

## HEARING SUMMARY – WILLIAM ALAN HEAPS – ELECTRICITY SUPPLY INDUSTRY

### Scope

1. My role on the Project has been to provide expert technical advice about electricity industry and market issues that are relevant to Mercury Energy's Southdown power station site and the proposed location of the East West Link.
2. I also participated in the first stage of the facilitated meeting of experts held on Thursday 13<sup>th</sup> July 2017 in Auckland.

### My key conclusions/findings are:

3. The Southdown site is not substantially more attractive than other sites available for electricity generation. There are likely to be other parties that can provide the same services.
4. An option to re-establish power generation at Southdown would not significantly reduce the probability of a national electricity shortage.
5. It is incorrect to state that the lost option value for future generation at Southdown created by the presence of the EWL, is a substantial economic cost. The time to relocate cooling towers is unlikely to have a material impact on the restoration time for gas turbine operation at Southdown that would lead to the claimed options value loss to Mercury.
6. It is difficult to envisage construction of the East West Link on the proposed alignment limiting Mercury's ability to provide a voltage support service from the Southdown site.
7. Locating solar power generation at the Southdown site would not be expected to have a security of electricity supply benefit.
8. The hazards identified in Mercury's evidence can have controls applied that can eliminate or mitigate the probability of a catastrophic event. If this were not the case, Mercury would not be able to undertake these operations adjacent to high pressure gas facilities and on an industrial park.
9. Of the potential future uses of the site, Mercury's evidence has emphasised the risks associated with gas turbine electricity generation plant. Other, in my opinion more likely, options will have reduced risks. For example, if Mercury were to use the generators as synchronous condensers, as it has proposed to Transpower, or for energy storage batteries, the hazard risk at the site would be much lower.

### *Issues outstanding as between myself and other experts:*

10. In my opinion the main areas of disagreement between myself and Mr Flexman and Mr Kieran Murray are as follows.
11. The national strategic significance and uniqueness of the site for thermal electricity generation, solar power, energy storage batteries and voltage support services. My position on this is that the claimed uniqueness and significant national strategic value of the Southdown site have been overstated. I have reached my position because:
  - (a) there are other sites and facilities that could provide these services to the electricity market:
  - (b) the time needed to restore electricity generation operations at Southdown would be too long to assist in periods of national electricity shortages or to avoid blackouts in Auckland; and

- (c) Southdown will have limited value for solar power generation due to its location and the availability of land.
12. I disagree with Mr Kieran Murray's statement that there are a "range of scenarios, albeit with low probability, where being able to re-establish significant, reliable generation at Southdown in 9 months or less would significantly reduce the probability of a national electricity shortage"<sup>1</sup>.
13. I have considered a range of credible electricity security events, such as low hydro lake levels and failure of critical components of the transmission system and concluded that, given the most optimistic time needed to reinstate electricity generation operations following a trigger event, Southdown would not be available within the time needed to significantly reduce the probability of a national or regional electricity shortage. In addition, some participants may be better placed to respond to an impending electricity supply shortage. For example, Genesis Energy has a third 250MW Rankine generation unit in storage at its Huntly power station site. So, there would still be significant uncertainty as to whether Mercury would re-establish power generation at Southdown.
14. I do not agree that examples presented by Mr Murray in his evidence support his view that history shows us scenarios in which having the Southdown site available to recommence generation in 3 to 4 months would reduce the risk of blackouts to a greater extent than recommencing in 7 to 8 months<sup>2</sup>.
15. In relation to the examples presented by Mr Murray:<sup>3</sup>
- (a) The 1998 Auckland CBD cable outage is not an example. The Southdown power station was operational at the time, having been commissioned in 1996, yet could not assist in relieving the situation.
  - (b) The Otahuhu substation fault is not an example. The Southdown power station was generating at the time, but was 'tripped' off (disconnected from) the national grid by the fault at Otahuhu.
  - (c) Low hydro lake levels are not examples, because they have not resulted in blackouts.
16. My experience of power blackouts is that they occur with extremely little, or no notice. For a power station to be of assistance at these times it would need to be already operational and able to respond immediately.
17. Whilst I accept Mr Murray's point that any delay in reinstating electricity generation due to the location of the highway would result in an economic cost, I do not agree that this would be a substantial economic cost to New Zealand.
18. It is difficult to argue that a 4-month delay would impose a potentially significant cost, as it would relate only to the loss of profit to Mercury on the electricity that would otherwise have been generated. Also, it is difficult to accept that the relocation of cooling towers would add an additional 4 months to the restoration of electricity generation and therefore there may be little or no potential loss of profit.

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<sup>1</sup> Statement of Evidence of Kieran Murray for Mercury NZ Limited, 10 May 2017, para 59.

<sup>2</sup> Statement of Evidence of Kieran Murray for Mercury NZ Limited, 10 May 2017, para 87.

<sup>3</sup> Statement of Evidence of Kieran Murray for Mercury NZ Limited, 10 May 2017, para 87.

19. Whilst I agree with Mr Flexman that the hazards identified in his evidence must be considered, in my opinion there are controls that can be applied to reduce the probability of an event and/or reduce the potential consequences for EWL users. Given that Mercury has now identified these hazards, I consider that it would need to apply controls even if the EWL did not proceed.

### **Conclusion**

20. In my opinion; the claimed uniqueness and significant national strategic value of the Southdown site have been overstated. The claimed ability for Southdown generation to be reinstated in response to electricity security situations or blackouts is incorrect, as these types of responses require a much more rapid response than the minimum 3 - 4 months reinstatement of Southdown generation.