

APPENDIX 8 – ASSESSMENT OF ALTERNATIVES – TRANSPORT
ASSESSMENT

**Assessment of Alternatives
Transportation Assessment**



Peka Peka to North Otaki
NZTA 440 / 442 PN

Assessment of Alternatives Transportation Assessment

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Contents

1	Introduction	2
1.1	Background.....	2
1.2	Methodology.....	2
2	Baseline Assessment	2
3	Traffic Efficiency	4
3.1	Network Performance Statistics.....	4
3.2	Travel Times	5
3.3	Discussion.....	6
3.4	Summary.....	7
4	Active Travel	8
4.1	Discussion.....	8
4.2	Summary.....	8
5	Traffic Safety	9
5.1	Discussion	9
5.2	Summary.....	9
6	Severance and Access	10
6.1	Discussion.....	10
6.2	Summary.....	10
7	Conclusions	11
7.1	Summary of Ratings.....	11
7.2	Preferred Option / Alternative	11

Introduction

This report documents the results of the transportation assessment of alternatives for the Peka Peka to North Otaki Scheme Assessment Project. The options assessed are those presented in the Peka Peka to North Otaki Expressway Alternate Corridors Report – Draft V2.

Background

This assessment of alternatives is based on the briefs provided by Vanessa Brown on 4 March and 9 May 2011. It is in accordance with the methodology outline in the memo prepared by Roger Burra dated 31 March 2011. All of the briefing documents described above can be found in Appendix A.

As per the methodology prepared by Roger Burra, no review of previous work has been undertaken. The majority of the assessment is based on the transport modelling undertaken for the Alternate Corridors Report and technical assessment of specific criteria.

Methodology

The transport assessment will be based around the following four criteria:

- Traffic Efficiency
- Active Travel
- Traffic Safety
- Severance and Access

The assessments against these criteria are presented in the subsequent sections of this report.

Baseline Assessment

This assessment of traffic and transportation associated with different corridors between Peka Peka and north Otaki has been based on baseline information presented in the 2002-2003 SAR and addendum). The PP2O Scoping Report 2010 and Peka Peka to North Otaki Expressway Alternate Corridors Report – Draft V2. These reports and documents contain information such as:

- Land-use demands;

- Existing Traffic and Transportation Facilities;
- Safety;
- Forecast Demands;
- Assumptions; and
- Design philosophy.

In addition to this background information the PP2O traffic model has been used to assess baseline and forecast traffic conditions and demands.

Traffic Efficiency

The traffic efficiency will be assessed by comparison of network performance statistics and travel times from the 2010 PP2O SATURN model. The assumptions for the modelled are outlined in the Alternative Corridors Technical Feasibility Report Draft V2 (April 2011).

Network Performance Statistics

The table 3.1 below compares the network performance statistics:

Forecast year 2026 PM		Do Minimum	Board Preferred Option	Alternative A	Alternative B	Alternative C
Performance Measure	Units	Actual	change%	change%	change%	change%
Network average travel speed	kms/hr	68.6	+19%	+15%	+17%	+21%
Total trips assigned	pcus	963	0%	0%	0%	0%
Total travel time	pcu-hrs	545.3	-15%	-5%	-10%	-13%
Total vehicle distance	pcu-kms	37400	+1%	+9%	+5%	+5%
Total delayed time	pcu-hrs	8.3	-95%	-95%	-96%	-96%
Total queued time	pcu-hrs	5.9	-59%	-66%	-66%	-68%

Table 3.1: 2026 PM peak performance comparison

The following performances measure changes are positive:

- Increase in network average travel speed (note that this does also impact on vehicle operating cost which is a negative)
- Decrease in total travel time
- Decrease in total vehicle distance
- Decrease in total delayed time
- Decrease in total queued time

Travel Times

The table 3.2 below compares the travel time statistics:

2026 PM	Routes	Peka Peka Rd to South Manakau via Existing SH1 (NB)	South Manakau to Peka Peka Rd via Existing SH1 (SB)	Peka Peka Rd to South Manakau via Express way (NB)	South Manakau to Peka Peka Rd via Express way (SB)	Tasman Rd to Freeman Rd via Mill Rd (EB)	Freeman Rd to Tasman Rd via Mill Rd (WB)
Do Minimum	Time (s)	867	855			364	362
	Dist (m)	18130	18130			4840	4840
Board Preferred Option	Time (s)	814	836	672	671	415	414
	Dist (m)	18018	18145	18545	18545	5590	5590
Alternative A	Time (s)	890	886	700	696	357	357
	Dist (m)	18145	18145	19350	19250	4840	4840
Alternative B	Time (s)	873	868	667	663	357	357
	Dist (m)	18145	18145	18430	18330	4840	4840
Alternative C	Time (s)	847	843	703	707	356	356
	Dist (m)	18145	18145	19430	19530	4840	4840

Table 3.2: 2026 PM peak travel time and distance on selected routes

More travel time statistics are provided in table 3.3 below for selected routes to/from local road locations:

2026 PM	Routes	Peka Peka Rd to Arthur Street	Arthur Street to Peka Peka Rd	South Manakau to Arthur Street	Arthur Street to South Manakau	South Manakau to School Road	Arthur Street to School Road
Do Minimum	Time (s)	510	497	357	357	642	675

	Dist (m)	10500	10500	7630	7630	13150	13150
Board Preferred Option	Time (s)	453	479	331	307	622	603
	Dist (m)	10689	11194	7630	7630	13285	13158
Alternative A	Time (s)	502	502	384	388	670	661
	Dist (m)	10515	10515	7630	7630	13150	13150
Alternative B	Time (s)	502	502	364	370	654	661
	Dist (m)	10515	10515	7620	7630	13285	13285
Alternative C	Time (s)	502	501	339	345	628	635
	Dist (m)	10515	10515	7620	7630	13285	13285

Table 3.3: 2026 PM peak travel time and distance on selected routes

Discussion

Bullet point discussion on traffic efficiency results are provided below.

- All of the alternatives have improved network performance statistics when compared to the do-minimum except for total travel distance.
- The order of improved network performance statistics as the key differentiation is; board preferred alignment, alternative C, alternative B, and alternative A.
- The board preferred alignment and alternative C have slightly improved network travel times for north-south through traffic on the existing SH1 when compared to the do-minimum. Alternative B and alternative A have slightly worse network travel times for north-south through traffic on the existing SH1 when compared to the do-minimum.
- The board preferred alignment and alternative B have the best network travel times for north-south through traffic on the new expressway. Alternative C and alternative A have slightly worse network travel times.
- Alternative A, alternative B and alternative C have slightly improved network travel times for east-west traffic through Otaki when compared to the do-minimum. The board preferred alignment has slightly worse network travel times for east-west traffic through Otaki when compared to the do-minimum (this is based on Rahui Road being closed).
- All options had very similar network travel times between the southern edge of the project and Otaki Retail Area when compared to the do-minimum.
- The board preferred alignment and alternative C have slightly improved network travel times for traffic travelling between the southern edge of the project and Otaki Retail Area and the northern edge of the project and Te Horo when compared to the do-minimum. Alternative B and alternative A have slightly worse network travel times when compared to the do-minimum.

Summary

The assessment ratings for the alternate corridors are provided below.

Route	Board Preferred Option	Alternative A	Alternative B	Alternative C
Rating	++	-	0	+

Active Travel

The effect on pedestrian and cyclist travel of each alternative is discussed below. The criteria used for assessment was the degree to which pedestrian and cyclist travel is improved or reduced for key linkages – especially across the expressway.

Discussion

Bullet point discussion on active travel is provided below.

- It has been assumed that no pedestrian / cycle facilities will be provided on the expressway corridor. A new shared pedestrian cyclist facility will be provided on the existing SH1 route under all options / alternatives.
- A new shared pedestrian cyclist facility will be provided in the board preferred option for access from the severed Old Hautere Road to Otaki Gorge Road.
- Pedestrian / cycle travel between east and west Te Horo will be made more onerous under the board preferred option and alternative B as these users will have to travel on an indirect traffic bridge over the expressway. Under alternatives A and C the existing situation will be retained with reduced traffic flows on existing SH1.
- Pedestrian / cycle travel between east and west Otaki on Rahui Road will be made more onerous under the board preferred option as these users will have to travel on an indirect bridge over the expressway. Under alternatives A, B and C the existing situation will be retained with reduced traffic flows on existing SH1.
- All local roads severed by any of the options / alternatives have alternate local access provided.

Summary

The assessment ratings for the alternate corridors are provided below.

Route	Board Preferred Option	Alternative A	Alternative B	Alternative C
Rating	0 (+ if Rahui Rd included)	+	+	+

Traffic Safety

The effect on traffic safety of each alternative is discussed below.

Discussion

Bullet point discussion on traffic safety is provided below.

- The monetised crash savings (relative to the do-minimum) for the board preferred option is approximately \$36 million (NPV).
- The monetised crash savings have not been calculated for alternatives A – C. The value of the monetised crash savings broadly speaking increases as trips are transferred from the existing SH1 to the expressway. This is because the existing SH1 has a poor crash record and the expressway will be significantly safer.
- The traffic volumes on the existing SH1 reduce by approximately 86% in the board preferred option and by approximately 81% in alternatives A, B and C. so there is likely to be very little difference in crash benefits between the four options / alternatives.
- However, the greater trip length and time increase the higher the risk of crashes. This is especially relevant for trips from the interchange to Otaki in Option A as per table 3.2 above, but also for options B and C to a lesser extent.
- Removal of at grade rail crossings (Rahui Rd, Old Hautere Rd, and Te Horo) with Board Preferred Option and in part for alternative A (Te Horo only) is seen as a significant safety benefit.

Summary

The assessment ratings for the alternate corridors are provided below.

Route	Board Preferred Option	Alternative A	Alternative B	Alternative C
Rating	++	+	+	+

Severance and Access

The effect on severance and access of each alternative is discussed below. The criteria used for assessing severance are the effect on populated and urban areas where a new corridor exists. The criteria used for assessing is the number of accesses where there is an improved or reduced level of service. Note: that severance and access is also covered by the Social Impact Assessment.

Discussion

Bullet point discussion on severance and access is provided below.

- There will be severance between east and west Te Horo under the board preferred option and alternative B as these users will have to travel on an indirect traffic bridge over the expressway. Under alternatives A and C the existing situation will be retained with reduced traffic flows on the existing SH1.
- Rahui Road will also be severed under the board preferred option as these users will have to divert around County Road. Under alternatives A, B and C the existing situation will be retained with reduced traffic flows on the existing SH1.
- Alternative C severs the Otaki town centre from the beach however; all existing routes are retained via Mill Road with minimal severance effects.
- A number of local roads are severed by the board preferred option including Old Hautere Road and Rahui Road. Alternative access is proposed but is less direct when compared with the do-minimum.
- All local roads severed by alternatives A, B and C generally have alternate local access provided under or over the expressway.
- Access to Otaki will be impacted under all alternatives. The board preferred option provides the most direct access to/from the expressway; however, using the existing SH1 route is still possible under all options and provides a good level of accessibility.
- Access to Te Horo will be affected under all alternatives. The only access is from the existing SH1. Access from the expressway alternatives is similar for all options with access to the north of Otaki and south of Peka Peka respectively.

Summary

The assessment ratings for the alternate corridors are provided below.

Route	Board Preferred Option	Alternative A	Alternative B	Alternative C
Rating	- (0 with Rahui Rd link retained)	0	-	0

Conclusions

The conclusions from the transportation assessment of alternate routes are provided below.

Summary of Ratings

Measure	Board Preferred Option	Alternative A	Alternative B	Alternative C
Traffic Efficiency	++	-	0	+
Active Travel	0	+	+	+
Traffic Safety	++	+	+	+
Severance and Access	-	0	-	0

Preferred Option / Alternative

If all of the attributes are weighted equally then either the Board Preferred Option or Alternative C have been assessed as the preferred route, as they both have the highest average rating.

If more weighting is given to traffic efficiency and safety and less to the effect on the local community then the board preferred option is most desirable.

Based on work undertaken and the development of options, design refinement and mitigation of potential concerns/issues, the Board Preferred Option provides the greatest opportunity for improvement (e.g. if a Rahui Road link can be provided this will significantly improve the ratings for this option in terms of Traffic Efficiency, Active Travel, and Severance and Access).

Design refinement and mitigation should be considered for the preferred option in order to meet the objectives of the project and achieve the most effective outcome for users, the community and nationally.