Submission No 30

CRITICAL TRANSPORT INFRASTRUCTURE SUPPORTING THE WESTERN SYDNEY INTERNATIONAL AIRPORT AND WESTERN SYDNEY AEROTROPOLIS

Name: Mr Matt Mushalik

Date Received: 31 March 2024

Western Sydney International
Critical Transport Infrastructure
Parliamentary Inquiry

http://crudeoilpeak.info
Crude Oil Peak

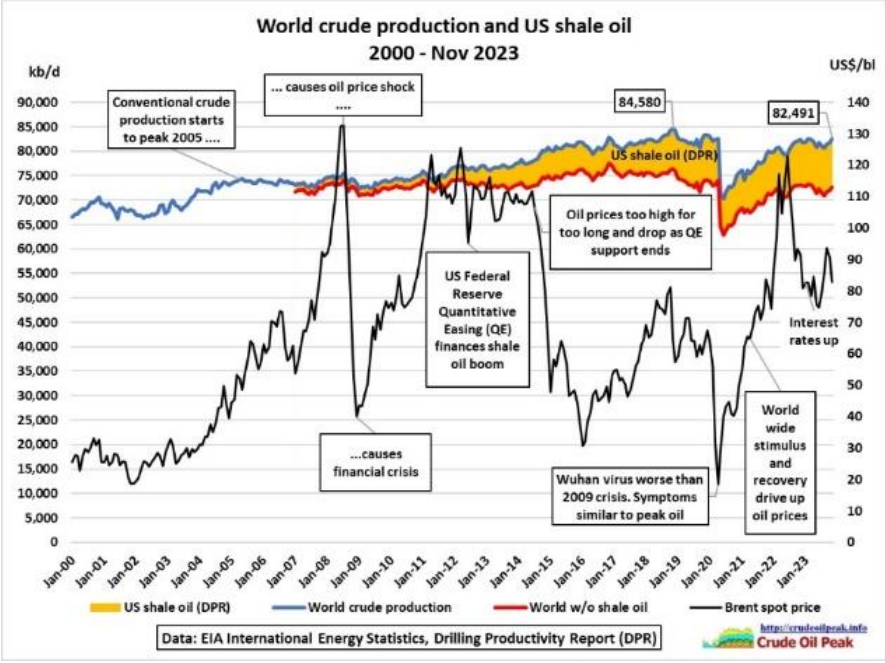
Submission by Matt Mushalik (MEng)
30/3/2024

This submission relates to following inquiry:
Critical transport infrastructure supporting the Western Sydney International Airport and Western Sydney Aerotropolis
Feb – Mar 2024
https://www.parliament.nsw.gov.au/committees/inquiries/Pages/inquiry-details.aspx?pk=3027

Introduction

The 2014 decision to build a 2nd Sydney Airport and in favour of Badgerys Creek was done by PM Tony Abbott who struggled to understand and accept processes controlled by the laws of nature, namely oil depletion (triggering global fights over oil and fuel supplies) and climate change (high temperatures restricting operations in ever hotter summers in Sydney's West). This will lead to the airport ultimately becoming a stranded asset for which a metro makes little sense.

Peak oil: This following graph is an update to what I provided in my submission #28 on the Metro West
https://www.parliament.nsw.gov.au/ladocs/submissions/82045/Submission%2028%20-%20Crude%20Oil%20Peak.pdf The facts presented in this document are still valid.

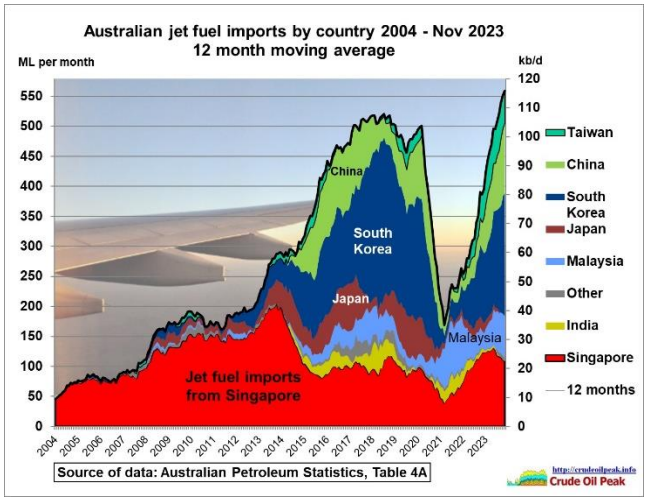


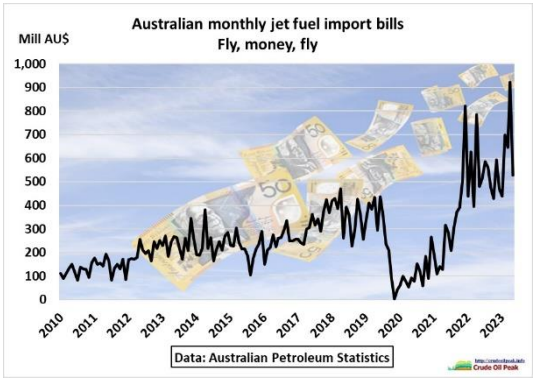
The world is in peak oil mode (crude oil)

Governments continue to ignore fuel supplies. Compared to September 2023 we have a war in the Middle East which can easily turn into a tanker war:

China-run tanker shipping Russian oil hit by Houthis, US says
24 March 2024
The Houthis fired five anti-ship ballistic missiles at the Panama-flagged, 115,459 dwt ship Huang Pu (IMO: 9402469) on March 23 in the Red Sea, according to the US military's Central Command.
US Central Command said the "Chinese-owned, Chinese-operated" tanker sustained only minimal damage, and a fire on board was extinguished within 30 minutes.
https://www.lloydslist.com/LL1148632/Chinarun-tanker-shipping-Russian-oil-hit-by-Houthis-US-says

Australia imports most of its jet fuel from East Asia which depends on Middle East crude oil.

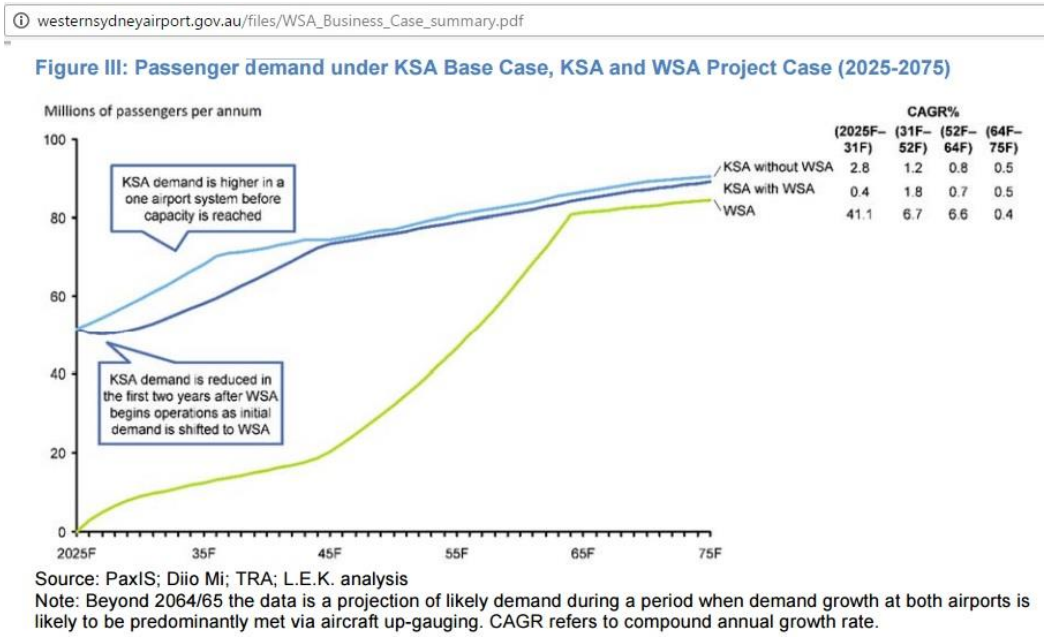




28 Jan 2024
Fly, money, fly. Australian jet fuel import bills skyrocket
https://crudeoilpeak.info/fly-money-fly-australian-jet-fuel-import-bills-skyrocket

Peak oil not only limits jet fuel supplies and increases fuel prices but also impacts on the global economy and therefore global demand for travelling. The forecast of passenger demand for the next 50 years in the business case prepared by the Department of Infrastructure and Regional Development (shown below) is therefore completely unrealistic, coming close to a fantasy. Now a metro is built to this vulnerable airport at almost double the cost of the airport itself.

WSA Business Case October 2016



An energy blind graph

https://www.westernsydneyairport.gov.au/sites/default/files/WSA_Business_Case_summary.pdf

A new problem for global aviation is foreseeable. The war in Ukraine endangers Europe. We have no idea how that will end. If Russian troops end up at the Polish border the next battle will be for Russia to create an overland corridor to the enclave of Kaliningrad (Suwalki gap between Poland and Lithuania). In the best case scenario, Europe – already hit by the Nord Stream sabotage and sanctions on Russian gas and oil) will have to spend more on defence – possibly by increasing taxes, reducing the purchasing power for private travel. In the worst case scenario there could be an initial wave of refugees, challenging aviation capacities. Refugees to Australia could increase the number of incoming flights but regular air traffic to and from Europe will decline. The latest news:

Russian Navy Enters Warship-Crowded Red Sea Amid Houthi Attacks
28/3/2024
"The detachment included the missile cruiser Varyag and frigate Marshal Shaposhnikov, Tass reported Thursday, citing the Russian Pacific Fleet's press service, which said the ships were carrying out "assigned tasks within the framework of the long-range sea campaign." The ultimate destination of the ships was unclear from the report, as was the reason Russia sent vessels to the area."
https://www.bloomberg.com/news/articles/2024-03-28/russian-warships-enter-crowded-red-sea-amid-houthi-attacks

The future for airports is VERY UNCERTAIN and expenditure under the assumption of continuing mass tourism should be minimised. International tourism could also trigger another Covid wave
https://www.sbs.com.au/news/article/when-to-expect-our-next-covid-19-wave-and-what-could-cause-cases-to-spike/z35ydyeyd
or accelerate the spread of another virus. Have we not learned the lessons?

Climate change

NASA climatologist James Hansen has just published his latest data analysis of warming trends in: “Global Warming Acceleration: Hope vs Hopium” 29 March 2024

columbia.edu/~jeh1/mailings/2024/Hopium.MarchEmail.2024.03.29.pdf

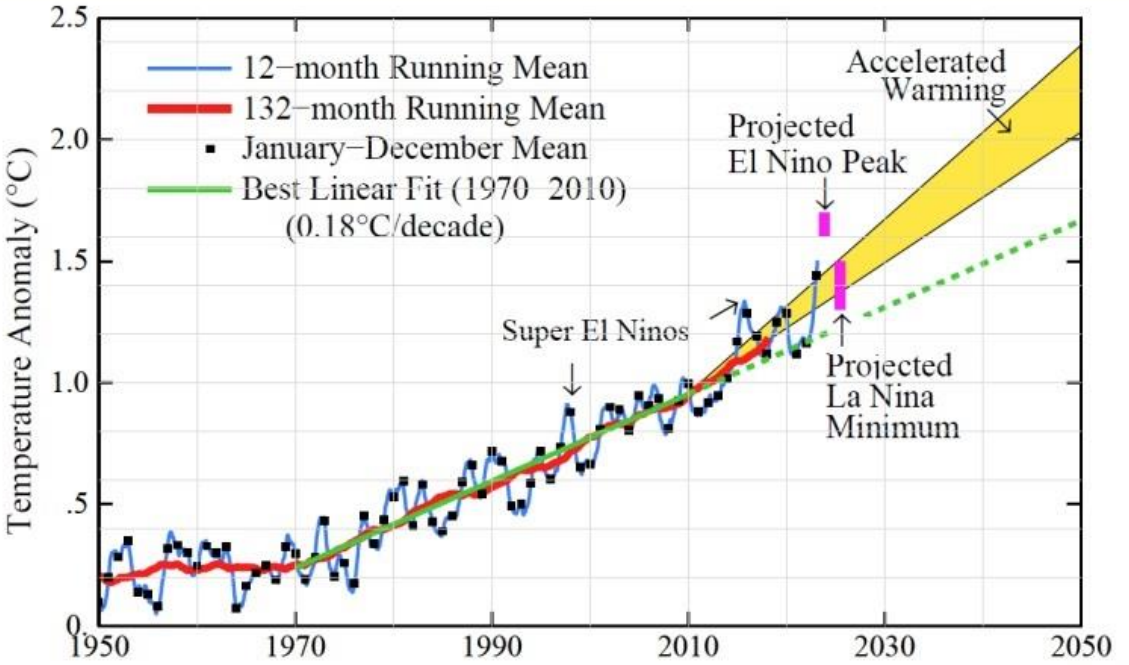


Fig. 10. Global temperature relative to 1880-1920 based on the GISS analysis.[36,37]

https://www.columbia.edu/~jeh1/mailings/2024/Hopium.MarchEmail.2024.03.29.pdf

Chapter 7 (Airspace architecture and operation) of the WSA EIS has a table on temperatures at Badgerys Creek and explains the impact of high temperatures but does not mention “climate change” or “global warming”:

High temperatures have the ability to affect airport operations and temperature has an indirect relationship with air density. As temperature climbs the air becomes less dense and affects aerodynamical lift. High temperatures can also affect fuel, causing it to expand and restrict the capacity to adequately refuel aircraft in some cases. A temperature exceeding the flash point for jet fuel (approximately 38 degrees Celsius for Jet A/A1) is extremely important as liquid becomes a gas at this temperature and becomes extremely hazardous....

Whilst it is possible to see temperatures exceed 40 degrees Celsius in late spring and summer it is not common at the airport site. Temperatures are most likely to exceed 40 degrees Celsius in January
https://www.westernsydneyairport.gov.au/sites/default/files/09-volume-1-chapter-7.pdf

We see here a typical feature of voluminous EIS documentation where inconvenient facts are included in one chapter (often a technical Annex) but then ignored and not used in other chapters, particularly in the executive summary. This will take revenge.

Response to the TOR:

a) An analysis of options for transport infrastructure

In the Environmental Impact Statement (2016) of the WSA https://www.westernsydneyairport.gov.au/media-resources/resources/environmental-assessment it says in chapter 5:

5.8.4 Rail access

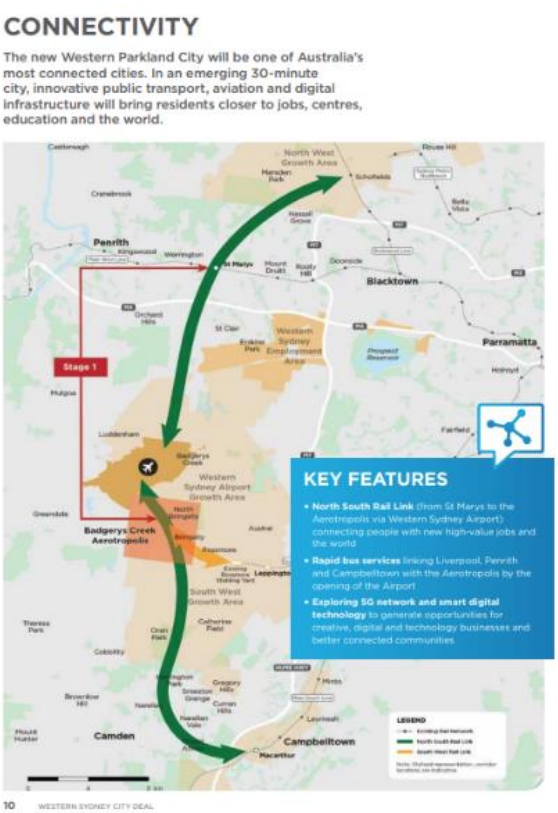
For the proposed airport to reach its long term capacity, rail services would be required at the airport site at an appropriate point in its development. Stage 1 does not currently anticipate a rail service because the recently approved road network upgrades have been assessed as adequate to support anticipated airport demand for at least a decade after operations commence. The Australian Government recognises however that rail could provide a benefit not only to passengers and employees using the airport, but also to the broader Western Sydney Region. For this reason, the Australian and NSW governments are undertaking a Joint Scoping Study on the Rail Needs for Western Sydney, including the proposed airport. The Scoping Study will consider the best options

https://www.westernsydneyairport.gov.au/sites/default/files/WSA-EIS-Volume-1-Chapter-5-Stage-1-Western-Sydney-Airport.pdf

This is very interesting to read that the WSA metro was actually not very urgent.

March 2018: Western Sydney City Deal

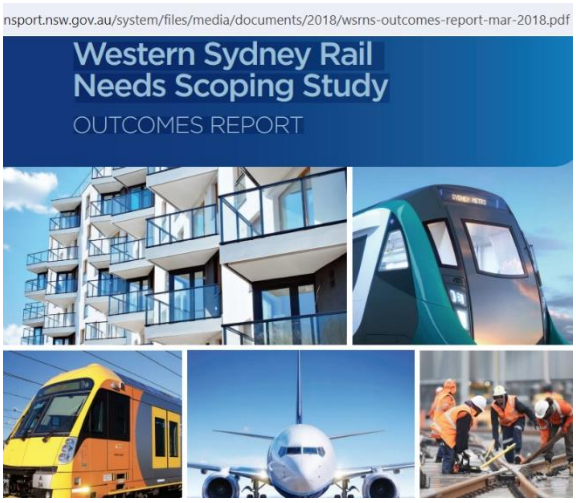
https://www.infrastructure.gov.au/sites/default/files/migrated/cities/city-deals/western-sydney/files/western-sydney-city-deal.pdf



"The Australian and NSW governments will deliver the first stage of a North South Rail Link from St Marys to Western Sydney Airport and the Badgerys Creek Aerotropolis. As a first step, the NSW Government will protect suitable corridors for future rail connections in Western Sydney. Both governments will contribute up to $50 million each to a business case process, in consultation with local government. This will include investigation of integrated transport and delivery options for a full North South Rail Link from Schofields to Macarthur and a South West Rail Link to connect" (p 11)

A metro is not mentioned. It is strange that there are 2 green disconnected arrows. A proper North South Rail Link would of course run from Macarthur to Schofields (and on to Pennant Hills/Thornleigh/Hornsby but this was not considered when designing the NWRL). The continuation of the 3rd freight track seems to have stalled because of the focus on metros. Not to mention the necessary full quadruplication of Strathfield – Hornsby.

March 2018: Western Sydney Rail Needs Scoping Study OUTCOMES REPORT



Metromania has entered the WSA planning process

Page 10

Note that the conversion of the Bankstown line to metro will disturb the whole heavy rail network west of Bankstown and therefore access to the WSA from that part of Sydney. Passengers with luggage will not easily change trains. The proper solution here would have been to stop the Bankstown line conversion and build Link 4 as heavy rail compatible up to WSA. Then the whole link from Schofields to Macarthur should also have been heavy rail. Link 5 should have been done long ago, when the NWRL planning was done. The NW metro repeated the same mistake. No strategic network thinking at the time.

And we know since May last year:

Why Sydney will end up with three incompatible metro train lines

May 29, 2023

The use of different power and trains built by separate manufacturers will make the new $11 billion metro line to Western Sydney Airport at Badgerys Creek incompatible with the first two stages of Sydney's metro rail network.

The airport line will use a 25 kilovolt alternating current to power the trains when it opens in 2026 while the Metro Northwest and Metro City and Southwest lines will operate on 1500 volt direct current.

The different electric current also means the 45 driverless trains built in India by French company Alstom for the city's first two metro lines will be unable to be switched to run on the airport line. Neither will they be able to operate on the $25 billion Metro West line – the biggest of the four lines which is due to open in 2030 – because it will run on 25 kilovolts, too.

The airport line is being designed for trains comprising up to four carriages whereas those for the Northwest and City and Southwest lines can be trains up to eight carriages long.

Transport and planning consultant Alex Gooding said it was highly unusual for metro lines in the same city to be deliberately planned to be as different as the airport line was from both the Northwest and City and Southwest lines.

"We are building a system from the ground up, but the previous government appeared to have deliberately designed a range of incompatible features which makes no sense," he said.

Gooding said a likely reason for the difference was that building the airport line to match the greater passenger capacity of the first two metro lines would have substantially increased the former's cost, while it also avoided a "single-private operator monopoly" in Sydney.

https://www.smh.com.au/national/nsw/why-sydney-will-end-up-with-three-incompatible-metro-train-lines-20230510-p5d78h.html

This of course means that it will be impossible to have a through service to the Rouse Hill area when the WSA metro is extended to Tallawong as shown in arrow 5 above.

As usual, total rail planning chaos.

Quote from p 51:

7.3 Low demand for rail to airport on opening

"The Australian and NSW Governments recognise that a rail connection for Western Sydney Airport will be needed at the right time, alongside a range of other transport connections. Rail connections to Western Sydney Airport will support airport passengers' and workers' travel to the airport, reduce road congestion and support economic growth in the region. Western Sydney Airport will be a full service airport providing international, domestic and freight services. On opening in 2026, it is estimated approximately 5 million passengers (equivalent to Gold Coast Airport today) will use the airport in its first year.

Table 2 Estimated numbers of Western Sydney Airport customers and daily rail users

Western Sydney Airport

	Estimated Airport passenger numbers (per annum)	Share of airport passengers travelling by rail (per annum)	Estimated daily rail passengers	Number of Waratah[4] trains needed to fit daily rail customers
Airport Opening	5m	20% (1m)	2,750	
Early 2030s	10m	20% (2m)	5,500	
2060s	80m	20% (16m)	43,800	

However, there is likely to be weak demand for rail to Western Sydney Airport in its early years of operation, as illustrated in Table 2 below. Research of international airports around the world suggests that around 20 per cent of airport passengers use rail transport to get to and from the airport. The significant investment in roads around and to the airport means that road based transport, including private cars and buses, will be an effective transport option for airport customers initially. It is unlikely that a 20 per cent mode share for rail transport will be achieved for airport customers in the early years of Western Sydney Airport's operations" (p 52)

https://www.transport.nsw.gov.au/system/files/media/documents/2018/wsrns-outcomes-report-mar-2018.pdf

Note that traffic is measured in number of Waratah trains, not metros.

Table 6 Rail Service offerings

	SUBURBAN TRAINS	METRO TRAINS	LIGHT METRO	EXPRESS
				
Comparable Product	Sydney Trains	Sydney Metro	Vancouver SkyTrain London Docklands Light Rail Copenhagen Metro	London Heathrow Express Stockholm Arlanda Express Tokyo Narita Express

So if there are only 5,500 daily passengers for the airport in the early 2030s this would neither justify heavy rail nor a metro (a 3 car train running 12 trains/h for 12hrs has a seating capacity of 189x12x12hrs=27,200. After all, Costa cancelled PERL because he thought 16,500 passengers are not enough.

Let's check how much passenger demand there would be from the Bradfield Centre of the Aerotropolis. It's here, on page 94 in:

Bradfield City Centre Master Plan Application
Transport Management Accessibility Plan Report
Prepared by AECOM October 2023

https://shared-drupal-s3fs.s3.ap-southeast-2.amazonaws.com/master-test/fapub_pdf/08.+Appendix+G+-+202...

6.8.2 Aerotropolis (Bradfield) Metro Station Precinct

PTPM AM 3.5 hour demand at Aerotropolis (Bradfield) Metro station, which services Bradfield City Centre is presented in **Table 28** and **Figure 49**. Results show the estimated access and egress demand at Aerotropolis station in the AM peak 3.5 hour period is expected to grow from 300 in 2026, to about 2,100 in 2036 and about 11,000 in 2056 (note: the modelling assumes there will be an express rail service to Parramatta in 2056).

In 2026 and 2036, there are more persons accessing Aerotropolis station in the AM peak than egressing, however by 2056 it is expected that there will be more than twice as many people exiting Aerotropolis station than entering in the AM peak as a result of the densification of the city centre with increases in employment land uses within the Aerotropolis Precinct.

Table 28 PTPM AM 3.5hr access and egress demand - Aerotropolis Metro station

Station	Movement	PTPM AM 3.5hr access / egress		
		2026	2036	2056
Aerotropolis	Access	240	1,260	2,910
	Egress	60	800	8,040
	Total	**300**	**2,060**	**10,950**

Source: PTPM v5 modelling (AECOM, 2022)

Daily passenger numbers are not given but let us assume daily traffic is 4.4 times the morning peak then that would be: 1,320 (2026), 9,060 (2036) and 48,180 (2056)

Adding these numbers to the airport passengers we get:

2026: 2,750 (airport) + 1,320 (Bradfield) = 4,070 daily train passengers

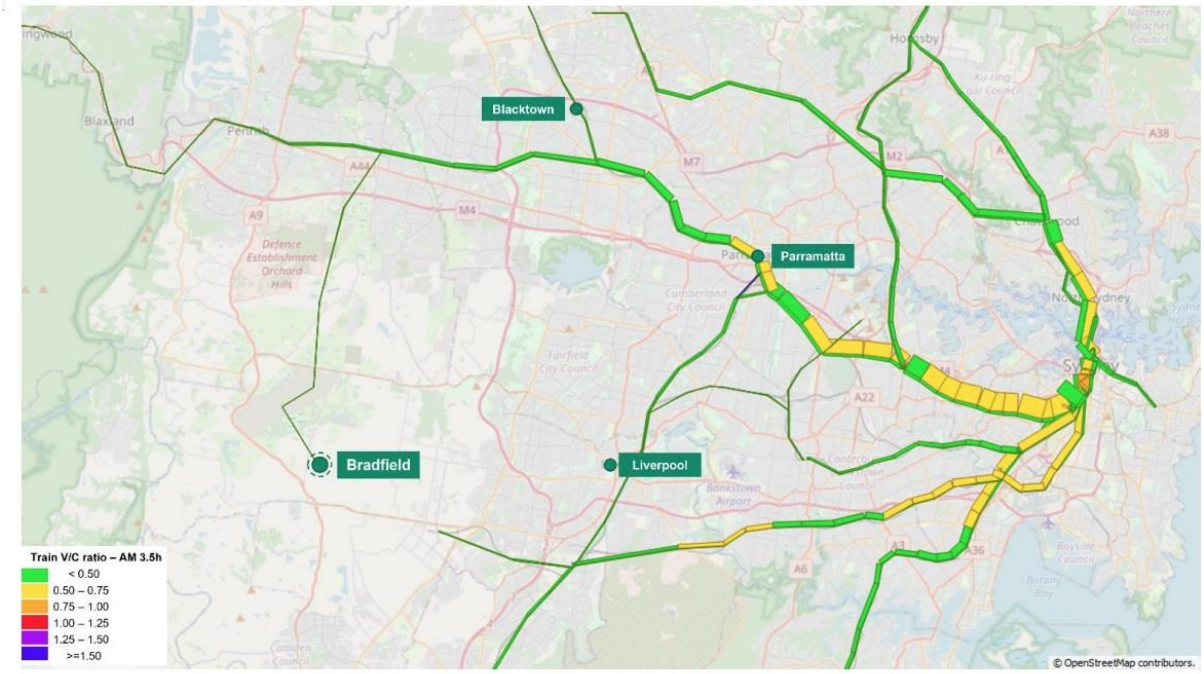
2036: 5,500 (airport) + 9,060 (Bradfield) = 14,560 daily train passengers

One would have to add passengers from other stations (much smaller)

Fig 46-48 show traffic flows on Sydney trains and volume to capacity ratios

https://shared-drupal-s3fs.s3.ap-southeast-2.amazonaws.com/master-test/fapub_pdf/08.+Appendix+G+-+20231

Figure 46 Plot of volume to capacity ratios for train and metro trips – 2026 AM 3.5hr



Source: PTPM v5 modelling (AECOM, 2022)

A very thin line to Bradfield. The System is very CBD centric

https://shared-drupal-s3fs.s3.ap-southeast-2.amazonaws.com/master-test/fapub_pdf/08.+Appendix+G+-+20231020+Transport+Management+Accessibility+Plan+Report.PDF

A similar graph is shown in Fig 5.5 (page 40) in:

Transport Modelling Report Sydney March 2019

https://www.infrastructureaustralia.gov.au/sites/default/files/2019-08/Transport%20Modelling%20Report%20for%20Sydney.pdf

The low passenger numbers in 2026 suggest there was no hurry to provide a rail link at that time. However, one can argue that a modern airport would need a rail service at opening for prestige reasons (global city – although at the end of the world) and strategic reasons. The most economic solution would have been to extend the rail line from Leppington to the airport terminal station ($ 6 bn in 2017 dollars, half the current metro cost). This would have allowed all passengers along T5 and T2 lines to access the airport without changing trains.
And all passengers along T3 and T8 with 1 change.
As a next stage the line would have continued to St Marys. As heavy rail it would have been suitable for short, fast, electrified freight shuttle trains between the Intermodal terminal in St Marys and the Moorebank terminal, also serving the cargo function of the airport.

To run such electric freight trains on track also used by passenger trains is standard practice in Europe.

A 3rd stage would have been the southern link to Macarthur from an interchange in Bradfield.

The INSW business case (November 2020)
https://www.infrastructure.nsw.gov.au/media/fcgpdzcr/insw-business-case-evaluation-summary_sydney-metro-western-sydney-airport.pdf

listed following transport options (table1, p 14)

- *Increased frequency of on-road buses*
- *Road pricing policy (demand management)*
- *Bus priority (on road)*
- *Dedicated airport rail with no or limited intermediate stations*
- *Mass transit rail (or a metro rail product)*
- *Light rail with stops every km*
- *Bus priority (transitway)*
- *Road infrastructure investment*
- *Active transport investment*

and calculated a very low BCR ratio of 0.82 for the chosen metro solution. At that point INSW should have considered the Leppington link and calculated the BCR.

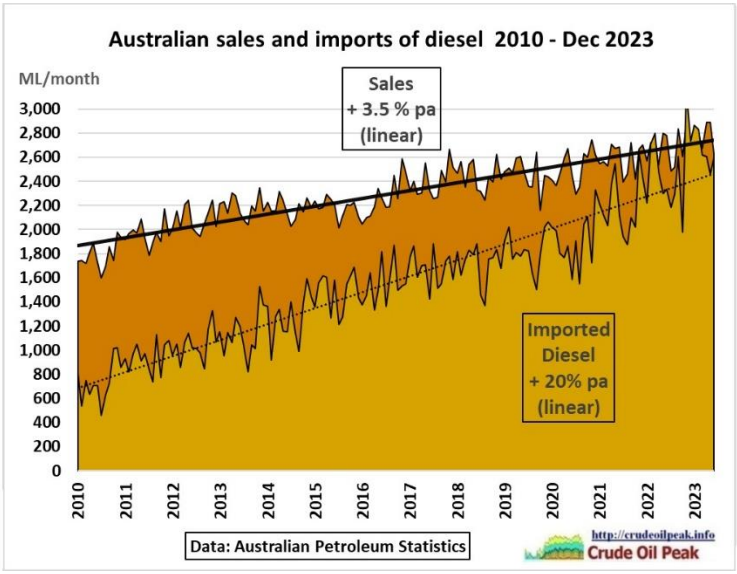
Also note that this INSW business case mentions “an additional 39,000 jobs and 27,000 dwellings to high-amenity precincts around stations by 2056” (p 1) but does not quote any daily passenger numbers expected from these dwellings and jobs.

Another option not considered is light rail compatible with heavy rail (Karlsruhe model) with dual voltage technology

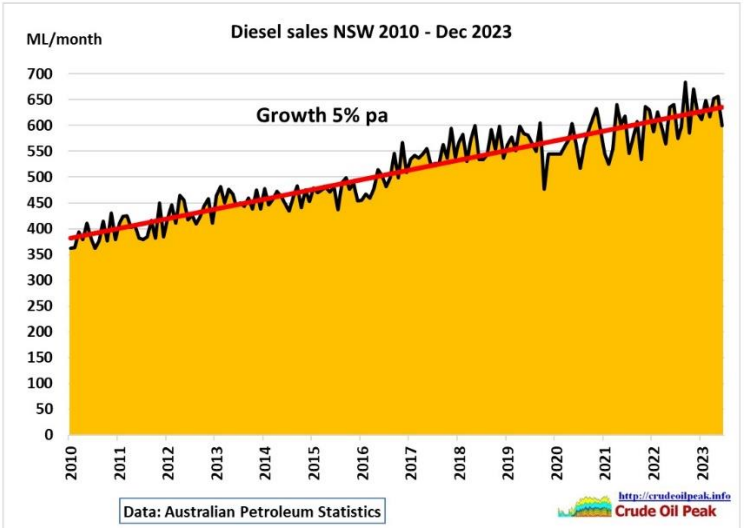
Video: https://www.youtube.com/watch?v=c9WY_lH6Sck&t=70s

Light rail can also make use of cargo trams suitable for light cargo from planes.

It is absolutely urgent to decarbonise freight transport. In the next oil crisis, shelves in shopping centres will empty within weeks, just like during Covid. Australia's diesel consumption is going in the wrong direction:



Much of the growth is driven by new pickup trucks and SUVs



The public thinks that EVs will decrease GHG emissions but few think about trucks. It is not clear whether electric trucks with very heavy batteries (increasing loads on bridges!) can be

deployed fast enough. The oil and energy blindness of governments pops up everywhere and has led to many wrong decisions.

b) Funding of transport infrastructure

In February 2021, Infrastructure Australia did a cost benefit analysis and quoted funding of $5.2 bn each from Federal/NSW governments.

https://www.infrastructureaustralia.gov.au/sites/default/files/2021-03/SMWSA%20Evaluation%20Summary.pdf

The proponent's reported capital costs and funding arrangements are presented in the following table.

Capital costs and funding	
Total capital cost	Pending (see endnote)
Australian Government funding committed	$5.2 billion
Other funding	$5.2 billion from the NSW Government

7

The net present value for this exorbitant expenditure (twice as expensive as the $5.3 bn airport!) is NEGATIVE! The benefit cost ratio (even with wider economic benefits) is only 0.82

https://www.infrastructureaustralia.gov.au/sites/default/files/2021-03/SMWSA%20Evaluation%20Summary.pdf

Benefits and costs breakdown

Proponent's stated benefits and costs		Present value ($m, 2019/20) @ 7% real discount rate		% of total
Benefits				
Urban development (land-value uplift, sustainability, avoided infrastructure, option value)		$3,566		64%
Public transport user benefits (travel time savings, farebox, decrowding, amenity, safety, accessibility)		$980		18%
Road user benefits (travel time savings, vehicle operating cost savings, parking, tolls)		$617		11%
Social and community (active travel, road safety, environmental externalities, affordable housing)		$384		7%
Total Benefits[1]		$5,545	(A)	100%
Total capital costs (P50): see endnote		$6,772		92%
Operating costs		$612		8%
Total Costs: see endnote[1]		$7,384	(B)	100%
Core results	Net benefits - Net present value (NPV)[2]	-$1,839		n/a
	Benefit-cost ratio (BCR)[3]	0.75		n/a
Wider Economic Benefits (WEBs)		$546		n/a
Results including WEBs	Net benefits - Net present value (NPV)[2]	-$1,294		n/a
	Benefit-cost ratio (BCR)[3]	0.82		n/a

Source: Proponent's business case
(1) Totals may not sum due to rounding.
(2) The net present value is calculated as the present value of total benefits less the present value of total costs (A – B).
(3) The benefit–cost ratio is calculated as the present value of total benefits divided by the present value of total costs (A ÷ B).

"The proponent has estimated that demand for the rail line would be significantly lower than its planned capacity in the initial years of operation, with passengers using less than 40% of the seated capacity in peak periods in 2026. In the longer-term, demand is projected to increase

with approximately 80% of the system's total capacity being used by 2056..... Upon the Western Sydney International Airport's opening in 2026, the business case estimates that the rail line would have peak line loadings of approximately 880 passengers per hour, or about 11% of the capacity of the metro in one direction. It forecasts peak line loadings growing to 3,200 passengers per hour by 2036 and 6,200 passengers per hour by 2056

https://www.infrastructureaustralia.gov.au/sites/default/files/2021-03/SMWSA%20Evaluation%20Summary.pdf

880 pax per hr. Let's check that with the above numbers: 2,750/4.4 (airport) + 300/3.5 (Bradfield, access and egress) = 710/hr. Plus passengers from other stations. Seems to be OK but why are the calculations not shown in these documents?

The BCR is likely to go down as the capital costs were estimated at $7 bn while it is much higher now:

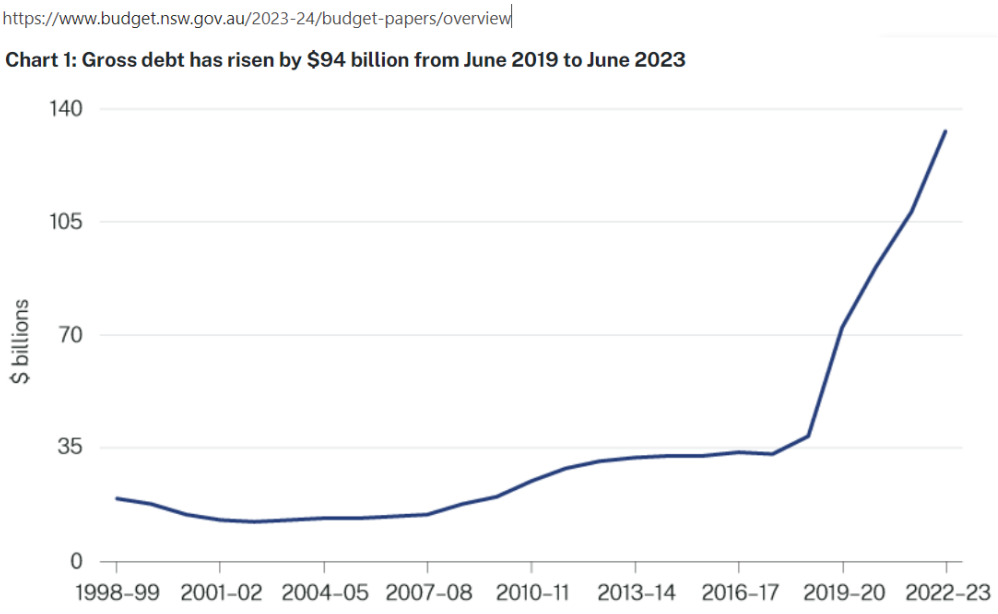
The total project cost is estimated at $11 bn.
https://investment.infrastructure.gov.au/key-projects/sydney-metro-western-sydney-airport

It seems governments have overcommitted themselves in their metromania addiction. The NSW debt has steadily increased, especially after 2019. From the Budget 2023/24 papers:

In recent years, growth in the State's expenses has far outpaced revenues, with expense growth peaking in 2021-22 at 25.0 per cent. However, in the 15 months to March 2023, $27.7 billion of new policy measures were added to the Budget over four years, worsening the State's financial position.

This high level of spending left the State with limited buffers in the event of an economic or financial future shock. Combined with the lack of funding for some ongoing programs, many essential services were at risk and under pressure.

Major infrastructure projects have been beset by substantial cost escalation and require fairer distribution of investment across the State.



https://www.budget.nsw.gov.au/2023-24/budget-papers/overview

19 Sep 2023

In Labor's first NSW budget in more than a decade, Treasurer Daniel Mookhey has announced $13 billion in cuts and savings, and increased a tax on big multinationals to fund promised pay rises for public sector workers such as nurses and teachers.

Mr Moohkey has forecast a $7.8 billion deficit this financial year, then an $800 million surplus in 2024-25, followed by a $1.5 billion surplus by 2026-27.

But he said that modest surplus was dependent on many things — including the war in Russia, inflation, and climate change.

https://www.abc.net.au/news/2023-09-19/nsw-budget-minns-state-government-live-blog-announcement-mookhey/102872482

Western Sydney Airport's Aerotropolis precinct at risk over federal infrastructure cuts, says NSW Treasurer Daniel Mookhey

14 Dec 2023

NSW Treasurer Daniel Mookhey said the slashed funding now jeopardises the planned Aerotropolis precinct surrounding the Western Sydney International Airport

https://www.news.com.au/finance/economy/australian-economy/nsw-treasurer-lashes-17bn-budget-blow-due-to-federal-infrastructure-cuts/news-story/573e8e4cd8ffda7f109bce85ad8d3cdd

One reason for the budget problems and the debt is the astronomical cost of driverless metros in deep tunnels (the most expensive urban transport option there is), resulting in equally high cost of underground stations:

Crows Nest $370 m, Victoria Cross $476 m, Barangaroo $217 m, Hunter St $640 m

Martin Pl $378 m, Pitt St $463 m, Central $955 m, Parramatta $379 m, Olympic Park $365 m

(revenue from leasing above station developments not deducted)

All these metro projects are CBD centric with inefficient and therefore costly monodirectional traffic flows. Was Sydney not supposed to become a city of cities?

c) The impacts of employment movements in Western and Southwestern suburbs of Sydney

The Western Parkland City is planned to accommodate 200k jobs in "defence, manufacturing, healthcare, freight and logistics, agribusiness, education and research industries".

https://www.planning.nsw.gov.au/plans-for-your-area/priority-growth-areas-and-precincts/western-sydney-aerotropolis

Note that these 200k jobs are for the whole of Sydney's West comprising 8 LGAs including Penrith which is already served by rail.

The Bradfield City Centre

https://pp.planningportal.nsw.gov.au/draftplans/under-consideration/bradfield-city-centre-master-plan

This looks like a headquarter economy, again a job for high rise developers. But what we really need is a re-industrialization as global supply chains (which have become too complex) are interrupted by all sorts of events and malicious actors.

It is very likely that the WSI airport becomes a cargo port (rather than a passenger port) for the import and export of urgently needed components for the renewable energy industry, That has to be taken into account when developing the aerotropolis.

d) Integration with existing transport infrastructure

Because the NSW government is transfixed with driverless metros and privatization of rail, the integration with the existing heavy rail network is poor, i.e. only at one point, St Marys.

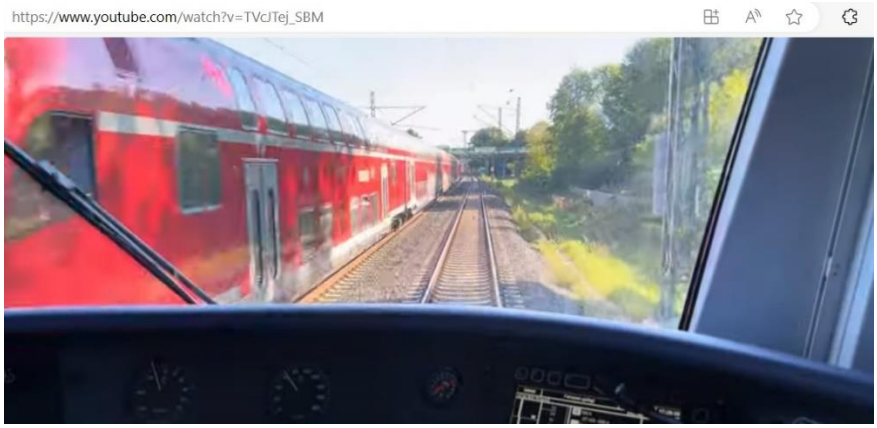
Stage 1 should have been heavy rail Leppington – WSA terminal. That would have created a strategic extension of the existing rail network towards the south west. The completely unnecessary downgrading of the Bankstown line to metro will create a discontinuation of services west of Bankstown towards the WSA. So passengers from the Bankstown line would have to change trains twice to get to the WSA even if link C (Bankstown - Liverpool) were built. Another planning disaster which is the result of an ideologically driven conversion of heavy rail to metros. To my knowledge, no other city in the world is doing this.

And if this were not enough it is planned to convert Glenfield – Leppington also to metro and link up with the Bradfield station, presumably at 25 KV AC.

https://www.sydneymetro.info/article/planning-metro-extension-linking-glenfield-western-sydney-aerotropolis-underway

The 2023-24 NSW Budget committed funding to develop two business cases that consider future extensions
https://www.sydneymetro.info/planning-future-extensions

In European countries, rail solutions are as flexible as possible. As an example, S-Bahn and regional trains in the Frankfurt region use the same track while additional loops are being built for new S-Bahn stations, ultimately resulting in a quadruplication.



Cab view from a single deck S-Bahn mass transit emu passing a double decker going in the other direction

Sydney's red rattlers were single deck and they were mixed with double decker trailers even in the same train. That was an ingenuous transitional solution, cost-saving.

But since money printing has become the norm after the GFC (which was caused by the 2008 oil price shock) Governments lost the skills to look for economic solutions.

To sum it up:

We had following chain of wrong decisions:

1) Then treasurer Costa cancelled the Epping – Parramatta rail link in June 2003.
https://www.smh.com.au/national/last-stop-epping-as-parramatta-rail-link-in-doubt-20030603-gdgv8f.html
This was the year of the Iraq war in which an intractable oil problem started. The clock to oil proof Sydney was ticking.

2) Transport Minister Berejiklian did not fix the PERL problem in 2011/12 but added another problem by changing the original plan for a North West Rail Link to an incompatible metro, thereby converting the perfectly working Chatswood – Epping tunnel, reducing the operational flexibility of Sydney Trains and making PERL impossible. Metromania starts. It was argued that an interchange in Chatswood could not be maintained forever, so the metro had to be continued to the city and beyond.

3) In October 2020 the Berejiklian government rejected the recommendation of report 11 of the Legislative Council dated April 2020 NOT to proceed with the conversion of the Bankstown line to metro standard.
https://www.parliament.nsw.gov.au/lcdocs/inquiries/2551/Report%20No%2011_PC%206_Sydenham-Bankstown%20line%20conversion.pdf This results now in broken rail links between Sydney's South West and the WSI. The conversion problem eats like a cancer through the whole heavy rail network.

4) As PERL was designed to relieve the Strathfield – CBD sector, the Metro West was invented which, however, suffered from a conflict of objectives: 20 minutes travel time between Westmead and the city OR maximising the number of stops to increase potential patronage.

5) By the time a decision had to be made to provide a rail link to the WSA, metromania was established to such an extent, that no other option was considered. The cheapest solution would have been to extend the Leppington line to the WSA

The Minns government inherited this planning mess from the previous Liberal Governments which signed many contracts. The public does not know about the details of contract conditions. For example can budget deficits be used as an argument to cancel a project or reduce its scope of work?

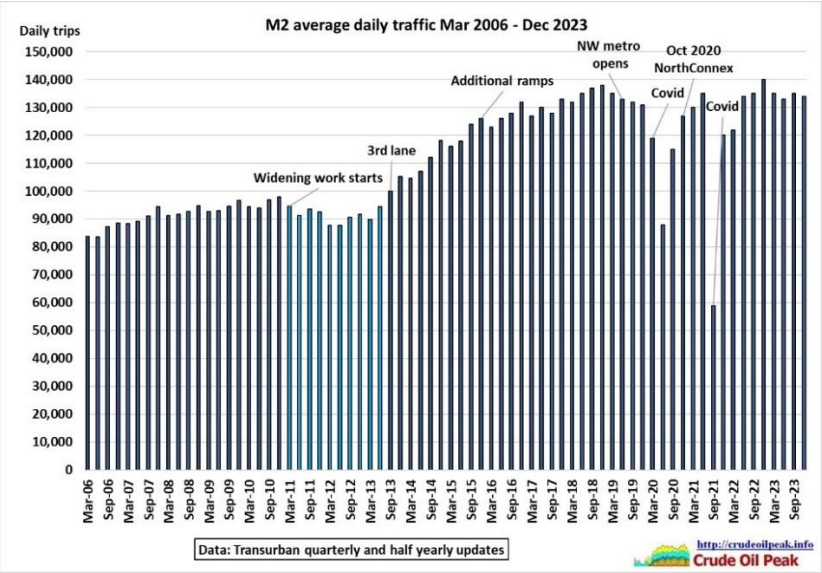
But metromania was continued by the Minns government when it was announced in August 2023 that the Bankstown line conversion would go ahead
https://www.abc.net.au/news/2023-08-01/sydney-metro-south-west-to-proceed-minns-says/102671718
This is a completely superfluous project costing $1 bn. How many kms of light rail could be built for this money?

Given the many wrong decisions in the past it is very difficult to make recommendations to fix this planning chaos. The NSW bureaucracy works in mysterious ways, locked up in silos and informing the public only when decisions have already been made. The media then report: "It has been revealed…"). There is no deus ex machina to cut this Gordian knot.

One recommendation can be made, however: to stop any future conversions of heavy rail to metros.

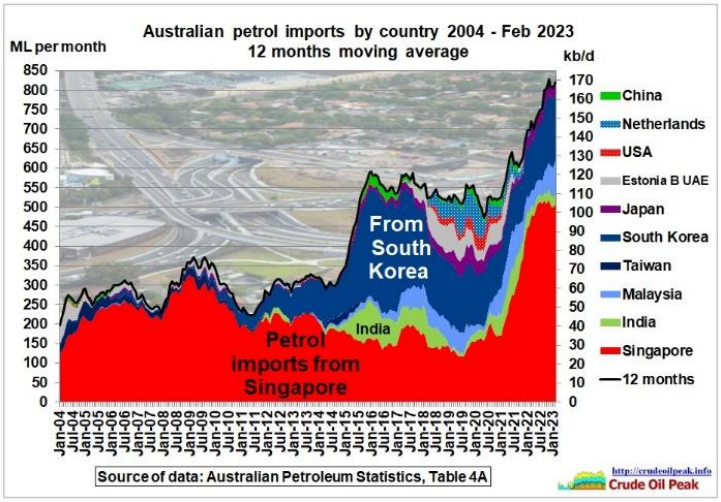
e) reducing road usage around the new airport and surrounding regions

The Bradfield cycling network is shown in Fig 45 in the Transport Management Report
https://shared-drupal-s3fs.s3.ap-southeast-2.amazonaws.com/master-test/fapub_pdf/08.+Appendix+G+-+20231020+Transport+Management+Accessibility+Plan+Report.PDF



As for the M12, there is little hope. As an example, the North West Metro has not reduced traffic on the M2.

I have written many submissions on this topic for over 15 years. To no avail. Only petrol shortages will do the trick

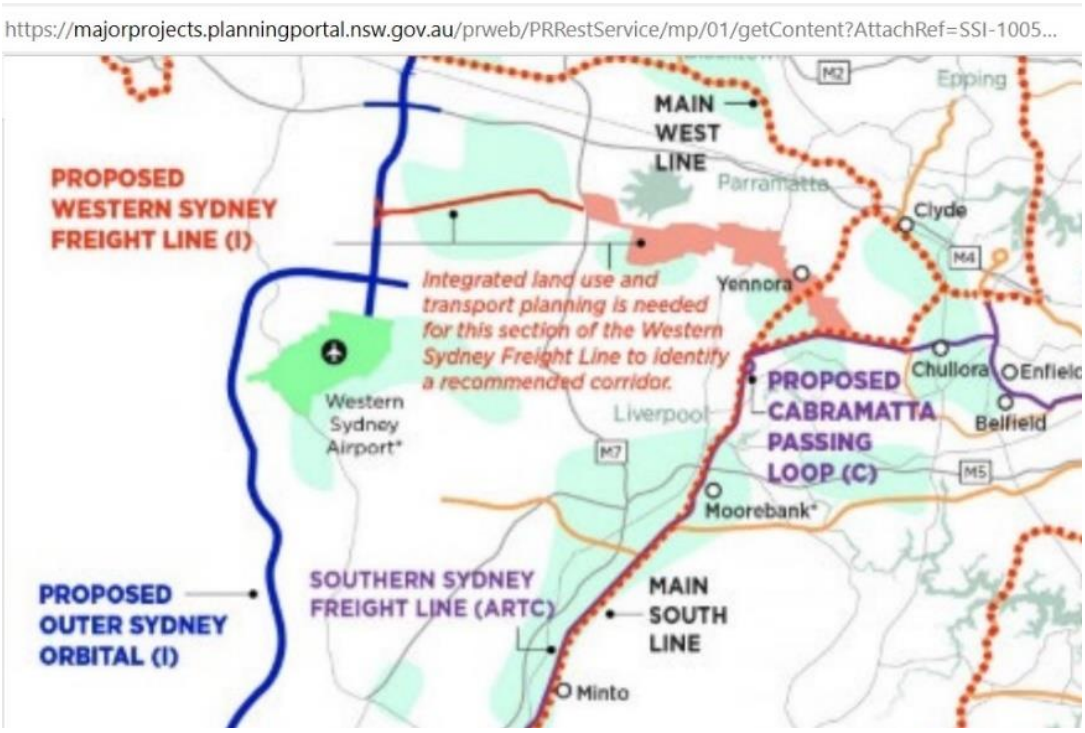


f) any other related matters (part 1 - freight)

What is happening with the freight rail plans for the West?

Oct 2020: Technical Paper 1 Transport

Chapter 3.2.5 Freight rail network

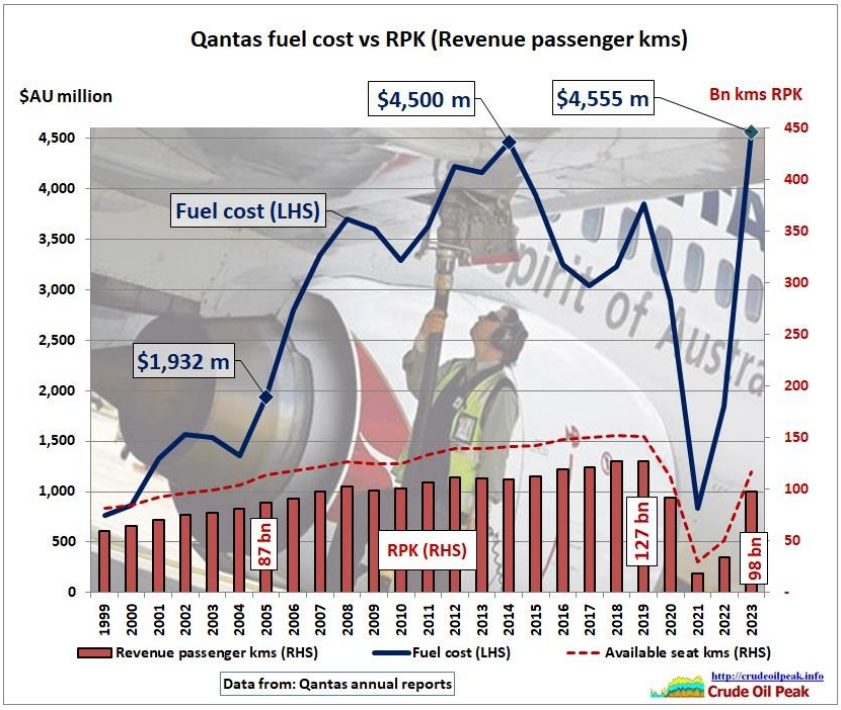


How will that fit along the metro alignment?

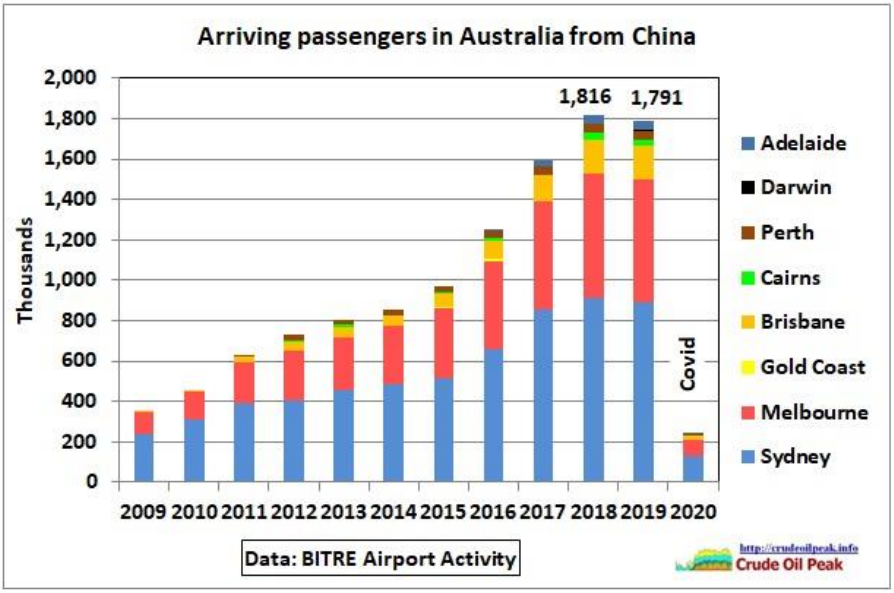
https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSI-10051%2120201019T005209.142%20GMT

f) any other related matters (part 2 - aviation)

Watch out for Qantas' fuel costs



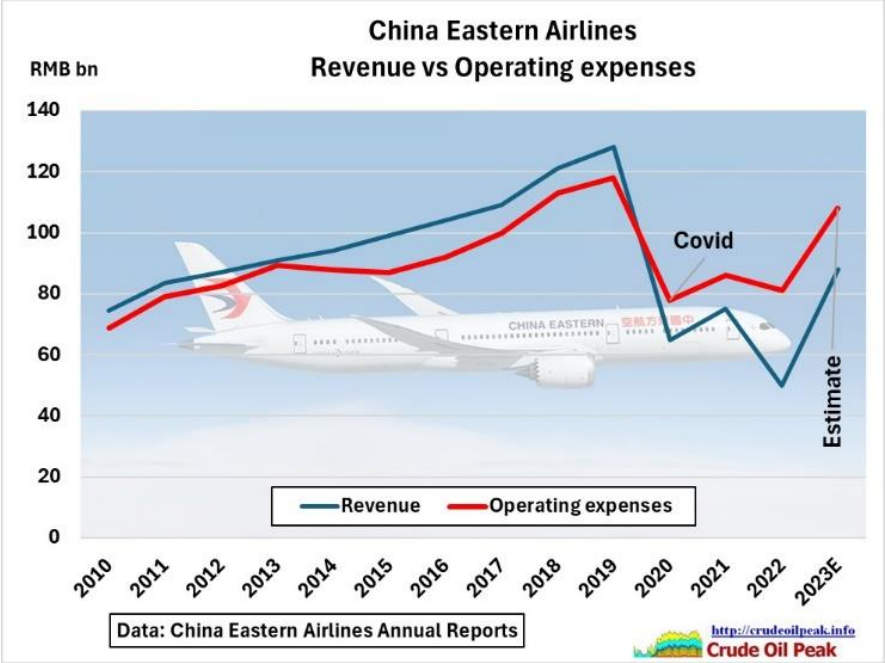
The impact of the crude oil peak in 2005 can be clearly seen



22/5/2021 China-Australia passenger traffic has peaked 2018-19 before Covid
https://crudeoilpeak.info/china-australia-passenger-traffic-has-peaked-2018-19-before-covid

We know the Chinese economy is not in good shape due to overinvestment in the real estate sector, among other factors.

China's Eastern Airlines was hard hit in Covid



What were the passenger numbers to/from China in the WSA business case?

f) any other related matters (part 3 – power supplies)

Has anyone calculated where the sustainable power supply will come from for:

- The airport
- All metros
- The aerotropolis
- All other apartment and office towers needed to fill the metros

The problem is in the afternoon and early evening. The more immigrants, the higher the (peak) demand for power and the more often there will be price spikes. All to be paid by us.

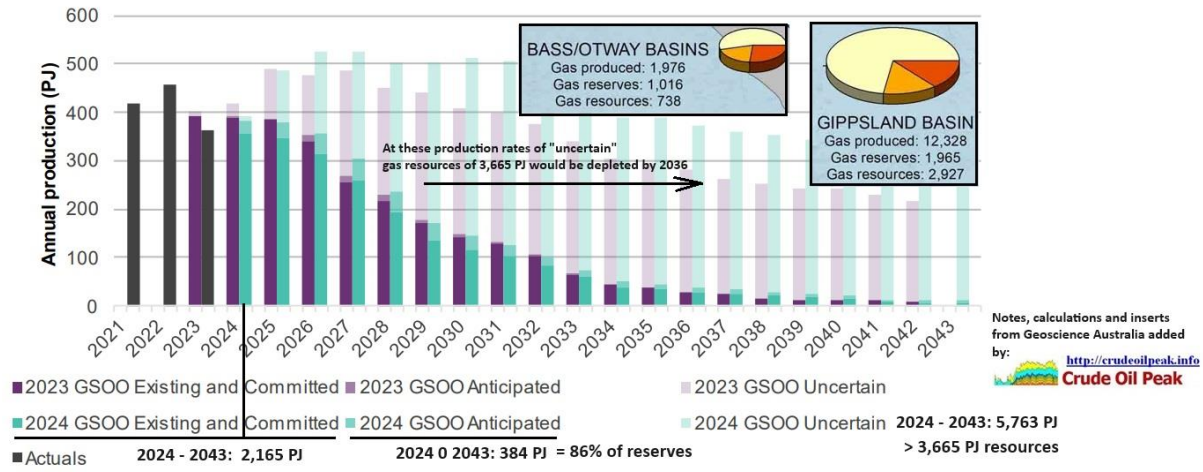
How would the government decide on priorities in the case of shortages? Load shedding by the Tomago alu smelter? It happened already but is actually a NO-NO.

Generation coal fired power plants in NSW 29 Feb 2024						
		Reg. capacity	Max output in previous 7 days	Generation 5 pm	Percent of registered capacity	Generation 7 pm
		MW	MW	MW	%	MW
Bayswater	BW01	660	657	666	101%	655
	BW02	660	685	684	104%	685
	BW03	660	685	683	103%	685
	BW04	660	685	665	101%	671
Eraring	ER01	720	698	548	76%	567
	ER02	720	699	556	77%	613
	ER03	720	698	593	82%	646
	ER04	720	618	618	86%	578
Mt Piper	MP01	700	728	592	85%	560
	MP02	700	690	596	85%	557
Vales Point	VP01	660	659	652	99%	660
	VP02	660	630	643	97%	573
	Sum	8,240	8,132	7,496		7,450
	% of registered capacity			91%		90%
	% of max in previous 7 days			92%		92%

8 Mar 2024 Last hot summer day: ALL 12 coal powered units running at combined 90% of capacity
http://crudeoilpeak.info/last-hot-summer-day-in-nsw-all-12-coal-powered-units-running-at-combined-90-of-capacity

aemo.com.au/-/media/files/gas/national_planning_and_forecasting/gsoo/2024/aemo-2024-gas-statement-of-opportunities-gsoo-report.pdf?la=en

Figure 28 Actual and forecast annual production from southern gas fields, 2021-43 (PJ)



Peak gas in Victoria (AEMO GSOO 2024). https://aemo.com.au/en/energy-systems/gas/gas-forecasting-and-planning/gas-statement-of-opportunities-gsoo Gas is needed in peaking plants and also to supplement renewables. If this is limited, there will be brownouts. They will get worse if immigration continues (which has been assumed in all airport and metro planning)

f) any other related matters (part 4 – planning documentation)

A lot of the planning documentation is promotional in nature with cherry picked, sometimes embellished information. During the research for this submission I did not come across a single executive summary which would give the following numbers all together in one table:

(1) passenger numbers by decade (5 million in 2026, 10 million in 2030s, 40 million in 2050s)
(2) population in aerotropolis (27k dwellings and 39k jobs in 2056 according to INSW business case)

(3) population and job numbers around other metro stations by decade (????)
(4) expected passengers for each station by decade as a result of (1) - (3)

The Inquiry might want to fill in the missing information during the hearings when asking Sydney Metro and TfNSW officials.

f) any other related matters (part 5 – killer assumptions)

It is a standard planning procedure to list killer assumptions (part of the Logical Planning Framework https://en.wikipedia.org/wiki/Logical_Framework_Approach) This is not being followed consistently by Australian governments. Certain assumptions are buried in the text of different chapters and appendices but are not listed together in the executive summary let alone dealt with in a cumulative risk analysis.

Killer assumptions are assumptions which lead to project failure if these assumptions do not materialize. For example, one of the1970s killer assumptions for the Francis Scott Key bridge was: "Ships using the Baltimore port in future will not have a dwt bigger than the dwt used in the design load calculations for the pylon and pylon foundations. The dolphins will protect the pylons"

The Western Sydney Airport EIS made following killer assumptions

(1) Sydney population growth: 2015: 5.7 million, 2030: 7.1 million (of which 1 million in Western Sydney), 2050: 8.9 million (chapter 2, p82)
(2) GDP growth 2.8% pa, GDP per capita growth 1.5% pa (chapter 2, p 83)
(3) Low cost carrier penetration in the Asian market increasing from 25% to 40% and domestically to 35% by 2050 (chapter 2, p 84)
(4) Tourism growth of 4.5% pa, underpinned by Asian economic growth of 4.4 % pa (6-7% in China)
(5) A linearly growing jet fuel supply to 2,800 ML pa in 2051 will always be available at a price which airlines can afford
(6) Passengers will have sufficient purchasing power to meet traffic forecasts of 40 million by 2055
(7) Climate change will not materially affect the operation of the airport and the demand for air travel (turbulances!)

The Metro WSA made following killer assumptions

1) WSA will achieve its passenger volume targets
2) Net overseas migration (with its current share for Sydney) will continue according to targets set in the Intergenerational Report 2023 and will increase air travel
3) There are sufficient power supplies for the additional population
4) For the "city shaping" function of the Parkland City there will be enough funds, low interest rates and construction capacity (materials at affordable prices, labour which can be housed somewhere)

Good luck.

Prepared by Matt Mushalik (MEng)

30 March 2024