**Strategex submission to Transport Connectivity Inquiry**

Strategex
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## Strategex submission

In summary, Strategex submits that transport connectivity makes an important difference to economic activity, especially land values. The benefits of land value impacts, which are partly additional to travel time savings, are usually ignored by government agencies in Australia, distorting public investment decision making. Strategex asks the Committee to recommend changes to investment appraisal guidance to incorporate impacts of transport investments on land use.

**Transport connectivity makes an important difference to economic activity, especially land values.**

A number of case studies demonstrate that transport connectivity makes a difference to land values, and that this contribution is significant, including: Sydney Harbour Bridge. Auckland City Link, Perth City Link.

A recent paper by BITRE cites many examples of land value capture:

- "The most well-known example in Australia is the use of a sophisticated version of betterment tax to fund a third of the construction of the Sydney Harbour Bridge (Ergas 2014). More recently, a quarter of the funding for the construction of Melbourne's City Loop rail system, completed in the early 1980s, was from a betterment tax on properties in the City of Melbourne (Lee 2007, Mares 2012). Currently, the Gold Coast Rapid Transit Light Rail is being partly financed by a form of city-wide betterment tax (McIntosh 2012). This project is discussed further on page 5. While betterment taxes are normally used to help fund large pieces of infrastructure, a form of betterment tax has been used in Western Australia since the 1950s to purchase land for future infrastructure and public amenity (Western Australian Planning Commission 2007)."

The BITRE paper fails to mention a recent case study from New Zealand, namely the Auckland City Rail Link. The ex-ante evaluation in 2010[1] analysed scope for value capture. Since 2010, significant land development has proceeded around the proposed rail line.

The BITRE paper also fails to cite some very useful literature from New Zealand, such as:

- Grimes A. & Young C. 2010 *Anticipatory Effects of Rail Upgrades: Auckland's Western Line*
  "We examine effects of urban passenger rail upgrades to Auckland‟s Western Line. The upgrades, and associated urban renewal projects, were announced in mid-2005. International experience indicates that the anticipated benefits of the upgrades should be factored into people's location and pricing decisions on announcement. We utilise unit record house sale price data, using a new repeat-sales methodology, to measure house price appreciation, testing the hypothesis that price appreciation is affected by proximity to Western Line stations. We find a small, statistically significant rise in values of houses located near stations upon announcement. Houses near stations that are more distant from

[1] https://at.govt.nz/media/imported/4601/crl-business-case-report.pdf

the Auckland CBD may benefit more than houses closer to the city."
Rise in prices was 3.5% prior to actual construction.

- Grimes A. and Liang Y. 2008 Bridge to Somewhere: The Value of Auckland's Northern Motorway Extensions
  "We estimate benefits that have resulted from extensions to Auckland's Northern Motorway since 1991. Population and employment rose substantially in locations near the new exits and to the north of the motorway extension, relative to developments elsewhere on the North Shore and in the broader Auckland Region. Land values also rose strongly near the new exits. Our approach to measuring net benefit uses changes in land values (after controlling for other factors) as a revealed preference indicator of value. We compare the estimated benefits with costs of the project to gain a measure of the project's benefit:cost ratio (B:C). Our results indicate that the gross benefit of the extensions from Tristram Avenue to Orewa is at least $2.3 billion (2004 NZ$s) compared with the estimated extension costs (discounted to 2004) of $366 million, giving a B:C ratio of at least 6.3, which exceeds the standard ratio of 4.0 used to approve roading projects in New Zealand. Our estimates take account of the possibility of diminution in value occurring elsewhere near the existing Northern Motorway network, but not in other areas of Auckland or elsewhere in the country. Conversely, they do not include any benefits that may be impounded in commercial property values in the CBD (and elsewhere) arising from increased accessibility to an enlarged labour pool."

**Land value benefits are usually excluded by Government agencies.**

Australian guidance on transport system management instructs people to exclude land value impacts when assessing impacts of transport projects. The stated reason for excluding land value impacts is to avoid double counting economic benefits. This is based on the belief that the value of land impacts is exactly the same as the value of travel time savings, as explained below.

- National Guidelines for Transport System Management (current guidance was published in 2006 (copy at http://transportinfrastructurecouncil.gov.au/publications/). New guidance is being updated at http://ngtsmguidelines.com/). Volume 4 Chapter 2 says:
  - "Similarly, increases in land value that may result from urban public transport initiatives are generally a capitalisation of other benefits. Accordingly, they should not be included in economic appraisal of initiatives because this would double count benefits."
- The *National Charter of Integrated Land Use and Transport Planning* was published in 2003 and has not been updated since. Section 2 says:
  - "Investment in transport and development should be linked. Critical activities include linking investment in transport infrastructure and services to economic, social, and environmental outcomes and linking land use decisions to transport infrastructure and services."
- NSW guidance "Principles and Guidelines for Economic Appraisal of Transport Investment and Initiatives" section 4.4 says:
  - "Conventionally, economic appraisals capture land use impacts indirectly."

- Dobes 1999 "Facts and Furphies in Cost Benefit Analysis" chapter 10 says :
    - "Double counting often results from adding increases in land values to conventional measures of benefit."

However the belief that value of land impacts is exactly the same as the value of travel time savings is only valid in very special conditions, which are never explicitly verified and in fact do **NOT** hold for major transport investments in Australia. So the assessment of economic benefits from public transport projects is flawed and probably biased in favour of roads.

The special conditions under which the value of land impacts is exactly the same as the value of travel time savings are when the land market is in equilibrium; that is, no one moves house as a result of the transport investment. This is explained in the following paper:

- Mohring H. 1961 *Journal of Political Economy*, Vol. 69, No. 3 (Jun., 1961), pp. 236-249 "Land Values and the Measurement of Highway Benefits"
  Specifically: 'In equilibrium - that is, when all families are content to stay where they are-the annual rents, Ri and Rj, on two pieces of property will differ by (capitalised travel time savings).'

Mohring's paper is silent on the relationship between land value impacts and travel time savings when the land market is not in equilibrium. Martinez and Arraya[2] have analysed to what extent transport users' benefits percolate into land rents, showing empirical evidence that it may be limited.

<u>Case study of what not to do: HSR Phase 2.</u>

The 2011-12 High Speed Rail Phase 2 study demonstrates the absurdity of ignoring land use impacts. The terms of reference for the Phase 2 study[3] were very prescriptive - 18 pages long[4]. Almost all of the terms of reference required that the study use the 2006 National Guidance for Transport System management, which (as noted above) excludes land value impacts. Less than half a page (5%) of the terms of reference (Module 4d) envisaged changes in land use. So the most recent publicly funded study into HSR was effectively directed to assume that the people would not change location as a result of high-speed rail – that is, to assume that the land market was in equilibrium.
It is highly likely that the HSR Phase 2 study chose the wrong route and made sub-optimal findings about station locations given the prescriptive misdirection. Strategex could elaborate on this if desired[5].

**Strategex asks the Committee to make the following findings:**

- **National guidance should give equal weight land to value and travel time impacts**
- **Land value impacts could be assessed in terms of unimproved land**

[2] Martínez F.C. and Araya C.S., 2000, *Environment and Planning* A 2000, vol 32 "Transport and Land Use Benefits under Location Externalities"
[3] https://infrastructure.gov.au/rail/trains/high_speed/tor.aspx
[4] One wonders why the terms of reference were so prescriptive.
[5] http://www.strategex.com.au/portfolio/high-speed-rail-economic-assessment/

- **Recent investments should be evaluated in terms which assess land value impacts.**
- **All current and new projects should be re-assessed to comply with new guidance.**

**1. National guidance should give equal weight to land value and travel time impacts**

The *National Guidelines for Transport System Management* are being re-written according to a website[6]. The new guidance should give equal weight to land value impacts as well as travel time impacts.

In line with Mohring's article, any assessments should be required to check explicitly whether the land market will remain in equilibrium during the transport infrastructure investment. If not, then there should be explicit analysis of overlap between different types of benefits.
The paper "More Productive Space and Time" prepared for the Victorian Competition and Efficiency commission discusses how appraisal methodology could take better account of accessibility (land productivity) and mobility (travel time productivity).

**2. Land value impacts could be assessed in terms of unimproved land value.**

Unimproved land value is a useful measure for land value impacts, because unimproved land value is already used in Australia as the basis for assessing (local government) taxes. Few other countries have a robust set of unimproved land values. So there are:

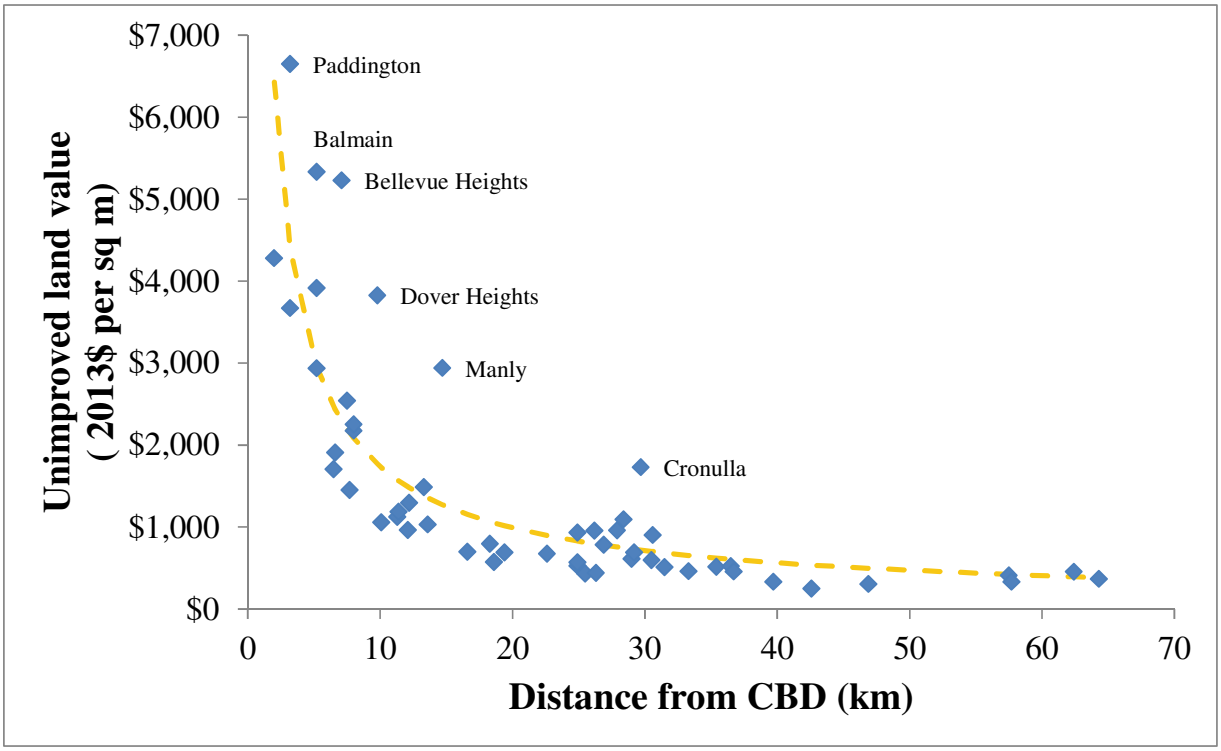
- established processes for assessing unimproved land value independent of dwelling type
- long time series of unimproved land values.

So the baseline is easy to establish enabling value changes to be estimated.

Strategex has undertaken some simple analysis of the 'land price gradient' implied by unimproved land value – see http://www.strategex.com.au/valuing-accessibility-using-markets/. The assumption that land price changes are simply capitalisation of travel time savings implies that the land price gradient should decrease linearly with distance from CBD, but in fact decreases faster than linearly as shown in the following figure. More sophisticated analysis of unimproved land price gradients is warranted around transport investments is warranted.

[6] http://ngtsmguidelines.com/about/

Figure 1 Unimproved land price gradients in Sydney (2013 $ per sq metre)




**3. Ex-post evaluations of land value impacts should be undertaken for recent land transport infrastructure investments – at least those that have had Federal Government funding.**

There are very few recent ex-post evaluations of major land transport infrastructure projects, at least since 2007[7]. Strategex is not aware of any ex-post evaluations that assess land value impacts. In the absence of such evaluations, it is not possible to tell how accurate were the ex-ante investment appraisals, and especially the assumption that land use would not change. Perhaps Infrastructure Australia could have a greater role in ex-post evaluations, notwithstanding that its recently published *Statement of Intent 2015 – 2017* mentions only ex-ante evaluations of proposals but not ex-post evaluations of investments.

**4. All current and new projects should be re-assessed in terms of both land and travel time impacts.**

If ex-post evaluations show that land value impacts have not been adequately taken into account, then (as noted above in the case study of HSR Phase 2) the investment appraisals are likely to be biased against projects with significant land impacts, such as public transport projects. All current and new proposals should therefore be re-assessed to take into account both land use impacts (accessibility) and travel time (mobility) impacts.

[7] https://bitre.gov.au/publications/2007/wp_070-1.aspx