Before a Board of Inquiry
Transmission Gully
Notices of Requirement and Consents

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under: the Resource Management Act 1991

in the matter of: Notices of requirement for designations and resource consent applications by the NZ Transport Agency, Porirua City Council and Transpower New Zealand Limited for the Transmission Gully Proposal

between: **NZ Transport Agency**
Requiring Authority and Applicant

and: **Porirua City Council**
Local Authority and Applicant

and: **Transpower New Zealand Limited**
Applicant

Supplementary statement of evidence of Dr Dalice Audrey Sim ((Probability of coincident rainfall and wind event during construction) for the NZ Transport Agency and Porirua City Council.

Dated: 23 February 2012

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CHAPMAN TRIPP

SUPPLEMENTARY STATEMENT OF EVIDENCE OF DR DALICE AUDREY SIM FOR THE NZ TRANSPORT AGENCY AND PORIRUA CITY COUNCIL

INTRODUCTION

1 My full name is Dalice Audrey Sim.

2 I have the qualifications and experience set out at paragraphs 2 and 3 of my statement of evidence in chief, dated 14 November 2011 (*EIC*).

3 I repeat the confirmation given in my EIC that I have read, and agree to comply with, the Code of Conduct for Expert Witnesses (Consolidated Practice Note 2011).

QUESTION

4 I was asked at the Transmission Gully Hearing, Friday February 17th, to use Table 15.35 in Technical Report 15 to calculate two probabilities:

4.1 The probability of an ARI 10 year or greater rainfall event over 6 years, and

4.2 The probability of an ARI 2 year or greater rainfall event over 6 years.

5 After consultations with Ms Michelle Malcolm of SKM and Craig Nicholson of NZTA, we are in agreement that, in fact, the calculated probabilities shown in Table 15.35 are exactly the probabilities that counsel was requesting, namely

5.1 95% is the probability that at least one rain event with rainfall at the ARI 2 year level or greater will occur over a six year period, and

5.2 45% is the probability that at least one rain event with rainfall at the ARI 10 year level or greater will occur over a six year period.

5.3 That is to say, the probabilities in Table 15.35 refer to rainfall over a threshold (defined by ARI 2 year, 10 year, etc) and so, an event classified as meeting a higher ARI threshold would also meet a lower ARI threshold. (i.e. An event that meets the ARI 100 year threshold also meets the ARI 1 year, 2 year, 5 year, 10 year, 20 year and 50 year thresholds) so is included in the stated probability for that lower ARI threshold.

5.4 In order to further clarify the interpretation of the probabilities stated in Table 15.35, I confirm that the 95% and 45% probabilities stated in paragraphs 5.1 and 5.2 above can be correctly interpreted to also mean that there is a 50% probability (i.e. 95% - 45%) that at least one rain event with rainfall at the ARI 2 year level or greater, but no rain events with rainfall at the ARI 10 year level or greater will occur over a six year period. Similar interpretations can also be correctly made by comparing any of the other probability values within each column of Table 15.35.

5.5 The assumption of Table 15.35 and therefore of this supplementary evidence is that the Poisson distribution adequately describes the probability of at least one event occurring, using the equation in Technical Report 15, page 114.

Dalice A. Sim

Dr Dalice Audrey Sim
23 February 2012