AusNet Transmission Group Pty Ltd

Transmission Revenue Review 2017-2022

Appendix 7B: Network Capability Incentive Parameter Action Plan (2017-22)

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ISSUE/AMENDMENT STATUS

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1 Introduction

Under the Network Capability Component (NCC) of the Service Target Performance Incentive Scheme (STPIS), AusNet Services is required to submit a Network Capability Incentive Parameter Action Plan (NCIPAP). This will be the second time AusNet Services has participated in the NCC having developed a NCIPAP under version 4 of the STPIS for the 2014-17 regulatory control period. The NCIPAP for that period has delivered significant consumer benefits in the current regulatory period and will continue to do so beyond the end of the 2014-17 regulatory period.

In September 2015, the AER released version 5 of the STPIS, which will apply to AusNet Services during the forthcoming regulatory period. A number of substantive changes were made to the NCC in version 5, including:

- The incentive allowance for the NCC will now be adjusted on a pro-rata basis to link the incentive payment to the total expenditure of approved projects. An incentive payment of 1.5x proposed expenditure now applies, with a maximum incentive of 1.5% of approved MAR;
- The AER's ability to reduce the NCC incentive allowance has been enhanced with the introduction of an ex-post review; and
- TNSPs will have more flexibility to amend their approved NCIPAP during the regulatory control period, including proposing additional priority projects.

Clause 5.2 of the STPIS Guidelines sets out that under the NCC, TNSPs must submit a NCIPAP:

1) *identifying for every transmission circuit and injection point on its network, the basis and cause for the limit for each transmission circuit and injection point.*
2) *proposing the priority projects to be undertaken in the regulatory control period to improve the limit of the transmission circuits and injection points listed above through operational and/or minor capital expenditure projects. This proposal must include:*
    i. *the total operational and capital cost of each priority project*
    ii. *the proposed value of the priority project improvement target in the limit for each priority project*
    iii. *the current value of the limit for the transmission circuits and/or injection points which the priority project improvement target is seeking to improve*
    iv. *the ranking of the priority projects in descending order based on the likely benefit of the priority project to customers or on wholesale market outcomes*
    v. *for each priority project, how the achievement of the priority project improvement target would result in a material benefit being achieved, including an outline of the key assumptions on which this result is based*

    in which the average total expenditure of the priority projects outlined in each regulatory year must not be greater than 1 per cent of the TNSP's average annual maximum allowed revenue proposed in its revenue proposal for the regulatory control period.

Due to AEMO's role as the transmission network planner in Victoria, the analysis presented in this document has been prepared jointly with AEMO.

The NCIPAP is structured as follows:

- Section 2 – provides an overview of the assessment of network limits that was undertaken by AusNet Services and AEMO to derive the list of priority projects; and
- Section 3 – outlines the proposed priority projects, including a description of the project, the current limit, the improvement target, the estimated project cost and the key assumptions underpinning the analysis.

2 Assessment of network limits

As part of the development of the first NCIPAP, AusNet Services and AEMO undertook an exercise to identify the reason for the limit for every transmission circuit and injection point on AusNet Services' transmission network. In addition, a RADAR study was carried out by AusNet Services to capture the limiting elements for the transmission lines under outage conditions. AusNet Services also consulted with the Victorian DNSPs to identify potential NCIPAP projects on connection assets.

The results of this analysis were reviewed and updated by AusNet Services and AEMO to provide an up-to-date assessment of network limits for the 2017-22 NCIPAP (refer to Attachment 1 – Network Limits). The limits presented are for system normal conditions.

Each limit was then assessed to determine:

- Whether the limit of the transmission circuit or injection point could be increased through operating or minor capital expenditure (where 'minor' is defined as an estimated capital cost of less than $5 million, or the cost threshold for the regulatory investment test for transmission); and
- Whether increasing the limit of the transmission circuit or injection point would either:
  - benefit wholesale market outcomes or
  - increase capability of the transmission system at times when network users place greatest value on the transmission system's reliability.

Because the NCC already applies to AusNet Services, many projects that fit the criteria of the NCC form part of the 2014-17 NCIPAP. In developing the second NCIPAP, AEMO, AusNet Services and connected parties found that fewer projects met the criteria. However, should circumstances change during the 2017-22 period, additional projects can be proposed under STPIS version 5.

3 Proposed Priority Projects

AusNet Services and AEMO have identified two priority projects. These are listed in Table 1 and outlined in detail below.

The table below presents the estimated cost (capex and opex) of each priority project. The timing of these projects is indicative, based on possible efficiencies where other work is planned to take place at a particular terminal station during the period. Projects have been ranked according to each project's benefit-cost ratio.

Table 1: Proposed Priority Projects ($'000, real 2016-17)

Project Number	Proposed Project Circuit/Injection Point	Description	Total expenditure
1	Hazelwood to Jeeralang 220 kV No. 4 line	Replace the existing interplant connections of the Hazelwood to Jeeralang 220 kV No.4 line at Hazelwood power station	107
2	South East to Heywood 275 kV No.1 and No. 2 lines	Increase the operating temperature of the South East to Heywood 275 kV lines from 90°C to 100°C.	18
Total expenditure			**125**

The expenditure split between capex and opex is shown in the table below, and is identified for each project below. This has been derived consistently with AusNet Services' capitalisation policy.

Table 2: Capital and operating expenditure ($'000, real 2016-17)

Capex	Opex	Total
125	0	**125**

The following sections provide further details of each proposed priority project.

3.1 Priority Project 1 – Hazelwood to Jeeralang No. 4 line limiting elements upgrade

Transmission Circuit / Injection Point	Hazelwood to Jeeralang 220 kV No. 4 line
Limit and Reason for the Limit	The short term (15 minute) rating of the Hazelwood to Jeeralang 220 kV No.4 line is 1190A in summer. The line is limited by the interplant connections (1130A) at Hazelwood power station.
Project	Replace the existing interplant connections of the Hazelwood to Jeeralang 220 kV No.4 line at Hazelwood power station to allow full utilisation of the line 15 minute

	ratings
Limit Addressed	Loading constraint of the Hazelwood to Jeeralang No.4 220 kV line
Project Description	Replace the existing limiting elements with higher rating elements to allow full utilisation of the line 15 minute ratings
Present Limit	**Transmission Circuit** / **Summer 15 minute rating** / **Winter 15 minute rating** Hazelwood – Jeeralang No. 4 / 431 (1130A) / 549 (1440A)
Target Limit	**Transmission Circuit** / **Summer 15 minute rating** / **Winter 15 minute rating** Hazelwood – Jeeralang No. 4 / 454 (1190A) / 597 (1566A)
Capital Cost	$107k
Operating Cost	$0
Project Ranking	1
Expected completion	2017/18
Priority Project Outcome	This project increases the 15 minute thermal capacity of the line by 23 MVA in summer and 48 MVA in winter.
Reasons to undertake the project: The interplant connections of the Hazelwood to Jeeralang No.4 220 kV line at Hazelwood power station limits flows between Hazelwood and Jeeralang and resulted in a reduction in the System Overload Control Schemes (SOCS) 15 minute rating of the Hazelwood – Jeeralang 220 kV No. 4 line on 28 May 2014.	
Key assumptions: Benefits were calculated using market impact of the constraint managing the congestion of Hazelwood to Jeeralang No. 4 line for 2014 and 2015 (until 30 September).	
Category of Benefit: Shared network, prior outage - reliability	
Description of Benefit: Allow full utilisation of the line 15 minute ratings	
Benefit cost ratio: The benefit cost ratio is estimated to be 36. The payback period is 0.3 year.	

3.2 Priority Project 2 – South East to Heywood 275 kV lines upgrade

Transmission Circuit / Injection Point	South East to Heywood 275 kV No.1 line South East to Heywood 275 kV No.2 line
Limit and Reason for the Limit	Thermal rating of the lines
Project	South East to Heywood 275 kV lines upgrade
Limit Addressed	Increase operating temperature of these lines from 90°C to 100°C
Project Description	Increase the operating temperature of the South East to Heywood 275 kV lines from 90°C to 100°C. This project involves a review of protection settings and updating AusNet Services RADAR and SOCS databases. No work is required to the overhead lines to achieve the electrical clearances for operating at 100°C.
Present Limit	South East to Heywood 275 kV No.1 and No.2 lines 15 minute ratings[1]

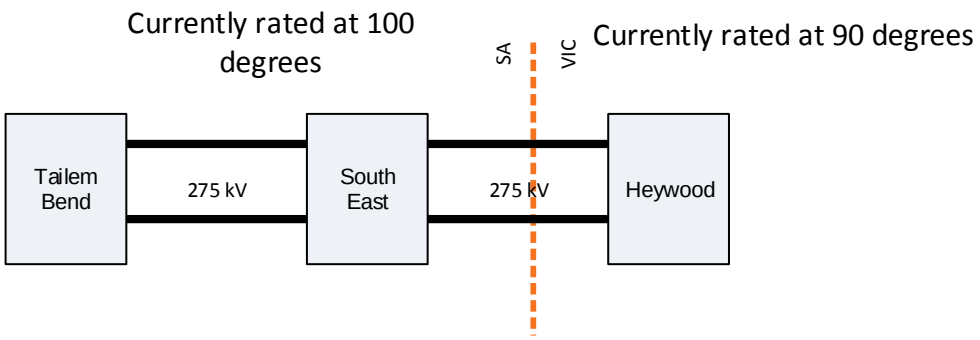
Operating	AusNet	ElectraNet	NEMDE	Limit set by

[1] Assuming the pre-contingency load to be half the post contingency value

	Condition (°C)	Services (MVA)	(MVA)	(MVA)	
	5	762	750	750	ElectraNet
	10	737	750	737	AusNet Services
	15	713	750	713	AusNet Services
	20	687	750	687	AusNet Services
	25	660	725	660	AusNet Services
	30	632	725	632	AusNet Services
	35	603	700	603	AusNet Services
	40	572	700	572	AusNet Services
	45	539	700	539	AusNet Services
Target Limit	South East to Heywood 275 kV No.1 and No.2 lines 15 minute ratings				
	Operating Condition (°C)	AusNet Services (MVA)	ElectraNet (MVA)	NEMDE (MVA)	Limit set by
	5	827	750	750	ElectraNet
	10	802	750	750	ElectraNet
	15	776	750	750	ElectraNet
	20	749	750	749	AusNet Services
	25	721	725	721	AusNet Services
	30	691	725	691	AusNet Services
	35	661	700	661	AusNet Services
	40	628	700	628	AusNet Services
	45	595	700	595	AusNet Services
Capital Cost	$18k				
Operating Cost	$0				
Project Ranking	2				
Expected completion	2017/18				
Priority Project Outcome	The 15 minute ratings of the lines increase by 58MVA at 35°C and 13MVA at 10°C				

Reasons to undertake the project:

The South East to Heywood lines will become the limiting elements constraining flows on the interconnector between Victoria and South Australia following the interconnector upgrade project and ElectraNet's proposed (approved?) NCIPAP project to uprate the 275 kV lines between South East and Tailem Bend to 120°C. This project will increase the import and export capability of the interconnector between Victoria and South Australia.



Key assumptions:

Benefits were calculated using outcomes from the Heywood RIT-T (i.e. binding hours from the preferred option for both VIC to SA and SA to VIC transfer).

Category of Benefit: Shared network, system normal – reliability

Description of Benefit:

The thermal uprate of the lines will increase the import and export capability of the interconnector between Victoria and South Australia.

Benefit cost ratio:

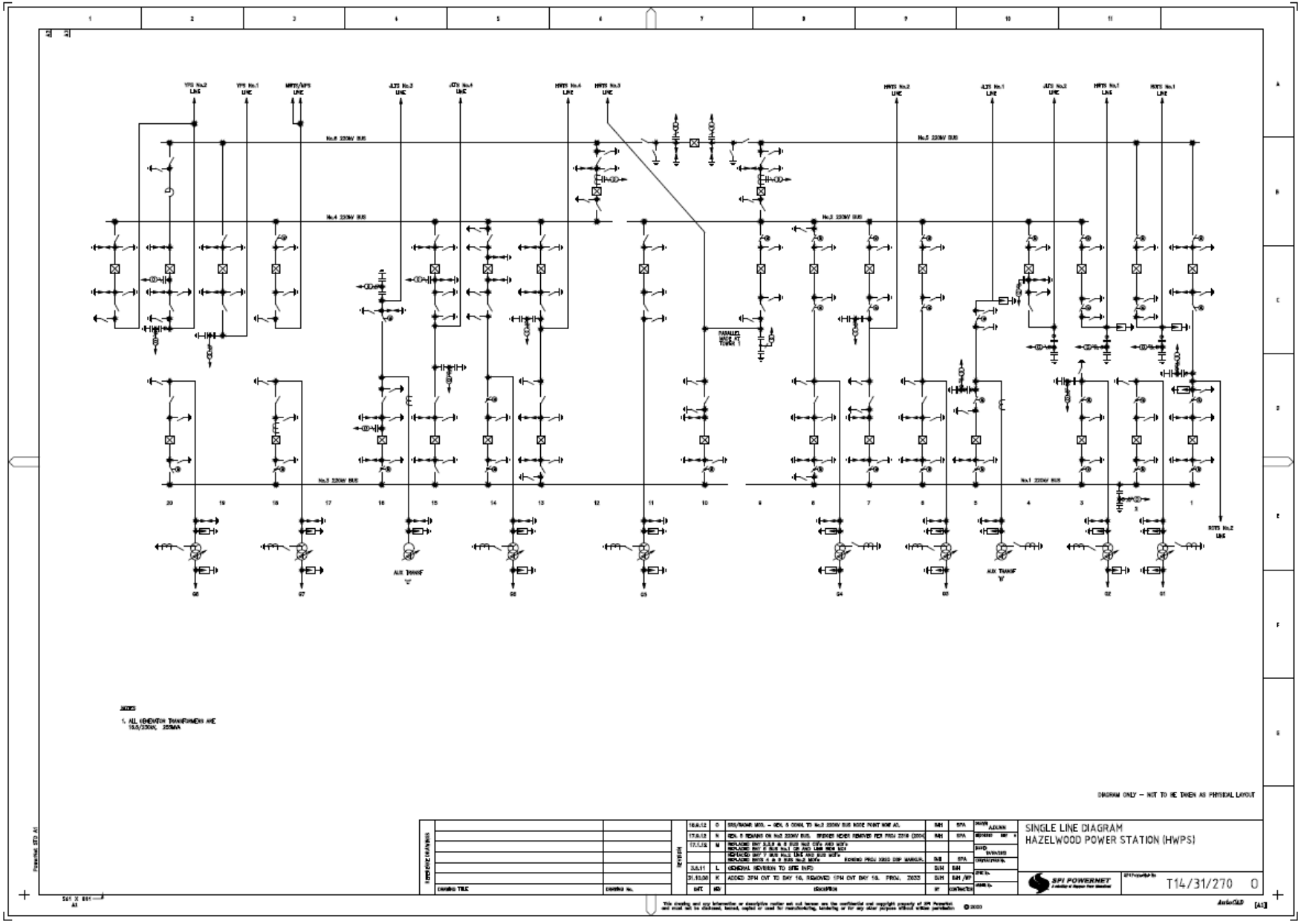
The benefit cost ratio is estimated to be 18. The payback period is 0.5 year.

4 Attachment 1 – Network Limits

In accordance with clause 5.2(b)(1) of the STPIS, the attached spreadsheet entitled "AusNet Services - NCIPAP 2017-22 Network Limits (CONFIDENTIAL).xlsx" identifies for every transmission circuit and injection point on AusNet Services' network, the basis and cause for the limit for each transmission circuit and injection point. This attachment is Commercial-In-Confidence.

5 Attachment 2 – Hazelwood Power Station Single Line Diagram

A Single Line Diagram for the Hazelwood Power Station has been provided on the next page in accordance with paragraph 16.3(b) of the Reset RIN.


SINGLE LINE DIAGRAM
HAZELWOOD POWER STATION (HWPS)
T14/31/270 0
DIAGRAM ONLY – NOT TO BE TAKEN AS PHYSICAL LAYOUT