



TRANSPOWER

Keeping the energy flowing

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Sol Friedman
Asset and planning Manager
PO Box 31 049
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Dear Sol

Central Park - Wilton Reconductoring Investigation

Thank you for your comments on the consultation paper. We have reviewed these and the attached table contains Transpower's answers to the question or comments received.

Hopefully these address the concerns raised relating to options for further security of CPK.

Should you have any further questions, we would be happy to discuss.

Yours sincerely

Jeff Edhouse
Project Investigation Manager

	Wellington Electricity	Transpower comment
Q1 ARE THERE ANY OTHER ISSUES OR CONSIDERATIONS RELATING TO THE NEED THAT WE SHOULD INCORPORATE INTO THIS PROJECT	<p>Yes</p> <p>In a High Level Request dated 15th May 2015, Wellington Electricity indicated a potential future desire for the transmission supply to Central Park from Wilton to be reconfigured such that one of the Wilton-Central Park 110 kV circuits (ideally WIL-CPK A) is diverted and transitioned to 33 kV cable to supply a future new zone substation in the Wellington CBD area.</p> <p>The operation of the WIL-CPK A line at 33kV and what impact this development will have on re-conductoring of the WIL-CPK B line needs to be considered (especially in terms of conductor rating – see response to Q2 below).</p>	<p>Transpower's High Level Response dated 19 February 2016 indicated that the CPK-WIL-A 33kV option would not be supported. However, the option to convert the "A" line to 33kV operation is not precluded by the reconductoring of the "B" line. Furthermore, the condition and capacity of the "B" line becomes more critical in a number of scenarios for increased security or site development at CPK.</p> <p>The line capacity is discussed in Q2</p>
Q2: IS OUR LONG LIST OF OPTIONS REASONABLE? SHOULD ANY OTHER OPTIONS BE ADDED TO THIS LIST?	<p>No.</p> <p>The options that WE* considers the most aligned to its security of supply requirements and long-term development strategy are the following:</p> <p>Ensure that the capacity of CPK-WIL B line at least matches future transformation capacity at CPK, i.e the 146 MVA cyclic rating of T5 (under the assumption that T3 & T4 are going to eventually be replaced with the same size transformers as T5 as indicated in Transpower's APR);</p> <p>The potential operation of the CPK-WIL A line at 33kV to supply a future new zone substation in the Wellington CBD; 110 kV bus at Central Park</p>	<p>The installed transformer n-1 capacity at CPK is 217/223 MVA¹ (summer/winter).</p> <p>The current "B" line capacity is 235MVA per circuit. The transfer limiting factor is the Chukar conductor section leading into CPK which is not planned to be reconducted for at least another 8-10 years. Recent condition analysis indicates it is still in good order for its age.</p> <p>We are proposing to reductor the balance of both circuits with simplex Sulphur AAAC at 70° C which will provide 238MVA transfer capacity per circuit.</p> <p>A thermal upgrade to 90° C is possible at a later date which would raise the capacity to 276MVA. This higher figure is well above the upper end load projections.</p>
Q3: ARE OUR SHORT LISTING CRITERIA APPROPRIATE?	<p>There are 5 short-listing criteria presented in the report, but 6 explained in the corresponding Appendix D. WE* consider these six are reasonable from a Transpower perspective, but</p>	<p>Noted and we agree that our investment analysis should consider end-consumer costs, not just transmission costs i.e. both transmission and distribution costs. Reconductoring the "B" line at the</p>

¹ The transformers' capacity is limited by the LV cable; with this limit resolved, the n-1 capacity will be 217/228 MVA (summer/winter).

	would like to see some reference to consideration of customer supply security and long term development requirements as they relate to the Distribution network.	planned capacity retains the status quo security. It does not preclude options for future security of supply enhancements.
Q4: DO YOU THINK THAT THE DEMAND ASSUMPTIONS ARE APPROPRIATE FOR THIS PROJECT? IF NOT, WE WOULD WELCOME SPECIFIC INFORMATION ABOUT DIFFERENCES. ARE YOU AWARE OF ANY FUTURE SIGNIFICANT (> 10 MW) CHANGES IN DEMAND AT CENTRAL PARK?	<p>As shown below, WE* has a lower demand forecast than Transpower, because it uses a different forecasting methodology and assumes less growth than Transpower does.</p> <p>Wellington Electricity and Transpower have differing load forecasts due to the individual methodologies adopted. (Abbreviated)</p>	<p>Noted. The figures Transpower uses are continually reviewed based on national and regional indicators of electricity use and technological changes, but are no guarantee of what the future may actually bring.</p> <p>The proposal to install Sulphur conductor was made after consideration of various conductor types, sizes and transfer capability under a range of scenarios. A smaller conductor is only marginally less expensive from a material cost viewpoint, but incurs the same installation costs. As the installation is proportionately significantly greater, the cost difference using a smaller conductor amounts to less than 1% of the overall project budget.</p> <p>The next conductor size down does not meet the upper end of the prudent load projections and would also preclude the configuration referred to in Q1.</p>
Q5 – 7 & Q9		Noted – no follow up required
Q8: IS \$26,000/MWH APPROPRIATE FOR VALUING EXPECTED UNSERVED ENERGY FOR THIS ANALYSIS?	<p>No</p> <p>The original VoLL figure of \$20,000/MWh is a value averaged for the country and across different market sectors. Various studies around the world have come up with much higher VoLL figures for the commercial sector than the other sectors. Given that the majority of Central Park’s load is the commercial centre of Wellington’s CBD, Wellington Electricity is of the opinion that a VoLL of \$26,000/MWh is not sufficient and should be significantly increased to better reflect the criticality of the site.</p>	Noted. In reality, as this is a reconductoring proposal, VoLL did not figure in our analysis as we have not considered options with different reliabilities.