South West Network Communications Replacement

Project Specification Consultation Report

Regulatory Investment Test - Transmission

12 May 2022

missionzero

AusNet services

Important notice

Purpose

AusNet Services has prepared this document to provide information about potential limitations in the Victoria transmission network and options that could address these limitations.

Disclaimer

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Executive summary

AusNet Services is initiating this Regulatory Investment Test for Transmission (RIT-T) to evaluate options to maintain communication reliability in the South Western Victorian Transmission network. Options investigated in this RIT-T will mitigate the risk of asset failure within the transmission network and provide the bandwidth requirements for the future Renewable Energy Zone (REZ) and growth in communications services for the future requirement in the region.

Publication of this Project Specification Consultation Report (PSCR) represents the first step in the RIT-T process in accordance with clause 5.16.4(c) of the National Electricity Rules (Rules)[1] and section 4.2 of the RIT-T Application Guidelines.[2] AusNet Services is also exploring opportunities to accelerate the RIT-T process for this project in accordance with clause 5.16.4(z1) of the Rules.

The protection, control, Supervisory Control and Data Acquisition (SCADA) and operational communications for the South Western Victoria Transmission network and interconnection to South Australia is currently enabled by communication assets known as SDH/PDH (Synchronous Digital Hierarchy / Plesiochronous Digital Hierarchy) and 5-hop microwaves.[3] The SDH/PDH asset currently serves the following lines within the Victorian Electricity Transmission Grid in the South Western Region:

- 220kV lines from Moorabool to Terang
- 220kV lines from Ballarat to Terang
- 500kV lines from Moorabool to Heywood
- 500kV lines from Heywood to Portland Alcoa APD

This PSCR relates to the proposed replacement of the SDH/PDH assets with Multiprotocol Layer Switching-Transport Profile (MPLS-TP) equipment and 5 hop microwaves with Fibre between Portland Alcoa APD and Terang Terminal Station (TGTS) in the AusNet Services Transmission network in the South West Region.

Identified need

The assets have been in service for an extended time and the condition of the SDH/PDH technology has deteriorated to a level where there is a material risk of asset failure. Asset failure could reduce electricity transmission reliability, impact safety, the environment, and require potential costs for emergency replacements. SDH/PDH technology has served the business for over 35 years and is now considered a legacy technology.

SDH/PDH equipment that is used by AusNet Services can no longer be sourced locally or overseas. The inability to purchase additional SDH/PDH equipment means future requirements for new installations or increased services cannot be met. Additionally, the current SDH/PDH and 5-hop microwave communication loop cannot support the future Victorian Renewable Energy Zone (REZ) Development Plan as it lacks the bandwidth required.

Therefore, the 'identified need' this RIT-T intends to address is the need to maintain supply reliability in the South Western Victorian Transmission network, mitigate risks of asset failures, and provide for additional network installations with a scalable solution that meets the REZ bandwidth requirements.

AusNet Services is investigating options that could allow for continued delivery of safe and reliable electricity transmission.

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[1] Australian Energy Market Commission, *"National Electricity Rules," available at,* https://energy-rules.aemc.gov.au/ner/367.
[2] Australian Energy Regulator, *"Application guidelines Regulatory investment test for transmission," available at* *https://www.aer.gov.au/system/files/AER%20-%20Regulatory%20investment%20test%20for%20transmission%20application%20guidelines%20-%2025%20August%202020.pdf*.
[3] All future references to the SDH/PDH communication asset is inclusive of the 5-hop microwave loop.

Credible options

AusNet Services has identified the following credible network solutions that could meet the identified need:

- Option 1 – Replace SDH/PDH and radio with MPLS-TP and fibre cable; or
- Option 2 – Replace SDH/PDH with MPLS-TP and upgrade radio

AusNet Services does not consider that any non-network options would be able to address the identified need, which requires the maintenance of reliable protection, control, SCADA and operational communications on the South Western Victoria transmission network.

Assessment approach

AusNet Services will investigate the costs, economic benefits, and ranking of options in this RIT-T. The robustness of the ranking and optimal timing of options will be investigated through a cost-benefit assessment which involves various assumptions around key variables.

Preferred option

AusNet Services' cost-benefit assessment is that Option 1, the replacement of the SDH/PDH communication technology and radio with MPLS-TP technology and fibre cable maximises the present value of net economic benefit.

This option will not only maintain transmission reliability, but also allows for ease of maintenance and provides sufficient bandwidth to accommodate the implementation of the REZ. This option mitigates the emergency replacement risk costs from deteriorating assets in the South Western Victorian Transmission network.

The optimal timing of the preferred option is FY 2025/26 based on a total nominal cost of $22.8 million.[4]

Submissions

AusNet Services welcomes written submissions on the topics and the credible options presented in this PSCR. Submissions should be emailed to rittconsultations@ausnetservices.com.au by Friday 10 August 2022. In the subject field, please reference 'RIT-T PSCR South West Network Communications Replacement.'

Submissions will be published on AusNet Services' and AEMO's websites. If you do not wish for your submission to be made public, please clearly stipulate this at the time of lodgment.

Next steps

A Draft Project Assessment Report (PADR) is not required if the capital cost of the preferred option is expected to be less than $46 million and the exemption conditions in clause 5.16.4(z1) of the Rules are met. As the costs of the preferred option are below the threshold amount, AusNet Services intends to publish a Project Assessment Conclusions Report (PACR) in September 2022.

[4] Total nominal cost includes overheads, capitalised finance charges, management costs and risk.

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1. Introduction

The RIT-T is an economic cost-benefit test used to assess and rank potential investments capable of meeting the identified need. The purpose of the RIT-T is to identify the preferred option that maximises the net present value of economic benefits to all those who produce, consume and transport electricity in the National Electricity Market.

AusNet Services is initiating this RIT-T to evaluate options to maintain communications reliability for the electricity transmission network in the South West Transmission Region in Victoria.

This PSCR represents the first step in the RIT-T process[5] in accordance with clause 5.16.4(c) of the Rules[6] and section 4.2 of the RIT-T Application Guidelines.[7]

In accordance with clause 5.16.4(b) of the Rules, this document describes:

- The identified need that AusNet Services is seeking to address, together with the assumptions used in identifying this need;
- Credible network options that may address the identified need;
- The assessment approach and scenarios AusNet Services is intending to employ for this RIT-T assessment; and
- The specific categories of market benefits that are unlikely to be material in this RIT-T.

[5] A RIT-T process will assess the economic efficiency and technical feasibility of proposed network and non-network options

[6] Australian Energy Market Commission, *"National Electricity Rules,"* available at https://energy-rules.aemc.gov.au/ner/367.

[7] Australian Energy Regulator, *"Application guidelines Regulatory investment test for transmission,"* available at https://www.aer.gov.au/system/files/AER%20-%20Regulatory%20investment%20test%20for%20transmission%20application%20guidelines%20-%2025%20August%202020.pdf.

2. Background

Protection, control, SCADA and operational communication of the South Western Victorian Transmission network is currently enabled by a communication asset known as SDH/PDH and 5-hop microwaves. SDH/PDH technology has served the business for over 35 years and is now considered a legacy technology.

Since being commissioned, the SDH/PDH communication assets have served the following Victorian Electricity Transmission lines in South Western Region:

- 220kV lines from Moorabool to Terang
- 220kV lines from Ballarat to Terang
- 500kV lines from Moorabool to Heywood
- 500kV lines from Heywood to Alcoa Aluminium Smelter Portland (APD)

See Figure 1 for Graphical Presentation of South West Network Communications and further details.

The communications services across the South Western Transmission network in Victoria is owned and operated by AusNet Services. This is currently enabled by a combined of SDH/PDH loop on Optical Ground Wire (OPGW) from Moorabool Terminal Station through to APD Portland, 5 hop microwaves between Alcoa Portland and Terang Terminal Station, and OPGW from Terang Terminal Station back to Moorabool.

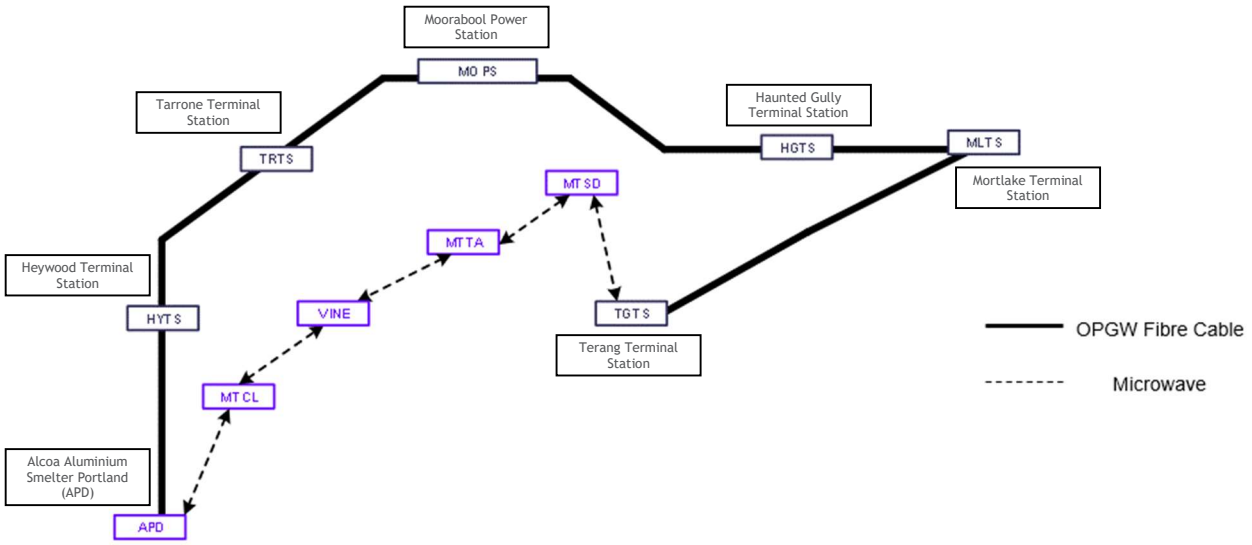

Figure 1 – OPGW fibres from Moorabool to Portland and 5 hop microwaves between Portland and Terang

AusNet Services classifies asset condition using scores that range from C1 (initial service condition) to C5 (very poor condition) as set out in Appendix C. The SDH/PDH technology used in the South West Transmission Network is in poor (C4) or very poor (C5) condition. The asset condition of the communications equipment is primarily determined by the level of support provided by the equipment vendor. The SDH/PDH equipment used by AusNet Services can no longer be sourced locally or overseas.

Over the past 6 years, the equipment has experienced 22 communication failures within the region. SDH and PDH technology has been in use for more than 35 years in the power industry, but the equipment is now becoming harder to source, making maintenance problematic.

3. Identified need

3.1. Description of the Identified Need

The need for replacement has been identified by AusNet Services having experienced 22 communication equipment failures over the past 6 years in the region of South West Victoria. AusNet Services expects that communication services will continue to be required for the protection, control and SCADA of 500 kV and 220 kV lines in this region and as demand for new generators increases in the long term.

Existing protection and control schemes on the South Western Transmission loop have limited bandwidth due to the use of microwave technology. This has resulted in the inability to install solar and wind farm connections on the existing SDH/PDH and 5 hop microwave loop.

For new renewable generators to connect to the network, separate MPLS-TP systems and microwave is required to achieve the redundancy requirement, leading to substantial cost for each new generator to implement and additional costs for AusNet Services to maintain. Connecting new variable renewable energy (VRE) generators to the South West Transmission Loop therefore costs each generator five to ten times more in new telecommunications infrastructure than it does elsewhere on the Victorian Transmission Grid. Costs for each new generator also vary greatly with the order of new generators connected, creating interdependencies between projects and complications for AEMO.

To enable the installation of VRE generation and energy storage in Victoria, the transmission network now requires additional high bandwidth digital telecommunications systems. Installing the fibre to replace the radio will provide scalable bandwidth to meet long term future demand. Due to the high number of renewable generation projects within the area covered by this loop, DELWP are seeking ongoing updates on AusNet Services' plans to deliver an upgraded communications network to support these generators.

DELWP released a directions paper in February 2021 that include a Renewable Energy Zone Development Plan (RDP). This plan includes proposed transmission projects to support the connections of up to 10 GW of renewable energy across Victoria. The South West Network Communication Project was identified as a critical project to support the connection of new renewables projects in South West Victoria. This project is included in Stage 1: Immediate priority projects resolving the network connection issues to support REZs, and has a current deadline of December 2024.

AusNet Services is investigating options that could allow for continued delivery of safe and reliable electricity transmission.

Without remedial action, other than ongoing maintenance, practice (business-as-usual) assets are expected to have an increased likelihood of failure and the inability to meet future services resulting in:

- An inability to purchase new equipment due to a lack of supply;
- The inability to maintain existing and obsolete network equipment resulting in the use of spares;
- Risks of increased costs from emergency replacement and repairs; and
- Risks of increased costs from future generator expansion.

Therefore, the 'identified need' this RIT-T intends to address is the need to maintain supply reliability in the South Western Victorian Transmission network, mitigate risks of asset failures, and provide for additional network installations that meets the bandwidth for future requirements including the REZ.

By delivering the options identified in this RIT-T, AusNet Services will be able to maintain reliable transmission network services and mitigate safety and environmental risks, as required by the Rules

and Electricity Safety Act 1998.[8]

3.2. Assumptions

In assessing the identified need, AusNet Services must consider the risk of asset failure and the likelihood of potential adverse consequences eventuating. In addition to estimating these risk and consequences eventuating, AusNet Services has adopted the following further assumptions to quantify the potential costs associated with asset failure under business as usual operations.

Safety risk costs

The Electricity Safety Act 1998[9] requires AusNet Services to design, construct, operate, maintain, and decommission its network to minimize hazards and risks to the safety of any person as far as reasonably practicable or until the costs become disproportionate to the benefits from managing those risks. By implementing this principle for assessing safety risks from explosive asset failures, AusNet Services uses a:

- Value of statistical life to estimate the benefits of reducing the risk of death;[10]
- Value of lost time injury;[11] and
- Disproportionality factor.[12]

AusNet Services notes this approach, including the use of a disproportionality factor, is consistent with the Practice Notes provided by the AER.[13]

Financial risk costs

Under business as usual operations, the communications network will have no spare capacity for the additional future services when new generators are established in the region. New generators will be unable to interface with existing transmission assets if they do not provide their own communications services and connections to the network. Generators providing their own communications is considered a piecemeal approach which will result in connection costs for the generators in the order of multi-millions of dollars, with additional costs resulting from communications assets being written off once the loop is closed from the new network.

Environmental risk costs

The installation of the equipment will be limited to the terminal stations and power stations indicated in Figure 1, with the ADSS fibre cable between Terang Terminal Station and APD Portland being installed onto existing Powercor poles. In both instances, the terminal stations and poles are existing

[8] Victorian State Government, Victorian Legislation and Parliamentary Documents, "Electricity Safety Act 1998," available at http://www.legislation.vic.gov.au/domino/Web_Notes/LDMS/LTObject_Store/ltobjst9.nsf/DDE300B846EED9C7CA257616000A3571/1D9C11F63DEBA5E2CA257E70001687F4/%24FILE/98-25aa071%20authorised.pdf.

[9] Victorian State Government, Victorian Legislation and Parliamentary Documents, "Energy Safe Act 1998," available at http://www.legislation.vic.gov.au/domino/Web_Notes/LDMS/LTObject_Store/ltobjst9.nsf/DDE300B846EED9C7CA257616000A3571/1D9C11F63DEBA5E2CA257E70001687F4/%24FILE/98-25aa071%20authorised.pdf.

[10] Department of the Prime Minister and Cabinet, Australian Government, "Best Practice Regulation Guidance Note: Value of statistical life," available at https://www.pmc.gov.au/resource-centre/regulation/best-practice-regulation-guidance-note-value-statistical-life.

[11] Safe Work Australia, "The Cost of Work-related Injury and Illness for Australian Employers, Workers and the Community: 2012" available at https://www.safeworkaustralia.gov.au/system/files/documents/1702/cost-of-work-related-injury-and-disease-2012-13.docx.pdf.

[12] Health and Safety Executive's submission to the 1987 Sizewell B Inquiry suggesting that a factor of up to 3 (i.e. costs three times larger than benefits) would apply for risks to workers; for low risks to members of the public a factor of 2, for high risks a factor of 10. The Sizewell B Inquiry was public inquiry conducted between January 1983 and March 1985 into a proposal to construct a nuclear power station in the UK

[13] Australian Energy Regulator, "Industry practice application note for asset replacement planning," available at https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/industry-practice-application-note-for-assetreplacement-planning.

assets where the environmental risks have already been assessed, and it is unlikely that the implementation of this project will bring additional environmental risk and associated risk cost.

4. Credible options

AusNet Services routinely considers network and non-network options in its assessment approach. As explained below, in this instance AusNet Services concluded that there are no credible non-network options that could address the identified need.

A joint review conducted by AusNet Services and Telstra in 2018 has determined that MPLS-TP is the most suitable replacement technology. This selected technology provides:

- The continued provision of a reliable communications pathway for the electricity transmission network in the South West of Victoria;
- Enablement of AusNet Services to comply with its Rules obligations regarding the performance of its communications assets; and
- The ability to use removed equipment as spares to maintain the rest of the network.

Consistent with the joint review, the selected option (Option 1) consists of:

- Replacement of the existing SPDH/PDH network and 5 hop microwaves with MPLS-TP technology and fibre cable.

4.1. Option 1 – Replace SDH/PDH and radio with MPLS-TP and fibre cable

Option 1 involves the installation of MPLS-TP technology and the replacement of 5 hop microwave with optic fibre. As communication equipment types must be consistent and different types cannot be interfaced, replaced SDH/PDH equipment will be used as spares for the remaining SDH/PDH equipment that is used elsewhere on the network.

The present value (PV) of estimated capital expenditure and operational and maintenance costs of this option are $20.30 million and $0.11 million respectively. The benefits of this option are as follows:

- Allows the replacement of the SDH/PDH assets in the South West region to free up spares to maintain the rest of SDH/PDH network.
- Provides AusNet Services the opportunity to continue to comply with all Rules requirements into the future on an increasingly important part of the transmission network.
- Delivers a long-term communication capability and scalable bandwidth to accommodate the future expansion of our network in this region.
- Delivers a long-term communication capability and scalable bandwidth to accommodate the future connections of non-synchronous generation (addressing the solar and windfarm connections in the South Western Transmission Region).

This is AusNet Services' preferred option. Based on AusNet Services' preliminary analysis, this option should proceed by 2025/26.

4.2. Option 2 – Replace SDH/PDH with MPLS/TP and upgrade radio

Option 2 involves the replacement of the existing SDH/PDH with MPLS-TP technology and upgrading the radio. As noted in relation to Option 1, the replaced SDH/PDH equipment will be used as spares for the remaining SDH/PDH equipment that is used elsewhere on the network.

The PV of estimated capital expenditure and operational and maintenance costs for this option are $23.60 million and $0.83 million respectively. Under Option 2:

- The existing radio links will need to be upgraded and new sites introduced to enable the radios to meet the increased bandwidth requirements of MPLS-TP equipment.

- This option would involve the radios at six sites being upgraded and the introduction of two additional radio sites.
- This option would meet the bandwidth requirements of MPLS-TP technology.
- The additional microwave radio links would meet the higher bandwidth requirements of MPLS-TP technology in the short-term.

AusNet Services is not progressing with this option.

4.3. Options considered and not progressed

Installation of OPGW fibre cable between Moorabool Terminal Station and APD Portland, between Moorabool Terminal Station and Terang Terminal Station as an alternative option was not considered to be a credible option. This OPGW fibre option was discounted because:

- it is more expensive than the credible options considered; and
- it would need to be installed on the same towers as the existing OPGW cables which presents a risk of having a single point of failure.

4.4. Non-network options

As the identified need arises from the need to maintain reliable protection, control, SCADA and operational communications on the South Western Victoria transmission network, there are no credible non-network options that could address this identified need.

4.5. Material inter-regional network impact

None of the credible network options being considered are likely to have a material inter-regional network impact. A 'material inter-regional network impact' is defined in the Rules glossary as[14]:

> *"A material impact on another Transmission Network Service Provider's network, which may include (without limitation): (a) the imposition of power transfer constraints within another Transmission Network Service Provider's network; or (b) an adverse impact on the quality of supply in another Transmission Network Service Provider's network."*

AEMO's screening test for material inter-network impact of a transmission investment is described as follows:[15]

- A *decrease in power transfer capability between transmission networks or in another TNSP's network of more than the minimum of 3% of the maximum transfer capability and 50 MW*
- An *increase in power transfer capability between transmission networks or in another TNSP's network of more than the minimum of 3% of the maximum transfer capability and 50 MW*
- An *increase in fault level by more than 10 MVA at any substation in another TNSP's network*
- T*he investment involves either a series capacitor or modification in the vicinity of an existing series capacitor.*

AusNet Services assessment of these criteria is that there is no material inter-regional network impact associated with any options considered.

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[14] Australian Energy Market Commission, *"National Electricity Rules,"* available at https://energy-rules.aemc.gov.au/ner/367/glossary/m.

[15] Inter-Regional Planning Committee, *"Final Determination: Criteria for Assessing Material Inter-Network Impact of Transmission Augmentations,"* available at https://www.aemo.com.au/-/media/Files/PDF/170-0035-pdf.pdf.

5. Assessment approach

Consistent with the RIT-T requirements and the AER's Application Practice Notes on risk-cost assessment methodology, AusNet Services will undertake a cost-benefit analysis to evaluate and rank the net economic benefits from various credible options. AusNet Services proposes to undertake this assessment over a 15-year period consistent with the intended asset life.

All options considered will be assessed against a business-as-usual case where no proactive capital investment to reduce the community risk costs is made. The South West Network Communications Replacement project is considered to be a replacement project given the identified need to replace existing communications assets with modern equivalents of sufficient bandwidth to accommodate future generation in the region. Hence, the business as usual case has been assessed using a replacement capex (repex) model as per the Australia Energy Regulator guidelines.[16]

Optimal timing of an investment option will be the year when the annual benefits from implementing the option become greater than the annualised investment costs.

5.1. Input assumptions

The robustness of the investment decision and the optimal timing of the preferred option will be tested by a cost-benefit analysis. This analysis involves variations of assumptions on the capital and operational costs and discount rate. A nominal pre-tax discount rate of 5.04% was used in the net present value assessments.

5.2. Classes of market benefits

Clause 5.16.4 (b)(6)(iii) of the Rules requires the RIT-T proponent to consider whether each credible option provides the classes of market benefits described in clause 5.15A.2(b)(4). To address this requirement, we discusses our approach to each of the market benefits listed in that clause below.

- Changes in fuel consumption arising through different patterns of generation dispatch: the replacement of the communications services has no effect on the arrangement of the existing South West region transmission network or surrounding generators, and hence will not have impact on the generation dispatch pattern.
- Changes in voluntary load curtailment: There is no material impact on the wholesale electricity market prices that could arise from the replacement of the communications services that could trigger voluntary load curtailment.
- Changes in involuntary load shedding: The replacement of the communications services has no effect on the capacity of the existing South West Region transmission network, and hence does not pose a material risk of load shedding.
- Changes in costs for parties: Other than the RIT-T proponent – this project has already been identified as a critical project to support the REZ in the South West Region under the RDP. Implementing this project will not impact the costs of other parties in a manner that has not already been accounted for. There is no other known investment, either generation or transmission, that will be affected by any option considered.
- Differences in timing of expenditure: The Victorian RDP had stated the required timeline for the communications project to be completed by December 2024 in order to enable the future REZ. It is unlikely that the project timeline will be delayed leading to impact on the capital expenditure.

[16] Australian Energy Regulator, *"Replacement capex (repex) - draft expenditure forecast assessment guideline,"* available at https://www.aer.gov.au/system/files/AER%20model%20guide%20-%20replacement%20capex%20%28repex%29%20-%20draft%20expenditure%20forecast%20assessment%20guideline.pdf.

- Change in network losses: Changes in network losses are unlikely to be a material class of market benefits for any of the credible options, given that the replacement of the communications network will not impact the supply or arrangement of the transmission network in the South West region.
- Changes in ancillary services costs: The options are not expected to impact the demand for and supply of ancillary services.
- Competition benefits: There is no competing generation affected by the limitations and risks being addressed by the options considered in this RIT-T.
- Any additional option value gained or foregone from implementing the credible options with respect to the likely future investment needs of the market: The Victorian RDP has stated the direct requirements for the communications network to accommodate the REZ. Hence, material impacts on the future investment needs have already been accounted for and are not likely incur in a manner that has not already been considered under the RDP.

Therefore, under clause 5.15A.2(6) we are not required to estimate the market benefits as they do not materially affect our assessment of the credible options. AusNet Services notes if the market consultation identifies an additional credible option that could deliver a material market benefit which impacts the preferred option, then this may need to be considered.

6. Options assessment

This section presents our assessment of the credible options considered in this RIT-T. Any credible option that may arise from submissions in response to this PSCR will be assessed and presented as part of the next step of this RIT-T. If there are no new credible options to assess, AusNet Services intends to progress to the final stage (PACR) of the RIT-T in accordance with clause 5.16.4(z1)(4) of the Rules.

This section describes the ranking of options and details the optimal timing of the preferred option.

6.1. Cost Benefit Assessment

For this assessment, the focus is on achieving the least-cost option. Table 1 below provides an analysis of the options against the BAU case.

Table 1 - Analysis of investment options ($'000 – Present Value)

Analysis of investment options	Capex	Opex	Total Financial Costs	Potential Costs	Other Economic Costs & (Benefits)	Total PV Cost	PV Cost Ratio (compared to BAU)
BAU	28,420.60	363.70	28,784.30	-	-	28,784.30	1.00
Option 1	**20,332.80**	**107.50**	**20,440.30**	**-**	**-**	**20,440.30**	**0.71**
Option 2	23,634.10	830.40	24,464.60	-	-	24,464.60	0.85

The analysis shows that Option 1 is the lowest cost option. As noted earlier, the installation of this modern communication technology and the replacement of 5 hop microwave with fibre will:

- Allow the replacement of the SDH/PDH equipment in the South West Region to free up spares to maintain the rest of SDH/PDH network.
- Provide AusNet Services the opportunity to continue to comply with all Rules requirements into the long-term future on an increasingly important part of the transmission network;
- Deliver long-term communication capability and scalable bandwidth to accommodate the future expansion of our network in this region
- Deliver long-term communication capability and scalable bandwidth to accommodate the future connections of non-synchronous generation (addressing the solar and windfarm connections in the South Western Transmission).

Due to the technical limitations of radio technology, bandwidth increase is limited and not scalable. While option 2 would meet the bandwidth requirements of MPLS-TP technology, it would do so at higher cost. Under this option further investment will be needed to accommodate new services once the capacity of the new/upgraded ratio sites is reached. Continued use of radio sites technology in the southwest region is therefore a sub-optimal and inefficient approach to the development of the communications network.

While the installation of additional microwave radio links would meet the higher bandwidth requirements of MPLS-TP technology in the short-term, this option is higher cost and will not be scalable for future expansions, thereby requiring substantial incremental, additional expenditure as new services are added to the communications network. This option would result in higher total costs to customers over the long term and, therefore, is not recommended.

Table 2 provides a comparison of the two options identified by AusNet Services.

Table 2 – Comparison and benefits of Option 1 and 2

Option	Key Benefit Value ($)	Key Benefit Assumptions (Baseline and Measurement)
Option 1	$28.1k OPEX saving starting from FY26. CAPEX cost avoidance of $8M.	OPEX saving of $28.1k on Radio Licence starting from FY26. CAPEX Cost avoidance of $8M compared to BAU option.
Option 2	$51.2k ongoing OPEX increase starting from FY26. CAPEX cost avoidance of $5M.	OPEX increase of $51.2k on Radio Licence and maintenance starting from FY25. CAPEX cost avoidance of $5M compared to BAU option.

6.2. Preferred option

Option 1 is the preferred option to maintain supply reliability in the South Western Victorian Transmission network, meet future REZ bandwidth requirements and mitigate risks of asset failures.

This preferred option involves the following scope of work in an integrated project:

- Replacement of SDH/PDH and radio with MPLS/TP and optic fibre;
- Comply with the existing 220kV and 500 kV transmission lines in the South West Region; and
- Provide sufficient bandwidth to accommodate the implementation of the REZ.

The estimated capital expenditure for this option is $22.8 million. Based on AusNet Services' preliminary analysis, this option should proceed by 2025/26. It is intended that construction should commence in November 2022, with commissioning readiness achieved by late December 2024.

7. Submissions and next steps

Submissions

Submissions are welcome and should be emailed to rittconsultations@ausnetservices.com.au by 18 August 2022. In the subject field, please reference 'RIT-T PSCR South West Network Communications Replacement.'

Next seps

In our view, a Project Assessment Draft Report is unlikely to be required as this project benefits from the exemption provided by clause 5.16.4(z1), for the following reasons:

- the preferred option, Option 1, has a capital cost of less than $46 million and is therefore below the threshold amount;
- this PSCR identifies the preferred option and explains our reasons for selecting it; and
- all credible options will not have a material class of market benefits except for those specified in clause 5.15A(b)(4)(ii).

Accordingly, subject to receiving submissions on this PSCR, AusNet Services intends to produce a PACR in September 2022.

Appendix A - RIT-T assessment and consultation process

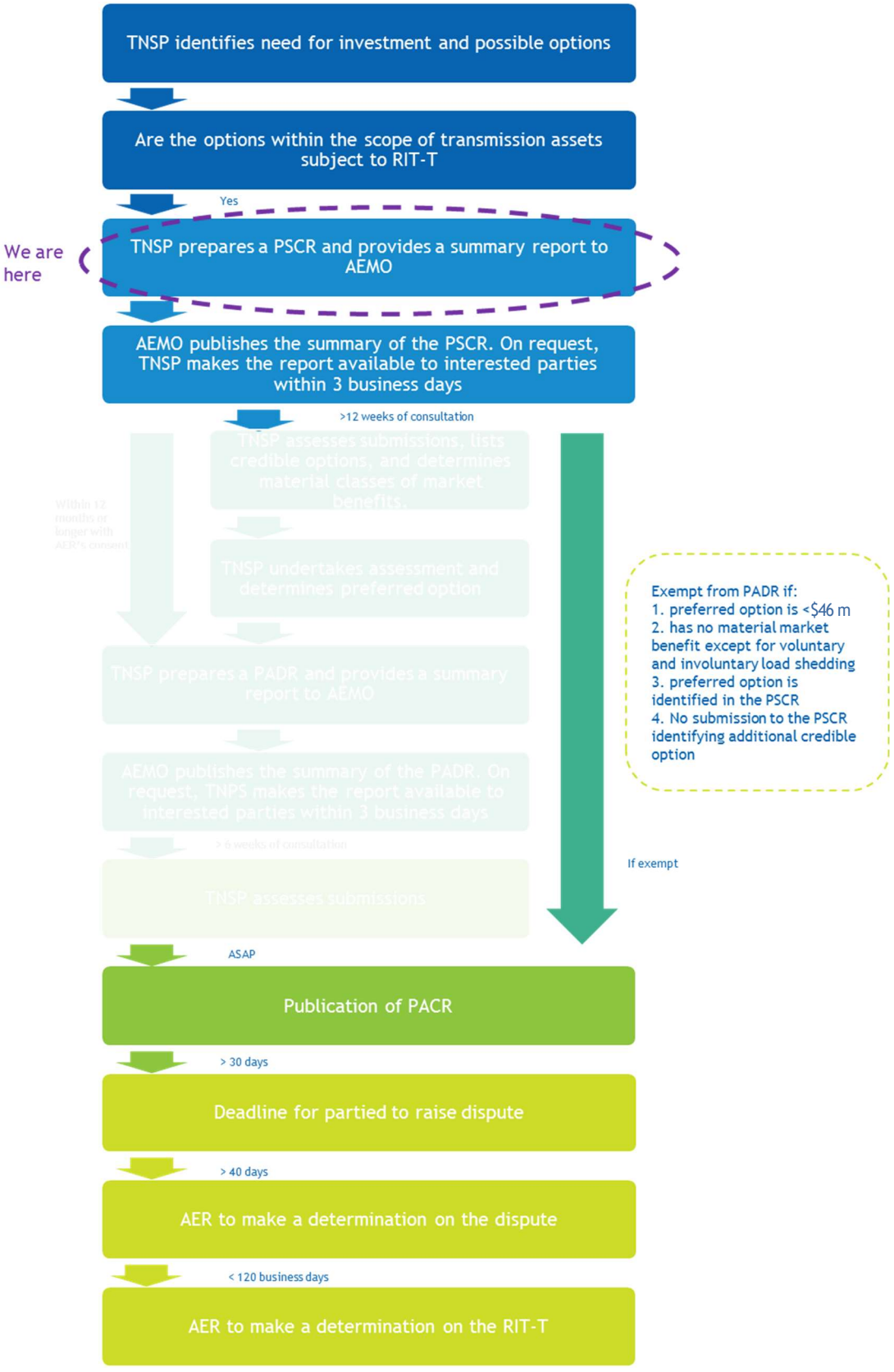

Figure 2 - RIT-T Process

Appendix B – Checklist of compliance clauses

The table below demonstrates the compliance of this PSCR with the requirements of clause 5.16.4(b) of the Rules version 177, which states that a RIT-T proponent must prepare a PSCR which must include:

Table 3 - Summary of RIT-T requirements as per clause 5.16.4(b) of version 177 of the Rules

Requirement	Relevant section
(1) a description of the identified need;	3
(2) the assumptions used in identifying the identified need including, in the case of proposed reliability corrective action, why the RIT-T proponent considers reliability corrective action is necessary);	3
(3) the technical characteristics of the identified need that a non-network option would be required to deliver, such as: (i) the size of load reduction of additional supply; (ii) location; and (iii) operating profile;	n/a - see section 4.4
(4) if applicable, reference to any discussion on the description of the identified need or the credible options in respect of that identified need in the most recent Integrated System Plan;	NA
(5) a description of all credible options of which the RIT-T proponent is aware that address the identified need, which may include, without limitation, alterative transmission options, interconnectors, generation, demand side management, market network services or other network options;	4
(6) for each credible option identified in accordance with subparagraph (5), information about: (i) the technical characteristics of the credible option; (ii) whether the credible option is reasonably likely to have a material internetwork impact; (iii) the classes of market benefits that the RIT-T proponent considers are likely not to be material in accordance with clause 5.16.1(c)(6), together with reasons of why the RIT-T proponent considers that these classes of market benefit are not likely to be material; (iv) the estimated construction timetable and commissioning date; and (v) to the extent practicable, the total indicative capital and operating and maintenance costs.	4, 5 and 6

Appendix C - Asset condition framework

AusNet Services uses an asset health index, on a scale of C1 to C5, to describe asset condition. The condition range is consistent across asset types and relates to the remaining service potential. The table below provides an explanation of the asset condition scores used.

Table 4 - Condition scores framework

Condition score	Likely scale	Condition description	Recommended action	Remaining service potential (%)
C1	Very Good	Initial service condition	No additional specific actions required, continue routine maintenance and condition monitoring	95
C2	Good	Better than normal for age		70
C3	Average	Normal condition for age		45
C4	Poor	Advanced deterioration	Remedial action or replacement within 2-10 years	25
C5	Very Poor	Extreme deterioration and approaching end of life	Remedial action or replacement within 1-5 years	15

In the case of the communications equipment across the South West Region, the condition description will refer to the level of support available from equipment vendors, which in turn impacts the level of maintenance afforded to the communication services.