Major Project Contingency – Risk Allowance

2007/8-2013/14 Capital Works Revised Proposal

SP AusNet
A member of Singapore Power Group

ISSUE/AMENDMENT STATUS

Issue Number	Date	Description	Author	Approved by
1	28/09/2007	Creation	G Towns	

Disclaimer

This template is for generating internal and external document belonging to SP AusNet and may or may not contain all available information on the subject matter this document purports to address. The information contained in this document is subject to review and SP AusNet may amend this document at any time. Amendments will be indicated in the Amendment Table, but SP AusNet does not undertake to keep this document up to date.

To the maximum extent permitted by law, SP AusNet makes no representation or warranty (express or implied) as to the accuracy, reliability, or completeness of the information contained in this document, or its suitability for any intended purpose. SP AusNet (which, for the purposes of this disclaimer, includes all of its related bodies corporate, its officers, employees, contractors, agents and consultants, and those of its related bodies corporate) shall have no liability for any loss or damage (be it direct or indirect, including liability by reason of negligence or negligent misstatement) for any statements, opinions, information or matter (expressed or implied) arising out of, contained in, or derived from, or for any omissions from, the information in this document.

Contact

This document is the responsibility of Network Development Division, SP AusNet.
Please contact the indicated owner of the document with any inquiries.

SP AusNet
Level 31, 2 Southbank Boulevard
Melbourne Victoria 3006
Ph: (03) 9695 6000

Table of Contents

ISSUE/AMENDMENT STATUS 2

1 Overview of the Draft Decision 4

2 SP AusNet's Response Draft Decision 5

3 Conclusion 8

4 References 8

1 Overview of the Draft Decision

SP AusNet's cost estimates for its station rebuild / refurbishment projects includes a contingency allowance. SP AusNet has explained to the AER that[1]:

- **The contingency allowed for the station refurbishments is to cover costs that arise when this type of complex refurbishment work is undertaken.**
- **The cost estimate for a station refurbishment project only covers the scope of work that can be defined at the estimation stage. Naturally issues will arise as the detailed design and installation work is undertaken.**

SP AusNet's proposed contingency allowance totals $24.8 million over the regulatory period.

PB recommends removing SP AusNet's proposed contingency allowance on the basis that:

- **SP AusNet's base unit costs (without the inclusion of a contingency allowance) represent efficient costs when benchmarked against PB's cost database.**
- **The generalised 'brownfield' factor, and the labour and materials escalations may act to double count on some of the unknowns to which the proposed contingency relates.**
- **The application of a contingency reduces the incentive for SP AusNet to forecast costs accurately and implement projects efficiently.**
- **The risk is effectively transferred to customers, who pay for the allowance regardless of whether the cost included for contingencies is realised.**

The AER accepted PB's recommendation, noting (on page 95) that:

> "SP AusNet has included a number of other risk mitigation allowances in its forecast capex proposal. These include the 'brownfield factor' in all cost estimates involving work at a brownfield site, a suite of 'response capability' projects catered to unforeseen events, and real labour and materials cost escalations. The combined effect of these allowances and the proposed contingency allowance for station rebuild / refurbishment projects potentially double-counts the risks intended to be captured by the proposed contingency allowance, and overestimates the costs likely to be incurred."

The AER also commented that SP AusNet had not presented any strong evidence justifying the need or quantum of its proposed contingency allowances for each individual station rebuild project.

The AER made the following adjustment to the SP AusNet proposal:

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's Proposal	3.54	4.24	3.57	3.76	5.51	4.19	24.81
AER's adjustment	-3.54	-4.24	-3.57	-3.76	-5.51	-4.19	-24.81
AER's conclusion	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 1 – Contingency Cash Flow over Works Program ($2007/8)

[1] Ibid, page 94.

2 SP AusNet's Response Draft Decision

During presentations to PB and the AER, SP AusNet explained that this contingency had only been applied to projects that had detailed costings using its "Expert Estimator" system. The estimating differed from other works in that the currently known scope of the project was estimated using a bottom up approach. For other work programs a unit based methodology was used. In the method a level of risk is included in the unit prices which depends on the nature of projects used to develop the unit price.

However with a bottom up approach no such risk allowance is included in the estimates as the base estimate is calculated using the known parameters and work scope. Therefore any changes that occur due to additional works that need to be included, additional volumes the cost can only increase. If these factors are included in the estimating system the estimating data would not be reliable or based on factual input data.

A generalised 'brownfield' factor is also not used in this bottom up estimating process and therefore cannot double up on the contingency.

Also escalation was not included in the bottom up estimating process as the data in the estimating system at the time was from 2005/6. Escalation was applied separately to these estimates to bring them to 2006/7 costs.

Brownfield factors and contingencies are only ever used in unit rates in order to calibrate these to historical averages where the estimate was not already calibrated to these historical averages.

In response to the AER's comment that SP AusNet had not presented any strong evidence justifying the need or quantum of its proposed contingency allowances, SP AusNet engaged Evans and Peck to undertake further analysis. The scope of Evans and Peck's assignment was to provide a robust estimate of a reasonable risk allowance for projects such as station refurbishment, taking into account the other elements of SP AusNet's cost accumulation process. Evans and Peck's key conclusions are summarised as follows:

The Evans and Peck study excluded the risk of input cost escalation for materials, labour, plant and equipment as these were taken into account separately in the estimating process.

The Evans and Peck review of SP AusNet's risk assessment for major projects found that:

Risk Allowance For Major Station Refurbishments

In relation to the Station Rebuild projects the reference estimate provides the starting point from which this risk model has been developed. Based on our experience there is no way the program of Station Rebuild's can be delivered for the cost identified in the reference estimate ($337.2m). There is only a 10% chance that the costs will not exceed $367.2, 50% chance of being delivered for less than $372.0m and 80% chance of being delivered for less than $375.5m.

A detailed risk assessment and modelling exercise has calculated an increase in the outturn cost of SP Ausnet's capital works project portfolio of between 8% - 10% above the non-risk adjusted "reference" estimate. This is lower than industry experience would typically suggest, and shows that SP Ausnet has been conservative (ie. optimistic) in estimating the amount of risk that is contained in its portfolio of projects. By being conservative in estimating the amount of risk in its portfolio, SP Ausnet has produced a conservative (low) cost of delivering it's portfolio of projects. Based on our experience and supported by the risk model, there is a greater than 95% probability that the cost of delivering the portfolio of Capital Works will exceed the reference estimate including contingency ($756.9m). There is only a 10% chance that the costs will not exceed $771.8m, 50% chance of being delivered for less than $787.6 and 80% chance of being delivered for less than $797.7m.

Evans & Peck recommend that at this stage of the project procurement cycle that the 80% figure is the most appropriate.

The outcome of the risk study for the major station refurbishment projects is in shown in Table xx

	Reference Estimate	Reference Estimate incl. contingency	Probability Profile of Modelled Cost			
			P90	P80	P50	P10
Station Rebuild						
Keilor 500 - X577	$11,271,861	$12,258,011	$12,845,345	$12,737,456	$12,544,392	$12,282,273
Brooklyn - X578	$49,053,202	$51,855,202	$56,390,524	$55,986,215	$55,149,209	$52,760,992
Hazelwood - X711	$33,982,443	$35,680,000	$39,345,012	$39,115,491	$38,691,763	$38,076,574
Thomastown - X4B4 220KV & 66KV	$40,025,638	$43,727,938	$44,223,919	$43,899,917	$43,283,025	$42,329,976
Ringwood - X576	$27,782,321	$29,375,951	$31,001,499	$30,752,943	$30,284,938	$29,569,709
Keilor 220 66 - X577	$24,928,019	$27,357,440	$27,671,246	$27,435,401	$27,023,193	$26,418,293
Hazelwood 500 - X580	$17,997,486	$19,409,686	$19,872,371	$19,737,021	$19,489,937	$19,116,252
Glenrowan - X725	$19,824,269	$21,324,369	$21,989,142	$21,807,692	$21,471,770	$20,964,957
Richmond – 7C3	$102,979,675	$113,277,642	$118,681,877	$116,681,826	$113,532,495	$109,522,600
Geelong - X508	$9,448,323	$10,367,323	$11,178,951	$11,000,716	$10,665,774	$10,202,026
Station Rebuild Cumulative Output *	$337,293,237	$364,633,562	$383,199,887	$379,154,678	$372,136,493	$361,243,651
Station Rebuild Portfolio Output *	$337,293,237	$364,633,562	$377,734,203	$375,482,399	$371,967,172	$367,219,019
% increase from reference estimate		8.1%	12.0%	11.3%	10.3%	8.9%

Table 2 – Station Rebuild Risk Model Outcome

*It is noted that the cumulative sum of each of the individual P90, P80, P50 and P10 values provides a greater range of costs than the portfolio output of the Station Rebuilds. This reflects the reality that not all the projects will realise the risks and opportunities at the same time. Whilst some projects incur cost overruns, other projects will not. The portfolio of Station Rebuild model outcome reflects this, with the range between the P10 and the P90 values reduced.

We have included for both the reference estimate and the reference including the single value contingency developed for the Station Rebuild projects provided to the AER as part of the initial SP AusNet submission. This contingency value was not supported by any additional documentation to justify its inclusion.

Through the risk assessed cost estimating process developed by Evans & Peck our objective is to provide a SP Ausnet and the AER with a logical and transparent approach to demonstrate the likely outturn cost of the Station Rebuild program of works.

The risk model outcomes may be presented as the percentage increase over the reference estimate. This is summarised for the key values identified as follows:

	% increase from reference estimate
Reference Estimate including Contingency	7.1%
P90 Outcome	12.0%
P80 Outcome	11.3%
P50 Outcome	10.3%
P10 Outcome	8.9%

Table 3 – Summary % Increase Over Reference Estimates

The probability profile for the portfolio of Station Rebuild projects represented graphically as follows:

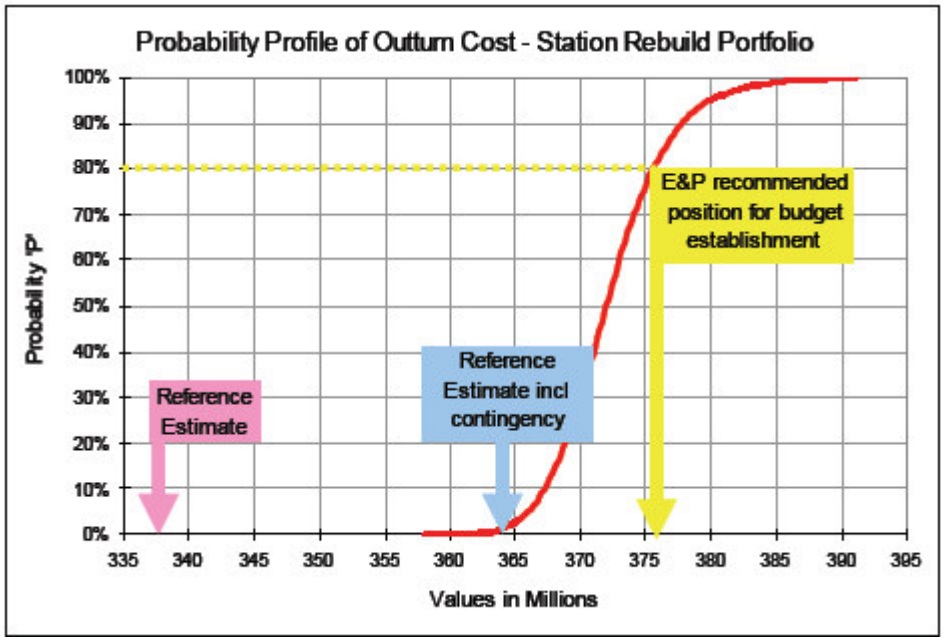

Figure 1 – Probability Profile of Outturn Cost – Station Rebuild Portfolio

3 Conclusion

On the basis of the conclusions set out in the Evans and Peck report SP AusNet believes there is a comprehensive case that the contingency allowance satisfies the requirements of the Rules:

Moreover, without provision for project contingency SP AusNet is of the view that the level of expenditure recommended by PB in relation to the proposed works:

- insufficient to enable SP AusNet to recover the efficient costs of achieving the capital expenditure objectives set out in clause 6A6.7(a) of the NER; and is
- below the costs that a prudent operator in the circumstances of SP AusNet would require to achieve the capital expenditure objectives.

In particular, in regard to the capital expenditure objectives set out in the NER, the level of project expenditure recommended by PB without project contingency, is in SP AusNet's view:

- insufficient to enable SP AusNet to comply with all applicable regulatory obligations associated with the provision of prescribed transmission services (clause 6A6.7(a)(2)); and
- insufficient to enable SP AusNet to maintain the reliability, safety and security of the transmission system (clause 6A6.7(a)(4)).

SP AusNet therefore considers that the AER must, pursuant to clause 6A6.7(c) accept the inclusion of the contingency allowance for the proposed works ptogram.

Table 4 below sets out the contingency allowance originally proposed and is not changed by this proposal.

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
SP AusNet's original proposal	3.54	4.24	3.57	3.76	5.51	4.19	24.81
AER Draft Decision allowance	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SP AusNet's revised proposal	3.54	4.24	3.57	3.76	5.51	4.19	24.81

Table 4 – Proposed Program Contingency Allowance 2008-14 ($2007/08)

4 References

- SP AusNet, Risk of Capital Replacement Program, Evans & Peck, October 2007