Submission No 261

INQUIRY INTO IMPACT OF THE WESTCONNEX PROJECT

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Submission to the NSW Parliamentary Inquiry into the impacts of Westconnex.

Submitted by:

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The Terms of Reference addressed are:

(a) The adequacy of the business case for the WestConnex project, including the cost - benefits ratio.

(b) The true cost of the Westconnex project, including the size and reasons for overruns.

(J) Any other related matter.

Submission:

No business case for a city road network can be considered adequate unless it considers the alternative of public transport.

Transport systems should be more about moving people than just cars and trucks. In Sydney main road traffic is mostly cars carrying an average of 1.1 people. Less than 14% of the traffic is heavy vehicles [1].

No major city relies exclusively on a road system for transport. Roads are simply too inefficient at moving people. In one hour a lane of cars moves 2100 people at most [2]. In comparison, a Sydney rail track can carry 24,000 people per hour [3] (or 40,000 people per hour if the North West Rail figures are to be believed [4]).

A rail track has more than ten times the people moving capacity compared to the same width of road.

On top of road's basic capacity limitation are the costs and capacity limitations caused by traffic jams at road accidents and road maintenance and the need for parking at both ends of the journey.

Railway is cheaper than tollway:
Comparison of the Perth to Mandurah railway with Westconnex

Westconnex Stages 1 to 3 will be 33km long with 19km of twin tunnels and will cost at least $16.8B or $510 million per km.

The Perth to Mandurah railway, finished in 2007, is 72km long, with 1.3km of twin tunnels, ten stations and a depot and cost $2.1B in 2017 dollars [4] or $29 million per km.

Added to the cost of the route is the cost of rolling stock or road vehicles which use it. A major difference results from the way these costs are apportioned. Rolling stock is costed to the railway but trucks and cars are purchased privately and not included in the cost of the road. Nevertheless both these costs are eventually born by the public.

An additional cost to Westconnex is the upgrades to feeder roads necessary at each Westconnex entry ramp. Tollway traffic doesn't just disappear at the end of a tollway as residents of Alexandria are finding out right now.

As is apparent at the Haberfield Westconnex interchange, a road tunnel also needs 500m long exit and entry ramps at its ends and at intervals along it which require cut and fill tunnelling, whereas an underground rail system needs underground stations but no more than passenger lifts to reach the surface.

Other costs not properly considered are the loss in property values associated with houses becoming road frontage to Westconnex or its new feeder roads and the air pollution resulting from extra vehicle kilometres, the result of encouraging road transport.

Using the rail system to move people frees up the road system to move the 25% of road traffic which comprises tradesman vehicles, delivery and heavy trucks, maintenance vehicles and buses, currently mired in Sydney's traffic jams.

It will be apparent that the cost-benefit ratio for rail must be much larger than that for a road system.

Nowhere does the Westconnex business case attempt the comparison with rail and its superior benefits and lower costs.

References

[1] RMS Traffic Viewer, City West Link near The Crescent, 2018
http://www.rms.nsw.gov.au/about/corporate-publications/statistics/traffic-volumes/aadt-map/index.html#/?z=17&lat=-33.87177714904851&lon=151.1710664017827&yr=2018&id=20075&hv=1&df=3&tb=0&to=0

[2] See Appendix below

[3] Private communication from Gladys Berejiklian, Minister for Transport, on 20/2/2013: "Currently the capacity of each heavy rail track is 24,000 people per hour, being 20 double-deck trains each carrying 1200 people".

[4] https://www.dailytelegraph.com.au/newslocal/the-hills/modern-double-decker-trains-could-increase-efficiency-of-north-west-rail-link/news-story/112214ac144c5e5073f5240c6c47bdd8

[5] Inflation = 26% from 2007 to 2017, Reserve Bank Inflation Calculator, https://www.rba.gov.au/calculator/

Appendix: Calculation of road lane vehicle capacity

The gap between vehicles is set by human reaction time which motorway designers generally take to be 1.5 seconds.

If the length of the vehicle is ignored then the number of vehicles that can pass a given point on a motorway lane in an hour equals 3600 seconds/hour divided by 1.5 seconds/vehicle equals 2400 vehicles/hour.

In reality this limiting capacity is an unstable condition and the actual stable lane carrying capacity is around 1900 cars/hour per lane.

If the length of the vehicle is taken into consideration then this vehicle flow rate reduces. For example, for 6m long cars travelling at 110kph (30.5 m/sec) the maximum flow rate is 2100 vehicles/hour [6].

In peak hour there is an average of 1.1 occupants/car so 2100 vehicles/hour is 2300 people/hour (per lane of motorway).

Compare this with Sydney Trains' 24,000 people/hour per track.

References:

[6] The RMS calculates lane capacity this way. Trucks are judged to be the equivalent of three cars. This is also the multiplier used when setting toll charges. See pages 14 and 39 of RMS Motorway Design Guide, Capacity and Flow Analysis, April 2017 http://www.rms.nsw.gov.au/business-industry/partners-suppliers/documents/motorway-design/motorway-design-guide-capacity-flow-analysis.pdf