Australian governments want to pay $810m subsidy for unviable road tunnel in Sydney as next oil price spike looms

The Federal government refused to financially help car manufacturers and airlines, arguing that companies need to get their "house in order". The Federal budget is deep in the red. Yet, billions of dollars in subsidies are envisaged to be paid to toll-way operators with the objective to take away risks associated with traffic forecasts. In 4 previous road tunnel projects estimates of future traffic were inflated in planning documents with the objective to get these projects off the ground. But ultimately this led to their bankruptcy. How about if toll-way operators and their consultants first got their house in order? And that would start by doing a proper analysis of oil supplies for the planning period.

These conceptual contradictions and embellishments are worsened by total planning chaos on a procedural level. An "innovative" tender process has selected a contractor for a road tunnel project in Sydney **before** an EIS (environment impact study), a cost benefit analysis, debt repayment plans, oil & energy and CO2 calculations were done. We can assume that the outcome is pre-determined and the numbers in the EIS will be tweaked.

In the completion year 2019 US shale oil will have likely peaked, the Middle East further disintegrated and oil production in many countries continued its decline. Northconnex and other planned toll-way projects will increase Australia's oil vulnerability and the economic burden of imported crude, imported fuel and imported cars and trucks which is being deducted from the domestic purchasing power.

North Connex tunnel: Tony Abbott and Barry O'Farrell give go-ahead to $3 bn project to link M1 and M2 in Sydney.
16/3/2014
"The Commonwealth will invest $405 million in the $3 billion NorthConnex to build the missing link between the M1 and M2 motorways to reduce congestion, shorten travel times and improve the safety of our roads."
The project was signed off between the State Government and the former Labor federal government last year, with each committing more than $400 million in funding.
But the Prime Minister says it is now happening under his watch.
He says construction on the nine-kilometre tunnel will begin next year and is expected to be ***completed in 2019****.*
http://www.abc.net.au/news/2014-03-16/nsw-to-start-work-on-northconnex-tunnel/5324118

16 March 2014

Transurban announces preferred contractor for NorthConnex
Transurban today welcomed the announcement of the preferred contractor for the M1 to M2 project, now known as NorthConnex, taking the motorway project a step closer to reality.

Transurban's Chief Executive Officer, Scott Charlton, said the consortium Lend Lease Bouygues had a design and construction proposal for the $3 billion project, which includes a construction budget of $2.65 billion along with land acquisition and project delivery costs. This is now subject to planning approval and finalisation of contract.

"We have gone through a unique and innovative competitive tender process to select Lend Lease Bouygues as the design and construction contractor. The twin tunnels will provide significant travel time savings for commuters and the freight network benefiting the NSW and Australian economies," Mr Charlton said.

http://www.transurban.com/140313_transurban_announces_preferred_tenderer.pdf

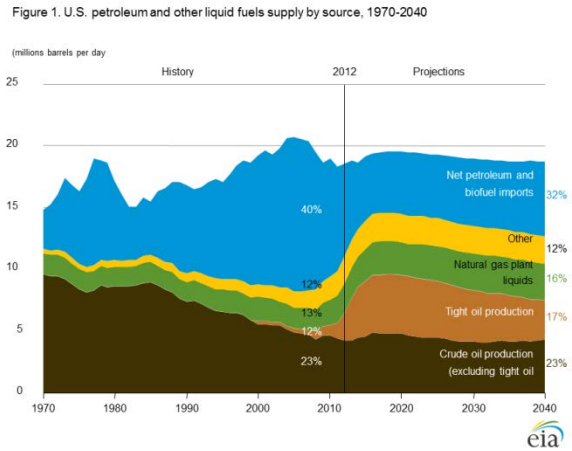
http://www.youtube.com/watch?v=cxU2x79xzd4

(1) World in 2019

4 road tunnels have already financially collapsed: X-city and Lane Cove tunnels in Sydney, Clem7 and Airport Link tunnels in Brisbane. Here we get the next candidate. Completion date of 2019? By that time we'll see:

(1.1) the US shale oil peak

From the EIA's Energy Outlook 2014 (early release):

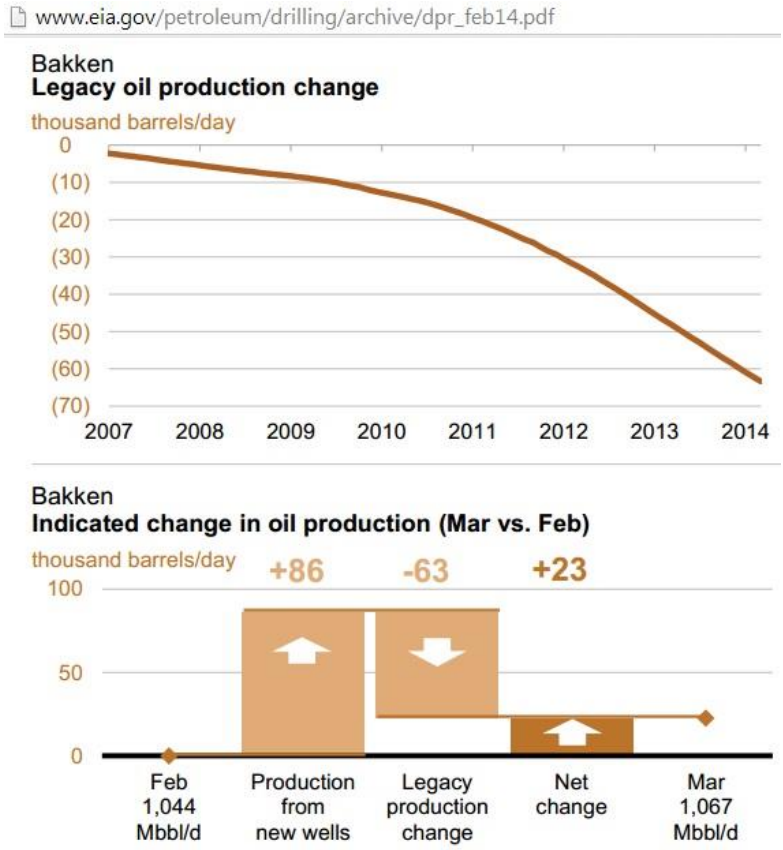


http://www.eia.gov/forecasts/aeo/er/images/figure_1es-lg.png

The US government's own graph shows that contrary to misinformation about US energy independence, parroted by the media, the US will always import 5- 6 mb/d of

oil and biofuels. Importantly, crude oil production starts a plateau of around 9.5 – 9.6 mb/d b (shale oil at 4.7 mb/d) by 2016, lasting until 2020 and followed by a slow descent. But there is disagreement among analysts about the decline rates of shale oil.

The mechanics of shale oil depletion is shown in this graph of the EIA drilling report:



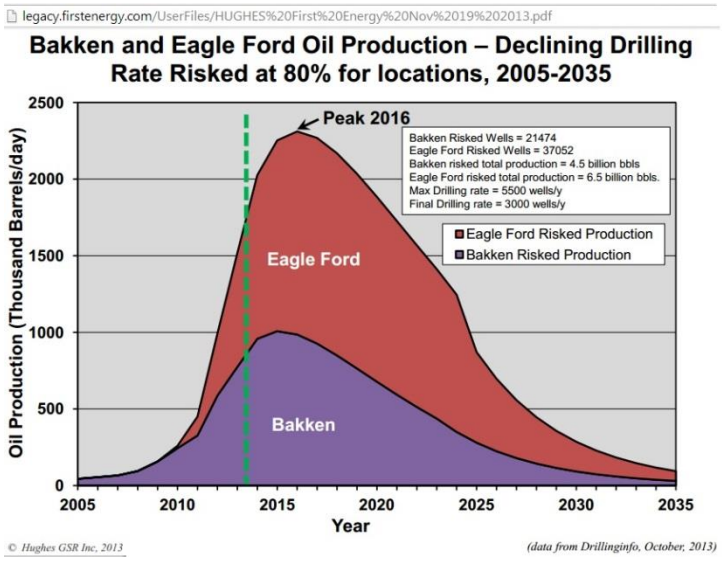
http://www.eia.gov/petroleum/drilling/?scr=email

The upper part of the graph shows the monthly production declines in the Bakken field have been increasing to more than 60 kb/d. This means that more or more efficient drilling at around 80 kb/d has to be done every month not only to offset that decline but also to arrive at a net additional production growth of around 20 kb/d per month. There will be a point where decline in old wells is so high that new drilling can't keep up. If, for argument sake, drilling were to stop (e.g. as a result of a credit crunch) decline would be a whopping 720 kb/d within 1 year, large enough to upset global oil markets. This is an insight from Rigzone, a professional blog of the oil and gas industry:

Musings: It's Official - Oil Industry Enters The New Era Of Austerity
20/3/2014
Chevron is the latest major oil company to implicitly declare that the oil industry has entered a new era – one marked by higher costs and more disciplined capital investment programs that will require higher oil prices. Capital discipline forces companies to sacrifice production growth targets on the altar of increased profitability in order to boost returns to shareholders…

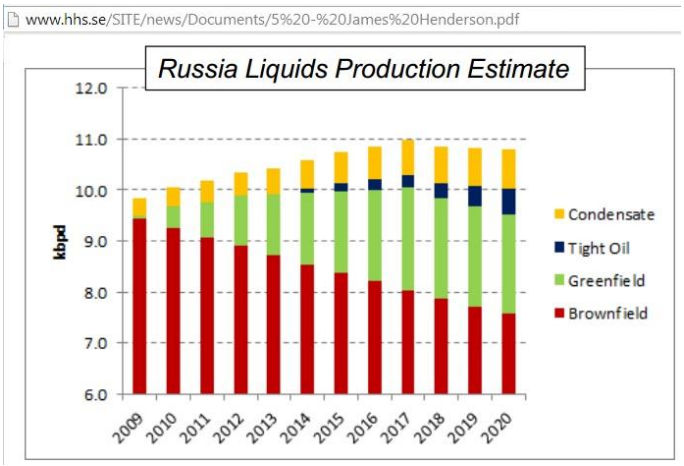
Unfortunately, the results of the shale revolution have been disappointing, leading to significant asset impairment charges and negative cash flows as the spending to drill new wells in order to gain and hold leases has exceeded production revenues, given the drop in domestic natural gas prices. Will that capital continue to be available, or will it, too, begin demanding profits rather than reserve additions and production growth?
http://www.rigzone.com/news/oil_gas/a/132190/Musings_Its_Official_Oil_Industry_Enters_The_New_Era_Of_Austerity/?all=HG2

Geoscientist David Hughes from Global Sustainability Research Inc. calculated a decline of 1.3 mb/d until 2025 in his slide show "Shale Revolution" for First Energy Capital:



http://legacy.firstenergy.com/UserFiles/HUGHES%20First%20Energy%20Nov%2019%202013.pdf

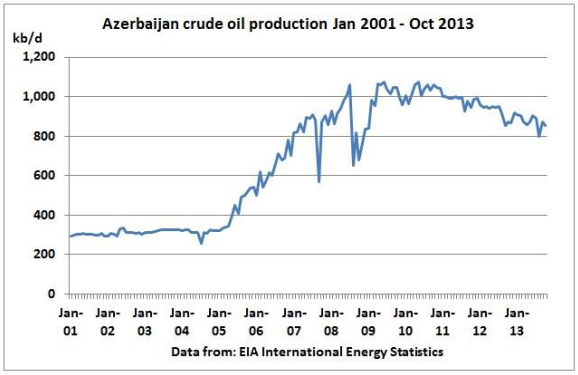
(1.2) Russia's crude oil peak



http://www.hhs.se/SITE/news/Documents/5%20-%20James%20Henderson.pdf

When looking at what is currently happening around the Black Sea maybe the above graph explains something.

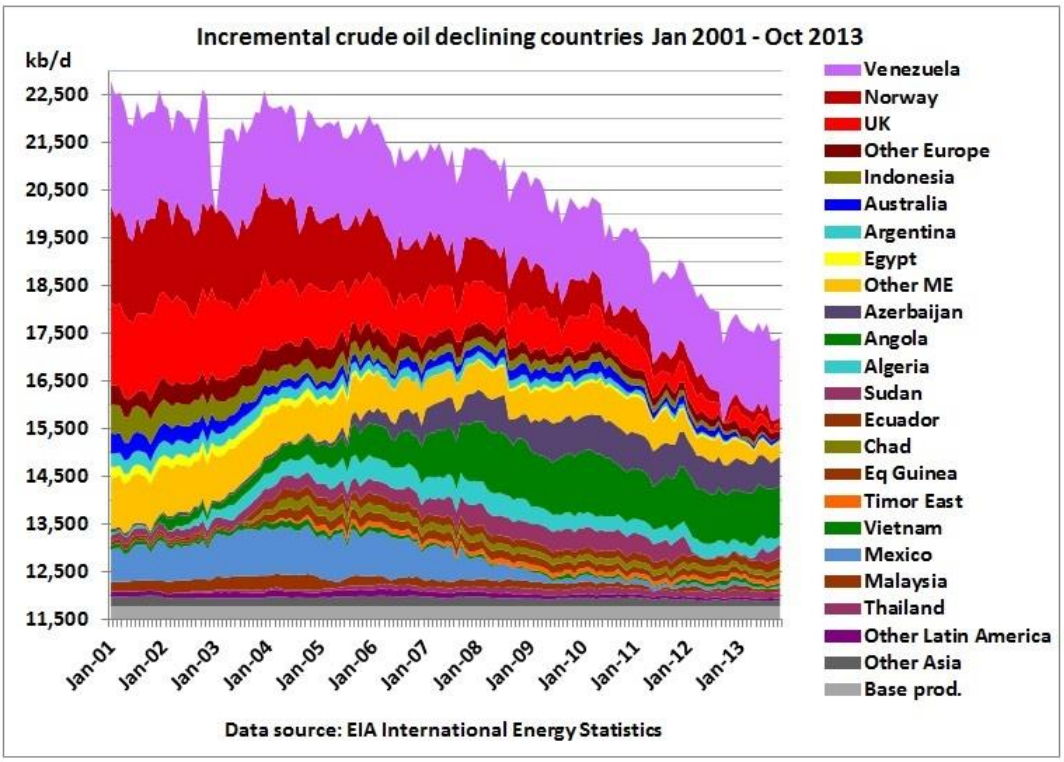
Oil flows through 2 pipelines to Black Sea ports will also be impacted by peak oil in Azerbaijan



http://crudeoilpeak.info/azerbaijan-peak

(1.3) Continuing decline in many countries

as shown in the following graph, at around 3-4% pa in the last 5 years



So by 2019 we can expect a total decline of around 5* 3% * 17 mb/d = 2.5 mb/d. More details are in this post:

World crude production 2013 without shale oil is back to 2005 levels
http://crudeoilpeak.info/world-crude-production-2013-without-shale-oil-is-back-to-2005-levels

(1.4) Further disintegration of the Middle East and increasing fuel import vulnerability

In another article, Rigzone describes latest developments, including conflicts between Saudi Arabia and Qatar:

EXHIBIT 15. THE MIDDLE EAST TODAY
SOURCE: MONEYANDMARKETS.COM

Musings: The Challenges Facing Saudi Arabia Include More Than Oil
21/3/2014
As Saudi Arabia contains the most holy sites of the Islamic religion, the Saudi royal family is its custodian and protector. Recently, a new political struggle erupted when Saudi Arabia listed the Muslim Brotherhood as a terrorist organization and the country withdrawal of its ambassador from Qatar who has been supporting the Brotherhood. The United Arab Emirates, Bahrain and Egypt have followed suit, also withdrawing their ambassadors. The spat with Qatar started a couple of weeks ago at a Gulf Cooperation Council foreign ministers' meeting held in Riyadh. Saudi Foreign Minister Saud bin Faisal declared that Qatar needed to shut down the television station Al-Jazeera, the Brookings Doha Center and the Rand Qatar Policy Institute if the emirate did not wish to be punished.

At the root of the Qatari dispute is a political clash between the emir of Qatar, Sheikh Tamin bin Hamad, and Saudi Arabia's King Abdullah bin Abdulaziz over support for Islamist groups perceived to be terrorists by the old, autocratic rulers in the region. The principal focus is on Qatar's support for the Muslim Brotherhood that was instrumental in helping to depose Egypt President Hosni Mubarak several years ago and replace him with the organization's president, Muhammad Morsi. The Saudi monarchy has been supportive of the military rulers of Egypt who overthrew the Morsi regime late last year. Saudi Arabia, along with the United Arab Emirates, has sent billions of dollars in order to prop up the military government, with no end in sight to the political and economic chaos in the country.

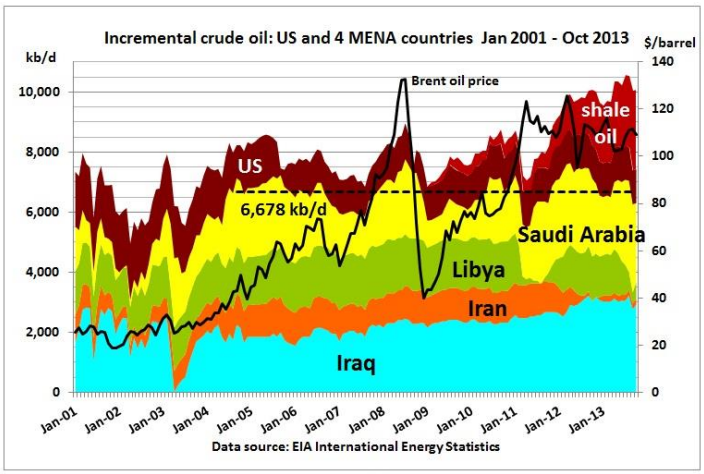
The Saudi monarchy is, and has been, concerned about the 12% of its population that are Shiite and that live over the Kingdom's petroleum reserves. The Kingdom is concerned about

Shiite Political Islam, the ideology of the Iranian state, which it believes was behind the social unrest in Bahrain during the Arab Spring. Saudi was so concerned about the stability in Bahrain that it sent troops into the country to support the current ruler

EXHIBIT 16. THE MIDDLE EAST RELIGIOUS LINE-UP
SOURCE: MONEYANDMARKETS.COM

	Shia	Sunni
Regimes of Major Nations	Iran Iraq Syria	Saudi Arabia Egypt Turkey
Some Major Organizations	Hezbollah (Lebanon) Mahdi Army (Iraq)	Al Qaeda & affiliates Muslim Brotherhood

The Saudi Royal family was described as both outraged and threatened by the role of Al Jazeera in the first years of the Arab Spring, which saw fellow potentates deposed in Tunisia and Egypt. They have become increasingly upset with Al Jazeera's sympathetic television coverage of the secular and Islamist opposition in Egypt
http://www.rigzone.com/news/oil_gas/a/132203/Musings_The_Challenges_Facing_Saudi_Arabia_Include_More_Than_Oil/?all=HG2



4 OPEC countries Saudi Arabia, Iran, Iraq and Libya did not produce more crude oil in 2013 than in 2005 (dashed line). There will be fights over Iraq's production quota. Saudi Arabia's production dropped in 2006/07. When finally Khursaniyah came on stream it was not sufficient for an additional demand from China in 2008 for the Olympic Games. When the war started in Libya in 2011 Saudi Arabia could not respond quickly enough, although Khurais and the Shaybah extension had been started in 2009.

Australia depends 37% on the Middle East, directly from imported crude or indirectly from imported fuels:

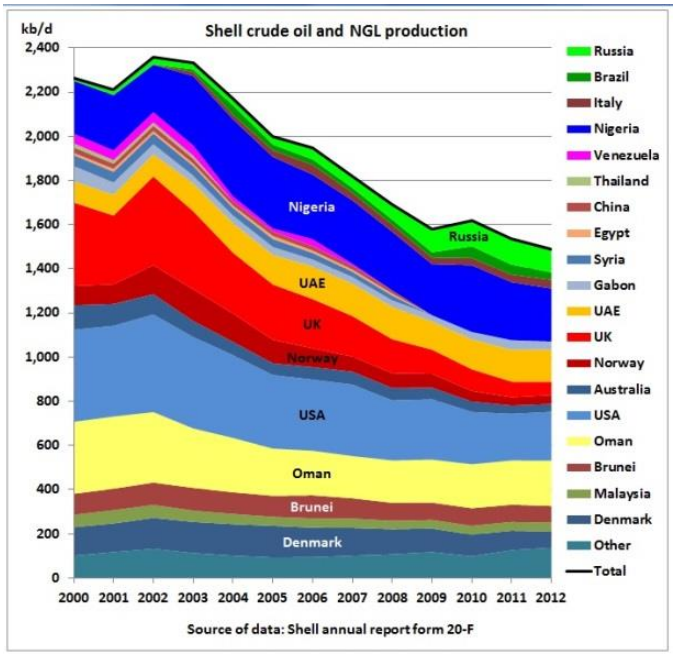
Apr 2012 - Mar 2013	Total (ML)	Import share	From Asian refineries (ML)	Middle East dependency	From ME (ML)
Refinery production	**36,775**			**14%**	5,148
Fuel imports					
Diesel imports	11,225				
Singapore		54%	6,061	94%	5,698
Japan		15%	1,684	82%	1,381
South Korea		20%	2,245	84%	1,886
Petrol imports	3,672				
Singapore		71%	2,607	94%	2,450
South Korea		25%	918	84%	771
LPG imports	1,023			100%	1,023
Aviation fuel imports	2,252				
Singapore		77%	1,734	94%	1,630
Japan		5%	122	82%	100
South Korea		15%	347	84%	291
Subtotal fuels above	18,171			84%	15,229
Other	2,855				
Singapore			710	94%	667.4
South Korea			260	84%	218.4
All imported fuels	**21,026**			**77%**	16,115
Refinery production + fuel imports				**37%**	**21,264**

This percentage will increase with every Australian refinery closing

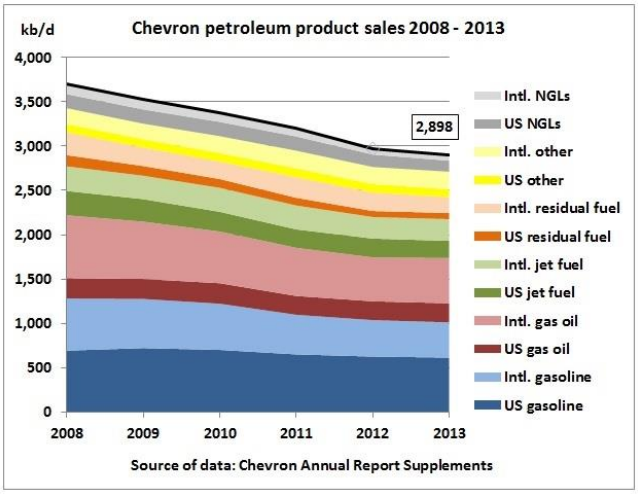
24/6/2013 Australian oil and fuel dependency on the Middle East is 37%
http://crudeoilpeak.info/australian-oil-and-fuel-dependency-on-the-middle-east-is-37

(1.5) Further decline of International Oil Companies

supplying petrol and diesel to Australia



23/2/2014 Geelong refinery sold as Shell's oil production continues to decline
http://crudeoilpeak.info/geelong-refinery-sold-as-shells-oil-production-continues-to-decline

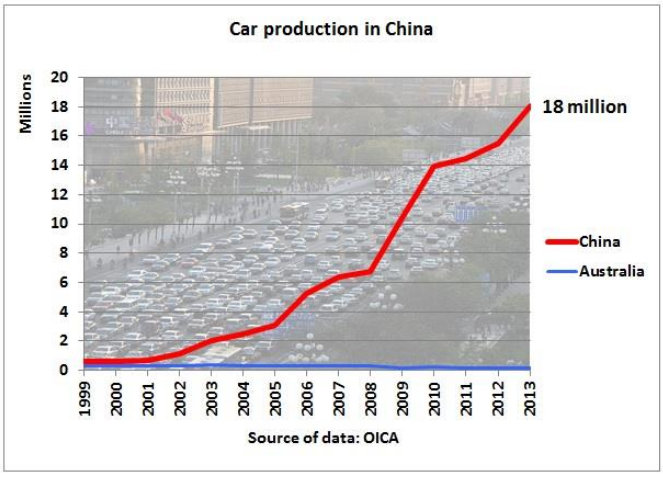


28/8/2013 Chevron's oil production, sales decline by 5%

http://crudeoilpeak.info/chevrons-oil-production-sales-decline-5

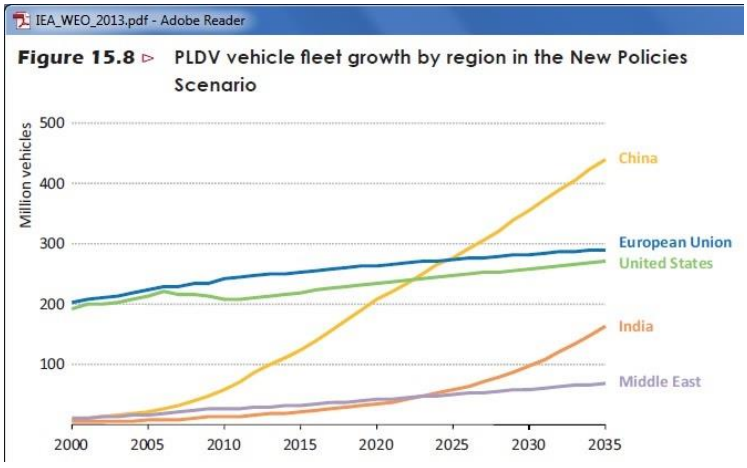
As Caltex is closing in the 4th quarter of 2014 this means increasing vulnerability to spot fuel markets.

(1.6) 90 million new cars on China's roads to compete with for crude/petrol



http://www.oica.net/category/production-statistics/

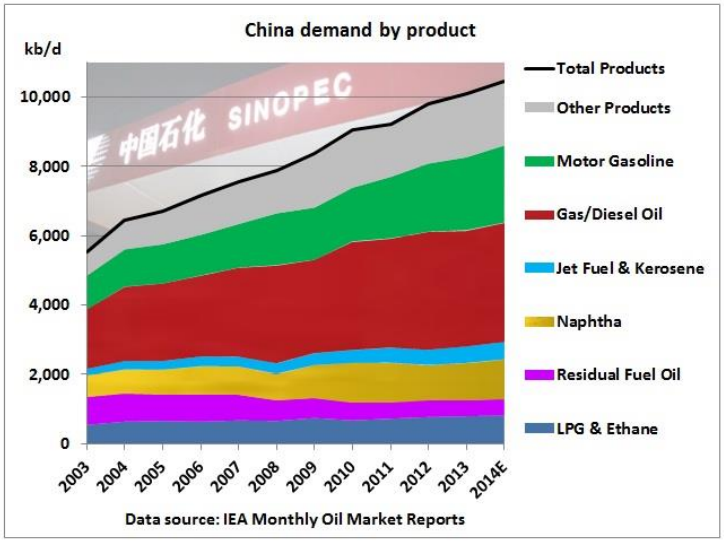
Most of these new cars will boost the car fleet, as scrappage rates are still low.

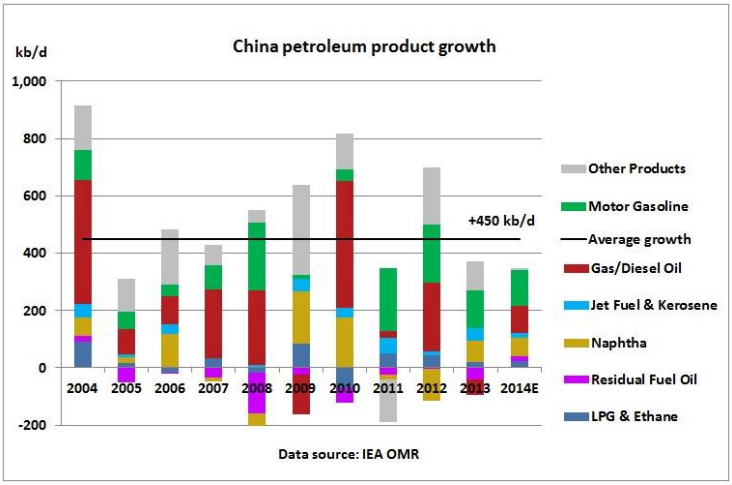


Vehicle fleet growth projected by the IEA in its WEO 2013

http://www.worldenergyoutlook.org/publications/weo-2013/

China's oil demand has been growing almost steadily:





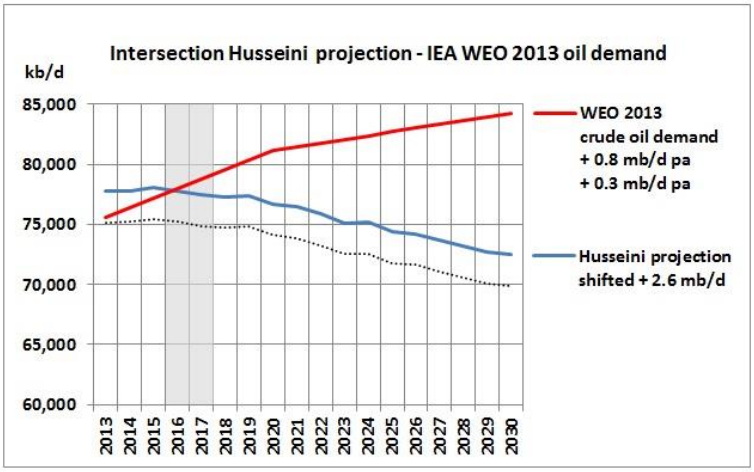
Average annual demand growth is 450 kb/d. For comparison: Australian total product sales are 950 kb/d. This means every 2 years China adds oil demand equivalent to 1 Australia. Data for these graphs are from: http://omrpublic.iea.org/

(2) Problems already during any tunnel construction

Why will there be another oil price spike in the next years?

Ex-Saudi Aramco geologist Dr. Husseini: *My base oil price forecast in 2012 dollars still ranges between $105 and $120/barrel Brent with a volatility floor of $ 95/barrel and more probable upward spiking to $140/barrel within 2016/2017.*

The realities of the 2009 Oil & Money [conference] forecast of a limited plateau of oil supplies have been pretty much vindicated since then. The oil plateau may now be inflated by about 1 – 2 Mbd of high cost unconventional oils but all major forecasters see this as pretty much transitional. The plateau itself remains a reality and unfortunately its duration is still unlikely to extend beyond the end of this decade."
http://peak-oil.org/2014/01/13716/



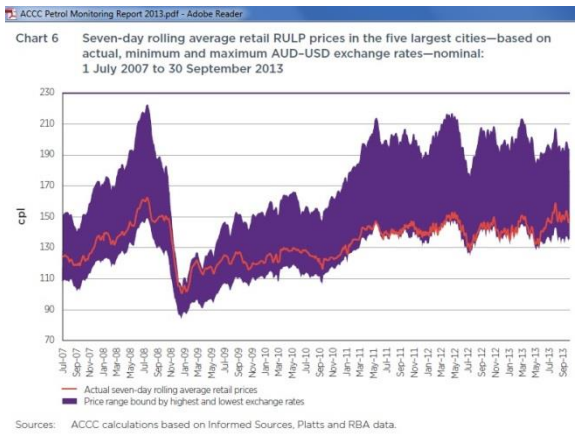
Dr. Husseini's 2009 oil production projection was 600 kb/d lower than actual production. Adjusting for this and adding 2 mb/d for US shale oil gives the blue line in the above graph. Comparing shifted production with growing oil demand shows that a gap opens in the 2nd half of this decade, widening towards 2030. More details are in this post:

15/3/2014 Ex-Saudi Aramco geologist Dr Husseini predicts oil price spikes of USD 140 by 2016-17: graphs
http://crudeoilpeak.info/ex-saudi-aramco-geologist-dr-husseini-predicts-oil-price-spikes-of-usd-140-by-2016-17-graphs

We don't know under whose watch that will happen but it won't be a happy ending for a road tunnel under construction. The last time we had an oil price spike it triggered a financial crisis. In addition, the Australian Dollar is expected to go down so petrol and diesel prices will go up:

14/3/2014 Goldman Sachs: AUD heading to US80 cents
http://www.smh.com.au/business/markets/currencies/australian-dollar-heading-to-us80c-goldman-sachs-20140314-34qpl.html

The ACCC had calculated what a lower AUD will mean:



15/12/2013 Lucky country dodged $2 a litre bullet - for now
http://crudeoilpeak.info/lucky-country-dodged-2-a-litre-bullet-for-now

(3)Toll-way subsidy against government's own policy

The Federal government refused to help the car and airline industry, yet intends to pay $405 million to tollway operators. Together with a similar State contribution this amounts to 27% of the project cost. If private investors need that much government assistance then apparently the road tunnel is not viable without this hidden subsidy. So what's the difference between car manufacturers and toll-way operators trying to make money with cars?

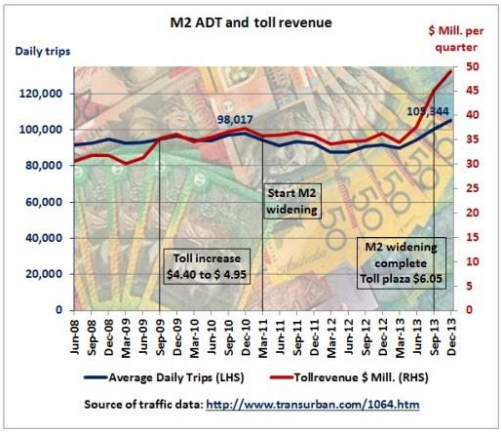
Remember this:

6/12/2013
Qantas, Holden: get your house in order, says Tony Abbott. **…companies must operate profitably if they want to survive.**
http://www.theaustralian.com.au/national-affairs/qantas-holden-get-your-house-in-order-says-tony-abbott/story-fn59niix-1226776767919

14/12/2013
Prime Minister Tony Abbott has ruled out giving Toyota extra government assistance to remain in Australia.
http://www.abc.net.au/news/2013-12-14/tony-abbott-rules-out-more-money-for-toyota/5156774

27/2/2014
Tony Abbott against debt guarantee for Qantas after 500 jobs axed
http://www.dailytelegraph.com.au/travel/travel-news/tony-abbott-against-debt-guarantee-for-qantas-after-5000-jobs-axed/story-fnjjv9zk-1226839057297

3/2/2014
Treasurer Joe Hockey has warned that the age of entitlement is over and it was time for all Australians to do their fair share of heavy lifting.
http://www.news.com.au/finance/economy/joe-hockey-warns-australians-the-age-of-entitlement-is-over/story-e6frflo9-1226816598949



What better example for the heavy lifting than the M2:

16/1/2014 Unsustainable Sydney: cost of using M2 toll-way grows 4 times faster than traffic

http://crudeoilpeak.info/unsustainable-sydney-cost-of-using-m2-toll-way-grows-4-times-faster-than-traffic

(4) Government's oil, energy and transport planning house NOT in order

(4.1) The December 2013 issues paper for the **Energy White paper** consultation process
http://ewp.industry.gov.au/documents/issues-paper
does not suggest that any serious oil supply analysis will be done in 2014, so any oil-dependent infrastructure hangs in the air without proper energy planning. More details are here: http://crudeoilpeak.info/wp-content/uploads/2014/02/Submission_Energy_White_Paper_issues_paper_Matt_Mushalik.pdf

(4.2) The **Productivity Commission's** draft report on Public Infrastructure released on 13/3/2014
http://www.pc.gov.au/projects/inquiry/infrastructure/draft
did not analyse why the above mentioned road tunnels went into receivership. On the Clem7 tunnel failure the report writes:

This project is an example of demand risk being transferred to private investors and not being borne by the government.
http://www.pc.gov.au/__data/assets/pdf_file/0009/134676/infrastructure-draft-volume2.pdf
So what is the logical conclusion from this? Taxpayers to the rescue! They can take the demand risk.

No one had the idea that the job at hand is to increase the productivity in the use of oil in the economy and that can really only be done by electric rail and rail freight, not toll-ways with gas-guzzling cars and trucks.

More details are here:
Submission sub19_Mushalik.pdf
http://www.aph.gov.au/DocumentStore.ashx?id=c827969b-714b-4c3a-b5c4-1890e63c90c5&subId=32248

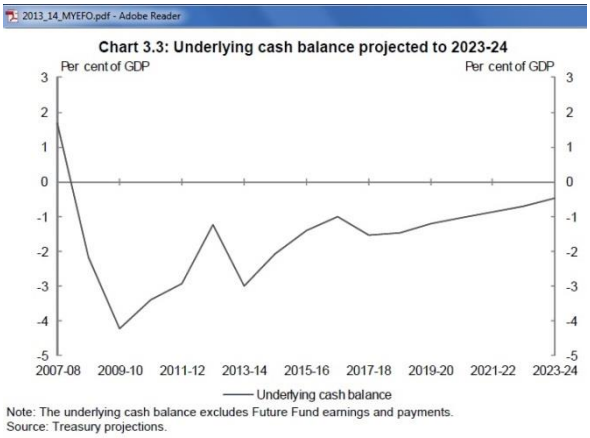
(4.3) The **Commission of Audit's** terms of reference:

"The Commission should also be guided in its work by the principles that:

– government should have respect for taxpayers in the care with which it spends every dollar of revenue; "
http://www.ncoa.gov.au/docs/NCA_TERMS_OF_REFERENCE.pdf

So where is the risk analysis for hundreds of millions of tax payer's dollars to co-finance road tunnels?

The Federal budget is in deficit for the foreseeable future:



"the heavy lifting to achieve a surplus must come through expenditure restraint" (p 25)
http://www.budget.gov.au/2013-14/content/myefo/download/2013_14_MYEFO.pdf

Thus, a federal $405 million subsidy to a project where oil supplies have not been analysed to be sufficient for the lifetime of the tunnel, i.e. from 2020 to 2050, makes no sense.

(5) Documents show low Cost Benefit Ratio

The Northconnex website refers to 3 planning documents:

(5.1) F3 to Sydney Orbital Link Study by SKM (February 2004)

northconnex.com.au/docs/2004_cover_summaryreport.pdf

	Purple	Blue	Yellow	Red
Strategic Capital Costs Estimates (in 2003 dollars)(1)				
Dual 3 lane ($million)	1,960	2,150	1,990	2,000
Dual 2 lane ($million)	1,670	1,820	1,650	1,600
Benefit Cost Ratio (BCR)(2) – No Toll(3)				
Dual 3 lane	1.1	1.0	1.0	1.0
Dual 2 lane	1.2	1.1	1.1	1.2
Benefit Cost Ratio (BCR)(4) – $3.50 Toll				
Dual 3 lane	0.8	0.8	0.7	0.5
Dual 2 lane	1.0	0.9	0.8	0.7

(1) Costs are based on the BOOT model of project delivery and are rounded to nearest $10 million.

(2) For the Base Case - based on Urban Development Program Scenario A, implementation of major rail upgrades on Main North Rail Line and calculated at 7% real discount rate.

(3) BCRs are calculated using D&C capital cost estimates.

(4) Note that the BCRs for tolled options are based on certain assumptions about the tolling regime that would apply on the M2 for travel east & west of the interchange with the new link and that results could vary if toll assumptions were altered.

Table 7: Summary Results of Economic Analysis of Type A Options

http://northconnex.com.au/docs/2004_cover_summaryreport.pdf

The purple option has been selected. For a toll of $3.50 the benefit cost ratio was below 1. Applying the ATO CPI index http://www.ato.gov.au/Rates/Consumer-price-index/ to the $3.50 toll that would be $ 3.50 * 104.8/79.5 = $4.60 in 2013 dollars. Assuming the CPI continues as in the last 5 years that would be $ 4.60 * 1.13 = $ 5.20 in 2019. However, a toll of $6 was already announced:

QUESTION:
What will the tolls be, Premier?

PREMIER O'FARRELL:
Well the tolls, you know, to compare them to today, they'll be roughly in line with the M2. So currently cars on the M2 pay just over $6, trucks pay about three times that. They'll be in line with that by the time they open. The tolls will be equivalent between NorthConnex and the M2.

https://www.pm.gov.au/media/2014-03-16/joint-press-conference-sydney

For dual 3 lanes we'll have construction costs of $ 3bn, 50% higher than in table 7 and tolls 15% higher (less traffic) so the benefit cost ratio will be lower than in table 7.

The classification of Infrastructure Australia for benefit cost ratios:

www.infrastructure.gov.au/infrastructure/infrastructure_reforms/files/Disincentivising_Overbidding_Toll_Road_Concessions.pdf

Table 2.2 VfM assessment

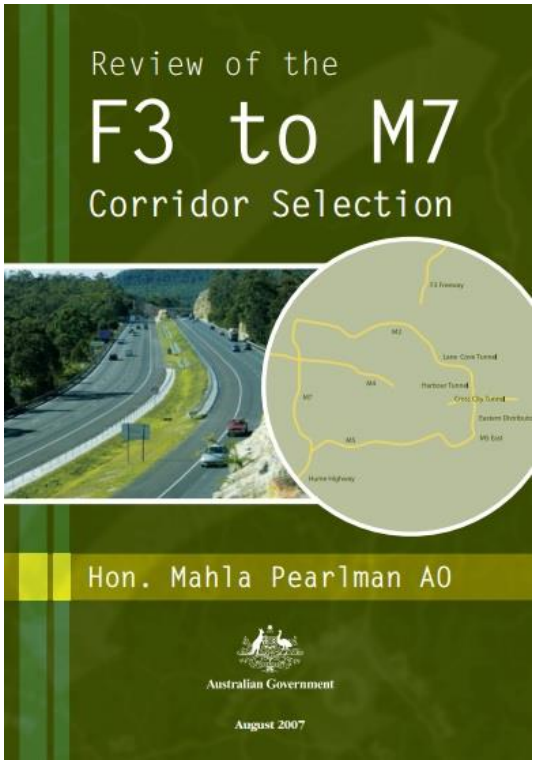
VfM category	Benefit–cost ratio
Poor	Less than 1.0
Low	Between 1.0 and 1.5
Medium	Between 1.5 and 2.0
High	Between 2.0 and 4.0
Very high	Greater than 4.0

That is why the title of this post says this tunnel is not viable.

It may have dawned on some planners that cars alone will not make sufficient money:

16/3/2014
Roads Minister Duncan Gay says he will fine heavy vehicles that continue to drive along Pennant Hills Road once a new motorway tunnel is built linking the M2 with the M1 in northern Sydney by 2019. The tunnel is expected to take 5000 trucks a day off the road
http://www.smh.com.au/nsw/trucks-to-be-forced-off-roads-20140316-34vn8.html

(5.2) Mahla Pearlman Report, commissioned by the Federal Government (in Feb 2007)



On page 82 we read:

Aug 2007
"SKM's conclusion was as follows:
The analysis showed that it would be difficult to achieve the transport objectives set for the F3 to Sydney Orbital link by upgrading public transport alone. However, potential public transport enhancements would lead to an increase in the volume of the public transport travel and overall mode share and therefore serve wider community transport objectives (SKM Main Report, page 6-4).
This conclusion may not be a direct answer to the claims raised in the submissions, but these claims are actually beyond my terms of reference. The same comment may be made about global warming and peak oil issues. This Review has been directed to focus on the assumptions and data in the SKM Study, changes to land use and transport flows and the outcomes of the SKM Study. ***However, I note these claims for completeness, and so that they will not be lost sight of in any further progress of the Link****."*
http://northconnex.com.au/docs/131205_pearlman_report.pdf

(5.3) State Significant Infrastructure Application Report by NSW Roads and Maritime Services (Sep 2013)

This report (the O'Farrell government came to power in Mar 2011) mentions the Pearlman report in chapter 2.2.3 (p 14) but has of course dropped the issues of peak oil, not to mention global warming:

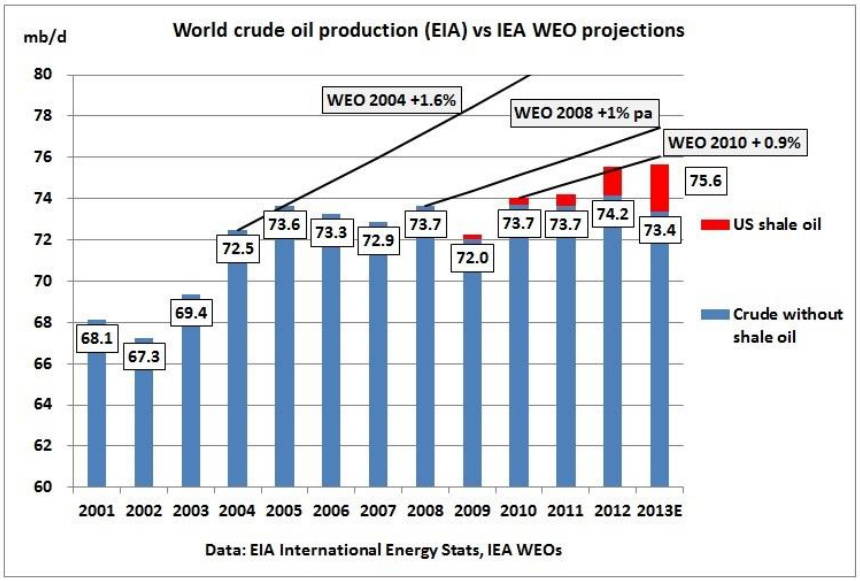
The review concluded that:

- *The assumptions and data used in the 2004 report were valid and reasonable* ***at the time of the study****.*
- *There have been changes affecting land use and traffic flows since the 2004 report, but that these changes reinforce the selection of the purple option.*
- *The purple option should be the preferred route and should progress to the next*
- *stage of design and development.*
- *Any future concept should consider east facing ramps at the Hills M2 Motorway to*
- *make the option more attractive to motorists.*
- *A long term option, being strategic corridor C, should be planned for.*

http://northconnex.com.au/docs/Infrastructure_Application_Report_1.pdf

Benefit Cost Ratios have not been calculated in this report.

What has fundamentally changed since February 2004, of course, is the oil supply situation. The process of crude oil peaking started in 2005, 1 year after the SKM study was done.



A kink in the crude oil production curve shows up in 2005. Earlier projections of the IEA of perpetual oil production and demand growth did not materialise

The 2013 Application Report just ignored 10 years of oil production data. No wonder that the following 2 documents of the previous governments - which mention peak oil and are critical of the tunnel project - have been omitted on the Northconnex library website.

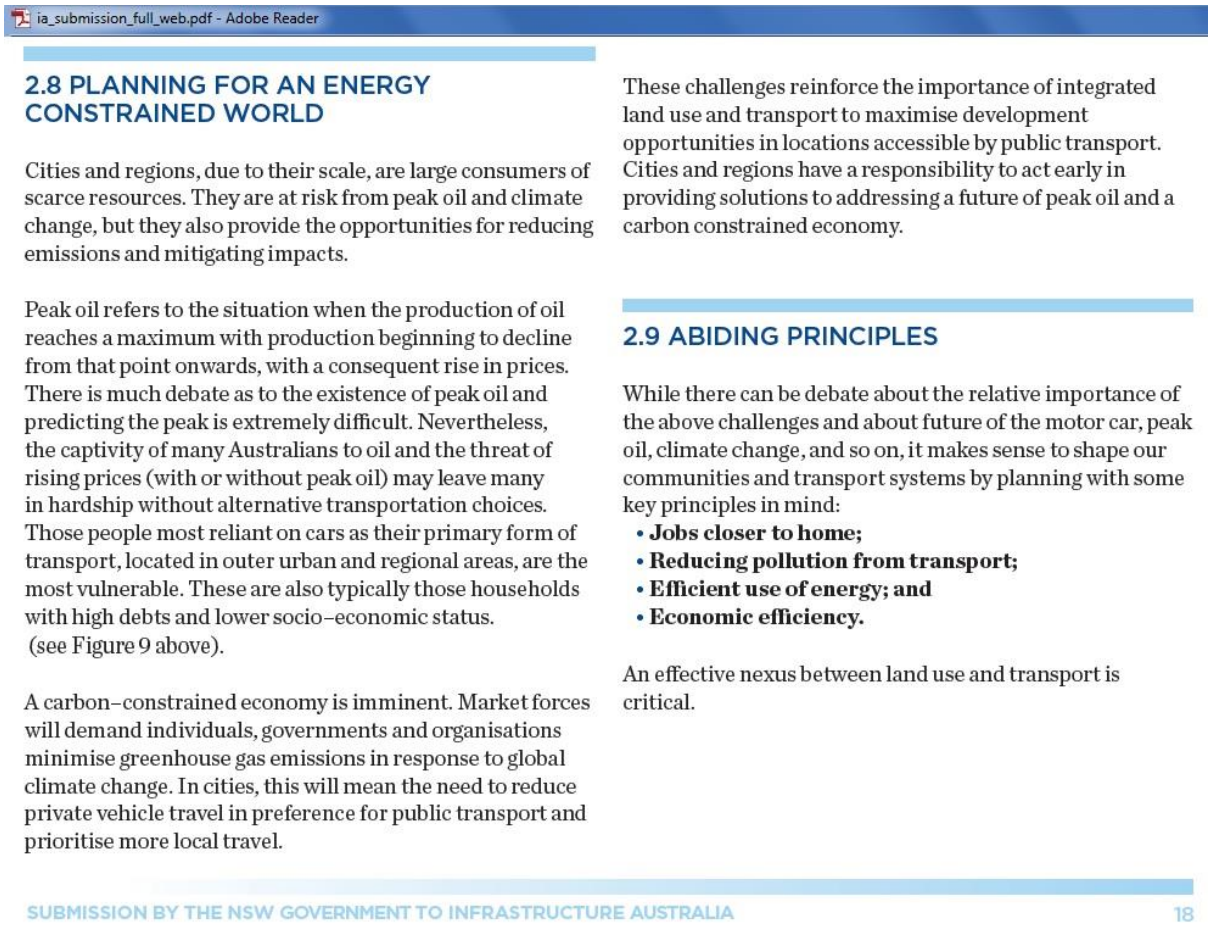
(6) Documents omitted on Northconnex website

Documents under previous governments were critical about the road tunnel

(6.1) NSW updated Transport Submission to Infrastructure Australia (August 2010)

The original link http://www.transport.nsw.gov.au/infrastructure-australia-submission-august-2010 to that report with the file name ia_submission_full_web.pdf returns error 404.

This is an excerpt from chapter 2.8 and 2.9:


ia_submission_full_web.pdf - Adobe Reader

2.8 PLANNING FOR AN ENERGY CONSTRAINED WORLD

Cities and regions, due to their scale, are large consumers of scarce resources. They are at risk from peak oil and climate change, but they also provide the opportunities for reducing emissions and mitigating impacts.

Peak oil refers to the situation when the production of oil reaches a maximum with production beginning to decline from that point onwards, with a consequent rise in prices. There is much debate as to the existence of peak oil and predicting the peak is extremely difficult. Nevertheless, the captivity of many Australians to oil and the threat of rising prices (with or without peak oil) may leave many in hardship without alternative transportation choices. Those people most reliant on cars as their primary form of transport, located in outer urban and regional areas, are the most vulnerable. These are also typically those households with high debts and lower socio-economic status. (see Figure 9 above).

A carbon-constrained economy is imminent. Market forces will demand individuals, governments and organisations minimise greenhouse gas emissions in response to global climate change. In cities, this will mean the need to reduce private vehicle travel in preference for public transport and prioritise more local travel.

These challenges reinforce the importance of integrated land use and transport to maximise development opportunities in locations accessible by public transport. Cities and regions have a responsibility to act early in providing solutions to addressing a future of peak oil and a carbon constrained economy.

2.9 ABIDING PRINCIPLES

While there can be debate about the relative importance of the above challenges and about future of the motor car, peak oil, climate change, and so on, it makes sense to shape our communities and transport systems by planning with some key principles in mind:

- **Jobs closer to home;**
- **Reducing pollution from transport;**
- **Efficient use of energy; and**
- **Economic efficiency.**

An effective nexus between land use and transport is critical.

SUBMISSION BY THE NSW GOVERNMENT TO INFRASTRUCTURE AUSTRALIA 18

Despite the abiding principles (lip-service) the "template for summaries of further priority projects" includes the F3-M2 link on p 522:

The estimated project cost in 2008 dollars is $4.14B for two lane (each direction) tolled option and $4.75B for three lane (each direction) untolled option, according to the RTA review in 2008. The project is not capable of being staged as intermediate ramps are not proposed. Staging would also result in increased costs and significantly lower travel benefits until completion of the total project.

Financial modelling indicates that the forecast revenues from tolling are approximately equal to the operating and maintenance costs of the tunnel. Therefore, it may not be appropriate to procure the concession as a standard economic PPP and other funding models should be considered.

Possibly 3 but more likely 4 tunnel ventilation stacks. (p 525)

Extract from: ia_submission_full_web.pdf

On page 61 we find a Benefit Cost Ratio of 0.74

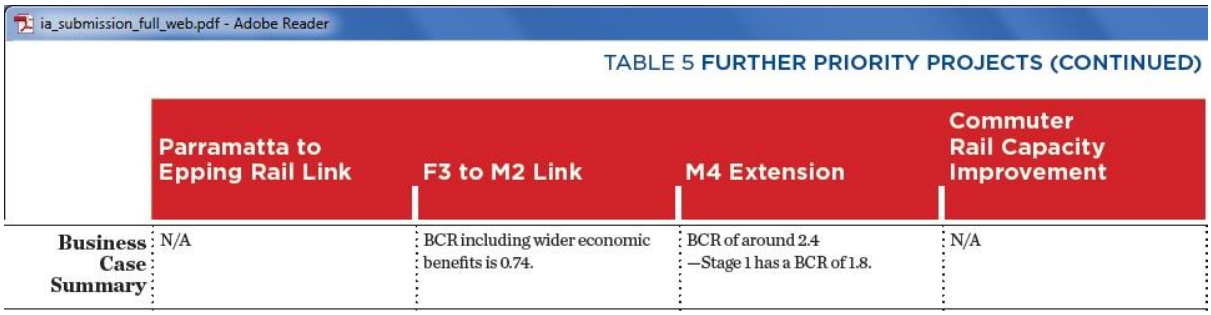

ia_submission_full_web.pdf - Adobe Reader

TABLE 5 FURTHER PRIORITY PROJECTS (CONTINUED)

	Parramatta to Epping Rail Link	F3 to M2 Link	M4 Extension	Commuter Rail Capacity Improvement
Business Case Summary	N/A	BCR including wider economic benefits is 0.74.	BCR of around 2.4 —Stage 1 has a BCR of 1.8.	N/A

One may ask why construction costs have dropped from $4.75 bn to $3 bn in 3 years. This is of course vital for the cost-benefit analysis. Interesting also the need for 4 ventilation shafts while the Northconnex promotion video shows only 2, one each at the tunnel exits.

Most importantly, the new federal government doesn't like an energy constrained world:

Prime Minister Abbott in a speech in Adelaide:

9/3/2014
Do you really want, as Premier of South Australia, someone who is looking forward to what he calls a carbon constrained future?

Well, I want no restraints on the future of South Australia. I want the future of South Australia to be unconstrained, ...
http://www.pm.gov.au/media/2014-03-09/address-south-australian-liberal-party-state-campaign-launch-adelaide

(6.2) National Infrastructure Coordinator Report by Infrastructure Australia (March 2012)

The following is an excerpt from:

Private Financing Options for Upgrades in the M5 and F3 - M2 Corridors in Sydney

on page 19:

F3 – M2 Corridor
The previous (2010) submission from the NSW Government included material indicating that an F3 – M2 motorway proposal would destroy economic value (the six lane tunnel option was judged as having a benefit cost ratio of around 0.6:1). This is likely to be a consequence of the high cost of the project - it was then estimated to cost $4.8 billion ($2008) - and traffic

volumes (although high) and speeds that are insufficient to generate a positive benefit cost ratio.
Re-scoping the project to focus on freight and improvements in bus-based public transport from the Central Coast is likely to provide a more cost-effective solution to the transport needs of Sydney and the Central Coast. Such an option could involve:

- *a two lane high value vehicle tunnel using the preferred route;*
- *high occupancy vehicle lanes on the existing F3 between the Central Coast and northern Sydney, on Pennant Hills Road, and into key commercial centres30;*
- *car parking stations on the Central Coast, e.g. at various points along the F3; and*
- *(potentially) acquisition of a new, air-conditioned „commuter" bus fleet, providing services from the Central Coast directly into major employment centres in Sydney (particularly northern Sydney).*

The cost of such a project is probably of the order of $2 - 3 billion, based on the per kilometre costs for other tunnel projects, costs of introducing bus priority measures, multi-deck car spaces and procurement of a fleet of buses. Limiting use of the link to freight vehicles, light commercial vehicles, buses and high occupancy vehicles is likely to generate the highest value solution because it would help capture time and fuel savings for those consumers who value these most.
There have been previous suggestions from some parties that alignments for an F3 – M2 link east of Pennant Hills Road (the route identified in previous studies) might be preferable. The Office of the Infrastructure Coordinator does not agree. The current alignment provides the most effective route for freight movements (given it provides the most direct access to the M7 and industrial areas of south west and south industrial areas of Sydney). Alignments to the east would direct more traffic towards the lower north shore and Sydney CBD, areas that are already congested.

Recommendation on page 32:

c. contributing to any broader community debate on road charging as a means of funding new transport improvements and managing transport demand in Sydney.

http://www.infrastructureaustralia.gov.au/publications/files/M5_F3_M2_Corridors_in_Sydney_final_report.pdf

That recommendation was taken up by the Productivity Commission (see 4.2 above) in its March 2014 draft report on p 11:

"For cars and other light vehicles, governments should undertake pilot technical studies of (revenue-neutral) direct road user charging using vehicle telematics and extend tolling across existing road networks as it becomes practical and cost-effective to do so"

But…..

13/3/2014 *Prime Minister Tony Abbott has rejected a controversial recommendation in a key Productivity Commission report that suggests drivers be charged for every kilometre of road use.*
http://www.abc.net.au/news/2014-03-13/infrastructure-rethink-could-save-1-billion-annually/5317002

(7) Global warming and CO2

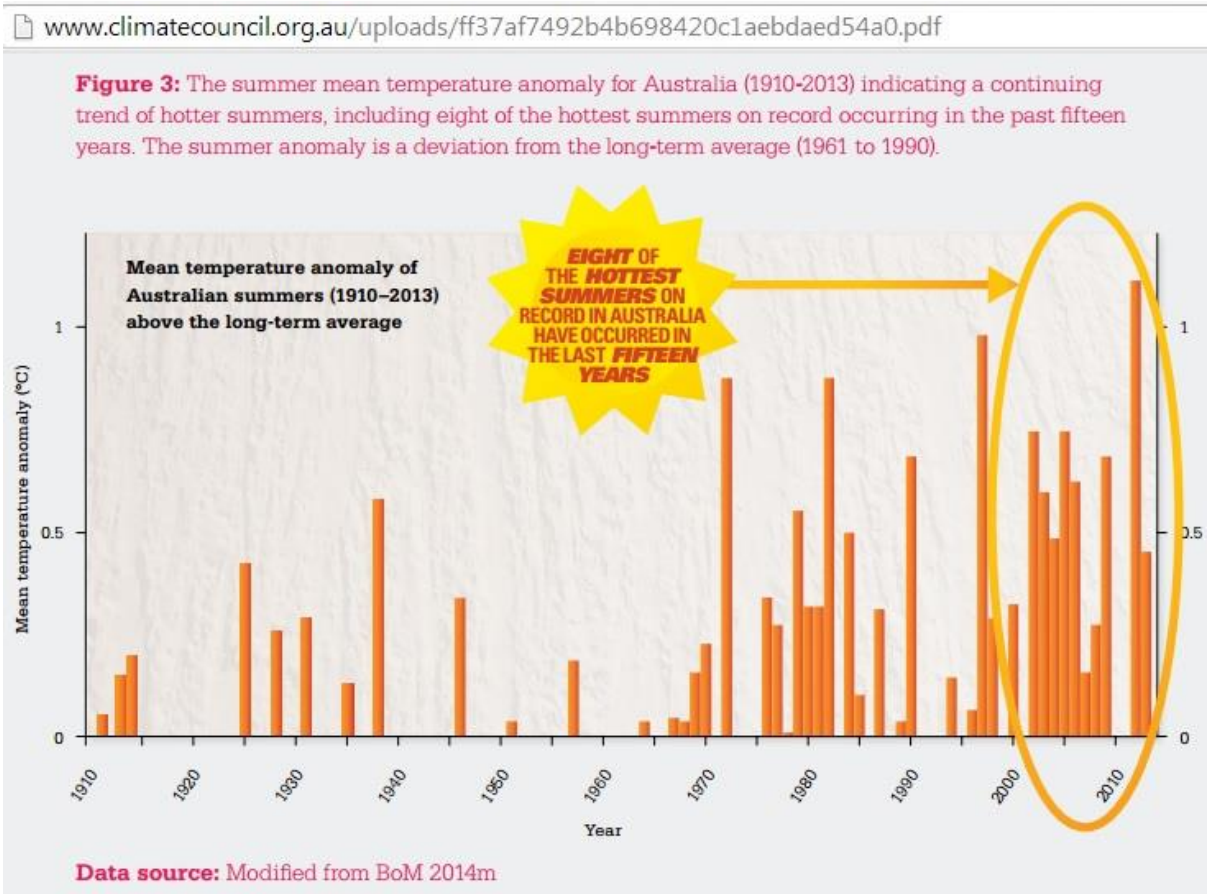
Planners think that carbon based road traffic will continue for decades to come. That is an untested assumption. The F3/M1, which feeds traffic into the planned road tunnel, is running through bush-fire prone areas North of Sydney. The scenes we have seen in past hot summers will become more frequent. This will impact on traffic and also on the performance of the tunnel ventilation systems.

Traffic comes to a standstill as the fire closes the M1 (formerly the F3)
12/9/2013
http://www.dailytelegraph.com.au/news/nsw/pacific-highway-reopens-in-both-directions-following-closure-due-to-bushfires/story-fni0cx12-1226717799315

Wyee Fire Closes M1 Pacific Motorway Yesterday (F3 Freeway)
12/9/2013
The Channel Nine helicopter captured scenes of panicked drivers as they used U-Turn bays to get away from the inferno. Large trucks who could no longer proceed began reversing down the Motorway back to the Doyalson Interchange to continue their journey and some cars continued driving through the smoke cloud risking their safety.
http://m1traffic.com.au/2013/09/2nd-bushfire-at-wyee-closes-m1-pacific-mwy-f3-freeway-today/

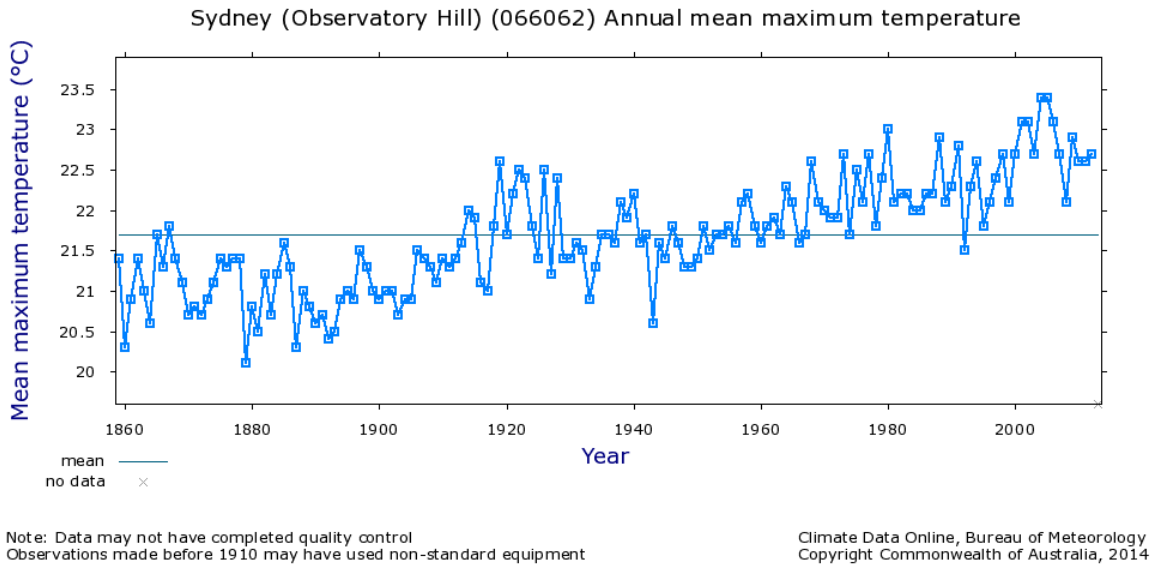
A month later:
25/10/2013
Prime Minister Tony Abbott has further entrenched his position on climate change and the bush-fires that have afflicted NSW, describing the link between the two as "complete hogwash."
http://reneweconomy.com.au/2013/tony-abbott-says-climate-link-to-bush-fires-is-complete-hogwash-99506

The facts are clear:



http://www.climatecouncil.org.au/uploads/ff37af7492b4b698420c1aebdaed54a0.pdf

And this is the temperature record from the Australian Bureau of Meteorology for Sydney:



http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_display_type=dataGraph&p_stn_num=066062&p_nccObsCode=36&p_month=13

Even blind Freddy can see a long-term trend of warming.

NASA climatologist James Hansen:
15/4/2013
One implication is that if we should "succeed" in digging up and burning all fossil fuels, some parts of the planet would become literally uninhabitable, with some time in the year having wet bulb temperature exceeding 35°C. At such temperatures, for reasons of physiology and physics, humans cannot survive, because even under ideal conditions of rest and ventilation, it is physically impossible for the environment to carry away the 100 W of metabolic heat that a human body generates when it is at rest. Thus even a person lying quietly naked in hurricane force winds would be unable to survive. Temperatures even several degrees below this extreme limit would be sufficient to make a region practically uninhabitable for living and working.
http://www.columbia.edu/~jeh1/mailings/2013/20130415_Exaggerations.pdf

In his latest testimony to the US Senate James Hansen writes:

Science has exposed the fact that we cannot burn all fossil fuels without enormous growing costs that would be borne most heavily by young people. So far we have burned about 380 GtC (gigatons of carbon), the purple areas in Fig. 1. Preserving creation, a planet that continues to look like the one civilization developed on, requires that we limit total fossil fuel emissions to something close to 500 GtC.

The exact limit is debatable, but there is no scientific debate about the fact that we cannot burn all of the fossil fuels without unacceptable destruction of life and property. That means we must phase out coal emissions and leave most of the unconventional fossil fuels, including tar sands, in the ground

www.columbia.edu/~jeh1/mailings/2014/20140313_SenateTestimony.pdf

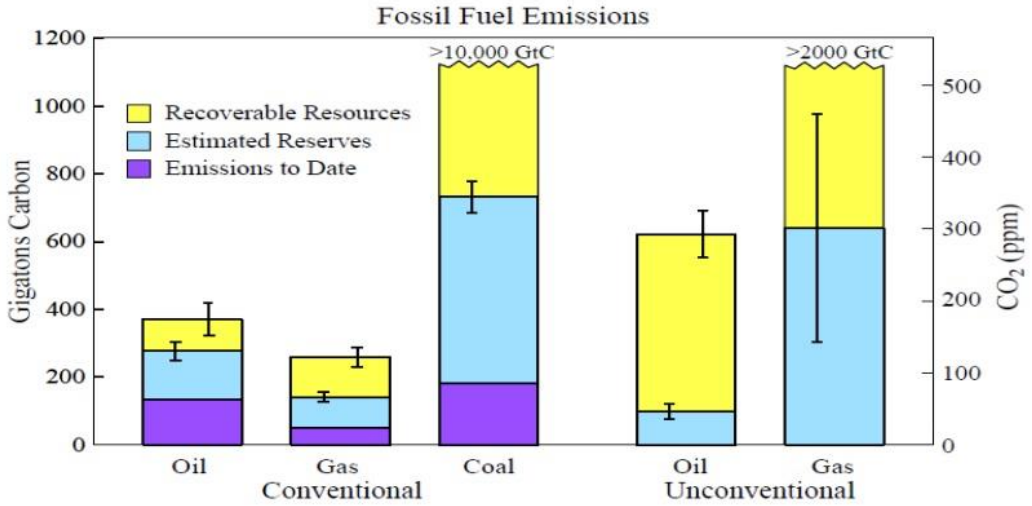
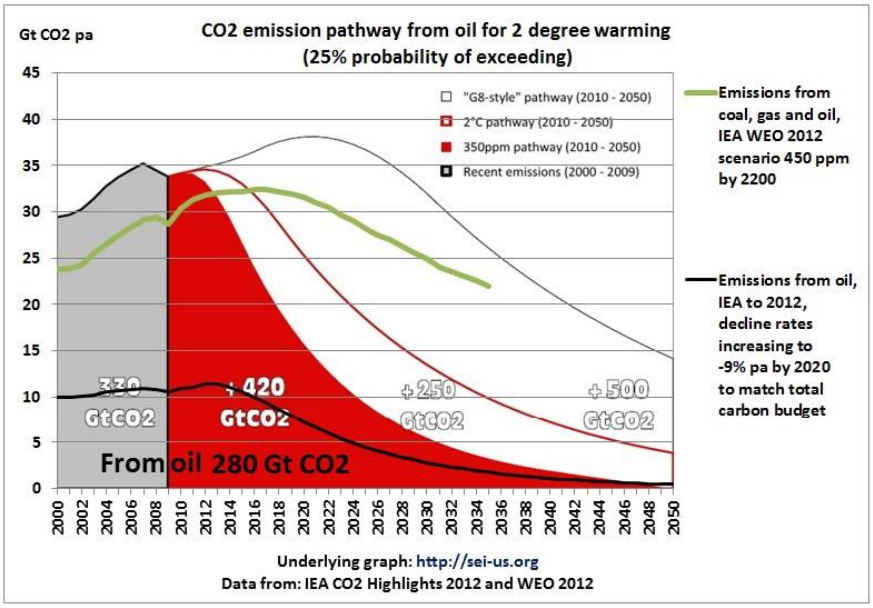


Fig. 1. Fossil fuel CO_2 emissions and carbon content.[1] Purple portions are fossil fuels already burned. Unconventional oil includes tar sands and tar shale. Unconventional gas includes hydraulic-fracturing.

http://www.columbia.edu/~jeh1/mailings/2014/20140313_SenateTestimony.pdf

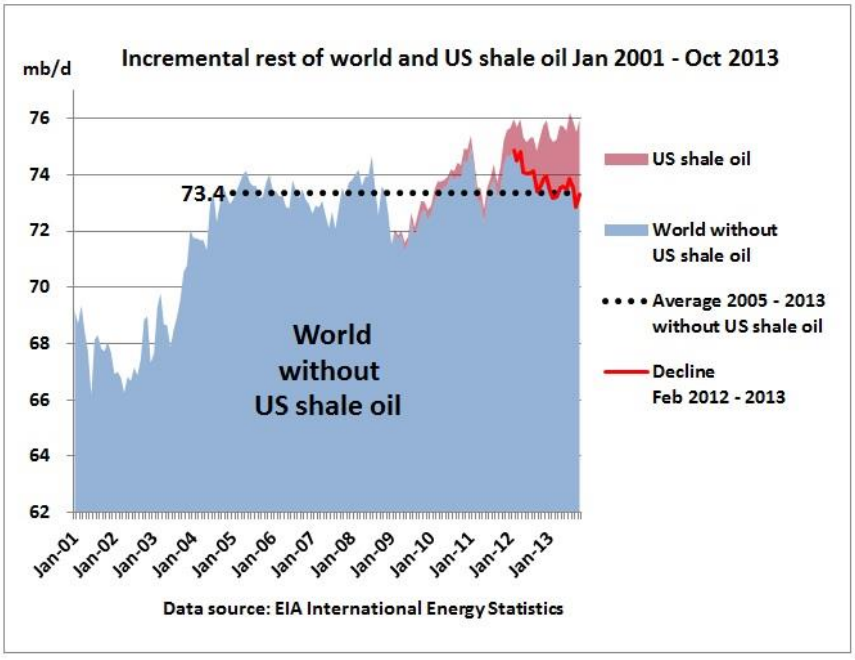
So what does this mean for using oil? The remaining total fossil fuel balance is 500 GtC – 380 GtC = 120 GtC = 440 GtCO2. The Stockholm Environment Institute has been using a

similar figure and an earlier post on this website http://crudeoilpeak.info/?p=4661 translated this into a climate saving oil use curve:



The scenario marked red would see planet Earth back to 350 ppm by 2100. Interglacial periods under natural climate change had 280-300 ppm

The carbon budget for burning oil in the period 2000-2050 to keep global warming to 2 degrees is 280 Gt CO2. In the first 12 years of that period, the world has already used up half of that budget. Oil use would need to decrease by 6% pa after 2012 and later to 9% pa to fulfil the carbon budget boundary condition. At present, we are far from such a decrease.



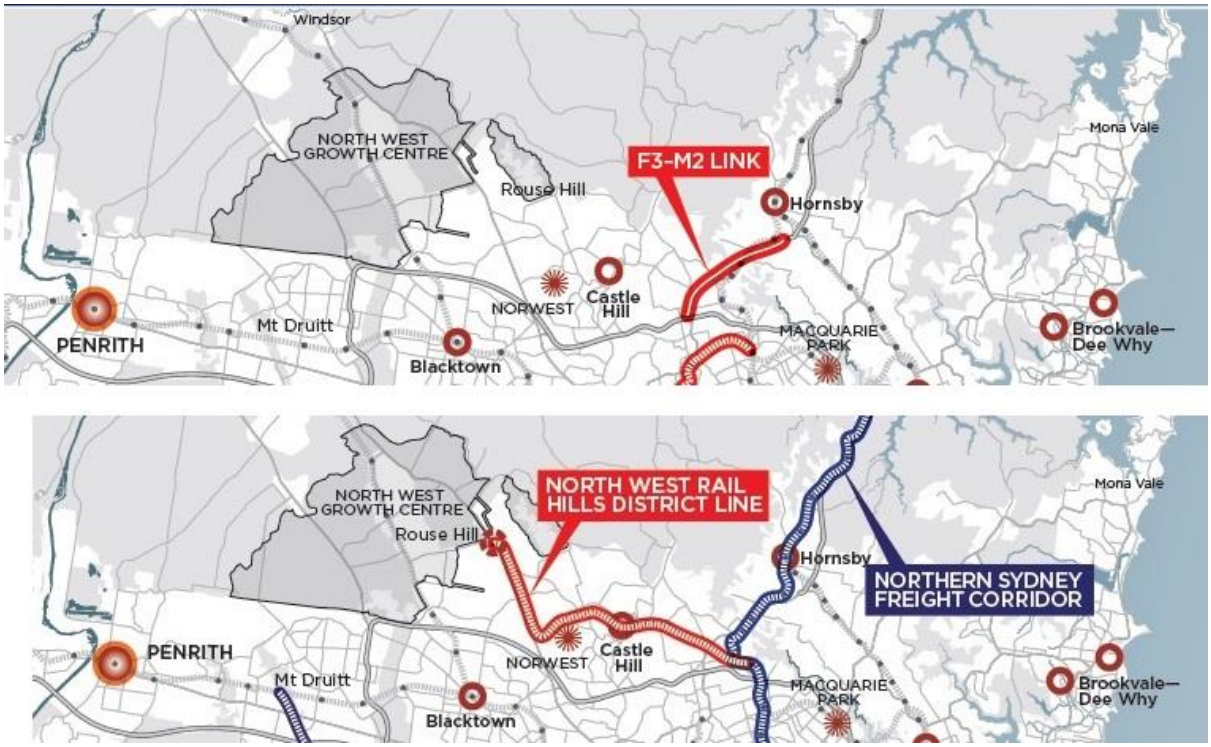
The end result of US shale oil - sitting on top of zero growth rest-of-world crude oil - is more CO2 in the atmosphere. This means more dramatic decreases will be needed later and/or coal must be phased out faster so that oil can use part of the CO2 budget from coal. There is not a single infrastructure department in Australia which has done such calculations in order to design infrastructure projects which now span the period up to 2050.

Nature's response to our CO2 emissions is swift:

No way home … the Ku-ring-gai fire closed the F3.
http://www.smh.com.au/news/national/fire-sparks-commuter-nightmare/2007/01/21/1169330767462.html

(8) Conflicts with rail projects under construction

One solution to the problem of peak oil and global warming is energy efficient rail.



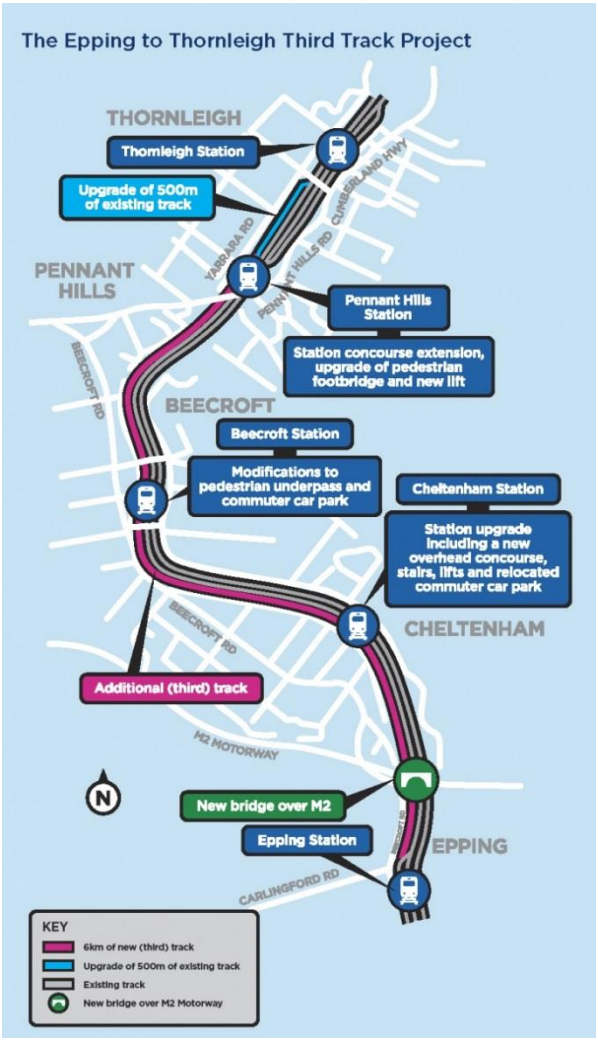
The map shows the proposed road tunnel which is in partial competition to rail projects currently under construction. The F3-M2 link connects Sydney's North-West and West with the Central Coast. The North West Rail Link provides services for Central Coast passengers via Epping. The Northern Sydney Freight corridor improves access to the metropolitan freight network.

(8.1) 3rd rail track on Northern line

The NSW government is currently building a 3rd rail track Epping – Thornleigh practically parallel to the road tunnel, designed to accommodate freight trains with the objective to get trucks off roads.

http://www.transport.nsw.gov.au/sites/default/files/b2b/projects/TP_NSFC_Strategic_Review_Report_July_2012.pdf

Construction work on 3rd track on Northern line, South of Cheltenham station in March 2014



The increased capacity from the program will allow the equivalent of an additional 200,000 heavy vehicle movements to be carried by rail each year within 15 years of project completion.

http://www.transport.nsw.gov.au/Projects-Northern-Sydney-Freight-Corridor-Program/epping-thornleigh-third-track

That would be 550 trucks per day or just a tenth of those 5,000 trucks supposed to use the road tunnel. Of course, rail planners – just like their RMS counterparts - did not analyse oil

supplies for the period of the next 15 years, i.e.2028. The evolving oil crisis will mean less trucks on the road.

Bottleneck Northern rail line at Pennant Hills station. Another freight train is waiting on the Thornleigh loop. Actually, the whole line from Strathfield to Hornsby needs to be quadruplicated instead of wasting money for a road tunnel.

Location of rail line and Pennant Hills Rd at Thornleigh

Long-distance trucks on the Pennant Hills Rd should be moved by rail.
Picture taken from pedestrian bridge (see google map) at Thornleigh, 25/3/2014, 2 pm

In any case, the road tunnel will negatively impact on the 3rd track project.

Intermodal train in Switzerland

Videos:
Intermodal train loading https://www.youtube.com/watch?v=zhCsnnw4Irg

Hupac https://www.youtube.com/watch?v=VBxg-GJEEBA

Cargobeamer
https://www.youtube.com/watch?v=BTef4ALfe6E&list=UUZl6MKnMdjO2xmh31kEzhrg

(8.2) North West Rail Link

http://nwrail.transport.nsw.gov.au/

Both the M2 (widening completed) and the F3-M2 link are in competition to the North West Rail Link from Epping to Rouse Hill. The objectives of the NSW government are contradictory. Clearly, there is no overarching, consistent plan to REPLACE oil dependent car and truck traffic.

Conclusion

Without US shale oil, the world would be in a deep oil crisis which would have precluded any new road tunnel or toll-way project. Due to high depletion rates (e.g. in Bakken 60 kb/d against 80 kb/d new wells per month) US shale oil will peak sometime in this decade which

will reveal the stagnating and later declining oil supply trends in the rest of the world. So the drama evolving now is that new oil dependent road tunnels and toll-ways are being planned which later will yield low returns for their investors.

In case of a Chinese debt crash things will get very complicated. A repetition of the 2008/2009 financial crisis followed by much lower oil prices will almost immediately stop new high cost shale oil development meaning US crude and condensate production would slide down rapidly. As in a Chinese crash scenario the AUD will come down - which would increase the cost of imported crude and fuels - it is not clear whether Australia would benefit from lower global oil prices. This shows that Australia has already manoeuvred itself into a highly oil vulnerable catch 22 situation.

Under no scenario will there be a good outcome for new road tunnels and toll-ways.

Prepared by Matt Mushalik, 30/3/2014 Twitter @crudeoilpeak