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AusNet

Board Paper:	**Sydenham Terminal Station Rebuild (CR 03_25)**
For:	**Decision**
Sponsor:	**[C.I.C], Executive General Manager, Transmission**

Sydenham Terminal Station Rebuild - Regulated Expenditure

1. Executive Summary

This paper seeks Board approval for an additional **$31.3M CAPEX** at Sydenham Terminal Station (SYTS), for the SYTS Gas Insulated Switchgear Replacement Project ("SYTS Rebuild"), bringing the total investment to **$122.9M**.

Sydenham Terminal Station (SYTS) is a 500kV switching station owned and operated by AusNet, which is a crucial part of the 500kV Victorian transmission backbone and will connect the Western Renewables Link (WRL) and the Melbourne Renewable Energy Hub (MREH). The 500kV outdoor Gas Insulated Switchgear (GIS) equipment at SYTS has deteriorated due to reaching end of its operational life, consequently posing a significant future failure risk. Failure could have negative impacts on reliability, safety, and environment outcomes, and result in significant collateral damage and emergency replacement costs.

To address this, AusNet considered two credible options: replacing the GIS with air insulated switchgear (AIS) or replacing the outdoor GIS with indoor GIS. **Replacing the GIS with AIS delivers the highest net benefit**.

The need for GIS replacement was identified in 2020, and the AusNet Board approved a $91.6m Business Case in November 2021. The project passed the Regulatory Investment Test for Transmission (RIT-T) and was reviewed in detail by the Australian Energy Regulator (AER) through the 2023-27 Transmission Revenue Reset (TRR) and is part of the approved allowance. However, Planning Approval delays have postponed the start of physical works at SYTS, leading to increased budget requirements. We have also conducted market testing to validate delivery partner prices. The changes required amount to a **19-month delay and +$31.3M budget**:

a) **+19 months delay** to the in-service date, from September 2025 to April 2027
b) **+$14M budget** from revising costs for demolition and removal and the redundant GIS and 500kV yard
c) **+$6M budget** from revising costs for site establishment, including travel and remote work allowances
d) **+$6M budget** from contract changes (other than demolition and site establishment)
e) **+$2M budget** from added scope to extend easements on a landholder's property next to SYTS
f) **+$4M budget** from Construction Delivery Partner (CDP) incentives
g) **+$7M budget** for other minor changes

[C.I.C]

Furthermore, completing the SYTS Rebuild in this regulatory period means we are delivering on our TRR RY23-27 commitments, which supports the credibility of our capex plans – which is critical as we lodge the TRR RY28-32 in October 2025.

It is recommended that the Board approve the proposed increase in Project Budget from $91.6M to $122.9M, with the associated scope and schedule variations.

2. Requested Resolution

The following resolutions and notes are requested of the Board:

The Board **RESOLVED** to approve the increase in the project budget for the SYTS Rebuild from $91.6M to $122.9M.

The Board **NOTED** that the:

a) Project Scope has been expanded to include the procurement of extended easements at 1 Holden Road for the SYTS Rebuild; and

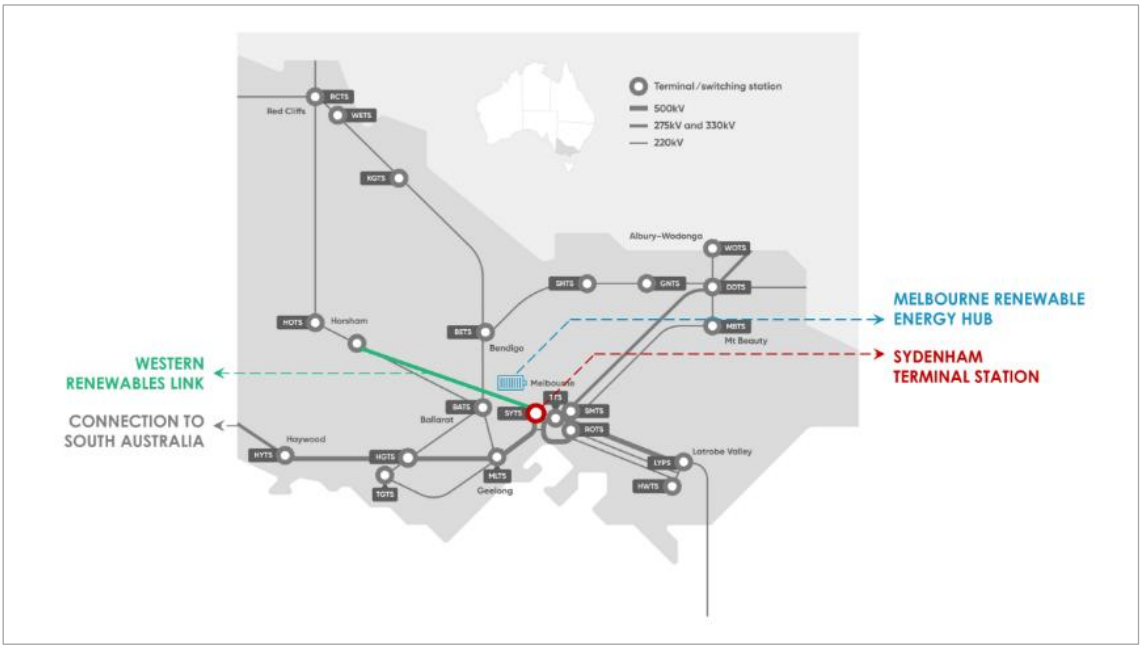
b) scheduled in-service date for the SYTS Rebuild has been revised from 30/09/2025 to 30/04/2027

3. Project background

Sydenham Terminal Station (SYTS) is a 500kV switching station owned and operated by AusNet Services and is located northwest of Melbourne's CBD. It is part of the main 500 kV transmission network, connecting South Morang, Keilor and Moorabool Terminal stations. As shown in Figure 1, SYTS plays critical roles including providing secure supply to Western Melbourne, providing secure supply to the Portland Aluminium Smelter, connecting to South Australia and enabling critical future works such as the Western Renewables Link (WRL) and the Melbourne Renewable Energy Hub (MREH).

AusNet Services also expects that the services that the terminal station provides will continue to be required, and are likely to be of increased importance, given the transmission network developments that may come in the 2025 Victorian Transmission Plan and 2026 Integrated System Plan.

Figure 1: Role of Sydenham Terminal Station in the Victorian Transmission Network



3.1. **Identified need:** What work is needed at SYTS?

The 500kV outdoor Gas Insulated Switchgear (GIS) equipment at SYTS has deteriorated, presenting a material risk of asset failure. This could severely impact electricity supply reliability, generation cost, safety, and the environment, potentially leading to collateral damage and emergency replacement costs. The deterioration is due to:

a) **End of life:** Installed in 1983, the GIS is nearing the end of its 40-45-year lifespan (expected to end between 2023-28)

b) **Lack of OEM support:** Originally built by Merlin Gerin and later supported by Siemens, which no longer provides technical assistance or spare parts

c) **Higher burden on the assets**: Dropping minimum demand has led to excess capacitance, requiring frequent switching that stresses the aging switchgear

Failures have already occurred, with more than 100 work notifications since 2016:

d) **28 hydraulic issues**: including leaks and/or low hydraulic pressure, requiring frequent top-ups.

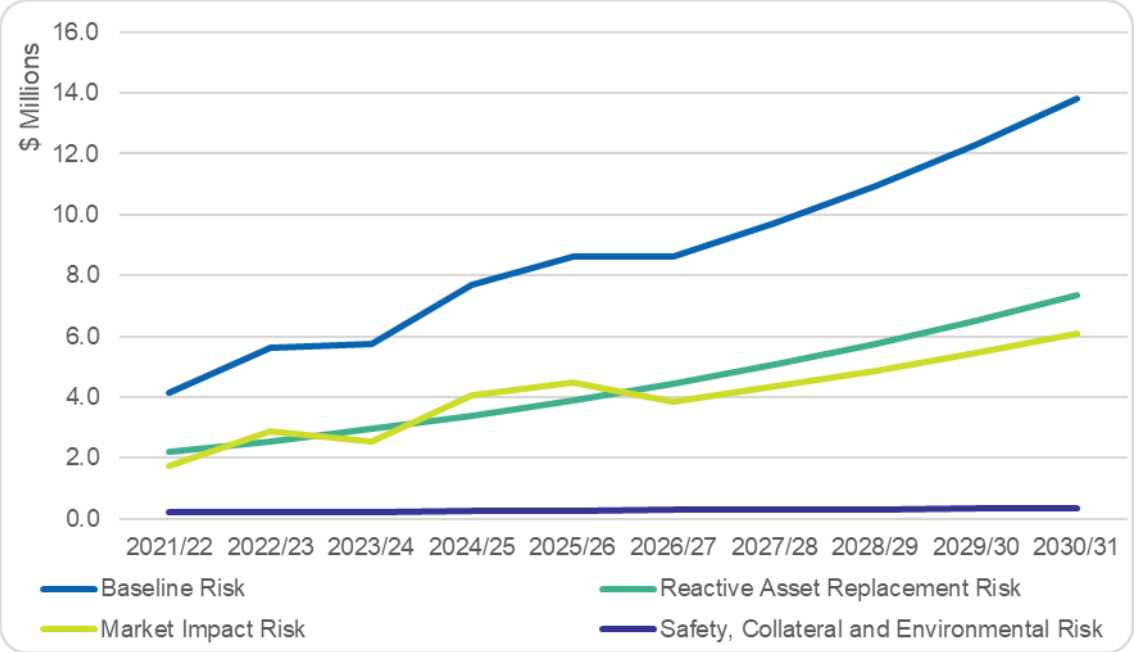
e) **80 SF_6 issues:** Mostly top-ups making SYTS the 4th worst SF_6 leaking station on our network and a replacement priority that was noted in AusNet's Climate Change Position Statement and 2024 Task Force on Climate-related Financial Disclosures (TCFD) Report

f) **March 7th incident**: A **hydraulic burst failure** on a circuit breaker took over 8 days to repair, requiring multiple outages and placing parts of the network at risk. This failure also caused the circuit breaker to 'slow open' in a different switching configuration, potentially leading to catastrophic failure of the breaker.

Without action, the GIS will deteriorate further.

The present value of the baseline risk cost is over $169 million from 2025 to 2070, primarily due to reactive asset replacement costs and market impacts from potential failures, as outlined in Figure 2 AusNet's assessments suggest the probability of significant switchgear failure is high and likely to increase if replacement is not pursued. Therefore, to support the continued reliability of the transmission network, **AusNet needs to replace the GIS equipment at Sydenham Terminal Station.**

Figure 2: Baseline risk for SYTS Rebuild (updated March 2025)



3.2. Options considered

AusNet considered two credible options to address the GIS issues at SYTS:

a) **Option 1: Replace the GIS with air insulated switchgear (AIS)**: This involves replacement of the 500 kV GIS with air insulated switchgear (AIS) just to the north of the existing GIS. The estimated capital cost of this option is $122.9 million (in 2021, cost estimated at $82.6M)

b) **Option 2: Replace the GIS with indoor GIS:** This involves replacement of the outdoor GIS with indoor GIS at an estimated cost of $220 million (in 2021, cost was estimated at $132M)

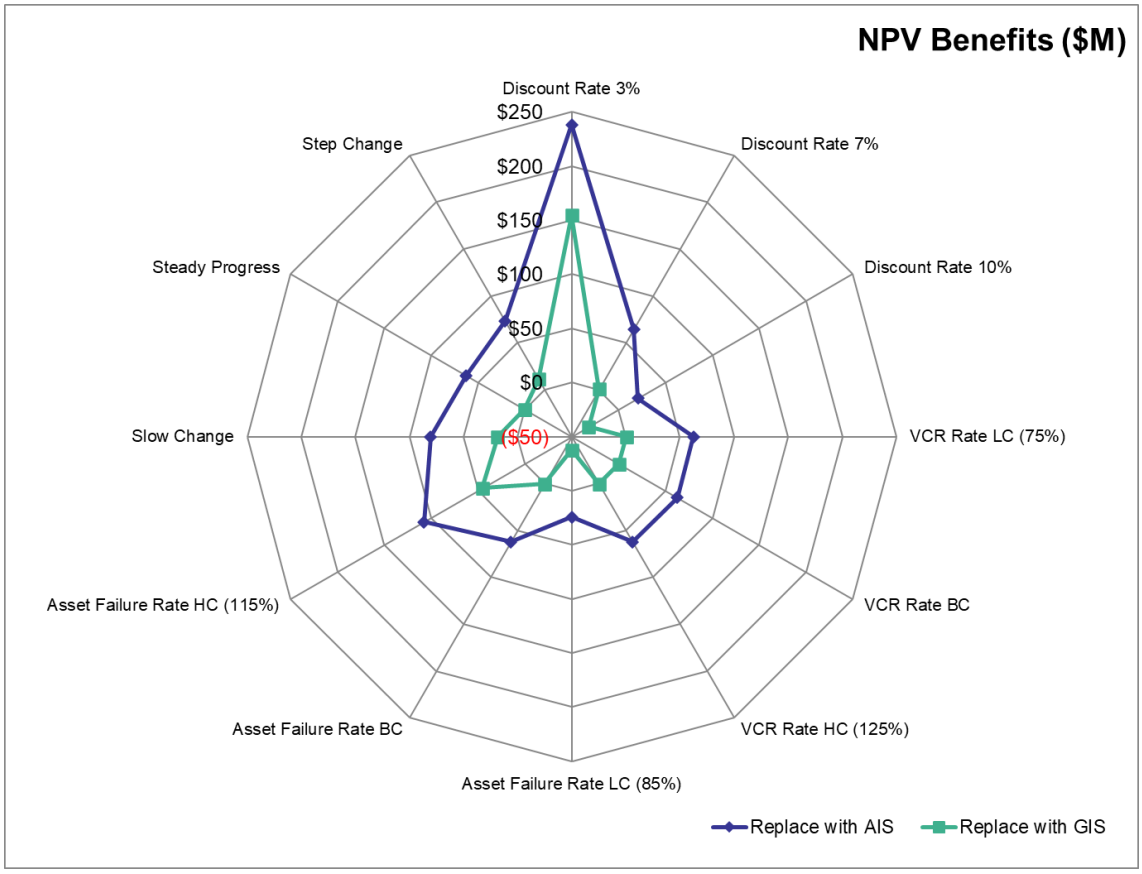
Through the 2021 RIT-T, AusNet welcomed proposals for non-network solutions that fulfil the identified need. No such proposals were received in 2021, and we still do not expect non-network solutions to be credible.

3.3. Cost-benefit analysis

Costs and benefits for each option were assessed to inform a decision, using an approach that is aligned with the AER's requirements. We also conducted sensitivity analysis that involves variation of underlying assumptions. The results of this analysis are shown in *Figure 3*, which reveal that:

a) **Both options are preferred to a "do nothing" optio**n for most of the sensitivities and scenarios considered
b) **Option 1 delivers the highest present value** of net economic benefits (i.e. benefits minus costs)
c) Option 1 continues to provide the most net benefit even under different scenarios

Figure 3: Present value of net benefits for Options 1 and 2, under different scenarios[1]



This suggests that that Option 1 is the preferred option to address the identified need, and that AusNet should replace the 500kV GIS at SYTS with air insulated switchgear. The economic timing of this investment is 2027/28, when the project annual benefits exceed the annualised cost.

3.4. [C.I.C]

[C.I.C]

[1] The analysis shown above was updated in March 2025, though its findings are consistent with the cost-benefit analysis that supported the original 2021 RIT-T and business case

[C.I.C]

Note as well that the approved transformer replacement works at South Morang Terminal Station will overlap with the SYTS Rebuild. These two projects at SMTS and SYTS will need to coordinate planned outages to ensure that the network risk across both projects is kept within manageable levels, as per AusNet's standard practice when we undertake brownfield rebuilds.

4. Summary of Project Change Request (PCR)

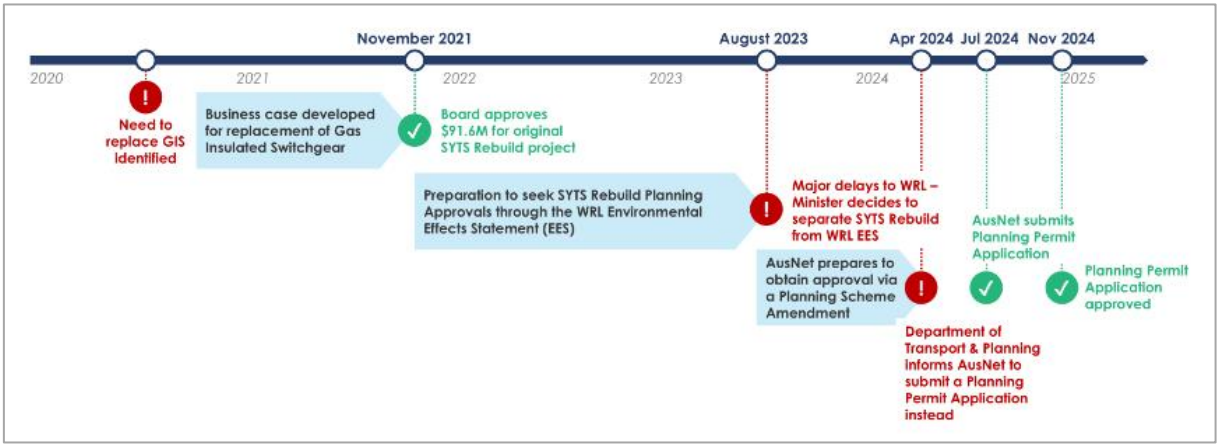
4.1. Project history

While the need for GIS replacement at SYTS was identified in 2020, external Planning Approval delays have prevented the start of physical works at SYTS, as shown at a high level in Figure 4, and described below.

In November 2021, the AusNet Board approved a $91.6m Business Case to replace the GIS at SYTS with Air Insulated Switchgear (AIS) by December 2025. The project was designed to capture efficiencies from integrating the GIS replacement and the Western Renewable Link project (WRL) at SYTS. This meant that Planning Approval requirements for the SYTS Rebuild were included in the Environmental Effects Statement (EES) for the WRL project at SYTS. However, the WRL project experienced multiple delays in obtaining the EES referral, hence delaying the SYTS Rebuild. To resolve this, the SYTS Rebuild was decoupled from the EES for the WRL Project. This change was accepted by the Minister for Planning **in August 2023** and requires that the SYTS Rebuild Project obtain standalone planning approvals. Following this, AusNet planned to obtain approval for SYTS via a Planning Scheme Amendment (PSA). However, **in April 2024**, AusNet was informed by the Department of Transport and Planning (DTP)that their preference was for AusNet to obtain planning approval via a Planning Permit Application (PPA). As a result, a PPA was submitted to DTP for review **in July 2024** and was approved **in November 2024**.

Altogether, these applications have resulted in a **delay of more than 2 years** for the project overall.

Figure 4: History of SYTS Rebuild project



4.2. Change required

As the project is now scheduled to be delivered more than 2 years later than originally planned, project requirements have changed. The changes required are summarised in Table 1 below.

Table 1: Change required to SYTS Rebuild project

Driver of change	Explanation	Impact
Delayed planning approvals	*See Section 4.1*	**19-month delay**
Cost to demolish redundant assets	The original business case estimate did not fully consider demolition costs and allowed ~$1M to decommission and remove redundant assets. Non-binding estimates from Delivery Partners for these works show the cost to demolish and remove assets is ~$15M. As this is a non-binding offer and the work can be delivered in isolation at the end of the project, we will tender these works and expect that we can outperform the current $15m estimate. a) **+$2.7M** to establish the demolition site including hardstand site offices, access roads b) **+$4.2M** to demolish and remove electrical assets and GIS including SF6 gas disposal c) **+$0.7M** civil demolition and site remediation d) **+$4.3M** for project management, site supervision, logistics and Living Away from Home Allowances (LAHA) e) **+$2.6M** additional allowance to ensure any fixed cost increase does not result in budget overspend Therefore, **$14M has now been added for demolition and removal** of the redundant 500kV yard and the GIS.	**+$14M**
Site establishment	Originally, **only $4M was estimated for site establishment**, based on a shorter delivery timeframe and only a single civil contractor on site. Now that the schedule for the SYTS Rebuild is more defined, we have been able to obtain a detailed cost for site establishment from our delivery partners.	**+$6M**

	As we now know that we will require a longer duration, more travel, and multiple contractors (CPP and Multiworks), we expect site establishment to **cost $10M**[2], consisting of: a) **$4M** project management, supervision & admin b) **$2M** Living Away from Home Allowances (LAHA) c) **$1M** travel costs d) **$3M** site mobilisation and demobilisation, site running, permits e) **<$1M** logistics management and disposal of packaging Therefore, **$6M has now been added for site establishment costs**.	
Contracts (excl. demolition, site establishment)	Adjustments to scope and rates in delivery partner contracts also contribute **+$6M** to the overall estimate. This includes, for example, an additional $500k for merging cubicles, and $800k added for building works.	**+$6M**
Requirement to extend easements	SYTS is located on a parcel of land owned by AusNet at 67 Victoria Road, Plumpton. An adjacent block of land is owned by a private landowner. AusNet has easements on the landholder's property for the existing 500kV lines and needs to extend these easements to complete the SYTS rebuild project. In the original Business Case, it was assumed that the project could be delivered within existing easements. Therefore, an **allowance of $2m** has been added to secure easements.	**+$2M**
Construction Delivery Partner incentives	This is a payment that is given based on an annual performance against KPIs that drive performance against safety, on time delivery, cost management and innovation – it was not included in the original budget and so adds a new **+$3M**.	**+$3M**
Other	An additional **+$6.5M of direct costs and +0.4M of indirect costs** have been added due to minor changes to pricing, scheduling, overheads, risk, finance charges, etc.	**+$7M**
TOTAL CHANGE	**+$31.3M** budget, **+19 months** delay	
ORIGINAL	**$91.6M** budget, **Sep 2025** in-service date	
UPDATED	**$122.9M** budget, **Apr 2027** in-service date	

4.3. Options considered

With respect to reducing construction costs two alternative options were considered:

a) **Negotiate cost reduction from preferred tenderer**: A 5% reduction in construction costs was negotiated and agreed with the preferred Delivery Partner. Further attempts are unlikely to achieve greater savings

b) **Retender construction works**: Due to the size and complexity of the project, few Delivery Partners have the skill set to deliver, meaning that a retender is unlikely to achieve cost savings

With respect to the purchase of 1 Holden Road, two alternative options were considered:

c) **Obtain easements through Compulsory Acquisition**: This will be considered if procurement of an easement extension is unsuccessful. Compulsory Acquisition is estimated to take 6 months, but a worst-case scenario of 18 months would not materially impact the project timeline

d) Land Purchase: An attempt was made to negotiate with the landowner to purchase 1 Holden Road. The landowners offered sale price of $18m is too high to make this option viable

[2] Site establishment costs are shared between SYTS Rebuild and the other projects occurring at SYTS – the $10M mentioned above represents ~60% of the total site establishment costs for SYTS

As such, **the changes proposed in Section 4.2 represent the most prudent option available at this time to maintain reliable transmission network services at SYTS and mitigate asset failure risks.**[3].

5. Recommendation

It is therefore recommended that the Board approve the proposed increase in Project Budget from $91.6M to $122.9M, and that:

a) the Project Scope be increased to include the extension of easements at 1 Holden Road; and
b) the revised in-service date from 30/09/2025 to 30/04/2027,

be noted

Management's updated cost benefit analysis confirms that, **despite the cost increases outlined, the project remains the most economically efficient option** to maintain reliable transmission network services at SYTS.

6. Key Implications

6.1. Strategy implications

Proactive asset renewal is a core regulatory expectation, in support of reliable and safe transmission services. The SYTS Rebuild, outlined in AusNet's 2023-27 TRR, continues to meet the RIT-T's 'identified need' even with increased costs and delays. Furthermore, **the SYTS Rebuild project is crucial to the upcoming TRR capex strategy**, as initiating work in the current period smooths the regulatory allowance approval pathway and enhances the credibility of our Major Stations program.

6.2. Financial implications

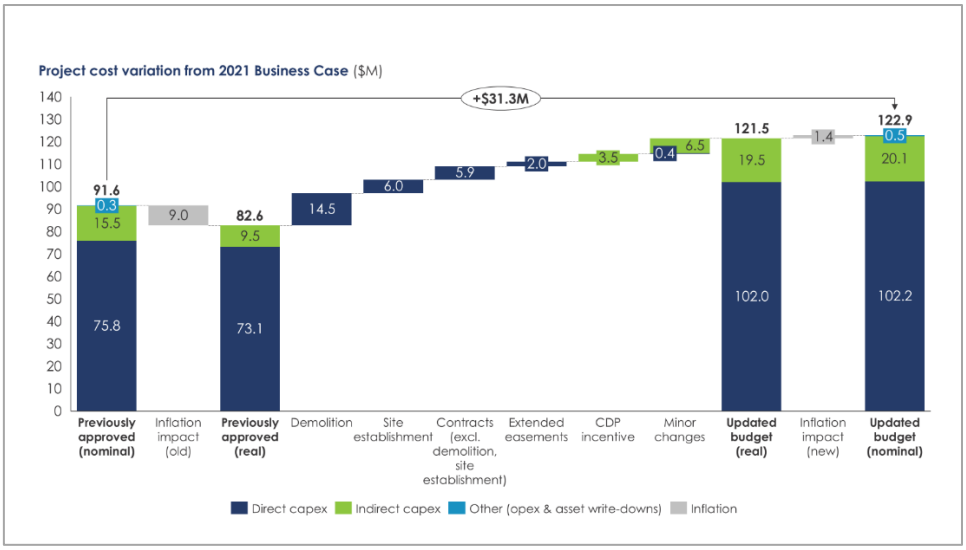
The total estimated expenditure for approval is $122.9M, which is $31.3M higher than the originally approved $91.6M. This includes $290k total for asset write downs. A summary of costs is provided in *Table 2*.

Table 2: Project expenditure for approval

Project Expenditure for approval (nominal, $M)	Calendar year (first 5 years)						PCR Total	Previous Business Case	Variation
	2023	2024	2025	2026	2027	2028			
Direct Capital	13.1	6.8	26.3	25.2	24.6	6.2	102.2	75.8	26.4
Overheads	0.9	0.4	1.3	1.3	1.2	0.3	5.5	3.1	2.4
Capitalised Finance Charges	0.4	0.8	1.5	2.8	0.8	0.1	6.5	10.6	(4.1)
Project Delivery Budget (SAP Capex budget)	**14.4**	**8.1**	**29.2**	**29.3**	**26.6**	**6.6**	**114.2**	89.4	24.7
CDP Incentive	-	-	-	-	-	3.7	3.7	-	3.7
Baseline - Management Reserve	-	-	-	-	1.9	-	1.9	1.9	-
Additional Management Reserve	-	-	-	-	1.2	1.4	2.6	-	2.6
Utilized Management Reserve	-	-	-	-	-	-	-	-	-
Management Reserve	-	-	-	-	**3.1**	**5.1**	**8.2**	1.9	6.3
Total Capex for Approval (incl risk, CFCs & OHs)	**14.4**	**8.1**	**29.2**	**29.3**	**27.7**	**8.0**	**122.4**	**91.3**	**31.1**
Baseline - Project Opex spend to date	-	-	-	-	-	-	-	-	-
Baseline - Project Opex delivery budget remaining	-	-	-	-	-	-	-	-	-
Additional Project Opex	-	-	0.1	0.1	-	-	0.2	-	0.2
Total Project Opex for Approval	-	-	**0.1**	**0.1**	-	-	**0.2**	-	**0.2**
Written down value of assets retired/sold	-	-	0.3	-	-	-	**0.3**	**0.3**	**(0.0)**
Total New Estimated Expenditure for Approval (nominal)	**14.4**	**8.1**	**29.6**	**29.4**	**27.7**	**8.0**	**122.9**	**91.6**	**31.3**

[3] Regulation team have confirmed that the RIT-T process does not need to be revisited as part of the increase in budget, allowing AusNet to proceed with the project following Board approval.

Figure 5: Changes to cost categories ($M)



Note that:

c) The financials shown above refer to only the SYTS Rebuild project, which is a company-initiated project, which is fully funded by allowance approved as part of the 2022-2027 Transmission Regulatory Reset

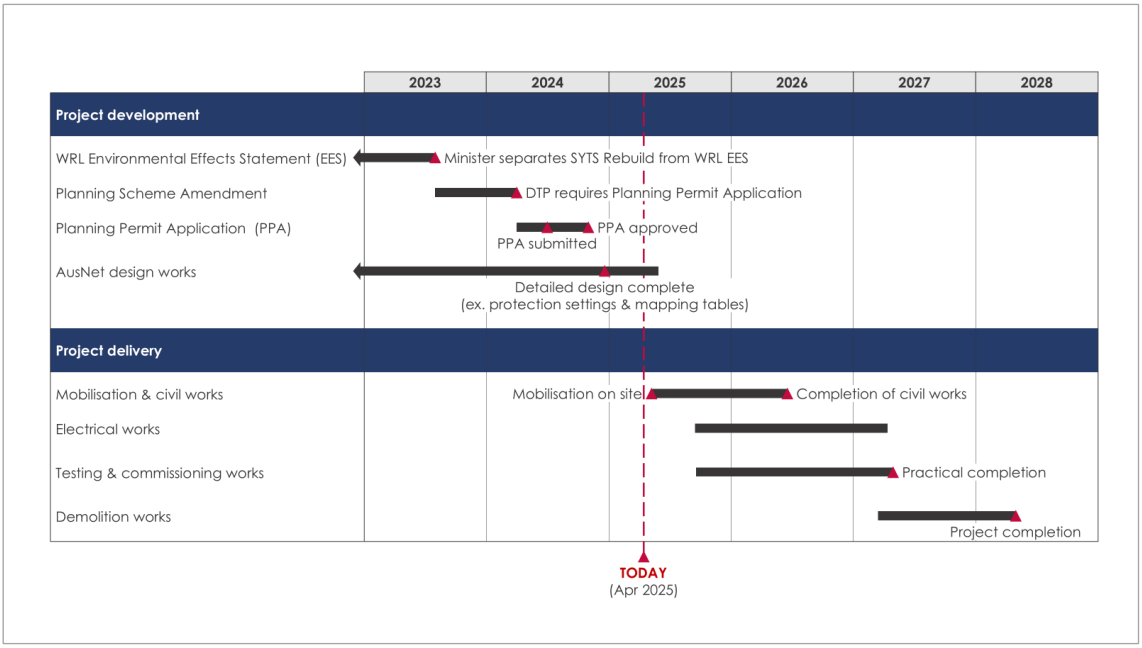
d) All expenditure on this project will be transferred to the Regulated Asset Base (RAB) upon project completion

e) The impact of inflation is much smaller in the updated budget as a greater proportion of the spend is now covered by fixed price contracts which are not subject to inflation

6.3. Project Timeline

The project is scheduled to be completed by April 2028. Upcoming key milestones include site establishment in May 2025 and practical completion in April 2027. Figure **6** below provides a high-level summary of the project plan, and a detailed schedule is provided as an attachment to this paper.

Figure 6: High-level project schedule for SYTS Rebuild



7. Risk

A detailed risk assessment was conducted in March 2025 to support the request for more budget for the SYTS Terminal Station Rebuild – shown in Table 3. This assessment concluded that **the likelihood of risks eventuating is low for all identified risks**. Strategies to manage the identified risks are provided as well.

Table 3: SYTS Rebuild risk assessment

Identified risk	Impact	Likelihood	Strategy to manage risk
[C.I.C]	[C.I.C]	[C.I.C]	[C.I.C]
Unable to negotiate extension of **easements** within requested budget	Compulsory acquisition of easements required	Low	h) Funds included to allow negotiation at up to 200% of valuation i) Management Reserve available if costs are >200% of valuation j) Acquisition Strategy defines negotiation process, compulsory acquisition process and timelines
Unforeseen additional **construction costs** greater than the contingency budget	Requirement to draw down on management reserve budget.	Low	k) Completed of detailed analysis of CDP costs to ensure all costs are included, and fixed price limits risk of additional costs l) Delivery planning considers external factors that could delay construction, e.g. outage restrictions over summer m) Allowance made to cover additional costs within contingency budget
Unforeseen **deterioration of existing 500kV switchgear**	Impact on construction delivery schedule due to associated operational or network outage restrictions	Low	n) Accelerate project delivery o) Condition monitoring of 500kV switchgear
Concurrent delivery of two major projects on the 500kV backbone (SYTS and SMTS)	Impact on construction delivery schedule to manage network outage restrictions	Low	p) Replace SYTS GIS with AIS in different location to minimise line outages requirements q) Majority of SYTS works will be completed in 2025 and 2026, ahead of commencement of SMTS 500kV works r) If required, the two projects at SMTS and SYTS will coordinate planned outages to manage network risk

8. Next Steps

Subject to the passage of the resolutions requested in this Board Paper:

s) Easement negotiation at 1 Holden Road will continue
t) Contracts will be established to deliver the construction component of the SYTS Rebuild project
u) Contracts will include WRL works for SYTS as separable portions so that these works can proceed once approval is received from AEMO

9. Appendix

9.1. Appendix A

Forecast expenditure

	PROJECT EXPENDITURE FORECASTS	Costs to date 31/01/2025 (CTC Sheet)	2025	2026	2027	2028	TOTAL
1	DESIGN & STUDIES/ASSESSMENTS	$ 2,988,700	$ 3,417,292	$ 206,445	$ 339,230	$ 87,097	$ 7,038,763
2	INTERNAL LABOUR	$ 3,164,449	$ 1,383,274	$ 1,584,540	$ 1,340,373	$ 392,930	$ 7,865,566
3	MATERIALS (AusNet Free Issue Materials)	$ 14,041,017	$ 2,261,562	$ 580,656	$ -	$ -	$ 16,883,235
4	PLANT & EQUIPMENT	$ -	$ 449,949	$ 554,518	$ 569,490	$ 146,216	$ 1,720,173
5	CONTRACTS	$ -	$ 18,221,711	$ 21,866,054	$ 21,866,054	$ 5,466,513	$ 67,420,332
6	CONSTRUCTION INSURANCE (1.1% of total cost)	$ -	$ 344,179	$ 424,166	$ 435,619	$ 111,845	$ 1,315,809
7	**PROJECT DIRECT EXPENDITURE P(50) including actuals to date**	**$ 20,194,167**	**$ 26,077,967**	**$ 25,216,378**	**$ 24,550,765**	**$ 6,204,602**	**$ 102,243,879**
8	OVERHEADS	$ 1,331,759	$ 1,322,345	$ 1,265,862	$ 1,232,448	$ 311,471	$ 5,463,886
9	FINANCE CHARGES (IDC)	$ 1,194,472	$ 1,547,739	$ 2,844,753	$ 768,709	$ 110,819	$ 6,466,492
10	**PROJECT DIRECT EXPENDITURE (SAP)**	**$ 22,720,398**	**$ 28,948,051**	**$ 29,326,994**	**$ 26,551,922**	**$ 6,626,892**	**$ 114,174,257**
11	MANAGEMENT RESERVE [P(90)-P(50)]				$ 3,060,202	$ 1,407,417	$ 4,467,619
12	CDP INCENTIVE						$ 3,741,675
13	Written down value of assets retired/sold		$ 289,923				$ 289,923
14	Total Project Opex for Approval		$ 100,000	$ 102,700			$ 213,794
13	**TOTAL EXPENDITURE FOR APPROVAL**	**$ 22,720,398**	**$ 29,337,974**	**$ 29,429,694**	**$ 29,612,124**	**$ 8,034,309**	**$ 122,887,267**

10. Sponsor and Contributors

Sponsor: [C.I.C], EGM Transmission

Key Contributors: [C.I.C], GM Network Management

[C.I.C], GM Delivery

[C.I.C], Principal Engineer

11. Attachments

Attachment 1 – Circulating Resolution