

Attachment C



TO: Matt Fanning
FROM: Cham Herath / Sol Friedman
DATE: 22nd January 2016

TRANSPOWER WIL-CPK B LINE RE-CONDUCTORING SUBMISSION

Transpower has indicated the need to replace the conductor on the CPK-WIL B line due to condition by 2018. A long list consultation and RFI was received in June for Wellington Electricity (WE*) to review and provide input.

Responses to the consultation paper are provided below:

Q1: ARE THERE ANY OTHER ISSUES OR CONSIDERATIONS RELATING TO THE NEED THAT WE SHOULD INCORPORATE INTO THIS PROJECT

Yes

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.

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).

Q2: IS OUR LONG LIST OF OPTIONS REASONABLE? SHOULD ANY OTHER OPTIONS BE ADDED TO THIS LIST?

No.

The options that WE* considers the most aligned to its security of supply requirements and long-term development strategy are the following:

- 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);
- 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

Q3: ARE OUR SHORT LISTING CRITERIA APPROPRIATE?

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 would like to see some reference to consideration of customer supply security and long term development requirements as they relate to the Distribution network.

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?

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.

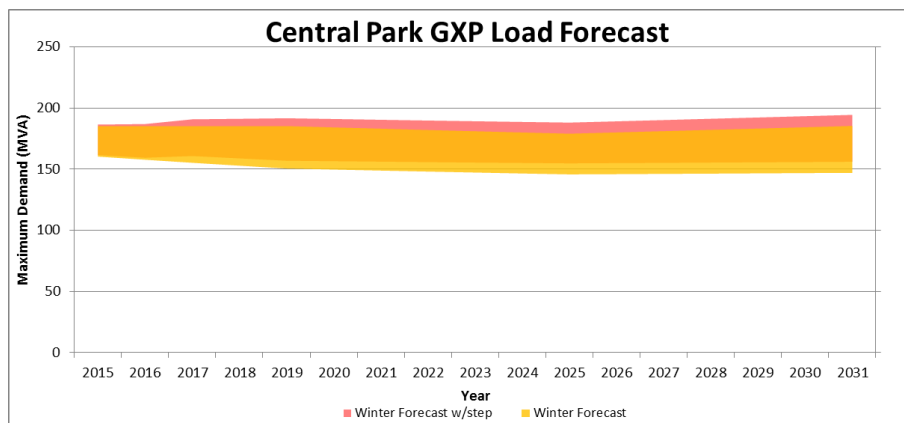
Wellington Electricity and Transpower have differing load forecasts due to the individual methodologies adopted.

Wellington Electricity uses the following load forecasting methodology:

- The forecast approximates potential winter temperature volatility by providing a range of potential forecast values based on determined correlations between historic winter temperatures and peak demand. Confirmed step change loading within the next 5 years is accounted for in the forecast. Unconfirmed step change loading is provided as a separate forecast range on top of the normal forecast (in red);
- A prudent value is calculated from the range of possible load forecasts for a given year as the load forecast for planning purposes. This value is the 60th percentile of the range of possible load forecasts.
- Forecasts are determined from actuals for the most recent year to date. The relatively low level of growth and milder winter temperatures in the Wellington region in the last 2 years has resulted in a flat load forecast for the next five years;
- The load forecast is split into three distinct periods, short-term (0-5 years), medium-term (5-10 years) and long-term (10+ years). The short-term load forecast takes into account any short term growth and demand fluctuations. The medium-term averages out these fluctuations and takes into account the historical growth rates in the preceding 10 year period. Long-term forecasts are a function of the approximated medium-term growth and long term projections of GDP and population growth for the Wellington region.
- Wellington Electricity discloses the 60th percentile load forecast for the next 10 years as part of the annual Asset Management Plan.

The 60th percentile load forecast is sufficient for Wellington Electricity's planning purposes at the subtransmission and distribution level. At the transmission level, WE* considers that Transpower's 90th percentile forecast is more applicable due to the cost and timeframes involved in a network upgrade and the magnitude and value of load at risk.

Wellington Electricity's long term (15 year) winter peak load forecast for Central Park is shown below.



Short term demand growth is anticipated due to a number of developments within the CBD, however the overall short-to-medium term trend is for declining demand. The long term trend is a function of historical trends and optimistic projections of growth provided by Statistics NZ and NZIER.

Wellington Electricity's load forecast is within the lower range of Transpower's forecast. The main point of difference is the rate of growth over the planning period. Wellington Electricity does not foresee significant growth within the next 15 years.

Q5: WHAT IS YOUR EXPECTATION OF THE UPTAKE OF SOLAR POWER IN THE WELLINGTON AREA?

Based on past and current uptake as well as consultant reports, Wellington Electricity has not incorporated any significant uptake of solar power in its 15 year demand forecast.



Q6: DO YOU THINK THAT THE GENERATION SCENARIOS ARE APPROPRIATE FOR THIS PROJECT? IF NOT, WE WOULD WELCOME SPECIFIC INFORMATION REGARDING CHANGES.

Yes.

Wellington Electricity's 15 year load forecast assumes very little uptake in the use of solar PV or electric vehicles, or embedded/distributed generation. WE* does not have current information that would lead to a change of these assumptions.

Q7: IS A 40 YEAR ANALYSIS PERIOD REASONABLE?

Yes.

Wellington Electricity agrees that based on the lifetime of the asset, a 40 year analysis period is reasonable. However the level of uncertainty regarding loads, generation, and the impacts of disruptive technology increases significantly in the 25 year period beyond WE*s load forecast and planning periods of 15 years.

Q8: IS \$26,000/MWH APPROPRIATE FOR VALUING EXPECTED UNSERVED ENERGY FOR THIS ANALYSIS?

No

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.

Q9: IS \$100/MWH APPROPRIATE FOR VALUING TRANSMISSION LOSSES FOR THIS ANALYSIS?

Yes.

The methodology of using the long-run marginal cost of generation to value transmission losses is considered reasonable.