

Business Case Bites

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The role of predictive and actual safety risk within business case prioritisation

WHAT IT IS

The purpose of this 'bite' is to confirm the use of predictive risk in the business case approach and assessment of NLTP funded activities.

Summary

To be prioritised for investment from the National Land Transport Programme (NLTP), activities must provide evidence and assessment against the Investment Assessment Framework (IAF). Although other strategic factors may be considered as part of the problem definition (evidence base and activity development), **from an investment perspective prioritisation is purely based on the IAF.** The criteria for 2015–18 encompass both actual and predictive risk.

Prioritisation of investment

The IAF assessment profile determines the overall priority of activities for investment, as shown in the table below. [For further information refer to the PIKB.](#)

Strategic fit	Effectiveness	Strategic fit and Effectiveness	Numeric benefit and cost appraisal			
			1 to 3	3 to 5	5+	
H	H	HH	Priority 3	Priority 2	Priority 1	Activities with these profiles progress to activity business cases.
H	M	HM	Priority 4	Priority 3	Priority 2	
M	H	MH	Priority 6	Priority 5	Priority 4	
M	M	MM	Priority 7	Priority 6	Priority 5	
H	L	HL	Low strategic fit does not progress beyond strategic business case. Low effectiveness does not progress beyond programme business case.			A decision gate that integrates with the business case approach.
M	L	ML				
L	H	LH				
L	M	LM				
L	L	LL				

For state highway improvements to be considered for investment during the 2015–18 NLTP, the profile must be at least priority order 4 (MH5/HM1 or better), or priority 6 for areas eligible for regional improvements (restricted to eligible areas outside the major metropolitan areas).

WHY USE IT

Problem statements (strategic assessment) can be different from the investment assessment (strategic fit and effectiveness) section of the strategic case – although consistency in outcome, and evidence to support, should be apparent between the two. This is particularly the case where the initial ILM is heavily weighted to stakeholder perceptions and perceived issues, which are then tested with collected evidence.

Benefit statements and key performance indicators (KPI) will then follow accordingly, and may cover the breadth of predicted and actual performance.

Subsequent stages of the business case development (programme business case onwards) must also represent the safety problem in terms of economic efficiency.

HOW IT'S APPLIED

Critical to the use of both predictive and actual risk is the currency of the evidence used to determine priority. This means understanding and identifying any interventions in the corridor which may skew historic / predicted crashes, including minor improvements, speed change, maintenance change or infrastructure improvement which has occurred though the 5/10 year period or since the KiwiRap rating / risk assessment was determined. **For example if applying actual crash risk, the assessment should not use the actual 10 year history if a significant barrier work was completed 4 years ago.** In these circumstances a description of the changes and impact on the risk, re-evaluation of KiwiRap/predictive risk, risk adjustment using crash type, and/or determining crash rates using crash rate analysis or weighted crash procedures (EEM), etc should be used to adjust the evidence base.

All evidence should be tested and confirmed against the current status of the corridor, and prioritised accordingly.

Inclusion in the National Roads and Roadsides business case or the NLTP is not a guarantee of investment, but a point in time prioritisation pending further confirmation. Any activity which has current evidence to support the problem has the ability to be prioritised for investment.

Investment Assessment Framework

The relevant IAF criteria for a safety road infrastructure activity (note that planning, walking and cycling, etc are required to meet the criteria of their respective activity classes) in the IAF is as follows. Refer to the [Planning and Investment Knowledge Base \(PIKB\)](#) for more information.

For medium strategic fit the activity must have a demonstrated 'medium crash risk', and high crash risk for high. These terms are [defined in the PIKB](#).

These definitions include elements of the:

- The High-Risk Intersections Guide; or
- The High-Risk Rural Roads Guide; or
- Urban KiwiRAP corridor risk mapping protocols; or
- Safer Journeys for Motorcycling on New Zealand Roads.

At all stages of activity development an effectiveness criterion must also be applied as part of the IAF assessment, with the overall rating being the lowest of all factors. A low effectiveness implies more work is required before progression, with medium typical of trade-offs or risks which have not been fully resolved. [Refer to the PIKB for more information on the effectiveness criteria.](#)

Economic Evaluation Manual

Predictive risk methodologies are available in the EEM, and standard safety benefit values can be applied to other accepted predictive methodologies (ie those outlined above). However, it should be expected that the BCRs determined using predictive methodologies may result in lower BCRs due to

the lower crash rate thresholds determined using predictive risk 'crashes' rather than actual crash history.

Economic efficiency assessment is independent from the strategic fit criteria – meaning that a BCR may be calculated on actual crash history, when the strategic fit justification is predictive, or vice versa.

The three factor assessment profile allows potential limitations of one factor, to be compensated by gains in the others. For example, the BCR encompasses all crashes, including minor – however the strategic fit better prioritises risk associated with predicted crashes which, by their lower frequency are less valued in a BCR.

FURTHER INFORMATION

Contact [Coral Aldridge](#) from the Outcome Planning team with any queries.

