

# Benefit Cost Ratio and Investment Prioritisation Methodology for National Education and Advertising Programme Business Case

## Benefit–cost ratios

Redacted - Out of scope

### Public Awareness Campaign

The Public Awareness Campaign will inform people about Road to Zero, it will educate and influence people about what we need to change and why and will ultimately build a social license (10-year outcome). This in turn is an enabler for infrastructure projects to be delivered on time and within budget. In lieu of being able to show the impact the Public Awareness Campaign will have on influencing people directly, we can show that not doing this work will have a detrimental impact

on the delivery of the Road to Zero Strategy, in particular the Speed and Infrastructure Programme (SIP).

Applying that logic, the Benefit Cost Ratio for the Public Awareness Campaign can be aligned with the Benefit Cost Ratio for the Speed and Infrastructure Project and would therefore be in the range of 2.1 – 2.3.

To further test this logic, we have calculated the BCRs for the three investment options for three Speed and Infrastructure scenarios. These BCRs have been calculated, on the assumption that the Public Awareness Campaign will influence the delivery time and outcomes of the Speed and Infrastructure Project.

We can see that across all scenarios the Public Awareness Campaign is value for money.

The following assumptions have been modelled:

- marketing activity supports and enables speed and infrastructure changes
- the SIP has a BCR of 2.1-2.3
- if we create an equivalent cash flow for speed and infrastructure that generates a BCR of 2.1-2.3 (calibrated to SIP), we can look at the impact of not doing the Public Awareness Campaign
- we create scenarios where without marketing, benefits are
  - delayed by 1 year
  - scaled back for several years with linear growth
  - permanently reduced
- this generates a loss in net present value (NPV) and this is our 'avoided social cost'
- the present value of our avoided social cost divided by the cost of our Public Awareness marketing campaign give us a BCR.

### Scenario 1. Delayed delivery

Option A	Option B	Option C
MVP - \$9.8m	Fit for Purpose - \$14.7m	Extension - \$26.7m
BCR = 32	BCR = 36	BCR = 20

In this scenario, if the Public Awareness Campaign is not done then all benefits in the Speed and Infrastructure Project are delayed by a year. i.e. by doing the PAC we bring forward benefits by 1 year Across the three investment options, Option B delivers the best outcomes and value.

### Scenario 2. Scaled delivery

Option A	Option B	Option C
MVP - \$9.8m	Fit for Purpose - \$14.7m	Extension - \$26.7m
BCR = 17	BCR = 19	BCR = 11

In this scenario, without the Public Awareness Campaign, the SIP takes longer to get up and running. Only 60% of required benefits are delivered in the first year, scaling up to 100% in year 5. i.e. the PAC allows a faster start and less delays in the SIP. Option B presents the best value here.

### Scenario 3. Permanently reduced

Option A	Option B	Option C
MVP - \$9.8m	Fit for Purpose - \$14.7m	Extension - \$26.7m
BCR = 10	BCR = 11	BCR = 6

In this scenario, if the Public Awareness Campaign is not done then some (5%) of projects are not able to be completed. i.e. The PAC allows for projects to be completed which previously the public would not have allowed. In this scenario Option B presents the best returns on investment.

In summary, while significant assumptions have been made, the above models show that Option B (Fit for Purpose) gives the best BCR and demonstrates the best value for money.

## Investment Prioritisation Method

Redacted - Out of scope

### Public Awareness Campaign

GPS Alignment – **Medium** alignment to safety strategic priority. This is a default for awareness campaigns.

Scheduling – **High** interdependency and criticality. Required to support implementation of the wider programme of Road to Zero. Non-delivery would have a significant impact on realising the Road to Zero programme benefits. Need to undertake this activity in order to deliver the remainder of Road to Zero activities in a timely way.

Efficiency – **High (BCR $\geq$ 10)**.

As we calculated the BCR of the Public Awareness Campaign using multiple sensitivity tests, we have shown all of these results within the IPM. Using the BCR of the Speed and Infrastructure Programme 2.1 – 2.3 as a proxy for the Public Awareness Campaign results in a Priority Score of **7** (as seen by the green circle in figure 8).

Using the preferred Option B - fit for purpose, across the three SIP scenarios the range of BCRs is 11 – 36 and the Priority Score is a **4** (as seen by the black circle in figure 8).

This gives us a Priority Score for the Public Awareness Campaign in range of 4 to 7. Note most BCR's were above 10 resulting in a priority score of 3-4.

Figure 8

Investment Prioritisation 3-factor Matrix for Improvement Activities						
Proposed 2021-24 NLTP Priority Order						
GPS alignment	Scheduling	Efficiency				
		VL* (BCR<1.0)	L (BCR 1.0-2.9)	M (BCR 3.0-5.9)	H (BCR 6.0-9.9) (PV of Costs for end of life replacement)	VH (BCR $\geq$ 10.0)
VH	H	7	2	1	1	1
VH	M	8	3	2	2	1
VH	L	9	4	3	2	2
H	H	9	5	4	4	3
H	M	10	6	5	5	3
M	H	10	7	6	6	4
M	M	10	9	8	6	5
H	L	11	8	8	6	5
M	L	11	10	10	9	8
L	H/M/L	12	12	12	12	12

\* Activities that have a Very Low (BCR<1) Efficiency rating may be included in 2021–24 NLTP if they are above the investment threshold for an activity class. However, funding for these activities will only be approved by exception at the appropriate level of delegation, usually the Waka Kotahi Board.

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