Forms part of a Business Case Approach

The BCA applies across an investment, but is critical at the front to determine if a problem exists, what the consequence is, and the impacts of possible solutions.

EEM useful for developing the Economic Case via a BCR, once the above is carried out.

- The EEM (and BCR) is often used too early.

- It is only at the programme business case stage (post the strategic case), that an “indicative BCR” should be carried out.
NZTA Investment Assessment Framework

Assessment
- ‘Strategic fit’ to the GPS impacts
- ‘Effective’ in addressing the impact
- ‘Economically efficient’ in using resources

Prioritisation
- Lower weight to ‘economic efficiency’ than in the past
History – since 1986

- National Roads Board Technical Recommendation 9 (TR9)
- Transit NZ Project Evaluation Manual
- Transfund NZ Evaluation Procedures for Alternatives to Roading (ATR)
- Transfund NZ Economic Evaluation Manual
- NZTA Economic Evaluation Manual
EEM objectives

- common basis for assessment
- standardised values
- standardised procedures
- standardised worksheets
- relative magnitude of benefits and costs
- appropriate data collection and analysis
Cost benefit analysis defined in EEM

- compares benefits measured in dollars with cost of a proposed activity
- proves activity’s value in monetary terms
- social cost benefit analysis
  Impacts as benefits or dis-benefits
- to transport users
- to non-transport users

Total cost – whole of evaluation period (generally 40 yrs)
- capital
- maintenance
- operating
Putting it together

Costs
- estimated amount
- over known time

Benefits
- impacts that maybe positive or adverse
- predicted to occur in future
Three levels of impacts

- benefits with standard $ values
  - vehicle operating cost, time, accidents, …

- external impacts with standard $ values
  - carbon dioxide, noise, …

- external impacts without $ values
  - ecological, cultural, …
What determines the level of impact?

- based on demand
  - historical
  - forecast

- based on diversion
  - historical
Forecasting demand

- traffic volume
- passenger transport patronage
- future growth
- population – size and distribution
- land use – details and distribution
NZ and UK Traffic Forecasts

NZ VKT forecasts and actual VKT

DfT Forecasts and actual car traffic growth
Benefits – national economic

- travel time cost savings
- vehicle operating cost savings
- accident cost savings
- risk reduction benefits
- carbon dioxide benefits
- external impact benefits
- health benefits
- transport user cost savings
## Benefit Types

<table>
<thead>
<tr>
<th>Benefit Type</th>
<th>Road</th>
<th>Transport demand management</th>
<th>Transport services</th>
<th>Walking and cycling</th>
<th>Education promotion and marketing</th>
<th>Parking and land use</th>
<th>Private sector financing and road tolling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel time cost savings</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Vehicle operating cost savings</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Crash cost savings</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Seal extension benefits</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Driver frustration reduction benefits</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Risk reduction benefits</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Vehicle emission reduction benefits</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Other external benefits</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Mode change benefits</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Walking and cycling health benefits</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Walking and cycling cost savings</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Transport service user benefits</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Parking user cost savings</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Journey time reliability benefits</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Wider economic benefits</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>National strategic factors</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
The baseline - do minimum

- a proposed activity addresses an issue

- There are costs and benefits associated with the activity

- costs and benefits are also associated with not pursuing the activity, referred to as the do minimum

- In many cases the “do-minimum” requires adjustment due to limitations of analysis tools
External impacts of activities on non-transport users and environment

- vehicle emissions including CO2
- noise and vibration
- ecological
- visual
- severance and isolation
Conventional benefits

Conventional benefits are:

- travel time savings
- vehicle operating cost savings
- accident cost savings
- health benefits
Wider economic benefits are additional:

- agglomeration from increased effective density
- imperfect competition effects from increased turnover
- additional labour supply from access to a larger pool
- more productive jobs from reducing commuting costs
Uncertainty and risk

guidance on the treatment of

- uncertainty in predicting benefits
- risk management costs
- by sensitivity or risk analysis
Sensitivity Testing / Risk Analysis

- Sensitivity of DECISIONS to INPUTS
- Wider range when inputs are uncertain
- Tighter scrutiny needed

Source: Adapted from Voros (2003) and Hancock and Bezold (1994)
Important Areas of Focus

- Use of Scenarios
- Incorporating uncertainty in entire analysis system
- Indicative BCRs that disappear to avoid lock-in
- Conspicuously Crude
Strengths of economic evaluation

- national economic welfare principles
- provides consistency for prioritisation
- has evolved and been adapted over time
- rigorous quantification of benefits and costs
- can incorporate externality effects
- public accountability (and transparency)
Weaknesses of economic evaluation

- relies on inherently imprecise forecasts

- does not easily handle
  - unquantifiable effects
  - regional or local needs
  - complex urban issues - eg, passenger transport
Finding the EEM


Current release

<table>
<thead>
<tr>
<th>Effective date</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Jan 2016</td>
<td>Economic evaluation manual, first edition, amendment 1 [PDF, 3.7 MB]</td>
</tr>
<tr>
<td>1 Jan 2016</td>
<td>Crash risk factors guidelines (compendium) [PDF, 690 KB]</td>
</tr>
<tr>
<td>1 Dec 2015</td>
<td>Update factors for 2015 [PDF, 83 KB]</td>
</tr>
<tr>
<td>1 Jan 2016</td>
<td>General circular 15/06 – EEM technical update release [PDF, 379 KB]</td>
</tr>
<tr>
<td></td>
<td>Frequently asked questions [PDF, 81 KB]</td>
</tr>
</tbody>
</table>

Evaluation procedures

<table>
<thead>
<tr>
<th>Date issued</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Jan 2016</td>
<td>SP1 Road Renewals [XLS, 141 KB]</td>
</tr>
<tr>
<td>1 Jan 2016</td>
<td>SP2 Bridge Renewals [XLS, 248 KB]</td>
</tr>
</tbody>
</table>