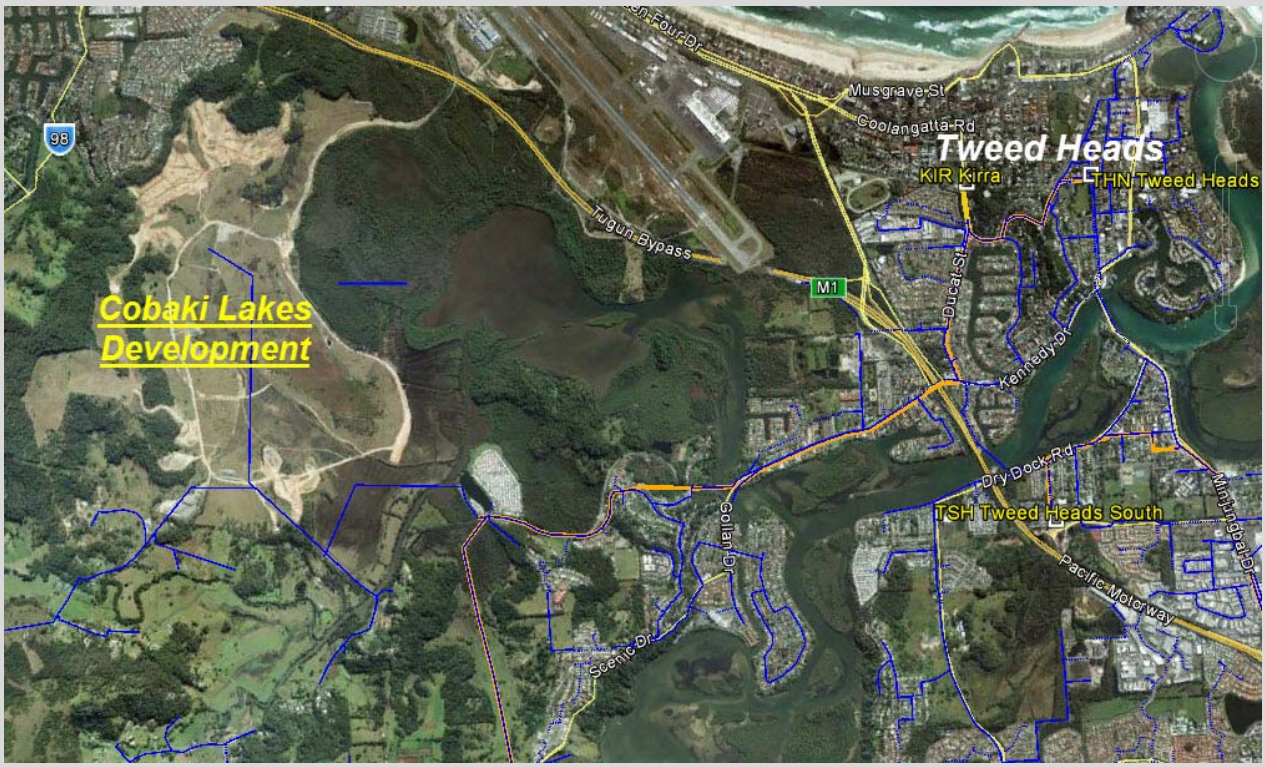
Supporting Document 12.1.15b
Major Project Detailed Options Report
ESS_1005 Cobaki Lakes Development



April 2018

essential energy

Table of Contents

List of Figures

List of Tables

1. Executive Summary

<table>
<tr><td>Major Project</td><td>ESS_1005 Cobaki Lakes Development</td></tr>
<tr><td>Description</td><td>Establish a 66/11kV zone substation in the Cobaki Lakes area west of Tweed Heads</td></tr>
<tr><td>Drivers for Investment</td><td>Customer growth:
> Residential and commercial development
> Providing and maintaining reliable supply</td></tr>
<tr><td>Investment Options</td><td>The investment options considered include:
> Establish 66/11kV zone substation
> Augment 11kV distribution network</td></tr>
<tr><td>Estimated Expenditure $million (Real FY19)</td><td><table><tr><td>2019/20</td><td>2020/21</td><td>2021/22</td><td>2022/23</td><td>2023/24</td></tr><tr><td>$0</td><td>$0</td><td>$1.57</td><td>$4.14</td><td>$0</td></tr></table></td></tr>
<tr><td></td><td>The timing of this project is dependent on progress of the development</td></tr>
</table>

2. Overview

A large residential development (Cobaki Lakes) west of Tweed Heads comprising 4,800 residential lots along with commercial and educational (university and accommodation) lots has developmental approval. Initial civil constructions are underway and the developer (Leda Holdings Pty Ltd) has proposed an ultimate demand in excess of 20MVA.

There is limited existing 11kV distribution capacity in the area. This major project report investigates options to alleviate the limited capacity and provide reliable future supply to this development. The construction of a new 66/11kV zone substation (initially with single 66/11kV transformer) is the preferred option to supply the ultimate load development.

Essential Energy owns a zone substation site immediately south east of the development in close proximity to the Terranora to Tweed heads 66kV feeder (#9508).

The timing of this project is dependent on progress of the development.

As required under Clause 5.17.3 of the National Electricity Rules (NER), a Regulatory Investment Test for new Distribution assets (RIT-D) will be published before this project commences.

Figure 1 - Cobaki Lakes Development Area

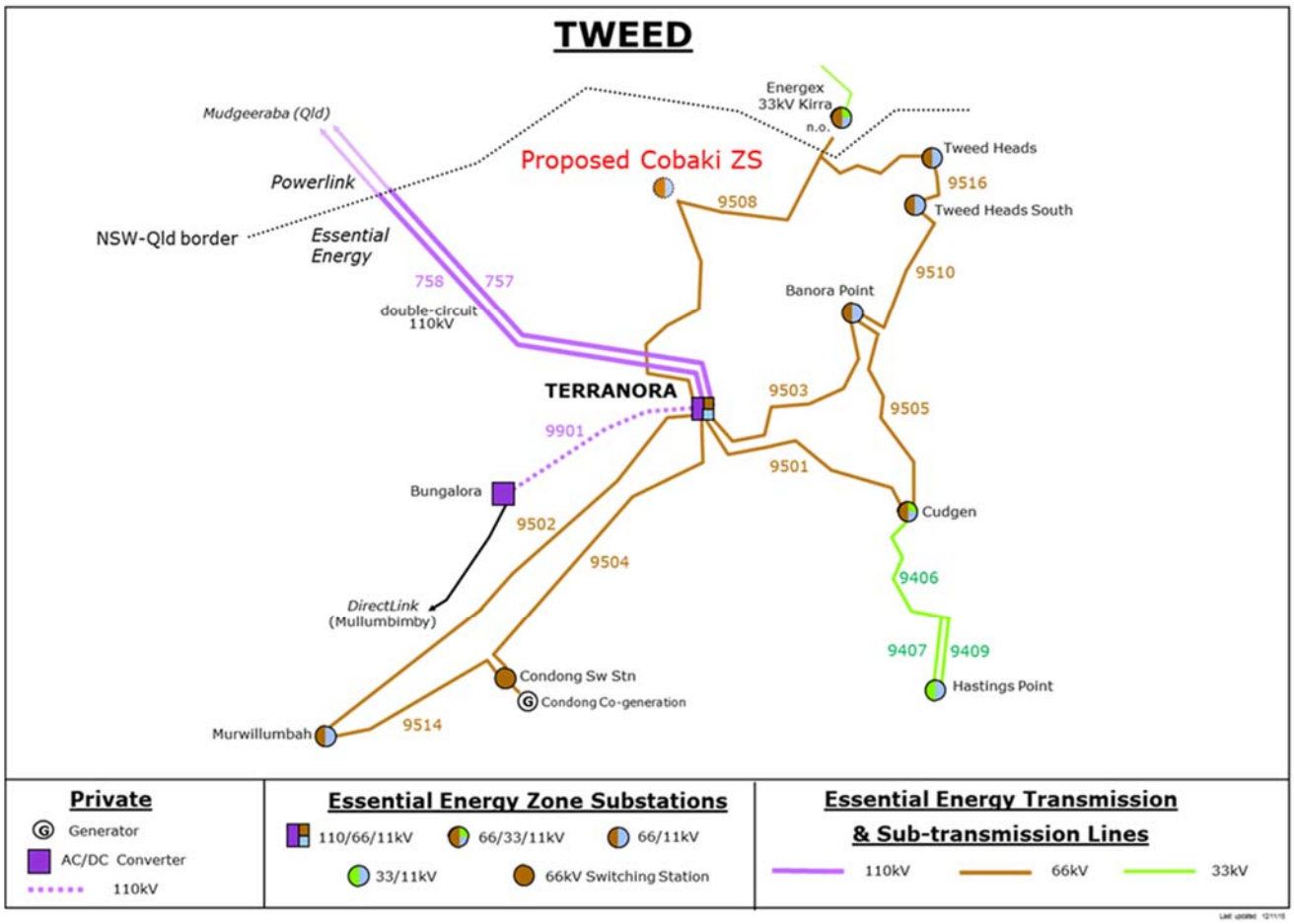


Figure 2 - Tweed Area Subtransmission Network

3. Network

3.1.1 Subtransmission

The Tweed area subtransmission network emanates from the Essential Energy Terranora 110/66/11kV substation which takes 110kV supply from Queensland via the joint owned Powerlink/Essential Energy dual circuit feeder (757/758) from Powerlink's Mudgeeraba substation as shown above in Figure 2 - Tweed Area Subtransmission Network.

The Tweed area has a peak demand of 85MW and provides supply to 45,000 customers via seven zone substations; Banora Point 66/11kV, Cudgen 66/33/11kV, Hastings Point 33/11kV, Murwillumbah 66/11kV, Tweed Head 66/11kV and Tweed Heads South 66/11kV.

The subtransmission feeder network consists of 75km of 66kV and 20km of 33kV of which 71km is overhead and 24km is underground cable.

3.1.2 Distribution

The Cobaki Lakes area is presently supplied by a 11kV distribution feeder (TSH3B1) that emanates from Tweed Heads South zone substation as shown below in Figure 3 - Distribution Network. The TSH3B1 feeder supplies the areas of Tweed Heads West, Piggabeen and Cobaki.

An 11kV feeder (TNA3B1) from Terranora zone substation supplies areas at Terranora, Bilambil Heights and Terranora West. The TNA3B1 feeder provides limited backup (200kVA) to the Cobaki area on loss of the TSH3B1 feeder.

The TSH3B1 11kV feeder from Tweed Heads South presently has capacity to provide 2MVA to the Cobaki Lakes area.

Figure 3 - Distribution Network

4. Load Forecast

4.1.1 Demand Forecast

A master plan load report (reference document 'Cobaki Electrical Master Plan Load Report Apr 16.pdf') which indicates peak demand levels has been provided by the developer Leda Holdings via MDA Consulting Engineers. The report indicates a total undiversified ultimate peak demand of 30MVA. A diversified total peak demand would be in excess of 20MVA.

A snapshot of the demand loadings from the report is shown in Appendix A – Demand Loadings. The report indicates a staging of all 4,800 residential lots over a ten-year period. Staging of the commercial and university lots is yet to be finalized by the developer.

5. Constraint

5.1.1 Distribution Network

The 11kV distribution network (TSH3B1 feeder from Tweed Heads South) that presently supplies the Cobaki area has a spare capacity of 2MVA. This capacity will reduce if spot loads or other developments occur in the areas this feeder supplies.

6. Network Options

6.1.1 Options

Net Present Value (NPV) analysis is undertaken to determine the benefit of the network augmentation options which addresses the supply constraint. The option with the larger NPV result, showing more positive benefit is the recommended option. Further explanation of the NPV analysis is detailed below in section 6.1.2.

NPV analysis takes into account the forecasted peak demand of development. It is problematic with large residential/commercial developments to accurately apply NPV analysis for network augmentation options based on proposed developer's demand levels and timings. These developments can often progress slower or quicker than estimated, or large sections (residential precinct, shopping centre or university etc) are deferred or bought forward. In some cases, significant segments of the proposed development may never eventuate.

Essential Energy will regularly liaise with developer to ensure any load development alterations are taken into account before a network option is finalised and construction begins. The developer has recently noted that the overall demand levels (20+MVA) as indicated in the April 2016 Master Plan Report still apply but the timings have moved back approximately two years and the intention is still to release all residential lots over a ten-year period. As noted previously the staging of the commercial and university lots have yet to be finalized by the developer.

There are two feasible network augmentations that can cater for demand levels in excess of 20MVA in the Cobaki Lakes development.

1) Establish 66/11kV zone substation
2) Augment 11kV distribution network

Option 1 – Establish 66/11kV Zone Substation

This option requires the staged establishment of a new 66/11kV zone substation, with initial stage, installation of a single 66/11kV transformer, 11kV switchboard (four 11kV feeders) and a 66kV feeder tee connection. The second stage would complete the substation with a second 66/11kV transformer and loop in/out 66kV feeder connections.

At the writing of this report, the developer has noted release of the first 400 residential lots to occur mid-2018 and following 200 blocks late-2018. It is envisaged the construction of housing will proceed slowly for the initial year/s and the existing spare 2MVA capacity in the distribution network will be exceeded in 2021/22 and zone substation (initial stage) commissioned in 2023. This timing of the zone substation will become apparent on progress of the development.

This option will increase demand on the 66kV network, in particular the Terranora to Tweed Heads 9508 and Tweed Heads South to Banora Point 9510 feeders. The two feeders have a total length of 20km, of which 17km is overhead and 3km is underground. The overhead sections are thermally rated at 40MVA, with 13km of smaller aluminium and copper conductor rated at 40MVA and the other 4km larger aluminium conductor rated at 60MVA. The 3km underground sections are rated at 60MVA.

Into the future as the Cobaki Lakes peak demand increases, along with the Tweed Heads and Tweed Heads South zone substation peak demands, the 40MVA rating on the 13km overhead sections will be exceeded during contingent scenarios and particular times of the year. During unplanned outages on either the 9508 or 9510 feeder, the other in-service feeder will have to supply the peak demand of the three zone substations (Cobaki, Tweed Heads and Tweed Heads South).

The 13km overhead sections of the 9508 and 9510 feeders will be upgraded to a larger aluminium conductor rated at 60+MVA. It is estimated this will be required fifteen years after the Cobaki zone substation is established.

Option 1 has estimated capital cost $8.68M and 40-year NPV of $45.05M

Option 2 - Augment 11kV Distribution Network

Augmentation of the 11kV network would require four new distribution feeders, two from Tweed Heads South zone substation and two from Terranora zone substation with an approximate 5+MVA capacity on each feeder.

The ultimate peak demand of 20+MVA cannot all be supplied from the closest source, Tweed Heads South zone substation. Present peak demand levels (15MVA) at Tweed Heads South are at half the substation capacity (30MVA). It is estimated a maximum 10MVA of the Cobaki Lakes demand, could be supplied from Tweed Heads South, dependant on future demand growth in the Tweed Heads area and distribution load shifting between the Tweed Heads area zone substations (Banora Point, Tweed Heads & Tweed Heads South).

Tweed Heads South zone substation is a recently established substation (2009) with an indoor switchboard that has space for new 11kV feeder circuits breakers and spare 11kV exit cable conduits. Two 11kV feeders (each approximately 6km) could be readily connected to Tweed Heads South. Tweed Heads zone substation is an older indoor substation in the central Tweed Heads area. The switchboard has no spare capacity for new 11kV feeders or provision for new exit cables. It is not possible to add new 11kV feeders to Tweed Heads zone substation.

Once demand at Cobaki Lakes exceeds 10MVA, two additional distribution feeders would be required. The two feeders (each approximately 12km) would be constructed from Terranora zone substation. Terranora 11kV switchboard has spare space for additional feeder breakers and the substation capacity could cater for the Cobaki Lakes demand.

While this option increases demand on the 66kV network, it does not increase the demand at the same level as Option 1, as some of the Cobaki Lakes demand is supplied from the 66kV source point, Terranora substation, and not via the 66kV network. In the longer term (20+ years) it is envisaged the 13km section of the 9508 and 9510 feeders will be upgraded to a larger aluminium conductor rated at 60+MVA. As it is in the longer term, the cost for this upgrade has not been included in the Net Present Analysis.

Five-year zone substation demand forecasts are shown in Appendix B – Zone Substation Forecast.

Option 2 has estimated capital cost $10.83M and 40-year NPV of $43.77M

6.1.2 NPV Analysis

In analysing the NPV of each option, a number of assumptions have been made. It is assumed the proposed ultimate demand level will be in excess of 20MVA over a fifteen-year period.

Demand from the 4,800 residential lots will be at a uniform rate over the assumed fifteen years equating to an approximate diversified total of 1MVA per annum. The larger retail/commercial and demands will likely occur at the mid to end periods of the fifteen years.

Initially the development will be supplied by the existing 11kV network, until the 2MVA capacity of this network is exceeded. Once exceeded some customer energy cannot be supplied. This 'unsupplied' energy can be equated to an annual $/MWH value of Value of Unserved Energy (VUE) based on the amount of energy not supplied and a Value of Customer Reliability[1] (VCR). As the demand increases annually the VUE will increase.

Although the network augmentation is an outgoing (-ve) cost, the NPV analysis takes into account the gain (+ve) of the augmentation supplying the 'unsupplied' energy based on the annual VUE. The augmentation proves over time to have a NPV positive benefit.'

A summary of the results of the NPV is shown below in Table 1 with Option 1 – Establish the Zone Substation' showing the greater benefit in all cases.

	Base Dis. Rate	Discount Rate Sensitivity		Capital Sensitivity		VUE Sensitivity	
Option	**3.45%**	**1.45%**	**5.45%**	**+25%**	**-25%**	**+25%**	**-25%**
1	**$45.05**	**$47.20**	**$42.89**	**$43.44**	**$46.66**	**$57.92**	**$34.85**
2	$43.77	$44.98	$42.30	$41.95	$45.59	$56.53	$33.68

Table 1 - NPV Analysis Results

Further detail on the VUE and NPV analysis is shown in Appendix C – VUE Summary and Appendix D - NPV Analysis.

[1] Value of Customer Reliability – based on rates CPI to 2017 from AEMO Value of Customer Reliability – Application Guide Dec 14

7. Non-Network Options

With all network augmentation investigations Essential Energy examines the opportunities to alleviate network constraints with non-network solutions. Non-network options generally consist of either demand management or embedded generation.

Demand management requires the peak demand to be reduced to a level which removes or defers the network constraint. The reduction in demand can be achieved by a number of methods, mainly load curtailment or fuel substitution.

With load curtailment, customers agree to provide a significant reduction in their demand (switch off air-conditioning, hot water, manufacturing plant etc) when requested during high peak demand periods. It is generally cost effective with large individual commercial/industrial customers or substantial numbers of existing residential customers. With fuel substitution, customers are given incentives or are provided with appliances that use alternate energy sources to electricity; gas stove replace electric stove etc.

In the case of Cobaki Lakes with newly established residential lots, with no or a very low base of existing demand, achieving a significant reduction in peak demand is not possible in the short – medium term.

Embedded generation involves installing generation sources to supply the load during peak periods and reduce the peak demand to a level which removes or defers the network constraint. The generation could come from various sources; diesel, gas, solar or wind etc. In this case, as the demand exceeds the network constraint, more generation capacity would be required and would operate for extended periods to a point where it would operate 24 hours/day. Generation is costly with average install costs around $1M/MW.

With the release of residential lots as noted by the developer, the estimated increasing peak demand (1MVA per annum), the low level (2MVA) of network constraint and the ultimate demand levels in excess of 20MVA, residential demand management or installation of embedded generation would not significantly defer the preferred network option to a point where implementing these strategies are cost effective.

8. Recommendation

It is recommended that Option 1 - Establish 66/11kV zone substation be accepted as the network solution for future supply constraints in the Cobaki Lakes area, with the initial stage an estimated direct cost of $5.5M. Option 1 has the least cost NPV and provides a robust long-term solution for providing reliable supply to the Cobaki Lakes and surrounding areas west of Tweed Heads.

9. References

Doc No.	Document Name	Relevance
1	Cobaki Electrical Master Plan Load Report Apr 16.pdf	Demand load levels and staging's as proposed by the developer

10. Key Terms and Definitions

Term	Definition
AER	Australian Energy Regulator

Term	Definition
NER	National Electricity Rules
NPV	Net Present Value
VUE	Value of Unserved Energy
VCR	Value of Customer Reliability
RIT-D	Regulatory Investment Test for Distribution

Appendix A – Demand Loadings

Page 7 of Cobaki Electrical Master Plan Load Report Apr 16.pdf

	Type of Lot/Yield	Electrical Demand Loading	Total Number of Lots/GLFA/Units/Beds	Total Demand (kVA)
Precinct 1	Residential	4kVA per lot	287	1148
Precinct 2	Residential	4kVA per lot	473	1892
Precinct 3	Residential	4kVA per lot	247	988
Precinct 4	Residential	4kVA per lot	32	128
Precinct 6-8	Residential	4kVA per lot	1019	4076
Precinct 5 and part 6 Town Centre	Unit/Apartment	4kVA per unit/Apartment	200	800
Precinct 5 and part 6 Town Centre	Retail/Shop	120VA/m²	6950	834
Precinct 5 and part 6 Town Centre	Office/Commercial/Medical	120VA/m²	3580	429.6
Precinct 5 and part 6 Town Centre	Supermarket	175VA/m²	7700	1347.5
Precinct 5 and part 6 Town Centre	Community Use	100VA/m²	2250	225
Precinct 5 and part 6 Town Centre	University	150VA/m²	10500	1575
Precinct 5 and part 6 Town Centre	Student Accommodation	1.5kVA/Bed	3300	4950
Precinct 9	Residential	4kVA per lot	375	1500
Precinct 10	Residential	4kVA per lot	371	1484
Precinct 10	Residential	4kVA per lot	287	1148
Precinct 11	Residential	4kVA per lot	222	888
Precinct 12	Residential	4kVA per lot	372	1488
Precinct 13	Residential	4kVA per lot	481	1924
Precinct 14	Residential	4kVA per lot	134	536
Precinct 15	Residential	4kVA per lot	198	792
Precinct 16A	Residential	4kVA per lot	170	680
Precinct 16B	Residential	4kVA per lot	26	104
Precinct 16C	Residential	4kVA per lot	25	100
Precinct 17A	Residential	4kVA per lot	123	492
Precinct 17B	Residential	4kVA per lot	15	60
Total				29589.1

Table 3.1 Electrical Loadings for each Precinct

Appendix B – Zone Substation Forecast

STS and ZS load forecast

SUMMER	Queanbeyan Supply Area POE50 Indicative Demand Forecast												
Substation	kV	Transformer Rating (MVA)			Firm Normal Cyclic Rating (MVA)	Forecast PF	Forecast (MVA)					Embedded Generation (MW)	95% Peak Load Exceeded (Hrs)
		Tx.1	Tx.2	Tx.3			17/18	18/19	19/20	20/21	21/22		
Bungendore	66/11	7.5/10	7.5/10		11	0.99	6.8	6.9	7.1	7.2	7.4	2.55	3.5
Captains Flat	66/22	5	5		5.5	1.00	2.3	2.3	2.3	2.4	2.4	0.76	4
Googong Dam	66/11	7.5/10	8		8.8	0.93	0.2	0.2	0.2	0.2	0.2	0.00	1
Googong Town	132/11	30			0	0.99	5.2	6.2	7.2	8.3	9.3	1.66	2
Oaks Estate	66/11	20/30	30		33	0.96	15.7	15.7	15.7	15.7	15.7	2.23	26.5
Queanbeyan South	66/11	20/25/30	20/25/30		33	0.98	20.3	20.3	20.2	20.2	20.1	3.82	6
Sutton	66/11	8	6.5/8		8.8	0.97	2.9	2.9	2.9	2.9	2.9	1.52	7.5

WINTER	Queanbeyan Supply Area POE50 Indicative Demand Forecast												
Substation	kV	Transformer Rating (MVA)			Firm Normal Cyclic Rating (MVA)	Forecast PF	Forecast (MVA)					Embedded Generation (MW)	95% Peak Load Exceeded (Hrs)
		Tx.1	Tx.2	Tx.3			2018	2019	2020	2021	2022		
Bungendore	66/11	7.5/10	7.5/10		12	1.00	8.8	8.9	8.9	9.0	9.0	2.55	2
Captains Flat	66/22	5	5		6	1.00	3.4	3.4	3.4	3.4	3.4	0.76	17.5
Googong Dam	66/11	7.5/10	8		9.6	0.99	2.2	2.3	2.3	2.4	2.4	0.00	2.5
Googong Town	132/11	30			0	1.00	8.1	9.4	10.0	10.0	10.0	1.66	1.5
Oaks Estate	66/11	20/30	30		36	0.98	19.0	19.0	19.0	19.0	19.0	2.23	68.5
Queanbeyan South	66/11	20/25/30	20/25/30		36	1.00	27.4	27.4	27.5	27.5	27.6	3.82	9.5
Sutton	66/11	8	6.5/8		9.6	0.99	3.7	3.7	3.7	3.7	3.7	1.52	13

Appendix C – VUE Summary

Annual Value of Unserved Energy based on 1MW increase in peak demand. VUE calculated with VCR of $41,299.

2MW PEAK - Year 1	
Annual Total Energy (MWH)	6,531
Energy at Risk (MWH per annum greater than 2MW)	1
Value of customer reliabilty VCR ($/MWH)	$41,210
Annual VUE $/MWH	**$22,253**
3MW PEAK - Year 2	
Annual Total Energy (MWH)	9,797
Energy at Risk (MWH per annum greater than 2MW)	268
Value of customer reliabilty VCR ($/MWH)	$41,210
Annual VUE $/MWH	**$11,056,231**
4MW PEAK - Year 3	
Annual Total Energy (MWH)	13,063
Energy at Risk (MWH per annum greater than 2MW)	1,159
Value of customer reliabilty VCR ($/MWH)	$41,210
Annual VUE $/MWH	**$47,756,621**

Appendix D – NPV Summary

BASE NPV 40 Year Results

Option 1 - $45.05M

Option 2 - $43.77M

Costs shown as negative (in brackets)

Benefits shown as positive (no brackets)

Project:	Cobaki Lakes Development																
Company Tax Rate	30%																
Discount Rate after Tax:	3.45%																
OPTION 1: Establish 66/11kV zone substation	8,678,532	46,581,431	45,275,784	45,143,143	45,048,657	-	-										
OPTION 2: Augment 11kV distribution network	10,831,300	46,067,817	44,280,378	43,982,509	43,770,321	43,885,261	43,899,729										
		FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
Timeline (Year)	Book Life Yrs	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OPTION 1: Establish 66/11kV zone substation	Depreciation																
Capital Expenditure:	Age																
Stage 1 single 66kV transformer	40	(1,500,000)	(3,938,532)														
Stage 2 second 66/11kV transformer	40	-	-	-	-		(1,450,000)	-	-			-					
Augment 66kV feeders	40	-	-	-													(1,790,000)
Capital Investment 4	40																
Total:		(1,500,000)	(3,938,532)	-	-	-	(1,450,000)	-	-	-	-	-	-	-	-	-	(1,790,000)
Cash Outflows - Risk																	
Operation and Maintenance Cost		-	(108,771)	(108,771)	(108,771)	(108,771)	(137,771)	(137,771)	(137,771)	(137,771)	(137,771)	(137,771)	(137,771)	(137,771)	(137,771)	(137,771)	(137,771)
			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total:		-	(108,771)	(108,771)	(108,771)	(108,771)	(137,771)	(137,771)	(137,771)	(137,771)	(137,771)	(137,771)	(137,771)	(137,771)	(137,771)	(137,771)	(137,771)
Cash Inflows - Benefits																	
Total:		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating Profit:		-	**(108,771)**	**(108,771)**	**(108,771)**	**(108,771)**	**(137,771)**	**(137,771)**	**(137,771)**	**(137,771)**	**(137,771)**	**(137,771)**	**(137,771)**	**(137,771)**	**(137,771)**	**(137,771)**	**(137,771)**
Depreciation Capital Investment 1			(37,500)	(135,963)	(135,963)	(135,963)	(135,963)	(135,963)	(135,963)	(135,963)	(135,963)	(135,963)	(135,963)	(135,963)	(135,963)	(135,963)	(135,963)
Depreciation Capital Investment 2			-	-	-	-	-	(36,250)	(36,250)	(36,250)	(36,250)	(36,250)	(36,250)	(36,250)	(36,250)	(36,250)	(36,250)
Depreciation Capital Investment 3			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Depreciation Capital Investment 4			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Annual Depreciation			(37,500)	(135,963)	(135,963)	(135,963)	(135,963)	(172,213)	(172,213)	(172,213)	(172,213)	(172,213)	(172,213)	(172,213)	(172,213)	(172,213)	(172,213)
Net Profit Before Tax		-	(146,271)	(244,734)	(244,734)	(244,734)	(273,734)	(309,984)	(309,984)	(309,984)	(309,984)	(309,984)	(309,984)	(309,984)	(309,984)	(309,984)	(309,984)
Tax at Company Tax Rate of Operating Profit		-	43,881	73,420	73,420	73,420	82,120	92,995	92,995	92,995	92,995	92,995	92,995	92,995	92,995	92,995	92,995
Net Profit After tax		-	**(102,389)**	**(171,314)**	**(171,314)**	**(171,314)**	**(191,614)**	**(216,989)**	**(216,989)**	**(216,989)**	**(216,989)**	**(216,989)**	**(216,989)**	**(216,989)**	**(216,989)**	**(216,989)**	**(216,989)**
VUE Saving		-	**22,253**	**11,056,231**	**47,756,621**												
Undiscounted Cashflow:		(1,500,000)	(3,981,169)	11,020,880	47,721,270	(35,350)	(1,505,650)	(44,775)	(44,775)	(44,775)	(44,775)	(44,775)	(44,775)	(44,775)	(44,775)	(44,775)	(1,834,775)
Discounted Cash Flow		(1,500,000)	(3,848,399)	10,298,057	43,104,291	(30,865)	(1,270,784)	(36,531)	(35,312)	(34,135)	(32,996)	(31,896)	(30,832)	(29,804)	(28,810)	(27,849)	(1,103,127)
Cumulative Discounted Cash Flow (Option 2)		(1,500,000)	(5,348,399)	4,949,658	48,053,950	48,023,084	46,752,300	46,715,770	46,680,457	46,646,323	46,613,326	46,581,431	46,550,598	46,520,794	46,491,984	46,464,135	45,361,008
		10 Yr NPV	**20 Yr NPV**	**30 Yr NPV**	**40 Yr NPV**	**50 Yr NPV**	**60 Yr NPV**										
NPV (Option 1):		**46,581,431**	**45,275,784**	**45,143,143**	**45,048,657**	-	-										

Project:	Cobaki Lakes Development																	
Company Tax Rate	30%																	
Discount Rate after Tax:	3.45%																	
OPTION 1: Establish 66/11kV zone substation	8,678,532	46,581,431	45,275,784	45,143,143	45,048,657	-	-											
OPTION 2: Augment 11kV distribution network	10,831,300	46,067,817	44,280,378	43,982,509	43,770,321	43,885,261	43,899,729											
		FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	
Timeline (Year)	Book Life Yrs	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
OPTION 2: Augment 11kV distribution network																		
Capital Expenditure:																		
Add first 11kV feeder from Tweed South	40	-	(3,456,000)															
Add second 11kV feeder from Tweed South	40						(1,393,500)											
Add first 11kV feeder from Terranora	40											(3,655,900)						
Add second 11kV feeder from Terranora	40																(2,325,900)	
Total:		-	(3,456,000)	-	-	-	(1,393,500)	-	-	-	-	(3,655,900)	-	-	-	-	(2,325,900)	
Cash Outflows - Risk																		
Operation and Maintenance Cost		-	(69,120)	(69,120)	(69,120)	(69,120)	(96,990)	(96,990)	(96,990)	(96,990)	(96,990)	(170,108)	(170,108)	(170,108)	(170,108)	(170,108)	(216,626)	
			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total:		-	(69,120)	(69,120)	(69,120)	(69,120)	(96,990)	(96,990)	(96,990)	(96,990)	(96,990)	(170,108)	(170,108)	(170,108)	(170,108)	(170,108)	(216,626)	
Cash Inflows - Benefits																		
Total:		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Operating Profit:		-	**(69,120)**	**(69,120)**	**(69,120)**	**(69,120)**	**(96,990)**	**(96,990)**	**(96,990)**	**(96,990)**	**(96,990)**	**(170,108)**	**(170,108)**	**(170,108)**	**(170,108)**	**(170,108)**	**(216,626)**	
Depreciation Capital Investment 1			-	(86,400)	(86,400)	(86,400)	(86,400)	(86,400)	(86,400)	(86,400)	(86,400)	(86,400)	(86,400)	(86,400)	(86,400)	(86,400)	(86,400)	
Depreciation Capital Investment 2			-	-	-	-	-	(34,838)	(34,838)	(34,838)	(34,838)	(34,838)	(34,838)	(34,838)	(34,838)	(34,838)	(34,838)	
Depreciation Capital Investment 3			-	-	-	-	-	-	-	-	-	-	(91,398)	(91,398)	(91,398)	(91,398)	(91,398)	
Depreciation Capital Investment 4			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total Annual Depreciation			-	(86,400)	(86,400)	(86,400)	(86,400)	(121,238)	(121,238)	(121,238)	(121,238)	(121,238)	(212,635)	(212,635)	(212,635)	(212,635)	(212,635)	
Net Profit Before Tax		-	(69,120)	(155,520)	(155,520)	(155,520)	(183,390)	(218,228)	(218,228)	(218,228)	(218,228)	(291,346)	(382,743)	(382,743)	(382,743)	(382,743)	(429,261)	
Tax at Company Tax Rate of Operating Profit		-	20,736	46,656	46,656	46,656	55,017	65,468	65,468	65,468	65,468	87,404	114,823	114,823	114,823	114,823	128,778	
Net Profit After tax		-	**(48,384)**	**(108,864)**	**(108,864)**	**(108,864)**	**(128,373)**	**(152,759)**	**(152,759)**	**(152,759)**	**(152,759)**	**(203,942)**	**(267,920)**	**(267,920)**	**(267,920)**	**(267,920)**	**(300,483)**	
VUE Saving		-	22,253	11,056,231	47,756,621	-	-	-	-	-	-	-	-	-	-	-	-	
Undiscounted Cashflow:		-	(3,482,131)	11,033,767	47,734,157	(22,464)	(1,435,473)	(31,522)	(31,522)	(31,522)	(31,522)	(3,738,604)	(55,285)	(55,285)	(55,285)	(55,285)	(2,413,748)	
Discounted Cash Flow		-	(3,366,003)	10,310,099	43,115,931	(19,614)	(1,211,553)	(25,717)	(24,860)	(24,031)	(23,229)	(2,663,205)	(38,069)	(36,800)	(35,572)	(34,386)	(1,451,224)	
Cumulative Discounted Cash Flow (Option 3)		-	(3,366,003)	6,944,095	50,060,026	50,040,412	48,828,859	48,803,141	48,778,282	48,754,251	48,731,022	46,067,817	46,029,748	45,992,948	45,957,376	45,922,990	44,471,766	
		10 Yr NPV	20 Yr NPV	30 Yr NPV	40 Yr NPV	50 Yr NPV	60 Yr NPV											
NPV(Option 2):		**46,067,817**	**44,280,378**	**43,982,509**	**43,770,321**	**43,885,261**	**43,899,729**											