

Feedback on Post Implementation Reviews - Seal Extensions and Bridge Replacement

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Presentation Outline

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- 3 Projects – Before and After
 - 2 Seal Extensions
 - 1 Low Volume Bridge
- Conclusions
- Questions

Introduction

New Zealand Transport Agency

- LTMA 2003 functions include:
 - Managing funding
 - Auditing performance (to ensure claimed benefits are achieved)
- Annual Audit Programme
 - Post Implementation Reviews
 - 10% Sample
 - 50/50 split State Highways/Local Roads
 - Includes Low Volume Road Seal Extensions and Bridge Replacement

Seal Extension 1 (8km) - Before



- Road serves mussel farms and tourists
- Traffic Volume 166 vpd
- Typical Speed 60kph (assumed)



- Lorries deliver fresh mussels to inland processing plant
- Traffic Growth Predicted 4.9%
- Predicted increase – 20kph

Seal Extension 1 (8km) - After



- Seal extension has improved cornering
- Issues with bitumen surface “bleeding”



- Some marker posts
- No guardrails provided

Seal Extension 1 (8km) – net benefits before and after

Benefit type	Before (\$000)	After (\$000)	Variance
Travel time saving	595	209	-65%
Comfort	629	415	-34%
Vehicle operating cost saving	1,120	777	-31%
Accident cost saving	251	251	0%
CO2	0	0	0%
Other	0	0	0%
TOTAL	2,595	1,652	-36%

Seal Extension 1 (8km) – BCR Before and After

Pre	Before	After
– Costs	\$685k	\$695k (\$87k/km)
– Benefits	\$2,595k	\$1.652k
– BCR	4.6	2.9

Seal Extension 1 (8km) – Summary

- A successful project in terms of on time and on budget
- \$87k/km for a seal extension is low
- The safety benefits of the project have been met so far
- Overall benefits are lower than expected because traffic growth was 0% v 4.9% predicted
- Both assumed speed before and speed increase were over estimated (more like 45kph to 50kph rather than 60kph to 80kph)

Seal Extension 1 (8km) – Summary (cont)

- To date the sealed road has achieved safety benefits
- Potential for loss of control accidents and conflict between mussel lorries and tourist traffic still exists
- Additional edge and centre line markings and edge barriers should be considered

Seal Extension 2 (18.1 km) - Before

- Tourist Route
- Increasing crash rate
- 204 vpd 2001 (2% HCV)
- Current average speed 56kph
- Predicted crash rate reduction 60%
- 7.5% growth forecast
- Predicted increase 23kph (56kph to 79 kph)

Seal Extension 2 (18.1km) - After



- Well signed and good lane markings, edge line
- Guardrail installed at bends



- Guardrail even installed to telegraph poles
- Accident reduction > forecast and less dust

Seal Extension 2 (18.1km) – Net benefits before and after

Benefit type	Before (\$000)	After (\$000)	Variance
Travel time saving	2,556	1,799	-30%
Comfort	2,341	2,139	-9%
Vehicle operating cost saving	2,762	2,524	-9%
Accident cost saving	9,431	14,663	55%
CO2	-3	-3	-10%
Other	0	0	0%
TOTAL	17,087	21,122	24%

Seal Extension 2 (18.1 km) - BCR before and after

	Before	After
• Costs	\$5,555k	\$5,534k (\$306k/km)
• Benefits	\$17,087k	\$21,122k
• BCR	4.3	5.2

Seal Extension 2 (18.1km) - Summary

- The project was successful in meeting its aims of improved safety and comfort
- The overall BCR has improved post implementation due to better than expected accident benefits
- Only two accidents recorded since the seal extension completed
- Lower traffic growth (5.9% v 7.5% predicted)
- Speed increase was over estimated (more like 56kph to 62kph rather than 56kph to 79kph)

Low Volume Bridge - Before



- Existing One way bridge
- 19 km route length (45km longer alternative route)
- AADT 874 (2.5% Growth)



- Do Min is Post at 80% Class1 due to structural failure of abutments
- Potential flooding (5yr return)

Low Volume Bridge - After



- Two lane bridge
- Guardrails on approaches provided



- Increased flood clearance
- Not all Safety audit recommendations implemented
- No recent traffic counts

Low Volume Bridge – net benefits before and after

Benefit type	Before (\$000)	After (\$000)	Variance
Travel time saving	1,266	1,280	1%
Vehicle operating cost savin	1,936	1,280	-34%
Accident cost saving	1,562	781	-50%
Vehicle passing options	0	0	0%
External Impacts	0	0	0%
Vehicle emissions	97	97	0%
National strategic factors	0	0	0%
Other	0	0	0%
TOTAL	4,861	3,437	-29%

Low Volume Bridge – BCR Before and after

	Before	After
• Cost	\$774k	\$667k
• Benefits	\$4,861k	\$3,437k
• BCR	8.4	5.2

Low Volume Bridge - Summary

- The project has successfully met its aim of lifting loading restrictions and improving flood clearance
- Before evaluations incorrectly used Freight Cost Factors from Simplified Procedures
- After evaluation based on simplified procedures reduction in HCV user costs (spread 50/50 TT/VOC)
- Evaluation correctly used the Weighted Attribute Method for both Pre and Post calculation of Accident Costs
- difficult to quantify not meeting some safety audit recommendations. 50% of predicted Accident Benefits assessed

Low Volume Bridge – Summary (cont)

- The BCR is very sensitive to the traffic flow and no recent counts have been done to verify the traffic counts and growth assumed
- 2.6% growth on nearby State highway
- Uncertainty still remains around HCV traffic counts and the average trip lengths
- No survey of local transport operators to estimate the daily distances travelled. Reverted to Simplified Procedures evaluation for HCV VOC benefits

Conclusions

- Evaluations need to be based on robust, evidence-based data, especially traffic flows and traffic growth, speed surveys and accident analysis
- Greater scrutiny of assumptions (i.e. speed increase and traffic growth) required i.e. How realistic are they?
- Greater scrutiny by NZTA's and LAs likely – especially value for money and need for accurate cost estimates
- NZTA now invest for outcomes and therefore monitoring of benefit streams is increasingly important

Thank you – questions?



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