Submission to Electricity Commission on Alternatives to Transpower's proposed Whakamaru-Otahuhu transmission upgrade

From

Contact Energy

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General Comments

Contact would like to take this opportunity to provide the Electricity Commission with information about its proposed Combined Cycle Gas Turbine (CCGT) project called Otahuhu C. In our view, Otahuhu C has a number of advantages in comparison with other generation projects: it is located in Auckland, next to an existing combined cycle generation site, and it already has resource consents. At present, though, the project lacks sufficient certainty in gas supply availability, pricing, and transport for Contact to proceed with the project.

Contact's analysis of the project and associated power system analysis leads us to believe that it should not be considered a transmission alternative per se; that is, it will not help to delay a transmission upgrade into Auckland. It may, however, provide some ability to manage risk to system security in case the transmission upgrade is delayed or estimates of demand growth or system capability prove to be overly optimistic.

Project Overview

The proposed Otahuhu C plant would be a single-shaft CCGT with generation capacity of up to 400 MW. Contact believes that Otahuhu C is an attractive new entrant option, based in part on the efficiency of the proposed plant, its location on an existing combined cycle generation site near Auckland, and its potential speed of development. The capacity factor and the longevity of the plant are also factors: Otahuhu C would be run as a baseload generator and would continue to be economic after the transmission upgrade was completed.

Contact has considered different generation technologies for the site, including an Open Cycle Gas Turbine construction, which could be operated as a pure peaking plant. In our analysis, though, such alternative options are not economic. In the case of the peaking plant, it would become redundant once the transmission upgrade was completed and transmission constraints into Auckland eased. Contact is therefore not pursuing this option.

Location

Otahuhu C would be located in Auckland, next to Otahuhu B, Contact's existing 380 MW CCGT. Once the decision is made to go ahead with the plant, the design is finalised, and the contracts are in place, Otahuhu C could be operational about three years.

A possible site layout is attached. There is sufficient land area between the existing plant and the new Highbrook Drive to install a new CCGT. The new plant would use the existing control room and workshop and possibly other common plant.

In terms of design, only minor work is required to finalise seismic design, fire protection, and grid connection.

Resource Consents

Contact currently holds the resource consents necessary for the construction and operation of the new plant. The air discharge, land use, and earthworks consents are valid until 2007; applications have been made to extend the air discharge and land use lapse dates to 2011. The current cooling water take / discharge consent for Otahuhu B has enough volume to accommodate another CCGT at the site.

Electricity and Gas Connection

Transpower completed grid connection studies for the plant in early 2002.

To supply the required gas quantities to Otahuhu C, the gas supply pipeline from Rotowaro to Otahuhu would have to be upgraded. Significant work was done on the preliminary design and costing of this work by NGC in 2001. Contact understands that NGC has done all necessary planning and lodged a consent application for the work.

Fuel Issues

The biggest obstacle that the Otahuhu C project currently faces is the lack of certainty around the long term availability and pricing of gas fuel supply. Contact is confident that we will eventually be able to contract sufficient gas to supply this plant, either from indigenous fields or from the importation of LNG or CNG. However, without greater certainty than we currently have around the timing of these developments, Contact cannot proceed with this project. It should be noted that at present Contact does not have a secure gas supply for existing generation assets beyond 2011, much less for a new asset.

At this stage, development efforts are focussed primarily on a range of activities designed to provide greater long term gas supply security for Contact's existing generation portfolio and new projects such as Otahuhu C. These efforts include:

- Continuing to evaluate how to support exploration activity in the critical offshore Taranaki area;
- Progressing with acquiring seismic for PEP38493, likely to proceed in December;
- Continuing to progress development of back-stop importation options for natural gas such as LNG and CNG. Having assessed economic viability last year, Contact and our partner Genesis have progressed the LNG work to the site selection phase.

The project also depends on achieving long-term certainty over gas transport. The ability to access gas transmission pipelines, particularly the Maui pipeline, is an important factor in the Otahuhu C project proceeding.

At this stage, Contact is working towards having Otahuhu C to market in the 2009 to 2011 timeframe, although the exact timing of commitments will depend on progress with gas supply strategies as outlined above and conditions in the electricity market.

Benefits to Transmission from Otahuhu C

Contact strongly believes that Otahuhu C can **not** be considered an alternative to a transmission upgrade into Auckland. The crux of the issue is that CCGTs can not be in service 100% of the time; they need to be taken out of service periodically for maintenance. There is also a risk of unplanned outages. We note that SKM, in the paper *Alternatives to Transmission for Supply of Auckland's Growing Electricity Demand*, wrote that the average availability of a base loaded, modern, single shaft CCGT is approximately 93% over its lifetime. In Contact's experience, this figure probably a bit optimistic – especially for a new plant in its first few years of operation. In contrast, the average availability of transmission is nearly 100%. The two are not equivalent.

Compounding the issue of generation asset availability is the issue of fuel supply reliability. Reliability of gas supply (including gas transmission) for potential generation projects would also need to be considered in any comparative evaluation of electricity transmission upgrades versus alternatives.

The tightness of the timetable to construct the Auckland upgrade is another factor. The earliest possible time that the upgrade can be built is 2010. This is roughly when the mean peak demand is forecast to exceed the mean technical capability of the system. However, there are uncertainties regarding demand growth rates, system capability and construction times. A higher than projected demand growth rate, a loss of system capability (e.g. a sustained outage – planned or unplanned – from an existing generator), or a delay in construction could all expose Auckland to the risk of loss of load before the transmission upgrade is completed. The construction of a combined cycle plant such as Otahuhu C can help to mitigate these risks by providing voltage support, reactive support, and generation in the area. It cannot, however, provide a guarantee that it will be able to provide these things at all times.

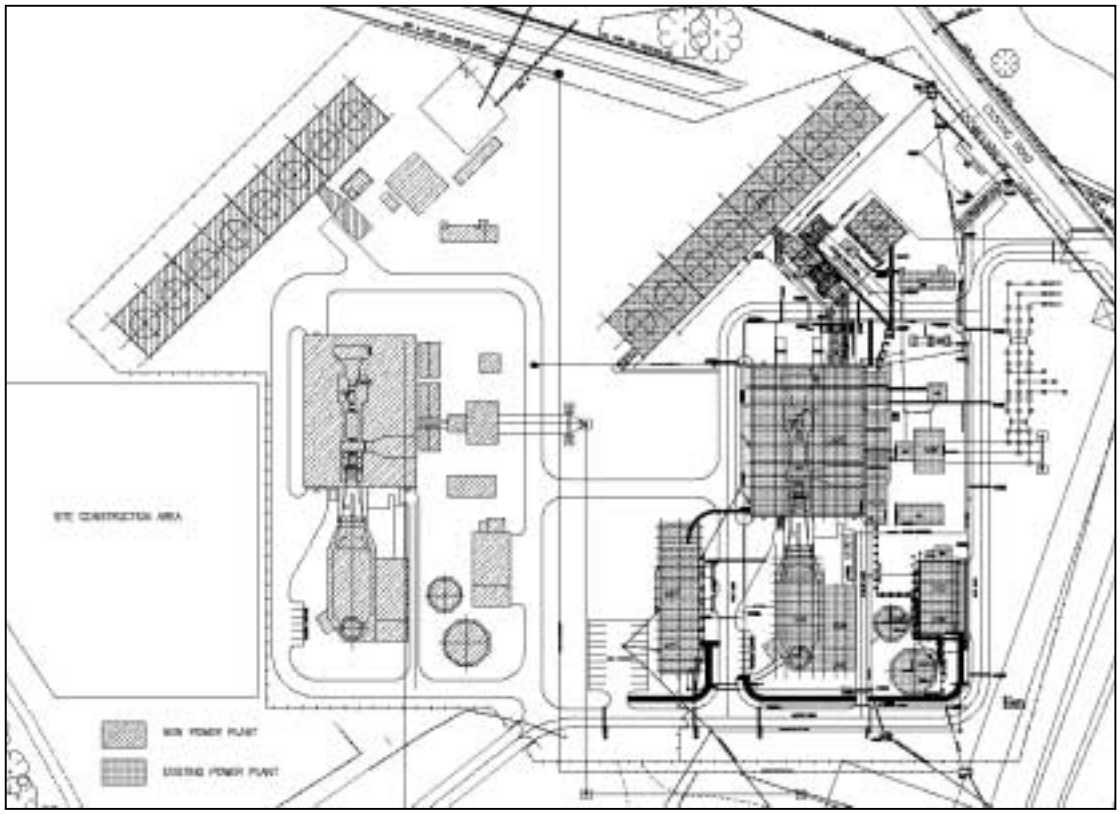
Contact does believe that Otahuhu C could enhance system security. We concur with Transpower, who wrote in the report Security of Supply into Auckland: Assessment of Alternative Solutions, October 2004, that

> System security could be improved by the construction of additional generation plant. However, the reliance on new generating plant to maintain the overall security of the power system needs to be carefully assessed against the risk and impact of generation plant failure or unavailability due to forced or planned outages. The security levels into Auckland are becoming increasingly reliant on the transmission grid and all significant generation in the area being available and operating reliably at times of peak system load. It would be prudent to make some allowance for generation unavailability when assessing system security and the possibility of overlapping or coincident generation plant outages should be considered. (section 5.1.2)

Otahuhu C should therefore be thought of as a possible risk mitigation tool that, when completed, could help to maintain security of the electrical system into Auckland. Contact believes that there is no scope for Otahuhu C to be used to delay the building of the transmission upgrade into Auckland.

Contact would welcome the opportunity to discuss this issue further with the Electricity Commission.

Site layout based on a single–shaft CCGT



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