ElectraNet Transmission Network Revised Revenue Proposal

Appendix H Evans & Peck, *Capital Program Estimating Risk Allowance - Response to AER Draft Decision,* January 2013

15 January 2012

David Bentley
Revenue Regulation Manager
ElectraNet
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Dear David,

CAPITAL PROGRAM ESTIMATING RISK ALLOWANCE - RESPONSE TO AER DRAFT DECISION

Further to our ongoing discussions, please find attached Evans & Peck's response to the issues raised by the Australian Energy Regulator in relation to our earlier report on Capital Program Estimating Risk Allowance. If you have any questions please do not hesitate to contact me on 0417800780.

Yours faithfully,

EVANS & PECK PTY LTD

BILL GLYDE
PRINCIPAL

Bachelor of Engineering (Electrical) with Honors 1 and Medal, University of Technology Sydney

Master of Commerce, University of NSW

Graduate – Australian Institute of Company Directors

Bill has over 41 years' experience in electrical distribution, trading, retailing and generation. He has built on his engineering experience to provide a bridge between the technical/operational aspects and the commercial/customer service side of energy supply. He has extensive experience in engineering, pricing, regulation, power purchasing, project development, sales contracting and trading. Key activities at Evans & Peck include:

Government Owned Corporations – Power Station Development, Gas Storage and Transportation Infrastructure Development, Renewable Energy Project Development

Transmission Network Service Providers – Risk Based Capital Submissions

Distribution Network Service Providers – Capital Budgets, Reliability Standards, Revenue Risk analysis.

Industry Regulators – Service Standards, Cost Pass Through Reviews, Compliance Reviews.

Listed Companies – Power Station Concept Studies, Energy Asset Acquisition Commercial Due Diligence

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ElectraNet

Capital Program Estimating Risk Allowance - Response to AER Draft Decision

January 2013

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1 Background

In May 2012, Evans & Peck prepared a report for ElectraNet in support of its Revenue Proposal to the Australian Energy Regulator (AER) covering the period 2013-14 to 2017-18. Evans & Peck concluded:

"that a portfolio wide Cost Estimation Risk Factor of approximately 4.9% is appropriate to Electranet and represents a reasonable reflection of expected costs"[1].

The AER issued its draft determination in relation to Electranet's submission on 30 November 2012. The Draft Decision[2] states:

The AER is not satisfied ElectraNet's cost estimation risk factor is a realistic expectation of the cost inputs. Therefore, the AER for this draft decision has substituted:

- *0 per cent for replacement and refurbishment capex*
- *2.6 per cent for augmentation and connection capex*
- *2.6 per cent all other capex.*

The AER's position is largely founded to three core observations:

i. *Given ElectraNet's focus on continuous improvement, the AER considers Evans & Peck's analysis is flawed by not taking into consideration these new cost estimating systems and processes*

ii. *The AER also considers it inappropriate to apply the same cost estimation risk factor to all capex categories, given more is known about a replacement than a new development. EMCa too considered estimate certainty is greater for replacement and refurbishment capex than for new augmentation and connection capex.*[3] *Replacements or refurbishments occur in environments that are known, so they do not encounter the uncertainty associated with a new project*.

iii. *The AER's final decision for Powerlink accepted a cost estimation risk factor of 3 per cent. EMCa considered ElectraNet's management practices are at least consistent with Powerlink's. On this basis, the AER considers it is unreasonable to accept a cost estimation risk factor above Powerlink's. In addition, the AER's 2008 transmission determination allowed for a 2.6 per cent cost estimation risk factor for the 2008–13 regulatory control period…given the sound systems and processes available to ElectraNet, its cost estimation risk factor should not be above that from the AER's 2008 transmission determination.*[4]

The following analysis addresses each of these issues in turn.

[1] Evans & Peck – Electranet Capital Program Estimating Risk Analysis – May 2012 P2
[2] AER Draft Decision P169.
[3] EMCa, ElectraNet technical review, October 2012, p. 82, paragraph 266.
[4] AER Draft Determination, Page 124

2 New Estimating System Risk

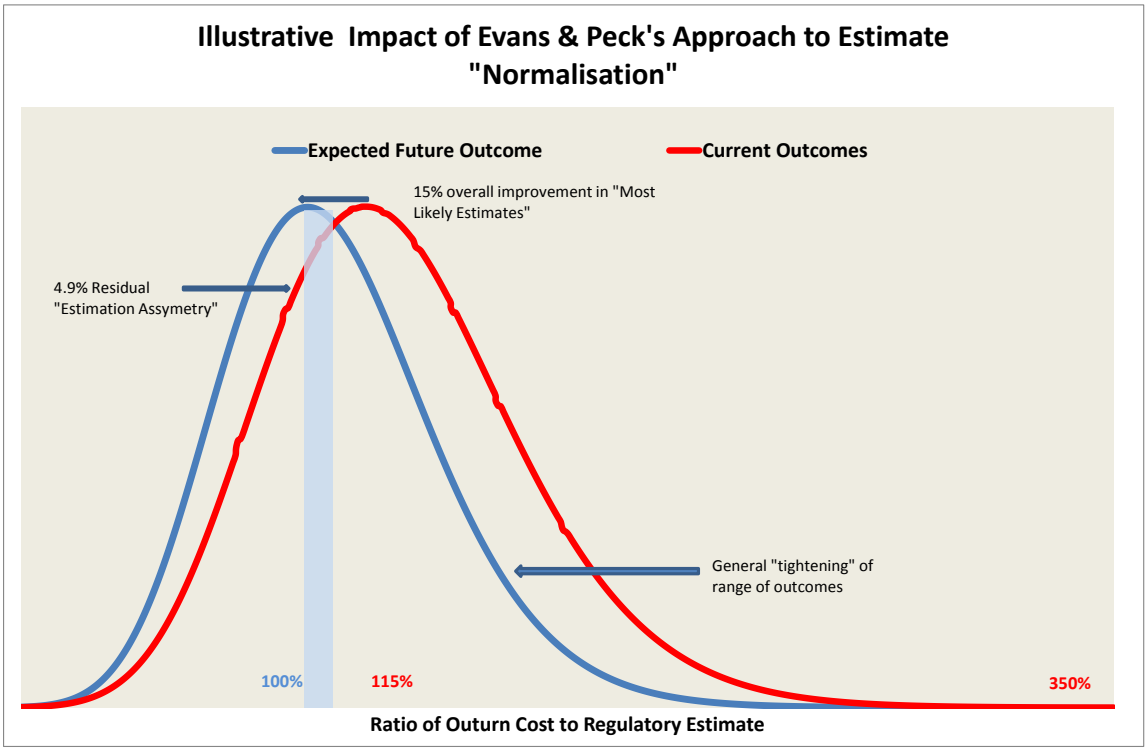
In Evans & Pecks view, observation (i) is factually incorrect. Central to Evans & Peck' analysis is an assumption that there will be a significant improvement in base estimates arising from the new estimating system as detailed in Evans & Peck's initial report[5]:

> In order to reflect the expected change in estimates, Evans & Peck has increased all estimates by 18.9% (the mean shift) and re-examined the shape of the resultant Business Case to Escalated Regulatory Allowance Ratios – that is we have normalised Figure 4.4 to a mean value of 100% (1) by dividing all values by 1.189. The resultant curve is shown in Figure 5.2. The P50 value for a symmetrical curve would also be 1, as shown by the Normal Distribution overlayed on the same graph.

This 18.9% "adjustment" is partially offset by the "*Out-turn Cost to Business Case (Level 2 Estimate) ratio of 0.967"*[6]. The combined effect of these two adjustments is an assumption that ElectraNet will improve its estimating accuracy, on average, by 15.0%. This adjustment has been specifically factored into the analysis undertaken by Evans and Peck to isolate the remaining asymmetric risk.

Figure 2.1 illustrates the expectations arising from the improvements in accuracy introduced through the new estimating system. Not only are the "most likely" estimates assumed to improve by 15%, the overall range of outcomes is also expected to tighten.

Figure 2.1 – Illustrative Impact Estimate Normalisation



[5] Evans & Peck – Electranet Capital Program Estimating risk Allowance – May 2012 P8
[6] Evans & Peck Op Cit P9

Whilst our scope has not extended to a full review of the new ElectraNet's estimating system, it is our understanding that the focus of the new system is to improve the estimating accuracy over the "known" elements of a project scope but not necessarily over the "unknown" elements. All ElectraNet's projects covered by the portfolio risk factor remain "Level A" – i.e. estimates made at the very beginning of each project's life. Notwithstanding that it is an "improved" system, the fact remains that the estimates are still "Level A", representing an early stage of project development. There has not been a sudden leap to "Business Case" estimates. As such the level of risk inherent in all "early" estimates remains.

The fundamental assumption underpinning the theory of asymmetric risk is that the estimating system delivers the "**most likely**" base estimate. "Most likely" estimates are based on a reasonable understanding of what is required to complete a task, but do not include explicit risk allowances to cover "unknowns". Whilst there will be "overs" and "unders" across the portfolio, it is more appropriate to hold allowances to deal with asymmetry towards "overs" at a portfolio level rather than at the project level. This is the purpose of the estimating risk allowance. The assessed residual asymmetry in Electranet's case is 4.9%. A failure to achieve "best practice" "most likely" estimates in the regulatory estimates remains a residual risk to ElectraNet that is not compensated for in Evans & Peck's analysis. In Evans & Peck's view, the AER has inappropriately used Evans & Peck's observation relating to the risks associated with a new estimating system[7] as a basis of an adjustment to the asymmetric risk estimate. To label the analysis "flawed" is factually incorrect and fails to recognise both the underlying adjustment that has been made to reflect the expected improvement in estimates, and the theoretical basis of calculation based on "most likely" regulatory estimates. If such adjustment had not been made, the (inappropriately) recommended estimating risk allowance would have been 15% or more.

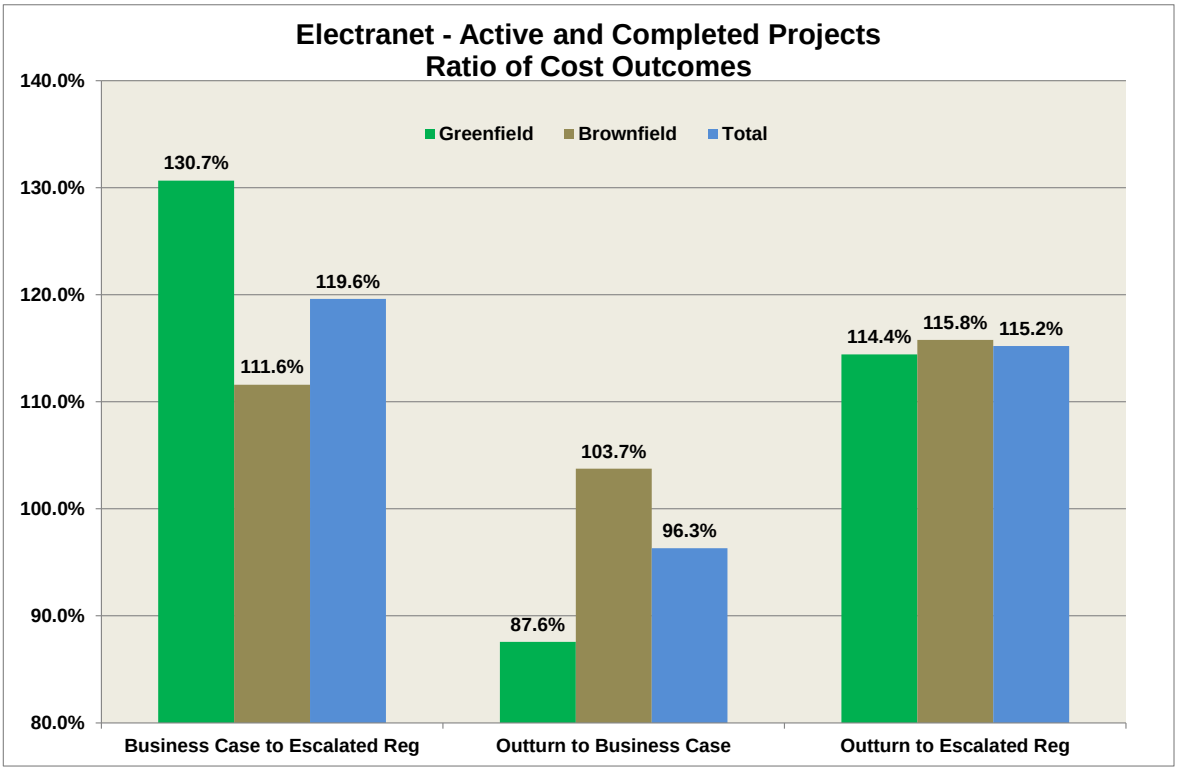
[7] AER Draft Determination, Page 123, footnote 357

3 Greenfield vs. Brownfield

The AER's second observation in relation to lower risks associated with brown field developments is not supported by analysis of ElectraNet's actual performance. There are also some gaps in logic associated with the application of risk factors derived from integrated portfolios of Greenfield and Brownfield projects to a subset of that portfolio.

Figure 3.1 demonstrates the relative performance of ElectraNet's capital projects over the current regulatory period. This figure is based on the same set of projects as used in Evans & Peck's May 2012 report. Inspection of Figure 3.1 shows that whilst the differences are relatively small, Brownfield projects have in fact performed worse than Greenfield projects.

Figure 3.1 – Ratio of Cost Outcomes on Current Electranet Projects[8]



There is an important distinction between where the risks have arisen. In the case of Greenfield projects, the primary increase in cost has occurred between the establishment of the 'Regulatory Estimate'[9] and the determination of the Business Case Estimate (as the project moves from concept to final design), whereas the cost increase in Brownfield projects occurs between Business Case Estimate and Final Delivery. The issues in the electricity sector are very similar to those in the oil and gas sector, eloquently summarised in the following article from "Exploration and Production magazine" entitled "Brown fields need special treatment":

[8] Note – the overall result varies very slightly from that provided in the original analysis. One "Telco" project has been excluded from this set through an inability to qualify as Greenfield or brownfield.
[9] Also known as Level A estimate

"A fundamental differentiator with Brownfield projects, whether they consist of minor repairs and/or modifications or major retrofits and upgrades, is the complex interdependencies that arise when combining existing and new facilities, in physical and process terms, as well as the commissioning start-up and operations aspects. Minimizing disruption to ongoing operations is a critical factor that is not normally an issue on a Greenfield project. More importantly, there are far greater safety considerations to be taken into account both from a design and an offshore implementation perspective in the Brownfield project environment.

These factors radically change the focus required for successful execution of Brownfield projects".[10]

Brownfield electricity projects are no different, driven by the need to work in live yards, uncover unanticipated preconditions and the need to maintain supply. Issues which lead to increases in risk include, but are not limited to:

- Full quantification of the extent of site contamination (e.g. Oil, PCB's).
- Full quantification of the need for remediation of earth grids, underground services and other underground infrastructure, the extent of which is not fully apparent until excavation commences.
- Reduced flexibility in the use of machinery such as cranes and excavators, and the need for increased manual excavation in the vicinity of live equipment.
- Realignment of boundaries / fences with uncertain approval and stakeholder response, often requiring engagement with neighbours with assets right up to the site boundary.
- Temporary bypass of existing transmission infrastructure to maintain security of supply, often entailing multiple stages and subsequent reinstatement of a permanent arrangement.
- Complicated outage planning and project staging associated with maintaining existing assets in service.
- Difficulties in the integration of new technology with old, particularly in relation to secondary systems.
- Compromised designs driven by unacceptable clearances and spacing, and the need to replace more equipment than originally envisaged.
- The discovery of structural limitations / defects in existing buildings, plant and equipment.
- The triggering of new environmental standards such as noise and fire mitigation requirements on legacy equipment.

Based on analysis of the data available and industry experience, the AER conclusion that Brownfield projects carry no risk is simply not supportable. The analysis suggests that whilst risk emerges in the delivery phase rather than the planning phase, the net effect is similar to that for Greenfield projects.

[10] http://www.epmag.com/EP-Magazine/archive/Brown-fields-special-treatment_4309

4 Risk Comparisons

The third deficiency in the AER's approach is that the risk factors under consideration – factors such as 2.6% (original E&P values from the 2007 Powerlink decision), 3% from the most recent Powerlink decision, or 4.9% from Electranet's submission) have all been developed from a portfolio of projects including both Brownfield and Greenfield. It is simply numerically inconsistent to draw on the factors derived from a portfolio of projects, and apply the factor only to part of that portfolio. It also does not automatically follow that one portfolio will have the same asymmetric risk as another. This depends heavily on the types of projects included in the portfolio, and individual portfolio analysis should take precedence over generic "rules of thumb".

Finally, Evans & Peck continues to be concerned that the AER draws on the highly caveated formative estimates prepared by Evans & Peck some 6 years ago as the definitive basis for allocating a 2.6% risk estimation factor. To the best of Evans & Peck's knowledge, every piece of analysis, whether it be an initial workshop output (based on historical data), or more detailed work completed in the intervening six year interval (considering a range of input data from various Australian TNSP's) has pointed to the appropriateness of a cost estimation risk factor greater than 2.6%. The AER's position seems therefore to be both opportunistic in nature and defiant of subsequent analysis.

5 Conclusions

Based on the foregoing analysis, Evans & Peck is of the view:

- That the AER has not fully taken into account the analysis used by Evans & Peck to remove the impact of estimating system improvements from the calculation of the estimating risk factor. We therefore categorically reject the assertion that our analysis is flawed as a consequence

- That an analysis of the facts indicates that there is no material difference in the Out-turn Cost to Regulatory estimates between Brownfield and Greenfield projects. To the contrary, Brownfield projects have incurred higher over runs. There is therefore no basis for removing the estimating risk factor from Brownfield projects.

- That the AER's approach of using estimating risk factors derived during earlier determinations and applying to only part of a portfolio is numerically incorrect. These factors have been derived from a portfolio of projects, and consequently should be applied at the portfolio level, not over a subset of the portfolio.

- No sustainable reasons have been presented by the AER justifying application of a factor materially different to the 4.9% originally recommended by Evans & Peck in its May 2012 report.