

WestConnex or What?

Those asserting that we have no choice but to build WestConnex seem blind to its many problems. Action for Public Transport (NSW) believes the drawbacks of this project are so significant that a major rethink is essential.

The first drawback is cost. At around \$450 million per km and based on current light vehicle occupancy, the yet-to-be-contracted stages of WestConnex could carry up to 8,400 people per hour on each three lane carriageway. Two rail-based projects currently under way in Sydney demonstrate that good public transport offers better value for money. The CBD and South East Light Rail project will provide a similar ultimate passenger capacity at less than half the capital cost per km of WestConnex. Similarly, the North West Sydney Rapid Transport project will provide many times the passenger capacity of WestConnex, and still for a good 20% less cost per km. The advantage for public transport would be even more favourable if an allowance for the capital cost of cars is added to the WestConnex figure.

The second drawback is that the claimed time savings for motorways are prone to overstatement. This is due to a combination of demand forecasts being influenced by the chase for a good financial outcome, and by a self-serving traffic modelling process that does not factor in medium and long term changes in demand. The result is an unrealistically high level of road network congestion being forecast if WestConnex is not completed, and this leads to the claimed benefits being overstated when a comparison of forecast congestion levels with and without WestConnex is made. There is a long history of such demand changes being induced.

It was the early Macquarie Street Mint economist William Stanley Jevons who first observed that more efficient production (in this case coal) led to higher consumption, rather than to lower costs as intuitively expected. 150 years later this effect is referred to in transport planning as demand elasticity with respect to generalised cost, of which time is the major component. This elasticity can be related to empirically observed behavioural tendencies to maintain a constant travel time budget over the medium to long term, and means that the future demand without WestConnex must turn out to be less. Travel response mechanisms to achieve this can include time shifting, going shorter distances, ride sharing, use of alternative modes and trip purpose amalgamation. Such savings are reversed when road capacity is expanded, which explains the well known phenomenon of induced traffic.

Other drawbacks include the social and environmental impacts from the increase in traffic and car dependency upon which the claims in favour of WestConnex have been based. That said, there is a need to realistically consider freight, trade services and car travel involving diverse origins and destinations. Setting aside the first two for the moment, the sheer mass of private vehicles to be carried, with fewer than 40% serving more than one occupant, points to an ongoing lack of productivity for WestConnex. Household Travel Survey statistics also reveal a lack of productivity, with commute travel distance over all modes being twice that for the average of each other less obligatory trip purpose. Clearly there are major structural inefficiencies in Sydney's transport and land use that need to be tackled.

Planning NSW implicitly signalled the need for structural change with the visionary 2004 announcement of a "city of cities" future for Sydney to improve what is referred to as the effective jobs density, particularly for areas outside the Sydney CBD. What has been lacking is the evolution of public transport from what is mainly a radial commute network into an interconnected web of rapid routes. By making cross-town access to the web intersection points as convenient as access to the Sydney CBD, nodes of knowledge based employment and other activities can agglomerate in a self reinforcing process for patronage on such a web. There is a special need for access with a long reach to be provided for Parramatta in its role as the second CBD.

The passing of ten years since the “city of cities” announcement without major progress towards a supportive public transport infrastructure can be linked, for example through the increasing Western Sydney employment deficit, to the worsening traffic congestion being experienced in Sydney. Thus WestConnex looks like a panic reaction to this neglect where the multiple drawbacks mentioned above are simply to be ignored. However it may not be too late to instead accelerate the construction of a public transport rapid web network if combined with some short-term measures to ease road congestion. An example would be managed ride sharing on selected road commutes until reductions in per-capita metrics such as commute distance and transport pecuniary cost are being achieved.

Structural changes to land use and transport over time, that enable the volume of diverse origin and destination car use to be reduced, would improve road travel conditions for those that remain, including the providers of freight and trade services that make up a minor, but growing, share of the total traffic. Only then can the needs of these users be efficiently considered, with the possibility of dedicated infrastructure provided on commercial terms being part of the mix.

Public transport funding mechanisms also need to be revised as a complimentary measure. While public transport and land use benefits, and road use externalities, are already partially recognised through community-accepted subsidies, rates and user charges, a formal linkage of these cash flows is needed. This would put urban road and rail funding on a more equal footing. An extensive and well patronised rapid public transport web that provides comprehensive multi-dimensional accessibility is the mark of great and liveable global cities.

While there may be no single *project* alternative to the remaining stages of WestConnex, there is a *strategic* alternative that better suits a nation struggling to live within its means.

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Reference data attached

Project Cost and Capacity

WestConnex Unit Cost

2012 announcement	\$11.5 billion for 33 km
Adjustment to 2014 Dollars	\$12.0 billion for 33 km
M4 Widening stage (Contracted 7.5 km)	\$0.5 billion for 7.5 km
Remaining stages (25.5 km based on the original length)	\$11.5 billion for 25.5 km
Initial unit cost for the yet-to-be-contracted stages	\$450 million/km

West Connect Later Stage Capacity (approx.)

Initial capacity with two lanes and 1.4* occupancy	5,600 people/hour
Ultimate capacity with three lanes and 1.4* occupancy	8,400 people/hour

CBD and South East Light Rail Unit Cost

2014 contract announcement	\$2.1 billion for 12 km
Initial unit cost	\$175 million/km

CBD and South East Light Rail Capacity (approx.)

Initial capacity with four minute intervals	7,000 passengers/hour
Expanded capacity with 3.25 minute intervals	8,500 passengers/hour

North West Sydney Rapid Transit Unit Cost

2014 contract announcement (including trains)	\$8.3 billion for 23 km
Estimated allowance for Epping-Chatswood conversion	\$0.2 billion
Project remainder for the length of the new route, without deducting a cost allowance for the Epping-Chatswood share of trains	\$8.1 billion for 23 km
Initial unit cost	\$350 million/km

North West Sydney Rapid Transport Capacity (approx.)

Initial capacity with six car trains at four minute intervals	17,000 passengers/hour
Ultimate capacity with 8 car trains at 2 minute intervals	45,000** passengers/hour

* Road capacity is 2,000 light vehicles per hour per lane multiplied by the average light vehicle occupancy of around 1.4 taken from the 2012/13 Household Travel Survey published by BTS. Occupancy of 1.4 implies that less than 40% of vehicles have more than one occupant as some vehicles will have more than two occupants.

** The present maximum Sydney Commuter Rail capacity (double deck trains) is lower at about 25,000 passengers/hour (due to less people standing), with some increase being planned.

Trip and distance data from the Household Travel Survey Report: Sydney 2012/13 available here:

http://www.bts.nsw.gov.au/ArticleDocuments/79/r2014-11-hts-summary-report_12-13.pdf.aspx?Embed=Y

Tables used as a source of data: Note that these are for the Sydney Greater Capital City Statistical Area (GCCSA) whereas WestConnex was probably modelled with traffic forecasts from the Sydney Statistical Division where vehicle occupancies could be marginally different.

4.2.2 Proportion of trips by purpose

4.3.2 Proportion of trips by mode

4.4.3 Proportion of distance by mode

4.4.5 Proportion of distance by purpose

Proportions	Trips	Distance
Commute	15.2%	25.9%
All other trip purposes	84.8%	74.1%
Vehicle driver	47.2%	58.7%
Vehicle passenger	21.8%	21.8%

Commute D/T ratio: $25.9/15.2=1.70$ undefined length units/trip

All other D/T ratio: $74.1/84.8=0.87$ undefined length units/trip

Commute to all other distance ratio: $1.70/0.87=1.95$

Vehicle occupancy by trip: $21.8/47.2=1.46$

Vehicle occupancy by distance: $21.8/58.7=1.37$

Note 1: Occupancy for trips is higher than for distance, indicating that long trips on WestConnex would on average be below the distance occupancy shown above.

Note 2: The Transport Supply and Demand Forecasts for the Sydney Statistical Division, which have presumably been used to model WestConnex, show that vehicle occupancy has been assumed to be 1.31 in 2016 and declining thereafter. The TransData document is also available at:

<http://www.bts.nsw.gov.au/ArticleDocuments/80/trans2014-03-stm-travel-forecasts.pdf.aspx>