

**Submission
No 77**

**INQUIRY INTO DEVELOPMENT OF THE TRANSPORT
ORIENTED DEVELOPMENT PROGRAM**

Name: Isaac Mann and David M. Levinson

Date Received: 26 March 2024



THE UNIVERSITY OF
SYDNEY

Submission to the “Inquiry into Development of the Transport Oriented Development Program”

Submission from Isaac Mann & David M. Levinson

Authors

Isaac Mann

Transport Engineer & Civil Engineering graduate at the University of Sydney.

Prof. David Levinson

*Professor of Transport at the University of Sydney and TransportLab Research
Group Lead.*

Introduction

We're pleased to respond to the inquiry into the development of the Transport Oriented Development (TOD) Program by the NSW Legislative Council's Portfolio Committee No. 7 Planning and Environment.

The subject TOD Program is vague regarding site selection, stating the process was '*informed by an evidence-based approach that used planning, infrastructure, and spatial data, along with expert advice and feasibility analysis.*'. We understand this ambiguity is a matter of contention and limits scrutiny of the Government's methodology.

Our focus is on terms 1(a)(iii) and 1(c) in the Terms of Reference where we offer commentary more broadly related to project appraisal and TOD policy development. Whilst we do not have comments regarding the specific stations selected, we hope to emphasise the benefits of TOD for both accessibility and the economic feasibility of transport investment. The Sydney context and expanding metro and rail networks offer strong opportunities for prudent land use policy at station precincts.

Access

Access is a measure that quantifies the ease with which travellers can reach people, places, and things (opportunities)¹. It combines measures of mobility and land use, and serves as an indicator of a network's efficiency and level of development. Ultimately, the value created by a transport system results from increasing access to desired places instead of reducing travel time by speeding up trips².

At its core, TOD seeks to improve access. The intensification of land use around transport nodes undoubtedly has economic benefits in travel time savings, and the close proximity of activities encourages active travel modes.

Appraisal

Transport investment generates economic benefit which is often measured using cost-benefit analysis (CBA). Alternative to traditional three-level CBA methods, investments can be appraised through land value gains³. We call this 'access-based CBA'. Valuable transport investments improve accessibility, where their strong correlation with land value can be measured using hedonic price modelling (HPM)⁴. HPM uses regression techniques to estimate property value based on the sum of individual attributes that cannot be sold separately in the market. For instance, the locality attribute of travel cost is well-encompassed and reflected in property

¹ Levinson et al., 2020

² Levine et al., 2019

³ Mann & Levinson, 2023

⁴ Sheppard, 1999

purchasing decisions, among other qualitative attributes, such as the natural environment and surrounding amenity.

Access-based CBA thus leverages the interplay between fierce demand and supply forces in the real estate market⁵ and reflects the dynamic feedback loop between urban development and transport systems⁶.

In both traditional and access-based CBA, benefits accrue from TOD. From an access-based sense, consumers within station precincts experience greater accessibility which is reflected positively in land value. This creates opportunities for targeted value capture strategy within TOD precincts. From a traditional CBA sense, consumers experience faster travel times and thus the demand for the service is higher. Firms benefit from better access to employees and agglomeration forces contribute to wider economic benefits.

Appraisal Example

We explore the benefits of TOD precincts in access-based investment appraisal through Sydney's South West Metro Link (SWML)⁷. Here we build a region-wide hedonic price model of Greater Sydney to first monetise access, then appraise the SWML associated with access gains and subsequent land uplift. The tested project alignment is shown in Figure 1. Whether this project is an extension of the existing heavy rail network, or delivered using metro technology, major conclusions are unaffected.

Importantly we model different land use scenarios for '2031' and '2061' including uniform and TOD. Uniform land use assumes development spreads independent of the project, while TOD concentrates dwelling and employment development at station precincts.

Figure 2 shows access gains and losses resulting from the SWML. The uniform land use scenario shows significant access losses caused by disruptions to the existing heavy rail network. TOD, however, offsets this disbenefit where regions with reduced mobility have access to closer intensified land use.

We find project benefits in 2061 are doubled by introducing TOD, from \$1.53 billion with uniform land use to \$3.08 billion with TOD land use.

Whilst the tested stations are not within the 8 accelerated or 31 SEPP precincts, these results illustrate the importance of compact development in realising the full economic benefits of Sydney Metro and Rail projects. This, however, requires careful planning to maximise access.

⁵ Y. Wang & Levinson, 2022

⁶ Merlin et al., 2018

⁷ Mann & Levinson, 2023

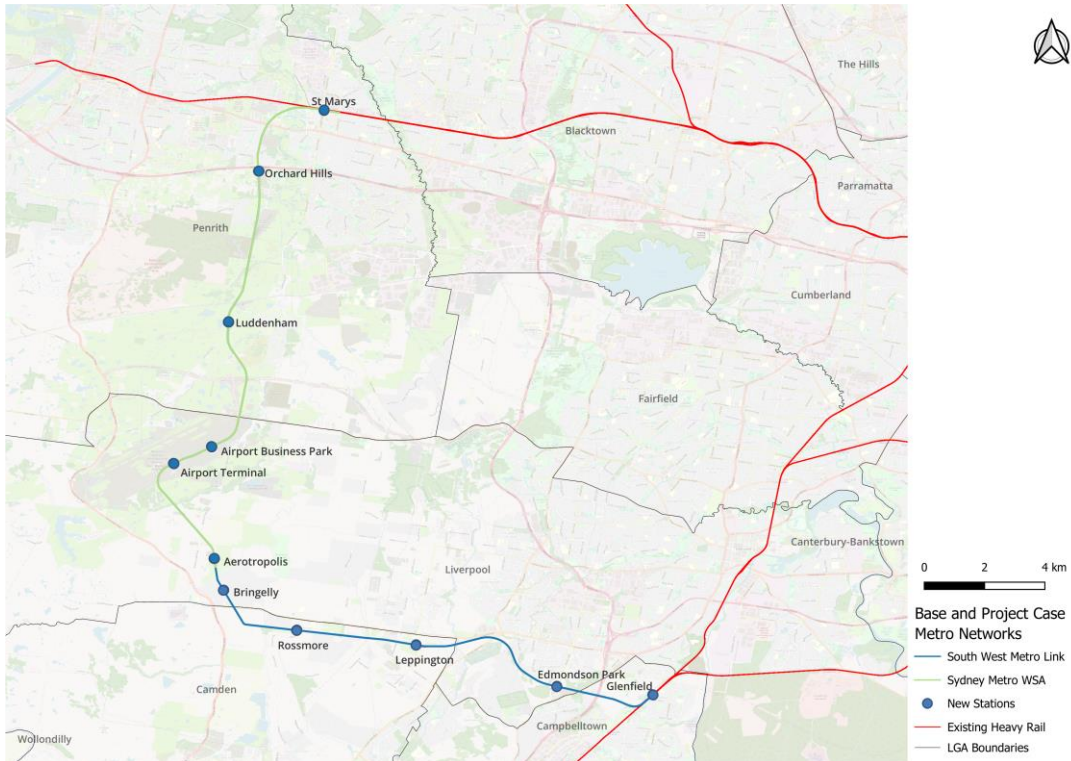


Figure 1: Map showing the base network including Sydney Metro Western Sydney Airport and the project network including the SWML configuration⁸.

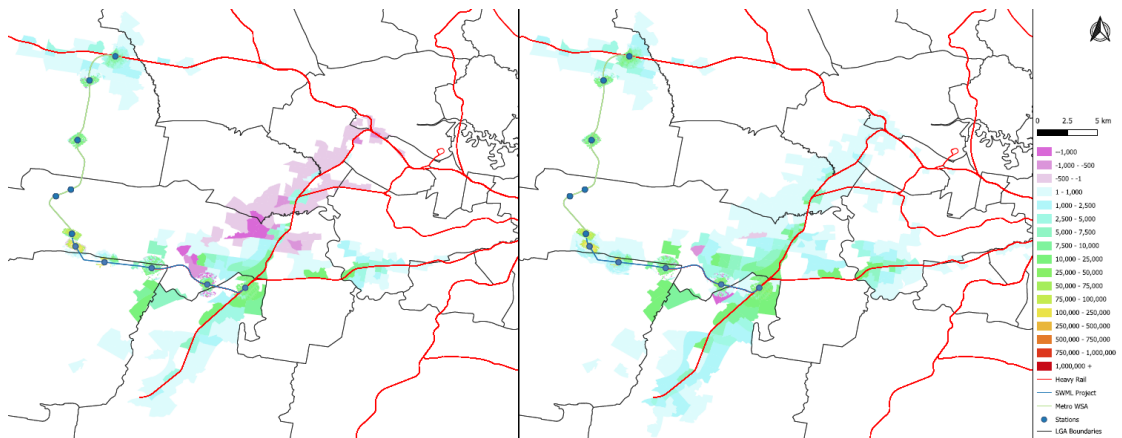


Figure 2: Map showing 60-minute transit access gains and losses for the year '2061'. Left: Uniform land use. Right: TOD land use⁸.

Contribution Planning

TOD paired with accessed-based CBA sets strong foundations for value capture strategy as an alternate infrastructure funding mechanism. While this mechanism can enhance infrastructure decision-making and investment, it faces resistance in Australia due to concerns of accurately estimating value uplift⁹.

⁸ Mann & Levinson, 2023

⁹ Infrastructure Australia, 2016

Access-based CBA would levy charges on land based on gains in accessibility, thus presenting a direct opportunity for value capture strategy. This may be through developer infrastructure payments within TOD precincts.

We note that contribution planning within the TOD Program remains unresolved. With the delivery of future transport investment and TOD across Sydney, we encourage an access-based approach be considered to overcome issues with current fixed contribution rates that fail to capture full project benefit¹⁰.

Conclusion

Sydney's expanding public transport network offers an opportunity for judicious TOD policy at station precincts. TOD, at its core, acts to maximise accessibility and thus should be located and designed as such. Accessible and compact development is important in realising the economic benefits of transport investment and offers a nexus to levy land value gains through value capture strategy.

We note that the selection methodology of TOD precincts within the program is ambiguous and contribution planning remains unresolved. Transparency going forward is important to enable security and help avoid the mistakes of secrecy.

Disclaimer

These opinions represent the views of the authors and not those of the University of Sydney.

References

Levine, J., Grengs, J., & Merlin, L. A. (2019). From mobility to accessibility: Transforming urban transportation and land-use planning. *Cornell University Press*. <https://doi.org/http://www.jstor.org/stable/10.7591/j.ctvfc52mj>

Levinson, D., & King, D. A. (2020). Transport access manual: A guide for measuring connection between people and places. *Committee of the Transport Access Manual*.

Locke, M. (2021). Resurgence of value capture. *University of Sydney Business School News*. <https://www.sydney.edu.au/business/news-and-events/news/2021/08/02/resurgence-of-value-capture.html>

Mann, I., & D. Levinson. (2023) Access-Based Cost Benefit Analysis of Sydney's South West Metro Link. *103rd Transportation Research Board Annual Meeting*.

¹⁰ Locke, 2021

Merlin, L. A., Levine, J., & Grengs, J. (2018). Accessibility analysis for transportation projects and plans. *Transport Policy*, 69, 35–48.
<https://doi.org/https://doi.org/10.1016/j.tranpol.2018.05.014>

Sheppard, S. (1999). Chapter 41: Hedonic analysis of housing markets. In P. Cheshire & E. S. Mills (Eds.), *Handbook of regional and urban economics: Applied urban economics* (pp. 1595–1635).

Infrastructure Australia. (2016). Advice on making value capture work in Australia. [https://www.infrastructureaustralia.gov.au/sites/default/files/2019-06/Capturing Value-dvice on making value capture work in Australia-acc.pdf](https://www.infrastructureaustralia.gov.au/sites/default/files/2019-06/Capturing%20Value-dvice%20on%20making%20value%20capture%20work%20in%20Australia-acc.pdf)

Wang, Y., & Levinson, D. (2022). Time savings vs. access-based benefit assessment of New York's second avenue subway. *Journal of Benefit-Cost Analysis*, 13, 120–147. <https://doi.org/https://doi.org/10.1017/bca.2022.3>

Contacts

Isaac Mann, Transport Engineer

Email: .

Professor David Levinson, Professor of Transport, School of Civil Engineering

Email: .

sydney.edu.au

CRICOS 00026A