporation case is directly applicable to ElectraNet's strategy for transmission corridors in urban settings, especially those areas earmarked for future urban expansion.

The execution of urban planning strategies to attempt to exert influence over the re-zoning of land adjacent to existing assets is a vital risk control. This control measure is limited however by the willingness of planning authorities to consider ElectraNet's recommendations.

Where it is successful in stifling re-zoning of land that is adjacent to existing assets or in areas where future network development has been identified to higher land uses, ElectraNet may be able to influence the value of land required for transmission network development, effectively reducing the acquisition costs.

Where land has already been re-zoned or the urban planning strategies fail, the cost of securing corridors is at great risk of rapid escalation. The key mitigation measure in this instance is to acquire land and easements at the earliest opportunity noting that, as in the Walker case, the cost of the land may only represent a fraction of the compensation a landowner may otherwise be entitled to.

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2 Vide High Court of Australia – Walker Corporation Pty Ltd v Sydney Harbour Foreshore Authority 2008: Landowner received $14,375,000 as compensation for land taken, Walker Corporation – an interest holder received $43,555,138 for losses associated with not being able to develop the land.

3 ibid

4. Conclusion

It is evident from the discussions above that ElectraNet cannot rely solely on the State land use planning system and the work it currently does in influencing it to preserve all future land and easement sites and corridors. All the works done to date to have existing and future high voltage electricity transmissions corridors designated within State and Local Government land use planning strategies does not of itself quarantine corridors and sites for its exclusive use.

Whilst the South Australian land use planning system provides highly valuable information and policy to support ElectraNet's network vision, it does not facilitate the provision of any development rights for ElectraNet's projected capital works. Electricity transmission corridors and substation sites depicted in State, Regional and Local Government land use planning instruments, including Development Plans, are afforded only conceptual status and do not provide legislative guarantees to an infrastructure provider of exclusive access and use.

The only way that ElectraNet can absolutely guarantee that it has firmly obtained a site or easement and secured the associated development rights for its future use, subject to relevant statutory approvals, is to acquire tenure of these property requirements ahead of the date network augmentation is required.

In order to identify such sites and corridors ElectraNet needs to implement a process of assessing risks of obtaining suitable land and easement associated with future network extension or even asset replacement projects. This takes the form of ElectraNet's SLAP to fulfil the company's obligations as a TNSP.

5. Letter of acknowledgement and support from SA Department of Planning, Transport and Infrastructure

RECEIVED
17 DEC 2012

Government of South Australia
Department of Planning, Transport and Infrastructure

In reply please quote # 7193657
Enquiries to: Donna Ferretti
Telephone: 8204 8394

Planning Division

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ABN 92 366 288 135

http://www.dpti.sa.gov.au

Mr Myles Somers
Planning Approvals Manager
ElectraNet
PO Box 7096 Hutt Street Post office
ADELAIDE SA 5000

Dear Mr Somers

Involvement of ElectraNet in Strategic Land Use Planning

I refer to your recent letter seeking support from the Department of Planning, Transport and Infrastructure (Department) to confirm ElectraNet's ongoing involvement in strategic land use planning for South Australia.

Effective and early discussion regarding infrastructure planning and funding is essential to delivering cost effective land use outcomes, and in this regard I am pleased to confirm that ElectraNet continues to be an essential stakeholder in contributing to well-planned and serviced growth areas for the State.

The Department facilitates this process through ongoing consultation with ElectraNet and other infrastructure providers during the preparation of strategic land use planning frameworks, structure planning, the rezoning process and for site specific development projects though the development assessment process.

It is important to note that the planning system, whilst giving assurances on land use policy, cannot guarantee development rights unless ElectraNet acquire the corridor. It is for this reason, amongst others, that my Department works closely with infrastructure providers to ensure the designation of infrastructure corridors for insertion into planning documents.

Importantly, no land will be rezoned in the future without the resolution of land use policy issues and negotiated agreements being in place for infrastructure delivery. This cannot occur without the continued involvement of major infrastructure providers during strategic and local planning process, including detailed infrastructure funding negotiations.

Yours sincerely

John Hanlon
DEPUTY CHIEF EXECUTIVE
PLANNING DIVISION
DEPARTMENT OF PLANNING, TRANSPORT AND INFRASTRUCTURE

13/12/2012