TD-0007975 - Purchasing a spare transformer for WOTS 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:**
20/12/2019		31/03/2022	30/06/2022
Delivery Budget ($):		**Management Reserve ($):**	**Total Estimated Expenditure for Approval ($):**
Capex ($)	$5.65M	$210k	$5.65M
Opex ($)			
Is this budgeted in the current Portfolio FY Plan?			**Incremental change in Opex**
Yes (The project was planned to commence in FY23 but had to advance)			Negligible

Executive Summary:

This business case seeks approval to invest $5.65M (including overheads, contingency allowance and finance charges) to purchase one 75 MVA 330/66/22 kV transformer as spare for the two WOTS transformers.

The two 75 MVA 330/66/22 kV transformers at WOTS are the only transformers of this voltage ratio in Victoria. AusNet Services does not have a spare transformer suitable for use at WOTS, so it is expected that it would take approximately twelve to sixteen months to replace a failed transformer at WOTS. Both transformers were installed in 1986 when the station was established and are around 34 years old.

Most of the time, WOTS demand (66 kV and 22 kV) is below N-1 station rating. Hume Power Station (HPS) is connected to the WOTS 66 kV bus 1 via a 66 kV line from HPS. Even though HPS has capacity to generate up to 58 MVA, its output is dependent on water release from the Hume dam. The five-year average generation of HPS is less than 30 MW.

A contingency plan prepared in 2016 (when both transformers were in C2 condition) considered all the credible options and recommended that the N-2 supply risk with C3 transformer condition is significantly high that an immediate implementation of the recommended option is warranted. According to the latest transformer assessment, both transformers are in C3 condition.

This business case is to purchase a spare transformer suitable for WOTS and place it at WOTS so that a failed WOTS transformer could be replaced within a shortest possible time.

This project is not subject to a Regulatory Investment Test (RIT-T) as the direct cost of each credible option is less than the $6M threshold. The project is scheduled to be completed by 31 March 2022 with project close out by 30 June 2022.

Project Initiator & Dept.	Prepared by:	Date BC submitted:
[C-I-C] Transmission Planning and Development	[C-I-C]	21/01/2020

Business Case e-sign-off

Key Project Details	
Project # / Title / Version	TD-0007975 - Purchasing a spare transformer for WOTS
Revision (Y/N)	N
Endorsement:	
Name: [C-I-C] Title: Manager, Transmission Planning and Development	Name: [C-I-C] Title: Manager, Major Projects Delivery
Signature:	Signature:
Date:	Date:
Comments:	Comments:
Name: [C-I-C] Title: Head of PM&R	Name: [C-I-C] Title: GM, Finance RES
Signature:	Signature:
Date:	Date:
Comments:	Comments:
Name: [C-I-C] Title: GM (Transmission)	
Signature:	
Date:	
Comments:	
Approvals:	
Name: [C-I-C] Title: EGM (RES)	Name: [C-I-C] Title: CFO
Signature:	Signature:
Date:	Date:
Comments:	Comments:

TABLE OF CONTENTS

Business Case Accountability Matrix

The table below provides delineation and shows *who* is responsible to review *which* section of the BC. This will expedite approval as only the person best placed to review a specific section will be accountable for it.

When the business case is approved, all the stakeholders below will be copied into the confirmation email.

Name	Role	Section Developed	Section Reviewed	Reviewed / Endorsed
[C-I-C]	Project Initiator	All aspects of the Business Case		10/01/20
[C-I-C]	Project Sponsor/Owner		Executive summary Project Background Scope Schedule Options considered (economic & technical) Risk assessment Benefit assessment	21/01/20
[C-I-C]	Benefit Owner/s		Financial assessment Options considered Benefit assessment	21/01/20

1. FINANCIAL SUMMARY

Transmission Regulatory Key	PS

Table 1.1: Project Expenditure Forecast

Project Expenditure for approval (nominal)	First 5 years					Lifecycle Total
	2020	2021	2022	2023	2024	
Direct Capital expenditure	-	55.4	4,755.3	260.5	-	5,071.2
Overheads	-	3.2	273.4	15.0	-	291.6
Capitalised Finance Charges	-	-	69.5	3.9	-	73.5
Project Delivery Budget (SAP Capex budget)	**-**	**58.6**	**5,098.2**	**279.4**	**-**	5,436.2
Management Reserve	-	-	104.0	106.1	-	210.2
Total CAPEX for Approval (incl risk, CFCs & OHs)	**-**	**58.6**	**5,202.3**	**385.6**	**-**	5,646.4
Operating Expenditure for approval (Project Opex)	-	-	-	-	-	-
Written dow n value of assets retired/sold	-	-	-	-	-	-
Total Estimated expenditure for approval (nominal)	**-**	**58.6**	**5,202.3**	**385.6**	**-**	**5,646.4**

Table 1.2: Net Present Value of Cash flows (Financial Analysis)

Investment Option	NPV of cashflows	IRR	Payback period (yrs)
BAU	-	-	-
Option 1	1,088.0	5.8%	32
Option 2	1,300.0	6.4%	32

Table 3.3: Analysis of investment options

Least Cost analysis ($'000 - PV)
The least cost option must be selected for all regulated projects other than those that have a mandated Regulation. Please contact PM&R for next appropriate steps if this is not the case

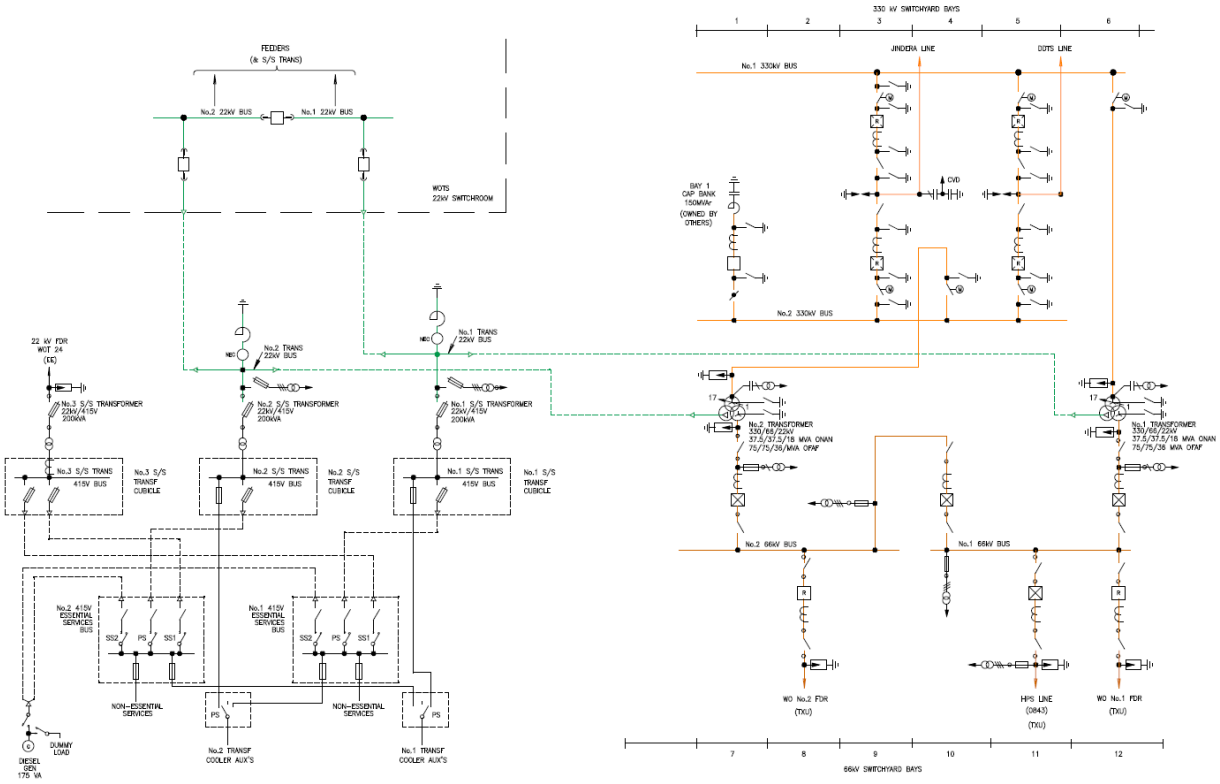
Analysis of investment options ($'000 - Present Value)	Capex	Opex	Total Financial Costs	Potential Costs	Other Economic Costs & (Benefits)	Total PV Cost	PV Cost Ratio (compared to BAU)	Financial outcome (in present value terms) - compared to BAU - excl non cash costs and benefits
BAU	-	60.9	60.9	-	106,824.4	106,885.2	1.00	
Option 1	4,909.5	60.9	4,970.4	-	15,861.1	**20,831.5**	**0.19**	**Excluding Economic costs and benefits this Option spends $5m more Capex compared to BAU**
Option 2	4,152.8	60.9	4,213.6	-	28,346.9	32,560.5	0.30	**Excluding Economic costs and benefits this Option spends $4m more Capex compared to BAU**

2. PROJECT BACKGROUND

Wodonga Terminal Station (WOTS) is a two transformer terminal station serving as the main source of supply for a significant part of northeastern Victoria. WOTS is located on the Victorian side of the border with New South Wales, 300 km northeast of Melbourne. This terminal station supplies Wodonga and the area from Rutherglen in the west to Corryong in the east.

The two 75 MVA 330/66/22 kV transformers at WOTS are the only transformers of this voltage ratio in Victoria. AusNet Services does not have a spare transformer suitable for use at WOTS, so it is expected that it would take approximately twelve to sixteen months to replace a failed transformer at WOTS. Both transformers were installed in 1986 when the station was established and are recently assessed at "Average" condition (C3).

WOTS consists of three switchyards operating at voltages of 330 kV, 66 kV and 22 kV as shown below. The 330 kV switchyard interconnects a transmission line from Dederang Terminal Station (DDTS) and a transmission line from Jindera Substation in New South Wales.



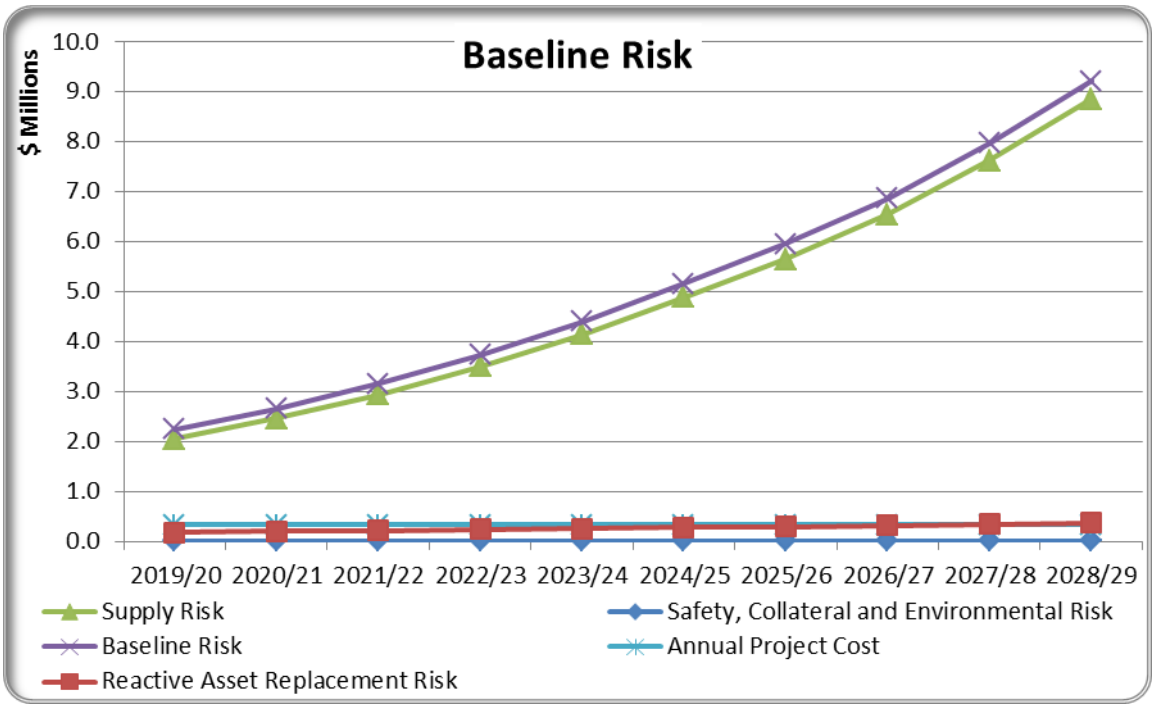
Most of the time, total station demand (66 kV and 22 kV demand) at WOTS is below the N-1 station summer rating of 81 MVA. Analysis of the historical station demand for the past five years shows that the station demand has exceeded the N-1 summer rating for very limited periods of time during summer. The maximum peak demand at WOTS since 2011 is 95 MVA, which is 14 MVA above the N-1 summer rating. The maximum peak demand occurred during summer 2013/14.

Hume Power Station (HPS) is connected to the WOTS 66 kV bus 1 via a 66 kV line from HPS. HPS generation can also be connected to the TransGrid 132 kV network in New South Wales. The power station is capable of generating up to 58 MVA. HPS generation is dependent on water releases from the Hume Dam for irrigation and the water level in the dam. The five-year average generation of HPS is less than 30 MW.

A contingency plan developed in 2016[1] (when the transformers were in C2 condition) considered all the credible options available and recommended that the N-2 supply risk with C3 transformer condition is significantly high that an immediate implementation of the recommended option is warranted. The following graph demonstrates

[1] presented to the June 2016 AMC meeting and approved – a copy is attached

the monetised supply risk, safety, collateral, environmental risks and reactive asset replacement risk in comparison with the annual project cost.



This Business Case is to purchase a cold spare transformer suitable for WOTS.

3. SCOPE – HIGH LEVEL

The scope covers design, procurement, supply, installation, testing and commissioning of a 75 MVA 330/66/22 kV transformer as a cold spare with associated equipment at WOTS including:

- Cold spare transformer to be installed at suitable position –still need to be determined;
- New transformer foundation including oil containments;
- All necessary fire protection equipment, as applicable; and
- All other minor works to facilitate all the above works.

All the works need to be completed as per relevant AusNet Services' Standard or Australian Standard specifically to Station Design Manual Section:

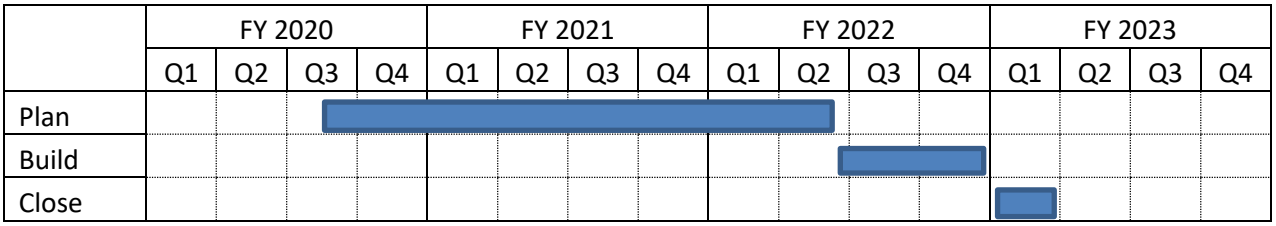
- SDM 05-0900 – Transformer Fire Detection and Suppression; and
- SDM 05 – Stations – Environmental, Civil and Structural.

3.1 Standards to be developed for this project

All the standards related to equipment required under this project are current and no new standard need to be developed.

4. SCHEDULE

Key Milestone	Date
Stage Gate 2 Approval	20/12/2019
Control Estimate Complete	31/08/2021
Commissioning Readiness Complete	31/03/2022
Project Completion / Regulatory Commencement	30/06/2022



5. OPTIONS CONSIDERED

Three options were considered for this business case as per table below and financial modelling was completed for all three applicable options. The duration of the analysis is 20 years from FY 2019/20 to FY2038/39.

Option	Description Summary
BAU	Business as Usual
1	Preferred Option Title: Purchasing a spare transformer for WOTS
2	Option 3 Title: Defer purchasing a spare transformer by 5 years

5.1 Business as usual

This option involves continuation of existing services without a spare transformer at WOTS. The two 75 MVA 330/66/22 kV transformers at WOTS are the only transformers of this voltage ratio in Victoria. AusNet Services does not have a spare transformer suitable for use at WOTS, so it is expected that it would take approximately twelve to sixteen months to replace a failed transformer at WOTS. The existing 34 years old transformers are recently assessed as in C3 condition. The N-2 supply risk with two transformers in C3 condition is significantly high and may result in involuntary load shedding.

A transformer failure could lead to significant network constraints and possible customer outages with regulatory penalties (including STPIS penalties/incentives) affecting company reputation. In addition, the outage incident would involve significant unplanned Opex and Capex costs to the business.

Due to significant risk exposure of asset damage, supply security and unplanned Opex and Capex costs including financial penalties, this option is neither prudent nor efficient and therefore not recommended. This option has the highest PV cost of the three options considered.

<table>
<tr><td>Capex and Opex</td><td>No additional capex is included in this option. The transformer operation and maintenance (O&M) opex cost is common for all three options as no transformer would be replaced. Transformer annual opex is estimated at $2.18 k for each one of the two old transformers.</td></tr>
<tr><td>Community Costs & Benefits</td><td>BAU option is considered the base for comparison. Following community costs were considered for the calculations.
Supply risk cost – the N-1 risk cost is insignificant while the N-2 risk cost is substantial. The supply risk cost is evaluated using the VCR[2] ($42,158/MWh)
Safety risk cost - $0.044M (weighted with the likelihood of consequence)
Environmental risk cost - $0.1M
Collateral damage risk cost - $1M
Transformer losses – includes load losses based on the forecast demand at WOTS as well as no load losses using the following assumptions for losses on the two old transformers.<table><tr><th></th><th>Old</th><th>New</th></tr><tr><td>No load losses (kW)</td><td>95</td><td>50</td></tr><tr><td>Load losses @ 150 MVA (kW)</td><td>776</td><td>475</td></tr></table></td></tr>
</table>

[2] Value of customer reliabiliry – 2019 TCPR

5.2 Preferred option - Purchasing a spare transformer for WOTS

This option involves purchasing of a suitable spare transformer for two WOTS transformers and positioning at WOTS as a cold spare so that a failed transformer could be replaced in a shortest possible time. There is no change to the current operation and maintenance costs as no existing transformer would be replaced in this option. However, there is significant supply risk reduction with the availability of a spare transformer.

This option has the lowest PV cost ($20.83 M) of three options considered and the project is already economic. Therefore, this option is recommended for approval.

Capex and Opex	The project capex cost is $5.65 M There could be insignificant opex cost change due to the new spare transformer. It is assumed that the maintenance cost of the new spare transformer is negligible, as it is not loaded. The existing transformers are not replaced in this option hence continue to incur the opex cost for O&M.
Community Costs & Benefits **(Regulated projects)**	A significant supply risk reduction would be achieved with the availability of spare transformer at site to replace any one of the failed transformers at WOTS with a shortest possible time. There is no significant change to the safety, environmental and collateral damage risks as the existing transformers are continued to use. Safety, environmental and collateral damage risks are very small compared with the supply risk.
Incentive Benefits **(Electricity only)**	

5.3 Option 3 - Defer purchasing a spare transformer

This option is very similar to the preferred option, only difference is deferring the purchase of spare transformer by 5 years. This option is better than the BAU but not as beneficial as the preferred. The PV cost of this option ($32.56 M) is higher than the preferred option and hence is not recommended.

Capex and Opex	The capex for this option is $5.65 M to be spent in 2025-27. The opex costs are very similar to the opex costs of the preferred option.
Community Costs & Benefits	The benefits achieved are very similar to the preferred option, only difference is that the benefits are achieved after 5 years due to the deferral of the spare transformer purchase.
Incentive Benefits **(Electricity only)**	

6. BENEFIT ASSESSMENT

It is not necessary to identify benefits from each category – insert N/A where not applicable

Note: Productivity and Cost Aviodance are to be detailed in Non financial benefits section

6.1 Financial Benefits

Financial Benefits are those that will have a direct bottom line (budget) impact on the profitability of AusNet Services (opex or propex or incentive, either on planned levels of expenditure and incentives, or growth (Revenue increase). Financial Benefits associated an increased Regulatory Asset Base are not considered appropriate benefits for a Regulated Business Case.

Note: Productivity and Cost Aviodance are to be detailed in Non financial benefits (section 6.2)

8 Financial Benefits Summary							
Financial Benefit Category	**Details and Measure (baseline, metric and target)**	**Benefit Start to Full Realisation Date**	**Capex**		**Opex**		**Business Benefit Owner** *Who stands to gain the most from the benefit? Must be role specific and cost centre provided*
			Labour	**Non-Labour**	**Labour**	**Non-Labour**	
1.Cost Efficency – Reduction							
Recurring cost savings	NA		$	$	$	$	Role: Cost centre:
One-off cost savings	NA		$	$	$	$	
2. Growth (Revenue Increase)			**Capex**		**Opex**		
Recurring Revenue (incl. incentives)	NA		$		$		Role:

					Cost centre:
One-off Revenue	NA		$	$	

Financial Benefits Summary (Definitions)		
Financial Benefit Item	**Definition**	**Example**
Labour	Reduced FTE – Reduced opex / capex	Decrease current asset maintenance costs
Non-Labour	Reduced material costs	Reduce working capital req'ts
Recurring savings (Planned)	Improved cost-to-serve	Reduced costs – once off / sustainable Reduced energy losses
One-off savings (Planned)		
Recurring Revenue (incl. incentives)	Reduced debtor / creditor days Improved Net Working Capital position Improved collections / margins on customer contributions	Increased customer contributions Improved incentive payments
One-off Revenue		

6.2 Non Financial Benefits

TD-0007975 - Purchasing a spare transformer for WOTS

Non Financial Benefits are those that will have a business benefit which will not directly impact the financials (cost centre / budget) of AusNet Services.

Every effort must be made to quantify these so they can be measured and tracked.

#	Benefit Category	Benefit Sub-Category	Benefit Name (& description)	Benefit Start to Full Realisation Date	Measure - Baseline, Metric and Target	Assumptions	Business Benefit Owner
	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.*	*Provide the assumptions behind how the program, project or initiative will deliver the benefit.*	*Who stands to gain the most from the benefit? (e.g. Business Owner) Must be role specific*
3	**Future Ready Capabilities and Culture** *Benefits that enhance the capabilities or culture of AusNet Services to make the organisation a more enjoyable and desirable place to work*	Productivity	NA				
		People and Culture	NA				
4	**Compliance** *Benefits to meet compliance against a specific reg \ legal obligations*	Regulatory & Legal	NA	Benefit start dd/mm/yyyy Full Realisation Date dd/mm/yyyy			
5	**Customer Centricity** *Benefits that provide direct improvement of our services to customers or enhance AusNet Services' repuation within the community*	Customer – General	Reliable power supply to customers	Benefit start 31/03/2022 Full Realisation Date Unplanned transformer failure	Customer satisfaction		[C-I-C]
6	**Risk Management**	Risk Controls	Security of supply risk	Benefit start 31/03/2022	SAIDI		[C-I-C]

#	Benefit Category	Benefit Sub-Category	Benefit Name (& description)	Benefit Start to Full Realisation Date	Measure - Baseline, Metric and Target	Assumptions	Business Benefit Owner
	Benefits that reduce the risk of either a poor outcome associated with one (or more) of the other benefit categories or a risk of future cost increase.			Full Realisation Date Unplanned transformer failure			
		Cost Avoidance	Possible STPIS incentive – due to one or more transformer unplanned outages	Benefit start 31/03/2022 Full Realisation Date Unplanned transformer failure	SC, MIC and NCC A loss of supply event as a result of any unplanned WOTS transformer outage would incur more than $2M STPIS service component penalty	Possibility of failing one or both transformers before planned replacement	[C-I-C]
7	**Mission Zero** *Benefits that provide a safer working environment for staff, our customers and the community*	Safety – General		Benefit start dd/mm/yyyy Full Realisation Date dd/mm/yyyy			

7. RISK ASSESSMENT

7.1 Project delivery risk (known)

Project Risk	What could occur?	Conseq-uence *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**
Failure of existing transformer/s before the spare is available	Expedite the delivery of spare transformer	1	Unlikely	E	Follow asset management strategies	E
OH&S incident risk during project work	OH&S injuries, project delays due to possible Work Safe Victoria audit	2	Unlikely	D	Adopting safe work procedures and JSA	E
Damage of spare transformer during transportation or installation	Significant delay in delivery and installation	2	Unlikely	D	Transporation in accordance with standard procedures, engagement of experienced transporters	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

7.2 Other risks

No other known risk at this stage

8. HIGH LEVEL CHANGE IMPACTS

8.1 High Level Impacts

Considering a BAU asset installation project, this project is not expected to change the system, processes, people or culture. Accordingly, change impact is none or minimal.

8.2 Stakeholder Groups impacted by the change(s)

Not Applicable

9. PROJECT GOVERNANCE

1. AusNet Services Portfolio Framework for governance on capital investments applies.

2. PM&R mandatory requirements will be followed including monthly forecasting, monthly status reports (updates on scope, cost and time), stage gates, and change control request process.
3. Establishment of a Project Reference Group or Steering Committee comprising key strategic and operational representatives to oversee the project and provide:
    - Oversight of project status
    - Guidance and direction
    - Review and endorsement for project key deliverables/decisions
    - Dissemination of information to other relevant parties
    - Facilitate the Transition to Support Process
4. Escalation Process for resolution of risks and issues.

10. FINANCIAL ASSESSMENT

Capex profit centre	13260.
Propex profit centre	NA
Opex (BAU) owner & cost centre	NA

10.1 Capex Breakdown

Capex Breakdown (incl mngt reserve - nominal)	First 5 years					Lifecycle Total
	2020	2021	2022	2023	2024	
Design	-	31.7	64.6	-	-	96.3
Internal Labour	-	23.7	186.8	30.7	-	241.1
Materials	-	-	2,520.8	-	-	2,520.8
Plant & Equipment	-	-	111.1	10.3	-	121.4
Contracts	-	-	1,589.2	147.4	-	1,736.6
Meter Costs	-	-	-	-	-	-
Risk	-	-	282.8	72.2	-	354.9
Other	-	-	-	-	-	-
Management Reserve	-	-	104.0	106.1	-	210.2
Total Capex	-	55.4	4,859.3	366.6	-	5,281.3

10.2 Opex Breakdown

Opex excl Project implementation (nominal)	First 5 years					Lifecycle Total
	2020	2021	2022	2023	2024	
BAU Total Opex	4.4	4.5	4.6	4.7	4.8	106.9
Incremental Opex Costs - Option 1	-	-	-	-	-	-
Opex Savings - Option 1	-	-	-	-	-	-
Net Budget impact (split by division below)	-	-	-	-	-	-
New Cost profile	**4.4**	**4.5**	**4.6**	**4.7**	**4.8**	**106.9**

10.3 Division Budget Impact

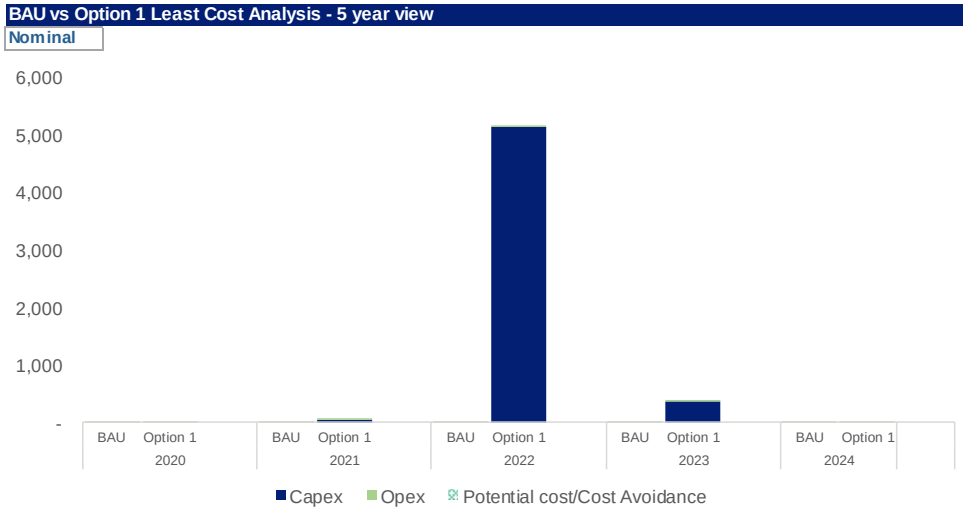
Budget impact by division (nominal)	First 5 years					Lifecycle Total
	2020	2021	2022	2023	2024	
RES	-	-	-	-	-	-
CES	-	-	-	-	-	-
Finance	-	-	-	-	-	-
Technology	-	-	-	-	-	-
Strategy & Transformation	-	-	-	-	-	-
People, Safety & Customer	-	-	-	-	-	-
Governance	-	-	-	-	-	-
Managing Director	-	-	-	-	-	-
Total Budget impact: Option 1	-	-	-	-	-	-

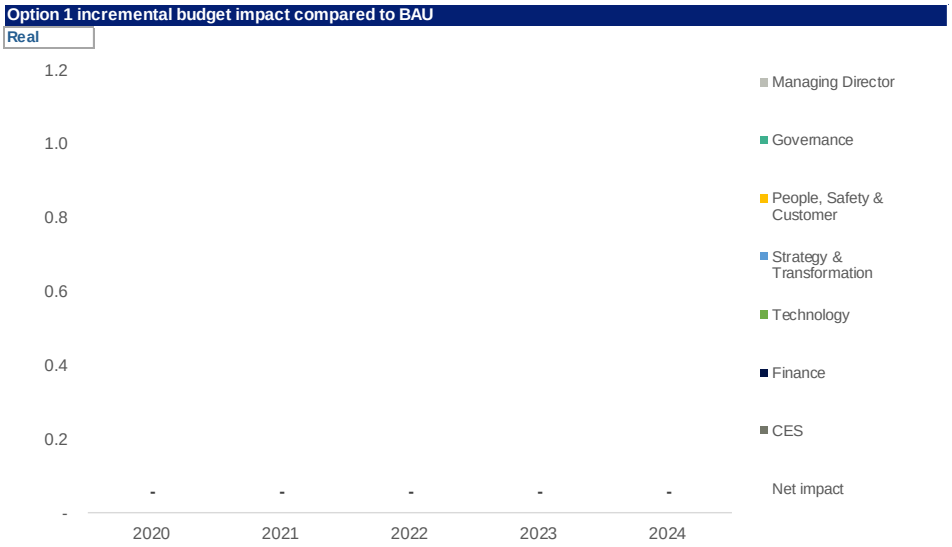
10.4 NPV Buildup Assessment

NPV buildup all options

	BAU	Option 1	Option 2
Regulated Revenue			
Return on assets	-	4,606.4	4,182.5
Regulatory Depreciation	-	1,459.8	1,256.1
Opex allowance	70.9	70.9	70.9
Efficiency Benefit	-	-	-
Tax Allowance	-	599.5	581.0
Imputation credits	-	(239.8)	(232.4)
Total Regulated Revenue	70.9	6,496.8	5,858.1
Proceeds from Sale of replaced assets	-	-	-
Unregulated Revenue	-	-	-
Opex	(70.9)	(70.9)	(70.9)
Capex	-	(4,892.4)	(4,110.2)
Tax Payable	-	(445.9)	(377.4)
NPV	-	1,087.8	1,299.7

BAU vs Option 1 Least Cost Analysis - 5 year view





11. CORPORATE ACCOUNTING CONSIDERATIONS

11.1 Asset Retirements

There are no asset retirements.

11.2 Contributed (Gifted) Assets

Not applicable

11.3 Assets to be created

Description of Asset	Quantity	Estimated Cost (total)	Expected Asset Life
75 MVA 330/66/22 kV transformer	1	$5.65M	45
Totals		$5.65M	

Total Estimated Cost must match the Delivery Budget (+CFC & O/H) on page 1.

11.4 Accounting Review

TD-0007975 - Purchasing a spare transformer for WOTS

Income Statement (nominal)	First 5 years					Lifecycle Total
	2020	2021	2022	2023	2024	
Regulated revenue	4.4	4.5	8.2	321.8	347.6	16,696.5
Incentive Revenue	-	-	-	-	-	-
Unregulated Revenue	-	-	-	-	-	-
Total Revenue	4.4	4.5	8.2	321.8	347.6	16,696.5
Net Opex	(4.4)	(4.5)	(4.6)	(4.7)	(4.8)	(106.9)
Net (gain) / loss on disposal of fixed assets	-	-	-	-	-	-
EBITDA	-	-	3.7	317.1	342.8	16,589.5
Depreciation	-	-	(1.3)	(110.9)	(118.9)	(5,350.4)
EBIT	-	-	2.4	206.2	223.9	11,239.1
Interest	-	-	(1.5)	(132.9)	(139.5)	(3,276.7)
NPBT	-	-	0.9	73.3	84.4	7,962.4
Tax	-	-	(0.3)	(22.0)	(25.3)	(2,388.7)
NPAT	**-**	**-**	**0.6**	**51.3**	**59.1**	**5,573.7**

Appendix A

1. *Attach files as objects, or upload to PPM and advise here.*
2. *Detailed Scope of Work should be attached here. Insert file as object where possible. Attach If applicable*
3. *Planning extract (AMS, AMP, ESV directive letter, AER submission etc.). Insert screenshot and highlight relevant section.*
4. *Detailed Cost Benefit Analysis Assumptions*
5. *Applicable AusNet Engineering Standards*

A.1 Scope of works

As explained in Section 3

A.2 WOTS Contingency Plan

WOTS Contingency Plan - Final 230616.d

A.3 ESV or Legal Directive

None

A.4 Detailed Cost and Benefit Assumptions

APD cost estimate, economic analysis and NPV model were uploaded and available in PPM