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

---

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

Statement of rebuttal evidence of Craig Murray Martell (Hydrology) for the NZ Transport Agency and Porirua City Council**.**

Dated: 18 January 2012

REFERENCE: John Hassan (john.hassan@chapmantripp.com)
Nicky McIndoe (nicky.mcindoe@chapmantripp.com)

Chapman Tripp
T: +64 4 499 5999
F: +64 4 472 7111

10 Customhouse Quay
PO Box 993, Wellington 6140
New Zealand

www.chapmantripp.com
Auckland, Wellington,
Christchurch

CHAPMAN TRIPP

STATEMENT OF REBUTTAL EVIDENCE OF CRAIG MURRAY MARTELL FOR THE NEW ZEALAND TRANSPORT AGENCY AND PORIRUA CITY COUNCIL.

INTRODUCTION

1 My full name is Craig Murray Martell.

2 I have the qualifications and experience set out at paragraphs 2-4 of my statement of evidence in chief (*EIC*), dated 17 November 2011.

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).

4 In this statement of rebuttal evidence, I respond to the evidence of:

4.1 Paul Everard Bruce, on behalf of the Rational Transport Society;

4.2 Tracey Jean Grant, on behalf of Greater Wellington Regional Council.

5 The fact that this rebuttal statement does not respond to every matter raised in the evidence of submitter witnesses within my area of expertise should not be taken as acceptance of the matters raised. Rather, I rely on my EIC and this rebuttal statement to set out my opinion on what I consider to be the key hydrological matters for this hearing.

6 For the purposes of this evidence, I will refer to the NZ Transport Agency (*the NZTA*) Project[1] and the Porirua City Council (*PCC*) Project[2] collectively as the "Transmission Gully Project" (and hereafter, *the TGP* or *the Project*).

SUMMARY OF EVIDENCE

7 I have considered the evidence of David Yorke, Paul Bruce and Tracy Grant, which comment on hydrological matters. None of the matters raised in their evidence has caused me to alter my conclusions in my EIC.

8 However, I have provided in this statement further detail in response to concerns raised in Mr Bruce's evidence.

---

[1] The 'NZTA Project' refers to the construction, operation and maintenance of the Main Alignment and the Kenepuru Link Road by the NZTA.

[2] The 'PCC Project' refers to the construction, operation and maintenance of the Porirua Link Roads (being the Whitby Link Road and the Waitangirua Link Road) by PCC.

EVIDENCE OF SUBMITTERS

Evidence of Paul Everard Bruce

9 In paragraph 23 of his evidence, Mr Bruce states that "*the effects of Q50 and Q100 [weather] events should be modelled if they might cause significant sediment movement*". This matter is also discussed in paragraph 6.

10 The hydrology was completed for the 50 year event but not used in the final assessment, as that assessment only included the analysis that the Project ecologists signalled was most relevant. The Project ecologists have reconsidered this information, and I understand **Dr De Luca** will discuss the impacts of the 50 year event in her rebuttal evidence. The 100 year event was not considered as, given the length of the programme, the 50 year event was considered to be an adequate representation of an unlikely event.

11 Mr Bruce states in paragraph 24 that he believes that the use of historic data is inappropriate for an assessment of the risk of sedimentation through the construction phase of the Project, due to its inadequacy, topographical effects, and climate change.

12 It is my view that the historic data is appropriate:

12.1 There is a good quality of historic rainfall data available for the development of the regionalised rainfall model used in the hydrological assessment of the Project. This includes a number of raingauge sites with over 50 years of data;

12.2 There is clear guidance from the Ministry for the Environment[3] for hydrologists with regard to combining historic data with increases in rainfall depth and intensity to account for climate change. Climate change has been incorporated into the hydrological assessment for the Project;

13 Mr Bruce indicates in paragraph 14 of his evidence that he believes more account should be taken of topography in the rainfall isohyets developed for the Project.

14 In response, I would note that:

14.1 The approach taken to the development of isohyets is similar in technique and level of topographic representation as has been taken for the Auckland Council in its standard TP108, and by NIWA with its own rainfall estimating tool HIRDS;

[3] Ministry for the Environment (2008). *Preparing for Climate Change – A guide for Local Government in New Zealand*.

14.2 In my experience it would not be standard practice for a hydrologist to extrapolate topographic effects any further given the data available.

15 I do not agree that the Isopleths in Technical Report 14 would underestimate rainfall in the hill country sections of the Project.

16 Mr Bruce states in paragraph 20 that he feels climate change effects on the patterns and sizes of rainfall events should have been taken into account in the assessment of sediment movement.

17 In response, I note that:

17.1 Climate change has been considered in all parts of the Project assessment where this has been considered to be appropriate, including in the assessment of sediment movement[4];

17.2 **Ms Malcolm's** EIC[5] addresses the relevance of climate change to erosion and sediment control during construction. She recommends the conditions are amended to require relevant climate change guidance be applied to sediment pond design at the time of construction. This will ensure any updated or new guidance will be followed.

Evidence of Tracey Grant

18 Paragraph 25 of Ms Grant's evidence states that it is unclear the level of inundation that is predicted to occur from the Duck Creek Culvert. This matter is addressed in paragraph 116.1 of my EIC where I conclude that the culvert "*does not represent any interference of peak flows in the stream during events equal to or less than a one in ten year AEP and only partial interference, for a short period of time, in rare events of a greater magnitude than this*". Further information is also provided in a memorandum from me to Peter Ward of the NZTA dated 23 November 2011 which I understand was provided to the Board in response to a request for further information.[6]

19 Ms Grant's evidence also contains a number of references to concerns over the impacts of the Project on groundwater. These concerns appear to fall into two categories;

19.1 Groundwater takes for water use on site;[7] and

---

4 Sinclair Knight Merz, 2011. *Transmission Gully Project: Assessment of Stormwater Effects, Technical Report 14.* Section 4.1 and Appendix B.

5 Paragraph 125.

6 The further information response was dated 24 November 2011.

7 Paragraphs 26 and 36.

19.2 The impact of major earthworks on groundwater.[8]

20 Groundwater takes from the site are not necessary for providing water supply for construction purposes. There are no consents sought for any water takes for construction supply, and it is assumed that if a contractor wanted to use either ground or surface water, that they would seek the appropriate consents at the time. As **Ms Rickard** has stated in her rebuttal evidence, no consents have been sought in relation to groundwater takes for operation either, on the basis of the information and design currently available.

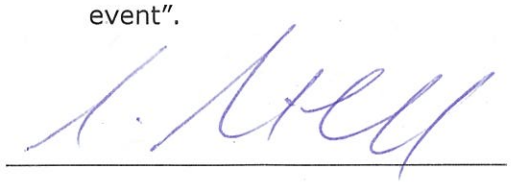
21 The effects of major earthworks on groundwater are covered in the rebuttal evidence of **Pathmanathan Brabhaharan.**

22 In paragraph 83 of Tracey Grant's evidence she suggests an alternate definition of a heavy rainfall event, to be referenced in the resource consent conditions for the Project.

23 I do not entirely agree with the suggested change. In my view 20mm/day is inappropriate for a condition[9] designed to provide a trigger for stabilisation of the site in a situation where a forecast rainfall event is greater than that which can be managed by the on-site sediment and erosion control.

24 The conditions require the sediment and erosion control to manage events of up to a 10 year return period on average across the site. The heavy rainfall event condition is designed for rainfall events which are higher than this. I recommend that if daily rainfall depth is to be used as a trigger, 40mm/day would be appropriate. This would represent the site being closed by this condition in the order of 4-10 times a year, depending on the catchment.

25 In addition, to avoid confusion, I suggest the defined words be "stabilisation trigger rainfall" as opposed to "heavy rainfall event" (and the phrases used in the conditions be altered accordingly). This would more accurately reflect the purpose of the rainfall trigger, and avoid any inconsistency with the Greater Wellington Regional Council's usual understanding of the phrase "heavy rainfall event".



Craig Murray Martell
18 January 2012

8 Paragraph 70.2.

9 For example, Condition E5(l)