

BEFORE THE PALMERSTON NORTH CITY COUNCIL (PNCC), THE MANAWATU DISTRICT COUNCIL (MDC) AND THE TARARUA DISTRICT COUNCIL (TDC)

**IN THE MATTER OF
AND**

The Resource Management Act 1991

IN THE MATTER OF

Notices of requirement for designations
under section 168 of the Act, in relation to
**Te Ahu a Turanga; Manawatū Tararua
Highway Project**

BY

New Zealand Transport Agency to the
Palmerston North City Council, Manawatu
District Council and Tararua District Council

**Hearing Statement by Greg Sneath on behalf of
Fertiliser Association of New Zealand**

Submitter Number: 361

Submitter: FERTILISER ASSOCIATION OF NEW ZEALAND

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Hearing Date: 3 April 2019

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Introduction and background considerations

- 1 The Fertiliser Association of New Zealand ('FANZ' or 'the Association'), is a trade organisation representing the New Zealand manufacturers of superphosphate fertiliser. Member companies – Ballance Agri-Nutrients Ltd and Ravensdown Fertiliser Co-operative Ltd are farmer co-operatives with some 45,000 farmer shareholders. Between them these two companies supply over 98% of all fertiliser used in New Zealand.
- 2 Our members have invested significantly in systems and capability to reliably estimate and document nutrient cycling on farms, with the purpose of providing sound advice and recommendations for nutrient management to support viable economic production and environmental responsibility.
- 3 Through the Association, funding is provided for common industry good research and information sharing to promote responsible nutrient management and productive agriculture.
- 4 The Fertiliser Association takes a particular interest in supporting the sustainable management of natural and physical resources. Our focus is to enable productive and sustainable agriculture, recognising that primary industry provides more than 50 % of New Zealand's export income and remains a significant base for New Zealand's economy and our standards of living.
- 5 The prominent role that agriculture has in New Zealand's economy is unique amongst OECD countries. This is reflected in the leading role New Zealand plays in many areas of pastoral research, not least of which include investigations into climate change mitigations associated with pastoral industry and also contaminants from phosphate fertilisers.
- 6 Specifically, in relation to the Ballantrae long term fertiliser and sheep grazing trail site, the Fertiliser Association has no ownership, management or control over the experiment. It was established by central government and Department of Scientific and Industrial Research (DSIR) for the benefit of New Zealand over the long-term. With the formation of Crown Research Institutes, the responsibility and management of the site was vested with AgResearch. The association has invested in research and commissioned work which uses the long-term fertiliser site, most recently being pasture assessments, reported in 2016, but also soil fertility and contaminant analysis, 2014.

Supporting and maintaining the research facilities and resources is expensive and difficult. There are many contrasting demands on limited resources and funds. The use and application of a long-term research facility does not require regular examination and assessment on a

biannual, annual or biennial basis to deliver its value to agriculture. Indeed, some of the very critical information, by the very nature of long-term impacts cannot be detected in less than decadal timeframes.

Why are we particularly interested in this site?

- 7 As part of its focus on nutrient cycling and management, the Association considers the long-term impact of farm management on production and soil health. Productivity and pasture responses to fertiliser are clear research aims, however, we are also interested in the impact of the different grazed farm systems on soil properties such as carbon and soil fauna and flora, and on the accumulation of contaminants. Phosphate rock which is used to manufacture phosphate fertiliser contains trace levels of natural elements which are considered as contaminants. Application of phosphate fertiliser over many decades can lead to a very gradual accumulation of these elements in the topsoil.
- 8 To this end, the staff of the Association, and its member companies participate in the Cadmium Management Group, with the aim to manage soil cadmium accumulation in farm systems to ensure they remain at acceptable levels over the next 100 to 300 years.
- 9 This Cadmium Management Group comprises central government (MfE, MPI), regional councils and primary industry representative groups. Crown research institutes are also consulted and engaged in the body of work addressing these emerging long-term issues to ensure that contaminants, such as cadmium, will not impact on soil or animal health or the risk of exceeding food standards over the long-term.
- 10 The time-frames involved in research and management of these contaminants are very long, as soil levels are measured in parts per million and entail incremental changes over decades. This has a considerable bearing on the nature and use of research sites for these purposes.

Rarity of long-term sites

- 11 Long-term farm system trials are a rare and extremely valuable resource to address incremental change over time. The most famous of which is at Rothamstead in the UK, established in 1834, having just celebrated 175 years of continuous operation.
- 12 As identified by Dr Roberts in his expert evidence (Paragraphs 14 and 17) there are very few long-term pastoral trial sites globally, and no others well representing New Zealand hill country conditions. The grazed farm system farmlets at Ballantrae are an invaluable and irreplaceable resource for understanding and addressing these matters in grazed systems over the long term.

Importance of the Long- term fertiliser and grazing trial at Ballantrae

- 13 Widespread application of phosphate fertiliser for pastoral hill country was enabled with the onset of aerial applications. It was not until post WWII that aerial application was facilitated by wider availability of aircraft and pilots.
- 14 It is very important to recognise the importance of these time frames when considering the value, importance and significance of the long -term fertiliser and sheep grazing trial site at Ballantrae. That is, now with at the most 70 years of history of phosphate applications in New Zealand, this site acts as an archive of farm practice enabling to us to examine the long-term impacts of management actions and build understanding of emerging issues without a myriad of other confounding factors.
- 15 At Ballantrae, as far as I know, there was no phosphate applied prior to establishment of these farmlets in 1972. With continuously grazed livestock since this time the treatments provide the last and only resource available to examine and understand the implications of long-term farm system effects in hill country. The history and background treatments are documented and consistently managed. This provides for valid scientific comparisons of grazed pasture and effects are not confounded by unknown factors and unknown history.
- 16 This site cannot be replaced, and the comparison it provides of continuous application of phosphate fertiliser under grazed hill country over 44 years cannot be reproduced to answer the emerging issues we are now facing.
- 17 The recent focus on issues of greenhouse gas and climate change, soil carbon effects, soil function and health, contaminants effects on livestock and food products were not considered when the grazing trial was established, but these emerging issues mean the site becomes more valuable each passing year.
- 18 The long-term fertiliser and grazing trial is not simply another 30 ha of grazed farmland, it is a unique research facility which enables and provides for our understanding, protection and development of grazed hill country production now and into the future decades and centuries. It is the last remaining facility of its kind.
- 19 Establishing a four-lane highway through the long term-fertiliser and grazing trial site will introduce the immediate effects from the loss of established monitoring sites, reduced land area, loss of some aspect and slope components and reduced stock carrying capacity. The less obvious but equally significant impacts are the effects introduced over the decades to come, from additional vehicle emissions and contaminants close to the road, and through impacts on livestock behaviour.

Options available and questions remaining

- 20 In the first instance, it is universally recognised and understood, that the Manawatu-Tararua Highway is essential and must be built as soon as is practical. It is clear that urgency in delivering an alternative highway is a very high priority.
- 21 In my view, the question that should have been asked on identifying the Ballantrae Hill Country Research Station's long-term fertiliser and grazing trial as a site of national and international significance, should have been, "Is New Zealand's best interest served by continuing with the road through this site, or by seeking an alternative route?" Regrettably the question that appears to have been asked was, "What conditions and mitigations can be implemented during construction and beyond?" (Mr Dalzell's Hearing Evidence, paragraphs 67-69).
- 22 It has been made clear by NZTA that there is no opportunity to revert to alternative options nor is there any opportunity to adopt significant variation of the existing proposal. There remains a very limited opportunity to adjust the placement of the road and construction area by a matter of a few meters (perhaps tens of meters at the most).
- 23 Within this context, there is uniform agreement by all expert witnesses that operation of the research trial site, as four grazed farmlets, can no longer continue and be meaningful, but there is opportunity for more constrained component work, and small plot work. (Pages 8 & 9 Joint Expert Witness Statement on Effects on Ballantrae Research Site)
- 24 And yet, I believe that if the significance and importance of the long-term fertiliser and grazing trial site to New Zealand pastoral industry had been more thoroughly investigated and understood from the outset, it is very likely that at the alternative options would have been rated much more highly. The current prospect of the loss of Ballantrae Research farmlet trials, as a resource to support the hill country pastoral industry into the future, may have been averted.
- 25 I have no doubt that in decades to come those addressing the long-term issues facing pastoral farming in hill country will cast their eyes to the north and south of the existing trial site, and wonder what wisdom it was that required the Manawatu-Tararua Highway to run directly through the last remaining long-term fertiliser and grazing trial-site for hill country. The impacts of the decision cannot be reversed.
- 26 In my view, the question which we now face is, "Can the use of the remaining portions of the site be sufficiently beneficial now and over the future decades to avoid the time, cost and expense of reverting to alternative options which will fully protect this unique research site?"

- 27 A subsidiary question is, how can the mistakes in process which have been demonstrated here be prevented from happening again, given the significance of the impact on this research facility?

Evidence considered in drafting this submission

- 28 In preparing this Hearing Statement, I have considered the following written Hearing evidence as they pertain to the Ballantrae Hill Country Research Station, and specifically the long- term fertiliser and grazing trial site:

Section 42 A Officer's reports on:

Construction and Earthworks	Freshwater
Recreation	Social impact
Traffic and transport	

Expert Evidence Statements:

Mr Dalzell (<i>Project Manager</i>)	Ms McLeod (<i>Planning Conditions</i>)
Mr Wickman (<i>Principal Transport Planner</i>)	Mr Whaley (<i>Technical Director – Civil Infrastructure</i>)
Dr Forbes (<i>Principle Ecologist – Forbes Ecology</i>)	Ms Downs (<i>Portfolio Manager System Design</i>)
Ms Linzey (<i>Senior Technical Director in Planning at Beca Group Limited</i>)	
Joint Expert Witness Statement (<i>Effects on AgResearch Ballantrae Site</i>)	
Mr Jeff Morton (<i>including commentary from Dr Alan Gillingham</i>)	
Dr Dave Horne	Dr Cory Matthews
Dr Antony Roberts	Dr Alec Mackay
Addendum to Statement of Evidence by Mr Morton, (<i>26th March 2019</i>)	
Addendum to Statement of Evidence of Ms McLeod (<i>26th March 2019</i>)	
Updated proposed designations and conditions (<i>25th March 2019</i>)	



Photo 1 (cropped) – Manawatū Gorge and Environs by David Lupton

Summary of Key Points

- 29 The Manawatu-Tarura Highway replacement to the Manawatu Gorge Road has been advanced with great urgency and *“an innovative approach to RMA approvals has also been followed”*.
- 30 The Long -Term Fertiliser and Sheep Grazing Trial, at Ballantrae Hill Country Research Station was highlighted as a site of national and international significance.
- 31 The documented process of evaluation of options and the explanation for the decision on Option 3 as the preferred route have not demonstrated any meaningful regard to the significance and importance of this unique and irreplaceable research site.
- 32 The documented evidence supporting Option 3 as the best option for the road does not appear to consider or address the consequence of the impacts on this site, or matters relating to the best interest of New Zealand primary industry, export economy or contribution of the research facility to the best interests of New Zealand as whole.
- 33 Significant aspects of the unique research facility will be impacted for decades to come. All expert science witnesses agree the trial site will no longer be able to operate as a grazed farmlet trial, as it has since 1975.
- 34 The proposed mitigations and management options to address the concerns raised about having a four-lane high through the research plots are limited to routine mitigations and processes which apply to any farm land and road construction site. They do not address the principle concerns.

- 35 There are conflicting views on the value of the opportunity to use the remaining area profitably, for component research.
- 36 High density traffic flows are recognised to have an impact on diffuse heavy metal and other contaminants on pastoral soils and plants, however, there is little experience or expertise in accounting for this confounding effect. This is at a time when these contaminants are recognised as emerging issues requiring very long-term scientific evaluation.
- 37 Other long-term emerging issues include climate change effects on the farm system and soil carbon evaluation.
- 38 Introduction of cycling and walking facilities through the research site (if they are required), will increase the impacts and further compromise any remaining utility of the research site.
- 39 The decision sought is first and foremost to avoid the negative impacts on the long-term fertiliser and grazing research site.

Response to S42 Officer reports

General Comment

- 40 As was observed in my original submission in relation to the technical documents for Notices of Requirements, there remains scant reference in the S42 Officers' reports to the impact of the proposed highway on the long-term fertiliser and sheep grazing trial site. The consideration of and recommendations for mitigations are largely restricted to impacts on daily operations and earthworks, as might be considered for any road construction, for any commercial farm, as discussed below.

S42 - Construction and Earthworks report

- 41 There is no specific evaluation or mention of the sensitivity and risk of adverse effects on the Ballantrae research site within the sections titled, "Existing Environment", "Project Effects", nor "Management of Effects". In response to submissions, reference and consideration of the long-term fertiliser and sheep grazing trial is made in Paragraphs 62 - 64, which provides for mitigation based on routine construction considerations, but, in my view, no insight or acknowledgment is given to the fact that these pose an enhanced risk of contaminants impacting on the integrity of the trials where, for example, heavy metals contaminant evaluation is measured in parts per million. Specifically, consideration in the Officer report is as follows:

62. I agree that construction works, including the proposed enabling works, can have an adverse environmental effect on watercourses if not managed appropriately. However, I am comfortable that industry best practice erosion and sediment controls if implemented, coupled with appropriate monitoring, will enable likely sediment related environmental effects to be appropriately managed. This issue would need to be further addressed through the management plans and through the ESCP's. I provide comment on the proposed conditions later in this evidence.

- 42 The paragraph discussed above (Paragraph 62) refers to Forest & Bird concern about impact on waterway. Specifically in relation to the long-term fertiliser and grazing trial site, comment was provided in paragraphs 63 and 64, as follows:

63. S312 – AgResearch Limited – At Section 3 Effect of proposed designation, the submitter comments that: “in addition to the loss of the long-term phosphorus fertiliser and sheep grazing experiment, there will also be construction effects and long-term environmental impacts on the wider Research Station. The key concerns during construction are fugitive dust, sediment and water runoff, emissions from construction vehicles and noise effects on stock. These effects could alter the physical soil conditions, impact the pasture and change the way stock graze the research blocks”.

64. As discussed above, I reiterate that provided industry best practice erosion and sediment controls are implemented, coupled with appropriate monitoring, then the likely sediment related environmental effects can be appropriately managed. In relation to dust, NZTA will prepare a Construction Air Quality Management Plan, which will address dust management from construction activities. This plan will be prepared at the resource consent stage of the Project.

- 43 Paragraph 65 identifies the relevant draft conditions as follows:

65. The relevant conditions I have considered and made recommendations (as detailed in my report) in respect of are:

- a) Condition 5 Outline Plan or Outline Plans (Permanent Works);*
- b) Condition 5A – Outline Plan or Outline Plans (Enabling Works);*
- c) Condition 10 – Construction Environmental Management Plan; and*
- d) Condition 11 - Environmental and Cultural Design Framework.*

- 44 My concern is that these mitigations are routine responses to impacts of roadworks in general, and do not reflect the necessary understanding and concerns about potential impact on research results from change in monitoring sites, grazing patterns, fertility transfer, trace levels of contamination, and the additional detailed protection that should be afforded the

long-term fertiliser and grazing trial site during construction and looking forward for the life of the highway.

- 45 The Draft Condition T3 (page 186, Vol 2, NOR), which is specific to the long-term fertiliser and grazing trial site provides for little more than routine mitigations addressing farm operations. It shows no insight into the true long-term impact of the proposal on the research facility. Ms McLeod’s Evidence Attachment B includes amendments recommended by Mr Morton and Dr Horne, however, with little opportunity for mitigation these amount to slightly more detailed explanation of earthworks, as follows:

REF	DRAFT CONDITIONS	REASON FOR CHANGE/ EVIDENCE
T3	<p>Outline plan – Ballantrae Farm Research Station</p> <p>Where an outline plan, or plans, describes works within the Ballantrae Hill Country Research Station, the Requiring Authority must:</p> <p>a) consult with AgResearch Limited for the purpose of designing and constructing the Project to minimise impacts, as far as practicable, on the farm operations and fertiliser trial sites at Ballantrae Farm Research Station; and</p> <p>b) as a minimum, the outline plan must:</p> <p>i. set out details of the consultation undertaken under clause (a);</p> <p>ii. demonstrate how the extent of construction works on the site (including fill areas and stormwater treatment facilities) is limited, including by reference to the total areas of each of the four farmlets that comprise the trial site as well as the slope, aspect and soil type balances of each farmlet; and</p> <p>iii. describe details of on-going farm and trial site access and stock movement arrangements during and following construction.</p>	<p>Amendments made to reflect the advice and evidence of Dr Horne and Mr Morton as to the importance of constraining works in these areas.</p>

- 46 It is noted, there are no mitigations recommended which might address the impact of the highway on the site over the long-term, e.g. water or airborne contaminants from the highway, loss of monitoring sites, influence on livestock behaviour etc. A further set of conditions is now suggested as an appendix to the Addendum document tabled on 26th March 2019. These new recommendations do not address the principle concerns, and are discussed at my paragraphs 104 and 105 below, under the discussion on Ms McLeod’s evidence on Planning and Conditions.

S42 - Freshwater report

- 47 The scope of evidence addresses the Natural Character and Freshwater assessments included in the Technical Reports, and as such there is no expectation that the long-term fertiliser and grazing trial site should feature specifically in these considerations.

S42- Recreation report

- 48 The scope of evidence for the recreation report addresses cycle trail/walking access, tourism, Department of Conservation guidelines for track construction and maintenance, road design and statutory obligations.
- 49 The 'Existing Environment' section of the Recreation report does not include recognition of the long-term fertiliser and grazing trial.
- 50 There is no specific reference to the long-term fertiliser and grazing trial site, and this particular omission is of very grave and significant concern, because the recommendations and condition at paragraph 145, under Draft Requirement Conditions includes the recommendation as follows (with my own emphasis added in bold):

*e) A separated shared path to accommodate cyclists and walkers **shall be provided for the entire length of the road** (with appropriate safety measures at the roundabouts at either end) as part of the application and be completed no later than the commissioning of the new road. Full detailed design of the walk/cycle path including route alignment, width, length, grade, land ownership, surfacing, fencing, seating, amenity planting, drainage and a maintenance regime shall be provided to the Territorial Authorities for approval; and*

- 51 If this recommendation is adopted this will greatly expand the footprint of the project extent area through the Ballantrae research site, and in my view, is likely to severely curtail the prospect of even restricted component research and smaller plot trials.
- 52 I am concerned that recommendations and a final decision on a proposed cycle path could have a critical additional impact on the long-term fertiliser and grazing trial. (Potentially even termination of component research work, depending on the extent of the footprint.)

S42 - Social impact report

- 53 The scope of this report is to review the Social Impact Assessment, other technical assessments and background documents relevant to determining how people and communities may be affected by the project. The scope includes consideration of main townships, community facilities, the alternative east-west routes, and wider area affected by the project.
- 54 It is unfortunate that the role of research and the importance of the long-term fertiliser and grazing trial site has not been acknowledged in the S42 Officer Report for the contribution it has economically for New Zealand's pastoral sector, and therefore socially for the New Zealand communities, not just regionally but nationally.

- 55 It is my view that, as with most other impact reports presented to evaluate the Manawatu - Tararua Highway proposal, the significance of the long-term trial site has been overlooked and misunderstood.
- 56 I am concerned that by failing to recognise the importance and potential influence of the research at the long-term fertiliser and grazing trial on productive pastoral farming into the future, (and being the only remaining long-term research facility representing hill country production), that the process for assessment of the options for the proposed Manawatu - Tararua Highway is flawed.

S42 - Traffic and transport report

- 57 The scope of this report includes traffic effects of each option including safety, access and efficiency.
- 58 The report makes what appears to be firm recommendations that the provisions for cycle ways in the proposal are inadequate.
- 59 At paragraph 181, a recommendation is made for safe provision for cyclists, with recommendations as follows, (with my emphasis added in bold):

Separated Cycleway/ Walkway

*As set out earlier in my evidence, I share concerns with the submitters with regard to the safety of the proposed shoulder for use by cyclists. In my view, the Project needs to allow for the safe provision for cyclists **with options including, but not limited to, either widened shoulders along each side or a barrier separated shared path along one side.***

- 60 I am concerned, as noted above at my paragraphs 51 and 52, that if these recommendations for a separate cycle/walking path or even extended shoulder to the proposed road extent area are implemented, it will have critical additional impact on the research site.
- 61 At paragraph 100 of the Officer report, it is noted that forecasts are that by 2041, the Project will carry 14,000 vehicles per day with up to 1,400 vehicle movements per hour (10%).
- 62 With the proposed road project placing a four-lane highway through the trial site, it will be hard to argue the long-term research facility remains an environment which is in any way representative of North Island hill country pasture when it comes to livestock grazing behaviour and trace element contaminants in soils and pasture.
- 63 I am concerned that the impact of current 6,000 vehicle movements rising to 14,000 daily between now and 2041, let alone beyond 2041, will have a significant impact on the research

facility which is intended to provide for representative hill country agricultural research over many decades if not centuries.

Summary of response to the S42 Officers reports

- 64 It is evident that the Officers' reports have not addressed some of the very important matters relating to the long-term fertiliser and grazing trial site at Ballantrae. In my view, little more insight is displayed than would apply to any farming property. In some instances, recommendations are made which can have a profound impact on the site. Impacts on the research facility have potential consequences for pastoral farming in New Zealand hill country, including economic repercussions, well into the future.

Response to expert evidence presented on behalf of NZTA

Overview:

- 65 Many of the statements presented in expert evidence dismiss the value of the research site because it has had reduced investment in research over the past 10 -20 years, and it is stated the purpose for which the trials were established has been fulfilled with phosphate fertiliser responses well understood, (Hearing Evidence of Mr Dalzell, paragraphs 70 and 71, Mr Morton paragraphs 9, 13, 25 and 72). It is proposed that the site can be utilised as small component research and plot trials, reducing the consequences of the impact of the loss of grazing farmlet trials (Mr Morton paragraphs 13 -14, 26- 28, 39-48, Dr Horne paragraphs 25 and 26).
- 66 These assessments are disputed given research requirements now, and research requirements emerging into the future (Hearing Evidence of Dr Roberts paragraphs 25- 35, Dr Matthews paragraphs 21 and 22, Dr MacKay Paragraphs 31-57).
- 67 I remain concerned that despite an opportunity to use the remainder of the site for small trial work, this in itself is a significant compromise, and the effects of the proposed highway will further confound even those assessments for some critical factors, such as contaminants. This issue is recognised but not well addressed in the Hearings evidence because there are no 'expert witnesses' within the discipline of impacts of vehicle emissions on farm systems. It is recognised there is an interim period of increased traffic flow on Saddle Road which is undesirable but entirely unavoidable. This impact is very different to the proposal to introduce a four-lane highway with significantly increasing traffic flows over time, continuing to impact on the research site over the life of the proposed highway.

Statement of evidence of Mr Dalzell (Project Manager)

- 68 The scope of Mr Dalzell's evidence is described (paragraph 10) as summarising the development of the project to date, with a particular focus on the engagement carried out by the Transport Agency with landowners, key stakeholders and the general public, and partnership with tangata whenua.
- 69 Mr Dalzell makes clear the urgency with which the project has been undertaken to establish an alternative route as rapidly as possible, an innovative approach to RMA approvals has also been followed (paragraph 11, 16-24), with a higher level of risk and uncertainty (paragraph 24), and operating outside of normal practice, to undertake three tasks in parallel; consenting, procurement and land acquisition. (paragraph 23).
- 70 I am concerned that this approach has compromised the effort to understand and adequately address the matters of significance in relation to the long-term fertiliser and grazing trial site.
- 71 In support of this concern, I have not been able to find any evidence or assessment in the S42 reports, Notices of Requisition, Technical Assessments, or Manawatu Gorge Alternative Routes Business Case documents, of the importance of the research site or the impact the proposal would have on the research site - only recognition that it will be impacted.
- 72 As per my original submission, there appears to have been no consideration of any mitigations other than routine provisions as would apply to any farmland with regard to earthworks, nuisance dust (to people), and movement of livestock (ref: my original submission: Appendix 1). In my original submission no reference was made to the Manawatu Gorge Business Case because there was no reference to the AgResearch site in this document, other than acknowledgment that it is impacted (pages 6, 46). The issue seems to have been dealt with in its entirety, in the Notices of Requirement for Designation.
- 73 Indeed Paragraph 30 of Mr Dalzell's Hearing evidence, reproduced here, appears to identify a strategy whereby any matters of concern will be addressed by conditions of designation and consultation during the execution of the project.

"30. The conditions imposed on the designations will provide the parameters within which the subsequent design of the Project must be undertaken. The updated conditions proposed by the Transport Agency are discussed in the evidence of Ainsley McLeod. These parameters respond to environmental and site constraints and are intended to ensure that actual or potential adverse effects of the Project are appropriately managed, and that a high degree of community and stakeholder engagement will continue over the life of the Project."

74 Paragraphs 68 and 69 of Mr Dalzell’s evidence identifies that this approach of dealing with any matters of concern by means of conditions of designation, was conducted by engaging in discussions with AgResearch. The result was narrowing the designation corridor through the farm, and then engaging Dr Horne and Mr Morton to provide analysis and further updated conditions.

75 I am concerned that this engagement between AgResearch and Dr Horne and Mr Morton first took place by correspondence in February 2019, and with the first face to face meeting on 1 March 2019, and is not a substitute for an assessment of the impact of the proposal on the research site prior to deciding the preferred route.

76 The Expert Joint Witness Statement states that there are no possible mitigations which protect the long-term fertiliser and grazing trial site, only discussion on how to make some profitable use of what remains based on component work. (Joint Expert Witness Statement, pages 8, 9 and 10)

77 Paragraph 68 of Mr Dalzell’s evidence suggests:

“Numerous meetings have been held with AgResearch in order to understand better the potential effects of the Project on the trial site (both during construction, and beyond), and potential ways in which the Transport Agency could minimise and otherwise address those effects, including through measures designed to further scientific knowledge in relation to the site (potentially beyond what could be expected if the Project did not affect the Site). Dr David Horne and Jeff Morton discuss those matters in detail in their evidence,.....”

78 In my view, failure to make any serious consideration of how impacts on the site could be avoided rather than mitigated is a serious flaw in the assessment in the context of an irreplaceable long-term research site.

79 In my view the research trial cannot be replaced or compensated for, and the mitigations under discussion provide for little more than the standard mitigations which apply for any working farm. The research site will be significantly compromised, limiting its function and scientific value to pastoral agriculture.

80 Mr Dalziel identifies at paragraph 70, that the 2012 AgResearch document “Future Footprint Business Case” identifies both Ballantrae research station and Winchmore research station as surplus to requirements and the sale of which is essential for the business plan and development of innovation centres and AgResearch’s Future Footprint Project.

81 Specifically, the Future Footprint Business case states (page 4);

This Business Case outlines the rationale and expected benefits to New Zealand from this project. We believe it represents the best investment AgResearch can make to support the achievement of our Core Purpose.

The project proposes to re-invest capital proceeds from the disposal of AgResearch's under-utilised assets, and to use cash surpluses and some minimal debt, to upgrade research facilities and realign existing capability to strengthen two existing agriculture innovation centres, and to streamline two regional campuses over the next five years.

82 The importance of the farm sales to the Business case is more explicitly stated on page 20 as shown in the following extract:

Financial Case

This section outlines the affordability and financial impact of the Future Footprint project.

The Future Footprint project can be funded entirely from the proceeds of farm sales and additional asset disposals, together with forecasted cash surpluses and debt. In summary, this is:

Future Footprint facilities

Capital Expenditure

Additional and renovated campus facilities	█
Purchase of farm land	█
	█
	█
	█
for purchase of land and buildings	█
	\$99.5m

Funded by

Sale of farm land	█
Sale of campus facilities	█
Balance from future profits and debt	█
	\$99.5m

No new or additional funding is being requested from the Shareholder.

83 My understanding is that based on overall return on investments and assets, a number of research farms were earmarked for sale and these sales being necessary for development the AgResearch business plan. Both Ballantrae and Winchmore were identified for sale as an essential step in the business case.

84 It should be noted that the long-term fertiliser and grazing sites were the primary reasons AgResearch did not sell the Ballantrae and the Winchmore research farms.

85 For Ballantrae, a lease arrangement with Taratahi Institute of Agriculture enabled protection and maintenance of the long-term fertiliser and grazing site.

86 It should also be recognised that sale of assets does not necessarily mean that protection mechanisms would not be put in place for the site. AgResearch have gone ahead with the sale

process for Winchmore¹. However, this did not occur until the long-term fertiliser research site was protected by a long-term lease negotiated with the Fertiliser Association.

87 The Winchmore long-term fertiliser trial site has small treatment plots and is situated on the Canterbury plains. Therefore, it is not a substitute for Ballantrae long-term fertiliser and grazing trial site which is representative of grazed hill country across large parts of the North Island of New Zealand.

88 Paragraph 73 of Mr Dalzell's evidence misinterprets the submission point lodged on behalf of the Fertiliser Association in the original submission. The submission point placed a "back of the envelope" justification for the importance of genuine investigation into an alternative route or means to avoid the research site. The point being that economic benefits of enhancing or protecting New Zealand hill country pastoral production through research is assumed. The research information to be gained from this site, if only providing for either protection or enhancement of a very minor percentage of hill country export product value, will provide very significant economic benefit to New Zealand as a whole. Therefore, the cost of the alternative roading options should be weighed against the benefits this site can provide to New Zealand as a whole.

89 This evaluation does not appear to have been explored or considered.

90 Paragraph 119 of Mr Dalzell's evidence in reference to the S42A Planning Report, identifies that Mr Morton and Dr Horne were engaged because:

"...it would be appropriate to consider more information on the effects the Project might have on the AgResearch site."

91 I am concerned that because Mr Morton and Dr Horne were not engaged until February 2019, the consideration of information about the effects were intended to focused solely on mitigation of impacts of proposed route, rather than avoidance of impact.

92 Paragraphs 100 and 101 of Mr Dalzell's evidence respond to the Hearing Panel's questions;

- a) To what extent (in terms of ha and % coverage of trial sites) will the earthworks footprint impact on land actively used for fertiliser trials (as opposed to AgResearch farm land not actively used for fertiliser trials) within the Ballantrae Hill Country Research Station?**
- b) What remediation or mitigation does NZTA offer for any possible forced cessation of the long-standing fertiliser trials?**
- c) Is AgResearch satisfied with this condition? [in reference to draft condition T3 as lodged]**

¹ <https://www.newshub.co.nz/home/rural/2019/01/agresearch-to-sell-research-farm-after-72-years.html>

- 93 It is noted that in Mr Dalzell's response to these questions, mitigation and remediation is reliant on advice from Mr Morton and Dr Horne. The Joint Expert Witness Statements also address these matters and it is unanimously acknowledged that with regard to the issue of viability and integrity of the long-term fertiliser and grazing trial as it currently operates, the credibility of data from the research site would come to an end if the existing route is agreed (Page 8).
- 94 Other matters addressed by the Joint Expert Witness Statement include what useful function can be utilised from the remainder of the site, based on component work.
- 95 I am concerned that there are conflicting views on the value of the component work and the extent to which the component work can substitute for the current trial.

Statement of evidence of Ms McLeod (Planning Conditions)

- 96 The scope of evidence by Ms McLeod addresses planning advice, addressing overall planning assessment of the effects on the environment; assessment of the statutory planning matters relevant to the project and the proposed approach to manage actual and potential adverse effects including through conditions imposed on the designations.
- 97 Paragraphs 18 and 19 of Ms McLeod's evidence identifies that subject to conditions outlined in Attachment B, the proposed approach provides a comprehensive set of conditions to be imposed on the designation "*.. to achieve the appropriate management of effects through both the establishment of an 'effects envelope' within which the Project must be designed and constructed and a suite of management plans to manage construction activities.*"
- 98 For these reasons Ms McLeod recommends that the designations should be confirmed. However, one must ask how these conditions can be affirmed as appropriate when there is no evidence of assessment of the importance of the long-term fertiliser and grazing trial, or assessment of the impact the on the site, prior to choosing Option 3?
- 99 As discussed below in my paragraphs 170-179, there was no assessment of the potential social and economic ramifications of losing this last remaining research site of national and international significance. It has been unanimously confirmed in the Joint Expert Witness Statement in relation to long term fertiliser and grazing trial site, that:

"If the designation corridor was to remain in the same location the credibility of the ongoing/future data collected from the long-term systems trial would come to an end because of the disruption to the systems and loss of permanent sites. "

100 As discussed in my paragraphs 73-78, the recommendations, advice, and strategy for dealing with issues identified within the designation corridor appears to be a strategy whereby ‘any matters of concern will be addressed by conditions of designation and consultation during the execution of the project.’ This apparent strategy gives little or no opportunity to consider the importance of the research site and the consequences of the losing the research facility prior to choosing the preferred route. There has been no consideration of how to avoid rather than mitigate effects. There has been no recognition that the effects on the site are critical.

101 At paragraph 61 of Ms McLeod’s evidence it is stated that;

“Based on this evidence and Part E of Volume 2 of the NoR documentation, I understand the process of considering alternatives to be sufficiently methodical, robust and repeatable. It is therefore my opinion that, in the context of section 171(1)(b), the consideration of alternatives has been adequate.”

102 Part E of Volume 2 of the NOR documents addresses the consideration of alternatives. I am concerned that Part E acknowledges the existence for the long-term fertiliser and grazing site as a nationally significant site, and acknowledges that it will be impacted by Option 3, but there is no discussion of the importance of the site nor is there discussion of the potential consequences relative to other options available.

103 My concern is that this research site has been identified as nationally significant, but consideration of the impact of Option 3 relative to the alternatives is not apparent, and therefore the planning assessment has been inadequate in relation to the long-term fertiliser and grazing trial site.

104 Efforts to introduce some form of mitigation for the impacts on the site have been presented as late as the addendum documents to planning and conditions and the updated proposed designation conditions, tabled on 26th March 2019, as follows:

REF	DRAFT CONDITIONS	REASON FOR CHANGE/ EVIDENCE REF.
T3.	<p><u>Ballantrae Hill Country Research Station</u></p> <p><u>Prior to any construction works being undertaken within the Ballantrae Station site, the Requiring Authority must prepare a Ballantrae Station Management Plan (“BSMP”) to manage the potential adverse effects of the Project on farm operations and the long-term grazing trial. The BSMP must, as a minimum:</u></p> <p>a) be prepared in consultation with AgResearch;</p>	Amendments made to reflect the advice and evidence of Dr Horne and Mr Morton as to the importance of constraining works in these areas.

	<p><u>b) describe the measures to be implemented to maintain site access and the ability to move stock within and between farmlets during, and following, the completion of construction;</u></p> <p><u>c) set out approaches to manage machinery noise to minimise disruption to grazing stock;</u></p> <p><u>d) describe site security and safety measures minimise the risk of stock rustling and to manage risks to farm staff as a result of construction activities in the locality; and</u></p> <p><u>e) establish a monitoring and research programme by:</u></p> <p><u>i. describing pre-construction monitoring, on a farmlet basis, of soil and pastoral properties that confirms the existing trial site environment, is comparable to earlier research, and is capable of being published in a peer reviewed journal;</u></p> <p><u>ii. detailing the approach to construction and post-construction monitoring of the effects of the Project that must be undertaken for a minimum period of 3 years following the completion of construction;</u></p> <p><u>iii. confirming the administration arrangements for future research activities that support and maintain the on-going research outcomes of the long-term grazing trial, or other research outcomes associated with the trial site, with such research activities continuing for a minimum of 5 years following the completion of construction unless AgResearch decides to discontinue such research activities at an earlier date.</u></p> <p><u>f) The BSMP may be updated to incorporate requirements of regional resource consents and the associated management of discharges to air, land and water.</u></p>	
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105 I am concerned about the proposed conditions and recommend that they are rejected, as they do not address the principle concerns, for the following reasons:

- a) There is removal of requirement to demonstrate how the extent of the construction works on the site (including fill area and stormwater treatment facilities), is limited.
- b) There is no condition for management or control of the long-term impact on the research interests arising from redistribution of the top soil as dust contamination, or contamination from machinery operating within the designation area.
- c) Bullet e) i) recommends a monitoring and research programme which sets a predetermined finding that the soil and pasture properties have not changed relative to

earlier findings. Research does not normally set out with predetermined findings. In any case, this assumed outcome is not supported by the findings of the pasture assessments reported in 2016, which found changes in pasture production on some aspects and slope at the site. Nor is this condition and approach consistent with the advice and recommendations in Mr Morton's addendum, at paragraph 34 as discussed below at my paragraphs 193-197 when addressing that addendum.

- d) Bullet e) ii) recommends post construction monitoring for a minimum of 3 years, but this is inadequate given the long-term nature of the site where many of the impacts will be felt over decades. Also, monitoring is not the same as mitigating or remedying these effects.
- e) Bullet e) iii) requires administration arrangements for research with research activities continuing for a minimum of 5 years. I question NZTA's qualification and mandate for administration of pastoral research, and I question the value of a commitment to 5 years research for a research site which has application over future decades or the next century and will be impacted by the highway for the life-time of the highway. I assumed this is a veiled offer of compensation in the form of grants or funding for research which utilises the remainder of the site for component work, as discussed in pre-hearing meetings, but if so, this is not clear. This condition does not provide any mitigation or remedy for the impacts of the proposed highway.
- f) It is not clear what the consequences are if any one of the proposed conditions are not met. Is it that the proposed highway will not proceed and NZTA will revert to an alternative option, if, for example, proposed condition e) i) determines the soil and pasture conditions are not the same as in 1988?

106 Furthermore, the 'Updated Proposed Designation Conditions' (25th March 2019) , at page 9 stipulate that:

iv except where AgResearch provides written consent, physical works within the long term grazing trial site at Ballantrae Hill Country Research Station site ("Ballantrae Station"), (being part of the land indicated by property reference numbers 14, 15 and 16 on Land Requirement Plan LR-11), must not;
A. exceed a maximum area of 4.8 hectares; and
B. reduce that area of a farmlet that makes up the trial ((as shown on the plan included as Attachment A to the statement of evidence of Dr David Horne dated 8 March 2019) by more than 26%.

107 These conditions are unacceptable, if only because it provides NZTA freedom to alter the impact on any one of the farmlets without approval from AgResearch by up to 26 % of the

farmlet's land area. This condition provides very limited assurances for protection against further significant impacts on the research site.

- 108 Dr Horne's Hearing evidence, paragraphs 18-20 identify that while the farmlet named 'LFLF' currently loses up to 26 % of its area, the other farmlets currently lose 19 %, 8 % and 9% of their land area. Furthermore, the farmlets are approximately balanced for multiple factors such as slope and aspects, and each contain site specific sampling points. Therefore, it is not appropriate to control impacts on the farmlets simply by a percentage of land area. It is unacceptable to it provide freedom for NZTA, within the designation area, without permission of AgResearch, to lose up to 26 % of any of the farmlets, even with an overall cap of 4.8 ha.

Statement of evidence of Mr Wickman (Principal Transport Planner)

- 109 Mr Wickman provides evidence which focuses on the assessment processes carried out up to the point that the Transport Agency selected 'Option 3' (as in, the chosen Project corridor) following its consideration of an initial long list and subsequent short list of options.

- 110 Paragraph 11 of Mr Wickman's evidence identifies the process by which options were assessed, was through a Multi-Criteria Analysis ("MCA").

- 111 Paragraph 13 identifies that the choice for Option 3 was influenced by

*“(a) its performance against the transport criteria;
(b) the risks of adverse environmental effects associated with the construction and operation were considered to be acceptable (noting all short list options performed similarly on an overall basis); and
(c) implementability considerations”*

- 112 Paragraph 33 of Mr Wickman's evidence describes the MCA process:

“33. Importantly, MCA is used by the Transport Agency as a tool to support decision making on its projects. It is not the outcome of the MCA process that determines the preferred investment or preferred option to be taken forward. Instead, the MCA provides decision-makers with the various risks and opportunities, strengths and weaknesses of a range of investment proposals. The MCA assessment at the business case stage of the project is not intended to assess effects at the level of detail that would be expected at the RMA consenting stage, but instead is intended to provide a risk-based assessment at a macroscopic level.”

- 113 Furthermore at Paragraph 34 it states:

For Transport Agency projects, there are three broad categories of criteria that are typically assessed through the MCA process. These are typically

defined in the early stages of the business case prior to any options being identified. The Project objectives and proposed MCA criteria for the Manawatū Gorge DBC were presented to key stakeholders for comment at a workshop at the outset of the business case process. The three categories of criteria included the following:

- (a) Project Objectives;*
- (b) Implementability; and*
- (c) Social and environmental factors.*

- 114 Therefore, the MCA process has not taken into account the factors such as the importance of the long-term fertiliser and grazing trial to New Zealand pastoral agriculture and New Zealand primary industry, either for today's research needs or the research needs which might occur in the long-term future. With regard to the reference above, that "*The Project objectives and proposed MCA criteria for the Manawatū Gorge DBC were presented to key stakeholders for comment at a workshop at the outset of the business case process*", I note that the business case does not address the issues relating to protection of the long-term fertiliser and grazing trial. The site was identified prior to selection of Option 3, so it should have addressed it.
- 115 In terms of the decision process paragraphs 48 and 59 identify that the MCA process was used to assess the long list and short list options.
- 116 Elements of the short-list assessment process of particular note are identified in paragraph 48 of Mr Wickman's evidence, as follows:

- (a) More detailed information on the design and anticipated transport performance of the options was incorporated into the assessment of the Project objectives group of criteria (Assessment Criteria 1).*
- (b) More detailed desktop data (including consents or approved projects like the Saddle Road improvements), as well as site visits by specialists and typical design and other 'standard' mitigation measures were incorporated into the assessment of the environmental and social criteria (Assessment Criteria 2). Information provided by tangata whenua was taken into account in the overall assessment of the options.*
- (c) Further information including in respect of network connectivity and land use was incorporated into the assessment of the implementability criteria (Assessment Criteria 3). Differentiators between the options related to:
 - (i) geotechnical risk and resilience;*
 - (ii) traffic impacts during construction;*
 - (iii) impacts on infrastructure; and*
 - (iv) connections to existing transport network (noting Option 4 would require considerable additional investment in that respect, whereas Options 1 and 3 would not).**
- (d) There was extensive consultation and engagement with stakeholders*

and the public at the short-list stage, which was factored into expert assessments and the overall consideration of the options

- 117 There appears to be little opportunity for regard to sites such as the long-term fertiliser and grazing trial site if not addressed under (b) desktop study including site visits and 'standard' mitigations, or (d) engagement with Stakeholders.
- 118 However, it has already been established (see my paragraph 75 above) by reference to NZTA evidence that better understanding of the effects on the Ballantrae research site, was not undertaken until Feb 2019 with the engagement of Mr Morton and Dr Horne, and only then with regard to establishing conditions which might provide some mitigation.
- 119 This assessment process as described by Mr Wickman is consistent with the evidence of Mr Dalzell discussed above in my paragraphs 73 -78, above, noting the apparent strategy whereby 'any matters of concern will be addressed by conditions of designation and consultation during the execution of the project.'
- 120 Key points in the decision process were identified in paragraph 60 of Mr Wickman's evidence and this included:

- (b) There were differences in the type of environmental and social effects that would likely flow from each option. Overall, all options would lead to potentially significant effects, and the Transport Agency considered that, on balance, Option 3 presented the lowest risks in environmental and social terms.*
- (c) For implementability, the options performed reasonably similarly, with Option 3 again considered to be the best-performing overall*
- (d) Public feedback largely favoured Option 3 or Option 4. There was little negative feedback on Option 3, but concerns about the possible impact on the AgResearch site were flagged.*

- 121 I note that in reference to b) there has been no assessment of social effects of impacts on the research site. I also note the wording at (d) of 'possible' impact on the AgResearch site.
- 122 Immediately following this acknowledgement of 'possible' impact on the AgResearch site the evidence at Paragraph 61 states simply that the choice for Option 3 was influenced by the following factors which do not include matters arising from the potential impact on the research site:

- (a) the transport performance of Option 3 (across all three transport criteria);*
- (b) the risks of adverse environmental effects associated with the construction and operation were considered to be acceptable (noting that all options performed fairly similarly on an overall analysis); and*

(c) implementability (particularly in terms of geotechnical risk, the connection to the existing and future network, and land use integration).

- 123 The site-specific consideration of the impacts on the AgResearch site is discussed in Mr Wickman's report at paragraphs 73 to 75 under the heading of 'response to submissions' and these paragraphs are reproduced in full below.
- 124 In my view, this response to submissions has not addressed or explained NZTA's consideration of the importance of the research site nor the impact of the proposal on the site prior to announcement of Option 3 as the preferred route.
- 125 Prior to the announcement, the research site was identified as nationally and internationally significant. However, the evidence presented in Mr Wickman's paragraphs 73 -75, do not address the decision process in relation to this matter.

73. The submissions of AgResearch, Beef and Lamb NZ, Fertiliser Association of NZ, Ballance Agri-Nutrients, Louis Schipper, and Cory Matthew raise the potential effects of the Project on the Ballantrae farm site, owned by AgResearch.

74. The statements of evidence of Mr Dalzell, Jeff Morton and David Horne address the Ballantrae site and the AgResearch submission (and related submissions) in detail, along with the current status of discussions between AgResearch and the Transport Agency on potential measures to address potential effects on the site.

75. The Project team was well aware of the potential effect the Project corridor (short list Option 3) could have on the Ballantrae site during the options assessment process. In particular, direct engagement with AgResearch during the short-list assessment stage aided our understanding of the potential impact on the fertiliser trial conducted at the site. Both short list Option 2 (the Saddle Road upgrade option) and short list Option 3 traversed the trial site. That potential impact was a consideration during the assessment process.

- 126 This statement specifically addressing the AgResearch research site principally relates to submission evidence (Mr Dalzell, Mr Morton, Dr Horne), and therefore it is not within the scope this Hearing evidence as defined in Paragraph 6 of Mr Wickman's evidence:

6. "My evidence focuses on the assessment processes carried out up to the point that the Transport Agency selected 'Option 3' (as in, the chosen Project corridor) following its consideration of an initial long list and subsequent short list of options. I have not been closely involved in the development of the Project since that time (with Lonnie Dalzell assuming the role of Project manager, as he explains in his evidence)."

- 127 At paragraph 75 the evidence states simply that the potential impact on the site was a consideration during the assessment process.
- 128 My view is that the response outlined in Mr Wickman's paragraph's 73-75 (above) is an inadequate explanation of the evaluation and decision process for selection of Option 3 when NZTA has been advised that Option 3 will impact on a site which has been identified as irreplaceable and both nationally and internationally significant.
- 129 Paragraphs 87 and 88 of Mr Wickman's evidence respond to the Hearing Panel's question;

When the designation corridor was being confirmed, were any options assessed that would avoid the Ballantrae Hill Country Research Station fertiliser trial sites?

- 130 Mr Wickman's evidence responds to the Hearing Panel's question as follows:

87. At the long-list and short-list stage, a number of options that would have avoided the Ballantrae farm site were considered (including short list Options 1 and 4, as discussed above).

88. I understand this question to be more focussed on the process of refining the designation corridor after the Project option (ie short list Option 3) was selected. I was not directly involved in that process; Andrew Whaley addresses that point in his evidence.

- 131 In my view, this response fails to explain the decisions and evaluation undertaken when considering the impact on the research site prior to selection of Option 3. Indeed, as per the apparent strategy commented on in my paragraphs 73-78 above, it seems that the NZTA focus is that, 'any matters of concern will be addressed by conditions of designation and consultation during the execution of the project.'
- 132 It is also noted the stated scope of Mr Wickman's evidence is given above in my paragraph 126, while the scope of Mr Whaley's evidence, as described in Paragraph 10 of his Hearing evidence is as follows:

10. The purpose of my evidence is to give the Hearing Panel a brief overview of various processes and inputs that have informed the shape of the designations now sought by the Transport Agency, within which a new road is proposed to be designed and built.

- 133 It is therefore apparent that no formal assessment is available to explain the process undertaken prior to announcing the choice of Option 3 to determine the effects on the long-

term fertiliser and grazing trial site, or the potential consequences of that impact over the short-term and the very long-term, as it relates to hill country production in New Zealand.

134 The final bullet of paragraph 95 of Mr Wickman’s evidence, which responds to matters raised in the Officers S42 A reports states simply:

*“d) A number of options considered through the MCA stage would have avoided the Ballantrae trial site (and it was understood that short list Option 3 would not avoid that site), as explained in my evidence above. Insofar as this comment relates to the refinement process following the selection of short list Option 3, that is addressed by **Mr Whaley** in his evidence.”*

135 Once more there is no acknowledgement of the lack of evaluation or consideration of the importance of the long-term fertiliser and grazing trial site, and lack of evaluation of the consequences of the impacts being imposed on that site. It does seem to reiterate an apparent expectation of ‘any matters of concern will be addressed by conditions of designation and consultation during the execution of the project.’

Statement of evidence of Mr Whaley (Technical Director – Civil Infrastructure)

136 As identified in my paragraph 132 above the scope Mr Whaley’s evidence is to give the Hearing Panel a brief overview of various processes and inputs that have informed the shape of the designations sought by the Transport Agency, within which a new road is proposed to be designed and built.

137 Paragraph 11 of Mr Whaley’s evidence identifies matters addressed include largely engineering matters such as design philosophy, design standards, options development, factors influencing design, construction methodology, assessment of alternative boundaries for designation corridor etc.

138 Mr Whaley confirms (paragraph 14) that he is author of the Road Design Philosophy Statement (DPS) and this document supports “...*the Project objectives and enables the translation of the outcomes sought for the Project into a set of standards and principles used by the Project team to guide the preliminary design and option consideration and assessment.*”

139 Paragraphs 26 – 31 of Mr Whaley’s report summarises the long list option development process and paragraphs 32 – 37 discuss the short list options, including brief reasons for the decision on Option 3, as follows:

34. *Following the MCA assessment of the short list options, and feedback provided through stakeholder and public consultation, Option 3 was recommended, including for the following reasons:*

- (a) delivering the desired transport outcomes for a likely cost that was relatively more expensive than Option 2, but considerably less expensive than Option 4;*
- (b) providing a more direct connection than Option 1, with the lowest average gradient of all the options;*
- (c) being able to be constructed almost entirely offline, and expected to be at least one year quicker to construct than Option 4;*
- (d) having the lowest-risk option, on balance, in terms of impacts on social and environmental factors (noting that all options would have had significant adverse effects, given the nature of the terrain across the Ruahine and Tararua Ranges; and*
- (e) with some further consideration of options for improving connectivity to Ashhurst Road, providing similar network benefits as Option 4.*

35. *Reasons that Option 1 was not recommended included:*

- (a) being the least direct option and offering the longest average travel time for key journeys; and*
- (b) having a medium to high risk of significant archaeological finds along the Pohangina River edge.*

36. *Reasons that Option 2 was not recommended included:*

- (a) providing a lower level of service than the other options, yet costing almost as much;*
- (b) being very difficult to construct, while maintaining normal flow along Saddle Road; and*
- (c) not offering the same level of network resilience as the other options, as it would have resulted in only two route options for crossing the ranges (ie the new road and Pahiatua Track), rather than three.*

37. *Option 4 was not recommended, including because of the following reasons:*

- (a) it had the most potential to cause adverse effects on the environment (noting again that all options would have significant effects);*
- (b) it was substantially longer than the other options in terms of the new road to be built, and would have taken at least one year longer to build the alignment;*
- (c) it ran parallel to a major known fault line, resulting in an increased resilience risk;*
- (d) it had the greatest impact on private properties – including the Te Matai Road and Stoney Creek Road communities; and*
- (e) it was the most expensive option, being at least \$200 million more expensive, while delivering the same or similar transport benefits as the other options.*

- 140 It is noted that preference is given for largely engineering and cost reasons. Risk of archaeological finds is identified for a reason for avoiding Option 1, but the known research site of national and international significance on Option 3 was not mentioned and there is no evidence of its consideration.
- 141 Paragraph 38 of Mr Whaley’s evidence addresses the Detailed Business Case for the options chosen, and these are noted to be primarily related to engineering and design considerations. Indeed, the Detailed Business Case was not included in the original submission by the Fertiliser Association because scant reference to the long-term fertiliser and grazing trial was found in the Detailed Business Case.
- 142 The long-term fertiliser and grazing trial site does not feature in the paragraphs of Mr Whaley’s report relating to “Environmental and other factors influencing design” except at paragraph 65, where it simply states:

“...the proposed designation corridor has been constrained at this location to provide increased surety of the final footprint through this property.”

- 143 Alternative designs influencing the boundaries of the proposed designation for Option 3 are discussed specifically in relation to the AgResearch farm in paragraphs 145 – 150 of Mr Whaley’s evidence. Once more the considerations are almost entirely from the perspective of engineering and design, although mention is made of ‘Outstanding natural landscape’ for the affected ridgeline, and medium to high vegetation value south of the AgResearch site. (It is noted however in my paragraph 163 below, the term ‘medium-high vegetation values’ is not used in Dr Forbes evidence, but rather ‘secondary/advanced secondary vegetation’.)
- 144 Despite acknowledgement of these wider non-engineering considerations, there is no consideration or acknowledgement given to the research site being irreplaceable and being nationally and internationally significant.
- 145 I am concerned that the unique and irreplaceable opportunity for hill country farm system research going forward over decades/centuries with national and international significance should not rate a mention or should be rated lower than a neighbouring site of medium to high vegetation value, or lower than the natural landscape value of the ridgeline.
- 146 As discussed earlier in my evidence, the mitigations introduced as late as 2019, through the engagement of Mr Morton and Dr Horne, have resulted in the reference in paragraph 148 of Mr Whaley’s evidence that from an engineering perspective changes were introduced;

“148. The designation boundary across the AgResearch property has been tightened to closer to the indicative alignment to reduce the potential footprint of the works...”

and

“Previously indicated stormwater treatment ponds and spoil disposal areas have also been removed from the AgResearch property, in order to minimise effects”

- 147 I am concerned that the admission of these amendments in design, at such a late stage provide clear evidence that scant consideration has been given to the importance and value of the long-term fertiliser and grazing trial during the assessment of options, and further evidence of the apparent strategy of ‘any matters of concern will be addressed by conditions of designation and consultation during the execution of the project’.
- 148 In response to submissions on the impacts on the research site, paragraphs 159 - 169 of Mr Whaley’s evidence reinforce the concerns and questions raised in my paragraph 145 above. That is, there appears to be little evidence of appreciation of the uniqueness, importance and sensitivity of this irreplaceable research facility. There is no consideration of benefits to New Zealand as a whole to be provided by the protection of this research facility.
- 149 Paragraphs 167 to 168 of Mr Whaley’s evidence address the suggestion by Dr Matthews, to divert the Option 3 route to the south of the trial site and thereby reduce impacts on the site.
- 150 The paragraphs explain that this route is much more difficult and expensive requiring excessive amounts of fill and earthworks and/or alternatively building a very large bridge (125m height with a total length of approximately 450m).
- 151 I am concerned that what is missing in the Technical reports supporting the original options, the S42A responses and the Expert evidence, is an assessment of the cost:benefit of these more difficult options to Option 3, relative to the potential value to New Zealand agricultural economy and national export income represented by the research opportunities associated with this unique trial site. The intrinsic value of the research to New Zealand society has not been addressed, other than to dismiss it off hand, subsequent to the selection of Option 3.
- 152 Paragraph 169 of Mr Whaley’s evidence determines the adverse effects on the trial site are not significant, and makes a statement about management by what are, in my view, standard controls on earthworks as follows;

169. With respect to concerns raised by submitters regarding adverse effects on the Ballantrae site during the construction phase, in my view there would not likely be any significant effects, because the majority of the works within the area will be confined within a cut which would substantially limit the potential for dust, water runoff and erosion onto the trial site. The site Construction Environmental Management Plan (“CEMP”), together with standard regional consent conditions, would address requirements for control of dust, runoff and erosion.

- 153 I am concerned about the lack of assessment, appreciation and consideration of the specific research issues and the vulnerability of the research site when the impacts are discounted as *“not likely be any significant effects”*. That is, it is regrettable that Mr Whaley was not aware that, as described by the Joint Expert Witness Statement, *“If the designation corridor was to remain in the same location, the credibility of the ongoing/future data collected from the long-term system trial would come to an end because of the disruption to the system and loss of permanent sites”*
- 154 I am concerned that the mitigations and assessments dismiss the concerns raised about irreparable damage to the research capability of this unique and irreplaceable research facility. I am concerned about the approach taken whereby ‘any matters of concern will be addressed by conditions of designation and consultation during the execution of the project’.
- 155 Paragraphs 198 and 199 of Mr Whaley’s evidence respond to the Hearing Panel’s question;

When the designation corridor was being confirmed, were any options assessed that would avoid the Ballantrae Hill Country Research Station fertiliser trial sites?

- 156 The alternative options which avoid the Ballantrae Hill Country Research Station are addressed in the Mr Whaley’s Hearing Evidence in relation to the short-list Options, and in response to Dr Matthews suggestion to divert the Option 3 route to the south, as discussed above, (in my paragraphs 143 -154).
- 157 As discussed in my Hearing submission above the reasons the alternative options, (which would avoid the research site), are dismissed appear to be largely for engineering reasons, without due consideration given to the significance of the long-term fertiliser and grazing trial site, and without suitable comparison to the benefits to New Zealand as a whole, from protecting the integrity of the research facility by choosing an alternative option.
- 158 I am concerned that while the apparent strategy of addressing concerns through conditions of designation and consultation during the execution or the project is more than appropriate for addressing concerns about operation of a farm paddock, it is inadequate when assessing the impact on this unique research facility which cannot be replaced.
- 159 Paragraph 226 of Mr Whaley’s evidence responds to the Hearing Panel’s question;

What would be the design implications of moving the road to avoid the Ballantrae Hill Country Research Station fertiliser trials, particularly in light of concerns raised by submitters including AgResearch, Fertiliser NZ, Ballance, Beef and Lamb and various individuals?

160 Paragraph 226 of Mr Whaley’s evidence indicates the response is provided in the Hearing evidence. However, as stated above, while recognising there are engineering and design reasons for not avoiding the site, what has not been addressed is the analysis of the considerable value and benefit the New Zealand as a whole, as measured over decades, if not centuries, by avoiding the site to facilitate on-going research needs. This consideration is required for a cost:benefit assessment of the options.

Statement of evidence of Dr Forbes (Principle Ecologist – Forbes Ecology)

161 The scope of evidence described by Dr Forbes is not to repeat the technical detail set out in reports but rather, present the key findings of Technical Assessment 6 (Terrestrial Ecology), respond to questions of the Hearing Panel and comment on the Council section 42A materials.

162 Dr Forbes evidence addresses the medium – high value vegetation referenced by Mr Whaley, in my paragraphs 143 and 145 above.

163 The specific reference to the vegetation in Dr Forbes evidence is provided in paragraphs 114- 115 of Dr Forbes evidence, as reproduced below. The term medium to high vegetation value is not used in this reference to the site, but rather secondary/ advanced secondary broadleaf forest.

“114. Andrew Whaley comments in his evidence on the suggestion made by Cory Matthew regarding potential routes sketched to the south of Ballantrae.

115. I have looked at the ecological attributes that might be affected by options through this area. The interaction of the design with the gully systems is of concern in ecological terms due to impacts to secondary/advanced secondary broadleaved forest (and associated fauna) and from a regional consenting point of view additional impacts to a significant number of waterways. I would advise against the alternative options as sketched on ecological grounds.”

164 Although there is expression of a clear preference to avoid the site on ecological grounds, on the face of it, there does not seem to be strong or detailed opposition. There is no evaluation on whether this particular secondary/advanced secondary broadleaved forest (and associated fauna) should be considered more valuable to New Zealand as whole than the long-term fertiliser and grazing research facilities.

Statement of evidence of Ms Downs (Portfolio Manager System Design)

- 165 The scope of evidence is given in support of the Notices of Requirements and addresses statutory role and functions; the background need and objectives for the Project and the reasons not to incorporate a separate walking and cycling facility (or certain other elements) as sought by a number of submitters;
- 166 Paragraphs 11 and 12 of Ms Downs evidence reiterates the urgency with which the project is being undertaken. While there remains no-doubt there is a need for an alternative route to the Manawatu Gorge Road, I am concerned this urgency has impacted on the decisions about recognising the importance of the long-term fertiliser and grazing trial site and its protection.
- 167 Paragraphs 53 - 73 of Ms Downs evidence address the reasons for not including a separate cycle foot path. In the event the proposed four lane highway proceeds though the long-term fertiliser and grazing trial, an additional reason for not including a separate footpath and cycle way for the length of the highway is that it would have an additional and further untenable impact on the remaining components of the trial site, potentially making even those unusable.
- 168 I note that in paragraph 6 of MS Downs evidence it is registered that meetings took place with AgResearch, but there is no other reference to the research facility.
- 169 I am concerned that the importance of the long-term fertiliser and grazing trial site does not feature in consideration of the impacts of a separate pathway and cycle trail.

Statement of evidence of Ms Linzey (Senior Technical Director in Planning at Beca Group Limited)

- 170 The scope of Ms Linzey's evidence is not to repeat the detail of Technical Assessment 3 (Social Impact Assessment), but rather to present the key findings; comment on submissions; comment on the Council section 42A reports; and answer questions by the Hearings Panel.
- 171 Paragraph 93 of Ms Linzey's evidence responds of the Hearing Panel's question;

Have you considered the 'social impacts' of the possible cessation of the Ballantrae Hill Country Research Station fertiliser trials, particularly in light of concerns raised by submitters including AgResearch, Fertiliser NZ, Ballance, Beef and Lamb and various individuals?

- 172 It is confirmed that no consideration was given to the specific social or socio-economic impacts of the Option 3 outcome. That is the importance of the long-term fertiliser and grazing trial site was not taken into consideration, until after the technical evidence was prepared, and engaging Mr Morton and Dr Horne in Feb 2019.
- 173 I note that the Technical Assessment Social Impacts Report identified the AgResearch site in paragraph 146 (e) of that document, but did not assess its importance.

- 174 I am concerned that the apparent strategy of ‘any matters of concern will be addressed by conditions of designation and consultation during the execution of the project’ seems to have been applied consistently throughout the evaluation and assessment process.
- 175 I am concerned that the treatment of the research farm in this Technical Report appears to be no different from that of any other farm operation, despite having been identified as a site of national and international significance. Paragraph 146 (e) of the Technical Assessment 3 (Social Impact Assessment) says:

146: Potential social or ‘way of life’ and ‘sustaining oneself’ impacts include:

(e) Loss and disruption to other business activity operating in the area, particularly the loss of business continuity (as is the case for the research and farm trials). While not specifically a ‘social impact’, it is recognised that this activity supports wider social-economic operations and as such may have an indirect impact on the ability for people to sustain oneself. Given the low scale and indirect nature of this impact it has not been further quantified.

- 176 There is no reason given why it was determined the nature of this impact is “low scale” when it has been identified the site is nationally and internationally significant.
- 177 I am concerned that at this stage of assessment of potential social impacts, it was not recognised that this is the last remaining research site of its kind in hill country. It is representative of large areas of the North Island, and with relevance to hill country nationally, and provides research conditions which cannot be replicated or reproduced and which will greatly assist in answering significant issues relating to primary production, environmental management, animal health and food safety into the future decades/centuries. With just under \$9.5 Billion of export income from meat & wool production for 2018, this represents just under a quarter of the total export income from the primary sector for 2018. The primary sector represents just over 50 % of all export income. (MPI Situation and Outlook, 2018)
- 178 It is most likely that Ms Linzey was not alerted to the significance of this particular research site at the time of preparing the Technical Assessment Report 3, however, I do not agree with the description of the nature of the wider economic and social impact arising from a four-lane highway through this long-term fertiliser and grazing trial site, as “low scale”, other than on the basis of immediate impacts.

179 I do not agree that the impact of the proposed highway does not warrant further investigation on the potential social and economic impact for New Zealand looking forward over future decades.

Joint Expert Witness Statement (Effects on AgResearch Ballantrae Site)

180 For all of the evidence, assessments and procedures discussed above, it is perhaps the Joint Expert Witness Statement which brings us to address the 'crux of the matters' in terms of potential impact and consequences of Option 3, and in consideration of mitigations in relation to the research site.

181 Regrettably, in my view, it is the science matters not addressed by the Joint Expert Witness Statement which remains a very significant concern with the proposed route.

182 In relation to the value of the site and on-going impact of the proposed four lane highway there remains one matter of serious consideration, for which there are no expert witnesses.

183 As raised in my paragraph 63 above traffic flows lifting from 6,000 /day to 14,000 day (1,400 /hr) through the trial site will inevitably have an impact on contaminants introduced to the long- term trial.

184 In my view, farm system contaminants is a long-term emerging issue which would be well informed, over time, by long- term trial sites and so this is a significant factor to consider in relation to the impacts on the site.

185 The expert witnesses acknowledge in the Joint Expert Witness Statement they have not addressed this matter of concern, as the effect of vehicle emissions on the long-term trial sites is not within the area of expertise of any of the expert witnesses.

186 Indeed, a highway through the research site means it is no longer representative of hill country farms and this area of expertise is not normally warranted.

187 Never-the-Less, Dr Matthews has raised this as a matter of concern at paragraph 23 of his Expert Evidence, noting that he has no experience in the matter, but that research papers provide evidence that the influence can be complex and substantive, and awareness of the potential impact would give cause to lose confidence in the credibility of any research trial data.

188 I reiterate the concerns that the research site will, over decades, be adversely influenced by not just vehicle exhaust emissions, but particulate matter from rubber tyres and brake pads and oil leaks continuously discharged into the environment of the long-term treatments, noting that the assessments of contaminants in soil are measured in parts per million. Effects are likely to be greatest on the High Fertility block as it runs parallel to and close to the

proposed highway. This is also the first block which will be considered relative to the control, for early signs and indications of impacts of the farm system, so the confounding effect of external influence (a four-lane highway) over decades, could be very significant.

- 189 In addition to the references given by Dr Matthews on influence of vehicle emissions, I would add a 1977 New Zealand paper, which identified elevated levels of cadmium, copper, chromium, lead, nickel and zinc in soils and pastures by a highway, and that levels correlated with traffic density, (Ward, *et al*, *Environ. Sci. Technol.*, 1977)². Another international paper from France identified that the greatest effects were close to the road but effects can be up to 320 meters (Viard, *et al*, *Chemosphere*. 2004)³. Some other papers with similar findings are available.
- 190 Contaminants are recognised as an emerging issue requiring investigation and management into the future. For example, the Waikato Regional Policy Statement has identified cadmium, zinc and fluorine as emerging contaminants of concern (Issue 1.1, Policy 14.3.1 and most particularly Policy 14.3.2 which includes research as follows:

14.3.2 Research, advocacy and education

Waikato Regional Council will:

- a) work with industry and other stakeholders to identify, and incorporate into land management practices, actions to reduce the rate of accumulation of key soil contaminants including cadmium, fluorine and zinc;*
- b) work with relevant agencies towards increasing the understanding of diffuse contaminant issues and developing relevant national strategies; and*
- c) advocate for sustainable land management practices and the use of alternative technologies that minimise the risk of diffuse soil contamination, including through environmental education programmes*

- 191 I am concerned that a four-lane high through the long-term fertiliser and grazing trial site will have significant negative impact on the ability to differentiate effects from traffic on the farm system from the effects of essential farm practices such as application of phosphate fertiliser, herbicides, anthelmintics etc which are a normal part of any farm system.
- 192 I note that a matter not raised in any of the Officers' Reports or Expert Witness statements is the potential impact and additional mitigations required in relation to the proposed compound and laydown area on what is identified as an old rubbish dump adjacent to Saddle Rd and Morgan Rd. (ref: Drawing A-O6, Notices of Requirements, Vol 4). As a compound and laydown area for heavy machinery this site has potential for further contamination and a

² <https://pubs.acs.org/doi/abs/10.1021/es60132a007>

³ <https://www.ncbi.nlm.nih.gov/pubmed/15081778>

significant impact on the remaining trial area which is less impacted by the road extent area and excavations. If the proposal proceeds, additional protection and mitigations will be required for this site, to protect the remaining parts of the long-term fertiliser trial site recommended for the component research. It is a concern that these matters have not been identified or addressed.

Addendum to the Hearing Evidence of Mr Morton (Effects on AgResearch Ballantrae Site)

193 I also note in the addendum to evidence of Mr Morton, dated 26th March, there are two apparently conflicting remarks. Paragraph 34 notes that research on pasture systems in response to climate change will be even more important in the future:

“.....Furthermore, pasture growth and presumably composition was measured from six sites per farmlet in 2015/16, compared with eighteen sites per farmlet in 1975 to 1988 introducing large spatial variability between the two periods. However, the large future unknown is climate change and this could greatly affect pasture growth and composition in the years to come e.g. invasion of more C4 grasses. This makes the trial site even more valuable as a future resource (and hence my proposed measures intended to facilitate future research use of the trial site). “

194 I agree with the statement that the farm system changes into the future either through climate change or other influences, makes this research facility even more valuable as time goes on. However, a second remark occurs in paragraph 42 of Mr Morton’s addendum, where contrary to being more valuable as a future resource for pasture assessments, these assessments are dismissed as not being necessary.

“Again, the measures I have proposed are intended to help secure the future research use of the site. Whether that is in the form of restarting pasture growth measurements (after a 30 year gap for continual annual measurements), or for some other use, should be considered by AgResearch. As explained in my EIC, I do not think that the continuation of the trial (once results are captured to date, as I have proposed), or the restarting of pasture growth measurements, is essential. “

195 I believe these conflicting statements reflect the great difficulty faced by each of the expert witnesses in trying to assess future needs and demands, which cannot be predicted with certainty. This also reflects the difficulty in making judgements on the relative merits of component research versus grazed systems research.

196 In response to the proposed new conditions discussed above in my paragraphs 104 and 105, I also note that Mr Morton makes the statement at paragraph 34 as follows, which calls into

question the value of the proposed condition e) i) which requires a one-off snap-shot assessment to establish there has been, (and presumably, will be) no change in the soil and pasture at the site.

“34. Because the 2015/16 results compare one year with thirteen years results from 1975 to 1988 leading to possible temporal variability, I do not think that you can put a large amount of reliability in the long-term trends in pasture growth and composition. This is also noted in the report of Mackay et al. (2016). For example, in Figure 3 from Mackay et al. (2016), the percentage of high fertility grasses are higher in the LFLF than in the HFHF farmlet, a complete and unexpected reversal from the 1975-1988 results. Furthermore, pasture growth and presumably composition was measured from six sites per farmlet in 2015/16, compared with eighteen sites per farmlet in 1975 to 1988 introducing large spatial variability between the two periods.....”

197 The evidence also highlights once more the significance of losing a substantial number of long-term and consistent monitoring sites.

198 **The crux of the matters in relation to the Joint Expert Witness Statement** is based on the understanding that:

a) The proposed four lane highway through the long-term fertiliser and grazing site would bring the current trial to an end:

“.....the credibility of the ongoing/future data collected from the long-term systems trial would come to an end because of the disruption to the systems and loss of permanent sites.” and,

b) The NZTA and expert witnesses appear to work on the basis of the inevitability of highway Option 3, meaning it is now incumbent on all parties to consider the best way forward to make best use of the remaining facility.

199 **However, the matters to be addressed should include:**

a) Are the costs, difficulty and disadvantages of moving the designation, to protect the research-site clearly much greater than the value of continuing to further build on and implement the farm systems research outcomes, for the benefit of New Zealand as a whole, over the future decades/century, (the life of the proposed highway)? and

b) Is the potential value of the more constrained component research, over the future decades/century, (the life of the proposed highway), sufficiently close to the value of the current long-term research site to accept it as a substitute for the farmlet trials?

These remain very difficult judgements however:

Bullet a) does not appear to have been considered at all, and

Bullet b) does not have an agreed position in the Joint Expert Witness Statement.

- 200 Research questions over future decades cannot be predicted, but mitigations will need to provide for current and emerging research questions such as pasture composition effects under the grazing system, livestock production effects, nutrient and production responses under different slopes and aspect in a changing environment, soil carbon effects, (greenhouse gas implications), soil biota effects, contaminant accumulation in soils and pasture, their effects on grazed livestock and pathways to food products. This is not intended to be an exhaustive list.

Decision Sought

- 201 The Fertiliser Association seeks, first and foremost that negative impacts from the proposed Manawatu-Tararua Highway on the long-term fertiliser and grazing site are avoided.
- 202 Evidence to-date indicates that to avoid impacts on the site, the proposed route must not go through the long-term fertiliser and grazing trial site.
- 203 Prior to making any recommendation that the proposed highway continue through the long-term fertiliser and grazing trial site, it is requested that the Hearing Panel consider the likely consequence of losing the fertiliser and grazing system trial site and the consequence of lost resource for research information to inform the development and protection of pastoral hill country production into the future decades or century. (This evaluation has been missing from the process to-date).
- 204 Should the recommendation be that the proposed highway continue through the long-term fertiliser and grazing trial site, then it is requested that the establishment of suitable mitigations before, during and after the construction should be fully informed by all stake-holders with an interest in the long-term fertiliser and grazing site and an interest in the research questions that might be addressed, and that the mitigations are effective. (It is recognised that expert witness conferencing to-date has identified that mitigations

are extremely limited, but there are still some gaps, for example with few mitigations to address the effects of contaminants).

Concluding comment

205 Thank you for the opportunity for provide feedback and comment through this Hearing process, to address the best interests of New Zealand agriculture in relation to the impacts of the proposed Manawatu-Taraura Highway.



Greg Sneath

Dated 1 April 2019

For Fertiliser Association of New Zealand