



The Business Case Methodology and Transportation Modelling

Communicating the understanding

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Overview

- The past
- The need for change
- Strategic case
- When to model
- What models
- Understanding Risk

The Past

- Scoping / PFR / SAR
 - Prescriptive approach
 - Repetitive investigations
 - Covered same ground as the study progressed

 - Focus on model results
 - BCRs
 - Spurious accuracy
 - Sensitivity testing in isolation

 - Produced a best of the best design.



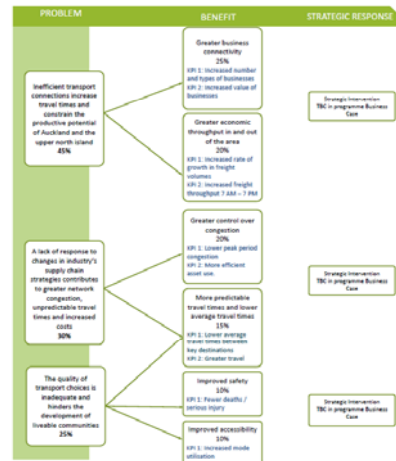
Need for change

- Realism
 - Admit we don't know what will happen in the future
 - Recognise that we know what *may* be important
- Focus
 - Support schemes that deliver intended benefits, not just most economically advantageous design
 - Prevent scope creep / deviation
- Understand Risk
 - Deliver schemes which are more resilient



Strategic Case

- The 'Strategic Case' is the spine of the Business Case process
- Developed 'in house' with stakeholders
- Investment Logic Mapping (ILM)
- Defines what the problem is and what the benefits will be from solving that
- Modelling, consultation, cost estimate, etc, adds the flesh to the SC as the Business Case develops



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When to model

- As required
- Need for information and understanding throughout process
- 'Rightsize' of modelling
 - High-level for Programme Business Case
 - Probably more in depth for Indicative and Detailed Business Cases
 - What's required to support the Strategic Case – what are desired benefits (but don't forget the unintended consequences)
 - Identify Risk
- Modelling is **not** to show what the scheme will achieve, it is there to aid understanding of the issues and challenges and how it will contribute to the outcomes.

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What modelling tools?

- Back of envelope / excel, etc
 - Rightsize
 - May not need anything else to tell story

- Intersection models (Sidra / LinSig /Transyt)
 - Identify capacity
 - Quick to test range of demands
 - Gives 'delay' as output



What modelling tools? (cont.)

- Microsimulation
 - \$\$\$ to build
 - Only as good as data you put in, and understanding you get out
 - Careful not to make decisions on outputs you can't measure in reality
 - Can produce output easily comparable to 'observed' data
 - Time consuming to model all sensitivities/risks

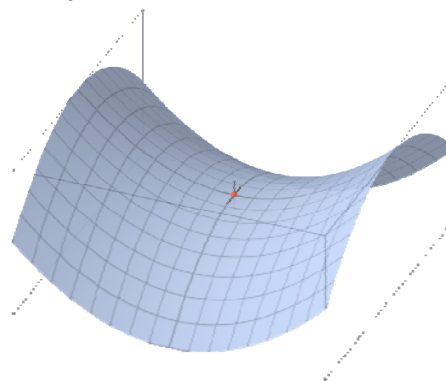
- Strategic Models
 - \$\$\$\$ to build and easy to get sucked into modelling every scenario
 - Step back and see if existing output already clearly answers the question
 - May not show all the issues / benefits
 - Use in conjunction with other tools

- Best approach will be bespoke combination



Risk

- Not the same as sensitivity
- Identify areas where there would be concern
 - Specific land use changes / sensitivity
 - Modal share sensitivity
 - Upper bound on capacity
- Context
 - ‘Corridor’ bottlenecks or future schemes
 - Future enhancements
 - Additional lanes
 - Grade separation



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Risk (cont)

- Could use a ‘simulation’ approach to modelling risks
 - Multiple assumptions
 - Paired / conflicting variables
 - Lower PT share linked to higher road demand
 - Faster growth in residential land
- Would result in a lot of data
- How to communicate the underlying issues?

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Communicating Risk

- We have modelled 6 scenarios to assess the sensitivity to input parameters. These include the traffic growth rate, population growth, rail movements and possible subsequent schemes. These result in the BCR varying from 1.5 to 2.7 as shown in the table below:

| Assumption | Lower | Mid | Upper |
|------------|-------|-----|-------|
| 1 | 1.8 | 2.1 | 2.3 |
| 2 | 1.9 | 2.1 | 2.4 |
| 3 | 2.1 | 2.1 | 2.1 |
| 4 | 1.5 | 2.1 | 2.7 |
| 5 | 1.8 | 2.1 | 2.5 |
| 6 | 2.0 | 2.1 | 2.2 |



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Communicating Risk (cont.)

- *“Option 3 is expected to provide all the required benefits unless the bottleneck at High Road is removed.”*
- Emphasis on the profession to translate the technical modelling into useful understanding to guide project development.



Modelling led decisions



KPIs

- A KPI is for life, not just for Christmas
 - Is it measurable during the development and post implementation
 - Consider alternatives other than before / after surveys
 - Can be costly
 - Confounding factors
 - Will project team still be around after
 - How long to wait to demonstrate if benefits achieved?
 - Is the problem a future problem?
 - Strategic case should provide clues as to how to measure success
 - Good KPIs should work during
 - MCA process
 - Principal's Requirements (if D&C)
 - Post Implementation Evaluation



KPIs (cont..)

- What measures / modelling
 - Benefits are achieved by users, so what can users perceive?
 - Journey time
 - Between where and where
 - Average or max
 - What days?
 - Account for peak spread
 - Queues
 - Average peak, max daily, reaches critical location
 - Journey time variability
 - Likely to need microsim modelling to assess this explicitly
 - (Safety)



Summary

- Little change from an excellent PFR/SAR to new Business Case, both clearly tell the story and focus on the problem
- Start out with clear understanding of change which needs to happen
- Work through the options and how each support the delivery of those benefits
- Modelling will be contained in an Appendix – important to write a clear executive summary of the output.
- Consider the audience
- Strategic case and the KPIs define the scope.