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*In the matter of:*                   Clauses 6 and 8 of Schedule 1 – Resource  
Management Act 1991 – Submissions on publicly  
notified plan change and variation – Proposed Plan  
Change 1 and Variation 1 to Waikato Regional Plan –  
Waikato and Waipa River Catchments

*And:*                               **Wairakei Pastoral Ltd**

Submitter

*And:*                               **Waikato Regional Council**

Local Authority

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**REBUTTAL EVIDENCE OF STUART JOHN FORD**

**Block 1 Hearing Topics**

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*Dated:* 26 February 2019

## REBUTTAL EVIDENCE OF STUART JOHN FORD

### Block 1 Hearing Topics

#### SUMMARY

- 1 The rebuttal in relation to economic evidence focuses primarily on the economic model or scenario modelling outputs whereby generally, the expert economic witnesses adopt two positions. Some witnesses consider that the scenario modelling that underpins PC1 and Var1 to Waikato Regional Plan is fit for purpose, while other witnesses take a different view and consider that the modelling is not fit for purpose.
- 2 I agree with **Mr Denne** and **Dr Chrystal** where they consider that the modelling is not fit for purpose for the following general reasons:
  - 2.1 If the results were presented in an even format across the x axis the interpretation of the results would result in different conclusions;
  - 2.2 Land use within the model was constrained whereas if it was not constrained then a much lower cost could have eventuated; and
  - 2.3 The discharge values used in the modelling are flawed along with the land use information that the modelling was based on.
- 3 I agree with **Dr Doole** that the structure of the model is appropriate for this type of analysis and that the application of it aligns with best practice, but I believe that the relatively low degree of confidence that we can have in the data used to populate the model means that in practice there will be a low level of confidence in the applicability of the model results.
- 4 I do not agree with **Mr Newman** where he states that he concurs with the general statements from the Officers who “consider the science and economic analysis and modeling to be both comprehensive and adequate to enable the RMA requirements in S32 to be fulfilled” because of the inadequate analysis in relation to the use of the HRWO economic modelling carried out in the Section 32 Evaluation Report.

## REBUTTAL

- 1 My name is **Stuart John Ford**. I have the qualifications and experience recorded in my statement of evidence filed in relation to the Block 1 Hearing Topics.
- 2 My rebuttal evidence has been prepared in accordance with the Code of Conduct for expert witnesses as set out in Section 7 of the Environment Court of New Zealand Practice Note 2014.
- 3 Relevant to my expertise, I wish to rebut the evidence of the following expert witnesses:

Name	Submitter
Mr Denne	Auckland / Waikato Fish and Game Council ID 74085
Dr Chrystal	Beef + Lamb New Zealand Ltd ID 73369
Dr Doole  Mr Newman	DairyNZ ID 74050

- 4 The rebuttal in relation to economic evidence focuses primarily on the economic model or scenario modelling outputs outlined in Part C.2.2.11 of the Section 32 Evaluation Report.
- 5 Generally, the expert economic witnesses adopt two positions. Some witnesses consider that the scenario modelling that underpins the Proposed Plan Change 1 (**PC1**) and Variation 1 (**Var1**) to Waikato Regional Plan is fit for purpose, while other witnesses take a different view and consider that the modelling is not fit for purpose.
- 6 For example, Mr Denne and Dr Chrystal consider that the modelling is not fit for purpose. Their reasons for arriving at this conclusion are:
  - 6.1 **Mr Denne** at his paras 4.3 to 4.9 discusses the fact that if the results were presented in an even format across the x-axis the interpretation of the results would lead to different conclusions, and the fact that land use within the model was constrained whereas if it was not constrained then a much lower cost could have eventuated.

- 6.2 **Dr Chrystal** presents a considerable amount of evidence (paras 147 to 205) as to why the discharge values used in the modelling are flawed along with the land use information that the modelling was based on, leading to her conclusion that "... the model is unreliable at best and could significantly misrepresent the relationship between current land uses and water quality ..." (para 21).
- 7 I agree with these conclusions from both experts. I addressed the scenario modelling in my evidence for Wairakei Pastoral Limited (**WPL**), and my reasons for concluding that it is not fit for purpose are set out in paras 54 to 86. In reaching this conclusion, I do however consider that the objectives in PC1 (as amended by Mr Mckay, the planning witness for WPL) are suitable for achieving sustainable management, but consider that compliance costs have been exaggerated by the way in which the scenario modelling was presented, and that this has resulted in policies, methods, and rules being included in PC1 that are unlikely to be efficient or effective. I will explore this latter point further in my evidence for the Block 2 Hearing Topics.
- 8 **Dr Doole** sets out the reasons why he considers the modelling to be fit for purpose in his evidence (paras 7, 8, 15, the second number 15 and the second number 17). His reasons for reaching this conclusion are based around his interpretation that the model is structured appropriately to carry out this type of analysis.
- 8.1 I agree that the structure of the model is appropriate for this type of analysis and that the application of it aligns with best practice. However I believe that the relatively low degree of confidence that we can have in the data used to populate the model (especially in relation to representing a long term average and to the metrics which it used in terms of N leaching data) mean that in practice there will be a low level of confidence in the applicability of the results.
- 8.2 In my review of the data used in the HRWO model (paras 59 to 66 of my evidence) I found that because of the uncertainty as to the accuracy of the data used, there is therefore considerable uncertainty as to the accuracy and reliability of the results generated.
- 9 **Mr Newman** says in his para 8.2 of his evidence that he concurs with the general statements from the Officers who "consider the science and economic analysis and modeling to be both comprehensive and adequate to enable the RMA requirements in S32 to be fulfilled" but:
- 9.1 Nowhere in his evidence does he explain his reasoning for coming to that conclusion; and

- 9.2 It is difficult to reconcile this conclusion given the inadequate analysis in relation to the use of the HRWO economic modelling carried out in the Section 32 Evaluation Report (as pointed out in my evidence, paras 18 to 23).

**Stuart John Ford**

*Agricultural and Resource Economist*

26 February 2019