Distribution Feeder Augmentation Maintain Reliability

Business Case

18 January 2024

ERGON ENERGY NETWORK

Part of Energy Queensland

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DOCUMENT VERSION

Version Number	Change Detail	Date	Updated by
1	Initial Version	17/2/2023	Manager Distribution Planning
2	Update following feedback	6/11/2023	Manager Distribution Planning
3	Approval	20/12/2023	General Manager Grid Planning

RELATED DOCUMENTS

Document Date	Document Name	Document Type
Dec 2019	Value of Customer Reliability - Final report on VCR values	Report
03/10/2019	Distribution Authority No. D01/99, Ergon	PDF

1 SUMMARY

<table>
<tr><th>Title</th><th>Distribution Feeder Augmentation Maintain Reliability</th></tr>
<tr><td>DNSP</td><td>Ergon Energy</td></tr>
<tr><td>Expenditure category</td><td>☐ Replacement ☒ Augmentation ☐ Connections ☐ Tools and Equipment
☐ ICT ☐ Property ☐ Fleet</td></tr>
<tr><td>Identified need
(select all applicable)</td><td>☐ Legislation ☒ Regulatory compliance
☒ Reliability ☒ CECV ☐ Safety ☐ Environment ☐ Financial
Augment the Distribution Network (11kV, 22kV, 33kV, LV and SWER) as required to meet customer expectations in terms of network reliability.</td></tr>
<tr><td>Summary of preferred option</td><td>The Preferred Option is to provide funding as detailed in this business case such that customer reliability expectations as can be justified by Value of Customer Reliability are met.</td></tr>
<tr><td>Expenditure</td><td>
<table>
<tr><th>Year</th><th>2025-26</th><th>2026-27</th><th>2027-28</th><th>2028-29</th><th>2029-30</th><th>2025-30</th></tr>
<tr><td>$m, direct 2022-23</td><td>$7.52</td><td>$7.95</td><td>$8.59</td><td>$9.25</td><td>$9.93</td><td>43.24</td></tr>
</table>
</td></tr>
<tr><td>Benefits</td><td>Compliance with Regulatory and Legislative obligations regarding network capacity and associated network clearance as well as network voltage performance.
Network Reliability performance in regard to Unplanned outages will be maintained as can be justified by CECV and VCR analysis</td></tr>
<tr><td>Consumer engagement</td><td>This Business case is based on the AER Value of customer reliability guidelines and reliability justification as detailed in those guidelines which included extensive customer engagement.</td></tr>
</table>

2 PURPOSE AND SCOPE

This business case is for Distribution Augmentation Unplanned Reliability driven works as can be justified by the AER's Value of Customer Reliability Guidelines and as detailed in Distribution Authority No. D01/99, Ergon Energy "must plan and develop its supply network in accordance with good electricity industry practice, having regard to the value that end users of electricity place on the quality and reliability of electricity services". The purpose of this business case is to justify feeder reliability improvement based on VCR analysis to meet customers reliability expectations. It is focussed on network reliability performance relating to unplanned outages.

3 BACKGROUND

Ergon Energy operates medium voltage distribution networks at 11kV, 22kV and 33kV as well as a range of 12.7kV and 19.1kV SWER systems. Ergon Energy operates a very different network to most Australian Distribution Network Service Providers (DNSPs) in the National Electricity Market (NEM), typified by small customer numbers, long network distances, large geographical spread of network and subsequent low network densities. The distribution network is made up of approximately 120,000km of overhead powerline and 9,000km of underground cable, with about 1,000,000 power poles and close to 100,000 distribution transformers. With approximately 8% of the total NEM customer base, Ergon Energy's network area is approximately 44% of the total area covered by the networks that form part of the NEM. Ergon Energy operates one of the lowest density networks in Australia which has a large impact on how the network is designed, managed, and operated. It is a largely overhead and radial network which includes one of the largest SWER networks in Australia and the world. Given the size, the often-difficult terrain and remoteness of the network, combined with the environmental exposure associated with a predominately overhead network, reliability performance poses a significant challenge.

As detailed in the "Ergon Energy Planned Distribution Augmentation – Capacity and Voltage" business case, the methodology for feeder capacity constraints was to apply a 90% utilisation based on the 10 POE forecast using 30-minute averaged data. It is recognised that this is an extremely conservative approach and at these utilisation levels, network reliability is expected to deteriorate. Feeder utilisation needs to be maintained well below 100% to maintain supply reliability at a reasonable level during network contingencies. This business case is targeted to address reliability performance where justified based on Value of Customer Reliability (VCR) and Customer Export Curtailment Value (CECV). This augmentation program is designed to maintain reliability at existing levels. The program is aimed at planned higher complexity reliability projects on the Medium Voltage Network. A separate "Ergon Energy Reactive Distribution Augmentation" business case has a reliability component which is more directed at the Low Voltage (LV) network and the unexpected more reactive reliability issues that might emerge associated with customer complaints.

For proposed unplanned reliability expenditure, Value of Customer Reliability (VCR) analysis has been performed to ensure the proposed work can be Net Present Value (NPV) justified. VCR rates ($/kwh) of unserved energy that have been applied are based on the Australian Energy Regulator's VCR guidelines. Individual feeder level consumption data for agriculture, commercial, residential, and Industrial customer types has also been applied to determine the accurate VCR rates with the applicable customer mix at a feeder level.

This Distribution Augmentation business case seeks to continue to deliver sustainable outcomes for customers and the business, with no compromise to safety and legislative compliance. The objective is to provide an affordable, safe, resilient, reliable, and secure quality of supply to meet the changing needs of our customers. Without Ergon Energy's proposed Distribution Augmentation expenditure, Ergon Energy would not be able to meet the expected reliability performance

associated with standard control services and unplanned outages over the regulatory control period 2025-30.

3.1 Planned Distribution Augmentation – Unplanned Reliability

As detailed in AEMOs Electricity Statement of Opportunity 2021(ESSO) which provides an insight into the next 10 years, demand for electricity is expected to increase as part of the energy transformation to Net Zero. Consumers will transition to electric vehicles, and households and business will move from carbon-based fuels to electricity. This transition will not only drive increase demand, but also create increased dependency on the reliability of supply to customers and the community.

As detailed in Distribution Authority No. D01/99, Ergon "must plan and develop its supply network in accordance with good electricity industry practice, having regard to the value that end users of electricity place on the quality and reliability of electricity services". This reliability program focuses on maintaining network reliability performance by targeting the feeders that have the most positive NPV outcomes. A conservative approach has been taken as part of this analysis in terms of the assumptions applied to derive the proposed volumes of work included in this business case. Solutions typically involve installing new reclosers, remote controlled gas switches, installing covered conductors, or installing ties to other feeders to improve operability of the network. Table 1 details the volume of reliability projects proposed to address unplanned outages. The methodology to determine the number of projects is detailed in section 4.4.2 of this business case and corresponds to projects where there is a VCR impact of greater than approximately $340,000. The timing of the work has been balanced across the regulatory period to ensure a deliverable program.

Table 1 Reliability Constraints

Description	25/26	26/27	27/28	28/29	29/30
Unplanned Feeder Reliability Constraints	36	38	41	45	48

4 IDENTIFIED NEED

Unplanned Reliability expenditure is required based on customer expectations regarding network performance and is justified by a positive cost/benefit analysis. Table 2 details the drivers that make up this planned distribution augmentation reliability business case.

Table 2 Distribution Augmentation Justification Matrix

Program	Sub Program	Justification	Justification Detail
Planned Augmentation	Reliability	Cost Benefit Analysis	Value of Customer Reliability (VCR) Export - Customer Export Curtailment Value (CECV) Electricity Act 1994/Distribution Authority D01/99

4.1 Problem Statement

A significant number of Ergon Energy's distribution feeders have poor unplanned reliability resulting in significant unserved energy to customers. This business case is focussed on addressing this reliability performance and is justified through VCR analysis. Feeders with an annual historic unserved energy resulting in an annual potential VCR impact of greater than approximately $340,000 have been targeted in this business case.

4.2 Compliance

Ergon energy has an obligation to comply with Electricity Act 1994 and the associated Distribution Authority D01/99 section 8.1 which details the reliability minimum service standards, and that Ergon must have regard to the value that end users place of the reliability, and as such the approach to justification taken in this business case is to apply Cost Benefit Analysis. This methodology is detailed in section 0 of this report.

4.3 Discussions with customers

On 18 December 2019 the AER released its final decision on the Value of Customer Reliability (VCR) with the aim of establishing and investment framework to ensure "consumers pay no more than necessary for safe and reliably energy, helping energy businesses identify the right level of investment to deliver reliable energy services to customers". In order to determine this investment methodology, the AER engaged with over 9,000 residential, small business and industrial energy customers. This business case applies the Value of Customer Methodology as detailed by the AER which was determined through extensive consultation and was updated further in 2021 and 2022.

4.4 Counterfactual analysis (Base case)

4.4.1 Summary

Ergon Energy broadly considers five value streams for investment. These are shown in Figure 1.

Figure 1– Value Streams for Investment

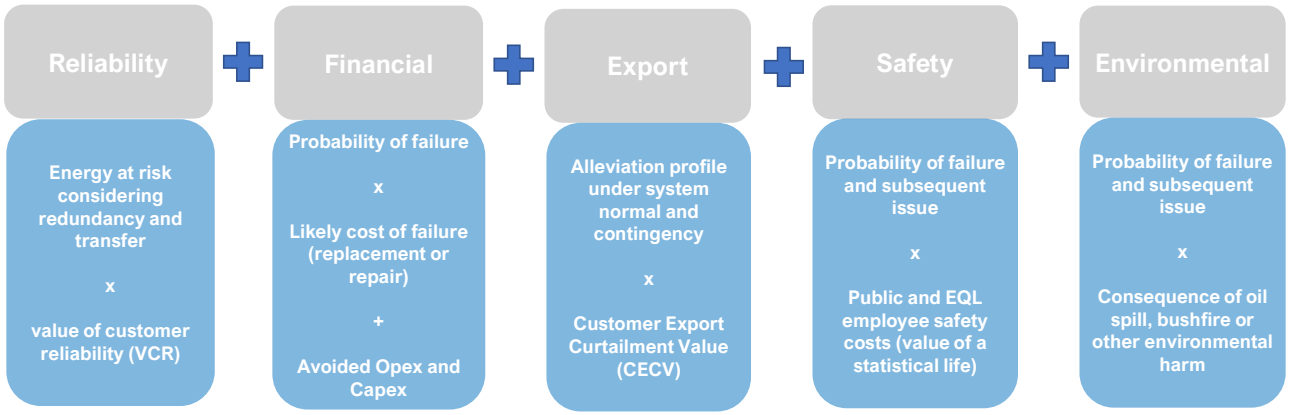


Table 3 details the value streams that are applicable to this business case is *Reliability and Export.*

Table 3 Program and value stream relationship

Program	Sub Program	Value Stream
Planned Augmentation	Reliability	Reliability - Value of Customer Reliability (VCR)
	Export	Export - Customer Export Curtailment Value (CECV)

The counterfactual arrangement is to not do this reliability program.

By doing nothing, Ergon Energy will fail to meet its obligations to the community to balance the reliability performance of the network with customer expectations. This will result in a significant economic cost to the community based on measures detailed in the AER's Value of Customer Reliability guidelines.

4.4.2 Risks

If left unaddressed, this will result in progressively decreasing reliability performance of the network, and an unaddressed VCR and CECV risk of approximately $150 million.

By doing nothing, Ergon Energy will fail to meet its obligations to the community to balance the reliability performance of the network with customer expectations. This will result in a significant economic cost to the community based on measures detailed in the AER's Value of Customer reliability guidelines. This will result in progressively decreasing reliability performance of the network, and a cumulated unaddressed VCR and CECV risk of approximately $150 million as detailed in Appendix 1.

4.5 Assumptions/ Methodology

This category of Distribution Augmentation is to specifically target distribution feeders that have significant customer minute contribution to Ergon's reliability performance. The following methodology has been applied to justify this program:

- The 5 year average annual customer minutes for each feeder was calculated based on historic reliability performance. This was determined simply by summating the customer minutes per feeder over the last five years and dividing by 5.
- The average energy per customer minute was then calculated based on RIN data. The total kwh consumption per feeder was divided by the metered days (total number of days customers were metered on the feeder over the year) to provide this figure.
- The average annual customer minutes observed on each feeder was then multiplied by the average energy per customer minute to determine the average energy lost on the feeder over the last 5 years.
- The VCR rate was then individually calculated per feeder based on the customer-mix across Agriculture, Commercial, Industrial and residential categories and multiplying by the AER published VCR rates as detailed in AER - Values of customer reliability update summary - December 2022.pdf.

QLD Rates	$/kwh $2022
Agriculture	42.14
Commercial	49.54
Industrial	70.97
Residential	26.44

- By Multiplying the VCR rate by the average annual energy lost at a feeder level with adjustment for self-consumed solar, the maximum annual potential VCR investment amount per feeder was calculated. This annual rate would be applicable if 100% reliability improvement could be achieved on the feeder, which in practice is unlikely to achieve.
- A reliability improvement hurdle/benefit of 10% was applied to determine a lower bound of improvement investment benefit that could be achieved and justified per feeder. A reliability improvement of 10% was selected as it is the minimum reliability performance improvement that can be expected based on historic reliability projects and Energex's Standard for Sub-transmission and Distribution Planning.
- A final potential investment value was then determined by applying the WACC and assuming a project reliability benefit of 10% would be realised over a 10-year life. A 10-year life was conservatively selected as this is based on a worst case bare minimum life Ergon would expect out of some assets installed to address reliability constraints (for example a recloser). With a potential investment value per feeder now determined, provided that the project cost per feeder is less than this value, the outcome will be NPV positive.
- Based on the above, a selection of NPV positive potential feeders were then selected to formulate this program, and the proposed expenditure in this category.

In addition to the above justification, maintaining the reliability performance of the network will also provide safety benefits and improve the operability of the network as more ties, remotely operable recloses and switches will be installed on the network as part of this program.

5 OPTIONS ANALYSIS

As part of this analysis only one option has been explored which involves creating a low risk conservative unplanned network reliability program of work, by including the most NPV positive feeders as determined through VCR and CECV analysis.

5.1 Economic Analysis

5.1.1 Cost summary 2025-30

The counterfactual is to not have an unplanned reliability program that specifically targets unplanned outages, resulting in zero expenditure across the regulator period. A cost summary of the proposed expenditure compared with the counterfactual is provided in Table 4 below.

Table 4 Cost summary 2025-30

Option	2025-26	2026-27	2027-28	2028-29	2029-30	Total 2025-30
Counterfactual (Base)	-	-	-	-	-	-
Option 1	$7.52	$7.95	$8.59	$9.25	$9.93	$43.24

5.1.2 NPV analysis

NPV analysis has been performed based on a number of conservative assumptions. Further to this sensitivity analysis applying monte Carlo simulation has also then been performed around these assumptions. Assumptions and sensitivity considerations are detailed in the following points:

1) Each project will deliver an ongoing benefit for 10 years. Sensitivity Analysis was performed over a 7–13 year benefit period.
2) Reliability Improvement benefit achieved per project is 10%. A deviation of +-3% was applied as part of sensitivity analysis. As detailed previously reliability improvement of 10% was selected as it is the minimum reliability performance improvement that can be expected based on historic reliability projects.
3) The average cost per project is $207,719 which is based on the cost of similar historic network reliability projects undertaking in the 2020-2025 regulatory period. A sensitivity was applied using cost from $177,719 to $237,719.

Table 5 details NPV sensitivity analysis performed with the variables of the expected years of benefit the project is expected to deliver and the percentage reliability improvement expected from the project.

Table 5 NPV Sensitivity Analysis with Benefit Years and % reliability Improvement

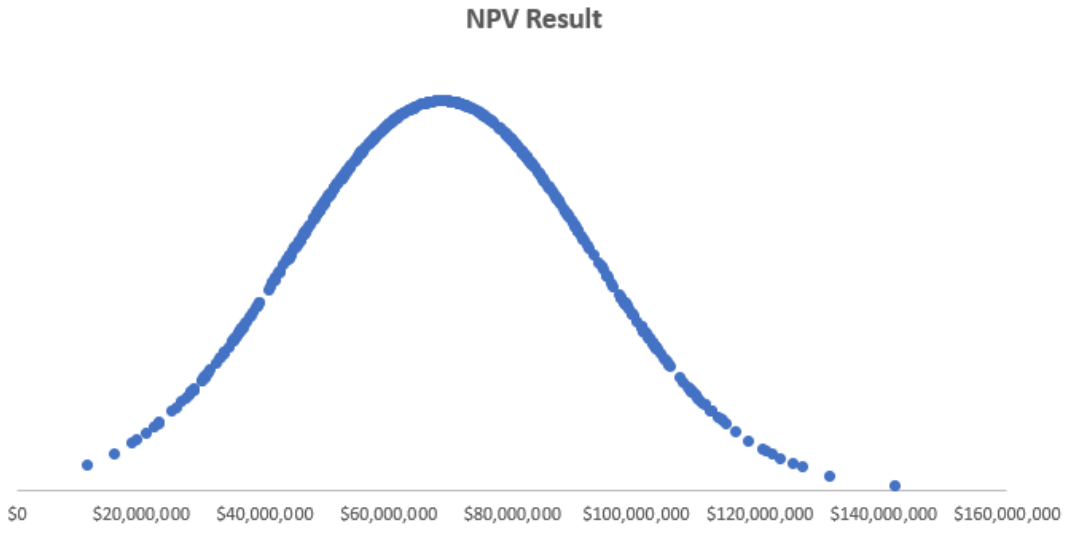
		% Reliability Improvement due to Reliability Project						
Benefit (years)		13.0%	12.0%	11.0%	10.0%	9.0%	8.0%	7.0%
	13	$152,846,030	$137,438,503	$122,030,976	$106,623,448	$91,215,921	$75,808,394	$60,400,867
	12	$140,365,962	$125,961,670	$111,557,378	$97,153,086	$82,748,794	$68,344,502	$53,940,210
	11	$127,545,189	$114,171,520	$100,797,851	$87,424,183	$74,050,514	$60,676,845	$47,303,177
	10	$114,374,408	$102,059,499	$89,744,590	**$77,429,680**	$65,114,771	$52,799,862	$40,484,953
	9	$100,844,065	$89,616,819	$78,389,574	$67,162,328	$55,935,083	$44,707,837	$33,480,592
	8	$86,944,343	$76,834,454	$66,724,566	$56,614,677	$46,504,789	$36,394,900	$26,285,011
	7	$72,665,159	$63,703,131	$54,741,103	$45,779,075	$36,817,047	$27,855,019	$18,892,991

NPV analysis based on a 10-year benefit, and an expected 10% reliability improvement has been undertaken for the proposed program. The program is expected to deliver a $77 million positive NPV outcome as shown in Table 5.

When applying this sensitivity analysis, the monte Carlo simulation on the NPV results was undertaken at a 100% confidence level that a positive NPV outcome would be achieved. These results can be seen in Figure 2.

Figure 2 Monte Carlo simulation output of NPV outcomes

NPV Result	Random Output	Mean	Standard Deviation	Probability of Greater Than	$0
	$26,635,530	$68,659,579	$24,379,195	100.00%	
	95% Confidence Level Interval	Upper Limit	Lower Limit	Minimum	Maximum
	$2,136,891	$28,772,421	$24,498,639	$11,224,362	$141,838,934



5.2 Optimal Timing

The individual projects that make up the Distribution Augmentation program are typically shorter duration projects of two years and under. Operating on a relatively short duration ensures projects can proceed efficiently with minimal risk of timing inaccuracy. The project timing is created to meet the associated timing of constraints and associated regulatory obligations. Reliability expenditure is based on VCR and CECV modelling, and the predicted network performance. Expenditure in this area increases over the regulatory period to allow for delivery resources to be incremented to achieve the delivery of this work. Expenditure also increases to align with expected network growth and expected increasing customer dependence on network performance associated with increased reliance on the network.

The program of work presented in this business case is formed by a large number of smaller projects. A prudent level of investment is assured by prioritising the timing and need for projects that make up this program based on risks, ensuring a range of viable alternative options are considered to minimise the cost and optimise the timing of any investments made within the network. Each individual investment that forms part of this program will be approved via an individual stand-alone business case with the financial delegate approval before funding is released.

6 RECOMMENDATION

It is recommended to establish the program of work, and breakdown as detailed in this business case. 6 summarises the key components of this program.

Table 6 Options Analysis Scorecard

Criteria	Detail
Net Present Value	Individual Planned Augmentation Reliability projects are issued based on positive NPV outcomes
Investment cost (TCO)	$43.2m
Investment Risk	Medium
Benefits	Meet Regulatory Obligations in terms of Distribution Authority requirement. Meet customer reliability expectations
Delivery time	This business based is for a rolling program made up of numerous individual projects that typically have a life cycle of less than 24 months
Detailed analysis – Benefits	Network reliability performance will also be addressed by economically justifiable (with Net Present Value positive) investments.
Detailed analysis – Risks	Conservative assumptions have been applied to the analysis in this business case and hence the funding requested is low in comparison to the amount that could otherwise be justified. This business case does not consider constraints in the 2020-2025 regulatory period that may not have been addressed during this period or associated work/investment that carry over from the 2020-2025 period into the 2025-2030 period which is expected to be significant.
Detailed analysis - Advantages	This option results in a distribution network where network reliability performance does not deteriorate and is justified by cost benefit analysis.

APPENDICES

Appendix 1: VCR and CECV Risk

Feeder	Annual Average Unserved Energy MWh	Minimum Reliability benefit/Annual VCR Impact $
Pumping Station	65.2	$4,354,653
GL2	58.5	$4,072,457
Coppabella Mine B	53.5	$3,797,443
Theodore Feeder	54.0	$3,587,595
BROOKLANDS	51.0	$3,462,432
CECIL PLAINS ROAD	54.5	$2,356,263
ST GEORGE MEATWORKS	51.5	$2,094,424
Cracow Town Feeder	29.5	$1,979,916
ROMA NORTH	47.3	$1,906,844
KURANDA RANGE	49.9	$1,671,741
MILLAROO	26.6	$1,628,488
AMH	23.1	$1,592,406
Rubyvale-Capella	36.3	$1,582,506
CAPE FERGUSON NO.01	31.0	$1,535,933
AUGATHELLA	28.5	$1,506,310
NOONDOO	25.9	$1,462,807
Biloela North	21.8	$1,381,202
Capella	36.8	$1,375,557
BURKETOWN	39.9	$1,344,975
Moura Rural	28.6	$1,335,858
Baralaba	34.2	$1,319,115
Northern	37.2	$1,255,188
INNISFAIL NO3	28.5	$1,238,931
YORK ST	23.7	$1,150,396
Alpha	29.7	$1,141,450
HARRIS STREET	25.8	$1,090,865
NORMANTON	28.1	$1,080,308
Manoora Feeder	33.4	$1,066,055
TULLY TOWN NO1	29.3	$1,051,089
South Walker Creek	20.5	$967,453
KARUMBA	23.3	$1,007,876
Duaringa	19.9	$1,000,379
WILKIE CREEK	17.7	$997,730
Abattoir	17.3	$993,122
SMITHS CREEK	17.9	$974,922
BAKERS CREEK	14.3	$947,863
NORTHCLONCURRY NO.02	26.5	$942,131
HOPEVALE	25.9	$936,419
PALUMA RD	18.6	$864,497
EVANSLEA	14.6	$864,320
Moura Urban	13.0	$843,011
BELLS BRIDGE	26.5	$840,062
HAMBLEDON FDR	25.7	$815,108
OAK VALLEY	17.0	$803,569
FOREST GARDENS	21.2	$801,410
MOSSMAN	16.4	$785,561
Foley Road	19.9	$767,422
REDLYNCH	25.0	$757,781
DAINTREE	24.5	$755,751
INNISFAIL NO2	18.9	$750,118
WARRA	18.0	$747,244
INNISFAIL NO1	20.4	$743,682
CRESCENT	18.8	$741,344
KAIRI-TINAROO	17.7	$738,557
BRUCEDALE	17.4	$735,746
LUCINDA NO.01	10.4	$735,368
TAROOM	17.8	$732,312
RIVERSTONE ROAD	21.4	$722,368
MAIN CAMP	19.0	$715,821
POONA	11.8	$706,119
Cooroorah (Oaky Ck Pumps)	9.9	$700,049
KIRKNIE NO.02	12.8	$689,145
SMITHFIELD	18.0	$686,360
Springsure	15.2	$684,927
GRANADA	22.1	$681,977
Rolleston	18.5	$681,414
Morella	18.0	$678,546
Port Alma	9.8	$677,809
QUILPIE RURAL	16.5	$665,469
CROWS NEST INDUSTRIAL ROAD	18.4	$656,817
CARBEEN	15.3	$653,825
COMET RURALS	14.4	$652,678
DUCHESSRD NO.12	17.4	$646,717
Tambo	17.8	$645,093
TULLY TOWN NO3	15.9	$643,787
TABACUM	14.4	$638,592
Middlemount	10.9	$638,112
EULO	16.1	$626,670

ARTHUR ST FDR	14.0	$624,638
JONDARYAN	12.3	$623,826
WIRTH RD SOUTH	11.0	$623,036
CARDWELL NO 2	15.9	$606,568
TULLY MILL	11.6	$598,105
JULIACREEK NO.08 CANOBIE	15.4	$592,334
ORION	16.2	$587,571
GREENVALE NO.02	16.6	$585,526
Aramac	16.0	$582,829
TANSEY	11.8	$582,528
AYR NO.04	15.5	$581,245
MT GOONANEMAN	10.9	$579,051
CARBINE	15.5	$575,732
QUEENS HILL	16.5	$574,534
WENTWORTH STREET	8.8	$572,644
TARA	15.3	$570,238
YANDARAN	14.5	$569,698
QEC Coal Plant	8.8	$565,928
NOBBY	12.8	$563,563
BLACKBUTT	16.6	$559,306
REEF PARK	12.1	$559,261
TROYS RD	10.9	$517,775
CLIFTON TOWN	11.0	$552,791
ANCHORFIELD	13.0	$550,479
Jambin	15.1	$547,873
ATHERTON ROAD	14.7	$543,898
CALEN	16.4	$543,471
GLENWOOD	18.2	$540,750
TOOGOOD RD	13.0	$540,507
Martyn Street Feeder	10.6	$503,464
HOMEHILL NO.04	10.6	$539,546
HASTINGS 11kV FDR	10.2	$533,542
BRINGALILY	13.4	$521,228
GORDONVALE NO3	12.4	$518,464
SILKWOOD NO2	14.5	$517,346
RAVENSHOE	12.9	$516,748
EINASLEIGH	14.3	$516,607
JANDOWAE	9.5	$516,528
GORDONVALE NO1	15.2	$516,411
MAREEBA NO2	12.0	$514,153
SLADE POINT	14.2	$510,679
MORVEN	13.0	$509,565
TORRENS CK	14.9	$504,990
MUNGALLALA	11.1	$501,493
DALBEG	8.7	$496,441
BLUEVALLEY NO.04 GORGEWEIRPUMP	7.0	$496,270
Mirani	13.3	$494,720
BARRINE	13.7	$493,223
KINGAROY NORTH	8.3	$485,797
Nebo	11.7	$480,880
Bajool	9.6	$477,107
WINDERMERE	12.6	$476,756
SERENE VALLEY	15.8	$475,968
Township No 4	9.6	$474,889
TOWNSVILLEPORT NO.03	12.0	$474,121
MUTCHILBA	11.2	$471,903
RIVERLEIGH FDR	11.5	$468,896
Dysart Town No 2	10.5	$467,490
Stanwell Pumps	6.5	$459,862
GORDONBROOK	10.3	$459,423
Dysart Town No 1	10.6	$458,540
Taroom Feeder	12.0	$453,972
Island Drive	10.6	$451,825
COOK NO 3	11.2	$444,585
Blackwater	12.1	$443,521
Glendale Road	10.7	$441,645
Water Pumps	10.6	$439,067
Emerald North	11.8	$437,971
BURRUM HEADS	13.5	$428,001
KUMBIA	11.3	$426,550
COOKTOWN NO 1	10.2	$420,248
JULIACREEK NO.01 TRIPLEX	10.8	$419,379
BARRATTA NO.01	10.9	$419,132
BINGEGANG RURAL CIRCUIT	12.9	$416,856
PORTSMITH	7.7	$416,746
HAYMAN	8.1	$385,303
BAYVIEW	12.7	$411,508
HERMITPARK NO.06	10.1	$411,513
BLUEWATER NO.02	14.2	$410,826
Blackwater Town	9.8	$409,586
KRATZKE ROAD FDR	10.7	$407,543
ALLOWAY	9.0	$406,652
CLONCURRY NO.01	10.1	$403,130
Strathdickie	11.2	$401,441
TOOTH ST	12.1	$398,113
GIRU NO.02	10.6	$394,916

FAIRYMEADOW	8.6	$393,791
Southern (Sarina)	9.4	$393,116
Waterpark	9.6	$391,555
ALTON DOWNS	12.4	$390,244
Ravenswood No.3	6.0	$389,980
QWRC	10.2	$388,899
MERINDA NO.04	7.0	$386,499
KALAMIA NO.02	9.9	$386,245
GUNALDA	10.4	$386,029
CUNNAMULLA NORTH	10.3	$382,265
EMERALD CREEK	10.9	$379,453
BRINSMEAD	12.9	$377,543
TAKURA	9.1	$376,604
Rural View	11.1	$374,582
LANEWOOD	11.5	$374,048
MERINDA NO.03	8.2	$373,289
ABEL ROAD	11.6	$372,789
PEERAMON	10.4	$372,753
HOMEHILL NO.06	9.2	$370,371
GIN GIN	8.5	$369,476
RACECOURSE	6.1	$368,981
AYR NO.03	9.3	$367,983
LAURA 1	8.8	$367,926
SANDY CREEK	9.2	$366,906
RICHMOND	11.1	$365,204
CREMORNE	9.2	$364,899
SHORT STREET	9.2	$363,971
Saunders No.01	9.0	$363,686
SOUTH EAST RURAL	9.4	$362,730
DRINAN	9.2	$358,873
LEMONTREE	8.2	$358,175
Jensen St Feeder	8.6	$357,788
DUBLIN STREET	8.6	$353,715
MONAPARK NO.06	8.7	$353,254
OAKEY TOWN	7.6	$351,583
REDGATE	9.3	$350,377
TOWNSHIP 6.6KV FEEDER	6.6	$349,579
BARGARA	9.2	$347,841
Meissner	8.0	$342,832
GREENMOUNT	9.7	$342,175
SUSAN RIVER	8.2	$341,372
CHINCHILLA NORTH	8.1	$339,087
PARROT STREET	8.1	$338,940
EIDSVOLD	8.9	$338,065
TOTAL	**3414.9**	**$151,220,508**

Appendix 2: Alignment with the National Electricity Rules

Table 7 Recommended Option's Alignment with the National Electricity Rules

NER capital expenditure objectives	Rationale
A building block proposal must include the total forecast capital expenditure which the DNSP considers is required in order to achieve each of the following (the capital expenditure objectives):	
6.5.7 (a) (1) meet or manage the expected demand for standard control services over that period	See Section 3.1 of this Business Case
6.5.7 (a) (2) comply with all applicable regulatory obligations or requirements associated with the provision of standard control services;	See Section 4 of this Business Case
6.5.7 (a) (3) to the extent that there is no applicable regulatory obligation or requirement in relation to: (i) the quality, reliability or security of supply of standard control services; or (ii) the reliability or security of the distribution system through the supply of standard control services, to the relevant extent: (iii) maintain the quality, reliability and security of supply of standard control services; and (iv) maintain the reliability and security of the distribution system through the supply of standard control services	See Section 3.1 and 4 of this Business Case
6.5.7 (a) (4) maintain the safety of the distribution system through the supply of standard control services.	No Applicable as not Safety Driven
NER capital expenditure criteria	**Rationale**
The AER must be satisfied that the forecast capital expenditure reflects each of the following:	
6.5.7 (c) (1) (i) the efficient costs of achieving the capital expenditure objectives	See Section 4.5 of this Business Case
6.5.7 (c) (1) (ii) the costs that a prudent operator would require to achieve the capital expenditure objectives	See Section 4.5 of this Business Case
6.5.7 (c) (1) (iii) a realistic expectation of the demand forecast and cost inputs required to achieve the capital expenditure objectives	See Section 4.5 of this Business Case

Appendix 3: Reconciliation Table

Table 8 Reconciliation

Expenditure	DNSP	2025-26	2026-27	2027-28	2028-29	2029-30	2025-30
Expenditure in business case $m, direct 2022-23, aligns with the Input sheet in the Capex model	Energex	$7.52	$7.95	$8.59	$9.25	$9.93	$43.24