

**IN THE MATTER OF**

The Resource Management Act 1991

**AND**

**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**  
Requiring Authority

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**STATEMENT OF EVIDENCE OF SCOTT DEEMER WICKMAN  
(ALTERNATIVES) ON BEHALF OF  
THE NEW ZEALAND TRANSPORT AGENCY**

**8 March 2019**

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## TABLE OF CONTENTS

INTRODUCTION .....	3
PURPOSE AND SCOPE OF EVIDENCE .....	3
EXECUTIVE SUMMARY .....	4
IDENTIFYING THE PROJECT AND DEVELOPING OPTIONS .....	5
MULTI CRITERIA ANALYSIS (MCA) .....	9
CONSIDERATION OF A SHORT LIST OF OPTIONS AND SELECTION OF PREFERRED OPTION .....	13
REFINING THE PREFERRED OPTION .....	17
COMMENTS ON SUBMISSIONS .....	17
RESPONSE TO QUESTIONS OF THE HEARING PANEL .....	19
COMMENTS ON COUNCIL SECTION 42A REPORTS .....	21
ATTACHMENT 1: ASHHURST SUB OPTIONS ASSESSMENT REPORT .....	23

## INTRODUCTION

1. My full name is **Scott Deemer Wickman**.
2. I am a Principal Transport Planner with the New Zealand Transport Agency ("**Transport Agency**"). I was responsible for leading the development of the Detailed Business Case process, including the Transport Agency's consideration of alternative options for the Te Ahu a Turanga; Manawatū Tararua Highway Project ("**the Project**"). I was involved in the Project from September 2017 through to April 2018.
3. While I am not giving expert evidence, for completeness I have the following qualifications and experience relevant to my evidence:
  - (a) I hold a Bachelor of Arts in Economics from Trinity College in Hartford, Connecticut (USA) and a Masters of Planning Practice from the University of Auckland, New Zealand.
  - (b) I have been working as a transport planner at the Transport Agency for over 9 years.
4. My evidence is given in support of the Transport Agency's notices of requirement ("**NoRs**") lodged in respect of the Project. I confirm that I am authorised by the Transport Agency to give this evidence.

## PURPOSE AND SCOPE OF EVIDENCE

5. The purpose of my evidence is to give an outline of the process followed by the Transport Agency in considering alternative options for the Project (including in the context of section 171(1)(c) of the Resource Management Act 1991 ("**RMA**").
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).
7. This evidence refers to and should be read together with Part E (Consideration of Alternatives) of the AEE, and the Detailed Business Case for the Project.<sup>1</sup>

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<sup>1</sup> The DBC is available at: <https://www.nzta.govt.nz/assets/projects/sh3-manawatu/Manawatu-Gorge-alternatives-detailed-business-case-part-a-october-2018.pdf>. The appendices to the DBC are at:

## EXECUTIVE SUMMARY

8. Following the closure of the Gorge road in 2017 (and once it became apparent that closure could be indefinite), the Transport Agency put in place a process for identifying and assessing options for re-establishing the SH3 connection.
9. That process was based on the Transport Agency's business case approach. Given the urgency assigned to the Project, the four-stage business case approach was condensed into a single Detailed Business Case process.
10. As part of the early tasks of the business case, the problems to be addressed were confirmed, Project objectives that would appropriately respond to the identified transport problems were identified, and a process for developing and assessing Project options was developed.
11. The process by which options were assessed was through a Multi-Criteria Analysis ("MCA") process. The MCA process was a key decision-support tool for the Transport Agency in identifying the preferred option to take forward for further development and refinement, including seeking the necessary RMA approvals.
12. The MCA process included a long-list and a short-list stage, with options assessed against a range of criteria (with the criteria organised into three groupings). 18 options were assessed at the long-list stage, and four options were assessed at the short-list stage. The short-list stage also included a specific sub-option MCA process for the connection back to SH3 at or near Ashhurst.
13. Ultimately, the Transport Agency selected short list Option 3 as the preferred option. That choice 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.

14. I respond in my evidence to comments by submitters and the Section 42A Report authors about the process of considering alternative options, as well as questions from the Hearing Panel.

## **IDENTIFYING THE PROJECT AND DEVELOPING OPTIONS**

15. As discussed in the evidence of **Sarah Downs** and **Mr Dalzell**, the Transport Agency immediately recognised the importance of reinstating the SH3 connection following the closure of the Manawatū Gorge road in early 2017. By mid-2017 it had become clear that there was a prospect of the Gorge road being closed on an indefinite basis.
16. A process for identifying and assessing options for reconnecting SH3 following the Transport Agency's 'business case approach', was promptly put in place. The Transport Agency and its investment partners use the business case approach to guide our long term planning and infrastructure investment decisions.

### **Business Case Approach**

17. A business case approach is a project development process that the Transport Agency utilises as a matter of best practice in relation to transport investment decisions. The approach sets out in a structured way the "investment story" of a project, with the ultimate outcome being to determine the appropriate scope and scale of investment required (if any) to resolve an identified problem and if so, to identify the most effective solution.
18. Undertaking business case development for transport projects is not a statutory requirement but is a process that is adapted from The Treasury's Better Business Case model to ensure that smart investment decisions are made, that maximise value for public spending. This is consistent with the Transport Agency's statutory operating principle to use its revenue in a manner that seeks value for money.<sup>2</sup>
19. Value for money is an important component of a business case approach but the focus is to ensure that a potential project addresses the identified problem(s) and achieves the identified potential benefit(s). Cost and benefit appraisal is undertaken at multiple stages during project development in order to inform the Transport Agency on such matters as optimal timing for delivery and benefit realisation. A benefit-cost ratio (BCR) is used as one

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<sup>2</sup> Land Transport Management Act 2003, section 96(1)(b).

piece of information to support the business case but it is not the sole determinative factor in the investment decision by the Transport Agency.

20. The Transport Agency's business case approach generally involves four successive and iterative stages that help define the problem and then shape and incrementally refine investment decision making. The typical four stage process includes the following phases:
  - (a) **Strategic Case:** The purpose of this stage is to identify transport problems, consider the consequence(s) of those problems and identify the benefits to be gained by fixing the problem(s). The strategic case provides the necessary rationale for how an investment proposal aligns with the Transport Agency's and project partners'/stakeholders' goals and priorities.
  - (b) **Programme Business Case:** This stage develops the evidence base to confirm the scale and significance of the problems and benefits identified in the Strategic Case. It then develops a programme of investment options and alternatives to address the agreed problems and deliver the desired outcomes. Specific activities (ie. investment options) are identified over a period of time and a programme is developed for the progression of further work.
  - (c) **Indicative Business Case:** At this stage further investigation is undertaken in relation to an individual activity (identified in a programme business case) to determine how well that investment responds to the problems identified. An activity could be a policy initiative or a project for new infrastructure or upgrades to existing infrastructure. The indicative business case reconfirms the strategic context, tests the evidence behind the key problems, and identifies opportunities and constraints for addressing the problem. A robust Multi Criteria Analysis ("**MCA**") process is followed at this stage to confirm the recommended option(s) to be progressed to the next phase.
  - (d) **Detailed Business Case ("**DBC**"):** At this stage the short listed option(s) are subjected to more detailed analysis of costs, benefits, risks and disbenefits to reach a conclusion around a preferred investment option. The DBC is used to determine whether funding will be approved by the Transport Agency for the preferred investment option to proceed to implementation (including for any RMA approvals).

21. However, the Transport Agency also recognises the need to act quickly, such as in the case of the closure of SH3 through the gorge. In this case, the decision was made to develop a Detailed Business Case as a matter of urgency, without requiring the completion of successive business cases. In this case, the key elements that are progressively explored through the above four stages are combined into a single business case.
22. For the Manawatū Gorge Detailed Business case, a team of consultants was appointed in August 2017 to develop the business case. The preferred route option (Option 3) was approved by the NZTA Board in March 2018 and the Detailed Business Case was completed by May 2018.

### **Overview of the Options Assessment Process**

23. One of the first tasks of the business case process was to confirm the problems to be addressed and then identify the Project objectives which appropriately respond to the identified transport problems. While the Project objectives were developed to inform an investment decision, the Project team was mindful of their future use, including for the purposes of section 171(1)(b) of the RMA. The Project objectives are:
  - (a) to reconnect the currently closed Manawatū Gorge State Highway 3 connection with a more resilient connection;
  - (b) to reconnect the currently closed Manawatū Gorge State Highway 3 connection with a safer connection than the Saddle Road and Pahiatua Track; and
  - (c) to reconnect the currently closed Manawatū Gorge State Highway 3 connection with a more efficient connection than the Saddle Road and Pahiatua Track.
24. These Project objectives effectively set out the scope and nature of the Project, framing the consideration of options that followed.
25. Designers developed a range of possible routes for the Project, taking into account historical studies, the Project objectives, design and engineering requirements., information relating to potential constraints (including geographic and geotechnical difficulties, sensitive areas in terms of cultural values, ecology and landscape / natural character, and land uses), and transport, economic and social needs and factors.
26. The evidence of **Andrew Whaley** provides more background and context to the development of route options.

## Reinstatement of the Manawatū Gorge road

27. As described in the evidence of **Sarah Downs**, the Manawatū Gorge has had a long history of landslide events, which have resulted in closures of the road through the Gorge for varying durations. Most recently, the Anzac slip in April 2017 resulted in a slip which resulted in the Gorge being closed temporarily until the slip could be remediated. However, in July 2017 the Transport Agency made the decision to postpone the remedial works and pull the contractors out of the Gorge, due to heightened health and safety concerns related to ongoing movement.
28. The existing road had previously been reinstated following landslide events, and that course of action was carefully considered following the 2017 closure. This was also not the first time that the Transport Agency (and its predecessors) had considered the viability of the route through the Gorge amidst ongoing instability within the Gorge. Notably, the Transport Agency commissioned a review of alternative routes in 2012,<sup>3</sup> following a landslide in 2011 which resulted in an extended closure (14 months) of the Gorge.
29. Based on the accumulated knowledge and experience of the Transport Agency, by mid-2017 it had become apparent that there was a prospect of the Gorge road being closed indefinitely. Prior to making a decision on the long-term future of the Gorge though, the Transport Agency obtained expert advice which concluded that reinstatement would not be viable on geotechnical and health and safety grounds. That was both in terms of carrying out the works (and the risks associated with that including to the safety of workers), and the ongoing operation of the route.
30. The advice we received following the 2017 closure was consistent with previous technical advice, including the 2012 report that identified the significant ongoing risk of landslides along the Gorge route. This covered expert advice from multiple sources, including geotechnical experts and network contractors.
31. As such, none of the options considered through the MCA process involve reinstating and reopening the closed Gorge road (although other 'in the Gorge' options were assessed).

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<sup>3</sup> The report is available here: <https://www.nzta.govt.nz/assets/projects/sh3-manawatu-gorge-2017-closure/PSW-198-SH3-Manawatu-Gorge-Alternative-Route-report-2012-11.pdf>



## **MULTI CRITERIA ANALYSIS (MCA)**

32. A key element of the business case approach is the process of identifying options to respond to the identified problem and then assessing those options against a common set of agreed criteria. This process of option assessment is commonly referred to as Multi-Criteria Analysis ("**MCA**"). The MCA process is used in the business case approach to differentiate between options and identify the respective performance of the various options against a common set of criteria. In the case of the Manawatū Gorge, an MCA was completed at the long-list and short-list phase of the business case, resulting in the identification of a preferred option.
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.
34. 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.
35. Generally, the options are assessed against each of the criteria, with technical experts assigned to assessing those criteria that are relevant to their respective areas of expertise. The experts are asked to provide a risk based judgment for each of the criteria that they are asked to assess, based on their technical expertise and practical experience. The amount of information available for the technical experts generally depends on the

stage of the assessment, with the long-list assessments being completed on concept designs and a relatively coarse level of information, while subsequent phases are subject to increased granularity due to steadily increasing knowledge from ongoing investigation and design work.

36. For the Manawatu Gorge MCA, a seven point scoring scale was employed, with zero being a neutral score. That scale was applied to some (but not all) criteria at the long list stage, and all criteria (except for cultural values / sites) at the short list stage.
37. As part of providing their assessments of each option, experts were asked to consider and record whether, in their opinion, any potential negative effects could be avoided, managed, or mitigated through further investigation and/or design work. In the event that experts deemed effects on any given criteria to be so bad as to be unlikely to be avoidable or unable to be appropriately managed or mitigated, a fatal flaw was provided as an option.<sup>4</sup>
38. Each of the experts completed their assessments independently. The assessments were then drawn together, along with supporting commentary from each of the experts. This was then followed by an overall judgment of the relative characteristics of the various options in terms of their ability to meet the Project objectives, the ability of the NZTA to actually deliver the investment proposal (ie. the risks and opportunities), and the potential effects of the proposal on the environment. In this way, the MCA process encourages a holistic and objective review of the key areas of relevance to the decision-maker for the proposed investment.
39. In summary, the MCA is a tool to support informed decision making. The decision as to the option to proceed with is one the Transport Agency makes in its role as requiring authority.
40. I set out below the assessment criteria that were used in the MCA process for the Project. The Project Objectives and MCA criteria were carefully considered and tested, with input sought from iwi and key stakeholders before they were confirmed.

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<sup>4</sup> I note that the term 'mitigation' in respect of fatal flaws was applied in the broad sense, as in measures to address the effects (which would for example include offsets). **Dr Adam Forbes** addresses this point in his evidence.

### *Assessment Criteria 1*

41. This group of criteria covered the Project objectives, which are focussed on resilience, safety and efficiency.
42. Assessing each option against these criteria involved considering:
  - (a) quantifiable measures for highway safety and efficiency (including KiwiRAP safety ratings, average annual deaths and serious injuries, and travel times); and
  - (b) qualitative resilience measures, drawing on the resilience expert's experience.

### *Assessment Criteria 2*

43. This group of criteria covered environmental and social impacts, focusing on the following areas:
  - (a) natural environment (water quality, hydrology, freshwater ecology, and terrestrial ecology);
  - (b) archaeology and built heritage;
  - (c) social effects;
  - (d) landscape and visual effects;
  - (e) effects on infrastructure and property; and
  - (f) effects on human health (noise and contaminated land).
44. The assessment against these criteria was carried out by a team of technical experts. The experts applied a risk-based approach, drawing on desktop reviews, insights and knowledge of the area, and stakeholder and community feedback.
45. Cultural effects were assessed by iwi representatives, who provided qualitative feedback on the options being considered instead of scoring each of the cultural effects of the options. This feedback was used alongside the quantitative assessments and feedback completed by the technical experts.

### *Assessment Criteria 3*

46. This group of criteria covered Project implementability factors. These factors included:

- (a) project risk, assessed by reference to potential issues that would need to be addressed during Project design and consenting;
- (b) cost, broken down into capital and operational costs;
- (c) construction considerations, including factors such as time to deliver, complexity, and risk;
- (d) network-dependent investments, which considers other consequential costs or investments that would be required as a result of implementing the option; and
- (e) Integration, which considers the potential risks and opportunities associated with integrating the option within the existing environment.

### **Long List MCA process**

- 47. A long list of 18 options (including a do-minimum option based on continued reliance on Saddle Road and Pahiatua Track) was developed for assessment.
- 48. The initial long list of options included 13 options. The process for identifying those original 13 options is discussed by **Andrew Whaley**. Following an initial assessment and through workshops with stakeholders and feedback from the public, a further 5 options were added to the long list of options, bringing the full long list that was assessed through the MCA process to 18 options.

### **Outcome of Long List assessment**

- 49. At the long list stage, eight options were assessed as being fatally flawed, reflecting the challenging terrain and significant cultural and ecological values of the area. These options were not taken forward for further consideration as a result.
- 50. For the remaining options, the scores (where scores were assigned) and information obtained from the long-list MCA process were considered by the Project team as part of our overall determination of what options would be carried forward to the short list for further assessment.

## **CONSIDERATION OF A SHORT LIST OF OPTIONS AND SELECTION OF PREFERRED OPTION**

51. Four options were included in the short list:
  - (a) Northern Option 5, which became short list Option 1;
  - (b) Saddle Road Upgrade (to a design speed of 100km/hr), which became short list Option 2;
  - (c) Northern Option 1, which became short list Option 3; and
  - (d) Southern Option 5, which became short list Option 4.
  
52. The short list options were again assessed using a similar MCA process and criteria as for the long list options. The same criteria were used, with the seven point scoring system applied against all criteria (noting that the level of information available to those carrying out the assessments was more detailed at this stage).
  
53. The short-list assessment built on the information from the long-list stage, and added further information from engagement with landowners and the public, through workshops and meetings with tangata whenua and key stakeholders including Meridian Energy, AgResearch, and TILT Renewables.
  
54. Elements of the short-list assessment process of particular note include the following:
  - (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.
55. Feedback on the options highlighted the ecological effects of Option 1, and the potential effects of Option 3 on the AgResearch site.
56. Feedback on Option 4 was split. Some feedback focussed on the directness and potential to support economic growth of Option 4 while others raised concerns about connecting to SH3 near Stoney Creek and the large number of affected landowners.
57. During the short-list process, representatives and mayors from Horizons Regional Council, Palmerston North City Council, Manawatū District Council, Tararua District Council and other territorial authorities expressed their strong support for Option 4 to the Transport Agency's Board. At the direction of the Transport Agency's Board, the Project team carried out:
- (a) additional evaluation of the issues raised by the local authorities, focussing on the strategic transport network and land use integration; and
  - (b) further engagement with the councils and key stakeholders.

#### **Outcome of the Short List Assessment and selection of preferred option**

58. The Project team gathered and considered all the information from the short list process, including the assessments and scores from the short-list MCA process, and the information received from stakeholders.
59. The MCA scores and discussion were used to inform the overall consideration of the information gathered, focussing in particular on points of differentiation between the options.

60. Some of the key points that arose from this overall analysis included:
- (a) All options were fundamentally better in transport terms than the existing situation. Option 3 performed best against the transport criteria (ie the Project objectives).
  - (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) Option 4 was estimated to be more expensive than the other three options,<sup>5</sup> with a slightly longer (by one year) estimated construction timeframe.
  - (e) 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.
61. Ultimately, the Transport Agency identified Option 3 as the preferred option to take forward to refinement and RMA approvals. That choice was influenced by:
- (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).

### **Analysis and assessment of connections to SH3 at / near Ashhurst**

62. The closure of the Gorge road has redirected traffic through Ashhurst, causing well-publicised issues for local residents. Part of the context for this

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<sup>5</sup> \$392 – 561m for Options 1, 2 and 3; \$603 – 801 for Option 4.

assessment was a clearly expressed desire, including via Palmerston North City Council, to rectify that situation.

63. Short list Options 1, 2 and 3 would all need to connect in to SH3 at or near Ashhurst.<sup>6</sup> During the overall short-list assessment process, the Project team ran a process to consider and assess options for this connection (in the event one of Options 1, 2 and 3 was selected as the preferred Project option).
64. Six options (A to F) were assessed for this connection, against criteria organised under transport (Project objective), social and environmental, and implementability groupings. The result of the assessment was that Option A was preferred.
65. Option A performed particularly well against the transport and social and environmental criteria groupings. While it was one of the more expensive options, it also performed well in terms of geotechnical risk. Option A includes a new bridge across the Manawatū River at the western end of the Gorge, avoiding the culturally significant Parahaki Island.
66. As the selected Ashhurst connection option, Option A was incorporated into the preferred overall Option 3.

#### **The tie-in at Woodville**

67. A key early decision (prior to the formal multi-criteria analysis (“**MCA**”) of options) was that the Project would ‘tie in’ to the existing State highway network on the eastern side of the route at the State Highway 2 / State Highway 3 junction in Woodville. This decision was strongly influenced by economic and social factors, including in particular to redirect the main flow of east-west traffic through the town centre (as before the Gorge road was closed).
68. In other words (and noting the Project objectives in this respect) the scope of the Project is to connect back to the existing State highway network at Woodville.
69. That said, as **Ms Downs** notes in her evidence, the Project does not preclude a possible future bypass of Woodville, as a separate project. Any such project would need to be subject to the usual Transport Agency

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<sup>7</sup> At page 60.



assessment processes, and of course RMA and other statutory approval processes.

## **REFINING THE PREFERRED OPTION**

70. Since the route of the Project was decided, in March 2018, considerable further work has been undertaken to inform and define the boundaries of the proposed designation corridor. The evidence of **Mr Dalzell** summarises the processes of engagement with tangata whenua, landowners, councils, and other stakeholders that has informed that refinement. The evidence of **Andrew Whaley** summarises key considerations from a design and technical assessment standpoint.

## **COMMENTS ON SUBMISSIONS**

71. A number of submissions raise issues related to the Transport Agency's consideration of alternative options for the Project. I address those submission points below, which relate to impacts of the Project on:
- (a) AgResearch's Ballantrae site;
  - (b) Te Āpiti Wind Farm, owned by Meridian Energy Limited; and
  - (c) two areas of land located subject to a 'QEII Covenant'.
72. I note that submissions seeking the inclusion of additional (separate) cycling and walking facilities are addressed in the evidence of **Sarah Downs**, **Jonathan Kennett**, and **David Dunlop**.

### **Effects on the Ballantrae site**

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.

### **Effects on Te Āpiti Wind Farm**

76. Meridian Energy's submission raises the potential impact of the Project on its Te Āpiti Wind Farm. Those potential impacts, and the status of discussions between the Transport Agency and Meridian to address those impacts, are discussed in the evidence of other witnesses, including **Mr Dalzell**.
77. There are two wind farms in the immediate vicinity of the Manawatū Gorge: Te Āpiti to the north, and Tararua Wind Farm (run by Tilt Renewables) to the south. The wind farms were recognised early on as a potentially significant constraint on the location and design of the Project.
78. A number of the long list corridor options considered would have directly affected one of those windfarms to a greater or lesser extent. Effects on the windfarms were carefully considered, and were relevant to a number of the assessment criteria (particularly effects on infrastructure and property). Engagement with Meridian and Tilt Renewables during the option assessment process aided our understanding of these potential effects.
79. Of the four short list options:
  - (a) Options 2 and 3 directly affected Te Āpiti Wind Farm;
  - (b) Option 4 directly affected Tararua Wind Farm; and
  - (c) Option 1 did not directly affect either wind farm. In fact, that option had been specifically designed as a northern option that would avoid direct impacts on Te Āpiti.
80. The varying levels of effect each of the short list options would have on wind farms was well understood and factored into the short-list assessment. Ultimately Option 3, which has direct effects on Te Āpiti, was selected as the Project corridor. The DBC records in respect of the Project corridor that:<sup>7</sup>

*“There is a risk of substantial adverse effects on infrastructure, primarily due to the presence of the Te Apiti wind farm, potential impacts on PowerCo transmission lines and disruption to the water supply of rural*

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<sup>7</sup> At page 60.

*properties. All of these effects would require appropriate mitigation. Across the alignment, service alterations and relocations would be required.”*

81. In summary, effects on wind farms were an important factor in options assessment process, but not an overriding one.

### **Impact on land subject to QEII Covenants**

82. The submissions of the Queen Elizabeth the Second National Trust, and Manawatū River Source to Sea, raise the impact of the Project on two areas of land subject to a QEII Covenant, referred to as the Western (CH5600-5800) and Eastern (CH6100-6400) QEII sites (“**QEII Land**”).
83. The potential impact of the Project on the QEII Land is discussed in the evidence of **Dr Forbes** and **Mr Whaley**. The QEII Trust submission recognises that the footprint of the Project within the QEII Land has been reduced.
84. In terms of the alternatives process, effects on land subject to QEII covenants were a consideration, in particular in terms of the ecological values of that land, and therefore the assessment of the options in terms of the natural environment criteria. Dr Forbes carried out an expert assessment of the options in that respect at both the long-list and short-list stage.
85. In his evidence, **Dr Forbes** explains that there are four other areas of land that are subject to QEII Covenants in the area, and which were addressed through the process of selecting and refining the Project option corridor, and that all of those areas were avoided through that process.

### **RESPONSE TO QUESTIONS OF THE HEARING PANEL**

86. I respond below to the questions from the Hearing Panel that are relevant to my evidence.

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

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.

**In relation to the sub-options A-F for the western end of the NOR considered in the DBC, please provide an assessment of traffic and engineering design effects of these options.**

**In relation to the sub-options A-F for the western end of the NOR considered in the DBC, are any of these routes preferential compared to the proposed in terms of cultural effects?**

89. I discuss the assessment of the sub-options for the Ashhurst connection in my evidence above. That assessment considered transport, social and environmental, and implementability criteria.
90. An *Ashhurst Sub Options Assessment* report was prepared on the assessment. I attach a copy of the report as **Attachment 1** to my evidence.
91. The performance of the options against the three transport criteria is set out at pages 8 – 10 of the report (and in Appendix A to the report). In terms of “engineering design”, the implementability criteria covered geotechnical and deliverability risk, cost, and construction considerations including time to implement. The performance of the options against those criteria is set out at pages 13 -15 of the report.
92. The performance of the options against the cultural and heritage criterion (one of the social and environmental criteria) is set out at page 12 of the report (and at Table 6 of Appendix B to the report, which focusses on the archaeological assessment carried out by **Dr Rod Clough**).
93. The cultural and heritage criterion considered cultural values, cultural sites / heritage, and archaeological and built heritage. Page 12 of the report records:

*There is some degree of cultural risk for all of the sub options, the key differentiator between the sub options is that sub option F intersects a pa site which represents a fatal flaw.*

*In terms of archaeological and built heritage impacts, sub options A and F were scored to have greater adverse effects than the other sub options. This is because, while all sub options avoid recorded sites of high significance, the potential of disturbing unrecorded archaeological sites is considered higher on these alignments due to the sensitive*

*archaeological nature of the land just north of the confluence of the Manawatu and Pohangina Rivers.*

#### **COMMENTS ON COUNCIL SECTION 42A REPORTS**

94. The Section 42A Reports include a number of comments on the process of assessing alternative options that was followed by the Transport Agency. The Planners' Section 42A Report includes (at page 200) the following list of issues that they consider "*warrants further consideration of alternative sites, routes or methods of undertaking the work*":
- (a) "*The potential for significant adverse effects on habitats and freshwater bodies, that either cannot be avoided, remedied or mitigated, or where effects offsetting is in doubt*";
  - (b) A query as to why short list Option 3 (ie the selected option) was not considered fatally flawed; and an assertion that not enough work was done to consider alternative designs and methods to address potential effects on indigenous biodiversity once that option was selected;
  - (c) A lack of detailed consideration of alternatives for the connection at Woodville (with no Woodville bypass option included);
  - (d) A lack of options specifically providing for safe facilities for vulnerable users; and
  - (e) A lack of options that would avoid the trial site at the AgResearch Ballantrae Research Station.
95. In response:
- (a) As discussed in my evidence above, effects on ecology were an important consideration through the MCA process for the Project. **Dr Forbes** provided the expert assessment of the long list and short list options. He explains his role in the process in his evidence. He also explains why he did not consider short list Option 3 to be fatally flawed.
  - (b) I have outlined above why no specific Woodville bypass option was assessed. **Ms Downs** adds to that in her evidence. There was a decision made not to seek to address this broader network consideration through this Project (which nonetheless does not preclude it being addressed in future).

- (c) The fundamental role of the MCA process was to consider corridor options for reinstating the severed SH3 link (in line with the Project objectives). Other witnesses (including **Ms Downs**, **Mr Whaley** and **Mr Dunlop**) explain the Transport Agency's position in respect of the improvements that will be delivered for vulnerable users following the completion of the Project.
  
- (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.

**Scott Wickman**

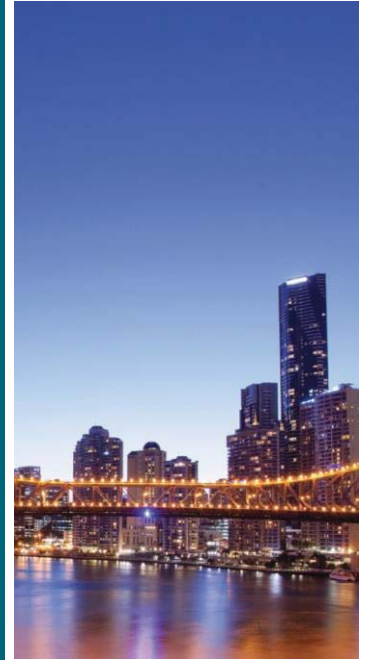
**8 March 2019**

**ATTACHMENT 1: ASHHURST SUB OPTIONS ASSESSMENT REPORT**

Provided separately

# Appendix E – Ashhurst Sub Option Assessment





# Ashhurst sub options assessment

Manawatū Gorge (SH3) Alternative Detailed Business Case

NZ Transport Agency

# Contents

Executive summary .....	1
<b>1. Introduction .....</b>	<b>2</b>
1.1 Purpose of this report .....	2
1.2 Assumptions .....	2
1.3 Disclaimer.....	2
<b>2. Background .....</b>	<b>2</b>
<b>3. Assessment methodology .....</b>	<b>4</b>
3.1 Transport performance assessment methodology .....	4
3.2 Social and environmental impact assessment methodology .....	4
3.3 Implementability assessment methodology .....	4
<b>4. Ashhurst sub option description .....</b>	<b>5</b>
4.1 Sub Option A.....	6
4.2 Sub Option B.....	7
4.3 Sub Option C.....	7
4.4 Sub Option D.....	7
4.5 Sub Option E.....	8
4.6 Sub Option F .....	8
<b>5. Ashhurst sub option assessment.....</b>	<b>8</b>
5.1 Transport performance .....	8
5.1.1 Resilience .....	8
5.1.2 Safety.....	9
5.1.3 Efficiency.....	10
5.1.4 Summary of transport performance assessment .....	10
5.2 Social and environmental impacts .....	10
5.2.1 Natural environment.....	10
5.2.2 Human health.....	11
5.2.3 Cultural and Heritage.....	12
5.2.4 Social .....	12
5.2.5 Landscape and visual.....	12
5.2.6 Infrastructure and property .....	13
5.2.7 Summary of social and environmental impact assessment.....	13
5.3 Implementability.....	13



5.3.1	Project risk (including geotechnical and deliverability risk)	13
5.3.2	Costs	14
5.3.3	Construction considerations including time to deliver	15
5.3.4	Summary of implementability assessment	15

**6. Sub option assessment summary .....15**

## Figures

Figure 1	Extract from short list flyer (emphasis added)	3
Figure 2	Ashhurst sub options	6

## Tables

Table 1	Resilience assessment summary	8
Table 2	Safety assessment summary	9
Table 3	Efficiency assessment summary	10
Table 4	Natural environment assessment summary	10
Table 5	Human health assessment summary	11
Table 6	Cultural and heritage assessment	12
Table 7	Social assessment summary	12
Table 8	Landscape and visual assessment summary	12
Table 9	Infrastructure and property assessment summary	13
Table 10	Summary of geotechnical risk	14
Table 11	Summary of estimated construction costs	14



# Executive summary

In response to the closure of the section of State Highway 3 that traverses through the Manawatū Gorge a Detailed Business Case is being developed to identifying a preferred option for a replacement route.

During the consultation and assessment of the long list options, and the subsequent development of the short list options, it was recognised that additional work was required to determine the most appropriate alignment to connect the options north of the Gorge back into SH3 in the vicinity of, and adjacent to, Ashhurst. The Ashhurst sub options assessment used a multi criteria analysis of six sub options (A to F) to confirm the most appropriate alignment to connect the options north of the Gorge back into SH3 in the vicinity of, and adjacent to, Ashhurst. This assessment was undertaken on the assumption that Option 3 would be the short list option that would be progressed, in order to make this assessment a manageable task. Notwithstanding, there were no fatal flaws or significant influences in the western end of Options 1 and 2 that would have influenced which option was taken forward, should sub options have been developed and assessed for these options as well (i.e. assessing Ashhurst sub options with relation to Option 3 only did not influence the assessment of the short list options).

Based on the results of a multi criteria analysis, sub option A was identified as the preferred connection between the Option 3 alignment and the existing state highway network east of Ashhurst as it would achieve the most favourable transport performance, environmental, social and implementability outcomes.

The key results of MCA process, which support the recommendation of Ashhurst sub option A as the preferred connection, include:

- **Transport Performance** - Sub option A was the highest performing from a transport performance perspective.
- **Environmental and Social Impact** - Across the 16 environmental and social effects assessed, sub option A had the least impact overall. Of note, there is potential for substantial positive social effects from this alignment and no substantial adverse effects were identified.
- **Implementability** - Sub option A was the third most expensive sub option in terms of construction cost, due to the requirement for a new bridge over the Manawatū River. The least expensive sub options largely rely on existing infrastructure and do not require any new bridge structures. There was little differentiation in construction time and traffic impacts during construction.

This assessment is part of the development of a Detailed Business Case and informs the identification of a preferred option for a replacement route for State Highway 3 as part of the Manawatū Gorge Alternatives Project.



# 1. Introduction

## 1.1 Purpose of this report

The purpose of this report is to document the assessment of six Ashhurst sub options that was undertaken to confirm the most appropriate connection of short list Option 3 into the existing network in the vicinity of, and adjacent to, Ashhurst. This assessment is part of the development of a Detailed Business Case that will identify a preferred option for a replacement route for State Highway 3 as part of the Manawatū Gorge Alternatives Project.

## 1.2 Assumptions

The report has been prepared in accordance with the NZ Transport Agency's business case guidelines and current practices and based on the best information available. Assumptions have been made throughout the assessment of the Ashhurst sub options and are detailed within sections 2, and 4.4.2 of this report.

## 1.3 Disclaimer

This report has been prepared by GHD for the NZ Transport Agency and may only be used and relied on by the NZ Transport Agency for the purpose agreed between GHD and the NZ Transport Agency as set out in section 1.1 of this report.

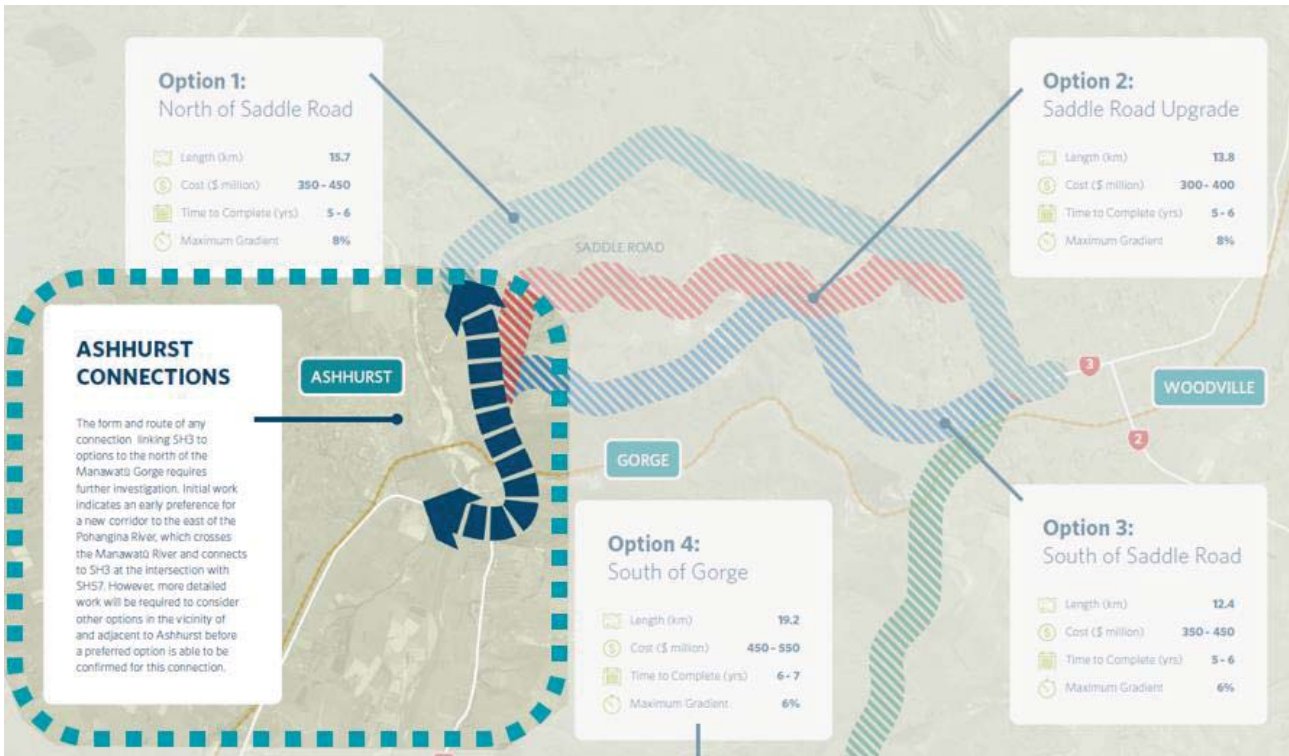
GHD otherwise disclaims responsibility to any person other than the NZ Transport Agency arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD based on conditions encountered at the time and information provided to GHD (which GHD has not independently verified or checked beyond the agreed scope of work), as described in this report (refer section 1.2 of this report). GHD disclaims liability arising from any of the assumptions or information being incorrect and has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

# 2. Background

The section of State Highway 3 (SH3) traversing through the Manawatū Gorge was closed in April 2017 as a result of slips and landslides compromising safety. The section of road provides a key link between the Manawatū Region including State Highway 1 (SH1) and State Highway 57 (SH57) and State Highway 2 (SH2) in the Wairarapa and Hawkes Bay Regions and is one of the few connections between the western and eastern sides of the Tararua and Ruahine Ranges. In the absence of suitable alternative routes, the Manawatū Gorge Alternatives Project is a response to the clear and urgent need to develop and construct an alternative route.

A long list of 18 options were identified and assessed using a multi criteria analysis (MCA) methodology<sup>1</sup>. Consultation on the long list options highlighted a range of social and environmental concerns with the options that traversed through, or near to Ashhurst. When the short list options were being determined it was recognised that additional work was required to determine the most appropriate alignment to connect the options north of the Gorge back into SH3 in the vicinity of, and adjacent to, Ashhurst (Figure 1). This was driven by the importance of ensuring a connection that was aligned with the aspirations of the Ashhurst community in the long-term, a common theme expressed during stakeholder and community engagement on the long list options.



**Figure 1 Extract from short list flyer (emphasis added)**

The Ashhurst sub option assessment was undertaken to confirm how the northern options would connect back into the network in the vicinity of, and adjacent to, Ashhurst. This assessment was undertaken on the assumption that Option 3 would be the short list option that would be progressed, in order to make this assessment a manageable task. Notwithstanding, there were no fatal flaws or significant influences in the western end of Options 1 and 2 that would have influenced which option was taken forward, should sub options have been developed and assessed for these options as well (i.e. assessing Ashhurst sub options with relation to Option 3 only did not influence the assessment of the short list options).

<sup>1</sup> The assessment of the long list and short list options is detailed further in the *Long List Report* and *Short List Report*, respectively.

## 3. Assessment methodology

The assessment methodology used to assess the Ashhurst sub options reflects the MCA process used to assess the short list options and utilised the same high level assessment criteria and 7-point scoring scale<sup>2</sup>. Due to the reduced spatial scope of the Ashhurst sub options assessment, the specific assessment metrics and scoring approach varied from those used to assess the short list options for the criteria discussed in section 3.1 to 3.3 below.

An internal workshop was held on the 1st December 2017 which involved the Transport Agency and GHD staff. The purpose of the workshop was to discuss the initial Ashhurst sub option assessment results and revisions were made following this to ensure consistent assumptions and approach. The Ashhurst sub options were not consulted on specifically, however, comments received during consultation on the long and short lists informed the social impact assessment in particular.

### 3.1 Transport performance assessment methodology

Transport performance was assessed based on three key result areas; resilience, safety and efficiency. The transport resilience of each route was considered in terms of geotechnical and flood risk (as opposed to the assessment of the short list options which followed the Resilience of State Highways guidelines).

The metrics for transport safety differ from those used in the assessment of the short list options, as the use of a KiwiRAP rating was not appropriate due to the number of urban roads (high number of vehicle access and/or intersections) as compared with the short list options. Instead, the assessment considers:

- Speed environment i.e higher speed higher severity crashes
- Number of intersections
- Side friction
- Number of vulnerable road users.

The efficiency assessment was made up travel time, travel time costs and total vehicle operating costs. The only differentiator between the short list assessment methodology was that travel time was considered for general traffic only, as there was not considered to be no discernible difference between general traffic and freight across the sub options. The assessment of transport performance is attached as Appendix A and summarised below in section 5.1.

### 3.2 Social and environmental impact assessment methodology


The assessment of social and environmental impact was undertaken as per the methodology used for the short list options. The social and environmental assessment score sheets are attached as Appendix B and summarised below in section 5.2.

### 3.3 Implementability assessment methodology

The following implementability criteria that were used to assess the Ashhurst sub options; project risk, costs, and construction considerations including time to deliver. The four other implementability criteria used to

---

<sup>2</sup> Please refer to Section 3 of the *Short List Report*, which discusses the development of the multi criteria analysis methodology.



assess the short list (safety and design, wider network considerations, network dependant investments and strategic network and land use integration) were not considered in the sub option assessment as they were unlikely to be major differentiators.

## 4. Ashhurst sub option description

The six sub options all commence at the existing road network west of Ashhurst (near the intersection of SH3 with Hillcrest and Hackett Roads) and terminate in the east, at a common point on Option 3, near the boundary of the Manawatū and Tararua Districts, as shown in Figure 2).



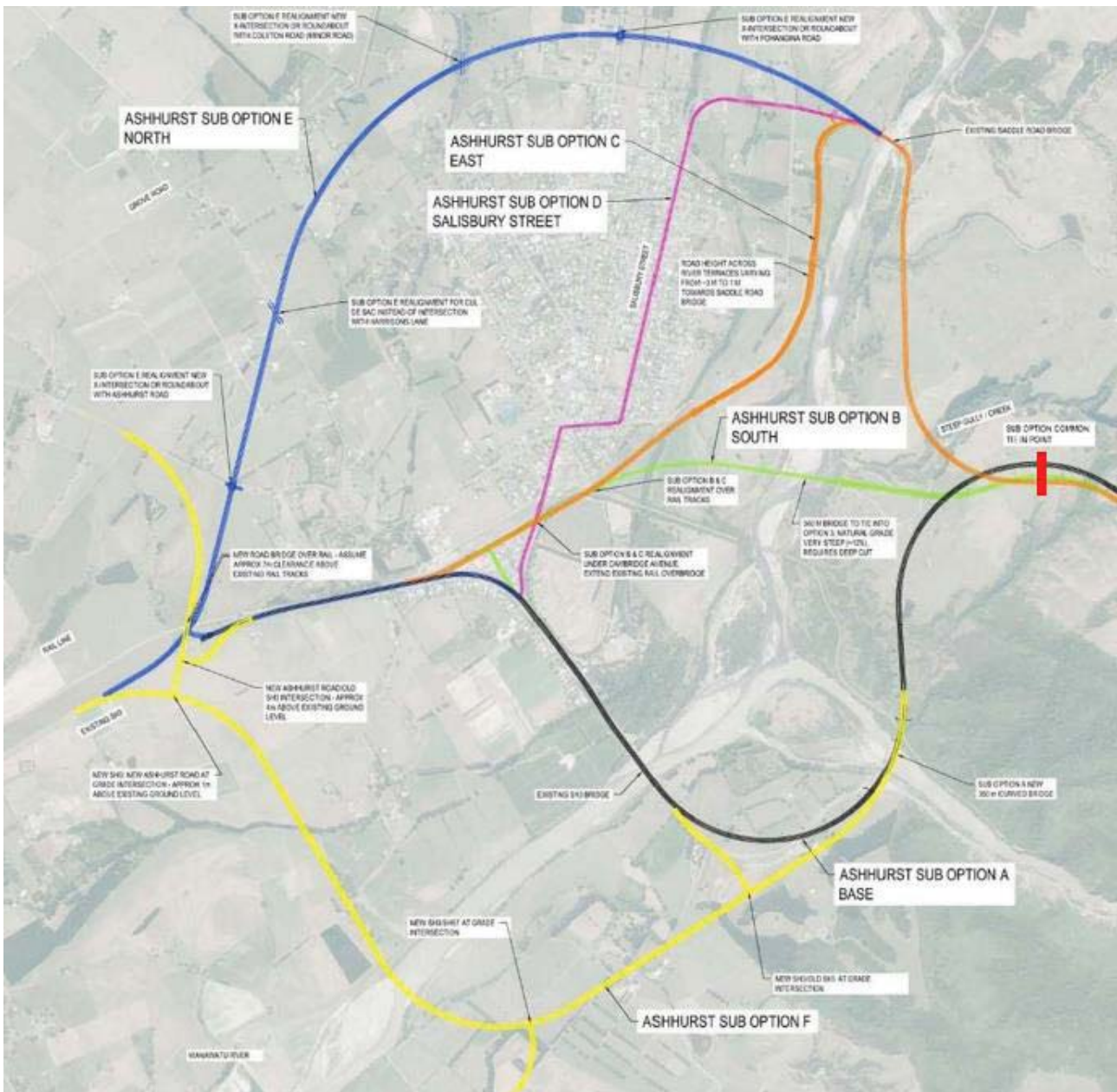


Figure 2 Ashhurst sub options

## 4.1 Sub Option A

Sub option A represents the alignment of short list Option 3 that was consulted on. This alignment connects back in with the existing SH3 at the intersection with SH57 and bypasses Ashhurst to the south.

From west to east, commencing at SH3 Napier Road the alignment traverses east toward the Gorge, before curving north across the Manawatū River via a long curved bridge (at the mouth of the Manawatū Gorge) and climbing and swinging east to link with the Option 3 alignment.

**New structures** 350 m bridge across the Manawatū River

**Design speed** 80 - 100 km/h

## 4.2 Sub Option B

Sub option B was developed to consider the feasibility of providing a new river crossing across the Pohangina River, to provide a more direct equivalent of the proposed temporary bypass of Ashhurst to Saddle Road.

From west to east, commencing at SH3 Napier Road the alignment continues along York Street adjacent to the rail line, before cutting across the corner of the Ashhurst Domain and crossing the rail line. The alignment then swings east traversing down to the lower terrace through a small cut/fill, before crossing Pohangina River and climbing to link with the Option 3 alignment.

<b>New structures</b>	Skewed bridge at grade across the rail line 340m bridge across the Pohangina River
<b>Design speed</b>	80 km/h

## 4.3 Sub Option C

Sub option C was developed to assess the feasibility of using the alignment of a proposed temporary bypass of Ashhurst to Saddle Road as a long-term connection.

From west to east, commencing at SH3 Napier Road the alignment continues along York Street adjacent to the rail line, before cutting across the north western corner of the Ashhurst Domain and crossing the rail line. The alignment continues north running parallel to the Pohangina River before turning on to the existing Saddle Road bridge, then turning south to run parallel to the eastern bank of the Pohangina River before swinging to the east and climbing to link with the Option 3 alignment.

<b>New structures</b>	Skewed bridge at grade across the railway (likely to be of a span sufficient for dual rail lines, or service road adjacent to existing line)
<b>Design speed</b>	80 km/h

## 4.4 Sub Option D

Sub option D was developed to represent a 'do minimum' option, by using the existing route via Ashhurst that is currently used to reach Saddle Road. This option largely uses existing roads on the western side of Pohangina River including the existing Saddle Road bridge, with new infrastructure required east of Pohangina River to connect the alignment into Option 3.

From west to east, commencing at SH3 Napier Road this alignment traverses north via Cambridge Avenue into Ashhurst before turning right into Mulgrave Street, left into Salisbury Street and heading north onto Saddle Road, crossing the Pohangina River over the existing Saddle Road bridge, before turning south and running parallel to the eastern bank of the Pohangina River before swinging to the east and climbing to link with the Option 3 alignment.

<b>New structures</b>	Nil
<b>Design speed</b>	50 - 80 km/h

## 4.5 Sub Option E

Sub option E was an iteration of the western end of long list option N07a and was developed to assess the merits of bypassing Ashhurst to the north.

From west to east, commencing at SH3 Napier Road this alignment swings north through rural and rural residential zoned land to circle the west and north of Ashhurst, before linking with the existing Saddle Road. It then crosses the Pohangina river over the existing Saddle Road bridge, turning south and running parallel to the eastern bank of the Pohangina River, before swinging to the east and climbing to link with the Option 3 alignment.

**New structures**                      Grade separation from the railway

**Design speed**                      80 - 100 km/h

## 4.6 Sub Option F

Sub option F was developed to assess a second option which bypasses Ashhurst to the south, requiring a second crossing of the Manawatū River.

From west to east, commencing at SH3 Napier Road the alignment swings south east through farmland, parallel to (and south of) Hacketts Road before crossing the Manawatū River and heading north east to cross the Manawatū River again, via a long curved bridge at the mouth of the Manawatū Gorge before climbing and swinging east to link with the Option 3 alignment.

**New structures**                      350 m bridge across the Manawatū River  
    Bridge across the Manawatū River

**Design speed**                      100 km/h

# 5. Ashhurst sub option assessment

## 5.1 Transport performance

### 5.1.1 Resilience

*Table 1 Resilience assessment summary*

	Sub option A	Sub option B	Sub option C	Sub option D	Sub option E	Sub option F
Geotechnical	-	-	xxx	xx	xx	xx
Flooding	-	x	xx	xx	xx	-

Sub option C was the least resilient sub option; this is because sub option C runs close to the western bank of the Pohangina River and is therefore more susceptible to lateral spreading. As with, sub options D and E, sub option C is also more likely to be affected by large scale land instability east of the Pohangina River (at the foothills of the Ruahine Range). Whereas, sub options A, B and F are less likely to be blocked by large landslides, due to their location with regard to the underlying geology. Sub option F also crosses several inactive faults.

Sub option C, D and E have a negative score for flooding resilience as they use the existing Saddle Road bridge and approaches (which has a history of flooding) and sub option C is substantially within the floodplain of the Pohangina River. Sub option B scores less negatively because while partially located within a floodplain it can be designed to minimise flood risk affecting the road, but this would need to be balanced with the inevitable reduction to flood storage. The sub options which introduce additional bridges offer better network resilience during flood events than those that rely on the existing Saddle Road bridge.

### 5.1.2 Safety

**Table 2 Safety assessment summary**

	Sub option A	Sub option B	Sub option C	Sub option D	Sub option E	Sub option F
Speed/severity (km/h)	H	M	M	L	H	H
Intersections <sup>a</sup>	L (4)	L (3)	M (6)	H (12)	M (6)	M (5)
Side friction	L	M	L	H	L	L
Vulnerable road users	L	M	M	H	L	L
MCA Score	✓✓✓	✓✓	✓✓	-	✓✓✓	✓✓✓

<sup>a</sup> The number of intersections on the alignment is indicated in brackets.

Note: Risk range is represented by H= high, M= medium, L=low.

Sub options A, E and F were the best performing in terms of safety, largely due to their low risk rating for side friction and vulnerable road users (i.e. pedestrians, cyclists and motorcyclists) as these options are largely located on the periphery of Ashhurst.

### 5.1.3 Efficiency

**Table 3 Efficiency assessment summary**

	Sub option A	Sub option B	Sub option C	Sub option D	Sub option E	Sub option F
Average Travel time (mins) <sup>a</sup>	4.5	3.5	5.2	7.4	5.4	4.2
Travel time savings (\$)	2,943,932	3,711,182	2,005,353	-	1,788,672	3,112,366
Annual vehicle operating costs (\$)	1,272,180	1,719,512	220,077	-	68,140	1,036,627
MCA Score	✓✓	✓✓✓	✓	-	✓	✓✓

<sup>a</sup> Estimated travel times were calculated for comparative purposes only and are for general traffic; the travel time for freight was distinguished as there was considered to be no discernible difference between the sub options.

Note: Risk range is represented by H= high, M= medium, L=low

Sub option B delivered the most significant benefit (in transport efficiency) as it was the most direct route, resulting in an approximately 50% reduction in travel time (when compared with sub option D). Sub options A and F also delivered significant improvement in efficiency, with all options reducing travel time by at least two minutes, when compared with sub option D.

### 5.1.4 Summary of transport performance assessment

Sub option A is the highest performing when assessed against the transport resilience, safety and efficiency criteria, followed by sub option B. This is because sub option A has a neutral score with regard to geotechnical and flooding resilience and is one of the best forming sub options in terms of safety and efficiency (along with sub options B and F).

## 5.2 Social and environmental impacts

### 5.2.1 Natural environment

**Table 4 Natural environment assessment summary**

	Sub option A	Sub option B	Sub option C	Sub option D	Sub option E	Sub option F
Water Quality (construction)	x	x	xx	x	x	x
Water Quality (operation)	✓	✓	✓	✓	✓	✓

	Sub option A	Sub option B	Sub option C	Sub option D	Sub option E	Sub option F
Hydrology	-	xx	xx	-	-	x
Freshwater Ecology	x	x	x	x	x	x
Terrestrial Ecology	xx	x	x	x	x	xx

There was no differentiation in water quality outcomes between the sub options once operational, however sub option C was scored more poorly for water quality outcomes during construction due to its proximity to the Pohangina River and therefore the risk of sedimentation is increased. Sub options B and C cross the floodplain of the Pohangina River, accordingly they may increase flood levels within the flood plain and therefore were considered to have a moderate adverse effect on hydrology.

All of the sub options were scored the same for freshwater ecology however sub options A and F were scored more negatively for terrestrial ecology (moderate adverse effects) on the basis that these options would impact an area of valuable vegetation north of the Manawatu River.

## 5.2.2 Human health

**Table 5 Human health assessment summary**

	Sub option A	Sub option B	Sub option C	Sub option D	Sub option E	Sub option F
Noise (construction)	-	-	-	x	-	-
Noise (operation)	✓✓	✓✓	✓	-	x	✓✓
Contaminated Land	-	-	-	-	-	-

Sub option D was the least favourable with regard to construction noise, as this sub option would require construction traffic to pass through Ashhurst creating the potential for minor adverse effects. For the remaining sub options, construction noise can be appropriately managed (such that they were scored neutral).

In terms of operational noise, sub option A would reintroduce traffic to SH3 along the previous route to the entry of the Gorge, whereas the other sub options introduce operational road noise to new areas. Sub option E, which is the only sub option scored negatively, introduces noise to a relatively quiet area resulting in a loss in amenity.

There is no differentiation between the sub options in terms of contaminated land as while the number of potential or identified contaminated sites varies between the options, it has been assumed that these effects can be avoided or mitigated such that the effects are neutral on all six sub options.



### 5.2.3 Cultural and Heritage

**Table 6 Cultural and heritage assessment**

	Sub option A	Sub option B	Sub option C	Sub option D	Sub option E	Sub option F
Cultural values						
Cultural sites/areas						This route will intersect a pa site.
Archaeological and built heritage	xx	x	x	x	x	xx

There is some degree of cultural risk for all of the sub options, the key differentiator between the sub options is that sub option F intersects a pa site which represents a fatal flaw.

In terms of archaeological and built heritage impacts, sub options A and F were scored to have greater adverse effects than the other sub options. This is because, while all sub options avoid recorded sites of high significance, the potential of disturbing unrecorded archaeological sites is considered higher on these alignments due to the sensitive archaeological nature of the land just north of the confluence of the Manawatu and Pohangina Rivers.

### 5.2.4 Social

**Table 7 Social assessment summary**

	Sub option A	Sub option B	Sub option C	Sub option D	Sub option E	Sub option F
Social	✓✓✓	✓	-	-	-	x

Sub option A delivers significantly greater positive social outcomes (compared with the other sub options) as it takes traffic off Salisbury Street, which is currently experiencing increased traffic volumes, and does not adversely impact the character of any other streets in Ashhurst by returning travel patterns to what they were pre-Gorge closure along SH3.

Conversely, sub options B, C and E impact the character or potentially sever other streets in Ashhurst to varying degrees, impact the Ashhurst Domain (sub options B, D), or have the potential to constrain the growth of Ashhurst (sub option E). Sub option F which has been scored negatively impacts two dwellings and crosses Class I and II soils which is used for established agricultural practices.

### 5.2.5 Landscape and visual

**Table 8 Landscape and visual assessment summary**

	Sub option A	Sub option B	Sub option C	Sub option D	Sub option E	Sub option F
Landscape	xx	xxx	xxx	xx	xx	xx

	Sub option A	Sub option B	Sub option C	Sub option D	Sub option E	Sub option F
Visual amenity	xx	xxx	xx	xx	xx	xx

All six sub options intersect outstanding natural landscapes (ONL) and are expected to result in varying degrees of adverse landscape effects. Sub options B and C, which scored more poorly, both intersect the Ashhurst Domain, a gazetted recreation reserve.

Sub option B was scored most poorly in terms of visual amenity, as this alignment would be highly visible where it rises through the Ashhurst Domain, it would impact on the visual amenity of adjoining residents to the south and would require box cuts that would be viewed from Ashhurst. While sub options A and F require a bridge that would be visible at the gateway of the Manawatū Gorge, in general the views of these alignments are considered to be relatively contained from Ashhurst due to the topography and landscape context.

### 5.2.6 Infrastructure and property

**Table 9 Infrastructure and property assessment summary**

	Sub option A	Sub option B	Sub option C	Sub option D	Sub option E	Sub option F
Infrastructure	-	xx	xx	-	x	x
Land	x	xx	xx	x	xx	xx

All of the sub options have limited utility impacts, particularly the alignments which go through greenfield areas. Sub options B and C have the most adverse infrastructure effect, as both require extending the existing rail overbridge.

With regard to land and property impacts, sub options A and D were scored less negatively (minor adverse effects) as a relatively low number of land owners are affected by these alignments, there was a lesser impact on individual properties and as KiwiRail infrastructure and recreation land were avoided, the complexity of acquisition was reduced.

### 5.2.7 Summary of social and environmental impact assessment

Sub options B and C are the only sub options which have been assessed to have significant adverse effects (with regard to landscape and visual amenity) and sub option A is the only sub option considered to have significant positive effects (relating to social outcomes). Sub option F was considered to have a fatal flaw as it crossed a pa site. Overall, based on a non-weighted consideration of scores, sub option A had the least social and environmental impact and sub option C had the greatest.

## 5.3 Implementability

### 5.3.1 Project risk (including geotechnical and deliverability risk)

The project risk criterion was largely informed by the geotechnical risk assessment, which considered the risk associated with ground conditions, as detailed Table 10.



**Table 10 Summary of geotechnical risk**

<b>Sub option A</b>	The western end of sub option A (north of the existing Manawatū bridge crossing) has Unit 1 geology, which presents a low – moderate risk. The eastern end is located within Unit 2 geology, which is weak, sensitive and potentially unstable. The risk is low - moderate.	✓✓
<b>Sub option B</b>	The western end of sub option B (up to the proposed Pohangina River bridge crossing) has Unit 1 geology, which presents a low – moderate risk. The eastern end is located within Unit 2 geology, which is weak, sensitive and potentially unstable. The risk is low - moderate.	✓✓
<b>Sub option C</b>	The western end of sub option C (up to the existing Saddle Road bridge) has Unit 1 geology, which presents a low – moderate risk. The eastern end is located within Unit 2 geology, which is weak, sensitive and potentially unstable. The risk is moderate.	-
<b>Sub option D</b>	The western end of sub option D (up to the existing Saddle Road bridge) has Unit 1 geology, which presents a low – moderate risk. The eastern end of sub option D is the same as sub option C.	-
<b>Sub option E</b>	The western end of sub option E (up to the existing Saddle Road bridge) has Unit 1 geology, which presents a low – moderate risk. The eastern end of sub option E is the same as sub option C.	-
<b>Sub option F</b>	The western end of sub option F (up to Fitzherbert East Road) has Unit 1 geology, which presents a low - moderate risk. Between Fitzherbert East Road and the proposed Manawatū bridge crossing, the cuts into western sloping alluvial terraces. The remaining eastern extent of the alignment is the same as sub option A (i.e. located within Unit 2 geology).	✓✓

Across all of the sub options, geotechnical risk is elevated where the alignments cross the Pohangina and Manawatū River terraces, as these areas have weak, potentially unstable and sensitive (Unit 2) geology.

The geotechnical risk of sub options A, B and F is lesser than the common path of sub options C, D and E (east of the Pohangina River) due to the orientation of these alignments, away from, or crossing perpendicular to high risk areas. Sub option B has the most favourable orientation in relation to the underlying geology, and therefore has the lowest risk profile.

### 5.3.2 Costs

**Table 11 Summary of estimated construction costs**

	<b>Construction costs (95<sup>th</sup> percentile)</b>
<b>Sub option A</b>	\$137 M
<b>Sub option B</b>	\$144 M
<b>Sub option C</b>	\$94 M
<b>Sub option D</b>	\$60 M
<b>Sub option E</b>	\$95 M
<b>Sub option F</b>	\$189 M

Assumptions:

- The cost associated with earthworks east of the main river crossing was excluded as this is common to all options.

## Construction costs (95<sup>th</sup> percentile)

- The estimate for sub option D accounts only for upgrades from the end of Salisbury Street (i.e. not any upgrade to existing roading infrastructure within Ashhurst).
- The existing Saddle Road bridge will remain, upgrading of this bridge has not been costed (and if required, would likely add \$10 - \$20 million to the construction cost of sub options C-E)
- Estimates do not include a grade separated link from SH3 to Ashhurst Road. If required, this would likely add \$10 - \$20 million to the construction cost
- Estimates do not include land purchase or accommodation works and are based on 2D alignment design only. They are for comparative purposes only.

Sub option F is expected to have the highest construction cost, as this sub option requires two new bridge structures over the Manawatū River. Sub options A and B are similar in cost (at approximately. \$40 million less than sub option F), followed by sub options C and E which are also comparable. As expected, sub option D which largely uses the existing road network through Ashhurst has the lowest estimated construction cost.

### 5.3.3 Construction considerations including time to deliver

In terms of delivery risk and construction considerations, all of the sub options were considered equal and therefore were not assessed in detail. However, one differentiator in terms of delivery criteria was that sub option C provided an opportunity for early delivery, to act as a bypass of Ashhurst while the remainder of the project is being delivered. In other aspects, the implementation was considered equal between the options.

### 5.3.4 Summary of implementability assessment

Sub options A, B and F were all scored equally as favourable in terms of geotechnical risk (the remaining sub options were scored neutral). The cost of construction ranged from \$60M (sub option D) to \$189M (sub option F), based on the extent of new infrastructure required. There was little distinction between the sub options in terms of construction considerations, however sub option C provides the opportunity for early delivery to act as a bypass of Ashhurst.

## 6. Sub option assessment summary

Based on this assessment, sub option A was identified as the preferred connection between the Option 3 alignment and the existing state highway network east of Ashhurst as it would achieve the most favourable transport performance, environmental, social and implementability outcomes.

The key results of MCA process, which support the recommendation of Ashhurst sub option A as the preferred connection, include:

- **Transport Performance** - Sub option A is the highest performing from a transport resilience, safety and efficiency perspective.
- **Environmental and Social Impact** - Across the 16 environmental and social effects assessed, sub option A had the least impact overall. Of note, there is potential for substantial positive social effects from this alignment and no substantial adverse effects were identified.
- **Implementability** - Sub option A was the third most expensive sub option in terms of construction cost, due to the requirement for a new bridge over the Manawatū River. The least expensive sub options largely rely on existing infrastructure and do not require any new bridge structures. There was little differentiation in construction time and traffic impacts during construction.



# Appendix A Transport Performance Assessment



28/11/2017

To	Mary O'Callahan	Ref. No.
From	Tony Harrison	Tel
cc	Carey Morris	
<b>Subject</b>	<b>Ashhurst Sub Options – Traffic and safety assessment</b>	

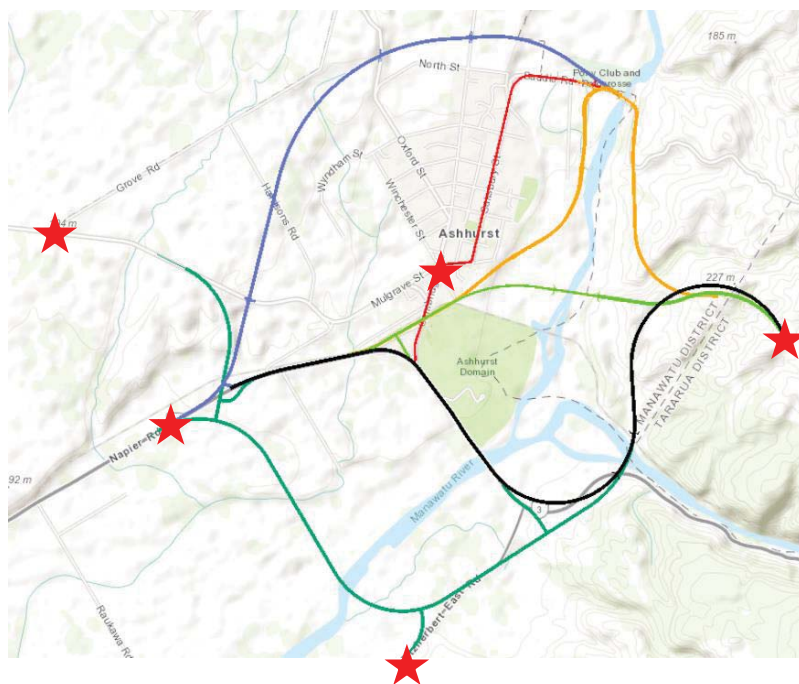
The sub options for the Ashhurst connection for short list Option 3 have been assessed from a transport efficiency and safety aspect. The sub options assessed are A, B, C, D, E and F as shown on drawing 91-50011-SK013 Rev A.

**Methodology**

The efficiency of each sub option they have been assessed from the common start point of sub option A through the following common points at the Ashhurst end. These are illustrated in Figure 1.

- SH3 where sub option F joins;
- SH57 where sub option F joins;
- The intersection of Mulgrave St and Cambridge Ave; and
- The intersection of Grove Rd and Ashhurst Rd.

**Figure 1: Origin-Destination Assessed**



Each route length has been measured and travel times calculated by applying average travel speeds over those routes which allows for 50 km/h, 80 km/h and 100 km/h speed restrictions on the various sub options.

Option E assumes that traffic heading to and from SH57 or Mulgrave St still utilise Salisbury Street.

The following assumptions have been used in the calculation of vehicle operating costs (VOC) and travel time savings (TT).

- VOC \$0.23 cents/km for general traffic;
- VOC \$1.741 cents/km for heavy commercial vehicles with the exception of Sub option B that has a steep section (12%) from Ashhurst to connect to Option 3. An average rate of \$2.261 cents/km has been applied based on the \$3.821cents/km rate for this section. Speed variable rates have not been included at this time;
- TT for general traffic \$14.4 per hour; and
- TT for heavy commercial vehicles of \$27.8 per hour

Update factors have been applied to the total VOC (0.98) and TT (1.45) benefits to update to 2016.

Sub option (Salisbury Street) has been used as the Do Minimum to assess total VOC and TT benefits.

The efficiency analysis is detailed in Tables 2 – 5.

Road safety has been assessed on a quantitative basis on the following metrics:

- Speed environment i.e higher speed higher severity crashes;
- Number of intersections;
- Side friction; and
- Number of vulnerable road users.

Each category was assessed on the following range and allocated scores.

**Table 1: Safety risk range and score**

Risk Range	Score
High (H)	5
Medium (M)	3
Low (L)	1

The results of the analysis are detailed in Tables 6 and 7 below.

The efficiency and safety summary scores have been assessed on a -3 to +3 range multi criteria assessment with 0 being the Do Minimum situation of Salisbury Street.

Table 2 indicates the percentage of traffic in terms of origin and destination and the trip length.

**Table 2: Route length (km)**

Sub Option	SH3	SH57	Mulgrave St	Grove Road
% traffic	39%	20%	12%	29%
A	6.75	4.94	5.44	8.4

B	5.18	6.24	3.41	6.33
C	7.42	8.29	5.66	8.56
D	8.02	8.65	5.16	8.46
E	8.1	8.78	5.13	8.5
F	7.08	4.64	5.7	9.04

**Table 3: Travel time (minutes)**

Sub Option	SH3	SH57	Mulgrave St	Grove Road
A	4.5	3.0	3.8	5.6
B	3.5	4.4	2.2	4.2
C	5.2	5.9	4.0	5.7
D	7.4	8.0	4.4	7.8
E	5.4	6.6	4.1	5.7
F	4.2	2.8	4.0	5.4

**Table 4: VOC and TT savings per annum against Do Min sub option D**

Sub Option	VOC	TT	Total annual benefits
A	\$1,272,180	\$2,943,932	\$4,216,112
B	\$1,719,512	\$3,711,182	\$5,430,694
C	\$220,077	\$2,005,353	\$2,225,430
D	-	-	-
E	\$68,140	\$1,788,672	\$1,856,812
F	\$1,036,627	\$3,112,366	\$4,148,993

The ranking from best performing to worst performing and associated MCA score are detailed in Table 5.

**Table 5: Efficiency ranking and score**

Sub Option	Ranking	Score	Band
B	1	✓✓✓	\$5m+
A	2	✓✓	\$2.5 – 5m
F	3	✓✓	\$2.5 – 5m

C	4	✓	\$0 – 2.5m
E	5	✓	\$0 – 2.5m
D	6	-	-

**Table 6: Safety assessment**

Sub Option	Speed / severity	Intersections	Side friction	Vulnerable road users	Summary	Score
A	80 – 100 km/h / H	4 / L	L	L	HLLL	8
B	80 km/h / M	3 / L	M	M	MLMM	10
C	80 km/h / M	6 / M	L	M	MMLM	10
D	50 – 80 km/h / L	12 / H	H	H	LHHH	16
E	80 – 100 km/h / H	6 / M	L	L	HMLL	8
F	100 km/h / H	5 / M	L	L	HLLL	8
<b>Notes</b>	0 – 50 L 50 – 80 M 80+ H	1 – 5 L 5 – 10 M 10+ H	Rural L Fringe M Urban H	Rural L Fringe M Urban		

The ranking from best performing to worst performing and associated MCA are detailed in Table 7.

**Table 7: Safety ranking and score**

Sub Option	Ranking	Score
A	1	✓✓✓
F	2	✓✓✓
E	3	✓✓✓
B	4	✓✓
C	5	✓✓
D	6	-

## Summary

The summary MCA scores for the sub options are shown in Table 8.



**Table 8: MCA summary**

Sub Option	Efficiency	Safety	Total
A	✓✓	✓✓✓	5
B	✓✓✓	✓✓	5
C	✓	✓✓	3
D	-	-	
E	✓	✓✓✓	4
F	✓✓	✓✓✓	5

# Appendix B Social and Environmental Score Sheets

## Natural Environment

## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Stormwater (Flooding, Quality)

**Expert undertaking assessment:** Tony Cain (GHD)

**Option being considered:** Ashhurst Sub-option A

**Hydrology Score:**

0 Neutral/Negligible

**Water Quality (Construction)Score:**

- Minor Adverse Effect

**Water Quality (Operation)Score:**

+ Minor Positive Effect

**Assumptions**

**Hydrology (Existing Catchment)**

Existing catchment flows will be passed through the alignment in fill areas and around the alignment in cut areas.

Effect of road alignment may require stream diversions and the diversion of water from natural catchment from one sub catchment to another.

**Water Quality (Construction)**

Best practice measures to manage construction stage erosion and sedimentation effects will be established during construction in accordance with NZ Transport Agency guidelines and standards

**Water Quality (Operational)**

Stormwater treatment devices will be provided in the operational phase of the project and will be established as part of the design proposals in accordance with the NZ Transport Agency's Stormwater Treatment Standard for State Highway Infrastructure.

Assumption is that there will be a preference for vegetated systems (e.g Swales, Wetlands, Filter strips) where possible and supplemented by proprietary treatment devices where space restrictions or landform excludes the establishment of vegetated systems.

<p><b>Notes:</b></p> <p><b><u>Hydrology</u></b></p> <p>I've scored this as a neutral/negligible this option is effectively on the same alignment as the existing road and therefore there would be no positive or negative effect on the hydrological regimes compared with the existing road alignment.</p> <p>Additional impervious surfaces that may be introduced for the road would increase the volume and velocities of stormwater discharged from the road when compared with the existing catchment.</p> <p>However, with the introduction of stormwater detention devices as part of the design this effect would be appropriately mitigated.</p> <p><b><u>Water Quality-construction</u></b></p> <p>With appropriate staging and sequencing effective and erosion and sediment control measures could be established. However, ESC measures do not and cannot be economically designed for full retention of sediment generated by the construction works and therefore it is inevitable that some sediment would still be released be released into the receiving environment.</p> <p>Appropriate ESC measures would be incorporated as part of a suite of environmental controls that would be established prior to and during construction and an overall assessment of effects would need to be undertaken at future stages of the project.</p> <p>The assessment of the effect would require additional sediment modelling to be carried out 1) to establish a baseline for the existing catchment and 2) to assess the sediment yield from construction activities and determine the effect of any increase caused due to construction.</p> <p>At this stage of the design I would consider that the effects of sedimentation can be managed to the fullest possible extent and would consider a minor adverse effect score to be appropriate.</p> <p><b><u>Water Quality – operation</u></b></p> <p>There is somewhat limited space along the route to provide effective storm water treatment measures.</p> <p>However, with further design development these would be incorporated in the design in a holistic manner.</p> <p>At this stage of the project it is assumed that the existing Manawatu Gorge Road and Saddle Road currently do not incorporate appropriately designed stormwater treatment devices and that SW treatment would be provided for the new route which would reduce the amount of contamination (suspended solids) present in stormwater discharges from the route when compared to the existing situation and therefore I consider there would be a minor positive effect on the receiving environment compared to the existing situation.</p>	<p><b>Assumptions made</b></p> <ol style="list-style-type: none"> <li>1) Stormwater treatment devices are not currently in place on either the Manawatu Gorge Road or the Saddle Road.</li> <li>2) Appropriate stormwater treatment and detention devices would be incorporated within the design proposals.</li> </ol> <p><b>Information relied upon</b></p> <ol style="list-style-type: none"> <li>1) Project GIS Webportal</li> </ol>
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<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Stormwater (Flooding, Quality)	
<b>Expert undertaking assessment:</b> Tony Cain (GHD)	
<b>Option being considered:</b> Ashhurst Sub-option B	
<p><b>Hydrology Score:</b> -- Moderate Adverse Effect</p> <p><b>Water Quality (Construction)Score:</b> - Minor Adverse Effect</p> <p><b>Water Quality (Operation)Score:</b> + Minor Positive Effect</p>	<p><b>Assumptions</b> <u><b>Hydrology (Existing Catchment)</b></u> Existing catchment flows will be passed through the alignment in fill areas and around the alignment in cut areas.</p> <p>Effect of road alignment may require stream diversions and the diversion of water from natural catchment from one sub catchment to another.</p> <p><u><b>Water Quality (Construction)</b></u> Best practice measures to manage construction stage erosion and sedimentation effects will be established during construction in accordance with NZ Transport Agency guidelines and standards</p> <p><u><b>Water Quality (Operational)</b></u> Stormwater treatment devices will be provided in the operational phase of the project and will be established as part of the design proposals in accordance with the NZ Transport Agency's Stormwater Treatment Standard for State Highway Infrastructure.</p> <p>Assumption is that there will be a preference for vegetated systems (e.g Swales, Wetlands, Filter strips) where possible and supplemented by proprietary treatment devices where space restrictions or landform excludes the establishment of vegetated systems.</p>
<p><b>Notes:</b></p> <p><u><b>Hydrology</b></u></p> <p>I've scored this as a moderate adverse effect as the route of this sub-option crosses the floodplain of the Pohingina River and depending on the design may increase flood levels within the flood plain and potentially increase flood levels upstream of the crossing.</p> <p>Mitigation measures in the form of flood relief culverts could go some way to mitigating the extent of the effect. However, there would still be an adverse effect. The design as currently presented does not include for any flood mitigation measures and therefore I would have to assess that this option would have a moderately adverse effect.</p> <p>Due to the increased impervious surfaces for the road there is the potential for additional volumes of stormwater and increased velocities of stormwater discharged from the road when compared with the existing natural catchment. However, with the introduction of stormwater detention devices as part of the design this effect could be appropriately mitigated.</p>	<p><u>Assumptions made</u></p> <ol style="list-style-type: none"> <li>1) Stormwater treatment devices are not currently in place on either the Manawatu Gorge Road or the Saddle Road.</li> <li>2) Appropriate stormwater treatment and detention devices would be incorporated within the design proposals.</li> </ol> <p><u>Information relied upon</u></p> <ol style="list-style-type: none"> <li>1) Project GIS Webportal</li> </ol>

However, these could only be placed outside of the existing Pohingina and Manawatu River floodplain.

**Water Quality-construction**

With appropriate staging and sequencing effective erosion and sediment control measures could be established. However, ESC measures do not and cannot be economically designed for full retention of sediment generated by the construction works and therefore it is inevitable that some sediment would still be released into the receiving environment.

Appropriate ESC measures would be incorporated as part of a suite of environmental controls that would be established prior to and during construction and an overall assessment of effects would need to be undertaken at future stages of the project.

The assessment of the effect would require additional sediment modelling to be carried out 1) to establish a baseline for the existing catchment and 2) to assess the sediment yield from construction activities and determine the effect of any increase caused due to construction.

At this stage of the design I would consider that the effects of sedimentation can be managed to the fullest possible extent and would consider a minor adverse effect score to be appropriate.

**Water Quality – operation**

There is available (but somewhat limited) space along the route to provide effective storm water treatment measures. However, with further design development these would be incorporated in the design in a holistic manner.

At this stage of the project it is assumed that the existing Manawatu Gorge Road and Saddle Road currently do not incorporate appropriately designed stormwater treatment devices and that SW treatment would be provided for the new route which would reduce the amount of contamination (suspended solids) present in stormwater discharges from the route when compared to the existing situation and therefore I consider there would be a minor positive effect on the receiving environment compared to the existing situation.

<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Stormwater (Flooding, Quality)	
<b>Expert undertaking assessment:</b> Tony Cain (GHD)	
<b>Option being considered:</b> Ashhurst Sub-option C	
<p><b>Hydrology Score:</b> -- Moderate Adverse Effect</p> <p><b>Water Quality (Construction)Score:</b> -- Moderate Adverse Effect</p> <p><b>Water Quality (Operation)Score:</b> + Minor Positive Effect</p>	<p><b>Assumptions</b> <b><u>Hydrology (Existing Catchment)</u></b> Existing catchment flows will be passed through the alignment in fill areas and around the alignment in cut areas.</p> <p>Effect of road alignment may require stream diversions and the diversion of water from natural catchment from one sub catchment to another.</p> <p><b><u>Water Quality (Construction)</u></b> Best practice measures to manage construction stage erosion and sedimentation effects will be established during construction in accordance with NZ Transport Agency guidelines and standards</p> <p><b><u>Water Quality (Operational)</u></b> Stormwater treatment devices will be provided in the operational phase of the project and will be established as part of the design proposals in accordance with the NZ Transport Agency's Stormwater Treatment Standard for State Highway Infrastructure.</p> <p>Assumption is that there will be a preference for vegetated systems (e.g Swales, Wetlands, Filter strips) where possible and supplemented by proprietary treatment devices where space restrictions or landform excludes the establishment of vegetated systems.</p>
<p><b>Notes:</b></p> <p><b><u>Hydrology</u></b></p> <p>I've scored this as a moderate adverse effect as the route of this sub-option crosses the floodplain of the Pohingina River and depending on the design may increase flood levels within the flood plain and potentially increase flood levels upstream of the crossing.</p> <p>Mitigation measures in the form of flood relief culverts could go some way to mitigating the extent of the effect. However, there would still be an adverse effect. The design as currently presented does not include for any flood mitigation measures and therefore I would have to assess that this option would have a moderately adverse effect.</p> <p>Due to the increased impervious surfaces for the road there is the potential for additional volumes of stormwater and increased velocities of stormwater discharged from the road when compared with the existing natural catchment. However, with the introduction of stormwater detention devices as part of the design this effect could be appropriately mitigated. However, these could only be placed outside of the existing Pohingina and Manawatu River floodplain.</p>	<p><b><u>Assumptions made</u></b></p> <ol style="list-style-type: none"> <li>1) Stormwater treatment devices are not currently in place on either the Manawatu Gorge Road or the Saddle Road.</li> <li>2) Appropriate stormwater treatment and detention devices would be incorporated within the design proposals.</li> </ol> <p><b><u>Information relied upon</u></b></p> <ol style="list-style-type: none"> <li>2) Project GIS Webportal</li> </ol>



**Water Quality-construction**

With appropriate staging and sequencing effective and erosion and sediment control measures could be established. However, ESC measures do not and cannot be economically designed for full retention of sediment generated by the construction works and therefore it is inevitable that some sediment would still be released be released into the receiving environment.

Appropriate ESC measures would be incorporated as part of a suite of environmental controls that would be established prior to and during construction and an overall assessment of effects would need to be undertaken at future stages of the project.

The assessment of the effect would require additional sediment modelling to be carried out 1) to establish a baseline for the existing catchment and 2) to assess the sediment yield from construction activities and determine the effect of any increase caused due to construction.

Given the proximity of the alignment to the Pohingina River, I do not consider that the effects of sedimentation can be appropriately managed as the ESC measures would need to be established within the floodplain of the river which in times of flood would flood the esc measures and therefore I consider a moderate adverse effect score to be appropriate.

**Water Quality – operation**

There is available (but somewhat limited) space along the route to provide effective storm water treatment measures. However, with further design development these would be incorporated in the design in a holistic manner.

At this stage of the project it is assumed that the existing Manawatu Gorge Road and Saddle Road currently do not incorporate appropriately designed stormwater treatment devices and that SW treatment would be provided for the new route which would reduce the amount of contamination (suspended solids) present in stormwater discharges from the route when compared to the existing situation and therefore I consider there would be a minor positive effect on the receiving environment compared to the existing situation.

## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Stormwater (Flooding, Quality)

**Expert undertaking assessment:** Tony Cain (GHD)

**Option being considered:** Ashhurst Sub-option D

**Hydrology Score:**

0 Neutral/Negligible

**Water Quality (Construction)Score:**

- Minor Adverse Effect

**Water Quality (Operation)Score:**

+ Minor Positive Effect

**Assumptions**

**Hydrology (Existing Catchment)**

Existing catchment flows will be passed through the alignment in fill areas and around the alignment in cut areas.

Effect of road alignment may require stream diversions and the diversion of water from natural catchment from one sub catchment to another.

**Water Quality (Construction)**

Best practice measures to manage construction stage erosion and sedimentation effects will be established during construction in accordance with NZ Transport Agency guidelines and standards

**Water Quality (Operational)**

Stormwater treatment devices will be provided in the operational phase of the project and will be established as part of the design proposals in accordance with the NZ Transport Agency's Stormwater Treatment Standard for State Highway Infrastructure.

Assumption is that there will be a preference for vegetated systems (e.g Swales, Wetlands, Filter strips) where possible and supplemented by proprietary treatment devices where space restrictions or landform excludes the establishment of vegetated systems.

<p><b>Notes:</b></p> <p><b><u>Hydrology</u></b></p> <p>I've scored this as a neutral/negligible this option is effectively on the same alignment as the existing road and therefore there would be no positive or negative effect on the hydrological regimes compared with the existing road alignment.</p> <p>Additional impervious surfaces that may be introduced for the road would increase the volume and velocities of stormwater discharged from the road when compared with the existing catchment.</p> <p>However, with the introduction of stormwater detention devices as part of the design this effect would be appropriately mitigated.</p> <p><b><u>Water Quality-construction</u></b></p> <p>With appropriate staging and sequencing effective and erosion and sediment control measures could be established. However, ESC measures do not and cannot be economically designed for full retention of sediment generated by the construction works and therefore it is inevitable that some sediment would still be released be released into the receiving environment.</p> <p>Appropriate ESC measures would be incorporated as part of a suite of environmental controls that would be established prior to and during construction and an overall assessment of effects would need to be undertaken at future stages of the project.</p> <p>The assessment of the effect would require additional sediment modelling to be carried out 1) to establish a baseline for the existing catchment and 2) to assess the sediment yield from construction activities and determine the effect of any increase caused due to construction.</p> <p>At this stage of the design I would consider that the effects of sedimentation can be managed to the fullest possible extent and would consider a minor adverse effect score to be appropriate.</p> <p><b><u>Water Quality – operation</u></b></p> <p>There is somewhat limited space along the route to provide effective storm water treatment measures.</p> <p>However, with further design development these would be incorporated in the design in a holistic manner.</p> <p>At this stage of the project it is assumed that the existing Manawatu Gorge Road and Saddle Road currently do not incorporate appropriately designed stormwater treatment devices and that SW treatment would be provided for the new route which would reduce the amount of contamination (suspended solids) present in stormwater discharges from the route when compared to the existing situation and therefore I consider there would be a minor positive effect on the receiving environment compared to the existing situation.</p>	<p><b><u>Assumptions made</u></b></p> <ol style="list-style-type: none"> <li>1) Stormwater treatment devices are not currently in place on either the Manawatu Gorge Road or the Saddle Road.</li> <li>2) Appropriate stormwater treatment and detention devices would be incorporated within the design proposals.</li> </ol> <p><b><u>Information relied upon</u></b></p> <ol style="list-style-type: none"> <li>3) Project GIS Webportal</li> </ol>
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## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Stormwater (Flooding, Quality)

**Expert undertaking assessment:** Tony Cain (GHD)

**Option being considered:** Ashhurst Sub-option E

**Hydrology Score:**

0 Neutral/Negligible

**Water Quality (Construction)Score:**

- Minor Adverse Effect

**Water Quality (Operation)Score:**

+ Minor Positive Effect

**Assumptions**

**Hydrology (Existing Catchment)**

Existing catchment flows will be passed through the alignment in fill areas and around the alignment in cut areas.

Effect of road alignment may require stream diversions and the diversion of water from natural catchment from one sub catchment to another.

**Water Quality (Construction)**

Best practice measures to manage construction stage erosion and sedimentation effects will be established during construction in accordance with NZ Transport Agency guidelines and standards

**Water Quality (Operational)**

Stormwater treatment devices will be provided in the operational phase of the project and will be established as part of the design proposals in accordance with the NZ Transport Agency's Stormwater Treatment Standard for State Highway Infrastructure.

Assumption is that there will be a preference for vegetated systems (e.g Swales, Wetlands, Filter strips) where possible and supplemented by proprietary treatment devices where space restrictions or landform excludes the establishment of vegetated systems.

<p><b>Notes:</b></p> <p><b><u>Hydrology</u></b></p> <p>I've scored this as a neutral/negligible the design would incorporate appropriately sized culverts and cross drainage which would pass flow from one side of the road to other thereby</p> <p>Additional impervious surfaces that may be introduced for the road would increase the volume and velocities of stormwater discharged from the road when compared with the existing catchment.</p> <p>However, with the introduction of stormwater detention devices as part of the design this effect would be appropriately mitigated.</p> <p><b><u>Water Quality-construction</u></b></p> <p>With appropriate staging and sequencing effective and erosion and sediment control measures could be established. However, ESC measures do not and cannot be economically designed for full retention of sediment generated by the construction works and therefore it is inevitable that some sediment would still be released be released into the receiving environment.</p> <p>Appropriate ESC measures would be incorporated as part of a suite of environmental controls that would be established prior to and during construction and an overall assessment of effects would need to be undertaken at future stages of the project.</p> <p>The assessment of the effect would require additional sediment modelling to be carried out 1) to establish a baseline for the existing catchment and 2) to assess the sediment yield from construction activities and determine the effect of any increase caused due to construction.</p> <p>At this stage of the design I would consider that the effects of sedimentation can be managed to the fullest possible extent and would consider a minor adverse effect score to be appropriate.</p> <p><b><u>Water Quality – operation</u></b></p> <p>There is somewhat limited space along the route to provide effective storm water treatment measures.</p> <p>However, with further design development these would be incorporated in the design in a holistic manner.</p> <p>At this stage of the project it is assumed that the existing Manawatu Gorge Road and Saddle Road currently do not incorporate appropriately designed stormwater treatment devices and that SW treatment would be provided for the new route which would reduce the amount of contamination (suspended solids) present in stormwater discharges from the route when compared to the existing situation and therefore I consider there would be a minor positive effect on the receiving environment compared to the existing situation.</p>	<p><b><u>Assumptions made</u></b></p> <p>3) Stormwater treatment devices are not currently in place on either the Manawatu Gorge Road or the Saddle Road.</p> <p>4) Appropriate stormwater treatment and detention devices would be incorporated within the design proposals.</p> <p><b><u>Information relied upon</u></b></p> <p>4) Project GIS Webportal</p>
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<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Stormwater (Flooding, Quality)	
<b>Expert undertaking assessment:</b> Tony Cain (GHD)	
<b>Option being considered:</b> Ashhurst Sub-option F	
<p><b>Hydrology Score:</b></p> <ul style="list-style-type: none"> <li>- Minor Adverse Effect</li> </ul> <p><b>Water Quality (Construction) Score:</b></p> <ul style="list-style-type: none"> <li>- Minor Adverse Effect</li> </ul> <p><b>Water Quality (Operation)Score:</b></p> <ul style="list-style-type: none"> <li>+ Minor Positive Effect</li> </ul>	<p><b>Assumptions</b></p> <p><b><u>Hydrology (Existing Catchment)</u></b> Existing catchment flows will be passed through the alignment in fill areas and around the alignment in cut areas.</p> <p>Effect of road alignment may require stream diversions and the diversion of water from natural catchment from one sub catchment to another.</p> <p><b><u>Water Quality (Construction)</u></b> Best practice measures to manage construction stage erosion and sedimentation effects will be established during construction in accordance with NZ Transport Agency guidelines and standards</p> <p><b><u>Water Quality (Operational)</u></b> Stormwater treatment devices will be provided in the operational phase of the project and will be established as part of the design proposals in accordance with the NZ Transport Agency’s Stormwater Treatment Standard for State Highway Infrastructure.</p> <p>Assumption is that there will be a preference for vegetated systems (e.g Swales, Wetlands, Filter strips) where possible and supplemented by proprietary treatment devices where space restrictions or landform excludes the establishment of vegetated systems.</p>

<p><b>Notes:</b></p> <p><b><u>Hydrology</u></b></p> <p>I've scored this as a minor adverse effect on hydrology as the design would introduce new crossing of the Manawatu River which could potentially increase flood levels within the river.</p> <p>Additional impervious surfaces that may be introduced for the road would increase the volume and velocities of stormwater discharged from the road when compared with the existing catchment.</p> <p>However, with the introduction of stormwater detention devices as part of the design this effect would be appropriately mitigated.</p> <p><b><u>Water Quality-construction</u></b></p> <p>With appropriate staging and sequencing effective and erosion and sediment control measures could be established. However, ESC measures do not and cannot be economically designed for full retention of sediment generated by the construction works and therefore it is inevitable that some sediment would still be released be released into the receiving environment.</p> <p>Appropriate ESC measures would be incorporated as part of a suite of environmental controls that would be established prior to and during construction and an overall assessment of effects would need to be undertaken at future stages of the project.</p> <p>The assessment of the effect would require additional sediment modelling to be carried out 1) to establish a baseline for the existing catchment and 2) to assess the sediment yield from construction activities and determine the effect of any increase caused due to construction.</p> <p>At this stage of the design I would consider that the effects of sedimentation can be managed to the fullest possible extent and would consider a minor adverse effect score to be appropriate.</p> <p><b><u>Water Quality – operation</u></b></p> <p>There is somewhat limited space along the route to provide effective storm water treatment measures.</p> <p>However, with further design development these would be incorporated in the design in a holistic manner.</p> <p>At this stage of the project it is assumed that the existing Manawatu Gorge Road and Saddle Road currently do not incorporate appropriately designed stormwater treatment devices and that SW treatment would be provided for the new route which would reduce the amount of contamination (suspended solids) present in stormwater discharges from the route when compared to the existing situation and therefore I consider there would be a minor positive effect on the receiving environment compared to the existing situation.</p>	<p><b><u>Assumptions made</u></b></p> <ul style="list-style-type: none"> <li>5) Stormwater treatment devices are not currently in place on either the Manawatu Gorge Road or the Saddle Road.</li> <li>6) Appropriate stormwater treatment and detention devices would be incorporated within the design proposals.</li> </ul> <p><b><u>Information relied upon</u></b></p> <ul style="list-style-type: none"> <li>5) Project GIS Webportal</li> </ul>
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## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Freshwater Ecology

**Expert undertaking assessment:** Dr. Adam Forbes

**Option being considered:** Ashhurst Sub-option A

**Score:**

- Minor Adverse Risk

Extent of risk on freshwater ecology (wetlands, habitats, flora and fauna)

**Notes:**

Reasons / Comments as to how you came to your assessment

- Total stream length at risk = 27 m
- Stream with exotic riparian zone = 27 m
- Stream with indigenous riparian zone = 0 m
- Wetland at risk = 0.14 ha

Assumptions made

Stream and wetland effect extent measured using GIS. Affected portions were identified from REC2 channel extents located beneath the design footprint (fill/cut/carriageway etc). The length measure was derived from the actual channel alignment within the REC2 extent.

REC2 used to estimate affected length of perennial and intermittently flowing waterways. Ephemeral and watershed systems not quantified due to the largely desktop nature of the analysis.

Potential wetland seep habitats in pasture not quantified due to the largely desktop nature of the analysis.

Information relied upon

GIS data

Site visits to selected sites

Aerial photography



<b>Multi Criteria Assessment Scoring Sheet – Shortlist</b>	
<b>Area of expertise:</b> Freshwater Ecology	
<b>Expert undertaking assessment:</b> Dr. Adam Forbes	
<b>Option being considered:</b> Ashhurst Sub-option B	
<p><b>Score:</b></p> <p>- Minor Adverse Risk</p>	<p>Extent of risk on freshwater ecology (wetlands, habitats, flora and fauna)</p>
<p><b>Notes:</b></p> <p><u>Reasons / Comments as to how you came to your assessment</u></p> <ul style="list-style-type: none"> <li>- Total stream length at risk = 48 m</li> <li>- Stream with exotic riparian zone = 48 m</li> <li>- Stream with indigenous riparian zone = 0 m</li> <li>- Wetland at risk = 0.0 ha</li> </ul>	<p><u>Assumptions made</u></p> <p>Stream and wetland effect extent measured using GIS. Affected portions were identified from REC2 channel extents located beneath the design footprint (fill/cut/carriageway etc). The length measure was derived from the actual channel alignment within the REC2 extent.</p> <p>REC2 used to estimate affected length of perennial and intermittently flowing waterways. Ephemeral and watershed systems not quantified due to the largely desktop nature of the analysis.</p> <p>Potential wetland seep habitats in pasture not quantified due to the largely desktop nature of the analysis.</p> <p><u>Information relied upon</u></p> <p>GIS data</p> <p>Site visits to selected sites</p> <p>Aerial photography</p>

<b>Multi Criteria Assessment Scoring Sheet – Shortlist</b>	
<b>Area of expertise:</b> Freshwater Ecology	
<b>Expert undertaking assessment:</b> Dr. Adam Forbes	
<b>Option being considered:</b> Ashhurst Sub-option C	
<b>Score:</b> - Minor Adverse Risk	Extent of risk on freshwater ecology (wetlands, habitats, flora and fauna)
<b>Notes:</b> <u>Reasons / Comments as to how you came to your assessment</u> <ul style="list-style-type: none"> <li>- Total stream length at risk = 277 m</li> <li>- Stream with exotic riparian zone = 254 m</li> <li>- Stream with indigenous riparian zone = 23 m</li> <li>- Wetland at risk = 0 ha</li> </ul>	<u>Assumptions made</u> Stream and wetland effect extent measured using GIS. Affected portions were identified from REC2 channel extents located beneath the design footprint (fill/cut/carriageway etc). The length measure was derived from the actual channel alignment within the REC2 extent.  REC2 used to estimate affected length of perennial and intermittently flowing waterways. Ephemeral and watershed systems not quantified due to the largely desktop nature of the analysis.  Potential wetland seep habitats in pasture not quantified due to the largely desktop nature of the analysis.  <u>Information relied upon</u> GIS data Site visits to selected sites Aerial photography

<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Terrestrial Ecology	
<b>Expert undertaking assessment:</b> Dr. Adam Forbes	
<b>Option being considered:</b> Ashhurst Sub-option D	
<b>Score:</b> - Minor Adverse Risk	Extent of risk on freshwater ecology (wetlands, habitats, flora and fauna)
<b>Notes:</b> <u>Reasons / Comments as to how you came to your assessment</u> <ul style="list-style-type: none"> <li>- Total stream length at risk = 168 m</li> <li>- Stream with exotic riparian zone = 143 m</li> <li>- Stream with indigenous riparian zone = 25 m</li> <li>- Wetland at risk = 0 ha</li> </ul>	<u>Assumptions made</u> Stream and wetland effect extent measured using GIS. Affected portions were identified from REC2 channel extents located beneath the design footprint (fill/cut/carriageway etc). The length measure was derived from the actual channel alignment within the REC2 extent.  REC2 used to estimate affected length of perennial and intermittently flowing waterways. Ephemeral and watershed systems not quantified due to the largely desktop nature of the analysis.  Potential wetland seep habitats in pasture not quantified due to the largely desktop nature of the analysis.  <u>Information relied upon</u> GIS data Site visits to selected sites Aerial photography

<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Terrestrial Ecology	
<b>Expert undertaking assessment:</b> Dr. Adam Forbes	
<b>Option being considered:</b> Ashhurst Sub-option E	
<b>Score:</b> - Minor Adverse Risk	Extent of risk on freshwater ecology (wetlands, habitats, flora and fauna)
<b>Notes:</b> <u>Reasons / Comments as to how you came to your assessment</u> <ul style="list-style-type: none"> <li>- Total stream length at risk = 237 m</li> <li>- Stream with exotic riparian zone = 215 m</li> <li>- Stream with indigenous riparian zone = 22 m</li> <li>- Wetland at risk = 0 ha</li> </ul>	<u>Assumptions made</u> Stream and wetland effect extent measured using GIS. Affected portions were identified from REC2 channel extents located beneath the design footprint (fill/cut/carriageway etc). The length measure was derived from the actual channel alignment within the REC2 extent.  REC2 used to estimate affected length of perennial and intermittently flowing waterways. Ephemeral and watershed systems not quantified due to the largely desktop nature of the analysis.  Potential wetland seep habitats in pasture not quantified due to the largely desktop nature of the analysis.  <u>Information relied upon</u> GIS data Site visits to selected sites Aerial photography

<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Freshwater Ecology	
<b>Expert undertaking assessment:</b> Dr. Adam Forbes	
<b>Option being considered:</b> Ashhurst Sub-option F	
<p><b>Score:</b></p> <p>- Minor Adverse Risk</p>	<p>Extent of risk on freshwater ecology (wetlands, habitats, flora and fauna)</p>
<p><b>Notes:</b></p> <p><u>Reasons / Comments as to how you came to your assessment</u></p> <ul style="list-style-type: none"> <li>- Total stream length at risk = 553 m</li> <li>- Stream with exotic riparian zone = 553 m</li> <li>- Stream with indigenous riparian zone = 0 m</li> <li>- Wetland at risk = 0 ha</li> </ul>	<p><u>Assumptions made</u></p> <p>Stream and wetland effect extent measured using GIS. Affected portions were identified from REC2 channel extents located beneath the design footprint (fill/cut/carriageway etc). The length measure was derived from the actual channel alignment within the REC2 extent.</p> <p>REC2 used to estimate affected length of perennial and intermittently flowing waterways. Ephemeral and watershed systems not quantified due to the largely desktop nature of the analysis.</p> <p>Potential wetland seep habitats in pasture not quantified due to the largely desktop nature of the analysis.</p> <p><u>Information relied upon</u></p> <p>GIS data</p> <p>Site visits to selected sites</p> <p>Aerial photography</p>

<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Terrestrial Ecology	
<b>Expert undertaking assessment:</b> Dr. Adam Forbes	
<b>Option being considered:</b> Ashhurst sub-option A	
<b>Score:</b> -- Moderate Adverse Risk	Extent of risk on terrestrial ecology (indigenous vegetation, habitat, flora and fauna)
<b>Notes:</b> <u>Reasons / Comments as to how you came to your assessment</u> <ul style="list-style-type: none"> <li>- At risk is 0.79 ha regionally significant indigenous forest</li> <li>- Valuable ecosystem located north of the Manawatu River crossing</li> </ul>	<u>Assumptions made</u> No indigenous vegetation outside of the mapped footprint would be affected.  <u>Information relied upon</u> GIS data Site visits to selected sites Aerial photography

<b>Multi Criteria Assessment Scoring Sheet – Shortlist</b>	
<b>Area of expertise:</b> Terrestrial Ecology	
<b>Expert undertaking assessment:</b> Dr. Adam Forbes	
<b>Option being considered:</b> Ashhurst sub-option B	
<b>Score:</b> - Minor Adverse Risk	Extent of risk on terrestrial ecology (indigenous vegetation, habitat, flora and fauna)
<b>Notes:</b> <u>Reasons / Comments as to how you came to your assessment</u> <ul style="list-style-type: none"> <li>- At risk is 0.34 ha regionally significant indigenous forest</li> </ul>	<u>Assumptions made</u> No indigenous vegetation outside of the mapped footprint would be affected.  <u>Information relied upon</u> GIS data Site visits to selected sites Aerial photography

<b>Multi Criteria Assessment Scoring Sheet – Shortlist</b>	
<b>Area of expertise:</b> Terrestrial Ecology	
<b>Expert undertaking assessment:</b> Dr. Adam Forbes	
<b>Option being considered:</b> Ashhurst sub-option C	
<b>Score:</b> - Minor Adverse Risk	Extent of risk on terrestrial ecology (indigenous vegetation, habitat, flora and fauna)
<b>Notes:</b> <u>Reasons / Comments as to how you came to your assessment</u> <ul style="list-style-type: none"> <li>- At risk is 0.61 ha regionally significant indigenous forest</li> </ul>	<u>Assumptions made</u> No indigenous vegetation outside of the mapped footprint would be affected.  <u>Information relied upon</u> GIS data Site visits to selected sites Aerial photography

<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Terrestrial Ecology	
<b>Expert undertaking assessment:</b> Dr. Adam Forbes	
<b>Option being considered:</b> Ashhurst sub-option D	
<b>Score:</b> - Minor Adverse Effect	Extent of risk on terrestrial ecology (indigenous vegetation, habitat, flora and fauna)
<b>Notes:</b> <u>Reasons / Comments as to how you came to your assessment</u> <ul style="list-style-type: none"> <li>- At risk is 0.56 ha regionally significant indigenous forest</li> </ul>	<u>Assumptions made</u> No indigenous vegetation outside of the mapped footprint would be affected.  <u>Information relied upon</u> GIS data Site visits to selected sites Aerial photography

<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Terrestrial Ecology	
<b>Expert undertaking assessment:</b> Dr. Adam Forbes	
<b>Option being considered:</b> Ashhurst sub-option E	
<b>Score:</b> - Minor Adverse Effect	Extent of risk on terrestrial ecology (indigenous vegetation, habitat, flora and fauna)
<b>Notes:</b> <u>Reasons / Comments as to how you came to your assessment</u> <ul style="list-style-type: none"> <li>- At risk is 0.54 ha regionally significant indigenous forest</li> </ul>	<u>Assumptions made</u> No indigenous vegetation outside of the mapped footprint would be affected.  <u>Information relied upon</u> GIS data Site visits to selected sites Aerial photography

<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Terrestrial Ecology	
<b>Expert undertaking assessment:</b> Dr. Adam Forbes	
<b>Option being considered:</b> Ashhurst sub-option F	
<b>Score:</b> -- Moderate Adverse Effect	Extent of risk on terrestrial ecology (indigenous vegetation, habitat, flora and fauna)
<b>Notes:</b> <u>Reasons / Comments as to how you came to your assessment</u> <ul style="list-style-type: none"> <li>- At risk is 0.53 ha regionally significant indigenous forest</li> <li>- Valuable ecosystem located north of the Manawatu River crossing</li> </ul>	<u>Assumptions made</u> No indigenous vegetation outside of the mapped footprint would be affected.  <u>Information relied upon</u> GIS data Site visits to selected sites Aerial photography



**Human health**

<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Acoustics	
<b>Expert undertaking assessment:</b> Dr Stephen Chiles	
<b>Option being considered:</b> Ashhurst sub-option A	
<b>Score:</b> 0 Neutral	Impacts of construction noise on sensitive receivers
<b>Notes:</b> <ul style="list-style-type: none"> <li>• There will be construction noise effects, but it should be practicable to manage these with standard practices.</li> <li>• <i>Construction noise effects are generally not a differentiator between route options, as effects are temporary and can be appropriately managed. Only substantial differences between options are scored.</i></li> </ul>	<p><u>Assumptions made</u></p> <ul style="list-style-type: none"> <li>• Piling for Manawatu River bridge/viaduct can be managed with standard practices.</li> <li>• Construction traffic does not pass through Ashhurst.</li> <li>• Any blasting is remote from houses.</li> </ul> <p><u>Information relied upon</u></p> <ul style="list-style-type: none"> <li>• Drawings showing alignment and relationship to nearby houses</li> <li>• GIS data showing houses and aerial photographs</li> </ul>

<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Acoustics	
<b>Expert undertaking assessment:</b> Dr Stephen Chiles	
<b>Option being considered:</b> Ashhurst sub-option B	
<b>Score:</b> 0 Neutral	Impacts of construction noise on sensitive receivers
<b>Notes:</b> <ul style="list-style-type: none"> <li>• There will be construction noise effects, but it should be practicable to manage these with standard practices.</li> <li>• <i>Construction noise effects are generally not a differentiator between route options, as effects are temporary and can be appropriately managed. Only substantial differences between options are scored.</i></li> </ul>	<p><u>Assumptions made</u></p> <ul style="list-style-type: none"> <li>• Piling for Pohangina River bridge/viaduct can be managed with standard practices.</li> <li>• Construction traffic does not pass through Ashhurst.</li> <li>• Any blasting is remote from houses.</li> </ul> <p><u>Information relied upon</u></p> <ul style="list-style-type: none"> <li>• Drawings showing alignment and relationship to nearby houses</li> <li>• GIS data showing houses and aerial photographs</li> </ul>

<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Acoustics	
<b>Expert undertaking assessment:</b> Dr Stephen Chiles	
<b>Option being considered:</b> Ashhurst sub-option C	
<b>Score:</b> 0 Neutral	Impacts of construction noise on sensitive receivers
<b>Notes:</b> <ul style="list-style-type: none"> <li>• There will be construction noise effects, but it should be practicable to manage these with standard practices.</li> <li>• <i>Construction noise effects are generally not a differentiator between route options, as effects are temporary and can be appropriately managed. Only substantial differences between options are scored.</i></li> </ul>	<u>Assumptions made</u> <ul style="list-style-type: none"> <li>• Construction traffic does not pass through Ashhurst.</li> <li>• Any blasting is remote from houses.</li> </ul> <u>Information relied upon</u> <ul style="list-style-type: none"> <li>• Drawings showing alignment and relationship to nearby houses</li> <li>• GIS data showing houses and aerial photographs</li> </ul>

<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Acoustics	
<b>Expert undertaking assessment:</b> Dr Stephen Chiles	
<b>Option being considered:</b> Ashhurst sub-option D	
<b>Score:</b> - Minor adverse effect	Impacts of construction noise on sensitive receivers
<b>Notes:</b> <ul style="list-style-type: none"> <li>• There will be limited if any construction in Ashhurst, but any noise effects, but it should be practicable to manage these with standard practices.</li> <li>• Construction traffic for the main works will have to pass through Ashhurst, giving rise to the negative rating.</li> <li>• <i>Construction noise effects are generally not a differentiator between route options, as effects are temporary and can be appropriately managed. Only substantial differences between options are scored.</i></li> </ul>	<u>Assumptions made</u> <ul style="list-style-type: none"> <li>• Any blasting is remote from houses.</li> </ul> <u>Information relied upon</u> <ul style="list-style-type: none"> <li>• Drawings showing alignment and relationship to nearby houses</li> <li>• GIS data showing houses and aerial photographs</li> </ul>

<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Acoustics	
<b>Expert undertaking assessment:</b> Dr Stephen Chiles	
<b>Option being considered:</b> Ashhurst sub-option E	
<b>Score:</b> 0 Neutral	Impacts of construction noise on sensitive receivers
<b>Notes:</b> <ul style="list-style-type: none"> <li>• There will be construction noise effects, but it should be practicable to manage these with standard practices.</li> <li>• <i>Construction noise effects are generally not a differentiator between route options, as effects are temporary and can be appropriately managed. Only substantial differences between options are scored.</i></li> </ul>	<u>Assumptions made</u> <ul style="list-style-type: none"> <li>• Construction traffic does not pass through Ashhurst.</li> <li>• Any blasting is remote from houses.</li> </ul> <u>Information relied upon</u> <ul style="list-style-type: none"> <li>• Drawings showing alignment and relationship to nearby houses</li> <li>• GIS data showing houses and aerial photographs</li> </ul>

<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Acoustics	
<b>Expert undertaking assessment:</b> Dr Stephen Chiles	
<b>Option being considered:</b> Ashhurst sub-option F	
<b>Score:</b> ++ Moderate Positive Effect	Impacts of operational noise on sensitive receivers

<p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>• Traffic and associated noise will be significantly reduced from the current route through Ashhurst and from the pre-existing Napier Road route. This will benefit numerous houses as well as public spaces. This is the primary reason for the positive rating.</li> <li>• The link to Ashhurst Road will remove further traffic and associated noise from the current and pre-existing routes through Ashhurst. This factor has increased the degree of the positive rating.</li> <li>• Noise will be introduced or significantly increased for in the order of 10 to 20 houses on Ashhurst Road, Napier Road, Hacketts Road and Fitzherbert East Road. In some instances, mitigation is practicable but there will be a residual loss of amenity, particularly for lifestyle properties such as those on Hacketts Road. This factor has reduced the rating, which would otherwise be substantial positive.</li> <li>• In terms of noise, the loss of amenity on the public tracks by the river at the new bridge is largely offset by the improved amenity that will occur around the existing bridge.</li> <li>• Traffic on the new state highway should be free flowing without having to decelerate and accelerate at intersections.</li> </ul>	<p><u>Assumptions made</u></p> <ul style="list-style-type: none"> <li>• Baseline/do-minimum is sub-option D (Salisbury Street)</li> <li>• Effects of engine braking and gradients are independent of sub-options.</li> <li>• Asphalt (or other mitigation) on alignment near houses.</li> <li>• No noise effects at two houses under the alignment.</li> <li>• The distribution of traffic on Ashhurst Road and SH3 Napier Road is not altered.</li> <li>• The intersections of the new SH3 with Ashhurst Road, SH57 and Napier Road are not roundabouts.</li> </ul> <p><u>Information relied upon</u></p> <ul style="list-style-type: none"> <li>• Drawings showing alignment and relationship to nearby houses</li> <li>• GIS data showing houses and aerial photographs</li> <li>• Site inspection 20/10/17</li> </ul>
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## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Acoustics

**Expert undertaking assessment:** Dr Stephen Chiles

**Option being considered:** Ashhurst sub-option A

**Score:**

++ Moderate Positive Effect

Impacts of operational noise on sensitive receivers

**Notes:**

- Traffic and associated noise will be significantly reduced from the current route through Ashhurst.
- Noise will be re-introduced to houses on SH3 (Napier Street). However, these houses will have previously adapted to that exposure over time and are generally set-back from the road.
- Traffic on the state highway should be free flowing without having to decelerate and accelerate at intersections.

Assumptions made

- Baseline/do-minimum is sub-option D (Salisbury Street)
- Effects of engine braking and gradients are independent of sub-options.
- Asphalt on alignment near houses.

Information relied upon

- Drawings showing alignment and relationship to nearby houses
- GIS data showing houses and aerial photographs
- Site inspection 20/10/17

## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Acoustics

**Expert undertaking assessment:** Dr Stephen Chiles

**Option being considered:** Ashhurst sub-option B

**Score:**

++ Moderate Positive Effect

Impacts of operational noise on sensitive receivers

**Notes:**

- Traffic and associated noise will be significantly reduced from the current route through Ashhurst.
- Noise will be introduced to houses on York Street, Cambridge Avenue and Pembroke Street, and to a lesser extent on Oruaiti Crescent and Durham Street. To some extent this would be mitigated by low-noise surfaces and barriers (although barriers might not be practicable for York Street)
- Amenity in the domain will be affected, although this is partly offset by reduction of exposure of other parts of the domain by Napier Street.
- Traffic on the state highway should be free flowing without having to decelerate and accelerate at intersections, other than potentially at Cambridge Avenue.
- The Short Street connection for SH57 would introduce new noise exposure for houses on Short Street and noise barriers are unlikely to be practicable due to driveways. This connection would therefore have an adverse effect that does not occur with a connection on the existing SH3 alignment. This aspect has not been included in the rating.

Assumptions made

- Baseline/do-minimum is sub-option D (Salisbury Street)
- Effects of engine braking and gradients are independent of sub-options.
- Asphalt on alignment near houses.
- Noise barriers by Cambridge Avenue and Pembroke Street.

Information relied upon

- Drawings showing alignment and relationship to nearby houses
- GIS data showing houses and aerial photographs
- Site inspection 20/10/17

## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Acoustics

**Expert undertaking assessment:** Dr Stephen Chiles

**Option being considered:** Ashhurst sub-option C

**Score:**

+ Minor Positive Effect

Impacts of operational noise on sensitive receivers

**Notes:**

- Traffic and associated noise will be significantly reduced from the current route through Ashhurst.
- Noise will be introduced to houses on York Street, Cambridge Avenue, Pembroke Street, Oruaiti Crescent and Durham Street, as well as rural properties on River Road. To some extent this would be mitigated by low-noise surfaces, barriers and the cut by Durham Street (although barriers might not be practicable for York Street, and possibly River Road).
- Amenity in the domain will be affected, although this is partly offset by reduction of exposure of other parts of the domain by Napier Street.
- Traffic on the state highway should be free flowing without having to decelerate and accelerate at intersections.

Assumptions made

- Baseline/do-minimum is sub-option 4 (Salisbury Street)
- Effects of engine braking and gradients are independent of sub-options.
- Asphalt on alignment near houses.
- Noise barriers by Cambridge Avenue, Pembroke Street, Oruaiti Crescent and Durham Street.
- Noise barrier by River Road.

Information relied upon

- Drawings showing alignment and relationship to nearby houses
- GIS data showing houses and aerial photographs
- Site inspection 20/10/17



## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Acoustics

**Expert undertaking assessment:** Dr Stephen Chiles

**Option being considered:** Ashhurst sub-option D

**Score:**

0 Neutral

Impacts of operational noise on sensitive receivers

**Notes:**

- Existing noise exposure in residential area remains.
- Traffic has to decelerate and accelerate near houses at intersections and corners.

Assumptions made

- Baseline/do-minimum is sub-option 4 (Salisbury Street)
- Effects of engine braking and gradients are independent of sub-options.
- Asphalt on alignment near houses.

Information relied upon

- Drawings showing alignment and relationship to nearby houses
- GIS data showing houses and aerial photographs
- Site inspection 20/10/17

## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Acoustics

**Expert undertaking assessment:** Dr Stephen Chiles

**Option being considered:** Ashhurst sub-option E

**Score:**

- Minor Adverse Effect

Impacts of operational noise on sensitive receivers

**Notes:**

- Traffic and associated noise will be significantly reduced from the current route through Ashhurst.
- Noise will be introduced to numerous rural-residential houses on Ashhurst Road, Harrisons Lane, Wyndham Street, Grove Road, Colyton Road, Oxford Street, North Street, Pohangina Road and Saddle Road. These are currently relatively quiet areas which will experience a significant change in amenity. This offsets the benefit of the reduced noise exposure in Ashhurst and is the reason for the adverse rating.
- Due to the isolated nature of many properties and separation from the road, noise barriers might not be practicable, although if there is surplus fill available then extensive noise bunds might be practicable.
- Traffic on the state highway should be free flowing without having to decelerate and accelerate at intersections.

Assumptions made

- Baseline/do-minimum is sub-option 4 (Salisbury Street)
- Effects of engine braking and gradients are independent of sub-options.
- Asphalt on alignment near houses.

Information relied upon

- Drawings showing alignment and relationship to nearby houses
- GIS data showing houses and aerial photographs
- Site inspection 20/10/17

## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Acoustics

**Expert undertaking assessment:** Dr Stephen Chiles

**Option being considered:** Ashhurst sub-option F

**Score:**

++ Moderate Positive Effect

Impacts of operational noise on sensitive receivers

**Notes:**

- Traffic and associated noise will be significantly reduced from the current route through Ashhurst and from the pre-existing Napier Road route. This will benefit numerous houses as well as public spaces. This is the primary reason for the positive rating.
- The link to Ashhurst Road will remove further traffic and associated noise from the current and pre-existing routes through Ashhurst. This factor has increased the degree of the positive rating.
- Noise will be introduced or significantly increased for in the order of 10 to 20 houses on Ashhurst Road, Napier Road, Hacketts Road and Fitzherbert East Road. In some instances, mitigation is practicable but there will be a residual loss of amenity, particularly for lifestyle properties such as those on Hacketts Road. This factor has reduced the rating, which would otherwise be substantial positive.
- In terms of noise, the loss of amenity on the public tracks by the river at the new bridge is largely offset by the improved amenity that will occur around the existing bridge.
- Traffic on the new state highway should be free flowing without having to decelerate and accelerate at intersections.

Assumptions made

- Baseline/do-minimum is sub-option D (Salisbury Street)
- Effects of engine braking and gradients are independent of sub-options.
- Asphalt (or other mitigation) on alignment near houses.
- No noise effects at two houses under the alignment.
- The distribution of traffic on Ashhurst Road and SH3 Napier Road is not altered.
- The intersections of the new SH3 with Ashhurst Road, SH57 and Napier Road are not roundabouts.

Information relied upon

- Drawings showing alignment and relationship to nearby houses
- GIS data showing houses and aerial photographs
- Site inspection 20/10/17

## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Contaminated Land

**Expert undertaking assessment:** Mark Ballard/Mike Trebitsch

**Option being considered:** Ashhurst Sub Option A

**Score:**

0 Neutral

**Notes:**

There are 12 HAIL sites within 500m of the route. Seven are unlikely to affect the route. Five are closer and alongside the route. There may be some potential for contact with impacted material IF there have been issues with the five adjacent sites.

No sites directly intersect the route.

Overall there are some nearby HAIL sites but it is assumed that these can be avoided or risks mitigated by use of an SMP with an accidental discovery protocol. This option would therefore have a Neutral Effect by avoiding the disturbance of a number of small HAIL sites.

Reasons / Comments as to how you came to your assessment

Significant Adverse Effect – Where a contaminated site exists which spans the entire 500m corridor and where contaminant issues have been recorded by councils or has the potential to generate significant contaminant issues (e.g. a landfill) that will require addressing during construction. Disturbance of the site may have a significant human/health and/or environmental effect.

Moderate Adverse Effect – Where site exists which spans the entire corridor but effects on construction may be of a lesser nature – e.g. orchards which may have some pesticide related soil contaminants that require management or removal

Minor Adverse Effects – Where the effects of the site are likely to be minor – e.g. removal of small areas of scrap material or some minor soil removal.

Neutral – Where no disturbance of HAIL sites is required.

F – Fatal Flaw – a contaminated site which spans the width of the road corridor and will require substantial remedial works to remove human health and environmental risks.

Assumptions made

That the road can be routed anywhere within the 500m corridor – i.e. moved around potential HAIL sites.

Information relied upon

HAIL site information provided by:

- Horizons Regional Council
- Manawatu District Council
- Palmerston North City Council
- Tararua District Council

Google Earth 2017 Aerial Imagery

Short List Options Information Sheets

## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Contaminated Land

**Expert undertaking assessment:** Mark Ballard/Mike Trebitsch

**Option being considered:** Ashhurst Sub Option B

**Score:**

0 Neutral

**Notes:**

There are 14 HAIL sites within 500m of the route. Eleven are unlikely to affect the route. Three are closer and alongside the route. There may be some potential for contact with impacted material IF there have been issues with the three adjacent sites.

No sites directly intersect the route.

Overall there some nearby HAIL sites but it is assumed that these can be avoided or risks mitigated by use of an SMP with an accidental discovery protocol. This option would therefore have a Neutral Effect by avoiding the disturbance of a number of small HAIL sites.

Reasons / Comments as to how you came to your assessment

Significant Adverse Effect – Where a contaminated site exists which spans the entire 500m corridor and where contaminant issues have been recorded by councils or has the potential to generate significant contaminant issues (e.g a landfill) that will require addressing during construction. Disturbance of the site may have a significant human/health and/or environmental effect.

Moderate Adverse Effect – Where site exists which spans the entire corridor but effects on construction may be of a lesser nature – e.g. orchards which may have some pesticide related soil contaminants that require management or removal

Minor Adverse Effects –Where the effects of the site are likely to be minor – e.g. removal of small areas of scrap material or some minor soil removal.

Neutral – Where no disturbance of HAIL sites is required.

F – Fatal Flaw – a contaminated site which spans the width of the road corridor and will require substantial remedial works to remove human health and environmental risks.

Assumptions made

That the road can be routed anywhere within the 500m corridor – i.e. moved around potential HAIL sites.

Information relied upon

HAIL site information provided by:

- Horizons Regional Council
- Manawatu District Council
- Palmerston North City Council
- Tararua District Council

Google Earth 2017 Aerial Imagery

Short List Options Information Sheets

## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Contaminated Land

**Expert undertaking assessment:** Mark Ballard/Mike Trebitsch

**Option being considered:** Ashhurst Sub Option C

**Score:**

0 Neutral

**Notes:**

There are 12 HAIL sites within 500m of the route. Eight are unlikely to affect the route. Three are closer and alongside the route. There may be some potential for contact with impacted material IF there have been issues with the three adjacent sites. One site, directly intersects the route. This is a stockyard/cattle race at 15-25 Mulgrave Street. It is assumed that the route may be able to be re-routed to avoid this. If not some investigation may be required to assess the degree of contamination.

Overall there some nearby HAIL sites but it is assumed that these can be avoided or risks mitigated by use of an SMP with an accidental discovery protocol. This option would therefore have a Neutral Effect by avoiding the disturbance of a number of small HAIL sites.

Reasons / Comments as to how you came to your assessment

Significant Adverse Effect – Where a contaminated site exists which spans the entire 500m corridor and where contaminant issues have been recorded by councils or has the potential to generate significant contaminant issues (e.g a landfill) that will require addressing during construction. Disturbance of the site may have a significant human/health and/or environmental effect.

Moderate Adverse Effect – Where site exists which spans the entire corridor but effects on construction may be of a lesser nature – e.g. orchards which may have some pesticide related soil contaminants that require management or removal

Minor Adverse Effects –Where the effects of the site are likely to be minor – e.g. removal of small areas of scrap material or some minor soil removal.

Neutral – Where no disturbance of HAIL sites is required.

F – Fatal Flaw – a contaminated site which spans the width of the road corridor and will require substantial remedial works to remove human health and environmental risks.

Assumptions made

That the road can be routed anywhere within the 500m corridor – i.e. moved around potential HAIL sites.

Information relied upon

HAIL site information provided by:

- Horizons Regional Council
- Manawatu District Council
- Palmerston North City Council
- Tararua District Council

Google Earth 2017 Aerial Imagery

Short List Options Information Sheets

## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Contaminated Land

**Expert undertaking assessment:** Mark Ballard/Mike Trebitsch

**Option being considered:** Ashhurst Sub Option D

**Score:**

0 Neutral

**Notes:**

There are 14 HAIL sites within 500m of the route. Twelve are unlikely to affect the route. Two sites are located alongside the route and have some potential for fuel contamination. It is assumed that both can be bypassed or a management plan could be implemented to manage accidental discovery of contamination.

Overall there some nearby HAIL sites but it is assumed that these can be avoided or risks mitigated by use of an SMP with an accidental discovery protocol. This option would therefore have a Neutral Effect by avoiding the disturbance of a number of small HAIL sites.

Reasons / Comments as to how you came to your assessment

Significant Adverse Effect – Where a contaminated site exists which spans the entire 500m corridor and where contaminant issues have been recorded by councils or has the potential to generate significant contaminant issues (e.g a landfill) that will require addressing during construction. Disturbance of the site may have a significant human/health and/or environmental effect.

Moderate Adverse Effect – Where site exists which spans the entire corridor but effects on construction may be of a lesser nature – e.g. orchards which may have some pesticide related soil contaminants that require management or removal

Minor Adverse Effects –Where the effects of the site are likely to be minor – e.g. removal of small areas of scrap material or some minor soil removal.

Neutral – Where no disturbance of HAIL sites is required.

F – Fatal Flaw – a contaminated site which spans the width of the road corridor and will require substantial remedial works to remove human health and environmental risks.

Assumptions made

That the road can be routed anywhere within the 500m corridor – i.e. moved around potential HAIL sites.

Information relied upon

HAIL site information provided by:

- Horizons Regional Council
- Manawatu District Council
- Palmerston North City Council
- Tararua District Council

Google Earth 2017 Aerial Imagery

Short List Options Information Sheets

## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Contaminated Land

**Expert undertaking assessment:** Mark Ballard/Mike Trebitsch

**Option being considered:** Ashhurst Sub Option E

**Score:**

0 Neutral

**Notes:**

There are 22 HAIL sites within 500m of the route. 19 are unlikely to affect the route. Three sites, directly intersect the route. These are two stockyards/cattle race at 25 Saddle Road, 84-102 North Street and a potential vehicle scrap yard at 158 Wyndham Street. It is assumed that the route may be able to be re-routed to avoid this. If not some investigation may be required to assess the degree of contamination.

Overall there some nearby HAIL sites but it is assumed that these can be avoided or risks mitigated by use of an SMP with an accidental discovery protocol. This option would therefore have a Neutral Effect by avoiding the disturbance of a number of small HAIL sites.

Reasons / Comments as to how you came to your assessment

Significant Adverse Effect – Where a contaminated site exists which spans the entire 500m corridor and where contaminant issues have been recorded by councils or has the potential to generate significant contaminant issues (e.g a landfill) that will require addressing during construction. Disturbance of the site may have a significant human/health and/or environmental effect.

Moderate Adverse Effect – Where site exists which spans the entire corridor but effects on construction may be of a lesser nature – e.g. orchards which may have some pesticide related soil contaminants that require management or removal

Minor Adverse Effects –Where the effects of the site are likely to be minor – e.g. removal of small areas of scrap material or some minor soil removal.

Neutral – Where no disturbance of HAIL sites is required.

F – Fatal Flaw – a contaminated site which spans the width of the road corridor and will require substantial remedial works to remove human health and environmental risks.

Assumptions made

That the road can be routed anywhere within the 500m corridor – i.e. moved around potential HAIL sites.

Information relied upon

HAIL site information provided by:

- Horizons Regional Council
- Manawatu District Council
- Palmerston North City Council
- Tararua District Council

Google Earth 2017 Aerial Imagery

Short List Options Information Sheets



<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Contaminated Land	
<b>Expert undertaking assessment:</b> Mark Ballard/Mike Trebitsch	
<b>Option being considered:</b> Ashhurst Sub Option F	
<b>Score:</b> 0 Neutral	
<b>Notes:</b>  There are 8 HAIL sites within 500m of the route. Five are unlikely to affect the route. One site exists along the route and two sites directly intersect the route. These two sites are an outbuilding and transport yard located at 1630 Napier Road. It is assumed that the route may be able to be re-routed to avoid this. If not some investigation may be required to assess the degree of contamination.  Overall there some nearby HAIL sites but it is assumed that these can be avoided or risks mitigated by use of an SMP with an accidental discovery protocol. This option would therefore have a Neutral Effect by avoiding the disturbance of a number of small HAIL sites.  <u>Reasons / Comments as to how you came to your assessment</u>  Significant Adverse Effect – Where a contaminated site exists which spans the entire 500m corridor and where contaminant issues have been recorded by councils or has the potential to generate significant contaminant issues (e.g a landfill) that will require addressing during construction. Disturbance of the site may have a significant human/health and/or environmental effect.  Moderate Adverse Effect – Where site exists which spans the entire corridor but effects on construction may be of a lesser nature – e.g. orchards which may have some pesticide related soil contaminants that require management or removal  Minor Adverse Effects –Where the effects of the site are likely to be minor – e.g. removal of small areas of scrap material or some minor soil removal.  Neutral – Where no disturbance of HAIL sites is required.  F – Fatal Flaw – a contaminated site which spans the width of the road corridor and will require substantial remedial works to remove human health and environmental risks.	<u>Assumptions made</u>  That the road can be routed anywhere within the 500m corridor – i.e. moved around potential HAIL sites.  <u>Information relied upon</u>  HAIL site information provided by: <ul style="list-style-type: none"><li>• Horizons Regional Council</li><li>• Manawatu District Council</li><li>• Palmerston North City Council</li><li>• Tararua District Council</li></ul> Google Earth 2017 Aerial Imagery  Short List Options Information Sheets

## Cultural and heritage

## Multi Criteria Assessment Scoring Sheet

**Area of expertise:** Archaeology and Heritage

**Expert undertaking assessment:** Rod Clough

**Option being considered:** Ashhurst Sub Option A

**Score:**

-- Moderate Adverse Effect

Ashhurst Sub Option A – Commencing on the eastern side of the existing SH3 Manawatu Bridge, traversing east then north across the Manawatu River via a long curved bridge at the mouth of the Manawatu Gorge before climbing and swinging left to link with the Option 3 alignment. The existing SH3 bridge is rated for HPMV traffic, but is of insufficient width to safely accommodate non-motorised users.

The option was checked against the following databases which have recorded archaeological or historic heritage site:

- Manawatu District Plan
- Tararua District Plan
- Palmerston North District Plan
- NZAA site record file Arcsite
- Heritage New Zealand Pouhere Taonga (Heritage NZ) New Zealand List of Historic Places

Other sources checked for historic buildings or other structures/notations:

- Google Earth
- Manawatu GIS overlays
- Site visit to properties along the river
- Consultation with relevant landowners
- Rangitane comments in workshop

The route will not affect any known sites. However, site inspection of properties to the north of the Gorge and east of the Pohangina indicates that route has potential to affect unrecorded archaeological sites:

- on the land close to the confluence of the Pohangina and Manawatu Rivers (Maori sites);

Subsequent to the field visit, the potential is considered high and any affects could be moderate (-ve) depending on the nature of the sites.

Iwi have subsequently indicated that the area north of the Manawatu and east of the Pohangina Rivers is a highly sensitive area.

However, they (Rangitane) have also indicated that there may be solutions in this area. This constraint also affects Sub Option F.

Recorded sites such as Moutere Island and the Karaka grove (just south of the confluence) will not be affected.

<p><b>Notes:</b></p> <p><u>Reasons / Comments as to how you came to your assessment</u></p> <p>Ashhurst has a good record of scheduled buildings and trees on the PNDP, and recorded archaeological sites near the river Manawatu River and confluence of the Pohangina and Manawatu Rivers. However, the possibility of surviving buildings/features related to 19<sup>th</sup> century settlement being present around the towns of Ashhurst and Woodville cannot be discounted. Brief field visits indicated that remains of 19<sup>th</sup> century settlement were unlikely to be an issue.</p> <p>River terraces were favourable locations for Maori settlement and gardening. Garden soils are recorded as site T24/29 nearby, and also the Pa (T24/28) recorded at the Domain, said to be located strategically overlooking the confluence of the two rivers. Moutere Island at the confluence of the rivers is also recorded as kainga/burials (T24/32) and is said to have been the home of Te Awe Awe (Rangitane), although the Island has been affected by flooding over many years. T24/31, a karaka grove on the southern bank of the Manawatu overlooking Moutere is considered to have potential for remains relating to Maori settlement. Overall, there is potential for other features related to Maori settlement to be located along the banks of the river.</p> <p>Overall, however, Option A avoids the recorded sites of high significance (Pa, burials/urupa sites).</p> <p>Site visits to the Bolton property on the northern site of the confluence indicated that there was considerable potential to encounter heritage remains in the area. While no archaeological remains were observed, the locational parameters and associated concentration of heritage sites were indicative of considerable potential to encounter heritage remains.</p> <p>Rangitane have previously outlined significant concerns in this area and either Sub Options A or F become the preferred option then more detailed site investigation will be required as part of the design and consenting phase. Rangitane have also indicated that it may be possible to find solutions for crossing this area.</p>	<p><u>Assumptions made</u></p> <p>That remains relating to early European settlement could be dealt with through normal mitigation processes under the HNZPTA</p> <p>That there could be significant archaeological sites in close proximity to the rivers which may not have been recorded.</p> <p><u>Information relied upon</u></p> <p>Route descriptions and GIS overlay. Heritage databases.</p>
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<b>Multi Criteria Assessment Scoring Sheet</b>	
<b>Area of expertise:</b> Archaeology and Heritage	
<b>Expert undertaking assessment:</b> Rod Clough	
<b>Option being considered:</b> Ashhurst Sub Option B	
<p><b>Score:</b></p> <p>- Minor Adverse Effect</p> <p><b>Ashhurst Sub Option B</b> – Commencing south of Ashhurst and traversing adjacent to the rail line to a point where the rail line swings east around the domain at which point the highway alignment cuts the corner of the domain and crosses the rail line. The rail line at this location is in cutting, with the highway passing over on a skewed bridge at grade. Bridge likely to be of a span sufficient for dual rail lines, or service road adjacent to existing line. Highway then swings east traversing down to the lower terrace through a small cut/fill, before commencing climbing and crossing Pohangina River to the link with the Option 3 alignment. The section crossing the river terrace adjacent to Ashhurst will be constructed on embankment of sufficient height to be above the 1:100 yr flood level plus free board. This is anticipated to be in the order of 3m height. SH57 will intersect with the new alignment either where the existing SH3 turns towards the gorge in Ashhurst, or through a new straighter tee intersection.</p>	<p>The option was checked against the following databases which have recorded archaeological or historic heritage site:</p> <ul style="list-style-type: none"> <li>• Manawatu District Plan</li> <li>• Tararua District Plan</li> <li>• Palmerston North District Plan</li> <li>• NZAA site record file Arcsite</li> <li>• Heritage New Zealand Pouhere Taonga (Heritage NZ) New Zealand List of Historic Places</li> </ul> <p>Other sources checked for historic buildings or other structures/notations:</p> <ul style="list-style-type: none"> <li>• Google Earth</li> <li>• Manawatu GIS overlays</li> <li>• Site visit to properties along the river</li> <li>• Consultation with relevant landowners</li> </ul> <p>The route will not affect any known sites. However, site inspection of properties to the north of the Gorge and east of the Pohangina indicates that route has some potential to affect unrecorded archaeological sites although less than Options A and F:</p> <ul style="list-style-type: none"> <li>• on the land close to the confluence of the Pohangina and Manawatu Rivers (Maori sites);</li> </ul> <p>Subsequent to the field visit, the potential is moderate on the eastern side of the river and any affects could be minor (-ve) depending on the nature of the sites. On the western side of the river the option transects farmland and although adjacent to the river is mostly within the floodplain. However, at the southern end, where it diverges from Sub Option B, Maori Garden soils have been recorded (T24/29) nearby and it is possible that further examples exist on the upper terrace.</p>

<p><b>Notes:</b></p> <p><u>Reasons / Comments as to how you came to your assessment</u></p> <p>Ashhurst has a good record of scheduled buildings and trees on the PNDP, and recorded archaeological sites near the river Manawatu River and confluence of the Pohangina and Manawatu Rivers. However, the possibility of surviving buildings/features related to 19<sup>th</sup> century settlement being present around the towns of Ashhurst and Woodville cannot be discounted. Brief field visits indicated that remains of 19<sup>th</sup> century settlement were unlikely to be an issue.</p> <p>River terraces were favourable locations for Maori settlement and gardening. Garden soils are recorded as site T24/29 nearby, and also the Pa (T24/28) recorded at the Domain, said to be located strategically overlooking the confluence of the two rivers. Moutere Island at the confluence of the rivers is also recorded as kainga/burials (T24/32) and is said to have been the home of Te Awe Awe (Rangitane), although the Island has been affected by flooding over many years. T24/31, a karaka grove on the southern bank of the Manawatu overlooking Moutere is considered to have potential for remains relating to Maori settlement. Overall, there is potential for other features related to Maori settlement to be located along the banks of the river. Maori agricultural soils are a possibility on the western side of the river but if encountered these would only represent minor effects.</p> <p>Overall, however, Option B avoids the recorded sites of high significance (Pa, burials/urupa sites), but might encounter Maori garden soils.</p> <p>Site visits to the Bolton property on the northern site of the confluence indicated that there was considerable potential to encounter heritage remains in the area. However, sub Option B is largely to the north of the sensitive area and the probability of encountered heritage remains is reduced and it is considered that any effects are likely to be minor and can be dealt with adequately under the RMA and HNZPT Acts.</p>	<p><u>Assumptions made</u></p> <p>That remains relating to early European settlement could be dealt with through normal mitigation processes under the HNZPTA</p> <p>That there could be archaeological sites in close proximity to the rivers which may not have been recorded.</p> <p><u>Information relied upon</u></p> <p>Sub option description and GIS overlay.</p>
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<b>Multi Criteria Assessment Scoring Sheet</b>	
<b>Area of expertise:</b> Archaeology and Heritage	
<b>Expert undertaking assessment:</b> Rod Clough	
<b>Option being considered:</b> Ashhurst Sub Option C	
<p><b>Score:</b></p> <p>- Minor Adverse Effect</p> <p>Ashhurst Sub Option C – Commencing south of Ashhurst and traversing adjacent to the rail line to a point where the rail line swings east around the domain at which point the highway alignment cuts the corner of the domain and crosses the rail line. The rail line at this location is in cutting, with the highway passing over on a skewed bridge at grade. Bridge likely to be of a span sufficient for dual rail lines, or service road adjacent to existing line. Highway then swings north running parallel to the Pohangina River before turning on to existing the Saddle Road bridge before turning south and running parallel to the Pohangina River before turning west and climbing to link with the Option 3 alignment. The section crossing the river terrace adjacent Ashhurst the will be constructed on embankment of sufficient height to be above the 1:100 yr flood level plus free board. This will typically be of 3m in height at the southern end tapering to 1-2m at the Saddle Road end. It is unclear whether the Saddle Road bridge is clear of the 1:100yr flood level plus free board which would need to be confirmed. The existing Saddle Road heading east would accessed from a Tee intersection off the new highway south of the existing bridge.</p>	<p>The option was checked against the following databases which have recorded archaeological or historic heritage site:</p> <ul style="list-style-type: none"> <li>• Manawatu District Plan</li> <li>• Tararua District Plan</li> <li>• Palmerston North District Plan</li> <li>• NZAA site record file Arcsite</li> <li>• Heritage New Zealand Pouhere Taonga (Heritage NZ) New Zealand List of Historic Places</li> </ul> <p>Other sources checked for historic buildings or other structures/notations:</p> <ul style="list-style-type: none"> <li>• Google Earth</li> <li>• Manawatu GIS overlays</li> <li>• Site visit to properties along the river</li> <li>• Consultation with relevant landowners</li> </ul> <p>The route will not affect any known sites. However, that route has some potential to affect unrecorded archaeological sites:</p> <ul style="list-style-type: none"> <li>• on the land close to the Pohangina River (Maori sites);</li> </ul> <p>Review of aerial overlays did not indicate any particular areas of interest as most of the route crosses over existing pasture in the Pohangina flood plain. However, at the southern end, where it diverges from Sub Option B, Maori Garden soils have been recorded (T24/29) nearby and it is possible that further examples exist on the upper terrace.</p> <p>There is also some potential on the eastern side of the Pohangina where it travels south to join the Option 3 alignment. This potential is shared with sub Options D and E</p>

<p><b>Notes:</b></p> <p><u>Reasons / Comments as to how you came to your assessment</u></p> <p>Ashhurst has a good record of scheduled buildings and trees on the PNDP, and recorded archaeological sites near the river Manawatu River and confluence of the Pohangina and Manawatu Rivers. However, the possibility of surviving buildings/features related to 19<sup>th</sup> century settlement being present around the towns of Ashhurst and Woodville cannot be discounted. Brief field visits indicated that remains of 19<sup>th</sup> century settlement were unlikely to be an issue.</p> <p>River terraces were favourable locations for Maori settlement and gardening. Garden soils are recorded as site T24/29 nearby, and also the Pa (T24/28) recorded at the Domain, said to be located strategically overlooking the confluence of the two rivers. Moutere Island at the confluence of the rivers is also recorded as kainga/burials (T24/32) and is said to have been the home of Te Awe Awe (Rangitane), although the Island has been affected by flooding over many years. T24/31, a karaka grove on the southern bank of the Manawatu overlooking Moutere is considered to have potential for remains relating to Maori settlement. Overall, given the spread of recorded sites, there is potential for other features related to Maori settlement to be located along the banks of the river.</p> <p>Overall, however, Sub Option C avoids recorded sites of high significance (Pa, burials/urupa sites).</p> <p>Site visits to the Bolton property on the northern site of the confluence indicated that there was considerable potential to encounter heritage remains in the area just north of the confluence. This avoids the sensitive area but with long stretches both sides of the river there is still a moderate potential to encounter heritage remains.</p> <p>It is considered that any effects are likely to be minor and can be dealt with adequately under the RMA and HNZPT Acts.</p>	<p><u>Assumptions made</u></p> <p>That remains relating to early European settlement could be dealt with through normal mitigation processes under the HNZPTA</p> <p>That there could be significant archaeological sites in close proximity to the rivers which may not have been recorded.</p> <p><u>Information relied upon</u></p> <p>Route description and aerial overlays. Heritage databases.</p>
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## Multi Criteria Assessment Scoring Sheet

**Area of expertise:** Archaeology and Heritage

**Expert undertaking assessment:** Rod Clough

**Option being considered:** Ashhurst Sub Option D

**Score:**

- Minor Adverse Effect

Ashhurst Sub Option D - This option follows the existing route through Ashhurst to Saddle Road being the interim corridor following closure of the highway through the Manawatu Gorge. Commencing south of Ashhurst, and traversing north over Cambridge Avenue into Ashhurst before turning right into Mulgrave Street before turning left into Salisbury Street and heading north until out of Ashhurst and onto Saddle Road north of The Terrace before turning right towards the Pohangina river and over the existing Saddle Road bridge before turning south and running parallel to the Pohangina River before turning west and climbing to link with the Option 3 alignment. It is unclear whether the Saddle Road from Ashhurst to the bridge is clear of the 1:100yr flood level plus free board which would need to be confirmed. The alignment from commencement to Saddle Road is through residential Ashhurst with a posted speed of 50km/hr, but with an overall operating speed being less. The existing Saddle Road heading east would be accessed from a Tee intersection off the new highway south of the existing bridge.

The option was checked against the following databases which have recorded archaeological or historic heritage site:

- Manawatu District Plan
- Tararua District Plan
- Palmerston North District Plan
- NZAA site record file Arcsite
- Heritage New Zealand Pouhere Taonga (Heritage NZ) New Zealand List of Historic Places

Other sources checked for historic buildings or other structures/notations:

- Google Earth
- Manawatu GIS overlays
- Site visit to properties along the river
- Consultation with relevant landowners

The route will largely adhere to existing roads through Ashhurst apart from a very small area of pasture where it turns east towards the saddle bridge. However, no known sites will be affected and it would appear unlikely that there are any unrecorded remains along the route.

There is some potential on the eastern side of the Pohangina where it travels south to join the Option 3 alignment. This potential is shared with sub Options C and E

Overall, potential for effects on archaeological sites is considered low.

<p><b>Notes:</b></p> <p><u>Reasons / Comments as to how you came to your assessment</u></p> <p>The bulk of this sub Option utilises the existing road network and effects on unrecorded heritage sites on the western side of the Pohangina are unlikely because of the limited nature of new earthworks.</p> <p>On the eastern side of the river, proximity to the river raises the potential to encounter unrecorded archaeological remains.</p> <p>Any effects are likely to be minor and can be dealt with adequately under the RMA and HNZPT Acts.</p>	<p><u>Assumptions made</u></p> <p>That remains relating to early European settlement could be dealt with through normal mitigation processes under the HNZPTA and would not present a risk to the project</p> <p><u>Information relied upon</u></p> <p>Option description and GIS overlay. Heritage databases.</p>
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<b>Multi Criteria Assessment Scoring Sheet</b>	
<b>Area of expertise:</b> Archaeology and Heritage	
<b>Expert undertaking assessment:</b> Rod Clough	
<b>Option being considered:</b> Ashhurst Sub Option E	
<p><b>Score:</b></p> <p>- Minor Adverse Effect</p> <p><b>Ashhurst Sub Option E</b> – Commencing south of Ashhurst this option circuits to the west and north of Ashhurst avoiding the residential areas. It crosses rural and rural residential zoned land. At its southern extent the alignment will require grade separation from the rail, coinciding with a new SH3/57 intersection (assuming the existing length of SH3 from Ashhurst to SH57 becomes SH57) before turning north then west across rural/residential land intersecting (either cross roads (SH3 having priority) or roundabouts) with Ashhurst Road, Colyton Road and Pohangina Road before linking with the existing Saddle Road before turning south and running parallel to the Pohangina River before turning west and climbing to link with the Option 3 alignment. The alignment would either sever Harrisons Lane or required another as provided for the other local roads. It is unclear whether the alignment from Pohangina Road to the Saddle Road bridge is clear of the 1:100yr flood level plus free board which would need to be confirmed. The existing Saddle Road heading east would accessed from a Tee intersection off the new highway south of the existing bridge.</p>	<p>The option was checked against the following databases which have recorded archaeological or historic heritage site:</p> <ul style="list-style-type: none"> <li>• Manawatu District Plan</li> <li>• Tararua District Plan</li> <li>• Palmerston North District Plan</li> <li>• NZAA site record file Arcsite</li> <li>• Heritage New Zealand Pouhere Taonga (Heritage NZ) New Zealand List of Historic Places</li> </ul> <p>Other sources checked for historic buildings or other structures/notations:</p> <ul style="list-style-type: none"> <li>• Google Earth</li> <li>• Manawatu GIS overlays</li> <li>• Site visit to properties along the eastern side of the Pohangina River</li> </ul> <p>Of all the sub Options, this route will affect a large area greenfields/farmland (similar to Option F). No archaeological sites have been recorded in close proximity to the route but as part of the route is adjacent to the Pohangina River there is some potential to encounter remains relating to earlier Maori settlement, including gardening soils.</p> <p>There would also be potential for encountering early farming remains relating to early settlement of Ashhurst.</p> <p>Overall, potential for Maori sites and historic European sites is moderate, so potential minor adverse effects.</p>

<p><b>Notes:</b></p> <p><u>Reasons / Comments as to how you came to your assessment</u></p> <p>There is some possibility of surviving buildings/features related to 19<sup>th</sup> century settlement to be present on the farmland between the state highway, land on the western side of the Manawatu/Pohangina Rivers.</p> <p>River terraces and other riverside locations were favourable locations for Maori settlement and gardening.</p> <p>The number of recorded sites around the confluence of the two rivers (including pa, urupa, settlements and garden soils is indicative of extensive Maori settlement, so there is more potential on the river terraces/farmland here for unrecorded sites.</p> <p>Overall, however, the route avoids the recorded sites of high significance (Pa, burials/urupa sites).</p> <p>Any effects are likely to be minor/moderate and can be dealt with adequately under the RMA and HNZPT Acts.</p>	<p><u>Assumptions made</u></p> <p>That remains relating to early European settlement could be dealt with through normal mitigation processes under the HNZPTA and would not present a risk to the project</p> <p><u>Information relied upon</u></p> <p>Route Description and GIS overlay. Heritage databases.</p>
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<b>Multi Criteria Assessment Scoring Sheet</b>	
<b>Area of expertise:</b> Archaeology and Heritage	
<b>Expert undertaking assessment:</b> Rod Clough	
<b>Option being considered:</b> Ashhurst Sub Option F	
<p><b>Score:</b> -- Moderate Adverse Effect</p> <p><b>Ashhurst Sub Option F</b> – Ashhurst sub-option F – commencing from SH3 Napier Road (northbound), the highway turns southeast via a 100km/hr bend approximately 400m south of Hacketts Road before crossing the Manawatu River and turning north west and traversing an alignment similar to the northern extent of SH57 before linking with the proposed new long curved bridge at the mouth of the Manawatu Gorge before climbing and swinging left to link with the Option 3 alignment. SH57 will intersect with the new alignment of SH3 south of it’s current intersection position.</p> <p>At SH3 Napier Road a new link between SH3 Napier Road and Ashhurst Road providing improved linkage without reliance on substandard highway network. This option would include the link road traversing over the rail line, providing full grade separation. The existing SH3 into Ashhurst will tee off this link road and progress on its existing alignment.</p>	<p>The option was checked against the following databases which have recorded archaeological or historic heritage site:</p> <ul style="list-style-type: none"> <li>• Manawatu District Plan</li> <li>• Tararua District Plan</li> <li>• Palmerston North District Plan</li> <li>• NZAA site record file Arcsite</li> <li>• Heritage New Zealand Pouhere Taonga (Heritage NZ) New Zealand List of Historic Places</li> </ul> <p>Other sources checked for historic buildings or other structures/notations:</p> <ul style="list-style-type: none"> <li>• Google Earth</li> <li>• Manawatu GIS overlays</li> <li>• Site visit to properties along the river</li> </ul> <p>The route will affect a large area of new ground/farmland with a possible new bridge over Manawatu river onto farmland before entering the hills; new 2 lane bridge to the south of the gorge crossing the river onto farmland/river terrace.</p> <p>Two archaeological sites T24/33 (Pa) and T24/26 (Pa) have been recorded on the northern side of the Manawatu to the south of Sub Option F. and Karaka grove and settlement (Moutere) near the confluence. It also transects the sensitive area to the north of the confluence (as does sub option A). However, no known sites will be affected, but some recorded Maori site nearby including two Pa sites.</p> <p>Overall, potential for Maori sites higher because of the proximity to recorded sites and to the river. In particular the area to the north of the confluence, so potential minor/moderate adverse effects.</p>

<p><b>Notes:</b></p> <p><u>Reasons / Comments as to how you came to your assessment</u></p> <p>River terraces were favourable locations for Maori settlement and gardening. Two sites are located to the northeast on the northern side of the State highway – a Pa T24/2 and terraces/possible Pa T24/3.</p> <p>Two additional Pa are recorded on either side of the loop in the Manawatu River – on the eastern side one recorded as Rangitane Pa T24/26, a small pa of the Chief Harawhanu. Noted as a good resource collecting area particularly for karaka and hinau berries. On the western side closest to the route T24/33 reported as Kopuanui Pa. So there is more potential on the river terraces/farmland here for unrecorded sites.</p> <p>Property inspection of the section of this route just to the north of the confluence (Bolton property) indicates archaeological sensitivities (confirmed by iwi) where there is considered a higher potential to encounter archaeological remains.</p> <p>A more detailed survey of this section would be required prior to detailed planning.</p> <p>Overall, however, the route avoids the recorded sites of high significance (Pa, burials/urupa sites).</p> <p>For most part it is considered that any effects are likely to be minor/moderate and can be dealt with adequately under the RMA and HNZPT Acts. However this has been scored as a moderate negative to reflect transit through the sensitive area.</p>	<p><u>Assumptions made</u></p> <p>That remains relating to early European settlement could be dealt with through normal mitigation processes under the HNZPTA and would not present a risk to the project</p> <p><u>Information relied upon</u></p> <p>Route Description and GIS overlay. Heritage databases.</p>
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**Social**

<b>Multi Criteria Assessment Scoring Sheet</b>	
<b>Area of expertise:</b> Social Impact	
<b>Expert undertaking assessment:</b> Alex Jepsen	
<b>Option being considered:</b> Ashhurst Sub Option A	
<p><b>Score without mitigation:</b> +++ Significant Positive Effect</p> <p><b>Mitigation available to change score?</b> Not applicable</p> <p><b>Potential shift with mitigation:</b> Not applicable</p>	<p>With reference to NZTA's "Social impact guide", the following matters have been considered:</p> <ul style="list-style-type: none"> <li>• Changes to access and accessibility, changes to local movement patterns, way of life.</li> <li>• Social connectedness, community severance, family community and social networks.</li> <li>• Changes to social infrastructure, community facilities, businesses.</li> <li>• Impacts on community aspirations and or expectations for the present and future.</li> <li>• Impacts arising from displacement – of residents, businesses, and community services/facilities.</li> <li>• Impacts on personal and community wellbeing, including those arising from uncertainty during the planning stage of the project; as well as impacts on material wellbeing, personal and property rights.</li> </ul>
<p><b>Notes:</b></p> <p><u>Reasons / Comments as to how you came to your assessment</u></p> <ul style="list-style-type: none"> <li>- No dwellings impacted. <i>Note: some privately owned land is affected (north-east and south of the Manawatu-Pohangina River confluence). However, the proposed alignment here is effectively a realignment of the existing road and I consider that the PWA will be an appropriate mechanism to manage effects on property in this instance. PWA is assumed as 'standard mitigation'.</i></li> <li>- Takes traffic off Salisbury Street (through Ashhurst). Salisbury Street is currently experiencing increased traffic flows as it comes off the Saddle Road (which is being used as an alternative to the Gorge). Salisbury Street is a residential street. Ashhurst School is also located on Salisbury Street. Taking traffic away from this street will result in reduced noise and vibration (from heavy trucks) which will reduce the disturbance and general nuisance that people are currently experiencing (including sleep disturbance, which has been confirmed through consultation feedback). Less traffic also alleviates existing safety risks associated with high traffic volumes and heavy vehicle traffic travelling up and down a residential street – which also has the school on it. Finally, Ashhurst residents generally have a desire to maintain a "quiet village" character and the reduction of general and freight traffic through Ashhurst supports this aspiration.</li> </ul>	<p><u>Assumptions made</u></p> <ul style="list-style-type: none"> <li>- Have assumed that where the sub-options follow an existing road there will be no widening. Where the sub-option involves construction of a new road, I have assumed a 30m wide corridor only. A 500m wide corridor is not a realistic or accurate assumption.</li> <li>- The MCA Assessment has been undertaken at a high level only, although a site visit has been undertaken to familiarise myself with the project area – undertaken on 19 September 2017 and a further drive over on 12 October 2017. I also participated in the open days held on 11-13 October 2017.</li> <li>- The assessment and rating of options is absolute, not comparative. However, differentiating factors have been noted where possible to arrive at a preferred option, from a social perspective.</li> <li>- The Public Works Act 1981 will apply i.e. land and building owners directly affected by the Project will be fairly compensated under the Public Works Act for any impact on business activities and property.</li> <li>- Consultation is and will continue to occur with directly affected landowners, stakeholders and the public to provide, where able, certainty about design and timing for project.</li> <li>- All effects and ratings are considered <u>without</u> mitigation (with the exception of the PWA and consultation assumed as per above).</li> </ul>



<ul style="list-style-type: none"> <li>- Travel patterns along SH2 ‘around the bend’ towards the existing SH3 bridge would return to what they were prior to the Gorge closure. This could be of benefit to the businesses located along this strip (compared to the current situation) – some have indicated a slow-down of business since the Gorge closed.</li> </ul>	<ul style="list-style-type: none"> <li>- Key informant interviews with landowners and members of the affected community needed to more accurately assess the social impacts.</li> </ul> <p><u>Information relied upon</u></p> <ul style="list-style-type: none"> <li>- Google Maps</li> <li>- Ashhurst sub options description (memo dated 8 November 2017)</li> <li>- Manawatu Gorge Web Portal (GHD Maps)</li> <li>- NZTA Guide to assessing social impacts for state highway projects</li> <li>- Media search</li> <li>- Site visit (drive over) 19 September</li> <li>- Further drive over 12 October</li> <li>- Participation in MCA Briefing Workshop 19 September 2017, MCA Workshop 1 on 27 September 2017, MCA Workshop 2 on 27 October 2017</li> <li>- Participation in Public Open Days held on 11-13 October</li> <li>- Palmerston North, Taranua, Manawatu and Horizons Planning documents (brief review)</li> <li>- Social Pinpoint</li> <li>- Discussions with Stakeholder Engagement Lead and Project Members who attended public meetings 25-27 September 2017, public open days on 11-13 October 2017, and those who have undertaken direct engagement with landowners.</li> </ul>
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Assessment table – Option A

Impact description	Assessment of scale	Assessment (without mitigation)
<p>No dwellings impacted.  <i>Note: some privately owned land is affected (north-east and south of the Manawatu-Pohangina River confluence). However, the proposed alignment here is effectively a realignment of the existing road and I consider that the PWA will be an appropriate mechanism to manage effects on property in this instance. PWA is assumed as 'standard mitigation'.</i></p>	<ul style="list-style-type: none"> <li>- No people affected (no people displaced).</li> </ul>	<p>Insignificant 0</p>
<p>Takes traffic off Salisbury Street (through Ashhurst). Salisbury Street is currently experiencing increased traffic flows as it comes off the Saddle Road (which is being used as an alternative to the Gorge). Salisbury Street is a residential street. Ashhurst School is also located on Salisbury Street.                      Taking traffic away from this street will result in reduced noise and vibration (from heavy trucks) which will reduce the disturbance and general nuisance that people are currently experiencing (including sleep disturbance, which has been confirmed through consultation feedback). Less traffic also alleviates existing safety risks associated with high traffic volumes and heavy vehicle traffic travelling up and down a residential street – which also has a school on it. Finally, Ashhurst residents generally have a desire to maintain a “quiet village” character and the reduction of general and freight traffic through Ashhurst supports this aspiration.</p>	<ul style="list-style-type: none"> <li>- Moderate number of people affected (community).</li> <li>- Permanent.</li> <li>- No mitigation required: positive effect.</li> <li>- Certain to occur.</li> </ul>	<p>Significant positive +3</p>
<p>Travel patterns along SH2 ‘around the bend’ towards the Napier Road bridge would return to what they were prior to the Gorge closure. This could be of benefit to the businesses located along this strip. But otherwise signifies no significant change from what occurred before.</p>	<ul style="list-style-type: none"> <li>- Few people affected.</li> <li>- Permanent.</li> <li>- No mitigation required: positive effect.</li> <li>- Likely or certain to occur.</li> </ul>	<p>Unknown (I have no evidence base for this effect, it is just assumed to be a likely outcome). However, more likely to be a positive than an adverse effect of the project.</p>
<p>Overall score: <b>+3</b></p>		

<b>Multi Criteria Assessment Scoring Sheet</b>	
<b>Area of expertise:</b> Social Impact	
<b>Expert undertaking assessment:</b> Alex Jepsen	
<b>Option being considered:</b> Ashhurst Sub Option B	
<p><b>Score without mitigation:</b></p> <p>+ Minor Positive Effect (negatives bring down the positives)</p> <p><b>Mitigation available to change score?</b></p> <p>Yes (Use Cambridge Road, which is already an arterial, instead of Short Street?)</p> <p><b>Potential shift with mitigation:</b></p> <p>Could be 'more' positive.</p>	<p>With reference to NZTA's "Social impact guide", the following matters have been considered:</p> <ul style="list-style-type: none"> <li>• Changes to access and accessibility, changes to local movement patterns, way of life.</li> <li>• Social connectedness, community severance, family community and social networks.</li> <li>• Changes to social infrastructure, community facilities, businesses.</li> <li>• Impacts on community aspirations and or expectations for the present and future.</li> <li>• Impacts arising from displacement – of residents, businesses, and community services/facilities.</li> <li>• Impacts on personal and community wellbeing, including those arising from uncertainty during the planning stage of the project; as well as impacts on material wellbeing, personal and property rights.</li> </ul>
<p><b>Notes:</b></p> <p><u>Reasons / Comments as to how you came to your assessment</u></p> <ul style="list-style-type: none"> <li>- No dwellings impacted. <i>Note: some privately owned land is affected (either side of the Pohangina River). However, I consider that the PWA will be an appropriate mechanism to manage effects on property in this instance. PWA is assumed as 'standard mitigation'. I note that the severance land (south of the alignment, on the western side of the Pohangina River) may need to be purchased if it is not a viable parcel on its own (becomes an island in between the alignment and the railway).</i></li> <li>- Impacts the neighbourhood/quiet residential character of Short Street. Residents on this street (approx. 8 houses based on aerials) currently live on a cul-de-sac with low traffic volumes (estimated ~150 vpd). This option would result in ~1500 vpd using this street (tenfold increase). The implication of this will be that what is now a low traffic, quiet residential, road safe environment, will change to a busy (high traffic), relatively noisy environment with potential traffic safety risks e.g. when residents are backing out of their driveways. This is likely to be at odds with the aspirations of these residents (while no specific consultation has been undertaken on this, there is nothing in the planning/strategic documents that indicates such a change in this area).</li> </ul>	<p><u>Assumptions made</u></p> <ul style="list-style-type: none"> <li>- Have assumed that where the sub-options follow an existing road there will be no widening. Where the sub-option involves construction of a new road, I have assumed a 30m wide corridor only. A 500m wide corridor is not a realistic or accurate assumption.</li> <li>- The MCA Assessment has been undertaken at a high level only, although a site visit has been undertaken to familiarise myself with the project area – undertaken on 19 September 2017 and a further drive over on 12 October 2017. I also participated in the open days held on 11-13 October 2017.</li> <li>- The assessment and rating of options is absolute, not comparative. However, differentiating factors have been noted where possible to arrive at a preferred option, from a social perspective.</li> <li>- The Public Works Act 1981 will apply i.e. land and building owners directly affected by the Project will be fairly compensated under the Public Works Act for any impact on business activities and property.</li> <li>- Consultation is and will continue to occur with directly affected landowners, stakeholders and the public to provide, where able, certainty about design and timing for project.</li> <li>- All effects and ratings are considered <u>without</u> mitigation (with the exception of the PWA and consultation assumed as per above).</li> </ul>

<ul style="list-style-type: none"> <li>- Takes traffic off Salisbury Street (through Ashhurst). Salisbury Street is currently experiencing increased traffic flows as it comes off the Saddle Road (which is being used as an alternative to the Gorge). Salisbury Street is a residential street. Ashhurst School is also located on Salisbury Street. Taking traffic away from this street will result in reduced noise and vibration (from heavy trucks) which will reduce the disturbance and general nuisance that people are currently experiencing (including sleep disturbance, which has been confirmed through consultation feedback). Less traffic also alleviates existing safety risks associated with high traffic volumes and heavy vehicle traffic travelling up and down a residential street – which also has a school on it. Finally, Ashhurst residents generally have a desire to maintain a “quiet village” character and the reduction of general and freight traffic through Ashhurst supports this aspiration.</li> <li>- Directly affects Ashhurst Domain (western edge). However, from the plans provided it does not look like the land requirement would render the Domain unusable by the community and sports groups that use the Domain. I understand the northern part of the Domain, where the alignment is proposed, is not the main part of the Domain that is used by the community – people mainly use the southern part of the Domain). Mitigation required (to replace carparking areas, walkways) but likely available.</li> </ul>	<ul style="list-style-type: none"> <li>- Key informant interviews with landowners and members of the affected community needed to more accurately assess the social impacts.</li> </ul> <p><u>Information relied upon</u></p> <ul style="list-style-type: none"> <li>- Google Maps</li> <li>- Ashhurst sub options description (memo dated 8 November 2017)</li> <li>- Manawatu Gorge Web Portal (GHD Maps)</li> <li>- NZTA Guide to assessing social impacts for state highway projects</li> <li>- Media search</li> <li>- Site visit (drive over) 19 September</li> <li>- Further drive over 12 October</li> <li>- Participation in MCA Briefing Workshop 19 September 2017, MCA Workshop 1 on 27 September 2017, MCA Workshop 2 on 27 October 2017</li> <li>- Participation in Public Open Days held on 11-13 October</li> <li>- Palmerston North, Taranua, Manawatu and Horizons Planning documents (brief review)</li> <li>- Social Pinpoint</li> <li>- Discussions with Stakeholder Engagement Lead and Project Members who attended public meetings 25-27 September 2017, public open days on 11-13 October 2017, and those who have undertaken direct engagement with landowners.</li> </ul>
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**Assessment table – Option B**

Impact description	Assessment of scale	Assessment (without mitigation)
<p>No dwellings impacted.  <i>Note: some privately owned land is affected (either side of the Pohangina River). However, I consider that the PWA will be an appropriate mechanism to manage effects on property in this instance. PWA is assumed as 'standard mitigation'. I note that the severance land (south of the alignment) may need to be purchased if it is not a viable parcel on its own (becomes an island in between the alignment and the railway).</i></p>	<ul style="list-style-type: none"> <li>- No people affected (no people displaced).</li> </ul>	<p>Insignificant 0</p>
<p>Impacts the neighbourhood/quiet residential character of Short Street. Residents on this street (approx. 8 houses based on aerials) currently live on a cul-de-sac with low traffic volumes (estimated ~150 vpd). This option would result in ~1500 vpd using this street (tenfold increase). The implication of this will be that what is now a low traffic, quiet residential, road safe environment, will change to a busy (high traffic), relatively noisy environment with potential traffic safety risks e.g. when residents are backing out of their driveways. This is likely to be at odds with the aspirations of these residents (while no specific consultation has been undertaken on this, there is nothing in the planning/strategic documents that indicates such a change in this area).</p>	<ul style="list-style-type: none"> <li>- Few people affected.</li> <li>- Permanent.</li> <li>- Measures/actions available to mitigate/reduce impact, but will be expensive and would be unlikely to be satisfactory for all. Mitigation could also result in consequential impacts e.g. if road widening is required to improve road safety.</li> <li>- Likely or certain to occur.</li> </ul>	<p>Moderate -2</p>
<p>Takes traffic off Salisbury Street (through Ashhurst). Salisbury Street is currently experiencing increased traffic flows as it comes off the Saddle Road (which is being used as an alternative to the Gorge). Salisbury Street is a residential street. Ashhurst School is also located on Salisbury Street.                      Taking traffic away from this street will result in reduced noise and vibration (from heavy trucks) which will reduce the disturbance and general nuisance that people are currently experiencing (including sleep disturbance, which has been confirmed through consultation feedback). Less traffic also alleviates existing safety risks associated with high traffic volumes and heavy vehicle traffic travelling up and down a residential street – which also has a school on it. Finally, Ashhurst residents generally have a</p>	<ul style="list-style-type: none"> <li>- Moderate number of people affected (community).</li> <li>- Permanent.</li> <li>- No mitigation required: positive effect.</li> <li>- Certain to occur.</li> </ul>	<p>Significant positive +3</p>

<p>desire to maintain a “quiet village” character and the reduction of general and freight traffic through Ashhurst supports this aspiration.</p>		
<p>Directly affects Ashhurst Domain (western edge) which has potential to affect use of Domain for recreation (reduce space available). However, from the plans provided it does not look like the land requirement would render the Domain unusable by the community and sports groups that use the Domain. I understand the northern part of the Domain, where the alignment is proposed, is not the main part of the Domain that is used by the community – people mainly use the southern part of the Domain). Standard mitigation to reinstate/remediate the site post-construction is assumed.</p>	<ul style="list-style-type: none"> <li>- No people affected (will not affect recreational use of the Domain).</li> <li>- Temporary (as Domain use will adapt to new available space).</li> <li>- Measures/actions available to mitigate/reduce impact, and relatively simple to achieve.</li> <li>- Unlikely to occur (i.e. use of Domain will not change).</li> </ul>	<p>Insignificant 0</p>
<p>Overall score: <b>+1</b></p>		

<b>Multi Criteria Assessment Scoring Sheet</b>	
<b>Area of expertise:</b> Social Impact	
<b>Expert undertaking assessment:</b> Alex Jepsen	
<b>Option being considered:</b> Ashhurst Sub Option C	
<p><b>Score without mitigation:</b> 0 Neutral/Negligible (positives and negatives balance out)</p> <p><b>Mitigation available to change score?</b> No</p> <p><b>Potential shift with mitigation:</b> Not applicable</p>	<p>With reference to NZTA's "Social impact guide", the following matters have been considered:</p> <ul style="list-style-type: none"> <li>• Changes to access and accessibility, changes to local movement patterns, way of life.</li> <li>• Social connectedness, community severance, family community and social networks.</li> <li>• Changes to social infrastructure, community facilities, businesses.</li> <li>• Impacts on community aspirations and or expectations for the present and future.</li> <li>• Impacts arising from displacement – of residents, businesses, and community services/facilities.</li> <li>• Impacts on personal and community wellbeing, including those arising from uncertainty during the planning stage of the project; as well as impacts on material wellbeing, personal and property rights.</li> </ul>
<p><b>Notes:</b></p> <p><u>Reasons / Comments as to how you came to your assessment</u></p> <ul style="list-style-type: none"> <li>- No dwellings impacted. <i>Note: some privately owned land is affected (west of the Pohangina River). However, I consider that the PWA will be an appropriate mechanism to manage effects on property in this instance. PWA is assumed as 'standard mitigation'. I note that some of the severance land (east of the alignment near the Saddle Road bridge) may need to be purchased if it is not a viable parcel on its own.</i></li> <li>- Impacts the neighbourhood/quiet residential character of River Road (approx. 5 houses based on aerials). Residents along River Road have an expectation and future aspiration for their neighbourhood to be a quiet, peaceful village environment. This could change dramatically under option C because a main state highway route would run along in front or behind their properties, between them and the river. Substantial mitigation would be required, and even then there may be residual impacts on community wellbeing associated with the change.</li> <li>- Impacts the neighbourhood/quiet residential character of Short Street. Residents on this street (approx. 8 houses based on aerials) currently live on a cul-de-sac with low traffic volumes (estimated ~150 vpd). This option would result in ~1500 vpd using this street (tenfold increase). The implication of this will be</li> </ul>	<p><u>Assumptions made</u></p> <ul style="list-style-type: none"> <li>- Have assumed that where the sub-options follow an existing road there will be no widening. Where the sub-option involves construction of a new road, I have assumed a 30m wide corridor only. A 500m wide corridor is not a realistic or accurate assumption.</li> <li>- The MCA Assessment has been undertaken at a high level only, although a site visit has been undertaken to familiarise myself with the project area – undertaken on 19 September 2017 and a further drive over on 12 October 2017. I also participated in the open days held on 11-13 October 2017.</li> <li>- The assessment and rating of options is absolute, not comparative. However, differentiating factors have been noted where possible to arrive at a preferred option, from a social perspective.</li> <li>- The Public Works Act 1981 will apply i.e. land and building owners directly affected by the Project will be fairly compensated under the Public Works Act for any impact on business activities and property. This would include the provision of stock passes etc if required.</li> <li>- Consultation is and will continue to occur with directly affected landowners, stakeholders and the public to provide, where able, certainty about design and timing for project.</li> <li>- All effects and ratings are considered <u>without</u> mitigation (with the exception of the PWA and consultation assumed as per above).</li> </ul>

<p>that what is now a low traffic, quiet residential, road safe environment, will change to a busy (high traffic), relatively noisy environment with potential traffic safety risks e.g. when residents are backing out of their driveways. This is likely to be at odds with the aspirations of these residents (while no specific consultation has been undertaken on this, there is nothing in the planning/strategic documents that indicates such a change in this area).</p> <ul style="list-style-type: none"> <li>- Takes traffic off Salisbury Street (through Ashhurst). Salisbury Street is currently experiencing increased traffic flows as it comes off the Saddle Road (which is being used as an alternative to the Gorge). Salisbury Street is a residential street. Ashhurst School is also located on Salisbury Street. Taking traffic away from this street will result in reduced noise and vibration (from heavy trucks) which will reduce the disturbance and general nuisance that people are currently experiencing (including sleep disturbance, which has been confirmed through consultation feedback). Less traffic also alleviates existing safety risks associated with high traffic volumes and heavy vehicle traffic travelling up and down a residential street – which also has a school on it. Finally, Ashhurst residents generally have a desire to maintain a “quiet village” character and the reduction of general and freight traffic through Ashhurst supports this aspiration.</li> <li>- Directly affects Ashhurst Domain (western edge). However, from the plans provided it does not look like the land requirement would render the Domain unusable by the community and sports groups that use the Domain. I understand the northern part of the Domain, where the alignment is proposed, is not the main part of the Domain that is used by the community – people mainly use the southern part of the Domain). Mitigation required (to replace carparking areas, walkways) but likely available.</li> <li>- From the aerials it looks like there is a road or path alongside the Pohangina River (western side) that would be removed under this option. However, the option will provide movement for all modes and so any impact from removing the existing path e.g. on recreation, will be appropriately mitigated/remedied.</li> </ul>	<ul style="list-style-type: none"> <li>- Key informant interviews with landowners and members of the affected community needed to more accurately assess the social impacts.</li> </ul> <p><u>Information relied upon</u></p> <ul style="list-style-type: none"> <li>- Google Maps</li> <li>- Ashhurst sub options description (memo dated 8 November 2017)</li> <li>- Manawatu Gorge Web Portal (GHD Maps)</li> <li>- NZTA Guide to assessing social impacts for state highway projects</li> <li>- Media search</li> <li>- Site visit (drive over) 19 September</li> <li>- Further drive over 12 October</li> <li>- Participation in MCA Briefing Workshop 19 September 2017, MCA Workshop 1 on 27 September 2017, MCA Workshop 2 on 27 October 2017</li> <li>- Participation in Public Open Days held on 11-13 October</li> <li>- Palmerston North, Tararua, Manawatu and Horizons Planning documents (brief review)</li> <li>- Social Pinpoint</li> <li>- Discussions with Stakeholder Engagement Lead and Project Members who attended public meetings 25-27 September 2017, public open days on 11-13 October 2017, and those who have undertaken direct engagement with landowners.</li> </ul>
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**Assessment table – Option C**

Impact description	Assessment of scale	Assessment (without mitigation)
<p>No dwellings impacted.  <i>Note: some privately owned land is affected (west of the Pohangina River). However, I consider that the PWA will be an appropriate mechanism to manage effects on property in this instance. PWA is assumed as 'standard mitigation'. I note that some of the severance land (east of the alignment near the Saddle Road bridge) may need to be purchased if it is not a viable parcel on its own.</i></p>	<ul style="list-style-type: none"> <li>- No people affected (no people displaced).</li> </ul>	<p>Insignificant 0</p>
<p>Impacts the neighbourhood/quiet residential character of River Road (approx. 5 houses based on aerials). Residents along River Road have an expectation and future aspiration for their neighbourhood to be a quiet, peaceful village environment. This could change dramatically under option C because a main state highway route would run along in front or behind their properties, between them and the river. Substantial mitigation would be required, and even then there may be residual impacts on community wellbeing associated with the change.</p>	<ul style="list-style-type: none"> <li>- Few people affected</li> <li>- Long term/permanent.</li> <li>- Measures/actions available to mitigate/reduce impact, but will be expensive and would be unlikely to be satisfactory for all.</li> <li>- Likely or certain to occur.</li> </ul>	<p>Moderate -2</p>
<p>Impacts the neighbourhood/quiet residential character of Short Street. Residents on this street (approx. 8 houses based on aerials) currently live on a cul-de-sac with low traffic volumes (estimated ~150 vpd). This option would result in ~1500 vpd using this street (tenfold increase). The implication of this will be that what is now a low traffic, quiet residential, road safe environment, will change to a busy (high traffic), relatively noisy environment with potential traffic safety risks e.g. when residents are backing out of their driveways. This is likely to be at odds with the aspirations of these residents (while no specific consultation has been undertaken on this, there is nothing in the planning/strategic documents that indicates such a change in this area).</p>	<ul style="list-style-type: none"> <li>- Few people affected.</li> <li>- Permanent.</li> <li>- Measures/actions available to mitigate/reduce impact, but will be expensive and would be unlikely to be satisfactory for all. Mitigation could also result in consequential impacts e.g. if road widening is required to improve road safety.</li> <li>- Likely or certain to occur.</li> </ul>	<p>Moderate -2</p> <p><i>Could use Cambridge Road, which is already an arterial, instead of Short Street?</i></p>
<p>Takes traffic off Salisbury Street (through Ashhurst). Salisbury Street is currently experiencing increased traffic flows as it comes off the Saddle Road (which is being used as an alternative to the Gorge). Salisbury Street is a</p>	<ul style="list-style-type: none"> <li>- Moderate number of people affected (community).</li> <li>- Permanent.</li> <li>- No mitigation required: positive effect.</li> </ul>	<p>Significant positive +3</p>

<p>residential street. Ashhurst School is also located on Salisbury Street.</p> <p>Taking traffic away from this street will result in reduced noise and vibration (from heavy trucks) which will reduce the disturbance and general nuisance that people are currently experiencing (including sleep disturbance, which has been confirmed through consultation feedback). Less traffic also alleviates existing safety risks associated with high traffic volumes and heavy vehicle traffic travelling up and down a residential street – which also has a school on it. Finally, Ashhurst residents generally have a desire to maintain a “quiet village” character and the reduction of general and freight traffic through Ashhurst supports this aspiration.</p>	<ul style="list-style-type: none"> <li>- Certain to occur.</li> </ul>	
<p>Directly affects Ashhurst Domain (western edge) which has potential to affect use of Domain for recreation (reduce space available). However, from the plans provided it does not look like the land requirement would render the Domain unusable by the community and sports groups that use the Domain. I understand the northern part of the Domain, where the alignment is proposed, is not the main part of the Domain that is used by the community – people mainly use the southern part of the Domain). Standard mitigation to reinstate/remediate the site post-construction is assumed.</p>	<ul style="list-style-type: none"> <li>- No people affected (will not affect recreational use of the Domain).</li> <li>- Temporary (as Domain use will adapt to new available space).</li> <li>- Measures/actions available to mitigate/reduce impact, and relatively simple to achieve.</li> <li>- Unlikely to occur (i.e. use of Domain will not change).</li> </ul>	<p>Insignificant 0</p>
<p>From the aerials it looks like there is a road or path alongside the Pohangina River (western side) that would be removed under this option. However, the option will provide movement for all modes and so any impact from removing the existing path e.g. on recreation, will be appropriately mitigated/remedied.</p>	<ul style="list-style-type: none"> <li>- No effect.</li> </ul>	<p>Insignificant 0</p>
<p>Overall score: <b>0</b></p>		

<b>Multi Criteria Assessment Scoring Sheet</b>	
<b>Area of expertise:</b> Social Impact	
<b>Expert undertaking assessment:</b> Alex Jepsen	
<b>Option being considered:</b> Ashhurst Sub Option D	
<p><b>Score without mitigation:</b> 0 Neutral/Negligible</p> <p><b>Mitigation available to change score?</b> No</p> <p><b>Potential shift with mitigation:</b> Not applicable</p>	<p>With reference to NZTA's "Social impact guide", the following matters have been considered:</p> <ul style="list-style-type: none"> <li>• Changes to access and accessibility, changes to local movement patterns, way of life.</li> <li>• Social connectedness, community severance, family community and social networks.</li> <li>• Changes to social infrastructure, community facilities, businesses.</li> <li>• Impacts on community aspirations and or expectations for the present and future.</li> <li>• Impacts arising from displacement – of residents, businesses, and community services/facilities.</li> <li>• Impacts on personal and community wellbeing, including those arising from uncertainty during the planning stage of the project; as well as impacts on material wellbeing, personal and property rights.</li> </ul>
<p><b>Notes:</b></p> <p><u>Reasons / Comments as to how you came to your assessment</u></p> <ul style="list-style-type: none"> <li>- No change to current situation.</li> </ul>	<p><u>Assumptions made</u></p> <ul style="list-style-type: none"> <li>- Have assumed that this sub-options follows the existing roads and there will be no widening.</li> <li>- The MCA Assessment has been undertaken at a high level only, although a site visit has been undertaken to familiarise myself with the project area – undertaken on 19 September 2017 and a further drive over on 12 October 2017. I also participated in the open days held on 11-13 October 2017.</li> <li>- The assessment and rating of options is absolute, not comparative. However, differentiating factors have been noted where possible to arrive at a preferred option, from a social perspective.</li> <li>- The Public Works Act 1981 will apply i.e. land and building owners directly affected by the Project will be fairly compensated under the Public Works Act for any impact on business activities and property. This would include the provision of stock passes etc if required.</li> <li>- Consultation is and will continue to occur with directly affected landowners, stakeholders and the public to provide, where able, certainty about design and timing for project.</li> <li>- All effects and ratings are considered <u>without</u> mitigation (with the exception of the PWA and consultation assumed as per above).</li> </ul> <p><u>Information relied upon</u></p> <ul style="list-style-type: none"> <li>- Google Maps</li> <li>- Ashhurst sub options description (memo dated 8 November 2017)</li> </ul>

	<ul style="list-style-type: none"> <li>- Manawatu Gorge Web Portal (GHD Maps)</li> <li>- NZTA Guide to assessing social impacts for state highway projects</li> <li>- Media search</li> <li>- Site visit (drive over) 19 September</li> <li>- Further drive over 12 October</li> <li>- Participation in MCA Briefing Workshop 19 September 2017, MCA Workshop 1 on 27 September 2017, MCA Workshop 2 on 27 October 2017</li> <li>- Participation in Public Open Days held on 11-13 October</li> <li>- Palmerston North, Tararua, Manawatu and Horizons Planning documents (brief review)</li> <li>- Social Pinpoint</li> <li>- Discussions with Stakeholder Engagement Lead and Project Members who attended public meetings 25-27 September 2017, public open days on 11-13 October 2017, and those who have undertaken direct engagement with landowners.</li> </ul>
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**No assessment table as there is no change.**

<b>Multi Criteria Assessment Scoring Sheet</b>	
<b>Area of expertise:</b> Social Impact	
<b>Expert undertaking assessment:</b> Alex Jepsen	
<b>Option being considered:</b> Ashhurst Sub Option E	
<p><b>Score without mitigation:</b> 0 Neutral/Negligible (positives and negatives balance out)</p> <p><b>Mitigation available to change score?</b> Unknown</p> <p><b>Potential shift with mitigation:</b> Unknown</p>	<p>With reference to NZTA's "Social impact guide", the following matters have been considered:</p> <ul style="list-style-type: none"> <li>• Changes to access and accessibility, changes to local movement patterns, way of life.</li> <li>• Social connectedness, community severance, family community and social networks.</li> <li>• Changes to social infrastructure, community facilities, businesses.</li> <li>• Impacts on community aspirations and or expectations for the present and future.</li> <li>• Impacts arising from displacement – of residents, businesses, and community services/facilities.</li> <li>• Impacts on personal and community wellbeing, including those arising from uncertainty during the planning stage of the project; as well as impacts on material wellbeing, personal and property rights.</li> </ul>
<p><b>Notes:</b></p> <p><u>Reasons / Comments as to how you came to your assessment</u></p> <ul style="list-style-type: none"> <li>- No dwellings impacted. <i>Note: some privately owned land is affected. However, I consider that the PWA will be an appropriate mechanism to manage effects on property in this instance. PWA is assumed as 'standard mitigation'.</i></li> <li>- While no dwellings are directly impacted, the alignment will traverse private property and therefore impact those landowners' living environment. Where there is currently no greenfield, there will now be a road and it is proposed to be relatively close to some houses (less than 100m in some cases). Consultation feedback has indicated that the community in general has an expectation and future aspiration for their living environment to be a quiet, peaceful village environment. This would change for the landowners directly affected by this option (and who remain living on their property once operational). Substantial mitigation would be required, and even then there may be residual impacts on individual and/or community wellbeing associated with the change.</li> <li>- Takes traffic off Salisbury Street (through Ashhurst). Salisbury Street is currently experiencing increased traffic flows as it comes off the Saddle Road (which is being used as an alternative to the Gorge). Salisbury Street is a</li> </ul>	<p><u>Assumptions made</u></p> <ul style="list-style-type: none"> <li>- Have assumed that where the sub-options follow an existing road there will be no widening. Where the sub-option involves construction of a new road, I have assumed a 30m wide corridor only. A 500m wide corridor is not a realistic or accurate assumption.</li> <li>- The MCA Assessment has been undertaken at a high level only, although a site visit has been undertaken to familiarise myself with the project area – undertaken on 19 September 2017 and a further drive over on 12 October 2017. I also participated in the open days held on 11-13 October 2017.</li> <li>- The assessment and rating of options is absolute, not comparative. However, differentiating factors have been noted where possible to arrive at a preferred option, from a social perspective.</li> <li>- The Public Works Act 1981 will apply i.e. land and building owners directly affected by the Project will be fairly compensated under the Public Works Act for any impact on business activities and property. This would include the provision of stock passes etc if required.</li> <li>- Consultation is and will continue to occur with directly affected landowners, stakeholders and the public to provide, where able, certainty about design and timing for project.</li> <li>- All effects and ratings are considered <u>without</u> mitigation (with the exception of the PWA and consultation assumed as per above).</li> </ul>

<p>residential street. Ashhurst School is also located on Salisbury Street.</p> <p>Taking traffic away from this street will result in reduced noise and vibration (from heavy trucks) which will reduce the disturbance and general nuisance that people are currently experiencing (including sleep disturbance, which has been confirmed through consultation feedback). Less traffic also alleviates existing safety risks associated with high traffic volumes and heavy vehicle traffic travelling up and down a residential street – which also has a school on it. Finally, Ashhurst residents generally have a desire to maintain a “quiet village” character and the reduction of general and freight traffic through Ashhurst supports this aspiration.</p> <ul style="list-style-type: none"> <li>- Severance of Harrisons Lane resulting in changes to local movement patterns (anyone who would have previously used Harrisons Lane as a through route will need to skirt around using Ashhurst and/or Grove Road.</li> </ul> <p>Further investigation/consultation required to determine magnitude of impact e.g. how many people’s movement patterns are affected, by how much (time, distance)? Knowing the reasons for travel down this road would also be useful in determining the magnitude of impact e.g. will severing this connection impact on social/family connectedness?</p> <p>I understand that it would be possible to include an intersection or roundabout in this location if it was determined to be necessary to mitigate/remedy an effect.</p> <ul style="list-style-type: none"> <li>- Potential for alignment to constrain growth of Ashhurst, impacting on community aspirations for the future. Consultation feedback on a previous ‘Ashhurst Bypass’ option indicated that people were concerned that an alignment around Ashhurst would constrain growth. The strategic planning documents for Palmerston North have indicated that 59% of their anticipated growth by 2031 is to be in greenfield areas (which is the type of land affected by this option). It is estimated that 4,823 more dwellings will need to be accommodated within greenfield areas by 2031. Three areas have been identified as ‘preferred’ areas for growth – Anders Road and the Racecourse (immediately west of Palmerston North) and Kelvin Grove (immediately east of Palmerston North). I estimate, based on the amount of land available in these areas (60 ha is available at Kelvin Grove and I have assumed that about the same amount is available across Anders Road and Racecourse combined, giving a total of 120 ha available) that around 2,000 houses could be accommodated in these areas (based on 400-800m<sup>2</sup> per property). This is less than half the number of dwellings that are expected to be needed by 2031 i.e. more greenfield land will need to be identified for growth. Areas in Ashhurst have also been investigated for growth but discounted due to distance from the city and</li> </ul>	<ul style="list-style-type: none"> <li>- Key informant interviews with landowners and members of the Ashhurst and Woodville communities needed to more accurately assess the social impacts.</li> </ul> <p><u>Information relied upon</u></p> <ul style="list-style-type: none"> <li>- Google Maps</li> <li>- Ashhurst sub options description (memo dated 8 November 2017)</li> <li>- Manawatu Gorge Web Portal (GHD Maps)</li> <li>- NZTA Guide to assessing social impacts for state highway projects</li> <li>- Media search</li> <li>- Site visit (drive over) 19 September</li> <li>- Further drive over 12 October</li> <li>- Participation in MCA Briefing Workshop 19 September 2017, MCA Workshop 1 on 27 September 2017, MCA Workshop 2 on 27 October 2017</li> <li>- Participation in Public Open Days held on 11-13 October</li> <li>- Palmerston North, Tararua, Manawatu and Horizons Planning documents (brief review)</li> <li>- Social Pinpoint</li> <li>- Discussions with Stakeholder Engagement Lead and Project Members who attended public meetings 25-27 September 2017, public open days on 11-13 October 2017, and those who have undertaken direct engagement with landowners.</li> </ul>
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flooding issues. A recent plan change to rezone land around Winchester Street from rural to residential was declined on the basis of elevated flood risk.

All of the underlying zoning is therefore rural and the indication is therefore that it is not anticipated for future development. I also understand (based on consultation) that the community in general has an expectation and future aspiration for their living environment to be a quiet, peaceful village environment.

Overall, it would appear that growth in Ashhurst is not a high priority. Further, the alignment is located some 500-1,500m away from the existing built up area of Ashhurst, leaving sufficient land available to accommodate growth/expansion of Ashhurst if this was desired.

**Assessment table – Option E**

Impact description	Assessment of scale	Assessment (without mitigation)
<p>No dwellings impacted.  <i>Note: some privately owned land is affected (farm land). However, I consider that the PWA will be an appropriate mechanism to manage effects on property in this instance. PWA is assumed as ‘standard mitigation’.</i></p>	<ul style="list-style-type: none"> <li>- No people affected (no people displaced).</li> </ul>	<p>Insignificant 0</p>
<p>While no dwellings are directly impacted, the alignment will traverse private property and therefore impact those landowners’ living environment. Where there is currently greenfield, there will now be a road and it is proposed to be relatively close to some houses (less than 100m in some cases). Consultation feedback has indicated that the community in general has an expectation and future aspiration for their living environment to be a quiet, peaceful village environment. This would change for the landowners directly affected by this option (and who remain living on their property once operational). Substantial mitigation would be required, and even then there may be residual impacts on individual and/or community wellbeing associated with the change.</p>	<ul style="list-style-type: none"> <li>- Few people affected.</li> <li>- Permanent.</li> <li>- Measures/actions available to mitigate/reduce impact, but will be expensive and would be unlikely to be satisfactory for all.</li> <li>- Likely/certain to occur.</li> </ul>	<p>Moderate -2</p>
<p>Takes traffic off Salisbury Street (through Ashhurst). Salisbury Street is currently experiencing increased traffic flows as it comes off the Saddle Road (which is being used as an alternative to the Gorge). Salisbury Street is a residential street. Ashhurst School is also located on Salisbury Street.                      Taking traffic away from this street will result in reduced noise and vibration (from heavy trucks) which will reduce the disturbance and general nuisance that people are currently experiencing (including sleep disturbance, which has been confirmed through consultation feedback). Less traffic also alleviates existing safety risks associated with high traffic volumes and heavy vehicle traffic travelling up and down a residential street – which also has a school on it. Finally, Ashhurst residents generally have a desire to maintain a “quiet village” character and the reduction of general and freight traffic through Ashhurst supports this aspiration.</p>	<ul style="list-style-type: none"> <li>- Moderate number of people affected (community).</li> <li>- Permanent.</li> <li>- No mitigation required: positive effect.</li> <li>- Certain to occur.</li> </ul>	<p>Significant positive +3</p>



<p>Severance of Harrisons Lane resulting in changes to local movement patterns (anyone who would have previously used Harrisons Lane as a through route will need to skirt around using Ashhurst and/or Grove Road. Further investigation/consultation required to determine magnitude of impact e.g. how many people's movement patterns are affected, by how much (time, distance)? Knowing the reasons for travel down this road would also be useful in determining the magnitude of impact e.g. will severing this connection impact on social/family connectedness?</p> <p>I understand that it would be possible to include an intersection or roundabout in this location if it was determined to be necessary to mitigate/remedy an effect.</p>	<ul style="list-style-type: none"> <li>- Few people affected.</li> <li>- Permanent.</li> <li>- Alternative routes available to maintain physical road connections, with not much change in distance/time.</li> <li>- Likely or certain to occur.</li> </ul>	<p>Minor -1</p> <p><i>Consult with people who use Harrisons Road – the identified potential impact may not be an actual impact.</i></p> <p><i>Include an intersection at Harrisons Road if an actual impact is identified.</i></p>
<p>Potential for alignment to constrain growth of Ashhurst, impacting on community aspirations for the future.</p> <p>Consultation feedback on a previous 'Ashhurst Bypass' option indicated that people were concerned that an alignment around Ashhurst would constrain growth. The strategic planning documents for Palmerston North have indicated that 59% of their anticipated growth by 2031 is to be in greenfield areas (which is the type of land affected by this option). It is estimated that 4,823 more dwellings will need to be accommodated within greenfield areas by 2031. Three areas have been identified as 'preferred' areas for growth – Anders Road and the Racecourse (immediately west of Palmerston North) and Kelvin Grove (immediately east of Palmerston North). I estimate, based on the amount of land available in these areas (60 ha is available at Kelvin Grove and I have assumed that about the same amount is available across Anders Road and Racecourse combined, giving a total of 120 ha available) that around 2,000 houses could be accommodated in these areas (based on 400-800m<sup>2</sup> per property). This is less than half the number of dwellings that are expected to be needed by 2031 i.e. more greenfield land will need to be identified for growth. Areas in Ashhurst have also been investigated for growth but discounted due to distance from the city and flooding issues. A recent plan change to rezone land around</p>	<ul style="list-style-type: none"> <li>- No people affected.</li> <li>- Unlikely to occur.</li> </ul>	<p>Insignificant 0</p>

<p>Winchester Street from rural to residential was declined on the basis of elevated flood risk. All of the underlying zoning is therefore rural and the indication is therefore that it is not anticipated for future development. I also understand (based on consultation) that the community in general has an expectation and future aspiration for their living environment to be a quiet, peaceful village environment. Overall, it would appear that growth in Ashhurst is not a high priority. Further, the alignment is located some 500-1,500m away from the existing built up area of Ashhurst, leaving sufficient land available to accommodate growth/expansion of Ashhurst if this was desired.</p>		
<p>Overall score: <b>0</b></p>		

<b>Multi Criteria Assessment Scoring Sheet</b>	
<b>Area of expertise:</b> Social Impact	
<b>Expert undertaking assessment:</b> Alex Jepsen	
<b>Option being considered:</b> Ashhurst Sub Option F	
<p><b>Score without mitigation:</b></p> <p>- Minor Adverse Effect</p> <p><b>Mitigation available to change score?</b></p> <p>Yes</p> <p><b>Potential shift with mitigation:</b></p> <p>Unknown</p>	<p>With reference to NZTA's "Social impact guide", the following matters have been considered:</p> <ul style="list-style-type: none"> <li>• Changes to access and accessibility, changes to local movement patterns, way of life.</li> <li>• Social connectedness, community severance, family community and social networks.</li> <li>• Changes to social infrastructure, community facilities, businesses.</li> <li>• Impacts on community aspirations and or expectations for the present and future.</li> <li>• Impacts arising from displacement – of residents, businesses, and community services/facilities.</li> <li>• Impacts on personal and community wellbeing, including those arising from uncertainty during the planning stage of the project; as well as impacts on material wellbeing, personal and property rights.</li> </ul>
<p><b>Notes:</b></p> <p><u>Reasons / Comments as to how you came to your assessment</u></p> <ul style="list-style-type: none"> <li>- Two dwellings impacted, resulting in displacement of people from their homes. The PWA will be an appropriate mechanism to manage effects on property in this instance. PWA is assumed as 'standard mitigation'. However, some residual impacts remain including impacts on personal wellbeing arising from uncertainty during the planning stage of the project (although 'standard mitigation' includes ongoing consultation with directly affected landowners to provide, where able, certainty about timing), impacts on material wellbeing (e.g. ability to find a like for like replacement residence), and impacts in terms of people's aspirations and or expectations for the future. Generally these are medium-term impacts as people come to terms with change and move on with their lives.</li> <li>- The alignment traverses land (southeast of Napier Road/SH3 and approx. 400m south of Hacketts Road, north of the river) which is classified as containing Class I and II soils. These are high quality soils, good for horticulture and agriculture. Community feedback has indicated that landowners have established agricultural practices in the area, aerials provide confirmation that this is what the land is used for. The potential social impacts of acquiring this land for road include impacts on personal and material wellbeing, e.g. the ability for people to</li> </ul>	<p><u>Assumptions made</u></p> <ul style="list-style-type: none"> <li>- Have assumed that where the sub-options follow an existing road there will be no widening. Where the sub-option involves construction of a new road, I have assumed a 30m wide corridor only. A 500m wide corridor is not a realistic or accurate assumption.</li> <li>- The MCA Assessment has been undertaken at a high level only, although a site visit has been undertaken to familiarise myself with the project area – undertaken on 19 September 2017 and a further drive over on 12 October 2017. I also participated in the open days held on 11-13 October 2017.</li> <li>- The assessment and rating of options is absolute, not comparative. However, differentiating factors have been noted where possible to arrive at a preferred option, from a social perspective.</li> <li>- The Public Works Act 1981 will apply i.e. land and building owners directly affected by the Project will be fairly compensated under the Public Works Act for any impact on business activities and property.</li> <li>- Consultation is and will continue to occur with directly affected landowners, stakeholders and the public to provide, where able, certainty about design and timing for project.</li> <li>- All effects and ratings are considered <u>without</u> mitigation (with the exception of the PWA and consultation assumed as per above).</li> </ul>

<p>continue to provide for their livelihood – particularly if the land provides for and/or contributes to personal income.</p> <p><i>Note: Acquiring arable land for road could have wider impacts in terms of the availability of land throughout the district to provide for productive land uses (and ability to meet market demand for produce from this land). However, this would require further investigation to determine the likelihood and magnitude of this as an impact.</i></p> <ul style="list-style-type: none"> <li>- The alignment will traverse private property and will in a couple of places be relatively close to houses (~100m). This has the potential to affect residential amenity. Consultation feedback has indicated that there is an expectation in these rural/rural-residential areas for a quiet, peaceful living environment. This would change for the landowners who are directly affected (in terms of land acquisition) and who remain living on their property once operational. Mitigation would be required.</li> <li>- <i>Note: in most places, the sub-option F alignment is a reasonable distance away from any living space and so will not affect residential amenity. It is acknowledged that property is still affected even where the alignment is at a distance away from a dwelling, but I have assessed this as an impact on property (for which the PWA applies) and/or an impact on land that provides for one’s livelihood (row two of this assessment table).</i></li> <li>- Takes traffic off Salisbury Street (through Ashhurst). Salisbury Street is currently experiencing increased traffic flows as it comes off the Saddle Road (which is being used as an alternative to the Gorge). Salisbury Street is a residential street. Ashhurst School is also located on Salisbury Street.</li> </ul> <p>Taking traffic away from this street will result in reduced noise and vibration (from heavy trucks) which will reduce the disturbance and general nuisance that people are currently experiencing (including sleep disturbance, which has been confirmed through consultation feedback). Less traffic also alleviates existing safety risks associated with high traffic volumes and heavy vehicle traffic travelling up and down a residential street – which also has a school on it. Finally, Ashhurst residents generally have a desire to maintain a “quiet village” character and the reduction of general and freight traffic through Ashhurst supports this aspiration.</p>	<ul style="list-style-type: none"> <li>- Key informant interviews with landowners and members of the affected community needed to more accurately assess the social impacts.</li> </ul> <p><u>Information relied upon</u></p> <ul style="list-style-type: none"> <li>- Google Maps</li> <li>- Ashhurst sub options descriptions (memo dated 22 November 2017) and associated Sub-option F drawing.</li> <li>- Manawatu Gorge Web Portal (GHD Maps)</li> <li>- NZTA Guide to assessing social impacts for state highway projects</li> <li>- Media search</li> <li>- Site visit (drive over) 19 September</li> <li>- Further drive over 12 October</li> <li>- Participation in MCA Briefing Workshop 19 September 2017, MCA Workshop 1 on 27 September 2017, MCA Workshop 2 on 27 October 2017</li> <li>- Participation in Public Open Days held on 11-13 October</li> <li>- Palmerston North, Tararua, Manawatu and Horizons Planning documents (brief review)</li> <li>- Social Pinpoint</li> <li>- Discussions with Stakeholder Engagement Lead and Project Members who attended public meetings 25-27 September 2017, public open days on 11-13 October 2017, and those who have undertaken direct engagement with landowners.</li> </ul>
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## Landscape and visual

## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Landscape and Visual

**Expert undertaking assessment:** Boyden Evans

**Option being considered:** Ashhurst Sub Option A

**Landscape Score:**

-- Moderately Adverse Effect

**Visual Score:**

-- Moderately Adverse Effect

**Landscape**

- Landscape sensitivity
- Magnitude of landscape change
- ONF/ONL
- Effects on landscape character

**Visual Amenity**

- Size, proximity and sensitivity of viewing audience
- Level of visibility
- Magnitude of visual change

**Notes:**

In this section of the Option 3 route, primarily where the alignment crosses the Manawatu River and climbs to connect with Option 3, there is a concentration of landscape and visual effects (as noted below). The landscape and visual effects in this section are balanced out when the whole of Option 3 is considered.

**Landscape**

- New bridge (viaduct) across Manawatu Gorge ONL (i.e Ballance Bridge to confluence of Manawatu and Pohangina Rivers -Horizons)
- Bridge would be a large structure at western edge of Te Apiti-Manawatu Gorge natural/recreation area
- Gorge entrance has high landscape, ecological and shared and recognised values
- Cuts through popular Manawatu Gorge / Te Apiti recreational car park
- Avoids (revised) Pohangina valley ONL
- Traverses areas of regenerating native vegetation on north side of Manawatu River
- Cuts through hill landform on north side of Manawatu River
- Passes through landscape already altered by presence of Te Apiti Wind Farm and Saddle Road
- Opportunities to enhance landscape character of Te Apiti-Manawatu Gorge natural/recreational area at western end (i.e. 'gateway' to Gorge)

**Visual**

- Bridge (viaduct) visible at gateway (western end) of Te Apiti-Manawatu Gorge natural/recreational area
- Alignment on southern side of Manawatu River will be able to be visually well integrated into bottom of toe slope
- Road would be viewed in the context of both Saddle Road and Te Apiti Wind Farm
- Views of alignment from Ashhurst reasonably contained because of road location and context

Assumptions made

- Sub Option D (Salisbury Street) is the baseline/do minimum option
- Gradient maximum 7.5%
- Car park for Manawatu Gorge Walkway could be relocated
- Opportunity for design of new bridge (viaduct) over Manawatu River that reflects its prominent position at mouth of Gorge.

Information relied upon

- Field Work (19/10/17)
- Site notes & photographs
- Knowledge of area (previous involvement in Te Apiti, Tararua 3 and Te Rere Hau Wind Farms)
- Horizons RPS
- Palmerston North, Manawatu and Tararua District Plans
- GIS datasets
- Maps on web portal
- Modelling alignment in Infracore software
- Google Earth
- Ashhurst Sub Options Descriptions

## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Landscape and Visual

**Expert undertaking assessment:** Boyden Evans

**Option being considered:** Ashhurst Sub Option B

**Landscape Score:**

--- Substantial Adverse Effect

**Visual Score:**

--- Substantial Adverse Effect

**Landscape**

- Landscape sensitivity
- Magnitude of landscape change
- ONF/ONL
- Effects on landscape character

**Visual Amenity**

- Size, proximity and sensitivity of viewing audience
- Level of visibility
- Magnitude of visual change

**Notes:**

**Landscape**

- Cuts through northern end of Ashhurst Domain, a gazetted recreation reserve (although not currently used for recreation).
- Bridge over railway line
- Splits off part of Ashhurst
- Severs triangular area of properties (between York and Cambridge Streets)
- New bridge over Pohangina River
- Section of alignment traverses southern end of (revised) Pohangina Valley ONL
- Additional road across lower river terrace on 3.0m embankment
- Road and activity adversely affects residential character
- Connects into SH3 but also ready connection to SH57

**Visual**

- High visibility where it rises through Domain to cross railway line
- High adverse effects on visual amenity for adjoining Ashhurst residents on south side of road
- Views of box cuts on west-facing foot slopes of from Ashhurst and environs

Assumptions made

- Sub Option D (Salisbury Street) is the baseline/do minimum option
- That gradient of alignment after crossing over Pohangina River bridge climbs at 7.5% to connect with Option 3.

Information relied upon

- Field Work (19/10/17)
- Site notes & photographs
- Knowledge of area (previous involvement in Te Apiti, Tararua 3 and Te Rere Hau Wind Farms)
- Horizons RPS
- Palmerston North, Manawatu and Tararua District Plans
- GIS datasets
- Maps on web portal
- Modelling alignment in Infracore software
- Google Earth
- Ashhurst Sub Options Descriptions

## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Landscape and Visual

**Expert undertaking assessment:** Boyden Evans

**Option being considered:** Ashhurst Sub Option C

**Landscape Score:**

--- Substantial Adverse Effect

**Visual Score:**

-- Moderately Adverse Effect

**Landscape**

- Landscape sensitivity
- Magnitude of landscape change
- ONF/ONL
- Effects on landscape character

**Visual Amenity**

- Size, proximity and sensitivity of viewing audience
- Level of visibility
- Magnitude of visual change

**Notes:**

**Landscape**

- Cuts through northern end of Ashhurst Domain, a gazetted recreation reserve (although not currently used for recreation).
- Splits off part of Ashhurst
- Utilises existing Saddle Road bridge over Pohangina River
- Crosses over railway line
- Uses existing residential street (Cambridge Street, the current temporary bypass)
- Avoids second road bridge
- Traverses river terrace and traverses (revised) Pohangina ONL
- Traffic activity adversely affects residential character
- Potential noise barriers for some Ashhurst residential properties
- Adverse effects on rural properties on river flats where road severs properties
- Road across lower river terrace on 3.0m embankment
- Route on east side of Pohangina River cuts across slope and Saddle Road
- Additional road on west-facing hill slope.
- Traverses steep vegetated gully systems before connecting into Option 3 alignment
- Connects into SH3 but also ready connection to SH57

**Visual**

- High visibility where it rises through Domain to cross railway line and also adjacent residential area
- Increased traffic and road activity would adversely affect visual amenity for some Ashhurst residents on eastern edge
- Outlook from properties on eastern edge of Ashhurst potentially adversely affected, including potential noise barriers

Assumptions made

- Sub Option D (Salisbury Street) is the baseline/do minimum option
- Road on Pohangina floodplain on embankment

Information relied upon

- Field Work (19/10/17)
- Site notes & photographs
- Knowledge of area (previous involvement in Te Apiti, Tararua 3 and Te Rere Hau Wind Farms)
- Horizons RPS
- Palmerston North, Manawatu and Tararua District Plans
- GIS datasets
- Maps on web portal
- Modelling alignment in Infracore software
- Google Earth
- Ashhurst Sub Options Descriptions



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| <ul style="list-style-type: none"><li>• Long traverse of road with cuts along west- facing foot slopes of Pohangina Valley would be visible from Ashhurst and environs</li><li>• Unstable slopes could potentially result in highly visible ongoing slips</li></ul> |  |
|---|--|

## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Landscape and Visual

**Expert undertaking assessment:** Boyden Evans

**Option being considered:** Ashhurst Sub Option D

**Landscape Score:**

-- Moderately Adverse Effect

**Visual Score:**

-- Moderately Adverse Effect

**Landscape**

- Landscape sensitivity
- Magnitude of landscape change
- ONF/ONL
- Effects on landscape character

**Visual Amenity**

- Size, proximity and sensitivity of viewing audience
- Level of visibility
- Magnitude of visual change

**Notes:**

**Landscape**

- Uses existing diversion route through Ashhurst
- Utilises existing Saddle Road bridge over Pohangina River
- Avoids second bridge over Manawatu River
- Section of alignment traverses (revised) Pohangina Valley ONL
- Route on east side of Pohangina River cuts across slope (much evidence of instability); crosses Saddle Road
- Traverses steep vegetated gully system then connects into Option 3 alignment
- Connects into SH3 and reasonably good connection to SH57

**Visual**

- Cuts along west-facing foot slopes of Pohangina Valley would be visible from Ashhurst and environs
- Unstable slopes could potentially result in highly visible ongoing slips

Assumptions made

- Sub Option D (Salisbury Street) is the baseline/do minimum option
- Gradient of road maximum 7.5% on eastern side of Pohangina River to connection with Option 3.

Information relied upon

- Field Work (19/10/17)
- Site notes & photographs
- Knowledge of area (previous involvement in Te Apiti, Tararua 3 and Te Rere Hau Wind Farms)
- Horizons RPS
- Palmerston North, Manawatu and Tararua District Plans
- GIS datasets
- Maps on web portal
- Modelling alignment in Infracore software
- Google Earth
- Ashhurst Sub Options Descriptions

## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Landscape and Visual

**Expert undertaking assessment:** Boyden Evans

**Option being considered:** Ashhurst Sub Option E

**Landscape Score:**

-- Moderately Adverse Effect

**Visual Score:**

-- Moderately Adverse Effect

**Landscape**

- Landscape sensitivity
- Magnitude of landscape change
- ONF/ONL
- Effects on landscape character

**Visual Amenity**

- Size, proximity and sensitivity of viewing audience
- Level of visibility
- Magnitude of visual change

**Notes:**

**Landscape**

- Skirts around northern and western edges of Ashhurst
- Utilises existing Saddle Road bridge over Pohangina River
- Avoids second bridge over Manawatu River
- Section of alignment traverse (revised) Pohangina Valley ONL
- Avoids severing or encroaching on Ashhurst residential area
- Provides a very defined de facto edge to Ashhurst
- Adversely affects rural character
- Adversely affects rural residential and rural properties on outskirts of Ashhurst by severing or encroaching on properties
- Potential need for noise mitigation barriers for adjacent dwellings
- Cuts through river terraces
- Additional road across lower river terrace on embankment north of Saddle Road
- Route on east side of Pohangina River cuts across slope and Saddle Road
- Additional road on west-facing hill slopes
- Long indirect route
- New SH3/SH57 intersection

**Visual**

- Presence of road, increased traffic and road activity would adversely affect visual amenity for nearby rural and rural residential properties
- Potential noise barriers would adversely affect visual amenity for dwellings close to alignment
- Cuts along west-facing foot slopes of Pohangina Valley would be visible from Ashhurst and environs

Assumptions made

- Sub Option D (Salisbury Street) is the baseline/do minimum option
- Road on embankment on lower Pohangina River terrace

Information relied upon

- Field Work (19/10/17)
- Site notes & photographs
- Knowledge of area (previous involvement in Te Apiti, Tararua 3 and Te Rere Hau Wind Farms)
- Horizons RPS
- Palmerston North, Manawatu and Tararua District Plans
- GIS datasets
- Maps on web portal
- Modelling alignment in Infracore software
- Google Earth
- Ashhurst Sub Options Descriptions

<b>Multi Criteria Assessment Scoring Sheet</b>	
<b>Area of expertise:</b> Landscape and Visual	
<b>Expert undertaking assessment:</b> Boyden Evans	
<b>Option being considered:</b> Ashhurst Sub Option F	
<p><b>Landscape Score:</b></p> <p>-- Moderately Adverse Effect</p> <p><b>Visual Score:</b></p> <p>-- Moderately Adverse Effect</p>	<p><b>Landscape</b></p> <ul style="list-style-type: none"> <li>• Landscape sensitivity</li> <li>• Magnitude of landscape change</li> <li>• ONF/ONL</li> <li>• Effects on landscape character</li> </ul> <p><b>Visual Amenity</b></p> <ul style="list-style-type: none"> <li>• Size, proximity and sensitivity of viewing audience</li> <li>• Level of visibility</li> <li>• Magnitude of visual change</li> </ul>
<p><b>Notes:</b></p> <p><b>Landscape</b></p> <ul style="list-style-type: none"> <li>• Two new bridges over Manawatu River</li> <li>• New road bridge over rail line</li> <li>• New bridge (viaduct) across Manawatu Gorge ONL (i.e. Ballance Bridge to confluence of Manawatu and Pohangina Rivers)</li> <li>• Bridge would be a large structure at western edge of Te Apiti-Manawatu Gorge natural/recreation area</li> <li>• Gorge entrance area has high landscape, ecological and cultural value</li> <li>• Opportunity to enhance landscape character of Te Apiti-Manawatu Gorge natural/recreational area at western end (i.e. 'gateway' to Gorge)</li> <li>• Road cuts through popular Manawatu Gorge / Te Apiti recreational car park (refer Assumptions)</li> <li>• Avoids (revised) Pohangina valley ONL</li> <li>• Traverses areas of regenerating native vegetation on north side of Manawatu River</li> <li>• Cuts through hill landform on north side of Manawatu River</li> <li>• Alignment between SH3 and Manawatu River through paddocks, avoids dwellings and other structures, crosses tree-lined waterway and through group of mature scattered trees</li> <li>• New bridge over Manawatu River and crosses SH57 and skirts along river terrace and lower toe slopes above SH57, south-east of existing SH3 below pine woodlot currently being harvested</li> </ul> <p><b>Visual</b></p> <ul style="list-style-type: none"> <li>• Much of alignment visually well contained between SH3 and Manawatu River</li> <li>• Alignment on southern side of Manawatu River will be able to be visually well integrated into bottom of toe slope</li> </ul>	<p><u>Assumptions made</u></p> <ul style="list-style-type: none"> <li>• Sub Option D (Salisbury Street) is the baseline/do minimum option</li> <li>• Assessment includes section from SH3 to Ashhurst Road link (including new road bridge over rail</li> <li>• Car park for Manawatu Gorge Walkway could be easily relocated</li> <li>• Opportunity for design of new bridge (viaduct) over Manawatu River that reflects its prominent position at mouth of Gorge.</li> </ul> <p><u>Information relied upon</u></p> <ul style="list-style-type: none"> <li>• Field Work (19/10/17)</li> <li>• Site notes &amp; photographs</li> <li>• Knowledge of area (previous involvement in Te Apiti, Tararua 3 and Te Rere Hau Wind Farms)</li> <li>• Horizons RPS</li> <li>• Palmerston North, Manawatu and Tararua District Plans</li> <li>• GIS datasets</li> <li>• Maps on web portal</li> <li>• Modelling alignment in Infracore software</li> <li>• Google Earth</li> <li>• Ashhurst Sub Option F Description</li> </ul>

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| <ul style="list-style-type: none"><li>• Bridge (viaduct) visible at gateway (western end) of Te Apiti-Manawatu Gorge natural/recreational area (this section responsible for lifting score from Minor to Moderate)</li><li>• Views of alignment from Ashhurst and environs limited and well contained because of topography and landscape context</li></ul> |  |
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## Infrastructure and property

## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Infrastructure

**Expert undertaking assessment:** David Mallett

**Option being considered:** Ashhurst Sub Option A

**Score:**  
0 Neutral/Negligible

**Notes:**  
Reasons / Comments as to how you came to your assessment

**General**

- Ties in with the existing SH3 bridge over the Manawatu River
- Approx. 6.1 km

**Utilities**

- Minor service alterations required at bottom of the 'J' prior to the existing bridge (gas and overhead power, and LV (underground?) running between the river and SH57)

**Structures**

- Requires 350 m curved bridge over the Manawatu gorge in the vicinity of the burial island

**Road infrastructure**

- Adjustment to SH57 / SH3 intersection (relatively minor works required to re-T the intersection)
- The existing SH3 bridge is insufficient to safely accommodate non-motorised users

Assumptions made

That the alignment shown on the existing section of SH3 requires minimal work to the existing road and does not impact existing utilities or road reserve boundaries (i.e. from chainage 0 up to chainage 2500)

There are no significant geotechnical issues present at the proposed bridge sites that makes the structural design and construction particularly complex

Information relied upon

Existing utility information

Google earth and aerial imagery

Sub options alignments as per 28/11/17 -  
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## Multi Criteria Assessment Scoring Sheet - Shortlist

**Area of expertise:** Infrastructure

**Expert undertaking assessment:** David Mallett

**Option being considered:** Ashhurst Sub Option B

**Score:**

-- Moderate Adverse Effect

**Notes:**

Reasons / Comments as to how you came to your assessment

**General**

- Most direct route to Ashhurst
- Ties in at the top of the 'J' in option 3
- Approx. 4.5 km

**Utilities**

- Minimal services impact as through greenfields primarily

**Structures**

- Requires 340 m bridge over the Pohangina River – deep cut required due to steep grades
- Requires a bridge over the rail line
- Requires extending the existing rail overbridge – significant programme risk here with KiwiRail requirements and lead in periods, as well as traffic impacts during construction

**Road infrastructure**

- Potentially requires very steep geometry

Assumptions made

The potential impact on properties along York Street are covered in other assessments

There are no geometric issues associated with this option that can't be resolved through further design

Extension of the rail overbridge requires the road to be closed during construction, and the rail line to be closed for significant periods during construction

There are no significant geotechnical issues present at the proposed bridge sites that makes the structural design and construction particularly complex

The existing Saddle Road bridge will be retained in its current form

Information relied upon

Existing utility information

Google earth and aerial imagery

Sub options alignments as per 28/11/17 -  
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<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Infrastructure	
<b>Expert undertaking assessment:</b> David Mallett	
<b>Option being considered:</b> Ashhurst Sub Option C	
<b>Score:</b> -- Moderate Adverse Effect	
<b>Notes:</b> <u>Reasons / Comments as to how you came to your assessment</u>  <b>General</b> <ul style="list-style-type: none"><li>- Non-direct route to Ashhurst – poor geometry with tight hair pin bend</li><li>- Ties in at the top of the 'J' in option 3</li><li>- Approx. 6.7 km</li></ul> <b>Utilities</b> <ul style="list-style-type: none"><li>- Minimal services impact as through greenfields primarily</li></ul> <b>Structures</b> <ul style="list-style-type: none"><li>- Utilises existing Saddle Road bridge over Pohangina River</li><li>- Requires a bridge over the rail line</li><li>- Requires extending the existing rail overbridge – significant programme risk here with KiwiRail requirements and lead in periods, as well as traffic impacts during construction</li></ul> <b>Road infrastructure</b> <ul style="list-style-type: none"><li>- New intersection required with Saddle Road (x2)</li><li>- The existing Saddle Road bridge is insufficient to safely accommodate non-motorised users</li><li>- The road would run through a flood plain and therefore need to be built on significant embankments (approx.. up to 3 m)</li></ul>	<u>Assumptions made</u>  The potential impact on properties along York Street are covered in other assessments  There are no geometric issues associated with this option that can't be resolved through further design  The clearance under the Saddle Road bridge is sufficient to pass flood flows  Extension of the rail overbridge requires the road to be closed during construction, and the rail line to be closed for significant periods during construction  There are no significant geotechnical issues present at the proposed bridge sites that makes the structural design and construction particularly complex  The existing Saddle Road bridge will be retained in its current form  Extension to the existing rail overbridge requires significant works to the existing bridge   <u>Information relied upon</u>  Existing utility information  Google earth and aerial imagery  Sub options alignments as per 28/11/17 - <i>N:\NZ\Wellington\Projects\91\50011\CADD\Drawings\20171030 Ashhurst suboptions\91-50011-SK005-11_ASHHURST SUB-OPTIONS_20171108.dwg</i>

<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Infrastructure	
<b>Expert undertaking assessment:</b> David Mallett	
<b>Option being considered:</b> Ashhurst Sub Option D	
<b>Score:</b> 0 Neutral/Negligible	Similar to the base case which assumes the existing temporary route via Saddle Road is the base case
<b>Notes:</b> <u>Reasons / Comments as to how you came to your assessment</u>  <b>General</b> <ul style="list-style-type: none"> <li>- Ties in at the top of the 'J' in option 3</li> <li>- Approx. 7.4 km</li> <li>- Route is through Ashhurst with lower operating speeds than other sub options</li> </ul> <b>Utilities</b> <ul style="list-style-type: none"> <li>- Use of existing roads so assume no impact on existing services</li> </ul> <b>Structures</b> <ul style="list-style-type: none"> <li>- Utilises existing Saddle Road bridge over Pohangina River</li> <li>- Utilises existing grade separation of rail line</li> </ul> <b>Road infrastructure</b> <ul style="list-style-type: none"> <li>- Local road intersections at Saddle Road, North Terrace, Mulgrave Street (x2)</li> <li>- Places old SH3 traffic at an intersection with the existing SH3 – requiring many vehicles to turn right at intersection</li> <li>- The existing Saddle Road bridge is insufficient to safely accommodate non-motorised users</li> </ul>	<u>Assumptions made</u> There are no geometric issues associated with this option that can't be resolved through further design  The clearance under the Saddle Road bridge is sufficient to pass flood flows  Assume Salisbury Street doesn't need to be upgraded, and any impacts of making this route permanent from a consenting point of view are covered elsewhere  The existing Saddle Road bridge will be retained in its current form  Extension to the existing rail overbridge requires significant works to the existing bridge   <u>Information relied upon</u> Existing utility information  Google earth and aerial imagery  Sub options alignments as per 28/11/17 - <i>N:\NZ\Wellington\Projects\91\50011\CADD\Drawings\20171030 Ashhurst suboptions\91-50011-SK005-11_ASHHURST SUB-OPTIONS_20171108.dwg</i>

<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Infrastructure	
<b>Expert undertaking assessment:</b> David Mallett	
<b>Option being considered:</b> Ashhurst Sub Option E	
<b>Score:</b> - Minor Adverse Effect	
<b>Notes:</b> <u>Reasons / Comments as to how you came to your assessment</u>  <b>General</b> <ul style="list-style-type: none"><li>- Ties in at the top of the 'J' in option 3</li><li>- Approx. 8.5 km</li><li>- Route is around the northern boundary of Ashhurst</li></ul> <b>Utilities</b> <ul style="list-style-type: none"><li>- Largely through greenfields – limited impact</li></ul> <b>Structures</b> <ul style="list-style-type: none"><li>- Utilises existing Saddle Road bridge over Pohangina River</li><li>- Bridge over rail line required</li></ul> <b>Road infrastructure</b> <ul style="list-style-type: none"><li>- Relatively straight forward local road intersections at Saddle Road, Pohangina Road, Colyton Road, Harrison's Lane, Ashhurst Road, and SH3</li><li>- The existing Saddle Road bridge is insufficient to safely accommodate non-motorised users</li></ul>	<u>Assumptions made</u>  There are no geometric issues associated with this option that can't be resolved through further design  A grade separated crossing of the rail line is required as shown on the sub-options plan  There are no significant geotechnical issues present at the proposed bridge sites that makes the structural design and construction particularly complex  The existing Saddle Road bridge will be retained in its current form  <u>Information relied upon</u>  Existing utility information  Google earth and aerial imagery  Sub options alignments as per 28/11/17 - <i>N:\NZ\Wellington\Projects\91\50011\CADD\Drawings\20171030 Ashhurst suboptions\91-50011-SK005-11_ASHHURST SUB-OPTIONS_20171108.dwg</i>

<b>Multi Criteria Assessment Scoring Sheet - Shortlist</b>	
<b>Area of expertise:</b> Infrastructure	
<b>Expert undertaking assessment:</b> David Mallett	
<b>Option being considered:</b> Ashhurst Sub Option F	
<b>Score:</b> - Minor Adverse Effect	
<b>Notes:</b> <u>Reasons / Comments as to how you came to your assessment</u>  <b>General</b> <ul style="list-style-type: none"><li>- Approx. 9.0 km</li><li>- Route is around the southern boundary of Ashhurst</li></ul> <b>Utilities</b> <ul style="list-style-type: none"><li>- Largely through greenfields – limited impact</li></ul> <b>Structures</b> <ul style="list-style-type: none"><li>- Requires 350 m curved bridge over the Manawatu gorge in the vicinity of the burial island</li><li>- Second bridge required over Manawatu River</li><li>- Existing SH3 bridge over Manawatu retained</li><li>- New bridge required for road over the railway line</li></ul> <b>Road infrastructure</b> <ul style="list-style-type: none"><li>- New intersection with SH3 (x2) and SH57 required, as well as extended linking road to Ashhurst Road</li><li>- Retains linkage with Manawatu Gorge carpark</li></ul>	<u>Assumptions made</u>  There are no geometric issues associated with this option that can't be resolved through further design  A grade separated crossing of the rail line is required as shown on the sub-options plan  There are no significant geotechnical issues present at the proposed bridge sites that makes the structural design and construction particularly complex  <u>Information relied upon</u>  Existing utility information  Google earth and aerial imagery  Sub options alignments as per 28/11/17 - <i>N:\NZ\Wellington\Projects\91\50011\CADD\Drawings\20171030 Ashhurst suboptions\91-50011-SK005-11_ASHHURST SUB-OPTIONS_20171108.dwg</i>

## Multi Criteria Assessment Scoring Sheet – Ashhurst Sub options

**Area of expertise:** Property

**Expert undertaking assessment:** Louise Jones, Kris Connell, Mitchell Bray, Daniel Scott

**Option being considered:** Sub option A

**Score:**

- Minor Adverse Effect

**Criteria:**

Maori Land-

Maori Reservation / Te Wherowhero title. Treaty Settlement. Maori Freehold. General freehold land with Ahu Whenua Trust.

Acquisition Cost / Compensation-

- Number of Owners
- Type/Use/Soil
- Improvements (Houses, Sheds)
- Windfarms

Impact on Individual Properties-

- Dwellings/Significant Improvements
- Severance/Amount of land taken/Location

Complexity of acquisition-

- No. of owners
- Other interests in land
- Tenure
- Known opposition to project
- Windfarms

**Notes:**

Reasons / Comments as to how you came to your assessment

**Maori Land**

Assumes Parahaki Block is to be avoided.

**Acquisition Cost/Compensation**

- 7 Titles affected
- Rural blocks and Lifestyle properties.

**Impact on Individual properties**

- 0 dwellings demolished

**Complexity of acquisition**

- Number of Owners- 7
- QE II Covenant

Assumptions made

- Maori Land (Parahaki Block) to be avoided by alignment
- Assume acquisition of *The Emigrant and Colonists Aid Corporation Limited* land can be progressed within project timelines (historic owners can be identified).
- No further land required where alignment is shown to be in current road reserve.

Information relied upon

- GHD GIS Portal
- QuickMap
- Property Guru data
- LandOnline - Easement and memorial review.

## Multi Criteria Assessment Scoring Sheet - Ashhurst Sub options

**Area of expertise:** Property

**Expert undertaking assessment:** Louise Jones, Kris Connell, Mitchell Bray, Daniel Scott

**Option being considered:** Sub option B

**Score:**

-- Moderate Adverse Effect

**Criteria:**

- Maori Land-  
Maori Reservation / Te Wherowhero title. Treaty Settlement. Maori Freehold. General freehold land with Ahu Whenua Trust.
- Acquisition Cost / Compensation-
  - Number of Owners
  - Type/Use/Soil
  - Improvements (Houses, Sheds)
  - Windfarms
- Impact on Individual Properties-
  - Dwellings/Significant Improvements
  - Severance/Amount of land taken/Location
- Complexity of acquisition-
  - No. of owners
  - Other interests in land
  - Tenure
  - Known opposition to project
  - Windfarms

**Notes:**

Reasons / Comments as to how you came to your assessment

**Maori Land**

No Maori Land affected by alignment

**Acquisition Cost/Compensation**

- 6 Titles affected
- Rural blocks and Lifestyle properties.

**Impact on Individual properties**

- OTS property affected
- Kirks (dairy) land severed

**Complexity of acquisition**

- Number of owners- 6
- QE II Covenant
- KiwiRail Interests affected (Rail Bridge).
- Small affect on corridor
- PNCC recreation interests
- OTS property affected

Assumptions made

- No further land required where alignment is shown to be in current road reserve.
- Assume Kiwirail land is not classed as core rail land
- Assume PNCC land held for recreation reserve will not require reconfiguration as land is currently leased.
- Assume OTS is prepared to dispose of land held for future treaty settlements.

Information relied upon

- GHD GIS Portal
- QuickMap
- Property Guru
- LandOnline - Easement and memorial review.

## Multi Criteria Assessment Scoring Sheet - Ashhurst Sub options

**Area of expertise:** Property

**Expert undertaking assessment:** Louise Jones, Kris Connell, Mitchell Bray, Daniel Scott

**Option being considered:** Sub option C

**Score:**

-- Moderate Adverse Effect

**Criteria:**

Maori Land- Maori Reservation / Te Wherowhero title. Treaty Settlement. Maori Freehold. General freehold land with Ahu Whenua Trust.

Acquisition Cost / Compensation-

- Number of Owners
- Type/Use/Soil
- Improvements (Houses, Sheds)
- Windfarms

Impact on Individual Properties-

- Dwellings/Significant Improvements
- Severance/Amount of land taken/Location

Complexity of acquisition-

- No. of owners
- Other interests in land
- Tenure
- Known opposition to project
- Windfarms

**Notes:**

Reasons / Comments as to how you came to your assessment

**Maori Land**

No Maori land affected by alignment

**Acquisition Cost/Compensation**

- 19 Titles affected
- Rural blocks and Lifestyle properties.

**Impact on Individual properties**

- 0 dwellings demolished

**Complexity of acquisition**

- Number of Owners- 8
- Tararua High Pressure Gas pipeline potentially affected.
- PNCC recreation interests
- OTS property affected
- All Freehold tenure identified to date
- KiwiRail interests affected (grant required for crossing)

Assumptions made

- No further land required where alignment is shown to be in current road reserve.
- Assume PNCC land held for recreation reserve will not require reconfiguration as land is currently leased.
- Assume OTS is prepared to dispose of land held for future treaty settlements.
- Potential court proceedings on Tippler land do not unreasonably defer acquisition timeline.

Information relied upon

- GHD GIS Portal
- QuickMap
- Property Guru
- LandOnline - Easement and memorial review.

## Multi Criteria Assessment Scoring Sheet - Ashhurst Sub options

**Area of expertise:** Property

**Expert undertaking assessment:** Louise Jones, Kris Connell, Mitchell Bray, Daniel Scott

**Option being considered:** Sub option D

**Score:**

- Minor Adverse Effect

Maori Land- Maori Reservation / Te Wherowhero title. Treaty Settlement. Maori Freehold. General freehold land with Ahu Whenua Trust.

Acquisition Cost / Compensation-

- Number of Owners
- Type/Use/Soil
- Improvements (Houses, Sheds)
- Windfarms

Impact on Individual Properties-

- Dwellings/Significant Improvements
- Severance/Amount of land taken/Location

Complexity of acquisition-

- No. of owners
- Other interests in land
- Tenure
- Known opposition to project
- Windfarms

**Notes:**

Reasons / Comments as to how you came to your assessment

**Maori Land**

No affected Maori land

**Acquisition Cost/Compensation**

- 7 Titles affected
- Rural blocks and Lifestyle properties.

**Impact on Individual properties**

- 0 dwellings demolished

**Complexity of acquisition**

- Number of owners- 5
- All Freehold tenure identified to date
- Tararua High Pressure Gas pipeline potentially affected.

Assumptions made

- No further land required where alignment is shown to be in current road reserve.
- Assume Kiwirail land is not classed as core rail land
- Bridge upgrade over rail land required

Information relied upon

- GHD GIS Portal
- QuickMap
- Property Guru
- LandOnline - Easement and memorial review.



## Multi Criteria Assessment Scoring Sheet - Ashhurst Sub options

**Area of expertise:** Property

**Expert undertaking assessment:** Louise Jones, Kris Connell, Mitchell Bray, Daniel Scott

**Option being considered:** Sub option E

**Score:**

-- Moderate Adverse Effect

Maori Land- Maori Reservation / Te Wherowhero title. Treaty Settlement. Maori Freehold. General freehold land with Ahu Whenua Trust.

Acquisition Cost / Compensation-

- Number of Owners
- Type/Use/Soil
- Improvements (Houses, Sheds)
- Windfarms

Impact on Individual Properties-

- Dwellings/Significant Improvements
- Severance/Amount of land taken/Location

Complexity of acquisition-

- No. of owners
- Other interests in land
- Tenure
- Known opposition to project
- Windfarms

**Notes:**

Reasons / Comments as to how you came to your assessment

**Maori Land**

No Maori land affected by alignment

**Acquisition Cost/Compensation**

- 30 titles affected
- Lifestyle, residential and Dairy Farm properties.

**Impact on Individual properties**

- 0 dwellings demolished
- Significant amount of severed land
- Some dwellings are significantly affected and may require full purchase

**Complexity of acquisition**

- Number of owners- 25
- KiwiRail interests affected (crossing)
- Tararua High Pressure Gas pipeline potentially affected.
- All Freehold tenure identified to date

Assumptions made

- No further land required where alignment is shown to be in current road reserve.
- Assume no effect on Kiwirail

Information relied upon

- GHD GIS Portal
- QuickMap
- Property Guru
- LandOnline - Easement and memorial review.

<b>Multi Criteria Assessment Scoring Sheet - Ashhurst Sub options</b>	
<b>Area of expertise:</b> Property	
<b>Expert undertaking assessment:</b> Louise Jones, Kris Connell, Mitchell Bray	
<b>Option being considered:</b> Sub option F	
<p><b>Score:</b></p> <p>-- Moderate Adverse Effect</p>	<p><u>Maori Land-</u> Maori Reservation / Te Wherowhero title. Treaty Settlement. Maori Freehold. General freehold land with Ahu Whenua Trust.</p> <p><u>Acquisition Cost / Compensation-</u></p> <ul style="list-style-type: none"> <li>•Number of Owners</li> <li>•Type/Use/Soil</li> <li>•Improvements (Houses, Sheds)</li> <li>•Windfarms</li> </ul> <p><u>Impact on Individual Properties-</u></p> <ul style="list-style-type: none"> <li>•Dwellings/Significant Improvements</li> <li>•Severance/Amount of land taken/Location</li> </ul> <p><u>Complexity of acquisition-</u></p> <ul style="list-style-type: none"> <li>•No. of owners</li> <li>•Other interests in land</li> <li>•Tenure</li> <li>•Known opposition to project</li> <li>•Windfarms</li> </ul>
<p><b>Notes:</b></p> <p><u>Reasons / Comments as to how you came to your assessment</u></p> <p><b>Maori Land</b></p> <p>No Maori land affected by alignment</p> <p><b>Acquisition Cost/Compensation</b></p> <ul style="list-style-type: none"> <li>• 20 titles affected</li> <li>• Lifestyle, residential and Dairy Farm properties.</li> </ul> <p><b>Impact on Individual properties</b></p> <ul style="list-style-type: none"> <li>• 1 dwelling demolished, 1 severely affected</li> <li>• Substantial amount of severed farming land</li> </ul> <p><b>Complexity of acquisition</b></p> <ul style="list-style-type: none"> <li>• Number of owners- 17</li> <li>• KiwiRail interests affected (crossing)</li> <li>• Tararua High Pressure Gas pipeline potentially affected.</li> <li>• All Freehold tenure identified to date</li> </ul>	<p><u>Assumptions made</u></p> <ul style="list-style-type: none"> <li>• No further land required where alignment is shown to be in current road reserve.</li> </ul> <p><u>Information relied upon</u></p> <ul style="list-style-type: none"> <li>• GHD GIS Portal</li> <li>• QuickMap</li> <li>• Property Guru</li> <li>• LandOnline - Easement and memorial review.</li> </ul>

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Rev.No.	Author	Reviewer Name	Signature	Approved for Issue Name	Signature	Date
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<https://projects.ghd.com/oc/Advisory/nztapalmerstonnorthma/Delivery/Documents/Short List Options Assessment.docx>

Rev.No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
Rev 1	Tim Eldridge	Mary O'Callahan		Carey Morris		12/10/18

