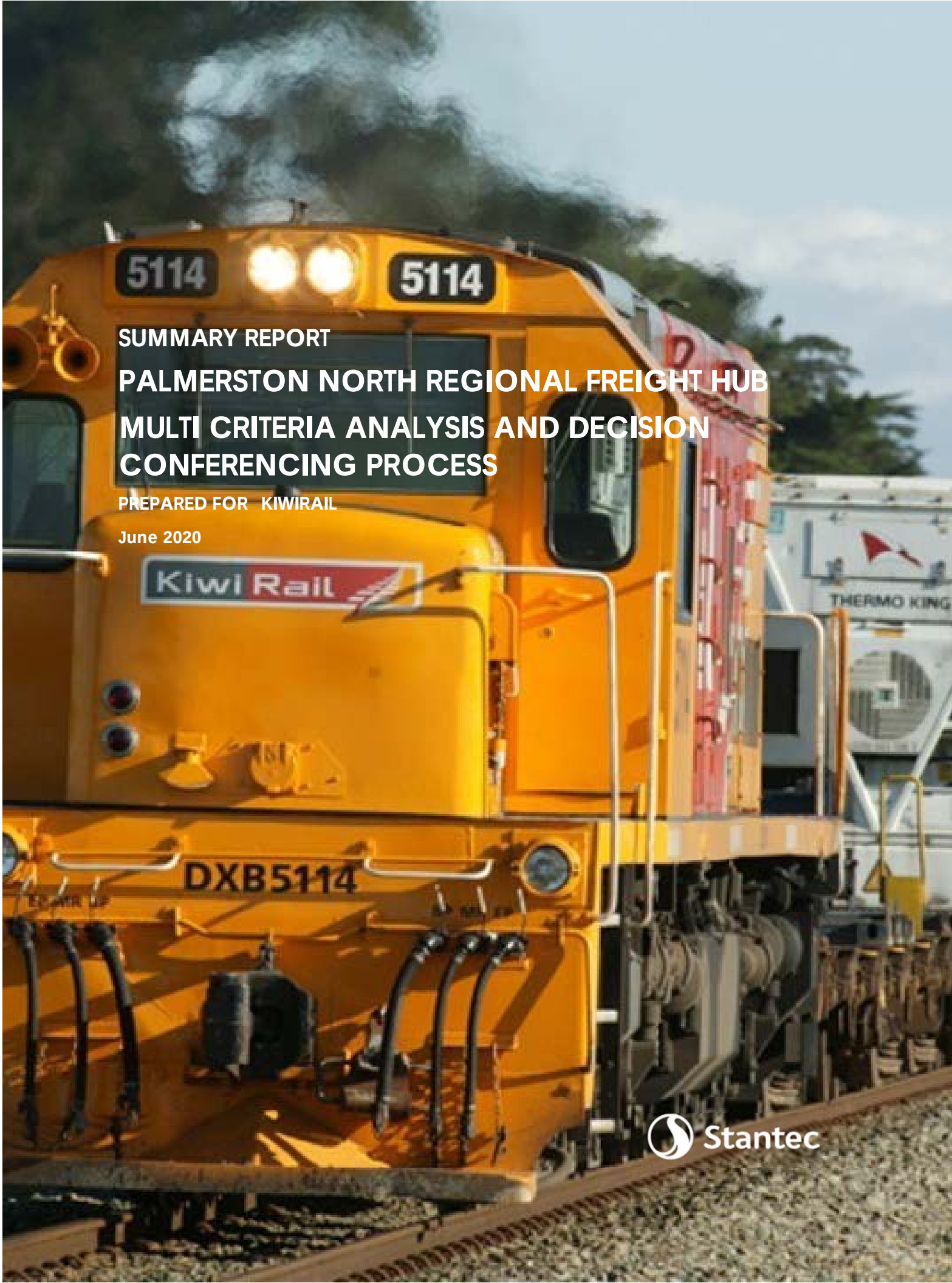

SUMMARY REPORT

PALMERSTON NORTH REGIONAL FREIGHT HUB MULTI CRITERIA ANALYSIS AND DECISION CONFERENCING PROCESS

PREPARED FOR KIWIRAIL

June 2020

Stantec

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Executive Summary

KiwiRail has the opportunity to design a new fit for purpose future focused Regional Intermodal Freight Hub (Freight Hub) in the Palmerston North area to better service central New Zealand's growing freight demands and support the Country's wider regional transport, economic development and supply chain strategies. The new Freight Hub will replace KiwiRail's current Palmerston North freight yard in Tremaine Avenue that dates from 1964. The current yard is constrained and will not be able to efficiently meet future freight servicing requirements.

In order to protect any new Freight Hub site and to enable its development to proceed, KiwiRail has determined that the site should be designated in the relevant district plan in accordance with the requirements of the Resource Management Act 1991(RMA).

KiwiRail has developed the following project objectives for the development of the Freight Hub in or near Palmerston North on the North Island:

- increase its operational capacity to efficiently accommodate projected regional and national freight growth and support wider regional development,
- enable rail to be integrated with, and connected to, other transport modes and networks; and
- improve the resilience of the regional and national freight transport system over time.

When seeking to designate a new Freight Hub site under the RMA, KiwiRail needs to demonstrate that it has undertaken a robust assessment of alternative site locations (site options) for the Freight Hub.

The purpose of this report is to summarise the site option identification and assessment process that was followed to assist KiwiRail in determining a preferred site location for a new Regional Freight Hub (Freight Hub).

To meet the requirements of the RMA and best practice principles for considering alternatives (options) as determined by case law, a multi-criteria assessment (MCA) and decision conferencing process was adopted. MCAs and decision conferencing are best practice approaches for assessing options for major infrastructure projects like the development of a new Freight Hub.

The first phase of the Freight Hub site selection process was the identification of areas along the rail corridor that could potentially accommodate the new Freight Hub. The existing North Island Main Trunk (NIMT) rail corridor was the focus for the identification of areas as fundamentally the Hub needs to connect to the existing NIMT line. It is also important that the Hub is close to the existing freight and employment activities within Palmerston North. Longburn was identified as the southern extent of the corridor as the Manawatu River provided a natural boundary. The northern extent of the corridor was determined by distance from the community / employment centre of Palmerston North City.

Key components of the Freight Hub site selection process were a series of three workshops that involved KiwiRail representatives, technical specialists and key stakeholders. Decision conferencing was a technique applied in the long list and short list workshops (Workshops 2 and 3) to ensure robust outcomes and to provide transparency in the decision-making process.

The first workshop was held in Palmerston North and involved KiwiRail representatives, technical specialists responsible for the assessment of the options and key stakeholders including representatives from Palmerston North City Council (PNCC) and Waka Kotahi NZ Transport Agency (NZ Transport Agency). The purpose of the workshop was to provide an overview of the project, the MCA process to be followed and to determine the assessment criteria to be used to evaluate the options for choosing a location for the Freight Hub. To understand the context of the project, the workshop attendees visited the existing freight yard and the NIMT rail corridor.

The key outcome of the first workshop was an agreed set of assessment criteria to be used by the specialists. It was agreed that criteria relating to rail, engineering degree of difficulty, connectivity, economic, resilience, tangata whenua values, heritage and archaeology, natural environment, property

degree of difficulty, noise and vibration, visual and landscape, strategic fit and community cohesion should be assessed.

While tangata whenua values were included in the suite of assessment criteria agreed at Workshop 1, this criterion was not assessed through the subsequent MCA and decision conferencing process. This is because KiwiRail has undertaken a separate and concurrent engagement process with Ngāti Kauwhata, Rangitāne ki Manawatu and Ngāti Raukawa ki te tonga to identify the cultural values and impacts of the various options.

The initial assessment involved the long list of nine area options that had been identified along the rail corridor. These areas were significantly larger than the potential Hub footprint required to provide flexibility at this stage. Four sites were identified in the vicinity of Bunnythorpe to the north-east of the city and four in the vicinity of Longburn to the south of the city. KiwiRail's existing freight yard in Tremaine Avenue was also included in the long list.

The technical specialists identified constraints in the nine areas in relation to the criteria they were responsible for and undertook a comparative assessment of the options and scored each option. Each of the specialists prepared a report on the nine options recording their assessment and scores.

A second workshop was held in Wellington which involved KiwiRail representatives, technical specialists, representatives from Ngāti Kauwhata and Rangitāne and representatives from NZ Transport Agency, PNCC, Horizons Regional Council (HRC), Manawatu District Council (MDC) and Accelerate 25. The purpose of Workshop 2 was to reduce the long list of area options to a short list of site options for further investigation.

At Workshop 2, each specialist presented their assessments and scores for each of the nine options under their relevant criterion. The workshop participants then discussed the scores with each respective specialist, identified any concerns or asked questions and the specialist then agreed either to keep the original score or a revised score. In some cases, specialists were asked to undertake further work and reassessments and report back on the outcomes of these exercises and whether this would result in any changes to the workshop scores.

At Workshop 2, the participants and the relevant specialists agreed that four of the nine options were "fatally flawed". The existing KiwiRail site in Tremaine Avenue was one of these four options. The other three options that were fatally flawed were all in the vicinity of Longburn in the south of the city. The reasons for the fatal flaws were primarily due to significant noise and flooding issues, ability to achieve rail requirements, loss of a significant indigenous forest remnant and the potential to significantly constrain the planned future residential expansion of Palmerston North City.

The workshop participants also collectively discussed the significance of each criterion and then weighted the importance of each criterion by giving them a weighting of between 1 and 10, with 10 being the most important.

Following Workshop 2 and the completion of the specialist reassessments, sensitivity testing of the long list of area options was undertaken by applying a range of weightings to the raw scores including the weightings agreed at the workshop. This weighting process was important for testing the robustness of the workshop results. The sensitivity testing confirmed the decisions to fatally flaw four of the options and also reinforced that there was little to distinguish between the scores of the remaining five options.

To advance the short-listing process, further refinement of the area options was undertaken. This involved applying site layouts to the five remaining area options and identifying in some locations more than one potential site within the area options that avoided mapped constraints. The specialists were then asked to assess and score the various site options. The site options were then subject to the same sensitivity testing that was applied to the long list of options.

The outcome of this process was that three site options (sites 2, 3 and 4) were shortlisted and identified for further investigation. All three sites are located to the north-east of the city. Site 2 is located to the north-west of Bunnythorpe on the eastern side of the NIMT line. The northern extent of the site is Taonui Road. Site 3 is located to the south-west of Bunnythorpe on the western side of the NIMT line. Site 4 is located opposite site 3 on the eastern side of the NIMT line.

As with the long list assessment process, the technical specialists were asked to assess and score the three site options. This process involved a more detailed assessment of the sites by the specialists. Each of the specialists prepared a report on the three options recording their assessment and scores.

A third workshop was then held in Palmerston North which involved KiwiRail representatives, technical specialists, representatives from Ngāti Kauwhata and Rangitāne and representatives from NZ Transport Agency, PNCC, HRC, MDC and the Central Economic Development Agency (CEDA). The purpose of Workshop 3 was to identify from the short list, a preferred site location to progress through the designation process.

As in Workshop 2, each specialist presented their assessments and scores for the three site options. The workshop participants then discussed the scores with the specialist and collectively agreed on a score. In some cases, specialists were asked to undertake further work and reassessments and report back to the project team on the outcomes of these exercises and whether this would result in any changes to the workshop scores.

The workshop participants reviewed the weightings that were applied to the criteria in Workshop 2 and decided on any changes that were required to the weightings because of the assessments undertaken in Workshop 3. The main reasons for the changes to the weightings at Workshop 3 were the availability of more detailed information and the increased confidence in the information available.

Following Workshop 3 and the completion of the specialist reassessments, the same sensitivity testing that was used on the long list of options was applied to the short list of options along with the updated workshop weighting

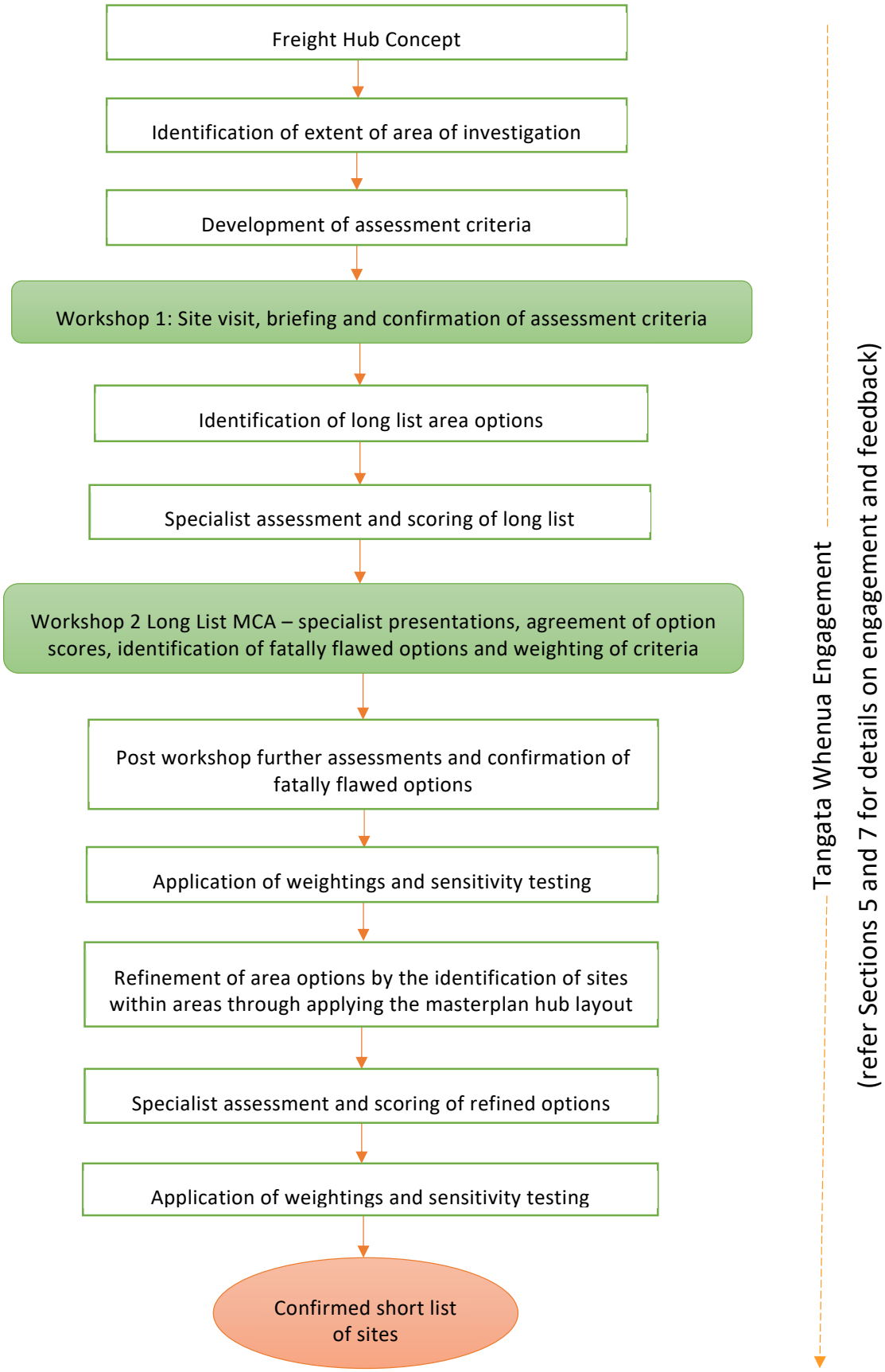
As a result of the MCA and decision conferencing process, Site 3 was identified as the preferred site.

As part of the concurrent engagement process with tangata whenua, Ngāti Kauwhata and Rangitāne were invited to rank area option and site option locations, or to provide feedback in a form of their choice.

KiwiRail used the outcomes from the iwi engagement and the MCA process to assist them in determining the preferred site location to take forward to the next stage of the process, having regard to the project objectives. This next stage involves detailed technical assessments, the identification of the designated site extent and the preparation of the Notice of Requirement (NoR) for the designation.

The following diagram provides a summary of the process that was followed to identify the preferred site.

KiwiRail Freight Hub Summary of the Site Selection Process



KiwiRail

Multi Criteria Analysis and Decision Conferencing Process

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1. Introduction

1.1 Purpose

The purpose of this report is to summarise the process that was followed to assist KiwiRail in determining a preferred site for a new Freight Hub located along the NIMT rail corridor close to Palmerston North.

The report describes:

- The methodology that was developed to assess the long list and short list of site options.
- The long list of potential site areas and the concept master plan to be applied to the site areas.
- The process that was followed to assess the long list of potential site areas and agree a short list of sites for further investigation (Workshop 2).
- The short list sites.
- The process that was followed to assess the short list of sites and to identify a recommended site (Workshop 3).
- The engagement with local iwi and their feedback on the process.

1.2 Background

KiwiRail's current Palmerston North Freight Hub was designed in 1964 when freight was delivered in a "breakbulk" format[1] . Whilst the Hub has been adapted over the years within the current footprint, this has caused inefficiencies. There are over 40 small buildings scattered in an ad hoc manner, severely impeding a cohesive working environment and the size and shape of the site means these cannot be redeveloped to resolve these issues.

KiwiRail has the opportunity to design a new fit for purpose future focused Freight Hub to better service central New Zealand's forecasted growing freight demands and support the Country's wider regional transport, economic development and supply chain strategies.

In order to protect the new Freight Hub site once it has been identified, and to enable its development to proceed, KiwiRail has determined that the site should be designated in the relevant district plan in accordance with the requirements of the Resource Management Act 1991(RMA). This will:

a) Ensure the ongoing protection of the site for its designated purpose.

b) Signal to any prospective property purchasers or developers that the site is intended to be developed as an Intermodal Freight Hub.

c) Provide a degree of flexibility for the future development of the site.

As discussed below, when designating the new Freight Hub site under the RMA, KiwiRail will need to demonstrate that it has undertaken a robust assessment of alternative sites for the Hub.

The RMA uses the term "alternatives" rather than "options". In this report the term adopted is options except in the context of the RMA.

[1] Breakbulk - goods that must be loaded individually, and not in intermodal containers nor in bulk

2. Methodology for assessing Freight Hub site options

This section explains the circumstances when an assessment of alternatives is required under the RMA along with an analysis of the key findings from the Courts and Board of Inquiry decisions on the consideration of alternatives. It provides an explanation of best practice principles in relation to alternatives consideration. The section outlines what MCA is and why MCA and decision conferencing have been proposed to assess the various site options. This section also describes the process followed to determine a preferred option.

2.1 Requirements of the RMA for the consideration of alternatives

2.1.1 Relevant provisions

There are a number of circumstances when the RMA requires an assessment of alternatives (options) to be undertaken. These are:

a) Section 171(1)(b) provides that when considering a notice of requirement (NoR) for a designation and the requiring authority does not have all necessary property rights to the land on which the works will be undertaken or the work will have a significant effect of the environment.

171 Recommendation by territorial authority

(1) When considering a requirement and any submissions received, a territorial authority must, subject to Part 2, consider the effects on the environment of allowing the requirement, having particular regard to—

(b) whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the work if—

(i) the requiring authority does not have an interest in the land sufficient for undertaking the work; or

(ii) it is likely that the work will have a significant adverse effect on the environment;

Form 18 in the Resource Management (Forms, Fees, and Procedure) Regulations 2003 that sets out what should be included in a NoR also requires the provision of information on alternative sites, routes, and methods that have been considered.

b) When preparing an assessment of environmental effects (AEE) if the proposal is likely to have a significant adverse effect on the environment, Schedule 4 of the RMA provides that the AEE must describe alternative locations and methods for undertaking the activity. Likewise, if the proposal involves the discharge of contaminants the AEE will need to address alternative methods of discharge and locations.

Schedule 4

6. Information required in assessment of environmental effects

(1) An assessment of the activity's effects on the environment must include the following information:

a) if it is likely that the activity will result in any significant adverse effect on the environment, a description of any possible alternative locations or methods for undertaking the activity:

c) When assessing an application for the discharge of contaminants to fresh or marine waters under s105 of the RMA decision makers must have regard to alternative methods of discharge and locations.

In the context of the Freight Hub, s171(1)(b) applies as at this stage KiwiRail does not have an "interest in all of the land required for undertaking the work" and there is potential for construction and operation of the Hub to have a significant adverse effect on the environment. Therefore, consideration of and information on alternative sites, routes, or methods will need to be included in the NoR for the designation of the Hub.

As there are no regional resource consents being applied for at this stage of the project, the matters in item c) will not apply.

2.1.2 Case law guidance

There is an extensive body of case law regarding the consideration of alternatives as required by s171(1)(b) of the RMA.

In a decision of the Environment Court[2] on a designation for a reservoir, the Court noted that the relevant principles relating to the consideration of alternatives were gathered together in the final report and decision of the Board of Inquiry into the Transpower Upper North Island Grid Upgrade Project. The Court adopted these principles and they are set out below.

a) The focus is on the process, not the outcome: whether the requiring authority has made sufficient investigations of alternatives to satisfy itself of the alternative proposed, rather than acting arbitrarily, or giving only cursory consideration to alternatives. Adequate consideration does not mean exhaustive or meticulous consideration.

b) The question is not whether the best route, site or method has been chosen, nor whether there are more appropriate routes, sites or methods.

c) That there may be routes, sites or methods which may be considered by some (including submitters) to be more suitable is irrelevant.

d) The Act does not entrust to the decision-maker the policy function of deciding the most suitable site; the executive responsibility for selecting the site remains with the requiring authority.

e) The Act does not require every alternative, however speculative, to have been fully considered.

f) The requiring authority is not required to eliminate speculative alternatives or suppositious options[3]

In terms of undertaking multi criteria assessments (MCAs) the High Court in the Basin Bridge decision[4] provides useful guidance on using a MCA to evaluate alternatives. In summary the High Court decision states:

a) An MCA analysis of alternatives should be transparent and replicable.

b) If any weightings are applied to the "raw" MCA scores, it may be necessary for those weightings to be available to the decision maker in order to be satisfied that adequate consideration has been given to alternatives.

c) If weightings are used in an alternatives assessment (such as an MCA) they should be "infused" with Part 2 matters and decisions to allocate weight to different evaluative criteria is subject to Part 2.

Finally, the High Court Basin Bridge decision[5] confirms that a more careful consideration of alternatives may be required where there are more significant adverse effects.

2.1.3 Best practice principles

The following provides a summary of best practice approaches for evaluating options based on the above findings of the courts, as well as practical experience from previous projects[6].

a) Any option evaluation needs to be robust, defensible, transparent, genuine, undertaken with an open mind and well documented from the outset.

[2] Pukekohe East Community Society Inc v Auckland Council [2017] NZEnvC 027
[3] Pukekohe East Community Society Inc v Auckland Council [2017] NZEnvC 027 at [21 and 22]
[4] NZ Transport Agency v Architectural Centre [2015] NZHC 1991. Also known as the Basin Bridge decision, at [175] – [198]
[5] NZ Transport Agency v Architectural Centre [2015] NZHC 1991 at [140]
[6] These include the Transpower North Island Grid Upgrade Project, numerous NZ Transport Agency business cases, and water and wastewater reticulation and discharge projects

b) Any option evaluation process should be "fit for purpose" i.e. of a detail that corresponds with the scale and significance of the options including the adverse effects that the options may have on the environment.

c) The process should have a clear RMA focus in order to meet the requirements of the Act and principles established through case law.

d) The evaluation of options needs to be undertaken in a structured and methodical (replicable) manner.

e) Wherever possible the focus should be on keeping the process simple especially where it involves non-technical people.

f) The process should use a consistent methodology as far as possible. If changes to the approach are required, the reasons for these must be well documented to avoid accusations of "engineering a desired outcome".

g) Comprehensive documentation of the evaluation process and decision making is essential, particularly to ensure transparency.

h) The right experts (i.e. ideally those who may later be witnesses) must be involved in developing the assessment criteria, providing information on the options being assessed and the assessment and decision-making processes to ensure the process is evidence based and robust.

i) Where non-technical people are involved in the evaluation process information must be presented in a way that they can understand and absorb so they are able to make informed decisions.

j) Where weightings are applied to criteria these need to be agreed through a consultative process, infused with Part 2 of the RMA, and recorded in the final presentation of results.

k) When undertaking an options evaluation process, it is important to be clear on who owns and is responsible for the process. Preferably, whoever that is, should be involved from the beginning to the end and preferably an expert in options assessment processes and the requirements of the RMA.

l) Key principles from RMA case law state:

    1) The focus is on the process not the outcome.

    2) The applicant does not have to choose the best option.

    3) The Act does not require every alternative, however speculative, to have been fully considered.

    4) It is the responsibility of the applicant to select the option not the decision maker.

These best practice approaches have been adopted in developing the process to assess the long list of site area options and the short list of site options for the Freight Hub.

2.2 Assessment process

2.2.1 Multi Criteria Analysis

To be consistent with the RMA requirement for assessment of alternatives and achieve the best practice principles and findings from case law set out above a MCA and decision conferencing process was adopted to assess the long list and short list of site options for the Freight Hub.

2.2.1.1 Background to Multi Criteria Analysis

MCA is a tool to aid decision making when comparing and assessing options. It is a structured process which enables a wide range of different aspects to be taken into consideration in evaluating options and provides a systematic framework for working through the merits and disadvantages of each option.

Some useful descriptions of MCA include:

"An analysis technique that takes into account a range of criteria which are both qualitative and quantitative in nature and which reflect the social, cultural, economic and environmental characteristics of the project outcomes[7]".

"MCA provides an open and traceable method of weighing up the advantages and disadvantages of different options taking account of both tangible and intangible issues[8]."

"MCA is a decision technique that considers more than one criterion (not just monetary units). It is commonly used where benefits and costs are more difficult to accurately define and are both quantitative and qualitative in nature[9]".

MCA is generally used instead of (or in addition to) the traditional cost benefit analysis which involves assigning a monetary value to specific aspects of each option. This creates difficulties when assessing environmental and social impacts and cultural / tangata whenua values. As set out above, MCA enables the evaluation of options without the need to assign monetary values to all criteria.

The MCA process generally involves:

a) The development of assessment criteria and scoring and weighting systems for evaluating options.

b) Expert briefings to inform decision making.

c) Decision conferencing which is a workshop process involving scoring and weighting of options through discussion and consensus informed by expert views (explained in further detail below).

d) Record of the process, decision making and outcomes.

There are a number of ways to undertake an MCA process. The involvement of an informed group of people representing a range of expertise and interests in a facilitated workshop is generally the preferred method. It is important that workshop participants have sufficient information to make informed decisions when scoring and weighting options. Technical presentations on a range of matters such as safety, integration with the local road network, effects on ecological values, noise and vibration effects etc. are an important method for assisting informed decision making. It is critical that participants understand the options, the assessment criteria and the method for scoring and weighting options.

MCA provides a robust process to assist in the determination of a preferred option because it is inter- or multi-disciplinary, participatory (especially where stakeholders are involved) and transparent. That said however, it must be remembered that MCA is only a tool to aid decision-making. The process should guide the decision-maker, but not make the decision for them.

2.2.2 Decision Conferencing

Decision Conferencing is a tool that brings key experts, client representatives and stakeholders together to provide different perspectives, generate shared understanding, and create buy-in to the outcomes.

Decision conferencing has three main elements; attendance by key stakeholders; impartial facilitation; and an interactive and iterative group process.

This process has been used by Stantec for many large infrastructure processes to ensure a more robust outcome and to provide transparency in the decision-making process.

The benefits of decision conferencing are that:

a) it enables the project team to obtain information that resides in the heads of the key players, not necessarily in printed papers and reports;

[7] Data collection and monitoring strategies for asset management of New Zealand road bridges Research report RR 475, Wellington: NZ Transport Agency, 2012

[8] Optimised Decision Making Guidelines – A Sustainable Approach to Managing Infrastructure. Pub. By NZ National Asset Management Steering (NAMS) Group, 2004

[9] International Infrastructure Management Manual 2011

b) it shortens timeframes by bringing the key players together, encouraging them to participate in the problem-solving process; and

c) it enables everyone to understand how the outcome was obtained.

For this particular project, the decision conferencing technique was used for the long list and short list workshops and involved:

a) Ensuring the right range of people participated in the workshops.

b) Requiring specialists to present their methodology, assessments and draft raw scores to the workshop participants.

c) An environment that enabled participants to question and test the specialist's assessments and opinions and to share information and knowledge.

d) A robust discussion on the scoring with a focus on achieving consensus on raw scores wherever possible

2.2.3 Considerations for developing MCA criteria

Based on the best practice principles above and previous project experience the following matters were taken into consideration when developing MCA criteria for assessing site options for the Freight Hub.

a) Criteria must assist in differentiating options (e.g. there is no point in including a criterion relating to natural hazards if none of the options will be affected by natural hazards)

b) Criteria need to be designed to address the local context within which the options are located e.g. urban, rural, natural hazards, open space.

c) Criteria need to be easily understood and clearly describe the matters to be assessed.

d) Double counting i.e. assessing the same or similar matters under different criteria should be avoided, where possible.

e) The criteria should be developed by a multi-disciplinary team to ensure all relevant matters are considered.

f) There should not be too many or too few criteria. A rule of thumb is between 8 and 12.

Section 3 of this report describes the process followed to determine the criteria adopted to assess the Freight Hub site options and sets out the confirmed assessment criteria. As the assessment process progressed some of the criteria were refined and adapted to ensure they remained relevant.

Draft assessment criteria were initially developed by the Stantec project team and were based on their knowledge of the project and previous experience with MCA processes. The draft assessment criteria took into account:

- Considerations for developing MCA criteria set out above.
- The project objectives – discussed further below.
- The benefits to be achieved from the development of the Freight Hub.
- The difficulties associated with the development of the Freight Hub.
- The potential impacts of the development and operation of the Freight Hub.

The application of the assessment criteria is discussed in subsequent sections below in relation to each workshop.

2.2.4 Application of project objectives

When considering a requirement for a designation s171(1)(c) of the RMA requires the territorial authority has particular regard to:

"whether the work and designation are reasonably necessary for achieving the objectives of the requiring authority for which the designation is sought".

KiwiRail has developed the following project objectives for the development of the Freight Hub in or near Palmerston North on the North Island.

- increase its operational capacity to efficiently accommodate projected regional and national freight growth and support wider regional development,
- enable rail to be integrated with, and connected to, other transport modes and networks; and
- improve the resilience of the regional and national freight transport system over time.

Where an objective will assist in determining the preferred site for the Freight Hub it should be reflected in the assessment criteria. When weighting criteria and undertaking sensitivity testing it is important to take into consideration project objectives to test that the site(s) selected meet the objectives for the project. This is discussed further in section 2.2.7 below.

2.2.5 Identification of fatal flaws

As the process develops some options may be fatally flawed for reasons such as the effects or the constraints are so significant that it is not feasible for that option to be pursued or the option fails to meet the project objectives. Options should only be identified as being fatally flawed where this is clear. If there is doubt or uncertainty about whether an option is fatally flawed, the option should be retained. To be fatally flawed an option need only trigger one of the identified fatal flaws, not all or a majority of them.

2.2.6 Approaches to scoring

There are a range of approaches to scoring options and these include:

1) Simple traffic lighting – red, orange, green.
2) Simple low, medium, high and variations such as low-medium, medium-high.
3) 1 - 5 numerical scale with 1 being best or worst, 3 being neither good or bad and 5 being worst or best.
4) Scoring +3 +2 +1 0 -1 -2 -3.

The scoring approach adopted depends on the project and the preferences of the project team. However, there are some basic principles, namely that consideration should be given to ensuring the scoring will provide sufficient variation / distribution and that the scoring should not be overly complex especially if involving non-technical people in the MCA process.

For the assessment of both the long list and short list of site options the specialists were asked to apply a scoring system with a numerical scale of 1 – 5 as part of their assessment of each option under their allocated criteria. The way the scores were applied is discussed further in section 5.1.3.

Each criterion to be assessed was categorised under either Benefits, Impact or Difficulty. Section 5.1.3 describes how each of the assessment criteria have been categorised.

2.2.7 Weightings and sensitivity testing

As discussed above weighting systems are often used for evaluating options. Weightings are applied to criteria where it is considered that some criteria are more important than others. If the group undertaking the MCA consider that all criteria are of the same importance, then no weightings need to be applied. With a multi-disciplinary group there are generally a range of views on which criteria are important and this results in a range of different weightings being suggested and applied. This adds to the robustness of the process and provides a form of sensitivity analysis.

The "weighted score" for each criterion is the raw score given to each criterion multiplied by the weighting.

After a weighting has been applied it can be useful to carry out a sensitivity analysis to see how sensitive the outcomes are to the chosen weights. It is important to explore the effects of adopting a range of tests that put different weights and emphasis on particular aspects to test the robustness of the results.

The weightings applied to the various criteria adopted for this assessment process are those that were determined by workshops participants at the long list (Workshop 2) and shortlist (Workshop 3) workshops and are described in sections 5.5.3 and 6.7.3 of this report. The application of weightings is discussed further in section 5.5.2.

In addition to applying the workshop weighting to each criterion, a range of other weightings were applied to assess the sensitivity of the scores to different "focus areas". This sensitivity testing was undertaken by Stantec after each workshop as a spreadsheet exercise.

To carry out sensitivity testing of the options both at the long list and short list stages, a range of other weightings were applied. The different "focus areas" of these weightings enabled the process to take into account "quadruple bottom line" (QBL) accounting and sustainability principles to reflect KiwiRail's sustainability strategy[10] and Statement of Corporate Intent[11].

QBL involves the consideration of the four well-beings (social, economic, environmental and cultural). Using QBL as a lens for sensitivity testing involves setting up four different weighting systems and weighting each criterion as to how it contributes to each of the four well-beings. For example, under environmental well-being the natural environment criterion has a weighting of 10, but under the economic well-being it has no weighting (0). The sensitivity testing shows which option scores the best under each of the four well-being weighting systems.

The weighting systems that have been applied for sensitivity testing are:

- RMA Part 2: - which places a higher weighting on those criteria that relate to Part 2 matters. This weighting was adopted to ensure appropriate consideration of Part 2 matters has been undertaken as set out in the High Court's Basin Bridge decision.
- Rail focused objectives: - which places a higher weighting on those criteria which reflect the project objectives and the outcomes required by KiwiRail. This weighting was adopted to test that the option(s) selected meet the project objectives and deliver on KiwiRail's requirements.
- QBL: - which takes into account social, economic, environmental and cultural considerations or "well-being". It ensures decisions take into account matters that are not amendable to quantitative evaluation (i.e. intangibles) as well as those that can be readily reduced to numeric or monetary terms. As KiwiRail has undertaken a separate and concurrent engagement process with local iwi, cultural well-being component was not included.
- Benefits, impacts and difficulty: which separately considers the criteria that have been listed under the categories of benefits, impacts and difficulty.

The approach to the application of the weightings and sensitivity testing was to begin with the raw scores agreed at the workshop by participants, then apply the weightings agreed by the workshop participants and then undertake the various sensitivity tests to see the extent to which the ranking of the options changes. The outcomes from these approaches could then be considered and compared to assist KiwiRail in determining the preferred site location. The process followed is discussed further in sections 5.6.3, 5.6.7 and 6.8.2.

- It should be emphasised that the assessments and results are intended to provide robust, transparent and replicable information and process to inform decision. The MCA process ensures that as many

[10] https://www.kiwirail.co.nz/our-story/sustainability/
[11] https://www.kiwirail.co.nz/assets/6b475227c2/KR-SCI_2019_191011_ForWeb.pdf

issues as practicable (within the limits of the information available) can be considered simultaneously in order that decisions are well informed.

3. Project introduction and assessment criteria setting (Workshop 1)

3.1 Purpose of the workshop

To commence the assessment process, a workshop (Workshop 1) was held in Palmerston North on 30 August 2019. The purpose of the workshop was to provide an overview of the project and the multi-criteria assessment process to be followed and to determine the assessment criteria to be used to evaluate the options for choosing a location for the Freight Hub. A site visit to the existing KiwiRail Freight Yard and Passenger Terminal and potential locations for the future Freight Hub along the NIMT corridor was also undertaken in conjunction with the workshop.

3.2 Workshop attendees

Table 3-1 Workshop 1 attendees

Name	Organisation	Title / Expertise
Pam Butler	KiwiRail	Planning
Stephanie Campbell	KiwiRail	Group General Manager Property.
Simone Hadley	KiwiRail	Project Director
Dale Philip	KiwiRail	Property
Olivia Poulsen	KiwiRail	Legal
Nick Manson	KiwiRail	Asset Management Engineer.
Gonçalo Sintra	KiwiRail	Project manager
Ben Goodin	KiwiRail	Site Visit – existing facility
Rob McMillan	KiwiRail	Operations Improvement Manager – CT - Afternoon only
Logan Kahui	KiwiRail	Area Operations Leader - Central NI - Afternoon only
Karen Bell	Stantec	Lead Planner
Phil Peet	Stantec	Facilitator
Paula Hunter	Stantec	Planning
Ilze Rautenbach	Stantec	Contamination
Andy Mott	Stantec	Geotech
Jo Wilkins	Stantec	Stakeholder and Community Engagement
Murray King	Stantec	Freight forecasting
Dhimantha Ranatunga	Stantec	Transport Planning
Tom Kerr	Stantec	Flooding
April Peckham	Stantec	Planning
Mike Skelton	Stantec	Engineering
Simon Beale	Beale Consultants	Ecology
Stephen Chiles	Chiles Ltd	Noise and vibration
Daniel Parker	Insite Archaeology	Archaeology and heritage
Lisa Rimmer	Isthmus	Landscape and visual assessment
Anna Sanson	NZ Transport Agency	Palmerston North Integrated Transport Improvements project
David McGonigal	NZ Transport Agency	Palmerston North Integrated Transport Improvements project
David Murphy	PNCC	Planning
Helen Churton	PNCC	Infrastructure

As listed in Table 3-1 above, attending the workshop were the technical specialists, KiwiRail representatives involved in the project and representatives from Palmerston North City Council and the NZ Transport Agency staff who provided information on plans for development and roading.

3.3 Workshop presentations

KiwiRail's project director gave an outline of the background to the project. An overview of the process and agenda for the workshop was presented and the workshop attendees were shown a 3D flythrough of the master plan.

A site visit to the existing KiwiRail Freight Yard occurred and then the attendees viewed the rail corridor (Figure 3-1 below) by bus from Longburn in the south to the Fielding aerodrome in the north to see the corridor under review.

Longburn was selected as the southern end of the corridor as the Manawatu River provides a natural boundary to the corridor. Locating a Freight Hub in close proximity to the river or on the south side of the river was not viable. This is because the river is 100m wide where it is crossed by the NIMT line and the cost of constructing a river crossing to accommodate the back shunt of any hub close to the river was not feasible. Also, traffic generated by a Freight Hub on the southern side of the river would need to pass Massey University and travel through the city centre to get to the North East Industrial area and further north, which is not consistent with the transport objectives of NZ Transport Agency and PNCC.

The northern end of the corridor was based on distance from the community/employment centre at Palmerston North. The existing rail corridor was the focus for the identification of areas as the Hub needs to connect to the existing NIMT line given the volume of freight moved to the north of Palmerston North and to Wellington and further south.

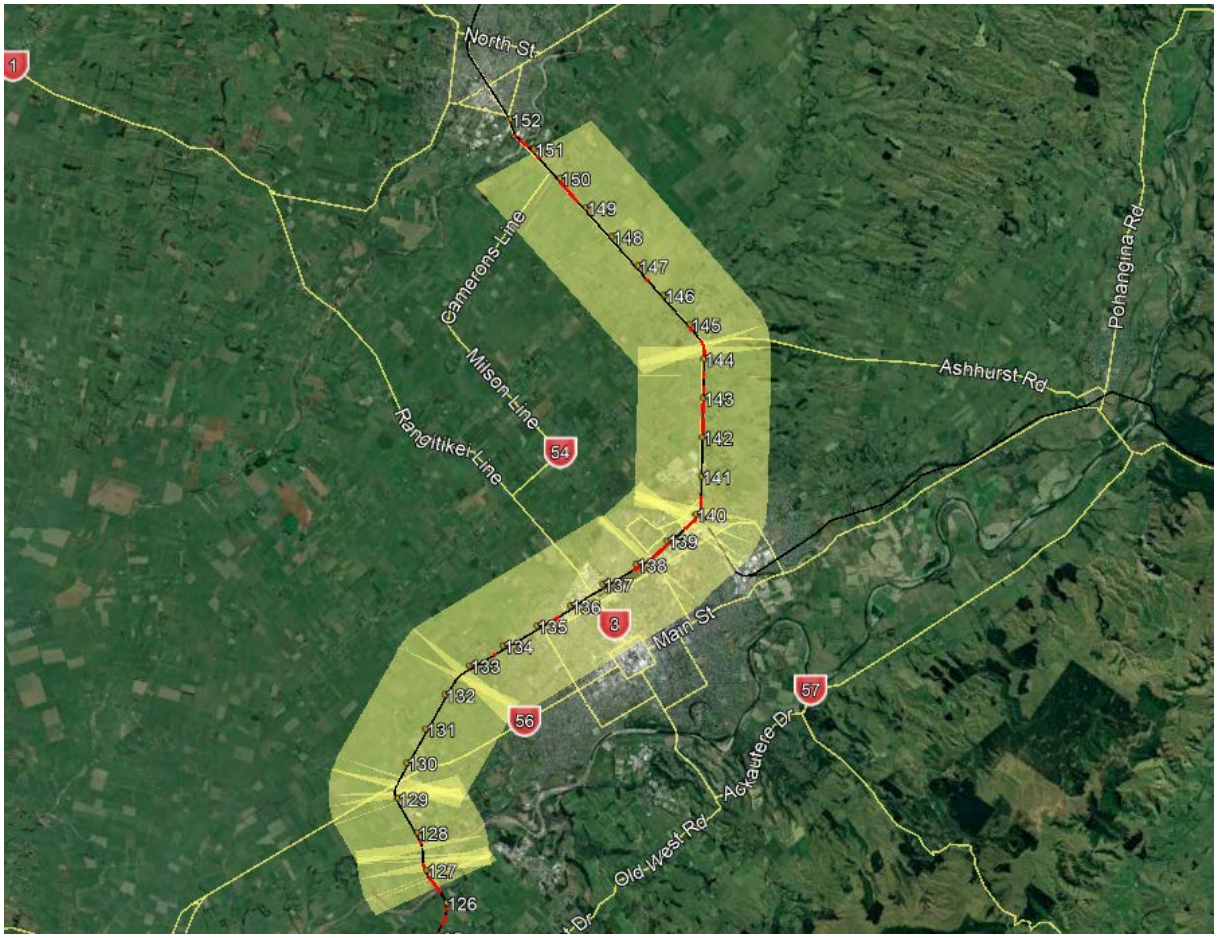


Figure 3-1: The rail corridor from Longburn to Fielding Aerodrome

At the workshop David Murphy (from PNCC) outlined the infrastructure strategy from the PNCC 10-year plan (2018- 2028) to provide further context for the project.

Paula Hunter outlined the MCA process and explained that the purpose of the tool is to aide KiwiRail's decision making by comparing and assessing options. She also explained the principles that were applied in developing the assessment criteria and introduced the proposed assessment criteria.

3.4 Assessment criteria

Draft assessment criteria were provided to the workshop participants for their review in advance of Workshop 1. The draft criteria covered the following areas:

- Engineering degree of difficulty
- Rail
- Connectivity
- Economic
- Resilience – hazards (likelihood of risk; severity of risk)
- Heritage and archaeology
- Natural environment
- Property degree of difficulty
- Noise and vibration

- Visual and landscape impacts
- Community cohesion
- Due to KiwiRail progressing a separate process with Rangitāne ki Manawatū, Ngāti Kauwhata and Ngāti Raukawa ki te tonga as discussed in Section 4 below, no draft criteria for Tangata Whenua values were developed or circulated.

During the workshop, as each of the assessment criteria were discussed new issues were identified and allocated to the proposed criterion and other modifications made. The workshop participants agreed that a new criterion "Fit with (regional) strategies / plans" (Strategic Fit) should be included in the assessment.

Several potential fatal flaws associated with the following criteria were noted by the workshop participants:

- flooding where this could not be appropriately mitigated as this would not meet KiwiRail's operational requirements.
- presence of certain elements of heritage or tangata whenua values.
- presence of Māori land due to the restrictions that apply to its sale.
- PNCC's plans for future residential areas through future structure plan process and zone changes – due to reverse sensitivity issues and similar constraints that are causing issues with the existing KiwiRail Freight Yard operations.

The comments received in relation to each of the criteria were addressed and the following updated criteria were circulated prior to Workshop 2.

Engineering degree of difficulty

This criterion addressed expected difficulties of the site with respect to constructability of permanent features and structures (construction complexity) and operation of the site, such as:

- Geotechnical considerations.
    - Geology: in good ground or anticipating difficulties (for example Palmerston North has some compressible subgrades such as peats).
    - Earthworks: to meet required gradients for tracks and establish anticipated building platforms and other on-site requirements, including complexities and significance of anticipated volume of cut or fill.
- Stormwater and groundwater.
    - Any obvious challenges in managing site runoff or wider catchment runoff on level of service of the site (the operation of the rail and freight facility and KiwiRail's partners over the life of the facility) or on neighbouring properties.
    - Contaminants.
    - Presence of known contaminated land.
    - Remediation difficulty.
    - Risk of discharges to the environment.
- Significant temporary works.
    - Including temporary or diverted rail lines, temporary structures, and haul roads.
- Utility services.
    - Requirements for new or the need to relocate major trunk services: transmission lines, power lines, gas, water, communications, sewer.

Rail

This criterion addressed the benefits to rail of the site in terms of:

- Rail network connectivity - ability to connect with existing / future rail networks.
- Rail customer benefits - travel time, potential capacity, ability of the site to increase the volume of freight moved through and to and from the region, the opportunities to reduce delays on the rail network.
- Other mode compatibility - any limitations produced by rail on road design, integration with modes / network.
- Impacts on resilience and operation of the network.
- Safety – possibilities for improving operational safety.
- Impacts to the existing North Island Main Trunk line - connectivity to electrification infrastructure.
- Site evaluation for long term strategic alignment with Business Plan.

Connectivity

This criterion addressed the impact of the site on the existing or planned transport network and includes:

- Access to, impacts and ability to integrate with other modes (rail, road, walking and cycling, air).
- The impact of other activities on freight movement to and from the site; (existing at grade rail crossings; schools; dairy herds etc.).
- Extent of new and upgraded local or state highway road connections required, including new crossings (rail level crossing, overbridges etc.).
- Alignment with the existing and proposed future road network hierarchy.
- Impact on safety of transport network outside the boundary of the site.
- Impact in terms of generating traffic on the wider network related to proximity / connectedness to industrial areas (connected to the customers / freight operators).
- Impact on Metro Rail.

Economic

This criterion addressed the economic benefits that the site is able provide to business/ industry in the region that could utilise the facilities. It is related to its proximity / connectedness to industrial areas (connected to the customers / freight operators) and the ability to create a 'Freight City' including additional benefits such as agglomeration and clustering.

Resilience – hazards

This criterion considered the difficulties associated with the site in terms of natural and man-made, hazards and relates to the likelihood of risk and severity of risk and included:

- The type, frequency, and scale of the hazard and whether adverse effects on the development will be temporary or permanent (over the life of the facility).
- The consequences of a hazard event in relation to the proposed activity and the people likely to be involved in that activity (KiwiRail and its partners) and the potential effects on public safety and other property.
- Any exacerbation of an existing natural hazard risks or creation of a new hazard risks to neighbouring properties or infrastructure as a result of the proposal.
- Exposure to other risks (vulnerability to third party damage such as terrorism) which could compromise the operation of the rail and freight facility and KiwiRail's partners.

Heritage and archaeology

This criterion assessed effects of the site and its development on heritage values and included:

- Impacts on recorded archaeological sites.
- The potential risk of encountering heritage in the form of unrecorded sites.
- Impacts on heritage buildings and sites identified in RMA planning instruments.

Note: archaeological sites of concern to tangata whenua were addressed under tangata whenua values.

Natural environment

This criterion considered effects of the construction and the operation of the site on terrestrial and freshwater ecology and included:

- Any significant natural features, areas etc. identified in RMA planning instruments including heritage / notable trees.
- Effects on any freshwater bodies (including wetlands).
- Effects on habitats and biodiversity.

Property degree of difficulty

This criterion considered the difficulty in terms of acquisition of land for the site in terms of:

- Number of properties including those in public and private ownership to be acquired.
- Anticipated complexity of property negotiations.
- Land title and ownership considerations including Māori Customary and Māori Freehold Land and land that falls within the jurisdiction of the Māori Land Court under Te Ture Whenua Māori Act 1993 and other legislation.
- Existing covenants and ancillary land interests (easements and access).
- Designated land and land held for special purposes such as reserves.
- Impacts on indirectly affected (e.g. affected by level crossing – new or change to existing).
- Land with existing resource consents that have not been given effect to.

Noise and vibration

This criterion covered the operational effects of noise and vibration from the site on surrounding land uses including:

- Number of truck movements generated along road network from the Freight Hub and associated noise.
- Offsite operational noise effects – increase in number of shunting movements on branch and mainline between what occurs now and with anticipated growth.
- The generated noise effects in the event that construction of the site could be staged over a lengthy period.

Visual and landscape

This criterion covered the construction and the operation of the site in terms of:

- Impact on outstanding or significant natural features and outstanding or significant natural landscapes identified in RMA planning instruments.
- Visual impact on surrounding land uses including from residential / private viewpoints and from public viewpoints.
- Impact of glare and lighting effects on other land uses resulting from operating lighting for rail activity.
- Impact of the new form and design of the site on existing character (i.e. rural character) and on features that contribute to character.

Community cohesion

This criterion addressed the potential impact of the facility on existing activities located on or around the site. It related both to the existing land use and zoning in the area and the final form of development and external effects of activity. In particular, this included:

- Impact on social and recreational activities and other land uses.
- Impact of the land being designated for a period of time before development occurs (possibly 10 years) and its delivery in stages.
- Severance – the potential effects of the Hub creating a barrier for communities accessing facilities and separating or severing communities.

Strategic fit

This criterion considered how the site aligns with the strategic planning for the sub region and city including:

- PNCC's and Manawatū District Council's strategic plans.
- Horizon Regional Council's strategies including Regional Transport Strategy.

4. Iwi Engagement

KiwiRail engaged with iwi early in the project and reached out to a wide range of iwi groups who might have an interest in wider the Palmerston North area. By agreement, the initial responses were reduced to three main groups with whom KiwiRail directly engaged with as the options were refined into the preferred site. These groups were:

- Ngāti Kauwhata
- Rangitāne ki Manawatu
- Ngāti Raukawa ki te tonga

Iwi are best placed to provide feedback about the cultural values and impacts that may result from the site selection, construction, operation, and maintenance of the new Freight Hub.

KiwiRail and the three iwi agreed that a separate engagement process would be undertaken and the outputs from this process would assist in informing KiwiRail's decisions on the options. KiwiRail also committed to inviting the three iwi to sending representatives to Workshops 2 and 3.

While the three listed iwi groups were formally engaged with the project further consultation will be undertaken with the wider iwi group as the project moves towards the NoR phase.

The following outlines the extent of the rohe of each iwi.

4.1.1 Rangitāne ki Manawatu

Rangitāne ki Manawatu identifies its rohe as extending from the southern bank of the mouth of the Rangitikei River, inland to the Orangipango Trig, in the northeast near Ohingaiti. From there in a straight line to Te Hekenga, following the summit along the Ruahine and Tararua Ranges across to the Taramea Trig. From this point it continues westward to the mouth of the Manawatū River, thence northwards along the coast to the mouth of the Rangitikei river. This is illustrated below.

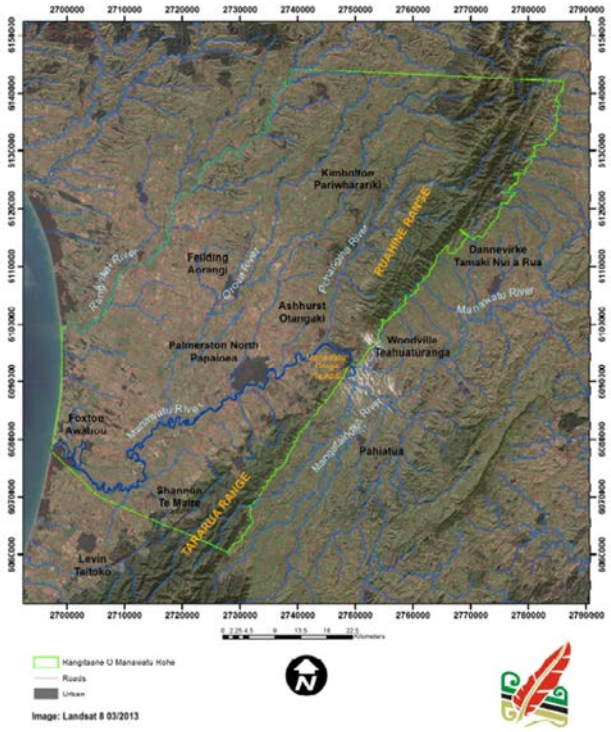


Figure 4-1: Extent of Rangitāne ki Manawatu rohe

4.1.2 Ngāti Kauwhata

Nga Kaitiaki o Ngāti Kauwhata Inc is an iwi authority, mandated to act in the best interests of whanau and Hapū members residing in Feilding, Bunnythorpe and surrounding districts. Ngāti Kauwhata claims mana whenua status and kaitiaki role in regard to the Freight Hub project. The rohe of Ngāti Kauwhata stretches from Umotoi in the north east, to between the river mouths of the Manawatū and Rangitikei Rivers to the west, and south to the convergence of the Oroua and Manawatū Rivers. This is illustrated in Figure 4-2 below.

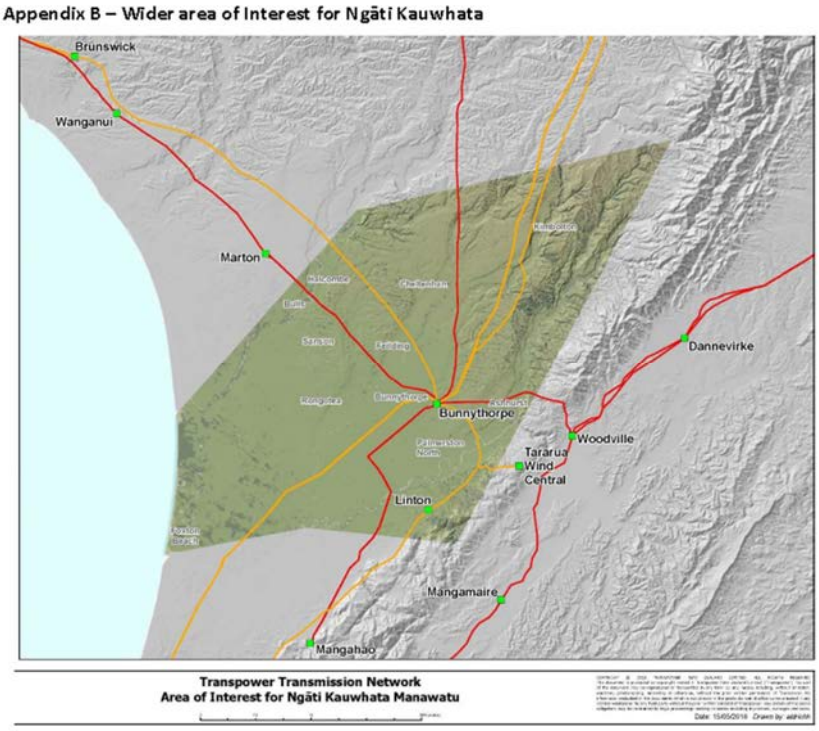


Figure 4-2: Extent of Ngāti Kauwhata wider area of interest

4.1.3 Ngāti Raukawa ki te tonga

Te Rūnanga o Raukawa Inc made up of a governance body of 25 hapū members of Ngāti Raukawa ki te tonga. The rohe extends from the Rangitīkei River, west of Manawatū, to Kukutauaki Stream just north of Waikanae. This is illustrated in Figure 4-3 below.

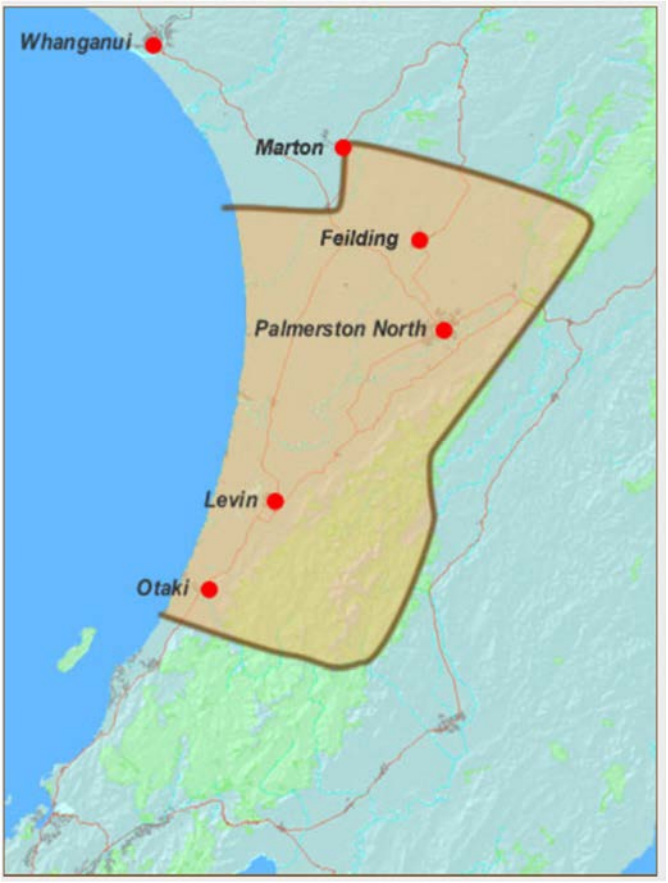


Figure 4-3: Extent of Ngāti Raukawa ki te tonga rohe

5. Long list assessment (Workshop 2)

The Stantec project team developed 9 options for initial assessment as listed in Table 5-1. The areas that were assessed are set out in the table below and shown in Figure 5-1.

- The areas are located along NIMT and outside 'developed' urban PNCC. For the purpose of the MCA, KiwiRail had also developed a potential concept and layout. The concept involved an area of around 120ha with provision for 1,500m long back shunts at each end of the Freight Hub connecting to the NIMT line.
- The concept was used to establish an approximate area of land that could be needed. However, in the first phase of identifying areas along the NIMT rail corridor no specific concept layout was able to be applied to a location because a concept layout had not been confirmed at that time.

Therefore areas 1-9 selected were larger than the expected concept footprint. The exception was the existing site at Palmerston North which is approx. 403,000 m^2 excluding the main line. Some specialists assessed the existing site as it currently stands, while others assessed what the existing site could be with a redeveloped hub.

Table 5-1 Area and Descriptions

Area	Description
Option 1	Bunnythorpe 1: West Side
Option 2	Bunnythorpe 2: East Side
Option 3	Bunnythorpe 3: West Side (Airport)
Option 4	Bunnythorpe 4: East Side
Option 5	Longburn 5: North Side
Option 6	Longburn 6: North West Side
Option 7	Longburn 7: West Side (River)
Option 8	Longburn 8: South East Side
Option 9	Existing KiwiRail Freight Yard in Tremaine Avenue

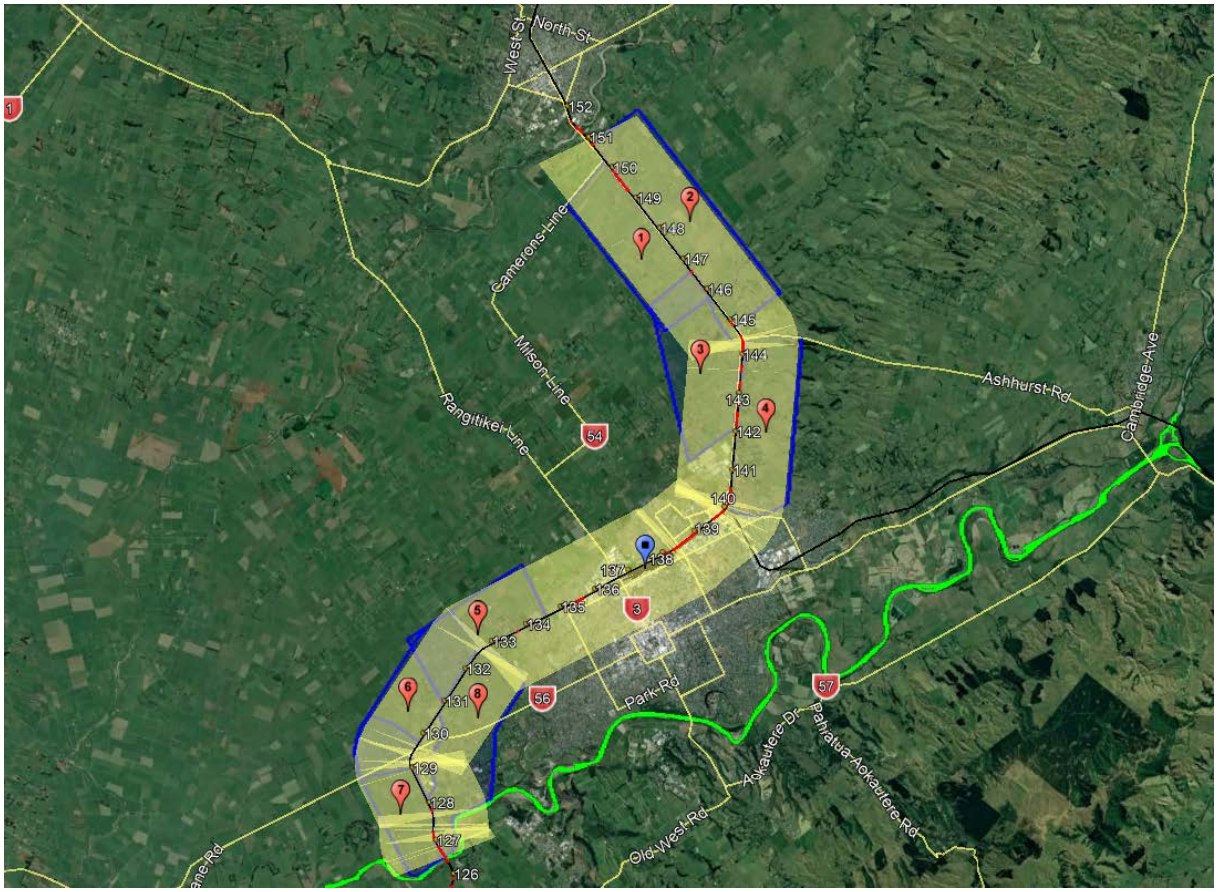


Figure 5-1 Long List areas

5.1 Pre-workshop specialist assessments

5.1.1 Specialists and assessment criteria

At the end of Workshop 1 each of the criterion leaders were identified, and specialists were asked to consider and identify what additional information would they need in terms of the assessment of the 'long list' of options.

In preparation for Workshop 2, the specialists listed in Table 5-2 below carried out desk top constraints and comparative assessments of each of the area options in terms of the criterion they were responsible for.

As KiwiRail had agreed that a separate engagement process would be undertaken with the three iwi a Tangata Whenua Values criterion was not included for assessment.

Table 5-2: Specialists and criteria

Specialist	Criterion
Gonçalo Sintra – support by Simone Hadley	Rail
Jamie Povall - supported by Tom Kerr (stormwater); Ilze Rautenbach (contaminated land); Andy Mott (Geotech)	Engineering degree of difficulty
Simon Beale	Natural environment
Michael Smith	Noise and vibration
Daniel Parker	Heritage and archaeology
Lisa Rimmer	Visual and landscape
Dale Philip	Property degree of difficulty
Andy Mott - supported by Tom Kerr (flooding)	Resilience
Richard Paling	Economic
Dhimantha Ranatunga	Connectivity
Paula Hunter	Strategic fit
April Peckham	Community cohesion

5.1.2 Information provided to specialists

A summary of the information that was provided to the specialists in advance of the workshop to assist them in assessing the options is contained in Appendix 1.

5.1.3 Approach to assessments and scoring

For the assessment of the long list of area options a scoring system with a numerical scale of 1 – 5 was adopted. The approach adopted by the specialists to assessing the area options involved both qualitative and quantitative assessments. Each specialist developed their own methodology for determining their scores and this reflected the nature of the criteria they were applying and their area of expertise. Where criteria comprised a number of elements (sub criteria) and the specialist considered that some elements were more important than others they developed a weighting process as part of the assessment. All specialists were required to provide an overall score for each option.

Each long list criteria to be assessed has been categorised under either Benefits, Impact or Difficulty. Table 5-3 below provides guidance on the categorising and scoring of each criterion.

Table 5-3: Approach to scoring of criteria

Score	Criteria		
	Benefits	**Impact**	**Difficulty**
	• Rail • Economic	• Natural environment • Noise and vibration • Heritage and archaeology • Visual and landscape • Resilience • Connectivity • Strategic fit • Community cohesion	• Engineering degree of difficulty • Property degree of difficulty
1	High Benefits	Low Impact	Low Difficulty
2	Medium High	Medium Low	Medium Low
3	Medium	Medium	Medium
4	Medium Low	Medium High	Medium High
5	Low Benefits	High Impact	High Difficulty

5.2 Purpose of the workshop

The purpose of Workshop 2 was to reduce the long list of area options to a short list of site options for further investigation.

In addition to the specialists listed in Table 5-2 above other Workshop 2 participants included key KiwiRail personnel and representatives from NZ Transport Agency, PNCC, Horizons Regional Council, Manawatū District Council (MDC), Accelerate 25, Ngāti Kauwhata and Rangitanae ki Manawatū.

The workshop was held in Wellington on 25 September 2019.

5.3 Summary of specialist workshop presentations

The following provides a summary of the assessments of the nine area options undertaken by the specialists under each criterion. It includes the specialist's pre-workshop scores for each option area, a summary the main reasons for the scores, any important points from the workshop discussions, and any key outcomes from the discussions.

The specialists' workshop assessments for Workshop 2 are contained in a separate document that is a support document to this report. A summary of each of the workshop assessments is set out in the following sections.

5.3.1 Rail assessment

The table below sets out the rail criterion scores for each of the area options as presented by the rail specialist at the workshop.

Table 5-4: Rail scores for area options

Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
1	1	2	2	3	2	5	5	5

1 = High benefits
2 = Medium high
3 = Medium
4 = Medium low
5 = Low benefits

The following provides a high level summary of the rationale provided by the rail specialists for the scores listed in the above table. It is based on the specialist's assessment for Workshop 2 and the workshop presentations and discussions.

- The area options that scored the best (have the highest benefits) are area options 1 and 2. This is primarily because of both sites can easily connect to the NIMT and can achieve KiwiRail's safety outcomes.
- Area options 3, 4 and 6 had the next best scores. Area option 3 was assessed as having medium to high benefits primarily because of its proximity to potential customers (North East Industrial area). However, a connection to the NIMT line will be required and the northern end of the area is close to Bunnythorpe.
- Area option 4 was assessed as having medium to high benefits primarily because of its proximity to potential customers (North East Industrial area) and connection to the NIMT line is possible. There are however potential safety issues with the number of road / rail crossings required.
- Area option 6 was assessed as having medium to high benefits because of its proximity to the Longburn industrial area and a key client. However, there are safety issues with the number of road / rail crossings required and there are significant infrastructure requirements for electrification.
- Area option 5 was assessed as having medium benefits as because while the NIMT line is well located any connection to it could be problematic. There are also safety issues with the number of road / rail crossings required.

- The area options that scored the worst (have the lowest benefits) are area options 7 and 8 and option 9 which is KiwiRail's existing freight yard. Area option 7 was assessed as having low benefit because of potential impacts on normal train operations, it has limited capacity for growth and significant infrastructure requirements for electrification. Area option 8 was assessed as having low benefits because the connection with the NIMT line will not be linear, potential conflicts with a major customer, limited capacity for growth, major safety concerns and significant infrastructure requirements for electrification.
- Area option 9 (existing site) was assessed as having low benefits because new road connections to the site will be required as the existing connections are constrained, limited capacity to meet growing freight demand (373 million tonnes by 2042) and to increase the capacity to move more goods by rail, constraints on operations from surrounding land uses and safety risks associated with keeping the site operating while redeveloping it.

In the workshop discussions following the rail specialist's presentation, the specialist clarified that option 9 (existing site) was assessed not with its existing footprint but the expanded footprint required to accommodate the new Freight Hub. The specialists also proposed that option 9 (existing site) could be fatal flawed from a rail perspective.

The workshop participants agreed with the specialist that option 9 (existing site) should be fatal flawed from a rail perspective for the reasons put forward by the specialist. The participants also noted that this option scored a 5 in terms of the noise and vibration, visual and landscape and the community cohesion criteria.

5.3.2 Engineering degree of difficulty assessment

The table below sets out the engineering degree of difficulty criterion scores for each of the area options as presented by the engineering specialists at the workshop.

Table 5-5: Engineering degree of difficulty scores for area options

Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
2	3	5	4	1	2	3	4	1

1 = Low difficulty
2 = Medium low
3 = Medium
4 = Medium high
5 = High difficulty

The overall engineering degree of difficulty criterion is broad and is made up from a number of factors which all have a bearing on overall engineering complexity. The factors considered were geotechnical, contamination, drainage and other significant engineering complexities which included road network, power transmission lines and site contours.

The scores reflect the importance placed on the geotechnical and other significant engineering complexity components. The optimum area from an engineering perspective is flat, well drained, with older geological deposits and with no water courses or utilities.

The following provides a high level summary of the rationale provided by the engineering specialists for the scores listed in the above table. It is based on the specialists' assessment for Workshop 2 and the workshop presentations and discussions.

- The area options that were assessed as having the best scores (lowest difficulty) were area options 5 and 9. Area option 5 had a low difficulty score because it is relatively flat and there are no water courses to be diverted. Option 9 which is the existing KiwiRail site had a low difficulty score because the site is already developed.
- Area options 1 and 6 had the next best scores (medium to low difficulty) because area option 1 was relatively flat with no significant engineering issues and because area option 6 is relatively flat and there no water courses to be diverted.

- Area options 2 and 7 were assessed as having medium difficulty because area option 2 contains numerous channels and contaminated land and because of the presence of a local drain / stream and a wetland on area option 7. The presence of channels and gullies increases the scale of earthworks.
- Area options 4 and 8 were assessed as having a medium to high degree of difficulty. This is because of the significant gullies on area option 4 and the recent geology on area option 8. The presence of recent geology creates potential settlement issues and requirements for extensive filling.
- Area option 3 was assessed as having a high degree of difficulty due to the presence of gullies, recent material and major transmission lines.

In the workshop discussions following the engineering specialists' presentation, the specialists confirmed that there were no options that were fatally flawed, that the entire area of each option had been assessed except for option 9 (existing site). Only the current extent of option 9 (existing site) had been assessed and not the additional areas required to accommodate the proposed Hub.

5.3.3 Natural environment assessment

The table below sets out the natural environment criterion scores for each of the area options as presented by the ecological specialist at the workshop.

Table 5-6: Natural environment scores for area options

Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
5	5	5	4	5	5	5	3	N/A

1 = Low impact
2 = Medium low
3 = Medium
4 = Medium high
5 = High impact

The constraints identified by the ecologist from a natural environment perspective were the location of water bodies, indigenous vegetation and wetlands within the area options.

The following provides a high level summary of the rationale provided by the ecological specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 2 and the workshop presentations and discussions.

- Six out of the nine area options had a high impact score. The high scores reflect the significant lengths of local streams affected by the site options. In addition, Option 5 and Option 7 would affect areas of indigenous vegetation and wetland (in the case of Option 7) that are classified as threatened habitats in the Horizons One Plan, Schedule F.
- Area option 1 has a high impact score because Taonui Stream, Whiskey Stream, and tributaries traverse the area and these streams have a combined linear length of approximately 8600 metres.
- Area option 2 has a high impact score because Taonui Stream, Whiskey Stream and Mangaone stream and tributaries travers the area and these streams have a combined linear length of approximately 6100 metres.
- Area option 3 has a high impact score because the Mangaone Stream and tributaries traverse the area and have a combined linear length of approximately 8100 metres.
- Area option 5 has a high impact score because of the existence of a remnant area of indigenous forest that is classified as a threatened habitat type. Whiskey Creek and tributaries traverse the area and have a combined linear length of approximately 6300 metres. The forest remnant represents a high impact constraint and avoidance of this feature would be difficult due to its location.
- Area option 6 has a high impact score because Whiskey Creek and tributaries traverse the area and have a combined linear length of approximately 7500 metres.

- Area option 7 has a high impact score because of the existence of an Oxbow Lake and associated wetland that is classified as threatened and a remnant area of indigenous forest to the north of the Oxbow Lake that is classified as At-risk. Unnamed tributaries of the Manawatu River traverse the area and have a combined linear length of approximately 4700 metres. The presence of an oxbow lake and wetland, remnant forest and a meandering stream collectively represents a high impact constraint. Avoidance of these features could be difficult.
- Area option 4 has a medium to high impact score because at least five small streams which are unnamed tributaries of Mangaone Stream. The combined lineal length of the streams is approximately 3000 metres.
- Area option 8 has a medium impact score because the area is traversed by an unnamed tributary of Manawatu River with a lineal length of approximately 1800 metres.
- Area option 9 (the existing site) was not scored due to the absence of any natural environment feature within the existing site.

As part of the presentation of the natural environment assessment, the ecological specialist recommended to the workshop participants that area option 5 should be fatally flawed. The reason for this recommendation was that the area affected by option 5 contains a large remnant of mature lowland indigenous forest which is classified as a threatened habitat type in Schedule F of the One Plan. It would be not be possible to avoid this feature if the Freight Hub was developed in this location. Because of its threatened status in the One Plan, any development that encroached on this feature would have significant adverse effects.

The workshop participants agreed with the recommendation, the reason for the recommendation and confirmed that area option 5 should be fatally flawed.

The specialist confirmed that the assessment had included a review of the relevant district plans for any notable protected trees and none were identified, and that the entire area of each option has been assessed for constraints.

Representatives Rangitāne and Ngāti Kauwhata noted that they were also considering this criterion.

5.3.4 Noise and vibration assessment

The table below sets out the noise and vibration criterion scores for each of the area options as presented by the noise specialist at the workshop.

Table 5-7: Noise and vibration scores for area options

Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
3	3	4	5	5	4	3	5	5

1 = Low impact
2 = Medium low
3 = Medium
4 = Medium high
5 = High impact

The factors considered by the noise specialist in assessing the area options were number of buildings around the Hub that may be affected by on-site noise, additional off-site rail movements and compatibly with surrounding land uses. The prime consideration addressed by the three factors was operational noise from on-site and off-site activity. The number of buildings and surrounding land uses were the key factors.

The following provides a high level summary of the rationale provided by the noise specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 2 and the workshop presentations and discussions.

- Four out of the nine area options have a high impact score. The best score was a medium impact score that applied to three area options.
- Area options 4, 5, 8 and 9 have a high impact score because of the significant number of affected buildings and proximity to residential areas. Options 5 and 8 have increased train movements in comparison to the other area options.
- Area option 3 has a medium to high impact score because of the higher number of affected buildings and proximity to Bunnythorpe. It has reduced train movements and is located adjacent to an industrial area and Palmerston North airport, which reduced the score from high to medium high.
- Area option 6 has a medium to high impact score because of the higher number of affected buildings due to its proximity to Longburn. It has increased train movements and located in proximity to the Longburn industrial area and future industrial area which reduced the score from high to medium high.
- Area options 1 and 2 have a medium impact score because of the fewer number of affected buildings, a lower density of rural buildings, reduced train movements and being located in a rural area with no significant noise sources.
- Area option 7 has a medium impact score because of the fewer number of affected buildings and opportunities for setbacks from dwellings. It has increased train movements and is located in proximity to the Longburn industrial area and future industrial area.

In the workshop discussions following the noise specialist's presentation, the specialist explained that for the noise assessment of each area an indicative 'core site' had been applied to each area which is approximately 3 km long and 200 m wide from the NIMT line. It was assumed that this footprint will contain most of the main noise sources (accepting there are other noise sources in the wider site).

The specialist confirmed that the noise assessment also covers potential effects from construction that could occur over a lengthy period, that the noise effects will differ with site layout changes and that for option 9 (existing site) only the extent of the existing site was assessed.

The workshop participants queried whether area option 5 should be fatally flawed because of very serious noise effects due to the proximity of a large number of residential properties. The specialist agreed that the Hub would be fundamentally incompatible with such extensive residential areas and that area option 5 should be fatally flawed in terms of noise effects.

- The workshop participants agreed that from a noise perspective area option 5 should be fatally flawed due to the proximity of a large number of residential properties.

5.3.5 Heritage and archaeology assessment

The table below sets out the heritage and archaeology criterion scores for each of the area options as presented by the specialist at the workshop.

Table 5-8: Heritage and archaeology scores for area options

Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
2	3	2	1	1	3	5	5	1

1 = Low impact
2 = Medium low
3 = Medium
4 = Medium high
5 = High impact

The factors considered by the specialist in assessing the area options were potential impact on recorded and unrecorded archaeological sites and impacts heritage buildings and listed sites. The following provides a high level summary of the rationale provided by the specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 2 and the workshop presentations and discussions.

- The northern area options, 1 to 4, score better than the southern options, 5 to 8. This is because there are few known sites inside the northern area options. However, the specialist noted that additional constraints are likely to be identified as other sources of information are incorporated at later stages of the project. In particular, further sites should be expected in the vicinity of Bunnythorpe and at places adjacent to the NIMT line.
- Of the four northern area options, area option 4 was assessed to have the lowest archaeological potential, with no known sites or named streams falling within the area.
- Of the four southern options, area options 7 and 8 have the highest archaeological risk, as these areas are closest to the Manawatu River and include a number of known sites. There is also a very high potential for unknown sites to be encountered in these areas. Options 5 and 6 score much better, though there are some risks for Option 6 around SH 56 and the NIMT line at Longburn where a late nineteenth century settlement was established.
- Area option 9 (existing site) is considered to be the lowest impact option. While there is some archaeological potential, this is likely to have been adversely affected by the existing development and the archaeological values somewhat compromised.

In the workshop discussions following the specialist's presentation, the specialist confirmed that archaeological sites of concern to tangata whenua are likely to be any streams / lakes that have cultural value, and these are expected to be covered under tangata whenua values and not considered under this criterion.

- The workshop participants agreed that there are no fatal flaws associated with the heritage and archaeological criterion and that there were no changes to the scores presented by the specialist.

5.3.6 Visual and landscape assessment

The table below sets out the visual and landscape criterion scores for each of the area options as presented by the specialist at the workshop.

Table 5-9: Visual and lanscape scores for area options

Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
3	3	4	5	4	5	5	5	5

1 = Low impact
2 = Medium low
3 = Medium
4 = Medium high
5 = High impact

The factors considered by the specialist in assessing the area options were impact on natural character, (s6(a) of the RMA) visual impact on surrounding land uses (s7(c)of the RMA), impact on existing character and impact of glare and lighting effects on other land uses. In reaching a final effects score for each area option an "overall judgement" approach was taken by the specialist. None of the sites are located in outstanding natural landscapes or include any outstanding natural feature identified in the Horizon's Regional Policy Statement.

The following provides a high level summary of the rationale provided by the specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 2 and the workshop presentations.

- Five out of the nine area options had a high impact score. The best score was a medium impact score that applied to two area options.
- Area options 1 and 2 scored the best with medium impact scores due to lower visual and character effects, fewer sensitive viewers and the potential opportunity for restoration of the streams in these areas.
- Area option 3 was assessed as having a medium to high impact due to the proximity of a viewing audience at Bunnythorpe, impacts on the character of the surrounding area to the north and east and problems with the fit with existing natural patterns and features.
- Area option 5 was assessed as having a medium to high impact due to its setting alongside existing and proposed residential areas and effects on rural character.
- Area option 4 was assessed as having a high impact due to its rolling landform and proximity to Palmerston North residential areas.
- Area options 6 and 8 were assessed as having a high impact because they cross natural features and a number of collector and main roads and interface with proposed new residential areas. They also have the worst fit with natural and urban patterns.
- Area option 7 was assessed as having a high impact due to its proximity to the Manawatū river, natural oxbow features, and extension across Pioneer Highway. This area has the greatest natural landscape values.
- Area option 9 (existing site) was assessed as having a high impact due to its proximity to, and numbers of, sensitive viewing audiences and the developments likely impact on urban patterns, including street networks, open space areas and contrast with other buildings and structures typical of the central city.

In the workshop discussions following the specialist's presentation, the specialist confirmed that the assessment of option 9 (existing site) was based on the footprint required to accommodate the new Hub.

- The workshop participants agreed that there were no fatal flaws associated with landscape and visual criterion and that there were no changes to the scores presented by the specialist.

5.3.7 Property degree of difficulty assessment

The table below sets out the property degree of difficulty criterion scores for each of the area options as presented by the property specialist at the workshop.

Table 5-10: Property degree of difficulty scores for area options

Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
4	5	4	5	2	1	1	5	N/A

1 = Low difficulty
2 = Medium low
3 = Medium
4 = Medium high
5 = High difficulty

The factors considered by the specialist in assessing the area options were number of property owners affected, presence of Māori Freehold Land, indicative land values and presence of any special purpose land (land that contains an activity that would need to be relocated to an alternative site).

The following provides a high level summary of the rationale provided by the specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 2 and the workshop presentations and discussions.

- Three option areas were assessed as having high difficulty. The best score was low difficulty and that applied to two area options. Area option 2 was assessed as having a high degree of difficulty primarily because of the presence of Māori land. The area also included a number of designated or special use properties.
- Area options 4 and 8 were assessed as having a high degree of difficulty because of the large number of property owners involved, the high indicative land costs and the large number of designated or special use properties within the area.
- Area option 1 was assessed as having a medium to high degree of difficulty primarily because of the presence of Māori land, and because of the number designated or special use properties within the area. It scored slightly better than area option 2 because it had fewer property owners.
- Area option 3 was assessed as having a medium to high degree of difficulty primarily because of the number of property owners involved and because of the number designated or special use properties within the area and indicative land values.
- Area option 5 was assessed as having a low to medium degree of difficulty because of the lower number of landowners involved and the low indicative land values.
- Area options 6 and 7 were assessed as having a low degree of difficulty because of the low number of landowners involved and the low indicative land values. These area options scored better than area option 5 because of the lower number of landowners.

In the workshop discussions following the specialist's presentation, the specialist confirmed that rateable values that were used were across 2 years from 2016 to 2018, roads were excluded from the assessment.

The specialist also confirmed that the existing KiwiRail site was not assessed and the footprint to accommodate the future Hub was not applied to option 9 (existing site). The specialist recommended that option 9 be considered in the detailed site analysis in the next stage of the assessment process[12].

The specialist considered that if the layout for the new Hub could be adjusted to exclude certain high price areas or a smaller layout applied, this would reduce the costs significantly and would have an impact on the scores, particularly for area options 1 and 2.

[12] The specialists for the rail criteria subsequently determined that Option 9 was fatally flawed from a rail perspective and the workshop participants agreed that Option 9 would not be taken forward for further assessment. Accordingly, the property detailed site analysis for Option 9 was not undertaken at the next stage.

5.3.8 Resilience assessment

The table below sets out the resilience criterion scores for each of the area options as presented by the engineering specialist at the workshop.

Table 5-11: Resilience scores for area options

Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
4	3	4	2	3	3	5	4	3

1 = Low impact
2 = Medium low
3 = Medium
4 = Medium high
5 = High impact

The factors considered by the specialist in assessing the area options were liquefaction, seismic risk and regional flooding. With the information currently available it was noted that the liquefaction and seismic risk assessments are similar for each area. Therefore, the focus has been on regional flooding to assist in identifying the differences between the areas.

The following provides a high level summary of the rationale provided by the specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 2 and the workshop presentations and discussions.

- Two area options were assessed as having a high impact. The best score was medium low and only one area option was assessed as this.
- Area option 7 was assessed as having a high impact because potential flooding from the Manawatū River. The Horizons Regional Council's modelling suggests the south end of option area 7 is prone to flooding even in a 1-year Average Recurrence Interval (ARI) event for the Manawatu River.
- Area option 8 was assessed as having a medium to high impact because of potential flooding from the Manawatū River.
- Area options 1 and 3 were assessed as having a medium to high impact primarily due to regional flooding from the Oroua River and Mangaone Stream north of Bunnythorpe in at least the 50-year ARI and because of the confluence of multiple streams.
- Area option 2 was assessed as having a medium impact primarily due to regional flooding from the Oroua River and Mangaone Stream north of Bunnythorpe in at least the 50-year ARI.
- Area option 5 was assessed as having a medium impact because it is subject to flooding from the Mangaone Stream and local streams to the north. The Oroua River flood flows also effect the area in at least a 50-year ARI event.
- Area option 6 was assessed as having a medium impact because it experiences some flooding from local drains but is not so prone to large river flooding.
- Area option 9 was assessed as having a medium impact as it is unlikely to be flooded from major rivers. There is the potential risk of flooding from the Mangaone Stream.
- Area option 4 was assessed as having a medium low impact because of the area has varied topography with multiple through channels and would only be subject to local flooding.

In the workshop discussions following the specialist's presentation, the specialist confirmed that seismic and liquefaction factors had similar scores across all the area options.

The specialist was of the view that area options in proximity to the Manawatū River (area options 7 and 8) will experience flooding and that engineering solutions may not be able to entirely mitigate these impacts in an extreme flood event. The specialist considered that these options could potentially be fatally flawed.

- The workshop agreed that due to the flooding risks associated with area options 7 and 8 they should be fatally flawed.

5.3.9 Economic assessment

The table below sets out the economic criterion scores for each of the area options as presented by the economic specialist at the workshop.

Table 5-12: Economic scores for area options

Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
4	3	2	2	4	4	4	3	4

1= High benefits
2=Medium high
3= Medium
4= Medium low
5= Low benefits

The factors considered by the specialist in assessing the area options were support for existing Freight Yard users, potential for new activity in vicinity of the Hub, proximity to key complementary employment sites, accessibility benefits provided by strategic transport modes and conformance with planning objectives.

The following provides a high level summary of the rationale provided by the specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 2 and the workshop presentations and discussions.

- Six of the nine options scored scores medium to low benefits. The best score was medium to high benefits and two area options (options 3 and 4) were assessed as this.
- Area option 1 was assessed as having medium to low benefits based on being a reasonable location relative to existing and planned transport networks which could help encourage development in north east industrial area and provide a reasonable location for existing key users.
- Area options 5, 6, and 7 were assessed as having medium to low benefits as they were slightly less well located to potential growth areas and existing users than Options 3 and 4.
- Area option 9 (existing site) was assessed as having medium to low benefits because of potential future development around the site could constrain rail activities. Difficulties in longer distance access to and from site via routes such as Tremaine Avenue could also constrain potential for development at the Hub.
- Option 8 was assessed as having medium benefits as it is reasonably well located in relation to some potential Hub users but more remote from other major users and main centres of activity within the city.
- Area option 2 was assessed as having medium benefits for similar reasons to area option 1 but scored better due to its closer location to the city.
- Area options 3 and 4 were assessed as having medium to high benefits because they are well located in relation to existing Freight Yard users, provide good connectivity into the city, provide focus for development in the north east industrial area and link well with the current and proposed transport network.

In the workshop discussions following the specialist's presentation, the specialist confirmed that the inclusion of accessibility benefits provided by strategic transport modes and conformance with planning objectives in this criterion was not overlapping with the connectivity and strategic fit criterion as these factors were considered from an economic perspective.

- The workshop participants agreed that there were no fatal flaws associated with this criterion and there were no changes to the scores presented.

5.3.10 Connectivity assessment

The table below sets out the connectivity criterion scores for each of the area options as presented by the transport engineering specialist at the workshop.

Table 5-13: Connectivity scores for area options

Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
3	4	4	3	3	3	3	4	3

1 = Low impact
2 = Medium low
3 = Medium
4 = Medium high
5 = High impact

The factors considered by the specialist in assessing the area options were impacts and ability to integrate with other modes (rail, road, walking and cycling, air) and ability to connect to the proposed road network hierarchy. In the assessment the specialist placed greater weight on the integration with other modes than the ability to connect to the proposed road network.

The following provides a high level summary of the rationale provided by the specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 2 and the workshop presentations and discussions.

Seven of the options were assessed as having medium impacts and two were assessed as having medium to high impacts.

- Area option 2 was assessed as having medium to high impact as it has no direct access to a state highway and no direct connection to the PNCC proposed future ring road. It could impact on up to nine roads, the Taonui airfield and the Te Araroa Trail. It is located some distance from the Palmerston North airport.
- Area option 3 was assessed as having medium to high impact as it has poor existing strategic links and could potentially impact on over eleven roads and the Te Araroa Trail. However, it is located close to the airport and aligns to the proposed future road hierarchy.
- Area option 8 was assessed as having medium to high impacts impact as it will impact on the Longburn to Palmerston North Shared Path and potential to impact on eight roads. It is also located over 10km from the Palmerston North airport. However, it has good potential to connect with the proposed road network.
- Area option 1 was assessed as having medium impact as it has potential to directly connect to SH54 (arterial) and Waughs Road (primary collector). However, it will impact on potentially impact on five roads and is located some distance from the Palmerston North Airport
- Area option 4 was assessed as having medium impact as it could potentially impact on twelve roads and the Te Araroa Trail. However, it is located close to the airport and has good potential to connect with the proposed network.
- Area options 5 and 6 were assessed as having medium impact primarily because they have good potential to connect with the proposed networks. Area option 6 is located over 10km from the airport. Both options have no direct impacts on dedicated walking and cycling routes.
- Area option 7 was assessed as having medium impact as it has direct access to SH 54, potentially only impacts on four roads, and some potential to connect with the proposed network. However, it is located over 10km from the airport.
- Area option 9 (existing site) was assessed as having medium impact because while it has good existing strategic links, it will have impacts in existing high-risk intersections and corridors and no direct connections to the proposed future strategic road network.

In the workshop discussions following the specialist's presentation, the specialist confirmed that the future ring road considered in the Palmerston North Integrated Transport Improvements (PNITI) project is a very important consideration, but the NZ Transport Agency is still going through the options assessment process and there is no confirmed location.

The workshop participants questioned the weighting the specialist had proposed and decided that equal weighting should be placed on the two factors assessed by the specialist. These factors being impacts and ability to integrate with other modes (rail, road, walking and cycling, air) and ability to connect to the proposed road network hierarchy.

The specialist was asked to apply the weighting preferred by the workshop participants, rescore the options and report back on any changes to the option scores after the workshop.

5.3.11 Strategic fit assessment

The table below sets out the strategic fit criterion scores for each of the area options as presented by the planning specialist at the workshop.

Table 5-14: Strategic fit scores for area options

Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
3	3	3	2	3	3	4	4	3

1 = High alignment
2 = Medium high
3 = Medium
4 = Medium low
5 = Low alignment

The planning specialist assessed how well each of the area options aligned with the various national, regional, city and district strategies, policies and plans. The analysis of these documents identified three common themes of relevance to the development of a new Freight Hub and against which the options were assessed. These themes were spatial directions for future growth, efficiency, integration and connectivity.

The scores for the economic and connectivity criteria informed the scoring of the alignment with the strategies, policies and plans for connectivity, efficiency and integration.

The following provides a high level summary of the rationale provided by the specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 2 and the workshop presentations and discussions.

- Area option 6 and 7 were assessed as having a medium to low alignment due to the distance from Palmerston North airport, proximity to future residential development and only some potential to connect to the future road network.
- Area option 8 was assessed as having a medium to low alignment primarily because of the potential to compromise planned future residential development.
- Area options 1 and 2 were assessed as having medium alignment because of their reasonable proximity to the north east industrial area and Palmerston North airport. However, they have limited direct connectivity as identified in the connectivity criteria assessment.
- Area option 3 was assessed as having medium alignment because of its close proximity to the north east industrial area and Palmerston North airport. However, it was assessed as having a medium to high degree of difficulty in as identified in connectivity criteria assessment.
- Area option 4 was assessed as having medium to high alignment because of its close proximity to the north east industrial area and Palmerston North airport and it scored well in terms of connecting to future road network hierarchy.
- Area option 5 was assessed as having medium alignment because of the location within Palmerston North and good potential to connect to the future road network.

- Area option 9 (existing site) was assessed as having medium alignment because of its location within Palmerston North and because it does not contain any areas of high productive land (Class 1, 2 or 3 under the Land Use Capability (LUC) system).

In the workshop discussions following the specialist's presentation, the planning specialist was of the opinion that the score for area option 8 should be increased to 5 and fatally flawed because it could significantly compromise the future planned residential expansion of the city.

Workshop participants considered the scores for area options 3 and 9 should be discussed further with PNCC planners in terms of the strategic planning for the central city and north east industrial area. The planning specialist agreed to do this and also check the implications of the changes to the connectivity scores as they have informed the assessment.

The workshop participants agreed that area option 8 should be fatally flawed because it could significantly compromise the future residential expansion of the city.

5.3.12 Community cohesion assessment

The table below sets out the community cohesion criterion scores for each of the area options as presented by the planning specialist at the workshop.

Table 5-15: Community cohesion scores for area options

Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
4	4	3	3	3	2	3	4	5

1 = Low impact
2 = Medium low
3 = Medium
4 = Medium high
5 = High impact

The factors considered by the planning specialist in assessing the area options were impact on Impact on social and recreational activities and other land uses, impact on designated land and severance of community facilities.

The following provides a high level summary of the rationale provided by the specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 2 and the workshop presentations and discussions.

- Area option 9 was assessed as having a high impact because the larger footprint of the concept plan would include a portion of the Palmerston North Hospital, schools, churches and water supply.
- Area option 1 was assessed as having a medium to high impact primarily because of the presence of a school and marae.
- Area option 2 was assessed as having a medium to high impact primarily because of the significant impact on the Feilding airfield and associated unique employment and recreational benefits that are assumed cannot be avoided.
- Area option 8 was assessed as having a medium to high impact because of the presence of the school, MediaWorks AM Transmitter Mast, numerous businesses, and severance issues.
- Area option 3 was assessed as having a medium impact as it is located adjacent to an existing industrial area. It does however contain two PNCC designated sites within the middle portion of the site, associated with water and waste services, and the Aokutere water supply[13].

[13] The designation for the Aokutere water supply was later identified as an error in the District Plan. The designation is for the Bunnythorpe Cemetery.

- Area option 4 was assessed as having a medium impact as a designation for a Youth Justice Residence is located within the south-western corner of the area which may be difficult to relocate. The area contains reserves and recreation areas.
- Area option 5 was assessed as having a medium impact due to the presence of several community facilities and a piggery. The piggery may be difficult to relocate.
- Area option 7 was assessed as having a medium impact primarily because of the designation for the Chorus NZ Longburn Repeater Station for radiocommunication, telecommunication and ancillary purposes.
- Area option 6 was assessed as having a medium to low impact as it is assumed social and community facilities within Longburn will still be able to be accessed.

In the workshop discussions following the specialist's presentation, the specialist confirmed that if the site layout could be moved around the area a number of the constraints could be avoided.

The workshop participants queried whether the score for area option 8 should be changed from 4 to 5. The planning specialist was of the view that as area option 8 has the potential to sever Longburn from Palmerston North City it should be rescored from 4 to 5.

The workshop agreed that the score for area option 8 should be changed from medium high impact (4) to high impact (5) and that there are no fatal flaws associated with this criterion.

5.4 Tangata whenua

Representatives from Rangitāne ki Manawatū and Ngāti Kauwhata attended and participated in the workshop. Following feedback received from tangata whenua, an assessment and scoring of tangata whenua values was not undertaken as part of the workshop. KiwiRail committed to supporting this as a separate exercise with each of the three iwi Rangitāne ki Manawatū, Ngāti Kauwhata and Ngāti Raukawa ki te tonga. The outputs from these processes informed the option evaluation process.

5.5 Summary of workshop outcomes

5.5.1 MCA scores

As set out above at the workshop each of the specialists presented their assessments, were questioned, and scores agreed or queried by workshop participants. The connectivity and strategic fit specialists were asked to do further work and review their scores after the workshops (which is discussed in further detail below).

The fatal flaws that eliminated four of the area options were proposed either by the specialists or the workshop participants where an option had scored a 5. The proposed fatal flaw was then discussed and confirmed. Following the workshop, the relevant specialist formally recorded the decision to fatally flaw the option and the reasons by way of a written addendum to the assessment report. The following table sets out the scores of the area options against the various criteria as agreed at the workshop and the criteria scores that need further review because of matters raised in the workshop.

Table 5-16: MCA scores agreed at Workshop 2

Criterion	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
Rail	1	1	2	4	3	2	5	5	~~5~~ FF
Engineering degree of difficulty	2	3	5	4	1	2	3	4	1
Natural environment	5	5	5	4	~~5~~ FF	5	5	3	1
Noise and vibration	3	3	4	5	~~5~~ FF	4	3	5	5

Criterion	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
Heritage and archaeology	2	3	2	1	1	3	5	5	1
Visual and landscape	3	3	4	5	4	5	5	5	5
Property degree of difficulty	4	5	4	5	2	1	1	5	N/A
Resilience	4	3	4	2	3	3	~~5~~ FF	4 FF	3
Economic	4	3	2	2	4	4	4	3	4
Connectivity	3	4	3	2	3	3	3	4	3
Strategic fit	3	3	3	2	3	3	4	~~4~~ FF	3
Community cohesion	4	4	3	3	3	2	3	~~4~~ 5	5

	Criteria scores requiring further review post workshop
FF	Fatal Flaw
~~4~~ 5	Change to score as agreed at the workshop

5.5.2 Fatal flaws

The table below sets out the area options that were fatally flawed in the workshop, what the fatal flaws were, the reasons for them including information from the specialist addendum reports relating to fatal flaws.

Table 5-17: Fatal flaw area options agreed at the workshop

Area option	Fatal flaws	Reasons
5	• Loss of significant indigenous forest remnant • Significant noise issues	At Workshop 2 as part of the presentation of the natural environment assessment, the ecological specialist recommended to the workshop participants that area option 5 should be fatally flawed. The reason for this recommendation was that the area affected by option 5 contained a large remnant of mature lowland indigenous forest which is classified as a threatened habitat type in Schedule F of the One Plan. It would be not be possible to avoid this feature if the Freight Hub was developed in this location. Because of its threatened status in the One Plan, any development that encroached on this feature would have significant adverse effects. PNCC attendees at Workshop 2 noted that the eastern end of area option 5 had a kahikatea forest remnant that according to aerial photos had changed little for decades. The remnant was identified as being the most significant example of terrestrial ecology in all of the areas being assessed. Following the workshop PNCC provided an ecological assessment that confirmed the 3.6 hectare fenced area was a significant representative example of the former Manawatu -Oroua floodplain kahikatea - ecosystem and one of the few remaining examples in the Manawatu. This information confirmed the decision to fatal flaw this are option.

Area option	Fatal flaws	Reasons
		Area option 5 was also fatally flawed by Workshop 2 participants because of very serious noise issues. These are due to the proximity of an extensive residential area and the inability to significantly distance the key elements of the Hub from the residential areas, due to the alignment of the existing railway.
7	• Significant flooding risks that cannot be suitably mitigated	The flooding data modelled by Horizons Regional Council was reviewed by the resilience specialists. It was identified that the southern end of area option 7 is prone to flooding from the Manawatu River, even in a 1-year ARI event. The 200-year ARI indicates extensive flooding as illustrated by the 2004 flood event. Engineering solutions are unlikely to mitigate the risk of an extreme flood event at these locations. The workshop participants agreed that area option 7 should be fatally flawed.
8	• Significant flooding risks that cannot be suitably mitigated • Significantly compromises the future residential expansion of Palmerston North City	At Workshop 2 as part of the presentation of the Strategic Fit assessment, the planning specialist proposed that area option 8 should be fatally flawed. The reasons for this recommendation were: • The area is within or in close proximity to two sustainable growth nodes which are identified by PNCC for future greenfield residential development. • The area is affected by two plan changes to rezone land residential. • The development of the proposed Freight Hub within Option 8 could severely compromise this area for future residential development. • Potential to create significant reverse sensitivity issues if the proposed Freight Hub was established in this location prior to the residential development. PNCC representatives confirmed Council's plans for residential expansion in the west of the City and that two significant plan changes had been notified to rezone land in and close to area option 8. The flooding risks are the are similar to those associated with area option 7. Engineering solutions may not entirely mitigate an extreme flood event at these locations. The workshop participants agreed that area option 8 should be fatally flawed.
9	• Will not achieve the freight capacity and operational rail outcome required	The rail specialists identified significant operational constraints particularly because of surrounding sensitive land uses which have the potential to inhibit 24/7 operations as well as a dense land development pattern surrounding the site which restricts opportunities for new or larger freight operators to locate nearby, and safety risks associated with keeping the site operating while redeveloping it.

5.5.3 Workshop criteria weightings

Following the scoring of the area options, the workshop participants discussed the importance of the assessment criteria and agreed a weighting for each criterion. The table below sets out the agreed weightings for each of the criteria and the reasons for the weightings.

Table 5-18: Criteria weightings agreed at the workshop

Criteria	Workshop weighting	Reasons
Rail	10	The rail criterion was considered to be of very high importance as the Freight Hub must be able to deliver the outcomes required by KiwiRail from an operational, customer and safety perspective and meet the project objectives.
Engineering degree of difficulty	4	The engineering degree of difficulty criterion was considered to be of relatively low importance due to the limitations of the information currently available. It was recognised that this weighting may change as more information is collected.
Natural environment	8	The natural environment criterion was considered to be of relatively high importance because it addresses a matter in Part 2 of the RMA.
Noise and vibration	7	The noise and vibration was considered to be of medium to high importance because of the impact on surrounding sensitive land uses.
Heritage and archaeology	8	The heritage and archaeology criterion was considered to be of relatively high importance because it addresses a matter in Part 2 of the RMA.
Visual and landscape	5	The visual and landscape criterion was considered to be of medium importance because of the potential for visual impacts on the surrounding area noting that there are no outstanding or significant landscapes and features identified in the Horizon's Regional Policy Statement.
Property degree of difficulty	4	The property degree of difficulty criterion was considered to be of relatively low importance due to the limitations of the information currently available and the potential for the site layout to be adjusted to exclude certain high price areas or a smaller area applied.
Resilience	9	The resilience criterion was considered to be of high importance as it addresses natural hazards which is a matter in Part 2 of the RMA.
Economic	10	The economic criterion was considered to be of very high importance as the Freight Hub must be able to be economically viable and meet the project objectives.
Connectivity	8	The connectivity criterion was considered to be of relatively high importance because for the Freight Hub to operate effectively it must be able to efficiently connect with the surrounding transport network.
Strategic fit	8	The strategic criterion was considered to be of relatively high importance because the

Criteria	Workshop weighting	Reasons
		outcomes sought in the regional and local strategies need to be delivered.
Community cohesion	8	The community cohesion criterion was considered to be of relatively high importance because of the potential impact the Freight Hub could have in terms of community severance in some locations.
Tangata whenua values	10	The tangata whenua criterion was considered to be of very high importance because of the partnership relationship and the criterion addresses matters in Part 2 of the RMA.

Although the tangata whenua values criterion was not assessed and scored at the workshop, all participants agreed that a weighting of 10 should be applied to the criterion for the reasons set out above.

5.6 Post workshop activities

5.6.1 Further assessments

As agreed by the workshop participants further assessment and review of scores were required for both the connectivity, and strategic fit criteria assessments. The specialist updates have been recorded in the addendums to their Workshop 2 assessment reports. These addendums have been prepared in conjunction with the preparation of this report to ensure the process that has been followed and the reassessments and opinions of the specialists have been accurately recorded. The addendums are contained in a separate document that is a support document to this report.

5.6.1.1 Connectivity

During Workshop 2, there was discussion as to which weighting system should be applied to the factors considered by the specialist in undertaking the connectivity assessment. The factors considered were:

- on impacts and ability to integrate with other modes; and
- the ability to connect to the proposed road network hierarchy.
- Weighting system A, which had a higher weighting towards impacts and ability to integrate with other modes was preferred by the specialist prior to the workshop. Weighting system B applied an equal weighting to both factors. Weighting system B was adopted as the preferred weighting system as a result of the workshop discussion, on the basis that the proposed Hub is part of a long-term vision and therefore future connectivity should have an equal weighting with existing impacts.
- Following the workshop the specialist applied weighting system B to the option scores which resulted in revised scores for area options 3 and 4. Changes to the "ability to connect to the proposed network hierarchy" criteria based on workshop also resulted in the score for area option 2 being adjusted to reflect that while there was no direct connection to the proposed future network, the site was still in close proximity to key strategic links and existing hub areas.
- This further assessment resulted in the following changes to the connectivity scores. Area option 2 changed from a 4 to a 3, area option 3 also changed from a 4 to a 3 and area option 4 changed from a 3 to a 2.

5.6.1.2 Strategic fit

At Workshop 2, some of the workshop participants questioned the strategic fit assessments for area option 9 (existing KiwiRail site) and area option 3. It was agreed at the workshop that the planning specialist would talk further with the Palmerston North City Council (PNCC) planners about the long term plans for the City in order to assist with the reassessing the scores for area options 3 and 9.

Discussions were subsequently held with the PNCC planners and they provided additional information on the PNCC Integrated Plan and industrial land use planning.

The reassessment of option 9 concluded that the establishment of a large freight hub on the fringe of the city centre that would significantly encroach into residential areas was not consistent with the PNCC's long term plans for the City and the Integrated Plan. The score for the strategic direction element of the strategic fit assessment for option 9 was changed from a 2 to a 3. However, this did not change the overall score for this option.

The reassessment of area option 3 confirmed that the North East Industrial Zone has for some time been PNCC's preferred location for a multimodal freight hub and that score of 2 for the spatial direction element of the strategic fit assessment for this option was the correct score.

The strategic fit assessment relied on the connectivity criterion scores for the connectivity element of the assessment. At workshop 2 participants raised some questions relating to the weighting used in the connectivity assessment for area options 2, 3 and 4. The scores for these options were subsequently revised by the transport specialist. Consequently, the connectivity element of the strategic fit scores needed to be changed to align with the revised connectivity scores. However, these changes did not alter the overall strategic fit scores for the area options.

5.6.2 Application of workshop weightings

The weighting for each of the criterion agreed by the workshop participants was applied by the Stantec project team to the area options and the results of this are shown on the graph below. As can be seen from the graph in Figure 5-2 there is very little difference between area options 1 to 6.

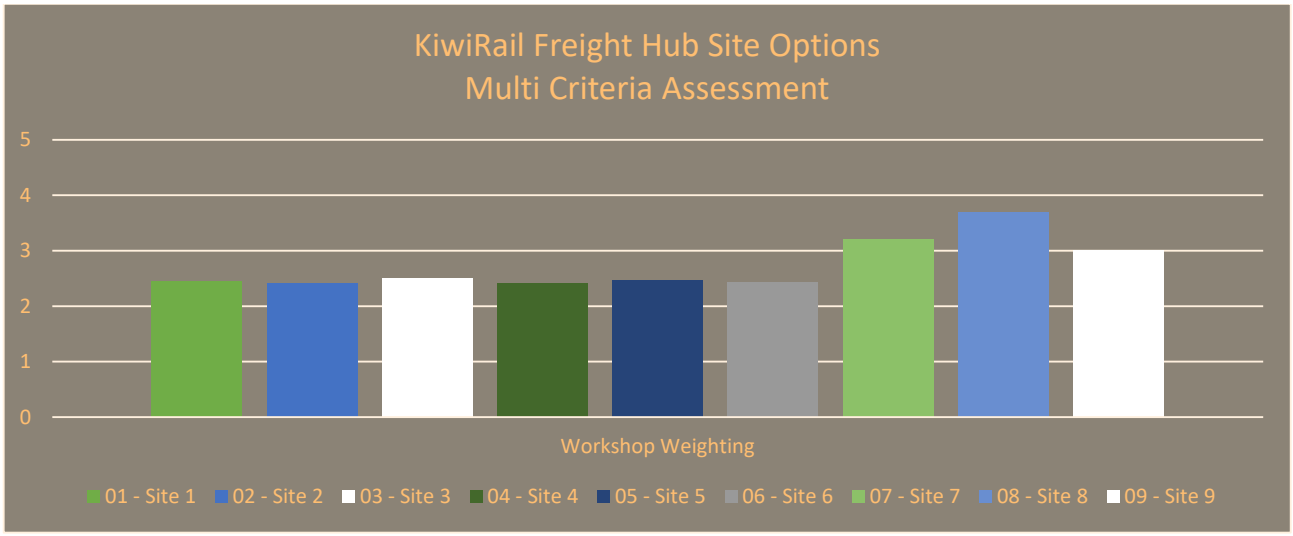


Figure 5-2: Workshop weighted scores

5.6.3 Sensitivity testing

As discussed in section 2.2.7 of this report the sensitivity tests involved a range of weighting systems including RMA Part 2; Rail objectives, benefits, impacts, difficultly and quadruple bottom line (QBL) well-beings. The following table sets out the weightings systems that were applied by Stantec to the criteria for the sensitivity testing.

Table 5-19: Sensitivity testing weighting systems

Criterion	Workshop Weighting	RMA Part 2	QBL: Social	QBL: Natural Environmental	QBL: Economic	Rail Objective Focussed	No Weighting	Benefit	Impact	Difficulty
Engineering Degree of Difficulty	4	0	0	0	8	2	1	0	0	10
Rail	10	4	0	0	10	10	1	10	0	5
Connectivity	8	4	8	0	8	6	1	5	10	5
Economic	10	10	4	0	10	10	1	10	0	0
Resilience - Hazards	9	10	0	6	8	8	1	0	10	5
Heritage	8	10	6	2	0	6	1	0	10	0
Natural Environment	8	10	4	10	0	8	1	0	10	5
Property Degree of Difficulty	4	0	6	0	8	4	1	0	0	10
Noise and Vibration	7	10	10	2	2	6	1	0	10	5
Visual and Landscape Impacts	5	8	8	8	2	3	1	0	10	0
Community Cohesion	8	10	10	2	2	8	1	0	10	0
Strategic Fit	8	8	4	4	8	5	1	5	10	0

The following explains the weightings systems that were applied by Stantec to the criteria for the sensitivity testing.

RMA Part 2: A high weighting (10) was applied to the heritage and archaeology, natural environment, noise and vibration, economic, resilience, and community cohesion criteria as these address matters in Part 2 of the RMA. A slightly lower weighting (8) was applied to visual and landscape criterion because there are no outstanding or significant landscapes and features affected and to the strategic fit criterion because the strategies assessed were not prepared under the RMA. No weighting was applied to property and engineering degree of difficulty because these criteria do not relate to RMA matters.

Rail objectives focus: A high weighting (10) was applied to the rail and economic criteria as these criteria directly relate to the project objectives. A slightly lower weighting (8) was applied to the resilience criterion because, whilst important, the rail and economic criteria were the main objectives. A weighting of 8 was applied to the community cohesion and natural environment criteria because these elements form part of KiwiRail's company values and a weighting of 6 was applied to connectivity, archaeology and heritage, natural environment, noise and vibration and strategic fit, and a low weighting (2) was applied to engineering degree of difficulty and property degree of difficulty because these matters do not form part of the project objectives.

QBL: Economic: A high weighting (10) was applied to the rail and economic criteria as these criteria directly relate to economic outcomes. A slightly lower weighting (8) was applied to criteria that include significant cost elements (engineering degree of difficulty, connectivity, property degree of difficulty, resilience). Strategic fit also had a weighting of 8 because the strategies assessed included strong economic elements. The noise and vibration, visual and landscape and community cohesions criteria had a low weighting (2). The natural environment and heritage criteria had no weighting.

QBL: Natural Environment: A high weighting (10) was applied to the natural environment criteria. A slightly lower weighting (8) was applied to the visual and landscape criteria because there are no outstanding or significant landscapes and features affected. A weighting of 6 was applied to the resilience criterion to reflect the natural hazard elements this criterion addresses. The noise and vibration, heritage and community cohesion criteria had a low weighting (2) as these primarily relate to the built environment and have only a very minor relationship with the natural environment. The rail, engineering degree of difficulty, economic and connectivity criteria had no weighting (0).

QBL: Social: A high weighting (10) was applied to the noise and vibration and community cohesion criteria as these criteria directly address social impacts. A slightly lower weighting (8) was applied to the connectivity, landscape and visual criteria as these criteria also comprises significant social elements. A relatively medium weighting (6) was applied to the property degree of difficulty and heritage and archaeology as these criteria some social elements. A relatively low weighting (4) was applied to the natural environment, economic and strategic fit categories because they have limited impact of social outcomes. The rail and engineering degree of difficulty criteria had no weighting as these criteria do not relate to social matters.

Benefit: The criteria that were scored as benefits (rail and economic) were included in this attribute and given a weighting of 10 and connectivity was given a 5. None of the others were weighted as none of the other criteria relate to benefits.

Difficulty: The criteria that were scored as difficulties (engineering degree of difficulty and property degree of difficulty) were included in this attribute and given a weighting of 10. There are potential difficulties in managing the impact of the Freight Hub on the natural environment and noise and vibration and therefore these were given a weighting of 5. None of the others were weighted.

Impact: The criteria that were scored as impacts (connectivity, resilience, archaeology and heritage, natural environment, noise and vibration, visual and landscape, community cohesion and strategic fit) were included in this attribute and given a weighting of 10.

The QBL Cultural element was excluded from the sensitivity tests as KiwiRail has carried out a separate engagement process with tangata whenua which has been run in parallel to this MCA process. The outputs from the tangata whenua engagement process will be considered by KiwiRail in conjunction with the outputs from the MCA process.

The results of applying the different weightings (including no weighting) from Table 5-19 above to the scores for each site are set out as rankings in Table 5-20 below.

Table 5-20: Sensitivity testing rankings

Area Option	Workshop Weighting	RMA Part 2	QBL: Social	QBL: Natural Environmental	QBL: Economic	Rail Objective Focus	No Weighting	Difficulty	Benefit	Impact		AVERAGE RANK	RANK
Option 1	4	4	2	3	4	5	3	3	3	2		3.3	3
Option 2	2	2	6	1	3	2	4	5	1	2		2.8	1
Option 3	6	3	2	5	6	4	6	7	1	5		4.5	6
Option 4	1	1	5	2	5	3	5	7	3	1		3.3	3
Option 5	5	5	2	4	2	6	1	2	6	4		3.7	5
Option 6	3	6	1	6	1	1	1	1	5	6		3.1	2
Option 7	8	8	7	8	7	8	8	4	8	8		7.4	8
Option 8	9	9	9	9	9	9	9	9	9	9		9.0	9
Option 9	7	7	8	7	8	7	7	6	7	7		7.1	7

The results from the sensitivity testing set out above indicated that there are two distinct groupings of the area options these being:

- Area options 1 to 6 with little difference between them with a ranking range from 3.1 to 4.5; and
- Area options 7 to 9 with a ranking range from 7.1 to 9.0.
- The results from the sensitivity testing which rank area options 7, 8 and 9 as the numerical highest (worse) are consistent with the decision by participants in Workshop 2 to fatally flaw these three area options.

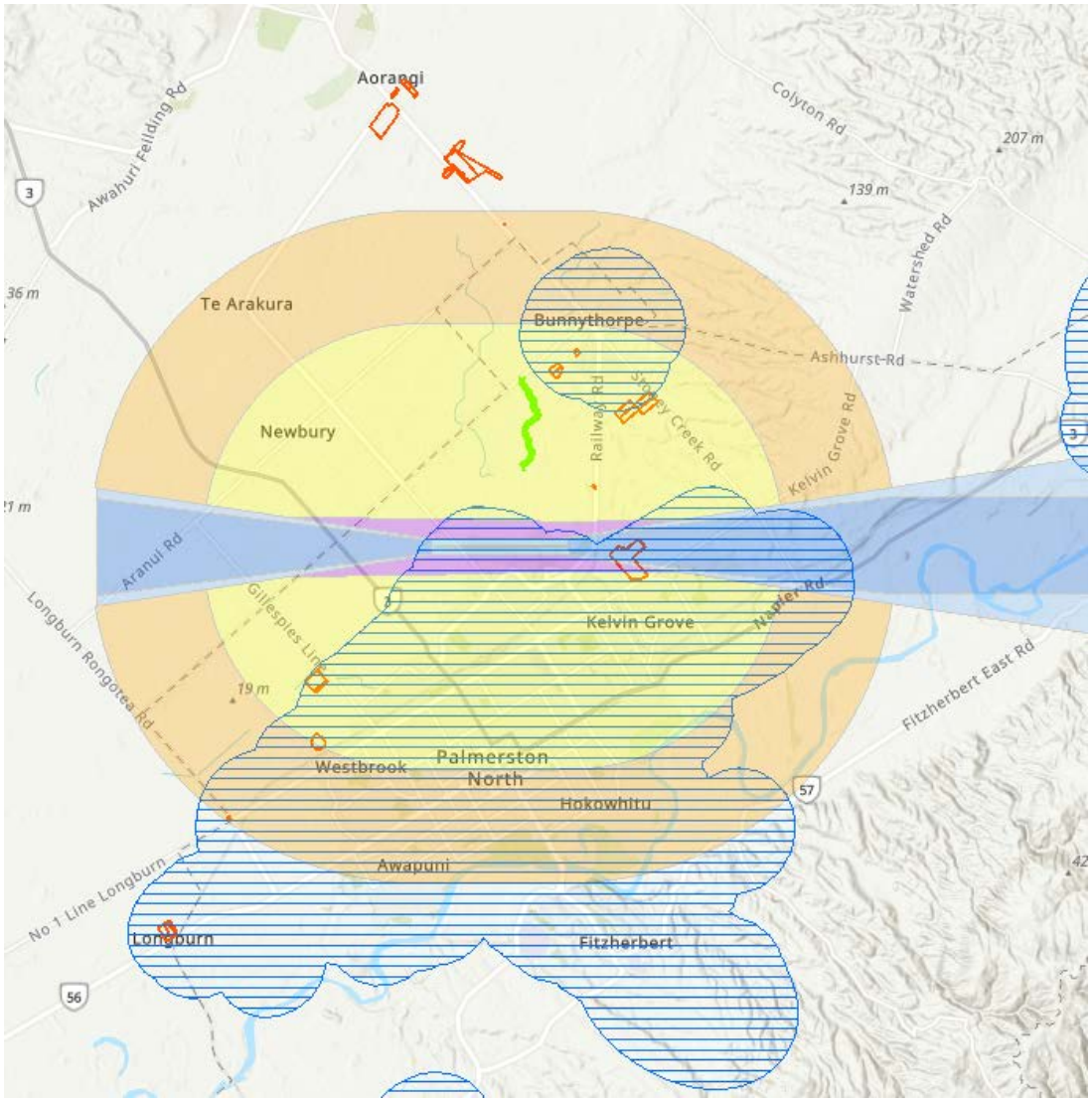
5.6.4 Further refinement of area options

The workshop exercise highlighted the presence of several constraints / sensitive sites that the specialists considered should be avoided, where possible. These included important social and physical infrastructure such as Fielding airfield, water bores, schools, reserves, community hall and cemetery, and other sensitive land and activities such as Maori freehold land, areas of ecological values (remnant forest) and the presence of existing noise sensitive receivers.

While the fatal flaws consideration had eliminated area options 7, 8 and 9, the specialists identified that in relation to area options 5 and 6 there were constraints on the edges of these options such as the remnant forest at the eastern end of area option 5 and SH 56 and the Longburn Community Hall at the southern end of area option 6. Rather than eliminate both these southern options the unconstrained portions of area options 5 and 6 were combined into a revised area option 5.

In relation to the other remaining areas (options 1 to 4) as identified at the workshop, the project team considered that a Freight Hub could potentially fit around the identified constraints as they were generally located in discrete locations either at the corners or edges of the areas.

The workshop participants agreed that there would be benefit in mapping the constraints and then applying the likely master plan layout in the most feasible location from a rail operations perspective while avoiding where possible the constraints. The specialists were asked to provide updated information on the location of constraints following the workshop. The important social and physical infrastructure and remnant forest and a noise buffer associated with the presence of existing noise sensitive receiver constraints were mapped. Figure 5-3 below shows the constraints. The area in blue hatching is the area where constraints related to noise levels received by sensitive residential receivers were identified.



Key to Constraints

- Noise Buffer
- Social/physical infrastructure/remnant forest
- Floodway designation
- Airport height restrictions

Figure 5-3: Constraints

The Freight Hub layouts for five area options (1, 2, 3, 4 and 5 (combined 5 and 6)) were developed. For areas that were sufficiently large or there were constraints / sensitive sites to be avoided different layouts were also provided.

Nine layouts as listed in the table below were developed (which was subsequently reduced to seven layouts) and provided to the specialists for assessment and to review the scores they had previously applied.

Table 5-21: Refined area option and layout descriptions

Option	Refined area option and layout description
Option 1	Two layouts were assessed in this area: • 1a - located in the northern end of area option 1 • 1b - located to the southern end of area option 1 closer to residential areas of Bunnythorpe
Option 2	Two layouts were assessed in this area option: • 2a - located in the northern end of area option 2. • 2b - located to the southern end of area option 2 closer to residential areas of Bunnythorpe
Option 3	• Located in area option 3 and includes part of the undeveloped North East Industrial Zone to the south and extends north to Bunnythorpe. • Three layouts were originally developed for option area 3, however only one layout was taken forward for assessment because it was the most optimal from a rail operation perspective and the other two options did not meet the project objectives.
Option 4	• Located in area option 4 and moved to the north away from the Palmerston North airport flight path
Option 5	• Combination of options area 5 and 6 that have avoided key constraints in these option areas.

The location of the five options in relation to the mapped constraints is shown below in Figure 5-4.

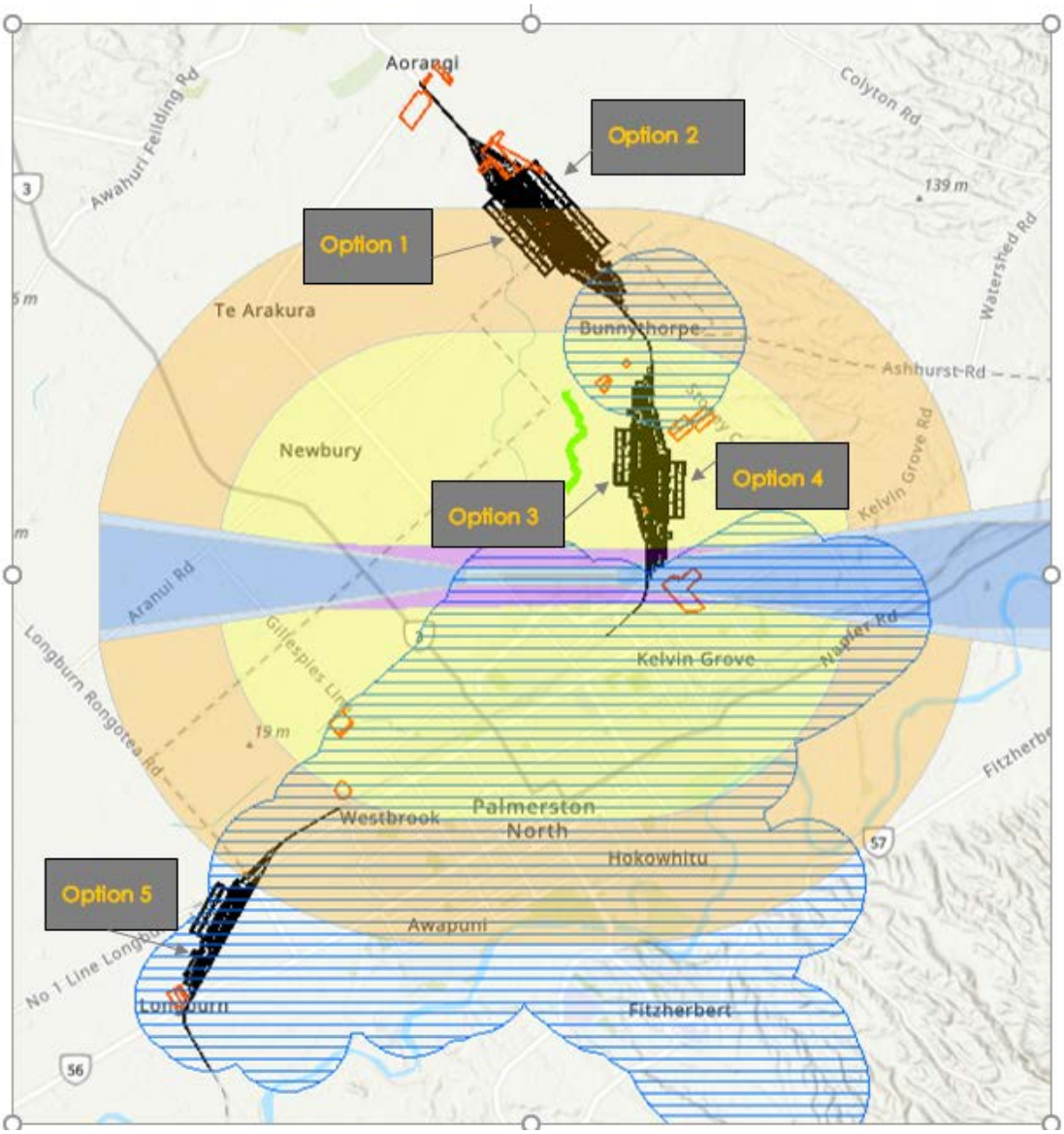


Figure 5-4: Location of Options 1 to 5

5.6.5 Specialist assessment and scoring of refined options

Following the refinement of the area options each of the specialists were asked to assess and score the refined options.

The following provides a summary of the assessments and scores of each specialist. The specialist assessments have been recorded in the addendums to their Workshop 2 assessment reports. These addendums have been prepared in conjunction with the preparation of this report to ensure the process that has been followed and the assessments and opinions of the specialists have been recorded. The addendums are contained in a separate document that is a support document to this report.

As described above three layout options were originally developed by the Stantec and KiwiRail project team for option area 3 (options 3a, 3b and 3c). The project team then decided not to take Options 3a and 3b forward for assessment because they did not meet the project objectives and were sub optimal from a rail operational perspective. However, some specialists had already assessed all three of the layout options, which is why some of the specialist assessments in the addendums include options 3a, 3b and 3c while other assessments only relate to layout option 3(c).

5.6.5.1 Rail

The following table sets out the rail assessment and scoring for each of the site options.

Table 5-22: Rail assessment and scoring

Site Option	Score	Assessment
Option 1a	1	No change to rail criteria score
Option 1b	1	No change to rail criteria score
Option 2a	1	No change to rail criteria score
Option 2b	1	No change to rail criteria score
Option 3c	2	No change to rail criteria score
Option 4	4	No change to rail criteria score
Option 5	2	No change to rail criteria score compared to (former) area option number 6, as the location of site option 5 largely mirrors that of area option 6 in the original assessment at workshop 2.

Even though the site options locations were reassessed with the overlay, these more detailed Hub layouts did not change the previous evaluation scores.

5.6.5.2 Engineering degree of difficulty

The following table sets out the engineering degree of difficulty assessment and scoring for each of the site options.

Table 5-23: Engineering degree of difficulty assessment and scoring

Site Option	Score	Assessment
Option 1a	4	• Smaller area and lack of gullies • Other engineering complexity was increased due to primarily transmission line issues and site contours.
Option 1b	3	• Smaller area and lack of gullies • Other engineering complexity was increased due to roading impacts and site contours
Option 2a	4	• No gullies • Contains a known HAIL site and impact of airport contaminants • Drainage effects less significant due to the reduced site • Other engineering complexity was increased due to major implications for the roading network.
Option 2b	4	• Other engineering complexity was fairly consistent with the previous assessment
Option 3c	3	• Reduction in drainage complexity • Other engineering complexity was reduced due to no significant concerns with transmission lines or site contours, though the roading impacts were considered highly complex.
Option 4	3	• No change to geotechnical score • Other engineering complexity was fairly consistent with the previous assessment
Option 5	1	• No change to geotechnical score • Other engineering complexity was fairly consistent with the previous assessment stage (no significant complexity issues with roading, transmission lines or site contours)

In terms of the engineering degree of difficulty assessment, option 5 is considered to be significantly less complex than the other sites and therefore warrants a score of 1 due to the margin of difference. Options 1b, 3c and 4 all perform very similarly and so are scored 3, with the remaining options scored a 4 due to greater levels of complexity.

5.6.5.3 Natural environment

The following table sets out the natural environment assessment and scoring for each of the site options.

Table 5-24: Natural environment assessment and scoring

Site Option	Score	Assessment (Lineal length of stream affected)	Streams affected
Option 1a	3	1500 metres	Mangaone Stream tributaries
Option 1b	3	1100 metres	Mangaone Stream tributaries
Option 2a	2	600 metres	Taonui Stream (270 metres) Mangaone Stream tributary (640 metres)
Option 2b	3	1150 metres	Mangaone Stream (800 metres) Mangaone Stream tributary (350 metres)
Option 3c	3	1950 metres	Mangaone Stream tributaries
Option 4	3	1100 metres	Mangaone Stream tributaries
Option 5	4	2200 metres	Whiskey Creek tributaries

The scores provided in the table for the options are lower than the scores provided in the initial assessment dated 18 September 2019. These scores reflect shorter lineal lengths of the affected streams based on more refined Hub layouts.

5.6.5.4 Noise and vibration

The following table sets out the noise and vibration assessment and scoring for each of the site options.

Table 5-25: Noise and vibration assessment and scoring

Site Option	Score	Assessment
Option 1a	3	This site is located approximately in the position of the core site previously assumed for the Workshop 2 assessment of area option 1. Therefore, the same factors/considerations apply as set out in the Workshop 2 noise and vibration assessment and the same score has been maintained.
Option 1b	4	This site is located closer to residential areas of Bunnythorpe than the core site previously assumed in the Workshop 2 assessment of area option 1. As there are more houses potentially affected by noise the score reflects a higher impact in terms of noise.
Option 2a	3	This site is located approximately in the position of the core site previously assumed in the Workshop 2 assessment of area option 2. Therefore, the same factors/considerations apply as set out in the Workshop 2 noise and vibration assessment and the same score has been maintained.
Option 2b	4	This site is located closer to residential areas of Bunnythorpe than the core site previously assumed in the Workshop 2 assessment of area option 2. As there are more houses potentially affected the score reflects a higher impact in terms of noise.
Option 3c	5	This site is located closer to residential areas of Bunnythorpe and other residential properties than the core site previously assumed in the Workshop 2 assessment of area option 3. As there are more key noise sources in the indicative site layout near houses there is likely to be a high noise impact and the score has been changed accordingly from that set out in the Workshop 2 noise and vibration assessment to have a higher impact in terms of noise.
Option 4	5	This site is located closer to the residential areas to the south than the previously assumed core site for area option 4 assessed for Workshop 2. Regardless, for the reasons set out in the Workshop 2 noise and vibration assessment the score was previously 5 so this has been maintained.
Option 5	4	This site is located in the position previously assumed for the core site in the Workshop 2 assessment of area option 6. Therefore, the same factors/considerations apply as set out in the Workshop 2 noise and vibration assessment for Option 6 and that score has been applied.

In general, the further assessment of the refined options has resulted in the same scores for noise and vibration as previously set out in the Workshop 2 noise and vibration assessment. This is due to the previous assessment being based on 'core sites' that largely align with the new site layouts. However, there are three new site layouts (1b, 2b and 3c) which have been found to have higher noise impacts because they are closer to residential areas of Bunnythorpe. The two options which score the best are 1a and 2a as they are furthest from residential areas.

5.6.5.5 Heritage and archaeology

The following table sets out the heritage and archaeology assessment and scoring for each of the site options.

Table 5-26 Heritage and archaeology assessment and scoring

Site Option	Score	Assessment
Option 1a	1	Negligible impact in high risk areas around named streams and high impact in medium and low potential areas. Identified constraints are: • 3 x named streams (Makahika, Mangaone and Taonui) • 2 x 19th century roads • 1 x NIMT Railway
Option 1b	1	Low impact in high risk areas around named streams and high impact in medium and low potential areas. Identified constraints are: • 3 x named streams (Makahika, Mangaone and Taonui) • 2 x 19th century roads • 1 x NIMT Railway
Option 2a	1	Low impact in high risk areas around named streams and high impact in low potential areas. Identified constraints are: • 3 x named streams (Makahika, Mangaone and Taonui) • 3 x 19th century roads • 1 x NIMT Railway
Option 2b	3	Low impact in medium risk areas and high impact in high potential areas around named streams. Identified constraints are: • 4 x named streams (Makahika, Mangaone, Taonui and Waitokatoka) • 4 x 19th century roads • 1 x NIMT Railway
Option 3c	1	Negligible impact in high risk areas and high impact in medium and low potential areas. Identified constraints are: • 6 x 19th century roads • 1 x named stream (Mangaone) • 1 x NIMT Railway
Option 4	1	Negligible impact in high risk areas and high impact in low potential areas. Identified constraints are: • 5 x 19th century roads • 1 x NIMT Railway
Option 5	3	Low impact in high potential areas, but two 19th century buildings adjacent to SH 56 overpass will be affected. High impact in medium potential areas. Minor changes to design could result in this option receiving a lower score. Identified constraints are: • 2 x 19th century buildings/structures • 3 x 19th century roads • 1 x named stream (Mangaone) • 1 x NIMT Railway • 1 x Foxton-Palmerston North Tramway

Applying the master plan concept to each of the site options enabled scoring to be refined to a finer grained level of analysis where the relative impacts to zones of low, medium or high archaeological potential could be more accurately evaluated as well as the identification of specific sites likely to be adversely affected.

Most option scores improved as a result of this refined assessment, predominantly due to the confirmation of reduced effects in higher risk areas surrounding rivers and streams. There was no change to scoring for option 2b due to confirmation of high impacts in the high potential zone surrounding the Makahika, Mangaone and Waitokatoka streams. The score for option 5 was changed from 1 to 3 as this option was refined from the original assessment to create a new site 5 (as explained above). The new option 5 included parts of a high potential zone and specific sites at Longburn that were originally part of option 6 and therefore the revised option 5 has a higher impact.

5.6.5.6 Visual and landscape

The following table sets out the visual and landscape assessment and scoring for each of the site options.

Table 5-27: Visual and landscape assessment and scoring

Site Option	Score	Assessment
Option 1a	3	• Preferred compared to Option 1b. Avoids Taonui stream and Whiskey Creek. • Provides some separation from marae and Homestead. • Larger scale utility type buildings at the aerodrome reduce impact. • Provides increased separation from rural residential properties and peri urban areas of Bunnythorpe (compared to Option 1b) and distinct separation from future growth areas in Fielding. • Direct impact on Taonui school will have adverse effects on character and amenity.
Option 1b	4	• Avoids Taonui stream and Whiskey Creek. • Provides greater separation from marae (no pull back track) and Homestead which contribute to character and amenity. • Potential for visual effects increased - reduced separation from Bunnythorpe rural residential and peri urban areas (compared to Option 1a). • Grade separation through Bunnythorpe will have additional adverse character and visual effects. • Larger scale utility type buildings adjacent, at aerodrome, are a mitigating factor. • Avoids immediate site of Taonui school and provides some separation to Aerodrome, however, character and amenity impacts will remain, and are likely to be highly adverse as the Hub will introduce a large-scale infrastructure development in close proximity.
Option 2a	3	• Preferred compared to Option 2b. Avoids Taonui stream. • Provides some separation from urupā excluding pull back track. • Potential for visual effects increased compared to Option 1a due to number of rural residential properties directly adjacent although has clear separation from planned growth at Fielding. • Will have a direct impact on the Aerodrome and directly adjacent Taonui school which contribute to character. • Avoids grade separation through Bunnythorpe which is a mitigating factor.
Option 2b	4	• Avoids Taonui stream. • Provides greater separation from urupā (including pull back track) and aerodrome may be able to be retained although likely character and visual effects. • Potential for visual effects increased (compared to Option 2a) due to numbers of rural residential and residential properties in proximity/interface with Bunnythorpe. • Grade separation through Bunnythorpe will have additional adverse character and visual effects. • Increased separation from Taonui School, Homestead and marae, a mitigating factor.
Option 3c	4	• Avoids Mangaone Steam. • Improved fit with existing urban patterns- alignment with the road network. • Proposed grade separation through Bunnythorpe will have increased visual and character effects. • Increased potential for visual effects due to rural residential and residential proximity – sensitive audience. • Proximity to existing industrial centre a mitigating factor.

Site Option	Score	Assessment
Option 4	5	• Hub components cut across existing natural and urban landscape patterns including rolling landforms and numerous streams. • Existing rural residential patterns help distinguish - separate- urban centres of Bunnythorpe and Palmerston North. • Hub would be located in close proximity to a large number of residential properties. • Proximity to Bunnythorpe and confirmed road crossings -disruption to urban patterns increases potential for character and visual effects. • Proximity to existing industrial centre a mitigating factor.
Option 5	5	Poor fit with natural and urban landscape patterns with Hub components cutting across a number of collector and main roads. Potential visual and character effects confirmed by requirements for rail overpass along with proximity to sensitive audience - future residential area, community hall, and existing rural residential land use.

Option 1a, 2a and 3c are preferred compared to the other options. Options 1a and 2a are assessed as having medium (3) overall landscape and visual effects and option 3 medium to High (4) effects due to the potential for greater visual, lighting and character effects. These additional effects relate to the proposed grade separated interchange, proximity to larger numbers of sensitive viewing audience and greater impact on existing urban landscape patterns, including existing road and cadastral boundaries.

5.6.5.7 Property degree of difficulty

The following table sets out the property degree of difficulty assessment and scoring for each of the site options.

Table 5-28: Property degree of difficulty assessment and scoring

Site Option	Score	Assessment
Option 1a	4	• Medium/Low Number of landowners affected. • Low total Rating Value for the land. • Site score is impacted by the site including Taionui School.
Option 1b	3	• Medium Number of landowners affected. • Low total Rating Value for the land. • Site score is better than option 1a as it avoids Taionui School.
Option 2a	2	• Low Number of landowners affected. • Low total Rating Value for the land. • Site score is impacted by the site including Feilding Aerodrome
Option 2b	1	• Low Number of landowners affected. • Low total Rating Value for the land. • Site score is better than option 2a as it avoids the Feilding Aerodrome.
Option 3c	5*	• High number of landowners affected. • High total Rating Value for the land. • Site adjusted to avoid Food Stuffs Property. • *The Final Score would change from 5 to 4 if the site is moved slightly to avoid the Council Water Bore.
Option 4	4	• High number of landowners affected. • High total Rating Value for the land.
Option 5	4*	• High number of landowners affected. • Medium total Rating Value for the land. *The Final Score would change from 4 to 2 if the site is moved slightly to avoid the Longburn community Centre and Power Substation.

The property criteria found 3 sites which are deemed to have the lowest degree of difficulty. These three sites are:

Option 1b

Option 2b

Option 5

5.6.5.8 Resilience

The following table sets out the resilience assessment and scoring for each of the site options.

Table 5-29: Resilience assessment and scoring

Site Option	Score	Assessment
Option 1a	4	• Geology: Q1a = 25%, Q3a=75% (gullies cover 20% of the site). • Seismic risk for Fielding z=0.37. • Regional flooding from Oroua River and Mangaone Stream in at least the 50yr ARI event. Also potential flooding from Taonui Stream.
Option 1b	4	• Geology: Q1a = 35%, Q3a=65% (gullies cover 5% of the site). • Seismic risk for Fielding z=0.3.7 • Regional flooding from Oroua River and Mangaone Stream in at least the 50yr ARI event. Also potential flooding from Taonui Stream.
Option 2a	3	• Geology: Q1a = 10%, Q3a=90%. • Seismic risk for Fielding z=0.3.7 • Potential flooding from Oroua River, Mangaone Stream, and Taonui Stream north of Bunnythorpe in at least the 50yr ARI event. However, current modelling does not show significant flooding.
Option 2b	4	• Geology: Q1a = 50%, Q3a=50% (gullies cover 10% of the site). • Seismic risk for Fielding z=0.37. • Potential flooding from Oroua River, modelled flooding from Mangaone. • Stream north of Bunnythorpe in at least the 50yr ARI event. Also potential flooding from Taonui Stream.
Option 3c	4	• Geology: Q1a = 15%, Q3a=85% (gullies cover 50% of the site). • Seismic risk for Palmerston North z=0.38. • Modelled flooding from local streams draining from the east under Railway Rd and ponding from Mangaone Stream and Oroua River flooding in 50yr event.
Option 4	2	• Geology: Q1a = 10%, Q3a=90% (gullies cover 90% of the site). • Seismic risk for Palmerston North z=0.38. • Varied topography with multiple through channels, would only be subject to flooding from local streams east of Railway Rd. Modelled flooding shown for 200yr event.
Option 5	3	• Geology: Q1a = 100%. • Seismic risk for Palmerston North z=0.38. • Not so prone to large river flooding. Does not fall into modelled Oroua, Mangaone, and Manawatu 200yr ARI flooded areas. • However, it is affected by local flooding in 200yr event.

Seismic and liquefaction conditions do not vary significantly between options (particularly between Options 1 to 4). Within any particular option, it is likely that ground conditions will vary significantly and so at this stage of the assessment only high level comments can be made. Flooding has a more significant effect on the options and shorter return period.

5.6.5.9 Economic

The following table sets out the economic assessment and scoring for each of the site options.

Table 5-30: Economic assessment and scoring

Site Option	Score	Assessment
Option 1a	4 Same for both options	Reasonable location relative to existing and planned transport networks which could help encourage development in NE industrial area and provide a reasonable location for existing key users.
Option 1b		
Option 2a	3 Same for both options	Similar to Option 1 but benefits from closer location to the city.
Option 2b		
Option 3c	2	Well located in relation to existing Freight Yard users, provides good connectivity into the city and provides focus for development in the north-east industrial area. This would be in line with PNCC proposals and the location would link well with current and proposed transport network.
Option 4	2	Well located in relation to existing Freight Yard users, provides good connectivity into the city and provides focus for development in the north-east industrial area. This would be in line with PNCC proposals and the location would link well with current and proposed transport network.
Option 5	4	Less well located to potential growth areas and existing users.

On economic and development grounds options 3 and 4 provide the best results.

5.6.5.10 Connectivity

The following table sets out the connectivity assessment and scoring for each of the site options.

Table 5-31: Connectivity assessment and scoring

Site Option	Score	Assessment
Option 1a	3	This site is located approximately within the envelope previously assumed for the assessment of area option 1. Impacts on Taonui school, but potentially 1 less local road is impacted compared to 1B. No change to original area score overall.
Option 1b	3	This site is located approximately within the envelope previously assumed for the assessment of area option 1. No impacts on Taonui school, but impacts an additional local road compared to 1A. No change to original score overall, but 1B preferred over 1A due to school impacts.
Option 2a	4	The site is located in closer proximity to Taonui Road / Airport than previously assumed for area option 2. This results in more significant impacts on Taonui Road and Taonui Airport, increasing the previous score overall (3 to 4).
Option 2b	3	This site is located approximately in the position previously assumed for the assessment of area option 2. Significant impacts on Taonui Road, Taonui Airport. No change to original score overall.
Option 3c	2	Site 3 has significantly lower connectivity impacts than previously assumed for area option 3 due to the location being parallel to the existing NIMT rather than offline (reduction in both the number and extent of potential network impacts). Reduction in the original score overall (3 to 2).
Option 4	2	This site is located approximately in the position previously assumed for the assessment of area option 4. No change to original score overall.
Option 5	3	This site is located approximately in the position previously assumed for the assessment of area option 6. No change to original score overall.

The assessment of the refined options shows that options 3c and 4 had the best score from a connectivity perspective, with both options scoring a 2.

5.6.5.11 Strategic fit

The following table sets out the strategic fit assessment and scoring for each of the site options.

Table 5-32: Strategic fit assessment and scoring

Site Option	Score	Assessment
Option 1a	3	The site options have been scored the same as when the assessment of the broader areas was undertaken for workshop 2. This is because the strategic fit assessment relates to the general location of an area and does not rely on specific site details.
Option 1b	3	
Option 2a	3	
Option 2b	3	
Option 3c	2	
Option 4	2	
Option 5	3	

Options 3c and 4 scored best primarily because of their proximity to the North East Industrial Zone and the Palmerston North Airport.

5.6.5.12 Community cohesion

The following table sets out the community cohesion assessment and scoring for each of the site options.

Table 5-33: Community cohesion assessment and scoring

Site Option	Score	Assessment
Option 1a	4	• Taonui School contained within the site. Severance for community. Longer travelling distances and times. Implications for other schools in the area. • MDC Utility Asset – potential to be relocated. • Mainly rural. • Opposite Feilding Aerodrome – potential height restrictions
Option 1b	3	• Close to Taonui School. Implications for the designation and drop of school roll. • MDC Utility Asset – potential to be relocated. • Mainly rural.
Option 2a	4	• Feilding aerodrome and associated activities and facilities. • contained within the site. Provides training and employment and is the base for a range of aviation sport related activities. Not easily relocated. Severance. • MDC Utility Asset – potential to be relocated. • Mainly rural. • Some businesses that could be easily relocated.
Option 2b	2	• Close to Feilding Aerodrome – possible height restrictions. • MDC Utility Asset – potential to be relocated. • Rural • Some businesses that could be easily relocated.
Option 3c	1	• PCC Water Bore southern end of site – assume impacts on • this resource will be avoided. • Rural • Good connectivity to industries (Ezibuy etc) and Palmerston North Airport. • Potential height restrictions associated with the Palmerston North Airport.
Option 4	2	• Close proximity (and potentially contains) higher density • lifestyle blocks • Good connectivity to other pocket of industries (Ezibuy etc) and Palmerston North Airport. • Potential height restrictions associated with the Palmerston North Airport. • Contains a number of businesses that may be easily relocated.
Option 5	2	• Rural • Close to community hall – assume will be located outside that site. • Contains MDC Designation D111; Powerco Ltd Electricity Substation – assume could be located outside of the KiwiRail site or provide access to the substation. • Severance of Longburn community to northern communities i.e. Rongotea.

5.6.6 Summary of scores of refined options

The following table provides a summary of all the specialist scores of the refined options.

Table 5-34: Summary of specilist scores of refined options

Criterion	Option 1a	Option 1b	Option 2a	Option 2b	Option 3	Option 4	Option 5
Rail	1	1	1	1	2	4	2
Engineering degree of difficulty	4	3	4	4	3	3	2
Natural environment	3	3	2	3	3	3	4
Noise and vibration	3	4	3	4	5	5	4
Heritage and archaeology	1	1	1	3	1	1	3
Visual and landscape	3	4	3	4	4	5	5
Property degree of difficulty	4	3	2	1	5[1]	4	4[2]
Resilience	4	4	3	4	4	2	3
Economic	4	4	3	3	2	2	4
Connectivity	3	3	4	3	2	2	3
Strategic fit	3	3	3	3	2	2	3
Community cohesion	4	3	4	2	1	2	2
Tangata Whenua values							

1 The Final Score would change from 5 to 4 if the site is moved slightly to avoid the Council Water Bore. Note this change was not made to the score.

2 The Final Score would change from 4 to 2 if the site is moved slightly to avoid the Longburn community Centre and Power Substation. Note this change was not made to the score.

5.6.7 Weighting and sensitivity testing

To ensure consistency with the process followed in assessing the original area options the Stantec project team applied the weightings agreed by the participants in Workshop 2 and the same sensitivity tests applied to the original area options to the refined options. The results of this analysis are set out below in Table 5-35 and this shows that options 2a, 3c and 4 ranked the best and were therefore short listed for further assessment.

Table 5-35: Sensitivity testing rankings for refined options

RANKING												
Site Option	Workshop Weighting	RMA Part 2	QBL: Social	QBL: Natural Environmental	QBL: Economic	Rail Objectives Focussed	No Weighting	Difficulty	Benefit	Impact	**AVERAGE RANK**	**Rank**
Option 1a	6	4	5	2	7	6	6	4	4	6	5.0	5
Option 1b	5	5	6	5	6	5	5	4	5	4	5.0	5
Option 2a	2	2	2	1	3	2	1	3	3	2	2.1	1
Option 2b	4	5	2	6	1	4	3	2	6	1	3.4	4
Option 3c	1	1	1	4	4	1	2	1	1	7	2.3	2
Option 4	3	3	4	2	2	3	3	4	1	5	3.0	3
Option 5	7	7	7	7	5	7	7	7	7	3	6.4	7

All of the options identified for short listing are located to the north-east of Palmerston North City and in the vicinity of Bunnythorpe. Option 2a had the best "raw score" i.e. no workshop weighting was applied. Option 3c had the best ranking when the workshop weighting was applied and also ranked the best when the sensitivity tests for Part 2, QBL social, rail objectives and benefits and impact were applied. Option 2a ranked well when the workshop weighting was applied and best when the sensitivity test for QBL natural environment was applied. Option 5 was the worst performing option, followed by options 1a and 1b.

5.7 Confirmed shortlist

Feedback from consultation with tangata whenua was also sought on the refined area options. As a result of this feedback, it was identified that:

There was a general preference by both Ngāti Kauwhata and Rangitane for site locations to the North east of the City. For example, based on density of known and likely sites of significance to Rangitane, areas to the north west were preferred, compared to sites closer to the river. This was also the position for scores for sites based on demographic data. The evaluation for 'Te Ao Turoa' addressed environmental attributes such as freshwater, landscape and indigenous land cover and resulted in sites 3 and 4 being preferred compared to other options to the north and south.

- Sites 1a and 1b, 2b and combined 5/6 were not preferred; and
- Sites 2a, 3c and 4 should be further investigated.

KiwiRail confirmed that Sites 2a, 3c and 4 should be shortlisted and taken forward for further investigation and assessment. For the short list assessment, the sites were renamed Sites 2, 3 and 4.

6. Short list assessment (Workshop 3)

6.1 Pre-workshop specialist assessments

6.1.1 Specialists and assessment criteria

In preparation for the workshop the specialists listed in the table below carried out a desk top comparative assessment of each of the site options in terms of the criterion they were responsible for.

Table 6-1 Specialists and criteria

Specialist	Criteria
Gonçalo Sintra	Rail
Jamie Povall - supported by Tom Kerr (stormwater); Ilze Rautenbach (contaminated land); Andy Mott (Geotech)	Engineering degree of difficulty Cost
Simon Beale	Natural environment
Stephen Chiles	Noise and vibration
Daniel Parker	Heritage and archaeology
Lisa Rimmer	Visual and landscape
Yvonne Evans	Property degree of difficulty
Andy Mott - supported by Tom Kerr (flooding)	Resilience
Richard Paling	Economic
Dhimantha Ranatunga	Connectivity
Paula Hunter	Strategic fit
April Peckham	Community cohesion
Tangata Whenua -	As per Workshop 2, KiwiRail carried out a separate engagement process with iwi. Iwi were also invited to attend the workshops and contribute to the MCA.

6.2 Description of the sites assessed

The specialists were provided with the following information on the sites to be assessed.

6.2.1 Site 2

Site 2 is located on the eastern side of the NIMT line and is shown in Figure 6-1 below. The extent of the Hub runs from Taonui Road to the north with back shunts running between the existing line and the site from Cameron Line to Bunnythorpe in the south. Campbell Road will need to be closed and traffic will need to use Waugh Road. The location of the site means that the Fielding Aerodrome is significantly affected. Transpower lines run across the southern end of the site.

Figure 6-1 Location of Site 2

6.2.2 Site 3

Site 3 is located to the south west of Bunnythorpe and is shown in Figure 6-2 below. The Hub extends from south of Maple Street, across Cleverly Line, Part of Te Ngaio Road and as far as Roberts Line to the south. Richardson Road is affected by the location of the Hub due to the position of the NIMT on the eastern side of Railway Road. A significant section of Railway Road will also be affected. The northern back shunt would run through Bunnythorpe past the Kairanga- Bunnythorpe Road / Dixons Line intersection and the southern back shunt would run as far as Settlers Line to the south both within the NIMT designated corridor.

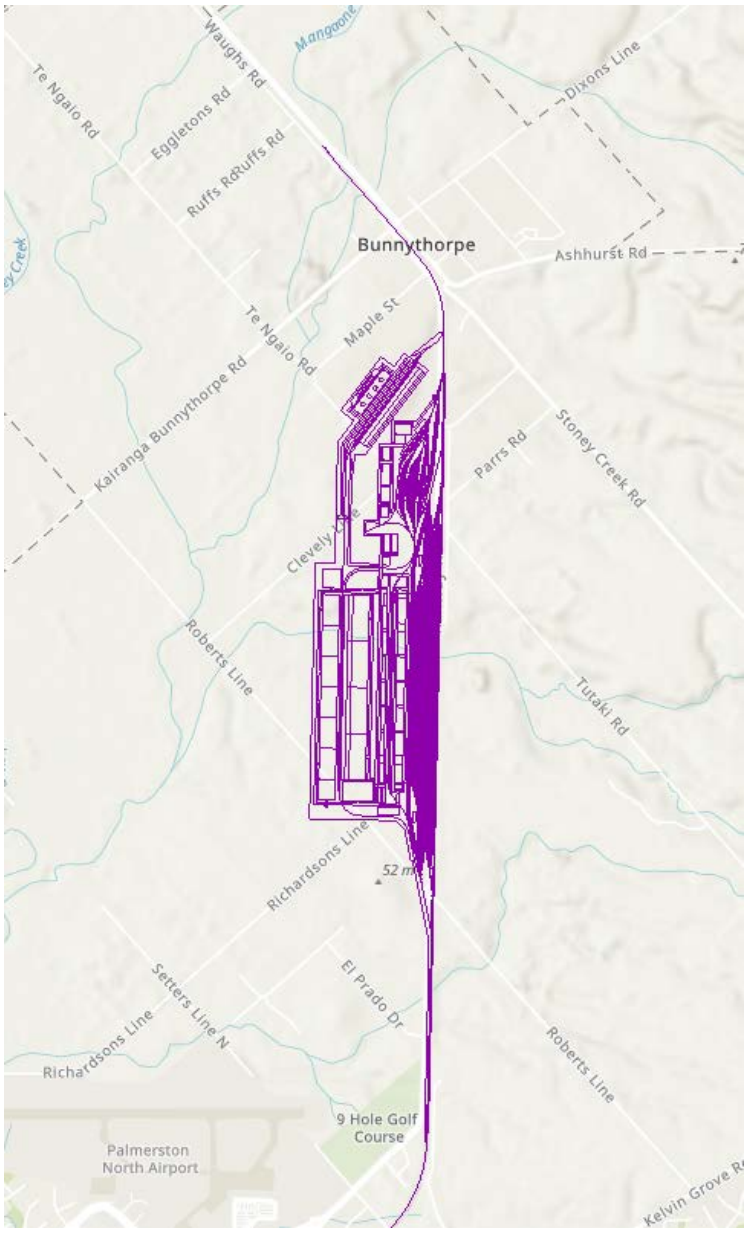


Figure 6-2: Location of Site 3

6.2.3 Site 4

Site 4 is located on the eastern side of Railway Road to the south of Bunnythorpe and is shown in Figure 6-3 below. The Hub extends from south of Parrs Road, across Tutaki Road and across Roberts Line. Railway Road is largely unaffected. The northern back shunt will run through Bunnythorpe past the Kairanga-Bunnythorpe Road /Dixons Line intersection. The southern back shunt will run as far as Settlers Line to the south. The southern end of the site is located under the approach paths to Palmerston North Airport and height restrictions apply.

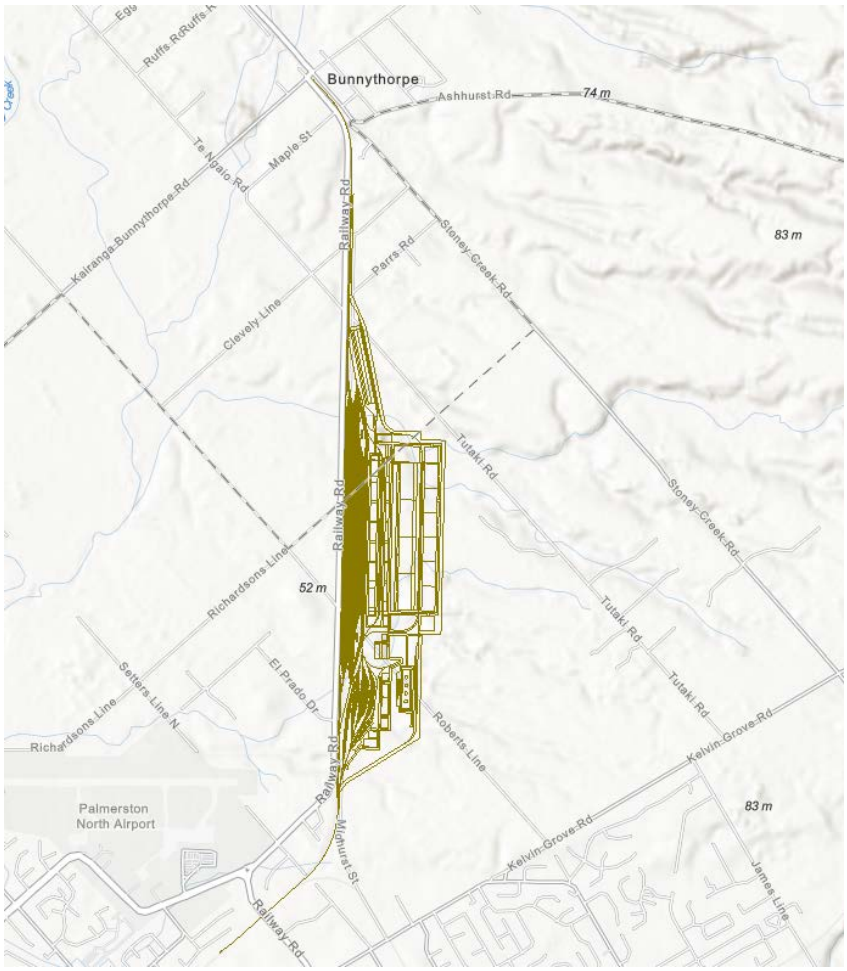


Figure 6-3: Location of Site 4

6.3 Description of the master plan

The master plan layout that was used by the specialists to assess the three short listed options in this phase was based on an area of land of approximately 120ha that is able to accommodate all the elements required for a fully integrated, multimodal Freight Hub operating 7 days per week / 24 hours a day.

The operational requirements provided for include the following specific components and activities:

- 8 arrival and departure tracks and at least 10 marshalling tracks of different lengths to accommodate both unit trains (trains carrying a single commodity) and manifest trains (trains carrying a mix of commodities).
- The tracks allow for trains of different lengths up to 1,500m long to be accommodated and improve capacity and efficiency in high peak periods and allow the Hub to operate seven days a week.
- Tracks are included to cater for storage of up to 100 wagons.

- Container Terminal in an island configuration to enable simultaneous loading and unloading on separate tracks and the ability to arrive and depart short (900m) unit trains directly. Storage area for 200 – 40-foot containers stacked three high (including refrigeration and temperature-controlled HACCP plug in capability) is also provided. The facility has inland port capability for import/ export containers and allow a truck to container service with the ability for truck traffic to drive directly onto the loading platform.

These facilities have been sized and located to incorporate the following planned changes to KiwiRail's network:

- More efficient and higher horsepower locomotives
- Marshalling a new fleet of wagons capable of higher loads – more capacity, with stronger couplers and axles
- Ability for longer trains up to 1,500m to operate on the North Island Main Trunk Line
- Optimising locomotive power requirements (HPT)
- Balancing traffic/power in two directions.

The master plan includes facilities for the maintenance of the current fleet of wagons, diesel, electric and battery powered locomotives and equipment in a common maintenance building and a network services maintenance depot with track maintenance depot, hardware, and machinery. The facilities have been sized to cater for the forecasted changes.

In addition, master plan includes connectivity to an adjacent freight forwarders depot with road service and log loading yard, and liquid storage facilities with direct rail service.

To optimise equipment and personnel movements and safe operations and promote efficiencies in management and operations and team building within the various working groups the master plan provides for:

- Vehicular access from the opposite side of the Hub from the mainline and a perimeter roadway network along three sides of the Hub (not including the mainline side) with security gates at multiple access locations to control access.
- Grouping of services/facilities such as offices, and Staff Amenities (lunchroom, toilets, showers, lockers), staff and visitor parking and equipment and materials storage.
- Security such as fencing, CCTV, lighting, and gates with controlled access to KiwiRail's facilities.
- The specialists applied the master plan when undertaking their site option assessments.

6.4 Purpose of the short list assessment workshop (Workshop 3)

The purpose of Workshop 3 was to identify from the short list, a preferred site location to recommend to KiwiRail to be taken forward through the Notice of Requirement (NoR) process.

Workshop 3 took place in Palmerston North on 20 November 2019.

In addition to the specialists listed in Table 5-1 above other workshop participants included key KiwiRail personnel and representatives from the NZ Transport Agency, PNCC, Manawatu District Council, Horizons Regional Council, the Central Economic Development Agency (CEDA), Ngāti Kauwhata and Rangitane O Manawatu.

6.5 Specialist presentations

The following provides a summary of the assessments of the three site options undertaken by the specialists under each criterion. It includes the specialist's pre workshop scores for each option area, a summary the main reasons for the scores, any important points from the workshop discussions, and any key outcomes from the discussions.

Each of the specialists' assessment of the short list of options and any addendums to these assessments as a result of the workshop outcomes are contained in a separate document that is a support document to this report.

6.5.1 Rail assessment

The table below sets out the rail criterion scores for each of the site options as presented by the rail specialist at the workshop.

Table 6-2: Rail scores for site options

Site option 2	Site option 3	Site option 4
4	1	5
1 = High benefits		
2 = Medium high		
3 = Medium		
4 = Medium low		
5 = Low benefits		

The factors considered by the rail specialist in assessing the site options were rail network compatibility, rail customer benefits, other mode compatibility, resilience and operation, safety and impacts on existing infrastructure and new infrastructure requirements for the Hub.

The following provides a high level summary of the rationale provided by the rail specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 3 and the workshop presentations and discussions.

- Option 2 had medium to low benefits because additional bridges would be required for a pullback track, distance from customers in Palmerston North City and safety issues with the transmission lines.
- Option 4 had low benefits because an underbridge will be necessary for yard access, access to the Hub is not well aligned with road freight flows, possible constraints on operations due to proximity of residential land uses, potential conflicts with the Palmerston North Airport in the long term.
- Option 3 had high benefits because its close proximity to Palmerston North City, the Palmerston North Airport, North East industrial area and potential customers, the re-alignment of Railway road will better accommodate the Hub and through freight activities, best option for freight connections.

A number of the workshop participants queried the factors considered as part of the rail criterion and adopted for the rail assessment and raised concerns about the overlap between the rail criterion and those covered by other specialists. In light of these concerns the rail specialist agreed to reassess and refine the factors comprising the rail criterion and rescore the options.

6.5.2 Engineering degree of difficulty

The table below sets out the engineering degree of difficulty scores criterion scores for each of the site options as presented by the engineering specialists at the workshop.

Table 6-3: Engineering degree of difficulty scores for site options

Site option 2	Site option 3	Site option 4
2	3	3
1 = Low difficulty		
2 = Medium low		
3 = Medium		
4 = Medium high		
5 = High difficulty		

In scoring the options the engineering specialists applied high level, rough order costs for each site for roading (external network but only for KiwiRail), structures, drainage, services (required for the Hub and other utilities requiring relocation), earthworks volumes, environmental controls and mitigation and contamination remediation.

The following provides a high level summary of the rationale provided by the engineering specialists for the scores listed in the above table. It is based on the specialists' assessment for Workshop 3 and the workshop presentations and discussions.

- Environmental requirements were considered about equal across all sites for erosion and sediment control measures related to earthworks areas.
- Option 3 scored a medium degree of difficulty because the earthworks and pavement requirements were the highest cost when comparing the three sites, the drainage requirements were the most significant, costs for service relocations and new services were moderate primarily due to the gas pipeline relocation and while only one structure is required it is fairly complex with a large span. Local roading costs were lowest for this site. Overall Option 3 was estimated to be marginally the highest cost site.
- Option 4 scored a medium degree of difficulty because the earthworks, pavement and drainage requirements were mid-range for this site, only two simple structures are required, service relocations and new services have the lowest cost, however local roading costs were highest for this site. Overall this option was estimated to have a mid-range overall cost.
- Option 2 scored a medium to low degree of difficulty because the earthworks and pavement requirements were lowest cost at this site, drainage requirements were the least significant at this site, only one minor structure was required and local roading costs were mid-range. Service relocations most significant at this site due to the high capacity transmission lines as well as the effects on the MDC water bores. Overall, this option was estimated to be marginally the lowest cost site.

The workshop discussions following the engineering specialists' presentation focussed on using cost to assess engineering degree of difficulty. It was agreed by the engineering specialists and workshop participants that using cost simplified the analysis and gave a fair reflection of the overall cost of each option and therefore the engineering degree of difficulty.

There were no changes made to the degree of engineering difficulty scores.

6.5.3 Natural environment assessment

The table below sets out the natural environment scores for the three site options as presented by the ecological specialist at the workshop.

Table 6-4: Natrual environment scores for site options

Site option 2	Site option 3	Site option 4
2	3	3
1 = Low impact		
2 = Medium low		
3 = Medium		
4 = Medium high		
5 = High impact		

No wetlands or areas of terrestrial ecological value are contained within the three sites and therefore the ecological specialist only assessed the impact on the freshwater streams that flow across the three sites. The scoring of the level of impact on streams is based on the linear length of the streams and is same applied by the specialist in Workshop 2.

The following provides a high level summary of the rationale provided by the ecological specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 3 and the workshop presentations and discussions.

- The score of a medium impact for Option 3 reflects a combined lineal length of the Mangaone Stream tributaries of approximately 1950 metres.
- The score of a medium impact for Option 4 reflects a combined lineal length of the Mangaone Stream tributaries of approximately 1300 metres.
- The score of a medium to low impact for Option 2 reflects a combined lineal length of Taonui Stream and the Mangaone Stream tributary of approximately 900 metres.
- The preferred option is site 2 as the combined lineal length of streams affected is approximately 900 metres as opposed to approximately 1950 and 1300 metres for sites 3 and 4.
- Further comparative assessment of the streams is not possible owing to the absence of clear differences in their ecological values.

In the workshop discussions following the ecological specialist's presentation the Ngāti Kauwhata and Rangitane representatives noted that in terms of Maori cultural values Option 2 impacts on puna and Matatika Stream and Jacobs Creek.

There were no changes made to the natural environment scores.

6.5.4 Noise and vibration assessment

The table below sets out the noise and vibration criterion scores for each of the site options as presented by the noise specialist at the workshop.

Table 6-5: Noise and vibration scores for site options

Site option 2	Site option 3	Site option 4
4	5	4
1 = Low impact		
2 = Medium low		
3 = Medium		
4 = Medium high		
5 = High impact		

The factors considered by the noise specialist in assessing the site options were, effects of on-site activity on surrounding houses and other noise sensitive locations, effects of off-site heavy vehicle movements on

houses near road links and altered roads; and compatibly with surrounding land-uses. Potential effects from on-site activity has carried the greatest weight in this evaluation, followed by potential effects from off-site heavy vehicle movements and compatibility with surrounding land-uses. The prime consideration addressed by the three factors listed is operational noise from on-site and off-site activity

The following provides a high level summary of the rationale provided by the noise specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 3 and the workshop presentations and discussions.

- Option 3 has a high impact score because between 0-500m of the unscreened sides of the site there are 164 buildings and between 500m and 1km of the unscreened sides of the site there are 176 buildings. The site is adjacent to an industrial area and the Palmerston North airport. The assumed location of the rail workshop in the Hub is immediately a rural lifestyle area.
- Option 2 has a medium to high impact score because between 0-500m of the unscreened sides of the site there are 24 buildings and between 500m and 1km of the unscreened sides of the site there are 67 buildings. Surrounding land uses comprise low density of rural dwellings and there are no significant noise sources other than existing road and rail.
- Option 4 has a medium to high impact score because between 0-500m of the unscreened sides of the site there are 21 buildings and between 500m and 1km of the unscreened sides of the site there are 78 buildings. Noise emissions will primarily be towards the industrial area and the airport on west of railway.
- Option 4 is preferred in terms of noise and vibration effects. This is because the main unscreened side of the site generally faces towards industrial land uses and the site is co-located with existing environmental noise sources of the airport and industrial activity.

In the workshop discussions following the noise specialist's presentation the noise specialist emphasised that noise is a significant issue particularly because the Hub needs to operate 24/7 without restrictions. Key sources of noise nuisance will be the locomotives at night pulling back and the banging with the movement of containers. These are the noises people complain about.

The specialist explained that all options have significant noise issues that could be difficult to mitigate.

6.5.5 Heritage and archaeology assessment

The table below sets out the heritage and archaeology criterion scores for each of the site options as presented by the specialist at the workshop.

Table 6-6: Heritage and archaeology scores for site options

Site option 2	Site option 3	Site option 4
2	4	3
1 = Low impact		
2 = Medium low		
3 = Medium		
4 = Medium high		
5 = High impact		

The factors considered by the specialist in assessing the site options were impacts on recorded archaeological sites, potential impacts on unrecorded archaeological sites and impacts on heritage buildings and listed sites.

The following provides a high level summary of the rationale provided by the noise specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 3 and the workshop presentations and discussions.

The following provides a high level summary of the rationale provided by the noise specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 3 and the workshop presentations and discussions.

- Refined design plans and further research has resulted in scores for all three short listed options that are different from the previous scores.
- The new scores favour options that are situated in predominantly rural areas where European/colonial occupation is expected to be less intensive and at a lower density. Options located in former urban and suburban areas are awarded higher scores as the intensity and density of occupation is likely to be greater at these locations.
- Option 3 has a medium to high impact because 124 nineteenth century land parcels will be affected, many of them small, high density urban or suburban sections at Bunnythorpe. However, further research may determine the actual potential to be lower. One named stream, the NIMT railway and five 19th century roads will also be affected, and recent research has identified two new archaeological site the Bunnythorpe School and Tremewan's store / house at the corner of Campbell Road and Dixon's Line.
- Option 4 has a medium impact because 47 nineteenth century land parcels will be affected, being predominantly lower density suburban or rural sections. However, further research may determine the actual potential to be lower. one named stream, the NIMT railway and seven 19th century roads will also be affected, and recent research has identified one new archaeological site a cottage on Railway Road (opposite the Glaxo building).
- Option 2 has a medium to low impact because only 10 parcels will be directly affected by construction of the Freight Hub, all of them rural. Further sites should be expected within this option, but in smaller numbers than options 3 and 4. Three named streams, the NIMT railway and two 19th century roads will also be affected and recent research has identified two new archaeological sites the Trondheim / Trondhjem sawmill and settlement at Taonui, and a cottage at Bunnythorpe.

In the workshop discussions following the noise specialist's presentation the specialist noted that none of the findings have identified any legislative barriers. Any issues would be dealt with by obtaining authorities under the Heritage New Zealand Pouhere Taonga Act.

There were no changes made to the archaeological and heritage scores.

6.5.6 Visual and landscape assessment

The table below sets out the visual and landscape criterion scores for each of the site options as presented by the landscape specialist at the workshop.

Table 6-7: Visual and landscape scores for site options

Site option 2	Site option 3	Site option 4
3	4	5
1 = Low impact		
2 = Medium low		
3 = Medium		
4 = Medium high		
5 = High impact		

The factors considered by the specialist in assessing the area options were impact on natural character, (RMA s6(a)) visual impact on surrounding land uses, impact on existing character and impact of glare and lighting effects on other land uses. In reaching a final effects score for each area option an "overall judgement" approach was taken by the specialist. There are no Outstanding Natural Features (RMA s6(b)) or Special Amenity Landscapes (RMA s7(c)) identified near any of the site options.

- Option 4 was assessed as having a high impact because the Hub has a poor fit with natural landscape patterns, several tributaries of the Mangaone Stream are impacted, the removal of distinct shelter belt will be necessary and is likely to require substantial earthworks. Compared to Option 3, it has a better fit with street and road network patterns of the urban landscape because the existing alignment of Railway Rd is retained for through traffic and the link road is set square to existing features. There will,

however, be unavoidable character and visual effects due to the Hub's location on the outskirts of Bunnythorpe and the proximity of the urban growth areas of Palmerston North.

- Option 3 was assessed as having a medium to high impact because the Hub has a better fit with the natural landscape patterns, compared to Option 4. This is due to reduced earthworks, less distinct vegetation patterns requiring removal and fewer tributaries of the Mangaone impacted. Although the Hub is aligned with Railway Road and benefits from the setting alongside the industrial precinct, overall, this option has a poor fit the urban patterns of the landscape. It requires the greatest disruption to street / road networks with a link road cutting across the grain of cadastral patterns. Due to its proximity with Bunnythorpe and elevated interchange it has unavoidable character and visual effects with limited mitigation options.
- Option 2 was assessed as having a low impact because the Hub has a better fit with natural and urban landscape patterns compared to options 3 and 4, due to its reduced impact on natural features and the ability to retain community character and separation of Bunnythorpe from Fielding. Adverse effects on visual amenity, on street and road network patterns and specific land uses that contribute to character, are limited due to the site's peri-urban setting.

In the workshop discussions following the specialist's presentation there was some discussion about the visual impact of structures such as bridges and the landscape specialist advised that the placement of these need to be carefully managed to minimise effects on the natural character of the area and in particular streams.

There were no changes made to the visual and landscape scores.

6.5.7 Property degree of difficulty assessment

The table below sets out the property degree of difficulty criterion scores for each of the site options as presented by the property specialist at the workshop.

Table 6-8: Property degree of difficulty scores for site options

Site option 2	Site option 3	Site option 4
5	3	3
1 = Low difficulty		
2 = Medium low		
3 = Medium		
4 = Medium high		
5 = High difficulty		

- The factors considered by the property specialist in assessing the site options were number of property owners and titles, land use mix and degree of difficulty i.e. complexity of acquisition.

The following provides a high level summary of the rationale provided by the property specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 3 and the workshop presentations and discussions.

- Option 2 scored a high degree of difficulty because even though it has the least number of owners of the three options it contains a high-risk special use property (Feilding airfield). The score reflects the high risk of the airfield property due to the unknowns associated with difficulty with securing, consenting, and reinstating a replacement site.
- Option 3 scored a medium degree of difficulty. It contains more owners than option 2 and a similar number of owners to Option 4. It has higher risk land uses including two commercially improved titles and a water bore site. The land use risk profile is similar to Option 4 and overall, it is considered to be similar in complexity to Option 4.
- Option 4 scored a medium degree of difficulty. It contains more owners then option 2 and a similar number of owners to Option 3. Land use is predominantly lifestyle. The land use risk profile is similar to Option 3 and overall, it is considered to be similar in complexity to Option 3.

In the workshop discussions following the property specialist's presentation, the specialist recommended that discussions take place with the airfield owner (option 2) to determine their views and operational requirements to better understand the magnitude of complexity. With the least number of owners, option 2 could well rank better if investigations with the airfield owner determined a less complex property issue.

There was also discussion about the complexity of property negotiations. The specialist explained that purchasing lifestyle and rural properties is different from purchasing industrial properties. This is because the landowners of rural and lifestyle properties generally have stronger connections to the land whereas owners of industrial properties have more of a commercial focus.

There were no changes made to the property degree of difficulty scores.

The workshop participants agreed with the property specialist's recommendation that discussions be undertaken with the landowner of the airfield contained within option 2. Noting that option 2 could score better if investigations with the airfield owners determined a less complex property issue[14].

6.5.8 Resilience assessment

The table below sets out the resilience criterion scores for each of the site options as presented by the engineering specialists at the workshop.

Table 6-9: Resilience scores for site options

Site option 2	Site option 3	Site option 4
3	4	3
1 = Low difficulty		
2 = Medium low		
3 = Medium		
4 = Medium high		
5 = High difficulty		

The factors considered by the engineering specialists in assessing the site options were liquefaction and seismic effects and regional flooding. The liquefaction and seismic effects did not vary between the sites. Regional flooding was assessed as having a higher impact on the sites than liquefaction or seismicity because flooding has a higher frequency and effects are better understood. Therefore the focus of the assessment was on flooding.

The following provides a high level summary of the rationale provided by the engineering specialists for the scores listed in the above table. It is based on the specialist's assessment for Workshop 3 and the workshop presentations and discussions.

- Option 3 scored a medium to high degree of difficulty due to regional flooding from the Oroua and Mangaone Streams in at least the 50-year ARI (average recurrence interval) and the inability of the site to drain because of the confluence of multiple local streams.
- Option 2 scored a medium degree of difficulty due to regional flooding from the Oroua and Mangaone Streams north of Bunnythorpe in at least the 50-year ARI.
- Option 4 scored a medium degree of difficulty due to its varied topography with multiple through channels meaning that it would only be subject to local flooding.

In the workshop discussions following the engineering specialists' presentation the specialists explained that for liquification and seismic risk all sites had the same value for each component. It was therefore decided to remove the liquification and seismic risk values from the overall score for this criterion because combining these values with regional flooding would mask the variation within regional flooding. Also,

[14] Discussion between KiwiRail and the airfield owners have now been undertaken and the owners have indicated that they are firmly committed to the ongoing use and operation of the airfield. Consequently, the score for option 2 has remained unchanged.

regional flooding events have a higher degree of confidence and are a higher frequency (i.e. will occur more often) than liquefaction or seismic events.

There was a discussion about flooding effects beyond the sites. The engineering specialists noted that the existing road network would not need to be raised and any new roads would be designed to address any flooding issues, flooding risks on each site can be mitigated through engineering design, the flooding on surrounding land would not be made worse.

There were no changes made to the resilience scores.

6.5.9 Economic assessment

The table below sets out the economic criterion scores for each of the site options as presented by the economic specialist at the workshop.

Table 6-10: Economic scores for site options

Site option 2	Site option 3	Site option 4
4	3	2
1 = High benefits		
2 = Medium high		
3 = Medium		
4 = Medium low		
5 = Low benefits		

The factors considered by the economic specialist in assessing the site options were support for existing Freight Yard users, potential for new activity in vicinity of Hub, proximity to employment, accessibility benefits provided by strategic transport modes, conformance with planning objectives and potential impact on activities located near to Hub.

The following provides a high level summary of the rationale provided by the economic specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 3 and the workshop presentations and discussions.

- Option 2 was assessed as having medium to low benefit mainly because it is more remote from the city centre activities than options 3 and 4 and it would impact severely on Fielding airfield and associated commercial activities. However the site is reasonably located relative to existing and planned transport networks which could help encourage development in North East Industrial area and provide a reasonable location for existing key users.
- Option 3 was assessed as having a medium benefit because it is well located in relation to existing users, provides good connectivity into the city and provides something of a focus for development in the North East Industrial area. This would be in line with PNCC proposals and the location would link well with the current and proposed transport network. However these benefits could be offset by possible need for a land take in or just beyond existing boundary of North East Industrial Zone and need to put a main north-south access road through the middle of the zone. This could cause potential conflicts between the activities in the zone and through traffic and could possibly making the area less attractive for development.
- Option 4 was assessed as having a medium to high benefit because it is well located in relation to existing users, provides good connectivity into the city, and provides focus for development in the North East Industrial area. This would be in line with PNCC proposals and the location would link well with the current and proposed transport network, especially the proposed ring road. It does not have the negative impacts associated with Option 3 since it is separate from while still being close to the North East Industrial Zone.

The workshop discussions following the economic specialist's presentation focussed on the access to sites 3 and 4, the assumptions made about access, the impact on existing activities in the North East Industrial zone and that there seems to be inconsistencies between the economic scores and the connectivity scores. It was agreed that the economic scores for options 3 and 4 should be reassessed particularly the

scores for option 3 in respect of the impact on activities in the vicinity of the Hub and option4 in respect of conformance with planning objectives.

6.5.10 Connectivity assessment

The table below sets out the connectivity criterion scores for each of the site options as presented by the transport specialist at the workshop.

Table 6-11: Connectivty scores for site options

Site option 2	Site option 3	Site option 4
2	2	3
1 = Low impact		
2 = Medium low		
3 = Medium		
4 = Medium high		
5 = High impact		

The factors considered by the transport specialist in assessing the site options were impacts and ability to integrate with other transport modes and ability to connect to the proposed road network hierarchy.

The following provides a high level summary of the rationale provided by the transport specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 3 and the workshop presentations and discussions.

- Option 2 scored a medium to low degree impact because at a minimum 6.5km length of new links and a grade separation of Ashhurst Road to Railway Road (underpass) near Bunnythorpe will be required. Also, the site is some 5-10km from Palmerston North Airport consequently there is limited potential for integration opportunities. However, option 2 is located to the north of the proposed future strategic network of Kairanga Bunnythorpe Road, Ashhurst Road / Stoney Creek and Railway Road the modelling shows good flow transfer to the strategic routes, due to the linkages around Bunnythorpe to Ashhurst, Railway Road and Kairanga Bunnythorpe Road.
- Option 3 scored a medium to low impact because its location aligns well to the proposed PNCC future hierarchy, with close proximity to the existing North East Industrial Zone and key links of Kairanga Bunnythorpe Road. However, further consideration of upgrading or detuning other links will be required to avoid "rat-running" and give effect to the proposed roading network. Its location in close proximity to Palmerston North airport has the potential for a direct connection. In addition, as a minimum a 3.5km length of new links, including intersection treatments along with a major grade separation of Campbell / Kairanga Bunnythorpe Roads near Bunnythorpe Township will be required.
- Option 4 scored a medium impact because the site location aligns to the proposed PNCC future road network, opposite the North East Industrial Zone, with direct connections to Railway Road, Stoney Creek Road, and a Waugh's Road extension. This option also directly connections the existing North East Industrial Zone with the new Hub and the industrial area at Kelvin Grove. However, increased traffic along Railway Road, Kelvin Grove Road, Stoney Creek and Roberts Line may result in rat running through the CBD and along residential streets. This highlights that further consideration of upgrading or detuning other links or providing new links will be required to avoid rat-running and give effect to the proposed roading network. The site is located in close proximity to Palmerston North airport, however, a grade separated connection will need to be provided under Railway Road to enable close integration opportunities. In addition, as a minimum a 6.5km length of new links including intersection treatments and grade separation of Ashhurst Road to Railway Road (underpass) near Bunnythorpe and yard access link to Railway Road (Southern connection) will be required.

There were discussions about how the Freight Hub will connect to the future roading network and in particular the Palmerston North Integrated Transport Initiative. Also, issues were raised regarding overlaps with the Engineering Degree of Difficulty criterion. The specialist agreed that the connectivity scores should be reviewed in light of these issues.

6.5.11 Strategic fit assessment

The table below sets out the strategic fit criterion scores for each of the site options as presented by the planning specialist at the workshop.

Table 6-12: Strategic fit scores for site options

Site option 2	Site option 3	Site option 4
4	2	3
1 = High alignment		
2 = Medium high		
3 = Medium		
4 = Medium low		
5 = Low alignment		

The factors considered by the planning specialist in assessing the site options were the extent to which each of the sites contains areas of highly productive land, land use planning for the area to the north east of Palmerston North over the last 10 to 15 years, outcomes sought under the current district plan zonings that apply to the sites and possible future land use patterns.

The following provides a high level summary of the rationale provided by the planning specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 3 and the workshop presentations and discussions.

- Option 2 scored a medium to low alignment because the site has the most highly productive land and there will be challenges in meeting National Policy Statement for Highly Productive Land criteria to support urban expansions, the Rural 1 Zone that applies to the site is designed to protect versatile soils and does not contemplate the type of land uses associated with a Freight Hub, the site is separated from existing urban areas and urban zones and is not identified or signalled for future urban expansion / land use change.
- Option 4 scored a medium alignment because the site comprises the least highly productive land when compared with sites 2 and 3, the productive use of the land is potentially comprised to some extent by existing lifestyle development, the site is in close proximity to urban edge of Palmerston North and is therefore likely to meet National Policy Statement for Highly Productive Land criteria to support urban expansion; industrial expansion has occurred on the other side of Railway Road; there are potential constraints with the operation of Palmerston North Airport, the land is currently not identified or signalled for future land use change or urban expansion noting that the "Sustainable Growth (Industrial)" area identified in the PNCC Spatial Plan does not extend to the east across the railway line.
- Option 3 scored a medium to high alignment because the productive use of the land is compromised by the current partial industrial zoning, the site adjoins existing urban area and is therefore likely to meet National Policy Statement for Highly Productive Land criteria to support urban expansion; the use of the land for a Freight Hub is very compatible with adjoining land uses to south, noting however, that the northern extent of the site is adjacent to residentially zoned land and the township of Bunnythorpe; the land was bought into the city to provide for industrial expansion; part of the site is already zoned North East Industrial which provides for activities associated with Freight Hubs; there is potential for the balance of the site to be rezoned North East Industrial, noting PNCC Spatial Plan identifies as "mapping for the future" the southern part of the site as an area of "Sustainable Growth (Industrial) and rezoning is likely to meet best practice approaches for rezoning criteria.

In the workshop discussions following the planning specialist's presentation the specialist explained that this criterion had been refined from that adopted for the high-level strategic assessments undertaken to assess the long list of area options. For the site-specific comparative assessments, a more focused and detailed land use planning analysis was required to differentiate between three sites that are located in relative proximity to each other.

It was noted in the discussion by the PNCC representatives that the PNCC Spatial Plan underwent extensive consultation three years ago and it included a multi-modal hub in the location of Option 3.

There were no changes made to the strategic fit scores.

6.5.12 Community cohesion assessment

The table below sets out the community cohesion criterion scores for each of the site options as presented by the planning specialist at the workshop.

Table 6-13: Community cohesion scores for site options

Site option 2	Site option 3	Site option 4
3	3	2
1 = Low impact		
2 = Medium low		
3 = Medium		
4 = Medium high		
5 = High impact		

The factors considered by the planning specialist in assessing the site options were degree of alignment with the form of development and level of activity anticipated by the zoning applied in the area around the site, potential severance effects (inconvenience and difficulties for community interact), impact on existing and or proposed (resource consents or designations not given effect to) activities that are potentially of value to the wider community and support the community's the sense of place and impact on owners of land around site (e.g. inability to sell or to develop as previously planned).

The following provides a high level summary of the rationale provided by the planning specialist for the scores listed in the above table. It is based on the specialist's assessment for Workshop 3 and the workshop presentations and discussions.

Option 2 scored a medium impact primarily due to the loss of the airfield and associated activities and facilities which provides training and is the base for a range of aviation sport, the loss of jobs and a community facility and the difficulties associated with relocation. However, there would be a low impact on severance as good road linkages will remain around the site and there is not a lot of residential development directly adjoining the site.

Option 3 scored a medium impact because of the location of residential areas adjoining the site at the northern end of the site at Bunnythorpe and because of PNCC designations, severance between eastern and western sides of Railway Road resulting in longer travelling distances and times and severance of pedestrian access between Kairanga Bunnythorpe Rd and Dixons Line. These impacts have been offset to some extent because the traffic will be rerouted onto the "new" Railway Road will bypass the centre of Bunnythorpe and that a reasonably direct route around the site will be created with the 'closed' roads being able to easily connect onto the new route.

Option 4 scored a medium to low impact because Railway Road will remain open and potentially there will be a safer and more accessible intersection at the Campbell Road Ashurst Rd intersection. However, there will be severance between eastern and western sides of Railway Road resulting in longer travelling distances and times, high impacts on lifestyle blocks resulting in potential difficulties with selling and developing properties and impacts on access to the Bunnythorpe Recreation Reserve.

The workshop discussions following the planning specialist's presentation were focused on why option 4 scored better than options 2 and 3 and it was agreed that all options had similar impacts. The workshop participants agreed that all the options should be scored as having a medium impact "3" in terms of community cohesion.

6.6 Tangata whenua

An assessment and scoring of Tangata Whenua values was not undertaken as part of the workshop. This was undertaken as a separate exercise with KiwiRail and Ngāti Kauwhata, Rangitāne ki Manawatū and Ngāti Raukawa ki te tonga. The outputs from these processes has informed the assessment of the long list of area option and will inform this phase of the option evaluation process. Representatives from Rangitāne o Manawatū and Ngāti Kauwhata attended and participated in the workshop and at the workshop advised that:

- Rangitāne ki Manawatū has provided KiwiRail with a report on the long list of options and options 3 and 4 came through as preferred.
- Ngāti Kauwhata assessed the options through a cultural lens including environmental and archaeological aspect. They support consideration of short list options in the north of the city, have concerns about Option 2 because of a number of puna and aquifers, and have a preference for Site 4.

6.7 Summary of workshop outcomes

6.7.1 MCA scores

The following table sets out how the site options scored against the various assessment criteria as agreed by participants at Workshop 3.

Table 6-14: MCA scores agreed at Workshop 3

Criterion	Site Option 2	Site Option 3	Site Option 4
Rail	4	1	5
Engineering degree of difficulty	2	3	3
Natural environment	2	3	3
Noise and vibration	4	5	4
Heritage and archaeology	2	4	3
Visual and landscape	3	4	5
Property degree of difficulty	5	3	3
Resilience	3	4	3
Economic	4	3	3
Connectivity	2	2	3
Strategic fit	4	2	3
Community cohesion	3	3	~~2~~ 3
Tangata Whenua values			

	Criteria scores requiring further review post workshop
~~3~~ 2	Change to score as agreed at workshop

6.7.2 Fatal flaws

There were no fatal flaws identified for any of the three site options.

6.7.3 Workshop weightings

Following the scoring of the site options, the workshop participants reviewed the weightings that were applied to each of the criteria at Workshop 2 and decided on any changes that were required to the weightings because of the assessments undertaken in Workshop 3. The main reasons for the changes to the weightings were the availability of more detailed information and the increased confidence in the information available.

The table below sets out the agreed weightings for each of the criteria for Workshop 2 and the agreed changes to these weightings at Workshop 3.

Table 6-15: Criteria weightings agreed at the workshops

Criteria	Workshop 2 weighting	Workshop 3 weighting	Reasons
Rail	10	10	
Engineering degree of difficulty	4	6	The engineering degree of difficulty weighting increased due to greater certainty with the information available.
Natural environment	8	8	
Noise and vibration	7	7	
Heritage and archaeology	8	5	The heritage and archaeology weighting was reduced because more information was available to determine that the risks were not as significant as initially considered at Workshop 2.
Visual and landscape	5	5	
Property degree of difficulty	4	6	The property degree of difficulty weighting increased due to greater certainty with the information available.
Resilience	9	5	The resilience weighting was reduced because more information was available to determine that the risks were not as significant as initially considered.
Economic	10	8	The economic weighting was reduced due the subjective nature of the assessments
Connectivity	8	8	
Strategic fit	8	9	The strategic fit weighting was increased because of the importance the workshop participants placed on this criterion
Community cohesion	8	8	
Tangata Whenua values	10	10	
	Changes to weightings		

Consistent with the approach at Workshop 2, the tangata whenua values criterion was not assessed and scored at the workshop. However, all workshop participants agreed that a weighting of 10 should be applied to the criterion.

6.8 Post workshop activities

6.8.1 Further assessments

As a result of questioning and issues raised by the workshop participants it was agreed at the workshop that the specialists responsible for the rail, economic and connectivity criteria would review their assessments and scores for the options. The following provides a summary of the outcomes from these reassessments and any resulting changes to the option scores for these criteria.

The specialist reassessments have been recorded in the addendums to their Workshop 3 assessment reports. These addendums have been prepared in conjunction with the preparation of this report to ensure the process that has been followed and the assessments and opinions of the specialists have been accurately recorded. The addendums are contained in a separate document that is a support document to this report.

6.8.1.1 Rail

Due to overlaps of the rail criterion with other assessment criteria identified at Workshop 3 the rail specialist agreed to reassess and refine the factors comprising the rail criterion and rescore the options.

The rail assessment for Workshop 3 relied on six sub criteria. The reassessment of these sub criteria following the workshop reduced them to three. “Impacts on existing infrastructure” was removed because this consideration was covered by the engineering degree of difficulty criterion. “Other mode compatibility” and resilience and operation were also removed because of overlaps with other rails sub criteria and materially they did not differentiate the site options.

The revises rail criterion comprised the following sub criteria:

- Impact on rail network operations (connecting the site to the regional and national network).
- Impact on Business delivery and service and KiwiRail values.
- Safety, resilience and future yard operations/service.

The application of the revised criterion resulted in the score for option 2 remaining the same, option 3 changed from a 1 to a 3 and option 4 changed from a 5 to a 4.

6.8.1.2 Economic

In reassessing the three options following Workshop 3 the specialist made a number of changes to the assumptions that were relied on when determining the economic scores for the three options for the workshop. These revised assumptions were:

- Modification can be made to the Hub design to minimise impacts on the North Eastern Industrial Zone.
- A satisfactory connection can be made to any ring road in the Bunnythorpe area and the connectivity would be the same for both options 3 and 4.
- For option 3, Railway Road would be diverted and would serve both the flows between Bunnythorpe and Palmerton North and the needs of the Hub and for option 4 these functions would be separated.

Relying on these revised assumptions resulted in the changes to the scores of all three options as shown in the table below.

6.8.1.3 Connectivity

The further assessment of the scores for the Connectivity criterion involved:

- consideration of the integration of the Hub as part of the Palmerston North Integrated Transport Initiative (PNITI);
- consideration of alignment with the PNCC Strategic Plan and the short listed PNITI options;
- consideration of the ability to give effect to the objectives of the Strategic Roading Network;

- rectifying any overlaps with the Engineering Degree of Difficulty criterion.

As a result of this reassessment the score for option 2 changed from a 2 to a 3. The scores for options 3 and 4 remained the same.

6.8.1.4 Updated scores

The table below sets out the updated scores resulting from the post workshop assessments as recorded in the addendums prepared by the specialists responsible for the economic and connectivity criteria.

Table 6-16: Updated MCA scores following further assessment

Criterion	Site Option 2	Site Option 3	Site Option 4
Rail	4	3	4
Engineering degree of difficulty	2	3	3
Natural environment	2	3	3
Noise and vibration	4	5	4
Heritage and archaeology	2	4	3
Visual and landscape	3	4	3
Property degree of difficulty	5	3	3
Resilience	3	4	3
Economic	~~4~~ 3	~~3~~ 2	~~3~~ 2
Connectivity	~~2~~ 3	2	3
Strategic fit	4	2	3
Community cohesion	3	3	3
Tangata Whenua values			

~~3~~ 2	Change to score following further assessment

6.8.2 Sensitivity testing

To ensure consistency with the process followed in assessing the long list of options the project team applied the weightings agreed by the participants in Workshop 3 and the same sensitivity tests that were applied in the long listing process to the short list of options. The results of this analysis are set out below in Table 6-17.

Site 3 ranked the best with the "raw scores" i.e. no weighting and the workshop weighting agreed by participants at Workshop 3. It also ranked best when the sensitivity tests for rail objectives, QBL economic, difficulty and benefit were applied. It did not rank well when the sensitivity tests for impacts and Part 2 were applied. Further work on mitigation measures is required which could potentially improve the ranking of Site 3 in these areas.

Table 6-17: Sensitivity testing rankings

RANKING												
Site Option	Workshop Weighting	RMA Part 2	QBL: Social	QBL: Natural Environment	QBL: Economic	Rail Objectives Focussed	No Weighting	Difficulty	Benefit	Impact	**AVERAGE RANK**	**RANK**
Option 2	3	1	1	1	3	3	2	3	3	1	2.1	2
Option 3	1	3	2	2	1	1	1	1	1	2	1.5	1
Option 4	2	2	3	3	2	2	3	2	2	2	2.3	3

7. Outcomes of Iwi engagement and feedback

Engagement with Ngāti Kauwhata, Rangitāne and Ngāti Raukawa has taken different forms, and both formal and informal feedback has been provided to KiwiRail about iwi roles, the area and site options, constraints, and prioritising of potential sites.

Ngāti Kauwhata and Rangitāne iwi were provided with MCA workshop details and attended two of the workshops (Workshops 2 and 3). Both were invited to rank site locations, or to provide feedback in a form of their choice. There has been engagement with Ngāti Raukawa, and they have been commissioned to undertake a Cultural Impact Assessment of the preferred site location for the NoR.

7.1 Rangitāne

Rangitāne chose to provide a general report and to rank the eight potential site locations. The methodology overlaid several databases to identify key constraints. These overlays included sites of significance to iwi, density maps, Statistics NZ information about the location of iwi members, NZ deprivation index, Te Ao Turoa (environment matters), such as rivers and landscapes.

When these factors were weighed there was a preference for the sites either side of Railway Road (sites 3 and 4) subject to more detailed assessment of the impact on sites of significance and waterways. Site options to the north (Aerodrome locality) and furthest south were considered less acceptable due to their proximity to the Manawatu and Oroua Rivers, respectively.

7.2 Ngāti Kauwhata

Ngāti Kauwhata opted to provide general comments on site options and considered the project as an ongoing process of engagement. Site options in the north east were generally preferred over the southern options. Their preference is for site 4 based on historical, archaeological, cultural, and environmental factors. Once a preferred site is selected Ngāti Kauwhata will develop and provide a Cultural Impact Assessment report (CIA). They intend to discuss with Rangitāne how the wider interests of both iwi can be protected and promoted in developing the new Hub.

7.3 Ngāti Raukawa ki te tonga

Raukawa have had an opportunity to comment on the wider site option study area and engagement is ongoing. While no site preferences have been discussed, Raukawa's role will become more significant when a proposal based on a preferred technical site option is identified. They will assist the project by developing a CIA representing their views on the site and its locality.

8. Recommended option

The outcomes of the MCA processes have identified Site 3 as the preferred option.

Appendices

Appendix A Information provided to the specialists for the long list assessments

A.1 Description of Freight Hub concept

The Freight Hub concept is sized to accommodate a forecasted 50% increase in tonnage / business from volumes passing through the existing Palmerston North KiwiRail Freight Yard that would be delivered over a 30-year horizon (based on a 10-year development stage and 20 years of operation).

The Freight Hub was expected to be able to be a fully integrated, multimodal facility that will run a 7 day per week / 24 hour a day operation to receive and depart trains. The associated operational requirements needing to be incorporated in the Hub site location, included:

- Marshalling yard, including arrival / departure and back shunt tracks, one at each end of the Freight Yard, to allow shunting to take place clear of the main line as a means of accommodating simultaneous yard assignments to improve capacity and efficiency in high peak periods. These tracks will be based on 1,500m trains.
- Container terminal.

As well as having the number / size to accommodate the forecasted growth, the Freight Hub's yards, tracks, and container terminal needed to be sized and located to incorporate future efficiencies planned across KiwiRail's network.

The Hub also needed to provide for other existing KiwiRail facilities to be relocated from the existing KiwiRail Freight Yard. These are KiwiRail's maintenance facilities for wagons, diesel and electric locomotives and the network services depot. The Freight Hub was also expected to provide for new partnership opportunities with land to accommodate freight forwarders, commodity storage and log handling with direct access to rail.

- The layout of the Hub needed to ensure that the environmental impacts could be managed. The location and layout of service roads needed to consider security and safety, provide for future automation and the delivery of a cohesive working environment.

A.2 Other information

To assist the specialists in the review of the sites, data was uploaded into ArcGIS (provided through Esril[15]) which comprised of a variety of spatial and geographical data provided in a series of layers. The layers included the latest aerials, streams and rivers, contours, roads, site boundaries, utility lines, district plan zones and flood information. The information was obtained from a range of sources including, Horizons Regional Council; Palmerston North City Council; Manawatu District Council.

The maps were able to be shown as a "layer" as shown in the image (Figure A-1) below. The area option locations were applied as layers. Each layer was able to be turned on and off and was able to be used by the specialists to assess each area option relative to the layer. Users were able to measure distances on the maps.

Prior to Workshop 2, each of the specialists who did not already have access to the Esri platform was provided with a licence by Stantec to visit the project's spatial data and to utilise it in their assessments.

[15] Esri is an international supplier of geographic information system software, web GIS and geodatabase management applications

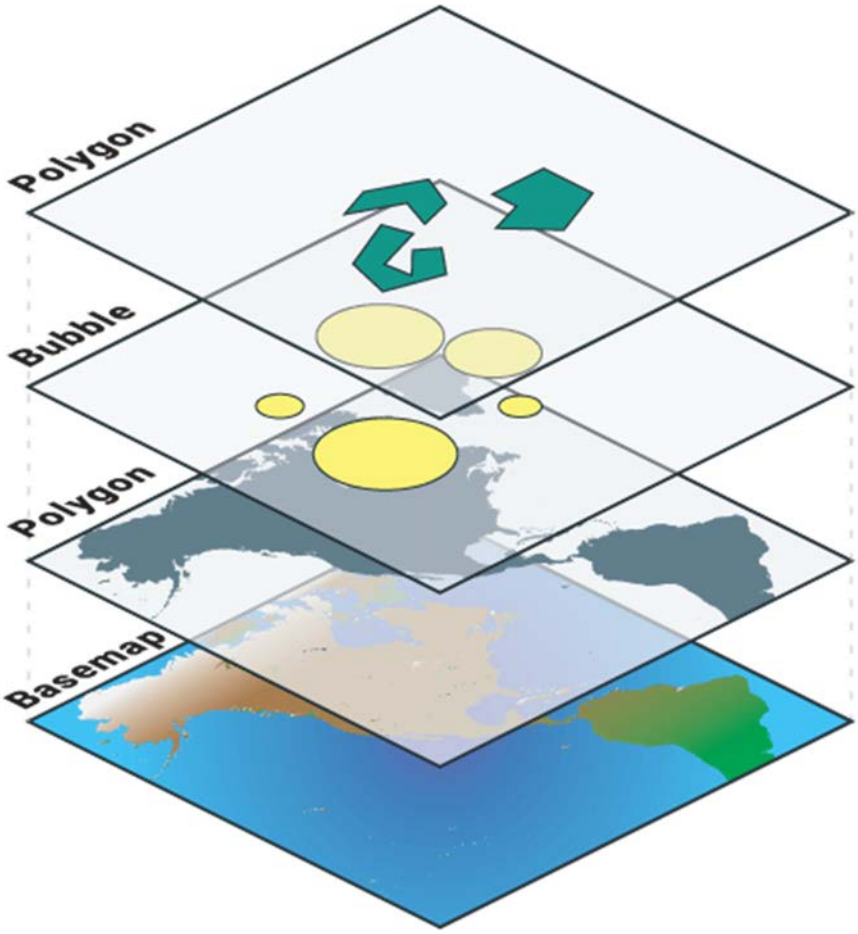


Figure A-1: Example of Mapping layers

In the Post Workshop 2 exercise, the site layouts (refer Figure 6-1, Figure 6-2 and Figure 6-3) and the constraints (refer Figure 5-3) were added to the ARC GIS as map layers.

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