TD-0007753 BLTS CB Replacement Business Case (BC)

Portfolio Business Line:	Work Category:	Work Code / Name:
Transmission	Replacement	2002 TCAPEX Station rebuilds
Project Start date:	**Commissioning Readiness Date:**	**Project Completion Date:**
15/01/2020	31/12/2025	31/03/2026

Business case purpose and overview

This business case seeks approval to invest $16.5M (including overheads, contingency allowance, and finance charges, but excluding $0.06M write downs) to replace fifteen 66 kV circuit breakers and associated primary and secondary assets that are in poor condition and can cause supply reliability, safety, environmental and operational issues at Brooklyn Terminal Station (BLTS) in an integrated project.

The regulatory investment test (RIT-T) has been completed for this project with the publication of the Project Assessment Conclusions Report (PACR) on 1 March 2021. No non-network proposals were received during the RIT-T consultation and a network solution was selected as the preferred solution to address the emerging asset failure risk at BLTS. Since the PACR publication, the timing of the project has been deferred to deliver works from FY23 to FY26. The project is now planned to be completed by March 2026. This project will not have STPIS penalties for planned outages.

This project has currently spent $186.5k ($158.7K has been allowed for in the business case estimate for these activities) without requesting seed funding to obtain additional budget approval beyond the $50k notional allowance. This has arisen due to additional activities associated with RIT-T projects where expenditure over the notional amount is typical. The RIT-T is a new requirement imposed on asset renewals and AusNet Services did not have any experience on how much the new process would cost. This spend to date has been added to the initial forecast (in FY22) and should not be taken from the management reserve.

Why is this project required? What's the value that this business will deliver?

The condition of the circuit breakers and associated switchgear at BLTS has deteriorated to a level where there is a material risk of asset failure. This project is hence required to improve the reliability of supply and reduce the safety risk associated with an unlikely asset explosive failure at BLTS; consistent with the regulatory obligation to maintain the quality, reliability, and security of supply of prescribed transmission services as stated in the National Electricity Rules. The present value of the baseline risk costs associated with maintaining the existing assets in service is estimated to be around $41.3M.

Is this project part of the 5 year Reg Reset submission?	☒ Yes / ☐ No If Yes please select: ☐ EDPR / ☒ TRR / ☐ GAAR Reset Category: Tx - Switchgear Reset Amount: $14.21M (P50 estimate in real FY22 dollars, including overheads, excluding CFCs and P90 contingency allowance).
Is this budgeted in the current Portfolio FY Plan?	☒ Yes – Current portfolio budget amount: $11.7M.
Incremental change in Opex	N/A

Project Expenditure Forecast

Project Expenditure for approval (nominal)	First 5 years					Lifecycle Total
	2022	2023	2024	2025	2026	
Direct Capital expenditure	200.0	1,211.4	4,566.3	6,082.1	3,142.7	15,202.4
Overheads	8.4	43.5	190.9	254.2	131.4	628.3
Capitalised Finance Charges	3.5	37.5	115.1	79.8	103.8	339.7
Project Delivery Budget (SAP Capex budget)	211.9	1,292.4	4,872.3	6,416.1	3,377.8	16,170.4
Management Reserve	-	-	-	-	294.0	294.0
Total CAPEX for Approval (incl risk, CFCs & OHs)	211.9	1,292.4	4,872.3	6,416.1	3,671.7	16,464.4
Operating Expenditure for approval (Project Opex)	-	-	-	-	-	-
Written down value of assets retired/sold	-	-	60.0	-	-	60.0
Total Estimated expenditure for approval (nominal)	211.9	1,292.4	4,932.3	6,416.1	3,671.7	16,524.4

TD-0007753 - BLTS CB Replacement

Analysis of investment options

Analysis of investment options ($'000 - Present Value)	Capex	Opex	Total Financial Costs	Potential Costs	Other Economic Costs & (Benefits)	Total PV Cost
BAU	-	327.5	327.5	-	40,968.4	41,295.9
Option 1	14,039.6	178.5	14,218.1	-	3,050.0	**17,268.1**
Option 2	12,011.3	208.0	12,219.3	-	8,653.4	20,872.7

Options considered	• BAU: Business as usual • Option 1 (Recommended): Replace selected 66 kV switchgear in an integrated project. • Option 2: Integrated replacement deferred by five years.	
Preferred option	This option addresses all the identified risks and will maintain supply reliability in the Brooklyn area and provides the highest present value of net economic benefits of all technically feasible options.	
Preferred option financial benefits	**Total value**	**Overview**
	$149k	• $149k reduction in Opex compared to BAU (NPV)
Non Financial benefits	• Reduction in supply risks and improved supply reliability • Reduction in safety risks due to potential explosive failure of the assets	
Key implementation/ delivery risks	• Plant explosive failure during project delivery phase • Plant failure during project delivery phase	
Strategic Fit	**Growth**	☐ Pursue growth in infrastructure capitalising on the energy transition ☐ Selectively pursue opportunities in energy services
	Customer Centricity	☒ Improve customer experience and enhance network reliability ☐ Invest in communities and enable sustainable choices
	Operational Excellence	☒ Optimise asset management ☐ Modernise field operations
	Culture and Capability	☐ Continue to improve asset mgmt and systems and process simplification ☐ Strengthen Risk & Governance frameworks ☐ Invest in data and digital capabilities, cybersecurity and tech. infrastructure
Is this initiative part of a program of work?	☐ Yes / ☒ No	

Project Sponsor	Project Initiator & Dept.	Prepared by:	Date BC submitted:
	Transmission Network Planning		7/05/2021

Business Case e-sign-off

Project # / Title / Version	TD-0007753 BLTS CB Replacement Business Case (BC)			
Name	**Title**	**Signature**	**Date Approved**	**Comments**
ENDORSEMENTS				
	Manager, Transmission Network Planning	Via Email	13/05/21	
	Manager, Major Projects Delivery	Via NEC	17/05/21	
	GM Network Strategy & Planning (Acting)	Via NEC	17/05/21	
	GM, Finance – Networks & Technology	Via NEC	17/05/21	
DoA APPROVALS				
	EGM Network Management	Via Investment Committee	21/05/21	
	CFO/IC Chair	[redacted]	May 24, 2021	

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1. PROJECT BACKGROUND

Brooklyn Terminal Station (BLTS) was commissioned in the early 1960's and has served the inner western residential area of Melbourne, commercial areas on the Western side of the Yarra River, a steel mill induction furnace at Laverton and sewerage pumping stations, via two electricity distribution companies: Powercor and Jemena. Approximately 56,650 customers depend on BLTS for their electricity supply, with a load composition comprising of 62.25% commercial, 19.42% residential 18.26% industrial and 0.07% agricultural customers.

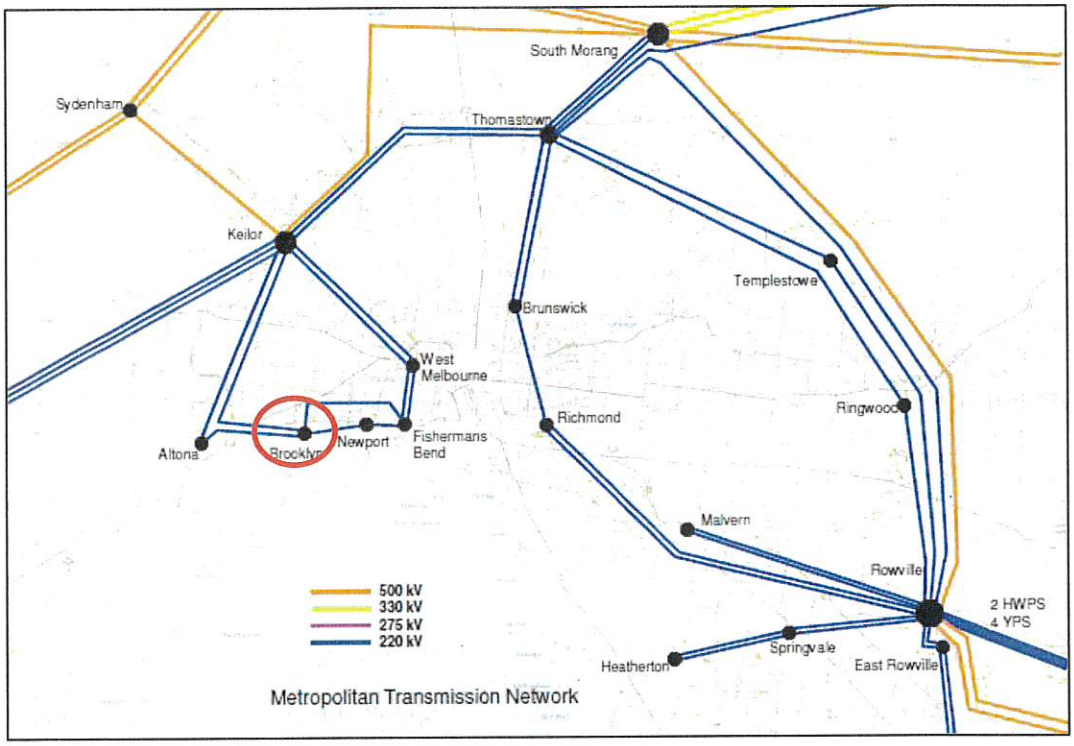

Figure 1 Metropolitan Melbourne Transmission Network

Peak demand at BLTS occurs throughout the summer periods. During the summer of 2019/20, the 66 kV peak demand reached 234 MW. According to the Australian Energy Market Operator's (AEMO) latest demand forecast[1] published in December 2020, a slight increase in peak demand is forecast for BLTS 66 kV over the ten-year forecast period.

As expected of assets that have been in service for an extended time, the condition of the circuit breakers and associated switchgear at BLTS has deteriorated to a level where there is a material risk of asset failure, which could have an impact on electricity supply reliability, safety, environment, and potential costs of emergency replacements.

The need for investment to address asset failure risks from the deteriorating assets at BLTS is included in AusNet Services' 2022 to 2027 revenue proposal. This investment need is also presented in AusNet Services Asset Renewal Plan that is published as part of AEMO's 2020 Victorian Annual Planning Report (VAPR).

[1] Australian Energy Market Operator (AEMO), "2020 Transmission Connection Point Forecast for Victoria," available at https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-andplanning/forecasting-and-planning-data/transmission-connection-point-forecasting/victoria

1.1 Rationale

It is expected that the services that BLTS provides will continue to be required as the demand for electricity is forecast to increase slightly over the next ten-year period. However, the poor and deteriorating condition of some of the components at the terminal station has increased the likelihood of asset failures which may result in prolonged terminal station outages.

Without remedial action, other than ongoing maintenance practice (business-as-usual), affected assets are expected to deteriorate further and more rapidly. This will increase the probability of failure, resulting in a higher likelihood of electricity supply interruptions, heightened safety risks due to potential explosive failure of the assets, environmental risks from possible oil spillage, collateral damage risks to adjacent plant, and the risk of increased costs resulting from the need for emergency asset replacements and reactive repairs.

Asset Condition Drivers

AusNet Services classifies asset conditions using scores that range from C1 (initial service condition) to C5 (very poor condition). The asset condition assessment for BLTS was conducted in 2019 and reveals that some assets at the terminal station are in poor condition (C4) or very poor condition (C5). For the selected assets, the probability of failure is high, and is likely to increase further if not replaced. Table below provides a summary of the condition of relevant major equipment.

Summary of major equipment condition scores to be replaced under this project:

Asset class	Condition scores				
	C1	C2	C3	C4	C5
66 kV circuit breakers				3	12
66 kV current transformers					12
66 kV voltage transformers				5	2

66 kV Circuit Breakers

Sixteen of the nineteen 66 kV circuit breakers, including all four bus tie circuit breakers, are in poor condition or have suffered extreme deterioration and are approaching their end of economic and technical lives. One of the 66 kV feeder circuit breakers will be replaced by another committed project (TD-0004191) therefore this project proposes to replace the remaining fifteen 66 kV circuit breakers.

Eleven of the fifteen 66 kV circuit breakers selected to be replaced are bulk-oil circuit breakers that have provided more than 50 years of service. These bulk-oil circuit breakers are amongst the oldest circuit breakers installed in the network and are critical for the security of supply of 66 kV load at BLTS. A summary of the key issues of these type of circuit breakers include:

- Age/duty related deterioration including the erosion of arc control devices, bushing oil leakages, and wear of operating mechanisms and drive systems.
- Limited fault level capability requiring restrictive switching configurations.
- Maintenance intensive.
- Manufacturer no-longer provides technical support or spares.
- Insufficient oil bunding.

The remaining four 66 kV circuit breakers selected to be replaced are minimum oil circuit breakers that have provided a service beyond their planned operational lives and they are now obsolete with spare parts no longer available. Minimum oil circuit breakers also generally require more intensive maintenance than modern equivalents and are costly to maintain with spare parts being difficult to find.

66 kV Instrument Transformers

Several instrument transformers at BLTS are assessed to be in poor condition and in an advanced deterioration phase (C4 and C5). Management of safety risks from potential explosive failures of instrument transformers is costly due to the need for regular oil sampling and partial discharge condition monitoring.

Twelve 66 kV capacitor bank current transformers in very poor condition (C5) are selected to be replaced. These current transformers have provided between 35 and 41 years of service. Recent failures of this type of current transformers have been seen[2].

Seven 66 kV voltage transformers have been selected to be replaced, with five in poor condition (C4) and two in very poor condition (C5). Both voltage transformers in very poor condition have provided 59 years of service.

All instrument transformers being replaced have reached end-of-life and from oil analysis, demonstrate age related deterioration. In the event of an explosive failure, porcelain projectiles from the transformer bushings could cause collateral damage to the adjacent plants and pose various safety risks.

Secondary Assets

Unlike primary assets, secondary assets become obsolete within a typical time frame of 15 years when they are no longer supported by manufacturers, are technically incompatible with interfacing equipment or are no longer able to provide the functionality required to comply with industry standards or regulation. The condition of a secondary asset is assessed based on its capacity to deliver its designed function. The selected secondary assets for replacement have been based on the above criteria and the asset management strategy (AMS10-68).

The secondary scope includes replacement of 220 kV, 66 kV and 22 kV bus protection schemes and associated back-up/current-check equipment. Many of the electro-mechanical relays of these protection schemes have been selected for replacement. Electro-mechanical relays are single function relays with mechanical measurement registers, rotating disc mechanisms, mechanical bearings, and spring-based energy storage. Electro-mechanical relays represent the oldest relay technology. These relays are obsolete with no manufacturer support. Their limited capability and functionality restrict implementation of current standards.

The Intelligent Electronic Device (IED) protection relays included in the 66 kV Automatic Load Shedding (ALS) scheme have been selected for replacement. The software platform used by these relays is no longer supported by the manufacturer and the relays are reaching the end of their service life. The current EDMI Mk3 revenue meters (in poor condition) are also no longer supported by the manufacturers and are to be replaced by EDMI Mk6E meters.

More details of selected assets to replaced are provided in Appendix A – Asset Information.

The emerging service constraints at BLTS are:

- Health and safety risks presented by a possible explosive failure of 66 kV instrument transformers and 66 kV bulk oil circuit breaker bushings.
- Security of supply risks presented by a failure of the 66 kV circuit breakers.
- Collateral plant damage risks presented by an explosive failure of instrument transformer or bulk oil circuit breaker bushing; and
- Environmental risks associated with insulating oil spill or fire.

The present value of the baseline risk costs is calculated to be $41.3M over the forty-five-year period from 2021/22. The key elements of the risk costs are shown below. The largest component of the baseline risk cost comes from the supply interruption risks borne by electricity consumers.

[2] Since 2002, two current transformers of this type have failed explosively in the Victorian network.

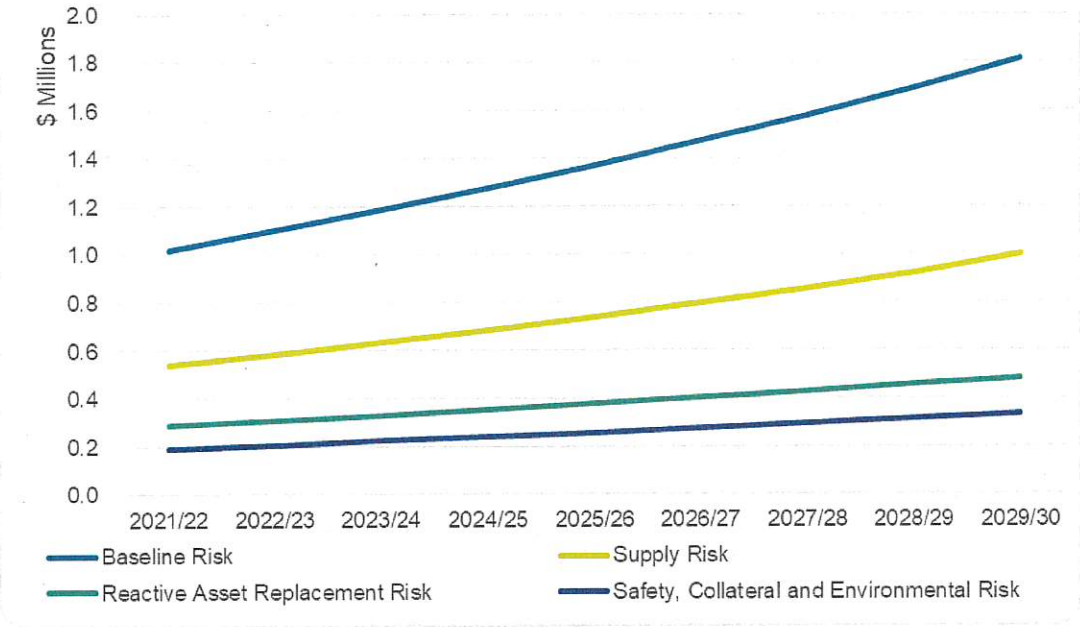

Figure 2 Baseline Risk Costs

2. PROJECT SCOPE

Has a Value Engineering Workshop been conducted? ☐ N/A If yes, what are the savings? The value of the total savings is $950k. This is comprised of: • Re-use of circuit breaker footing – saving $50k • Deferral of 22 kV circuit breaker replacements – saving $900k	☒ Yes	☐ No

2.1 In Scope

Item No.	In Scope
IS-1	Primary Assets for Replacement • Circuit Breakers • Isolators & Disconnectors • Instrumentation (CTs and VTs) • Surge Arrestors • Insulators, Buses & Conductors • Miscellaneous Items (Earthing System, Switchyard Lighting, Bus Protection CT Summation Boxes and Secondary Cabling requirements)
IS-2	Civil & Structural Assets for Replacement • Footings & Foundations • Support & Switchyard Structures • Civil Ground Works & Drainage
IS-3	Secondary & Communications Assets for Replacement: • Protection & Control Schemes • NEM Metering, Instrumentation & Operational Metering Equipment • SCADA & Communications

2.2 Out of Scope

Item No.	In Scope
OS-1	The existing synchronous condenser transformer is currently out of service and it is understood that the long-term strategy is to decommission and remove from site. The scope excludes any activity relating to synchronous condenser which do not directly interfere with described BC works. For more details, see Appendix A – Scope of Works.
OS-2	The associated assets (to be replaced in the original function scope) from the existing bays currently out of service have been agreed in COM0 to be excluded from the project. For more details, see Appendix A – Scope of Works.
OS-3	The existing 22 kV assets for feeder bays (Bay C, E, G, H, J, K, M, and N) are not in the AusNet asset database, and it is understood from the COM0 that these assets are Powercor assets Thus, the associated assets to be replaced due to its ageing conditions confirmed by visual inspection will be excluded from the project. For more details, see Appendix A – Scope of Works.
OS-3	A number of other assets, proposed in the original functional scope, will be excluded from the project as discussed in the COM0. For more details, see Appendix A – Scope of Works.
OS-4	Secondary scope items which are dependent upon coordination with supplied DNSPs are excluded from the scope. For more details, see Appendix A – Scope of Works.
OS-5	A number of 22 kV assets, listed in the original assets identified for the scope have been excluded. For more details, see Appendix A – Scope of Works.

2.4 Dependencies

This project has no relevant dependencies.

3. SCHEDULE

3.1 Key Project Schedule and Milestones

Key Milestone and Deliverables (Waterfall)	Planned Completion Date
Approval of RIT ☐ N/A	**1/04/2021**
Approval of Stage Gate 2	**15/01/2020**
Approval of Business Case	**24/05/2021**
Design Complete	**24/05/2022**
Commissioning Readiness Complete	**31/12/2025**
Project Completion - Stage Gate 6 Approval	**31/03/2026**

4. OPTIONS CONSIDERED

The following options were considered in this assessment. The duration of analysis is over 45 years, from FY21/22 to FY65/66.

Option	Option Title	Description of Option	Capex (real dollars)	Opex
BAU	Business as Usual	The Business as Usual (BAU) option quantifies the base line risk (primarily supply and financial risk) at BLTS. This option involves maintaining the existing assets and doing nothing to mitigate the risk of an asset failure at BLTS. This option has a total present value (PV) cost of $41.3M, which is mainly due to escalating supply and financial risks costs. The "Business as usual" option does not address the AusNet Services obligations under the National Electricity Rules and Electricity Safety Act and is not an economical option or a prudent management strategy for the assets at BLTS.	$0	$13.8k p.a.
Option 1 (Preferred)	Integrated Replacement	This option involves replacing fifteen 66 kV circuit breakers and associated primary switchgear and secondary equipment that are in poor condition, in a single project. This option addresses all the identified risks and has the lowest PV cost ($17.3M) of all technically feasible options. Sensitivity analysis of net economic benefits and optimal timing shows that this option presents the most robust investment decision and represents the most ideally timed investment decision.	$15.54M (excluding asset retirement cost)	$6.9k p.a.
Option 2	Integrated Replacement Deferred by 5 Years	This option defers the replacement of the fifteen 66 kV circuit breakers and associated primary switchgear and secondary equipment by five years. The investment year is deferred to 2028/29. This option is not recommended as analysis has shown that the optimal timing is to deliver a solution as soon as possible and the total PV cost of this option ($20.9M) is higher than the preferred option.	$15.54M (excluding asset retirement cost)	$6.9k p.a.

4.1 Preferred option – Integrated Replacement

Amongst the options considered, Option 1 – Integrated Replacement is the most economical option to maintain supply reliability in the Brooklyn supply area and to manage safety, environmental, collateral and emergency replacement risks at BLTS.

The preferred option involves replacing fifteen 66 kV circuit breakers and associated primary switchgear and secondary equipment that are in poor condition, in a single integrated project. This option addresses all the identified risks and has the lowest PV cost ($17.3M) of all technically feasible options. It is also the preferred option as identified in the RIT-T.

The preferred option is economical to proceed as soon as possible. However, allowing for construction and equipment lead time, the earliest commissioning date is in 2024/25.

Capex and Opex	The project capex cost is $16.2M (excluding asset retirement cost and management reserve). The project will deliver an annual Opex saving of $6.9k. The saving is due to the lower expected maintenance cost associated with the new circuit breakers.
Community Costs & Benefits **(Regulated projects)**	The residual safety, supply, collateral, and environmental risk costs will be negligible after project completion as it addresses all the identified risks.
Incentive Benefits	There are no incentive benefits associated with this project.

5. BENEFIT ASSESSMENT

#	Benefit Category (Strategic Objective)	Sub-Category (Strategic Priority)	Benefit Name (& description)	Benefit Start to Full Realisation Date	Measure - Baseline, Metric and Target	Business Benefit Owner	Financial Benefit Details
	Duplicate benefits must be avoided in the Benefit Assessment.	*Use one of the existing categories below.*	*Provide a short benefit name and a description of what benefit is being provided by the program, project or initiative.*	*When can benefits (i) start to be tracked (date after key milestone) and (ii) when will they be fully realised?*	*What is the baseline, metric used and the result expected.*	*Who stands to gain the most from the benefit? (e.g. Business Owner) Must be role specific*	*Is there a direct bottom line budget impact. If Yes please provide Cost centre and amounts*
2	**Customer Centricity** *Improve customer experience and enhance network reliability or Invest in communities and enable sustainable choices*	Improve Customer Experience and Enhance Network Reliability	Provide safe, reliable, and stable power supply to customers	Benefit start 31/12/2025 Full Realisation Date 31/12/2025	Minimise outages at BLTS due to asset failures and in turn improve customer satisfaction		☐ Yes / ☒ No Cost Centre: CPX: $ OPX: $
3	**Operational Excellence** *Continue to improve asset management and systems and process simplification* *Strengthen Risk & Governance framework* *Invest in data and digital capabilities*	Strengthen Risk and Governance Framework	Risk reduction of either potential explosive or device failure of the assets, maintaining compliance with the regulator.	Benefit start 31/12/2025 Full Realisation Date 31/12/2025	Minimise supply interruptions and outages due to asset failures		☐ Yes / ☒ No Cost Centre: CPX: $ OPX: $
5	**Mission Zero** *Benefits that provide a safer working environment for staff, our customers and the community*	Safety – General	Safe working environment at BLTS for the employees. Injury due to explosive asset failure is reduced significantly.	Benefit start 31/12/2025 Full Realisation Date 31/12/2025	Safer work environment at the BLTS site.		☐ Yes / ☒ No Cost Centre: CPX: $ OPX: $

6. RISK ASSESSMENT

6.1 Project delivery risk (known)

Project Risk	What could occur?	Consequence *Rating 1-5**	Likelihood *Rating (Almost Certain ~ Rare)**	Current Risk Rating *Rating A-E**	Actions and controls in place to manage/reduce risk	Target Risk Level *A-E**	Cost Impact
Plant explosive failure during project delivery phase	Safety risk and supply outages	4	Unlikely	C	Monitor assets during project. Safety review completed prior to project start.	C	
Plant failure during project delivery phase	Supply outages	2	Unlikely	D	Contingency plans, load transfers and monitor assets for any deterioration in condition.	E	
Brown Field Redevelopment	Supply outages	2	Unlikely	D	Manage outages and limit it to the lower demand period.	E	

Refer to the Risk Rating Assessment Criteria document and the Risk Management Policy and Framework 2018) on ECM: Link

Has a Costed Risk Workshop been conducted to calculate Management Reserve for this project?	☒ Yes	☐ No

6.2 Other risks

No other known risk at this stage.

7. HIGH LEVEL CHANGE IMPACTS

7.1 High Level Impacts

Overall Change Impact Rating	☐ High ☐ Medium ☒ Low	**What is the Type of Change?**	☐ People ☐ Process ☒ Systems ☐ Mindset ☐ Skills
Divisions Impacted	☒ Network Ops ☒ Network Mgmt ☐ Growth & Future Networks ☐ Digital ☐ Strategy & Transformation ☐ People & Safety ☐ Regulation & External Affairs ☐ Governance & General Counsel ☐ Finance	**Potential Impacts to External Parties**	☐ None ☒ Customers ☐ Vendors ☒ Delivery partners ☒ Retailers ☐ Regulatory Bodies ☒ Distributors ☐ Other – specify below
High level description of the change impacts	**Internal Teams** **Network Operations –** This project impacts the Network Operations division as it aims to maintain supply reliability in the Brooklyn area by replacing assets which could have a material risk of failure and disrupt the supply of electricity. The current ageing assets require intensive maintenance which can be reduced by replacing the selected assets. **Network Management –** The changes highlighted in this project impact the Network Management division as they relate to the effective management of network assets and ensuring network safety by selecting ageing assets for replacement prior to their failure, and thereby continuing the safe operation of the network. **External Teams** **Customers** - Failure of the assets at BLTS has the potential to interrupt electricity supply to its approximately 56,650 customers. The changes proposed in this project will allow the continued delivery of safe and reliable electricity supply to customers. **Distributors and Retailers –** Brooklyn Terminal Station provides electricity supply services through two distributors: Jemena and Powercor, and through the various Victorian electricity retailers. Failure of the assets at BLTS would result in electricity supply interruptions, impacting the ability of these distribution bodies to provide a reliable supply to customers. The changes proposed in this project aims to reduce the likelihood of this event. **Delivery Partners –** The changes proposed in this project involve the demolition and removal of existing assets and the installation of new assets. Delivery partners will be required to carry out these changes.		

Have you consulted a change manager on this project to discuss your assumptions?	☐ Yes	☒ No	☐ Not Yet, but I will

8. FINANCIAL ASSESSMENT

Note: OPEX owner assumes responsibility for any write off costs should the project be cancelled.

Capex profit centre	13260
Propex profit centre	Not Applicable
Opex (BAU) owner & cost centre	[redacted]
Transmission Regulatory Key	PS

8.1 Capex Breakdown

Capex Breakdown (incl mngt reserve - nominal)	First 5 years					Lifecycle Total
	2022	2023	2024	2025	2026	
Design	-	1,020.0	520.2	-	-	1,540.2
Internal Labour	200.0	191.4	438.3	426.1	267.2	1,523.0
Materials	-	-	1,679.2	2,283.7	582.3	4,545.3
Plant & Equipment	-	-	207.4	362.7	246.6	816.8
Contracts	-	-	1,542.5	2,697.2	1,834.1	6,073.8
Meter Costs	-	-	-	-	-	-
Risk	-	-	178.6	312.3	212.3	703.2
Other	-	-	-	-	-	-
Management Reserve	-	-	-	-	294.0	294.0
Total Capex	200.0	1,211.4	4,566.3	6,082.1	3,436.6	15,496.3

8.2 Opex Breakdown

Opex excl Project implementation (nominal)	First 5 years					Lifecycle Total
	2022	2023	2024	2025	2026	
BAU Total Opex	13.4	13.6	13.9	14.2	14.5	960.5
Incremental Opex Costs - Option 1	-	-	-	-	-	-
Opex Savings - Option 1	-	-	-	(7.3)	(7.5)	(474.9)
Net Budget impact (split by division below)	-	-	-	(7.3)	(7.5)	(474.9)
New Cost profile	**13.4**	**13.6**	**13.9**	**6.9**	**7.0**	**485.6**

8.3 Analysis of investment options

Analysis of investment options ($'000 - Present Value)	Capex	Opex	Total Financial Costs	Potential Costs	Other Economic Costs & (Benefits)	Total PV Cost
BAU	-	327.5	327.5	-	40,968.4	41,295.9
Option 1	14,039.6	178.5	14,218.1	-	3,050.0	**17,268.1**
Option 2	12,011.3	208.0	12,219.3	-	8,653.4	20,872.7

9. CORPORATE ACCOUNTING CONSIDERATIONS

9.1 Asset Retirements

This project includes the retirement of:

- Fifteen 66 kV circuit breakers
- Twelve 66 kV current transformers
- Seven 66 kV voltage transformers
- Poor condition and aging secondary assets including 220 kV, 66 kV and 22 kV protection and control schemes, metering panels, communications equipment etc.

The total written down value (WDV) of the project is $57,682.80 (WDV spreadsheet is attached in Appendix A).

9.2 Contributed (Gifted) Assets

Not applicable.

9.3 Assets to be created

Description of Asset	Quantity	Estimated Cost (total)	Expected Asset Life
66 kV Circuit Breakers 66 kV Current Transformers 66 kV Voltage Transformers Associated Primary Equipment (Isolators, Surge Arrestors, Insulators, Buses etc.)	15 12 7	$11.32M	45 years
220 kV Bus Protection		$0.61M	15 years
66 kV Protection and Control Schemes (Bus Protection, Circuit Breaker Management and Load Shedding equipment)		$1.68M	15 years
22 kV Protection and Control Schemes (Bus Protection and Circuit Breaker Management)		$0.58M	15 years
Other secondary (SCADA, Metering & Monitoring, Comms, Digital network/asset data interface etc)		$1.98M	15 years
Totals		$16.17M	

Appendix A ATTACHMENTS

Document Title	Attachment (Embedded document)
Scope of Works / Initiative Brief	TD 7753 BLTS CB Replacement BC Final
Financial Model with NPV	TD-0007753 - Business Case Evalu:
Detailed Cost Estimate and Benefit Assumptions	TD-0007753 - BLTS CB Replacement - DC:
Cost Breakdown File	TD-0007753 - BLTS CB Replacement - ES
Write Down Value (WDV) details	TD-0007753 - BLTS CB Replacement - WD
Asset Information	TD-0007753 - Asset Information v2.0.do:
RIT-T PACR	BLTS PACR Rev1.pdf