Memorandum

To	IPAB members
CC	Rob Napier / 9(2)(a)
From	9(2)(a)
Date	16/5/17
Subject	Output from MCA 1

Introduction

MCA 1 workshop was held on 11 & 12 May, with the Alliance experts in engineering, construction and environmental specialist disciplines providing inputs to score options for selected criteria. The workshop was attended by Ngati Tama (and their advisor 9(2)(a)), who provided scoring inputs on cultural maters, as well as contributions to the wider discussion.

Some 12 corridor options were evaluated, with each corridor having two sub options, either an 'earthworks' focus or a 'structures' (tunnels and bridges) focus to the crossing of gully features (i.e. 24 options in total). This included options crossing the Ngati Tama land to the east and west of the existing SH3 land corridor, plus options that remained largely within the SH3 corridor (refer Figure 1).

Options were scored for criteria which included: transport (safety, efficiency, travel time), resilience, constructability, landscape and natural character, historic heritage, community, property acquisition, ecology, and cultural.

In mid-2016, NZTA had previously completed a MCA options assessment for some 26 options as part of the business case process. That process had been completed on options with a lower level of design development, limited availability of site environmental data (i.e. largely desktop based) and without cultural scoring of options. The MCA 1 process has brought a much higher level of rigour to the options assessment process and significantly, has incorporated cultural maters and the Ngati Tama landowner perspective into the scoring process.

MCA 1 outcomes

Results

Results from MCA 1 are presented in Figure 2, which presents rankings for options scoring. Rankings are presented for the raw scores from the workshop, plus scores weighted post the workshop according to: the criteria that will feature in the RMA decision making process; criteria that favour environmental outcomes; and criteria that favour transport outcomes.

Summary memos detailing scoring for the key MCA criteria of landscape, ecology and cultural values are contained in Attachment 1. Key factors that have driven the scoring process are: the strong landscape, ecological and cultural values of the western Ngati Tama land (Parininihi); the ecological values of

threatened swamp forest in the valley floor to the south of Mt Messenger, and the ecological and cultural values of the Ngati Tama land to the east of SH3.

Fatal flaw scores

A number of the options were identified in the workshop as having fatal flaws. A fatal flaw score (indicated on Figure 2 with an 'F') was given where an expert felt that a mitigation solution could not address the effects of the option, and that as a consequence, in the expert's professional opinion, the option could not be supported. In particular, fatal flaw scores were given due to landscape, ecological and cultural sensitivities.

Options A2, B2, F2, G2, J2, L2 receiving fatal flaw scores for ecology, landscape and cultural effects. Option C2 received a Fatal Flaw score for cultural effects. The two corridors furthest to the west (Option L1 and L2 (the coastal option) and Option J1 and J2) both received multiple fatal flaw scores.

Advice on how to treat fatal flaw scores from Buddle Findlay will be presented. In summary, a fatal flaw would normally result in elimination of an option, unless it is possible to resolve issues through design refinement.

Poorly performing options

In all cases, the 'earthworks' options performed poorly in the MCA process. This is largely due to effects on sensitive landscape, ecology or cultural values.

The two corridor K options also performed poorly.

On-line options

Options formed largely within the existing SH3 corridor (Options Z2 and Z4) have scored well. These options avoid sensitive landscape, ecological and cultural areas. However, they present significant constructability challenges, as well as being very complex to construct while maintaining network capacity. In all likelihood these options will lead to longer periods of disruption to the existing network over the other "off line" options.

Option D1 also scored relatively well, and while it is formed within part of the sensitive western Ngati Tama land, it avoids the sensitive Ngati Tama land to the east, and much of the southern approach is in land with lower sensitivity (private land and the SH3 corridor).

Overall the scoring indicates that the SH3 land corridor to the south of Mt Messenger is significantly less sensitive than the land to the west or east. On this basis, it is recommended that further consideration be given to options that make use of this land.

Other favourable options

In addition to the on-line options, a number of the 'structures' options performed reasonably well through the MCA. These included Options A1, B1, C1, E1, F1 and G1. Of these, the options in the sensitive western Ngati Tama land (Options A1, B1, F1, G1) received low scores because of the high landscape, ecological and cultural values, while Option E1, to the east of the SH3 corridor, scored lower because of higher ecological and cultural values.

Design refinement / hybrid options

It was noted by experts that through some additional design, it might be possible to avoid or reduce effects on high value features, including options that currently receive fatal flaw scores.

Affordability considerations

Cost estimates are now available for all options (refer Figure 3). The scale of estimates generally matches the order from the previous Business Case estimates, excepting that the differential between structures / earthworks is now clearer (>15%).

Costs were not presented to the MCA 1 workshop so as not to introduce bias into the discussions. However we have reviewed these estimates alongside the MCA 1 scores and based our recommendations on the relative

Recommended options being taken forward

Based on the outcome from the MCA 1 process and affordability considerations, the options, or associated hybrids of these which optimise earthworks but minimise environmental impacts, recommended to be taken forward into the short list for further consideration are:

- Option A1;
- Option E1/E2;
- Option F1;
- A hybrid option, which focuses on a combination of the B, F and G corridors;
- On-line Option (taking in D1, D2, Z2, and Z4).

Hybrid options in these corridors may also evolve through design development.

Figure 1 – Route Options

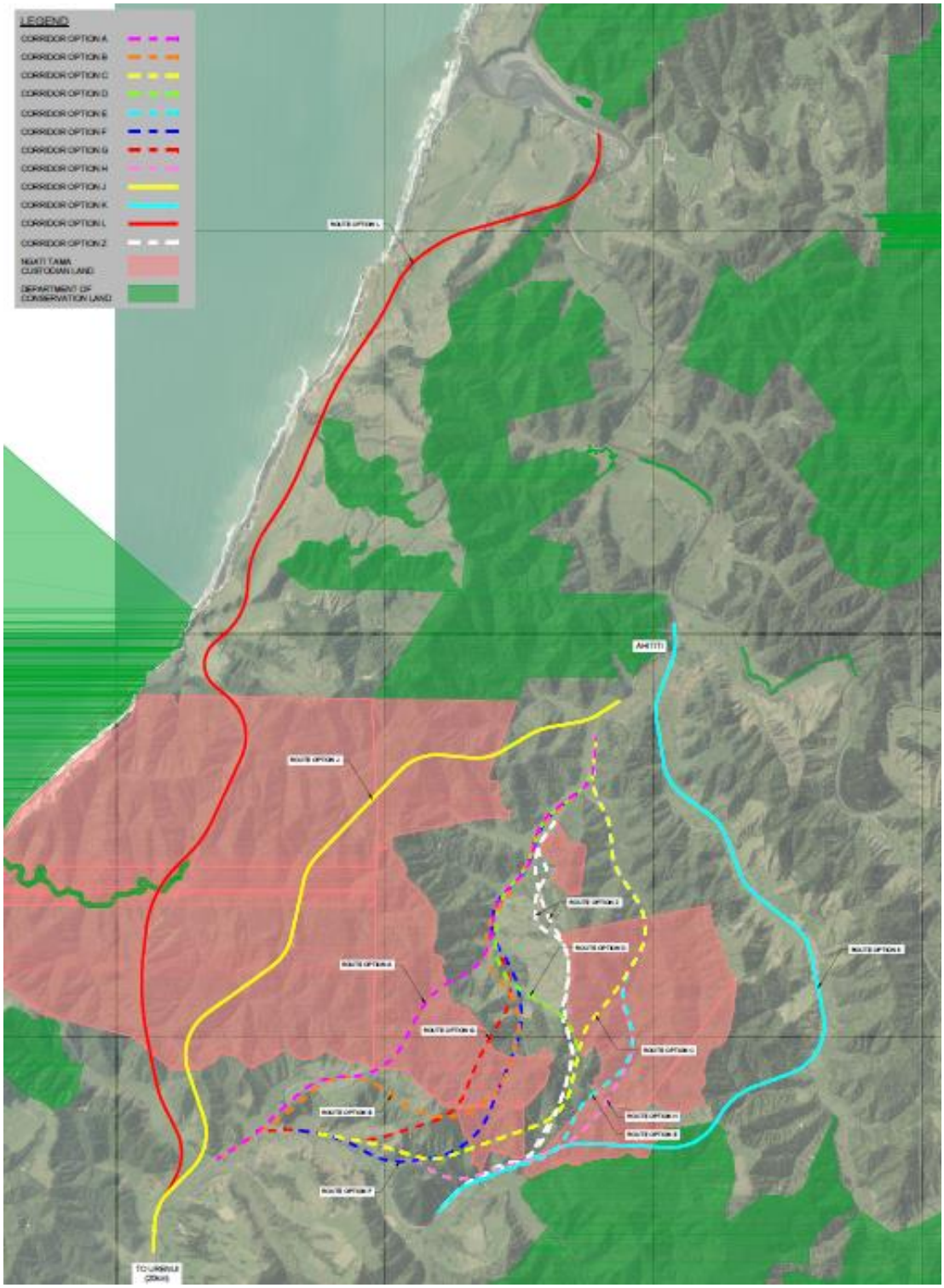

Figure 2 – MCA outcomes

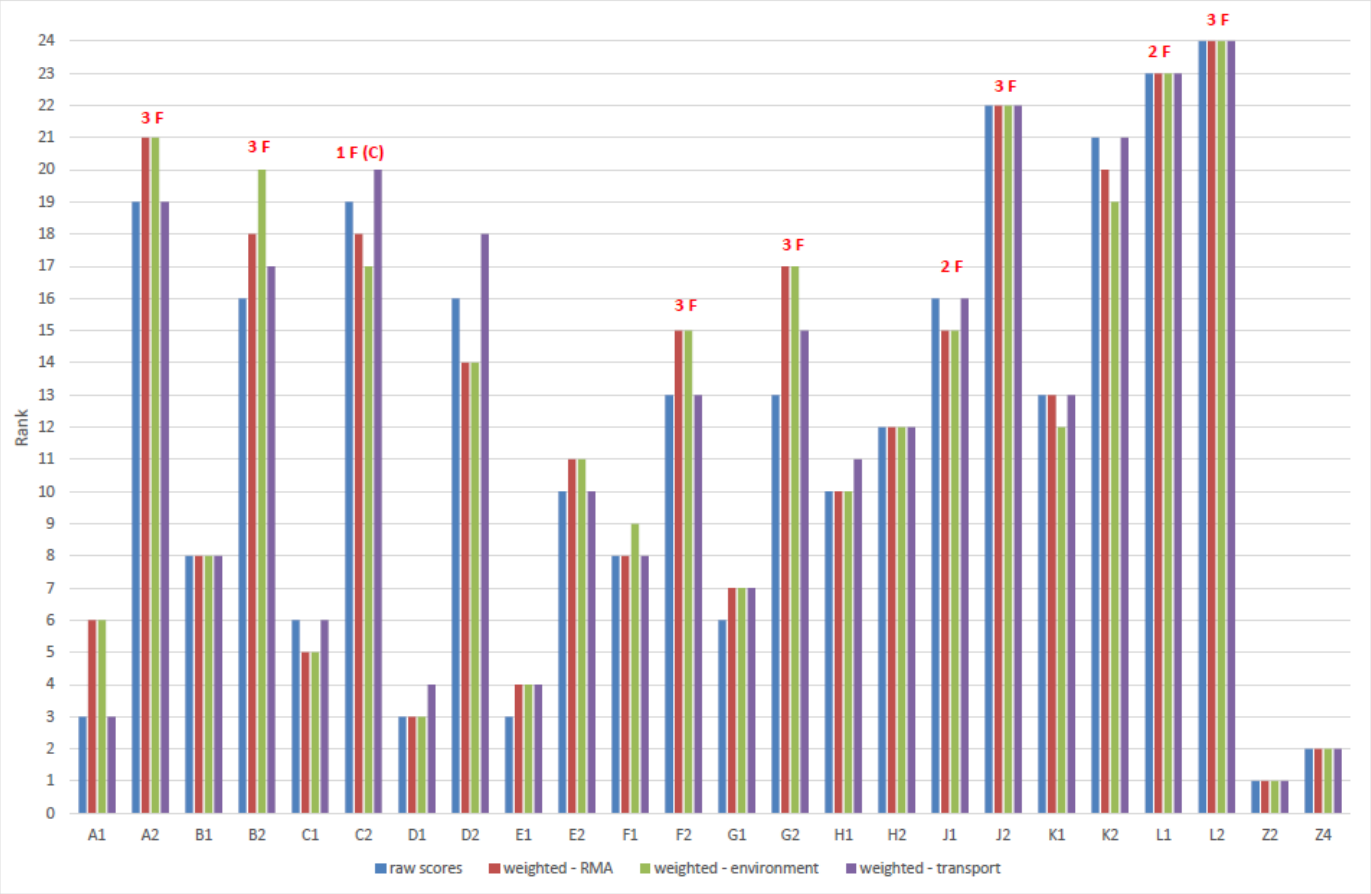

Figure 3 – Cost Estimate Graph