

## Reprioritising infrastructure projects

The cost of Christchurch's devastating earthquakes means that the Government's prior promises to undertake specific infrastructure projects now have to be reviewed. As the Finance Minister<sup>1</sup> signalled, funding Christchurch's recovery will prompt 'a fairly hard look at our capital investment priorities to see whether they can be shuffled around'.

The challenge is to make the right tradeoffs about whether to abandon or delay a given infrastructure project and redirect those funds to Christchurch's redevelopment or to continue as originally planned.

### Are our prioritisation methods up to it?

Making tradeoffs is easier said than done.

A major complication is that current economic methods and assumptions significantly understate the value of many of the ambitious transport infrastructure projects such as the Roads of National Significance (RoNS) and some major upgrades to public transport networks. In particular, current approaches are not very good at assessing the costs and benefits of transport projects that could cause major changes to a region's economy and urban land use development.

The risk is that some infrastructure projects that are in the economy's long-term interest will be put on hold when it would be better to look elsewhere to find the money needed to support Christchurch's recovery.

It might be more sensible for the Government to cut back lower value spending programmes, or push out its goal of returning to budget surplus a bit, if it means the investment that does occur improves New Zealand's long-term economic growth potential. But to make such tradeoffs requires a sensible way of comparing net benefits across a wide range of options.

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<sup>1</sup> <http://tvnz.co.nz/business-news/amp-business-finance-minister-quake-impact-5-25-video-4042587>

## Sound prioritisation needs sound analysis

There is about \$10 billion tied up in the RoNS programme, which makes it one of the more likely targets for re-prioritisation. There are some other major non-RoNS transport projects being considered also, primarily in Auckland, such as the Auckland CBD Rail Link project.

These major transport projects have the potential to support economic growth by providing high capacity, bottleneck-free, longer distance routes to, through, and around our major cities. Although many of the constituent RoNS projects had long been in the pipeline they have surged ahead as a coordinated programme to stimulate the economy and to lift long-term economic productivity to improve standards of living.

However, the funding unexpectedly needed to support the recovery of Christchurch has brought into sharp and immediate focus the challenges that investment in the RoNS and other major transport projects were up against anyway: generally low benefit-cost ratios when funding availability is tight.

## Estimates of the benefits of strategic network improvements are understated

We have found that the benefits of major transport projects are likely to be substantially understated. This is because the conventional approach applies some implausible assumptions.

The most significant assumption is that projects do not cause changes to how land is used or where people live. But this is contrary to the evidence: large scale transport projects *do* change where people live, where they shop, where businesses locate etc. The omitted benefits from major land use changes could be substantial compared to the conventional benefits.

Project assessments generally exclude an estimate of induced freight or work-based journeys. This is the same as assuming that transport improvements do not increase economic activity. But a strategic network improvement can lower firms' transport costs. This would increase firms' demand for transport to bring in their inputs and distribute their outputs. To ignore these behavioural responses of firms is to ignore these potential benefits.

Another problem is that current approaches do not capture the impact of private sector reinvesting some of the benefits rather than 'consuming' them immediately. Investment targeted at export-earning industries have been found to be particularly beneficial, but such benefits are largely absent from conventional appraisals.<sup>2</sup>

These are areas where computable general equilibrium (CGE) modelling can help. For example, the long-term benefits might be up to three times greater than conventional benefits, if the private sector reinvests some of their productivity gains in capital equipment to improve productivity.<sup>3</sup>

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<sup>2</sup> Grimes, A (2010) *The economics of infrastructure investment: beyond simple cost benefit analysis*. Motu Working Paper 10-05, Motu Economic and Public Policy Research.

<sup>3</sup> Infometrics (2009) *General equilibrium analysis of Roads of National Significance*, contained in SAHA (2010) *Roads of National Significance — Economic assessments Review; Final report*. Report for NZ Transport Agency

## Better estimates of the benefits of major transport schemes are possible

The sheer scale of investment decisions — whether to proceed, delay, or scrap — and the potential size of transport project impacts that are missing from conventional analysis justify a closer look at how the transport system interacts with the economy and land use (including demographics).

There are tools that, with time, can help, such as Land Use/Transport Interaction models and CGE models of the economy. There are now methods to estimate the benefits of transport projects that change land uses, and these should be pursued further.<sup>4</sup>

CGE modelling could be useful in a range of ways, such as helping transport models estimate the induced journeys by firms as they increase their economic activity. One approach NZIER is exploring is how to use CGE to calculate ‘correction factors’ to use in conventional cost-benefit appraisals to represent the range of benefits currently omitted.

## Some guiding principles

Although there is much scope to improve economic appraisal methodologies, this will take time and a concerted effort. They cannot be improved in time to assist with reconsidering the priorities of infrastructure projects to help fund the recovery of Christchurch. Below we offer some guiding principles in light of the weaknesses of current approaches to help reduce the risk that the wrong projects may get weeded out or delayed.<sup>5</sup>

Traits	High priority to projects that:	Low priority to projects that:
Network completeness	Complete a major corridor or area network upgrade and unlock the benefits of complementary prior investments	Are at an early stage and require numerous uncommitted complementary network improvements to enable full benefits to occur
Economic development	Support major urban land use changes (including population and economic activity) that are already well in motion	Are based on speculation that they will put in motion major urban land use changes that are not expected to occur in the project’s absence
Impact	Principally support export-earning industries	Principally support the non-traded goods sector, non-work activities or other non-market benefits
Economic efficiency	Have high benefit-cost ratios	Have low benefit-cost ratios – provided the project is not expected to materially affect land uses, population, and economic activity

In addition, we advocate the following principles:

- value for money tradeoffs are supported with evidence rather than asserted or assumed
- the strengths and limitations of methods and analysis are openly acknowledged
- where judgements override formal analysis (and this is what we elect politicians for), then this is made transparent.

<sup>4</sup> David Simmonds Consultancy and John Bates Services (2001) *Appraisal in Land-Use/Transport Interaction: Design*. Report to Government Office for the North-West.

Also, Department for Transport (2010) *WebTAG Unit 3.16: Appraisal in the Context of Housing Development*.

<sup>5</sup> Our focus here is more narrowly centred on economic development; a more general prioritisation framework would take account of other important factors and obligations such as the need to improve safety.

There are major projects (and packages of projects) that will fit fairly cleanly in the high or low priority categories. This helps to free up analytical resources to focus on those schemes that fall somewhere in the middle. An example of a high priority project in this framework is the Waterview Connection as it completes Auckland's Western Ring Route motorway. Some major corridor improvements being planned would fit in the low priority category because their physical works have not substantially commenced yet, and their pay-offs are more speculative (compared to projects that would alleviate proven congestion, say). Projects with more uncertain pay-offs could potentially wait for the time being if needed.

## Summary

High quality economic appraisals help decision makers to make the right tradeoffs when tough decisions must be made. They also help to justify funding decisions to stakeholders and sustain them over potentially long and turbulent periods before those decisions are irreversible.

Because they are long term investments, it is important that the case for chosen major infrastructure projects is strong and durable enough to withstand unexpected changes in priorities. The earthquakes in Christchurch represent a major test to these infrastructure priorities. And there will be more unexpected events over the next ten years.

We must continue to challenge and improve economic methodologies to better support the decision-making processes. It is only in this way that we can maximise our chances of making the right tradeoffs and direct limited funding towards its highest value uses.

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