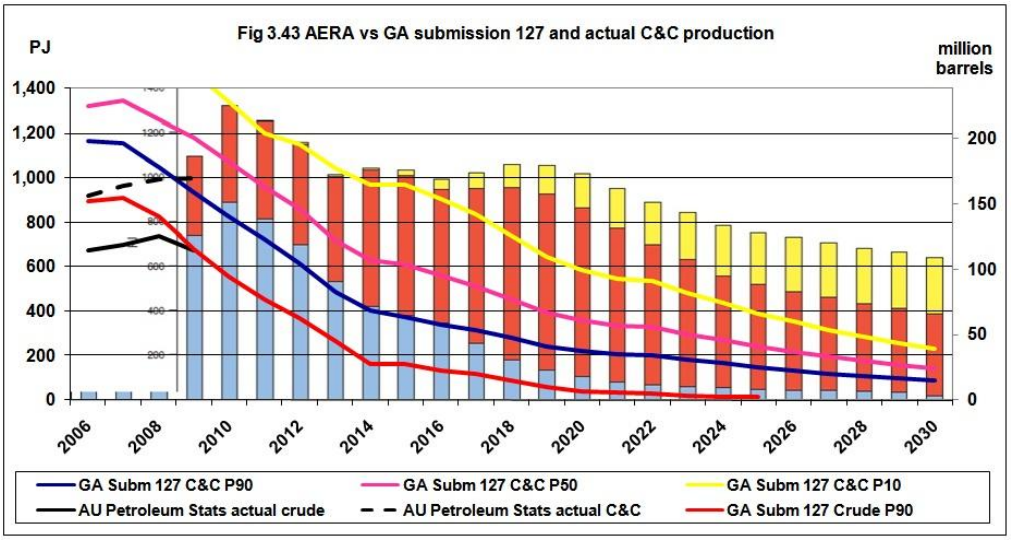
Northern Link and the Australian Oil Import Crisis after peak oil 2005-2008

China 2005

Iran 2007 petrol rationing



Ozy oil decline 2010-2020

Oil end game in the Gulf

Asleep at the wheel

Contents

Images on cover page:

August 2005: Fuel Shortages Put Pressure on Price Controls in China
http://www.nytimes.com/2005/08/18/business/worldbusiness/18yuan.html

June 2007: Iran's oil restrictions 'a warning for Aust'
http://www.abc.net.au/news/stories/2007/06/28/1964295.htm?section=world

April 2010: Great Prophet 5 Manoeuvres
http://uskowioniran.blogspot.com/2010/04/great-prophet-5-naval-maneuvers-2.html

Brisbane Traffic jam
http://farm3.static.flickr.com/2077/1866929252_68c18a80dc.jpg

This report is downloadable as PDF file: http://www.crudeoilpeak.com/pdfs/32

Prepared by: Matt Mushalik (MIEAust, CPEng) April 2010 mushalik@tpg.com.au

Where will the oil come from to run cars on the Northern Link in 2014?
Net present value may turn negative

Northern Link gets the go-ahead

Brisbane City Council's $1.7 billion Northern Link tunnel has received state government approval, paving the way for work to begin later this year….The Federal Government has chipped in $500 million to the $1.7 billion project, which is projected to provide 1400 jobs during construction and 85 jobs when it is running in 2014. [= around $300 K pa per job – not a cheap job creation]
http://www.brisbanetimes.com.au/queensland/northern-link-gets-the-goahead-20100423-ti1b.html

Summary

This approval is based on a transport strategy which was conceived and pushed by King & Co's Tom Richman a decade ago and then eagerly picked up and promoted by Lord Mayor Campbell Newman in 2004 during his election campaign. The road tunnel boom has since then gained its own, seemingly unstoppable momentum.

Since 2004, however, several factors have impacted on the financial viability of road tunnels:

- global crude oil production started to peak in 2005, leading to markedly higher oil prices and oil price volatility
- the Australian public was repeatedly warned about an impending oil import crisis as local crude oil production will decline
- the Global Financial Crisis, triggered by peak oil itself and now morphing into sovereign debt failures – will make Australia's access to international money markets more expensive
- higher interest rates, partially caused by new debt from stimulus packages, now reduce the paying capacity of motorists for tolls as mortgage repayments take priority
- spectacular road tunnel failures in Sydney and tollway revaluations in Melbourne, resulting from traffic forecasts not meeting expectations, lead to financial losses in Private Public Partnerships
- a badly managed share float for Brisconnections further spooked investors and resulted in bad publicity
- the need to reduce CO2 emissions in the transport sector is acknowledged but is in total conflict with a continuing road tunnel strategy. Documentation promoting freeway developments is full of sustainability jargon, pictures of bike paths and graphs on bus lanes, but completely contradictory to and disconnected from actual project objectives.

Despite all these events, both the Brisbane City Council and the State government stubbornly continue with a road tunnel strategy which is now outdated and based on following untested assumptions:

- Australia will always be able to import all the oil we need
- Peak oil will evolve peacefully without oil wars and other conflicts in the Middle East
- Population growth will result in oil production growing at the same rate
- Coal exports can continue growing for many decades to come
- There is sufficient carbon free primary energy to replace both declining oil production and provide for growth in traffic
- Alternative fuels are cheaper and easier to produce and handle than conventional oil
- Electric cars will be introduced in large numbers in the next 10 years

The benefit cost ratio is very low at 1.2, meaning a meagre 20% return over the discounted value of the investment for the full 45 year period. Any oil crisis will wipe out most of the benefits and the net present value may turn negative. Who will be responsible for this risky investment?

(1) Introduction and outlook for the next years

That's how it all started, in 2002:

http://images.brightfox.com.au/store/FOXKNCO/documents/KCSpring2002.pdf

Tunnels, tunnels everywhere and not a critic in sight

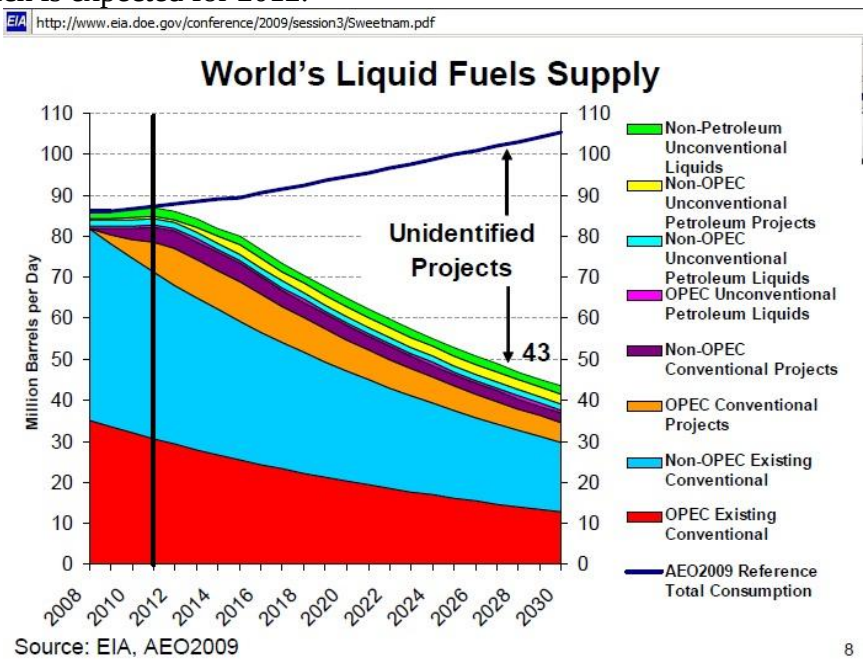
Whaddya know! Not more than three years ago, local pollies of nearly every stripe were offering a dismissive "no way" when it came to even considering King & Co's proposals for additional connections across the Brisbane River. Now, leaders of both major parties find themselves in a race to introduce a veritable panoply of tunnel or bridge visions, each touted with a vigour that would lead the casual observer to think the whole concept was of their own making. Considering the momentum this competition has generated, we can only assume that the next Council election will produce a virtual tunnel/bridge bidding war as the need for them is the one key issue upon which both sides now agree...something the public did ages ago.

http://images.brightfox.com.au/store/FOXKNCO/documents/KCSpring2002.pdf

But the world has changed since then and will continue to change fast in the next years.

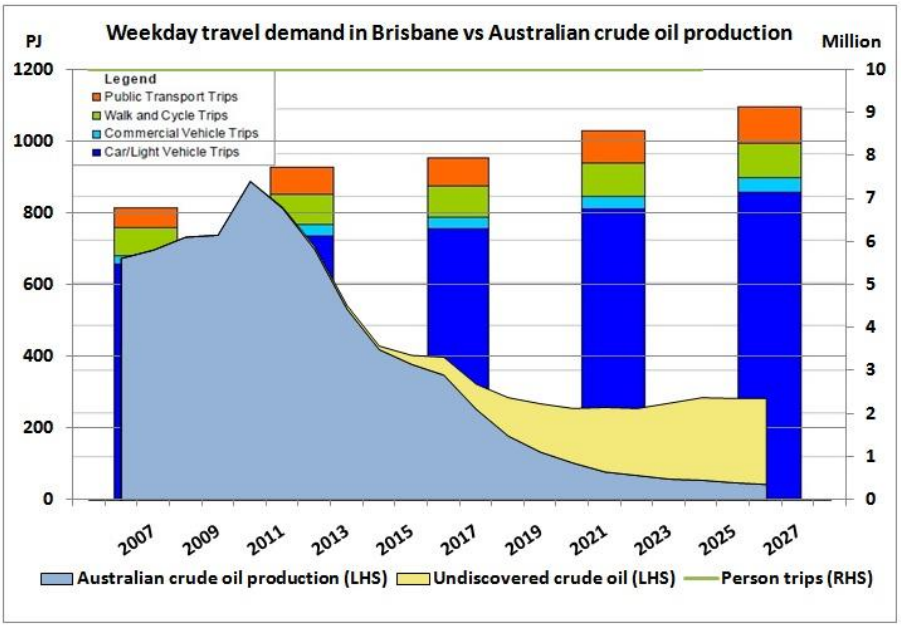
In the year of the planned completion of the tunnel, in 2014, Australia will be in a deep oil import crisis. Our oil import dependency is a whopping 80% http://www.crudeoilpeak.com/?page_id=1225
The next oil crunch is expected for 2012.

http://www.eia.doe.gov/conference/2009/session3/Sweetnam.pdf



Slide 8 from the EIA, DoE http://www.eia.doe.gov/conference/2009/session3/Sweetnam.pdf

The next graph shows Australian crude oil production declining by 85% over the next 10 years compared to Brisbanes's assumed travel demand by various modes (dark blue: private cars, from page 2-14 of the EIS)



More details: http://www.crudeoilpeak.com/?p=1243 http://www.crudeoilpeak.com/?page_id=1225

The Northern Link decision is based on following outdated documents

- The Transport Plan for Brisbane 2008-2026, which was originally designed in 2003 but has not incorporated the fact that peak oil started in 2005 http://www.brisbane.qld.gov.au/BCC:BASE::pc=PC_73
- The TransApex plan, March 2005 http://www.brisbane.qld.gov.au/bccwr/about_council/documents/transapex_prefeasibility_report_executive_summary.pdf
- The Northern Link EIS itself http://www.northernlinkeis.com.au/EISDocuments.html

and an optimistic interpretation of the oil vulnerability report

http://www.transport.qld.gov.au/Home/Projects_and_initiatives/Projects/Oil_vulnerability_mitigation/

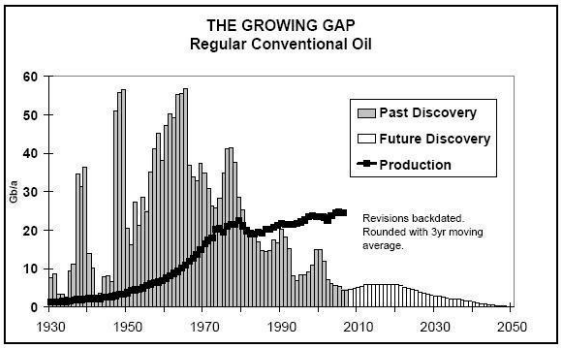
(2) Comments on the Northern Link EIS (chapter 2.6)

Oil Price Vulnerability and Oil Availability (quotes *in italic*)

The EIS claims to have done an assessment on oil prices and oil availability (page 2-37) without actually saying what these prices will be over the projection period to 2026 and where the oil will come from. Thus vital statistics to prove the commercial viability are missing.

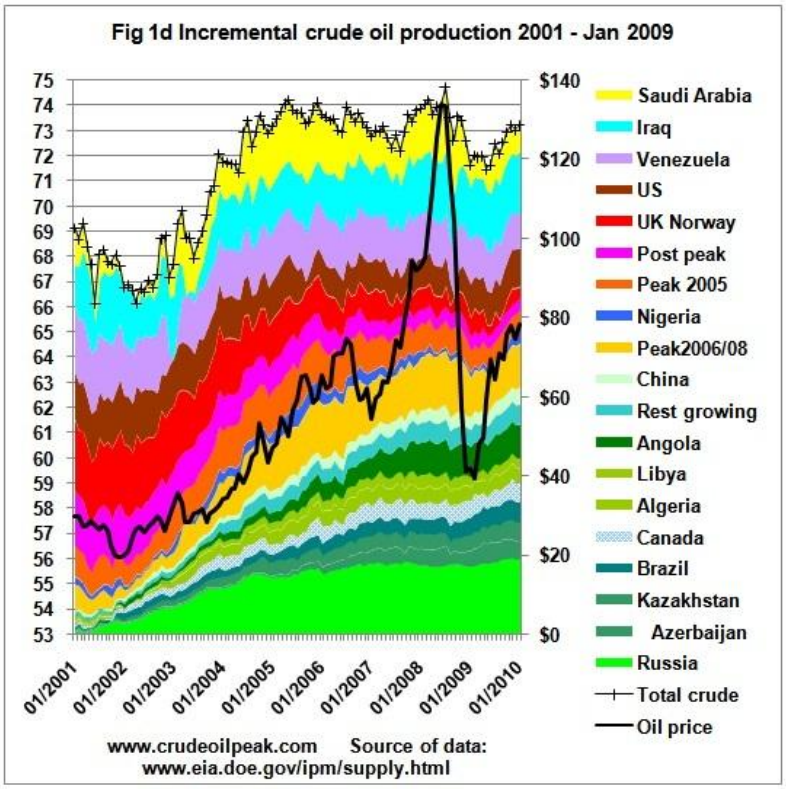
Peak oil (chapter 2.6.1)

"Analyses of crude oil production data of the last 100+ years generally conclude that the rate of discovery of crude oil has generally increased throughout the 20th century" (page 2-37)
Comment: That is factually wrong. Discoveries already peaked in the 1960s. The production peak follows 30-40 years later, which is now.



www.aspo-ireland.org/contentFiles/newsletterPDFs/newsletter89_200805.pdf

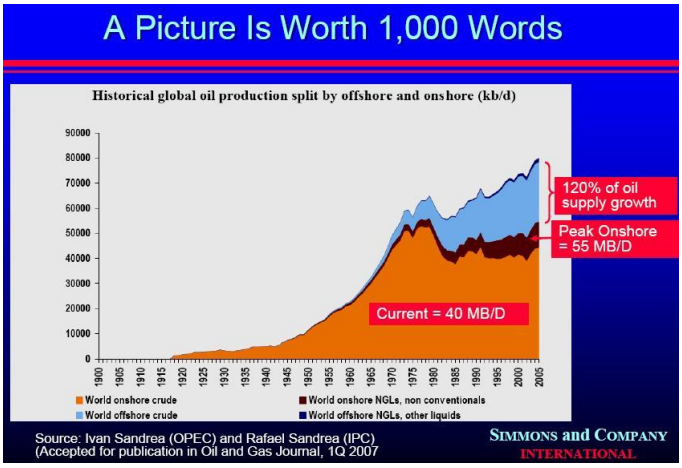
"Estimates of future global crude oil production indicate that production will plateau and decline based on assumptions that there are no known major fields left to be found on the globe, and no obvious technological improvements to extract significant volumes from resources not accessible at present."(page 2-37)



Comment: The plateau has already started in 2005 as can be seen on this graph from my web site www.crudeoilpeak.com

Saudi Arabia could not pump enough oil in 2007/08 to keep oil prices down.

"Since the 'oil shock' of the 1970s, changing market conditions, further exploration and improved extraction technologies have contributed to maintaining production levels with some variations over time". (page 2-37)



Comment: The 1970s oil shocks were contributed to by the US oil peak in 1970/71 and an overproduction in Saudi Arabia and Iran (onshore peak at the technologies available at the time) and triggered by geo-political events (Yom Kippur war and Iranian Revolution). We have now the offshore peak.

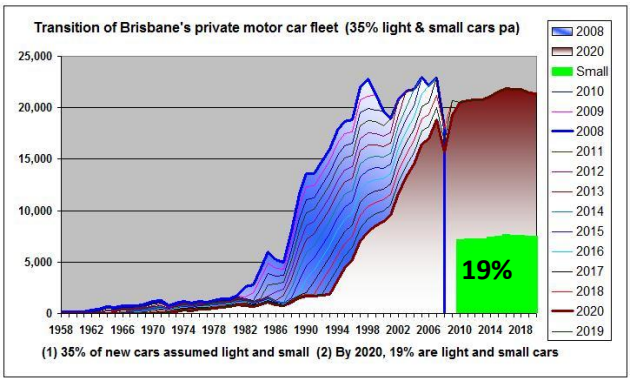
"Regardless of the debate about whether the future outlook is optimistic or pessimistic, there is consensus that the world's crude oil resource is finite. There is a market expectation that technological advances would respond to the need for alternative energies for transportation and industry, just as steam-driven land transportation was largely and progressively replaced." (2-38)

Comment: We had primary energy transitions from wood to coal to oil and then nuclear. Except for France, all nuclear countries got stuck at around 25% of energy from nuclear power plants. None of these countries have managed a transition to electric cars before the oil peak

"While such technological advances are in development…."

Comment: The problem is not technology but the physical availability of carbon free primary energy in sufficient quantities and at acceptable prices to replace declining oil production.

Highlight: Why we'll see the end of our car culture in the next decade



1.Modelling of Brisbane's private car fleet >> based on current behavioural patterns (which could only be changed by a fundamental oil shock) shows only 19% of cars could be "green" or electric cars by 2020.

2. Denial mode in governments and Parliaments: the Senate voted down a peak oil and alternative fuels motion by 31:6 http://www.theoildrum.com/node/5977

3. Oil decline is too steep to allow transition of car fleet. Australia is in the last quarter of its oil age. http://www.crudeoilpeak.com/?p=182

The oil balance to drive private petrol or diesel cars is already zero by 2015 if we want all other transport services to continue at current levels (not to mention any growth). Quick calculation: assume Australian oil production is half by 2015 and global net oil exports down by 10% (very optimistic). Then reduction is 260/340 = 76%, down 24%. All cars consume 28%.

	2008 mb	2015 mb	Passenger vehicles personal	339 PJ
Net imports	220	200	Commuting	163 PJ
Local crude	120	60	Light commercial personal	31 PJ
Total	340	260	Subtotal	533 PJ of total 1879 PJ=28%

Huge problem of refineries to adapt to higher percentage of diesel requirements.
http://www.aip.com.au/pdf/AIP%20Paper%20-%20Maintaining%20Supply%20Reliability.pdf

4. Oil decline after peak oil will NOT evolve peacefully or smoothly: roller coaster oil prices, oil wars, oil proxy wars and global power conflicts, civil unrest in the Middle East when OPEC's oil reserve bubble bursts, trade deficits and regional imbalances. We have no Strategic Oil Reserve.

5. Global warming, unpredictable climate change events and weird weather will physically force us to abandon coal by 2020, => huge electricity crisis on top of declining oil production. Turning point may be disappearance of Arctic summer sea ice by the middle of this decade.

6. Demand for power to drive electric cars will increase household consumption by 30%. If recharging of batteries is done at night from coal fired power plants we'll swap oil dependence with coal dependence. Local grids/transformers are also too weak in hot summer nights.

7. Accumulated debt crisis continues. Availability of car finance will be a severely limiting factor in transformation of car fleet.

8. Biofuels and other alternative fuels don't have a high energy profit ratio and must be used in the agricultural sector and for transport of food to the cities. What cars we drive will NOT be our main problem.

9. The laws of thermodynamics will not allow to introduce fuels like liquid hydrogen

10. Compressed natural gas is a solution but is not being pursued at a speed commensurate with the expected oil decline. Training of licensed gas mechanics would be a bottleneck.

11. Less working hours and/or unemployment will mean less purchasing power and fewer new cars are bought, further delaying the transformation of the car fleet.

12. Car industry is weakened by 1st oil price shock of peak oil and is in the process of downsizing.

"…governments are seeking practical steps to limit oil and petroleum usage wherever possible. Such actions include (p 2-38)

 efficient and attractive public transport systems – important but not the only solution to transport needs;"

Comment: Do these "practical steps" include new road tunnels? Why is public transport not developed in the first place? The individual transport needs will not be met when fuels are physically not available.

" *promotion of more fuel-efficient engines;*

 promotion of research into transportation based on alternative fuel sources;"

Comment: see highlight on previous page, basically, it is too late trying to transform the car fleet

" *better integration of land use and transport planning to reduce dependence on private motor vehicles in the long term; and"*

Comment: That is obvious but what means "long term"? Several decades? We don't have that time to change the existing physical structure of our cities which were built for $20 oil. We must therefore go into emergency mode.

" *travel demand management (eg: economic incentives to change travel behaviours such as CBD cordon taxes)."*

Comment: Fine, then this should be done to see how traffic is reduced BEFORE funds are wasted for road tunnels

"Fuel consumption can be reduced by up to 30% and more for larger vehicles, by relieving congestion in urban streets to allow better traffic flow"

Comment: The recently opened Clem7 tunnel hasn't reduced the traffic snarls. But declining oil production will.

Clem7 tunnel slammed as traffic snarls

http://www.couriermail.com.au/news/queensland/clem7-tunnel-slammed-as-traffic-snarls/story-e6freoof-1225853787457

"Public transport and travel demand management are among the Queensland Government initiatives aimed at reducing traffic congestion. For example, the Queensland Government has established an Urban Congestion Taskforce for this purpose" (p 2-38)

Comment: Then why does the BCC not wait until this taskforce has come up with recommendations?

Future Developments

Transport systems that rely on petroleum-derived fuels at present are expected to move progressively to development of alternative fuel sources. This transition has been foreshadowed in the Mc Namara report to the Queensland Government and the Hirsch Report to the US Government (Hirsch et al., 2005)."

From the Hirsch report (Economic Impacts of US liquid fuel mitigation options, DOE/NETL 2006/1237)

"Dealing with world oil production peaking will be extremely complex, involve literally trillions of dollars, and require many years of intense effort. To explore these complexities, three alternative mitigation scenarios were analyzed:

• Scenario I assumed that action is not initiated until peaking occurs.
• Scenario II assumed that action is initiated 10 years before peaking.
• Scenario III assumed action is initiated 20 years before peaking." (page 2)

"IX.D. Impacts of the Mitigation Options

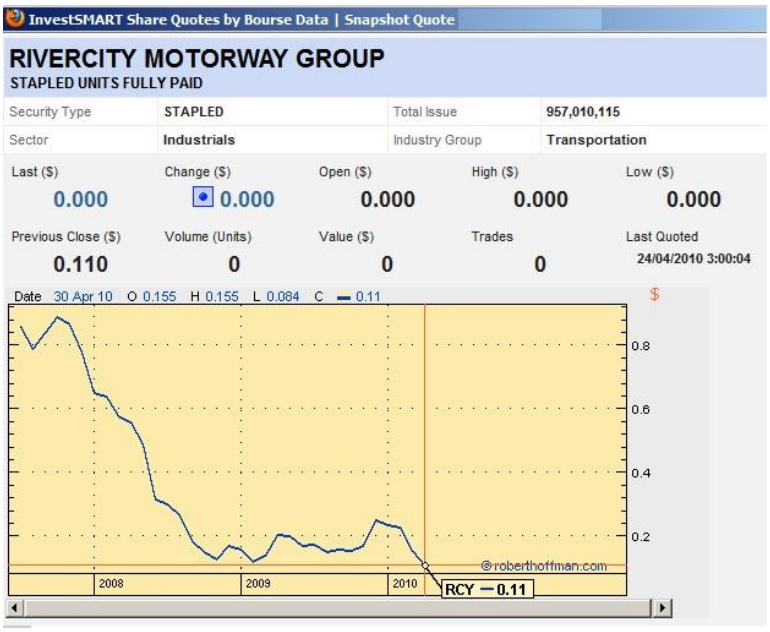
The total fuel savings and production resulting from crash programs involving all four options in year t_0 + 10 is approximately 5 MM bpd and in year t_0 + 20 is about 14 MM bpd. Thus, if the crash mitigation programs envisioned here were to be initiated in 2006, it may be possible to stabilize U.S. oil imports at no more than 13 MM bpd in both2016 and 2025, representing significant reductions in U.S. oil imports, providing greater U.S. energy security.

However, it should be noted that these relatively optimistic estimates depend critically upon the crash mitigation option programs being started in 2006. If crash program implementation is delayed five years until 2011 for example, then our mitigation options would change the total level of U.S. imports from the current 13 MM bpd to about 15 MM bpd in 2016 and about 12 MM bpd in 2025. (page 80)"

Comment: We are in scenario I. Peak oil started in 2005, the crash program was not initiated in 2006, peak oil popped the debt bubble and lead to the GFC which basically bankrupted the US, only temporarily rescued by money printing.

"Although the future is uncertain, ..."

Comment: If that is the case, why does the BCC run the risk of investing in road tunnels? The private sector is already reluctant to get involved as shares have plummeted



"....it is likely that a number of criteria would drive the market development of these alternatives. (p 2-38)"

Comment: That is an untested assumption. No quantitative analysis, no modelling over the projection period to 2020 is done to support this statement.

"One criterion likely to drive the consumer market is the flexibility of personal movement afforded currently by the private motor car and other forms of private motor vehicles. The freedom of movement afforded by private vehicles, combined with increased affordability, has been a major

contributor to the global dominance of the internal combustion engine in personal and industrial land transport."

Comment: No. It is the other way around. The availability of cheap oil has allowed personal mobility to grow. Mobility will go down with declining oil production, whether motorists like it or not.

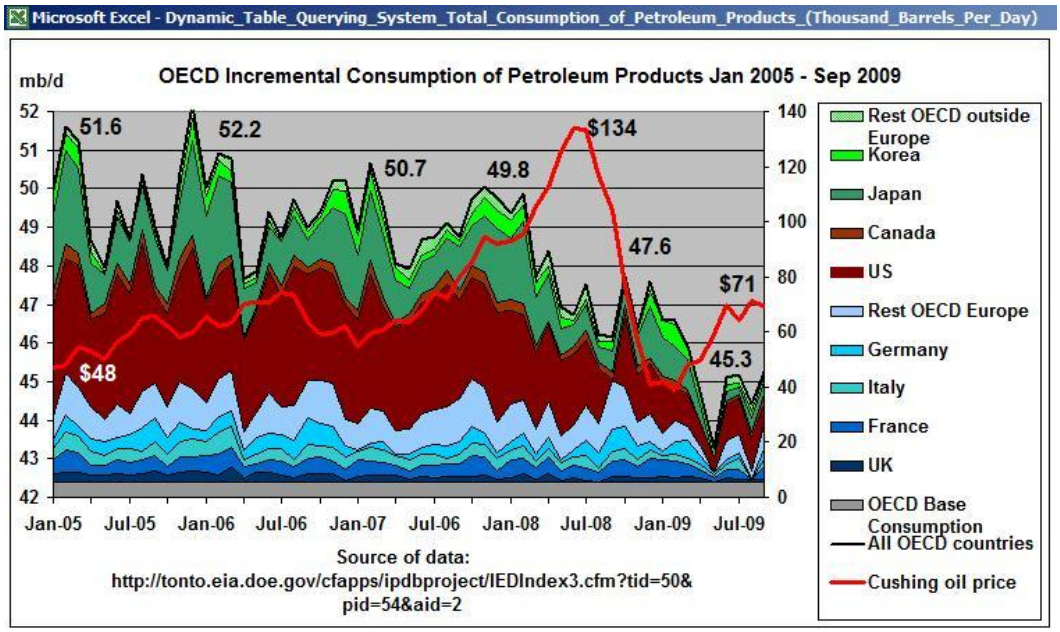
"Whatever the future holds for land transportation, it is highly likely that road networks will continue to serve a critical function in society and in the economy for the movement of people and goods to places of common interest and commerce."

Comment: The EIS tries to overcome the uncertainty of the future by speculation. Semantics without number crunching is not helpful.

Personal Economics

The price of petrol and diesel fuel has risen steadily over the last 30 years, almost doubling between 1999 and 2006 (Queensland Government, 2007a) with a further 15-20% increase in the last two years. Throughout this period demand has steadily increased in line with increased motor vehicle registrations in all States and with increased population in Queensland in particular. There is no evidence that price increases have had any long term effect on motor vehicle use, especially in urban areas.

Comment: High oil prices over the last 5 years and the debt crisis have resulted in an oil demand destruction in OECD countries of around 5 mb/d. This is why we did not get oil shortages.



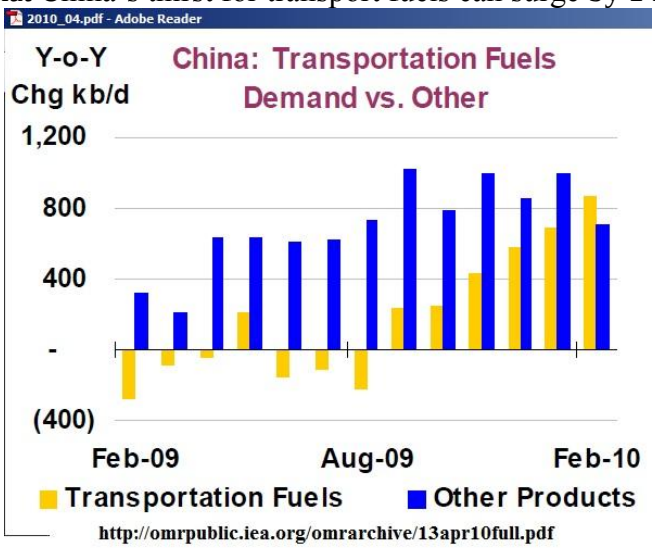
This problem will reach Australia when the mining boom gets stuck because China needs an additional 4 mb/d over the next 8 years, oil which has to be saved by someone because even in the most optimistic scenario of the WEO 2008 (IEA) crude oil production will basically stay flat.

"The convenience and flexibility provided by private motor vehicle travel appears to override other considerations, such as personal finances, for the majority of suburban residents in Australian capital cities. The demand for this mode of travel can be expected to continue in the future." (p 2-39)

Comment: The demand cannot be met when oil production declines.

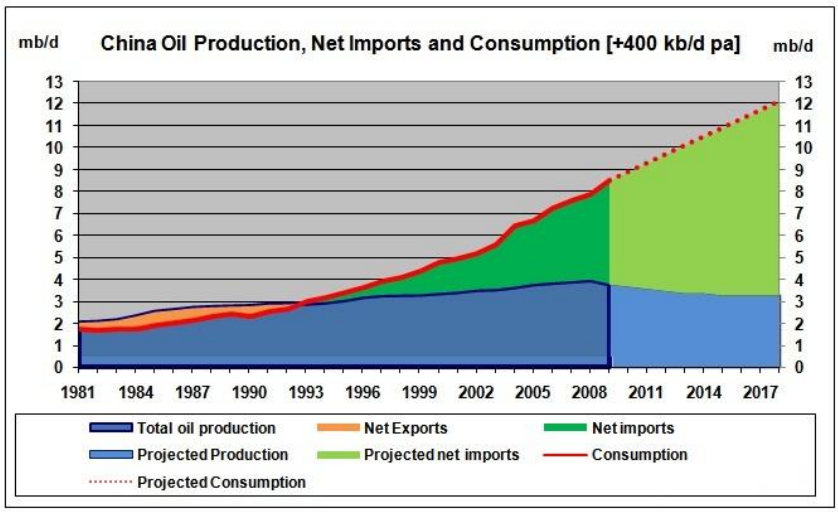
Highlight: the new elephant in the demand room: China

Recent statistics show that China's thirst for transport fuels can surge by 1 mb/d in just 8 months:



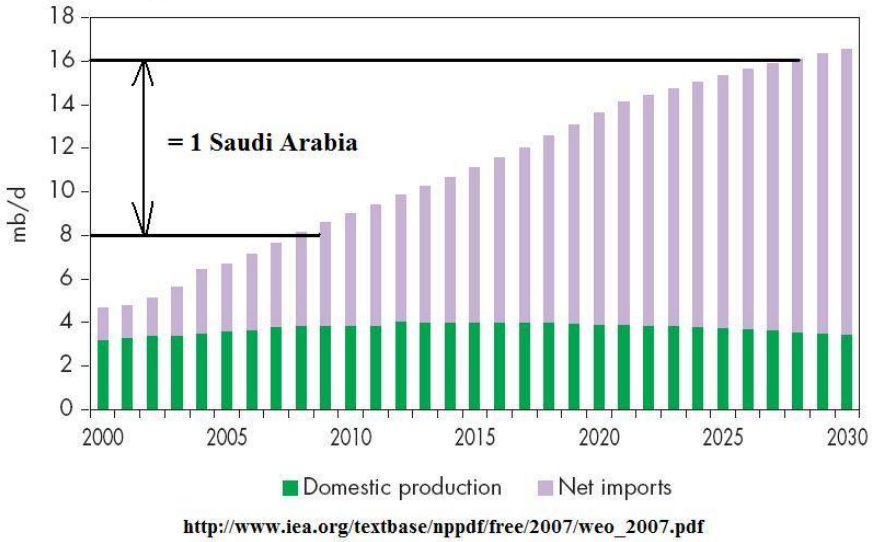
http://omrpublic.iea.org/omrarchive/13apr10full.pdf

If past long term growth trends continue, China will need an extra 4 mb/d of oil imports over the next 8 years:



This is the scenario from the IEA WEO 2007: China will need oil from 1 Saudi Arabia by 2030

Figure 10.6: **China's Oil Balance in the Reference Scenario**



http://www.iea.org/textbase/nppdf/free/2007/weo_2007.pdf

"Furthermore, the form and density of most Australian cities, including Brisbane and the other major centres in South East Queensland, demand a degree of reliance on private motor vehicle travel, at least to a public transport node"

Comment: Then public transport has to be provided to such nodes.

***"Table 2-7** illustrates the low density of settlement in the Brisbane urban area compared with other Australian cities and international cities with arguably better public transport systems and a lower reliance on private motor vehicle travel"(p 2-29)*

Comment: That suggests that Brisbane will have big problems when oil production decline starts in earnest. Up to now we have seen the global economy and the financial system only responding to oil production not growing. Worse is to come.
"Whether there is a threshold price level at which a radical change in travel behaviour would occur and what that level might be cannot be determined with any rigour, having regard to the historic increases in fuel prices to date."

Comment: According to an interview of ABC TV's 7.30 report with Jeff Dixon in early 2008, then CEO of Qantas, airlines cannot make money when oil prices are at $100 - $120 a barrel. Therefore, such an oil price will impact on airlines and therefore on traffic to and from the airport and the rest of Brisbane. Again, if there is uncertainty, why are road tunnels being built?

"Notwithstanding increases in fuel prices, measures are required to manage traffic congestion in urban areas in the short and medium term, in anticipation of the implementation of effective travel demand management."

Comment: That will invalidate the Northern Link traffic projections

"Government Policy Framework
The vulnerability of Queensland industry and way of life to rising fuel costs and ultimately declining fuel resources was comprehensively assessed by a Queensland Parliamentary Taskforce (Queensland Government, 2007a) with a series of far-reaching recommendations. The Queensland Government is yet to release its policy position in response to these recommendations and other factors. Consequently, there is no coordinated policy position against which this or any other infrastructure project could be meaningfully assessed".

Comment: Then why does the BCC embark on yet another billion dollar project? Who will bear the financial risk?

All quotes are from this file:
http://www.northernlinkeis.com.au/pdf/eis/Vol1/Vol%201_Chapter%202_Project%20Rationale.pdf

(3) Comments on the oil vulnerability mitigation report

OIL VULNERABILITY STRATEGY/ACTION
PLAN FOR QUEENSLAND: RESEARCH
PAPER
Report Sept 2008

http://www.transport.qld.gov.au/resources/file/eb8aa70c5febef9/Oil_vulnerability_strategy_action_plan_part1.pdf

"At a broad macroeconomic level, Queensland's rich resource endowments of gas and coal provide a natural hedge against the oil price outlook that would be consistent with a nearer term plateauing of global oil production. Absent a major global recession, the general upward movement in energy prices would be reflected in improved terms of trade,economic activity and higher government revenue for Queensland"(p 6)

Comment: Queensland has no oil. Australian crude oil will decline by 85% over the next 10 years. Gas and coal exports will never compensate for that. In the oil end game after peak oil – which started in 2005 – physical availability is the most important issue. There may be a situation in which Middle East oil cannot be bought at any price due to geo-political events.

"Higher prices would likely generate adverse sectoral impacts for industry sectors unable to pass on these higher input prices to downstream markets and/or exposed to end markets that are particularly sensitive to higher oil prices (such as air transport)."

Comment: We have seen that impact during the recession in 2009. At the time the report was written the severity of this impact was not known. Only money printing and new debt temporarily stabilized the situation.

"Initial analysis suggests that Queensland's coal seam gas (CSG) resource provides a significant source of liquid fuel diversification away from conventional oil, both via compressed natural gas (CNG) and gas to liquids (GTL). Further work is required to validate/evaluate options in this area compared with a range of other supply side options".

Comment: The focus at present is to export the CSG as LNG. Just hinting at a potential of a resource is not good enough. Like in a relay race were runners hand over the baton at the same speed, alternative fuels must by physically available in sufficient quantities and at similar cost to oil to allow a smooth transition between fuels. But this is not being planned and market forces will not do it because all alternative fuels have a lower energy profit ration than conventional oil.

6/1/2010
Diminishing Returns of Fossil Fuel Energy Invested
http://www.crudeoilpeak.com/?p=909

"Interaction with these agencies would:
• Assist in generating deeper understanding of sectoral exposures to oil risk and approaches to oil risk mitigation."

Comment: We have now 2 years experience how peak oil works through the financial bottom line of companies. We have the convergence of 4 main factors

(a) An accumulated debt crisis created over decades since WW2
(b) Banks assuming they can always roll over debt in a perpetually growing economy
(c) Governments not advising banks about limited oil supplies
(d) The crude oil peak hitting in 2005

In short: peak oil popped the debt bubble. Companies with high debt were hit first. Example in Sydney: the Lane Cove Tunnel.

25/1/2010
Peak oil brought forward moment of truth for Lane Cove Tunnel
http://www.crudeoilpeak.com/?p=998

"The Taskforce Report found that most published estimates consider that conventional oil production is likely to peak between 2005 and 2010."

Comment: Correct. The peaking of oil production is a complicated process which evolves in a non linear way over several years. Crude oil started to peak in 2005 and remained on a bumpy production plateau since then. A monthly peak was reached in July 2008 when extra demand from China broke the camel's neck. Saudi Arabia could not pump more oil to keep oil prices down.
"*There is a wide range of views on the medium to long term outlook for oil and energy prices. One view is that there will be an initial retreat from current levels and from there a gradual upward trend in oil prices as flat or declining supply intersects with strongly increased demand." (p8)*

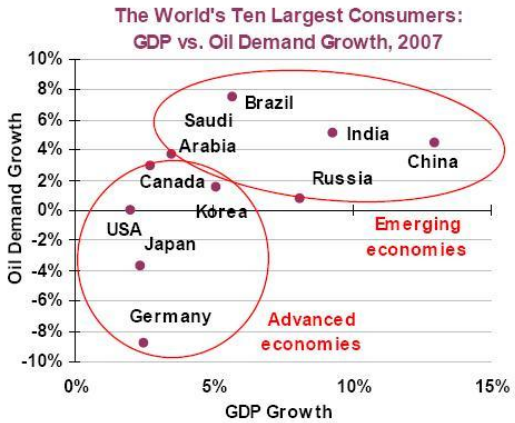
Comment: Events in the last years showed that a gradual increase drives the system to a breaking point.

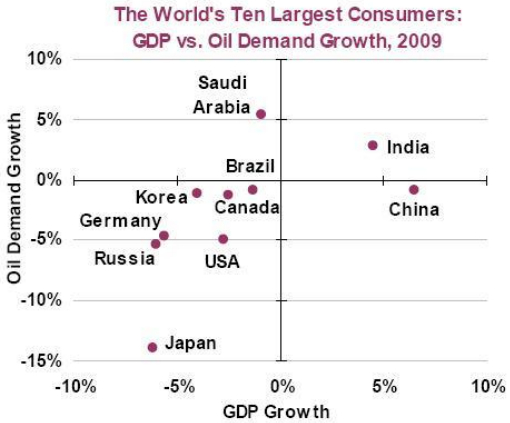
"Another [view] places more emphasis on the short run elasticity of supply and demand with sharp upward movements in prices, accompanied by high volatility and, possibly, by absolute physical shortages of fuel"

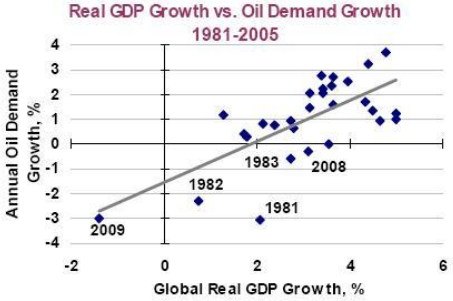
Comment: We have witnessed the high volatility in oil prices which inhibit both the development of additional oil resources as well as alternative fuels. The physical oil shortages didn't happen yet because OECD oil demand dropped by 5 mb/d and serious oil production decline hasn't started yet. (see graph above)

"Analysis by a range of international agencies, together with the experience with previous global oil shocks, suggests the general impact of a long term higher oil price would be to reduce economic growth." (p 9)

Comment: Evidence of the last years suggests that higher oil prices for only a couple of years cause a recession, not just a reduction in economic growth. The oil demand elasticity of real GDP growth is 0.5, that is for every percentage point of real GDP growth there must be 0.5 % of oil production growth.







http://omrpublic.iea.org/omrarchive/14may09full.pdf

"Partly driven by the differing views about oil price and availability over the medium term, there are also widely divergent opinions on the likely onset and intensity of these impacts. This will be a factor of: • how soon the world oil supply plateaus;"

Comment: The plateau started in 2005

"• how much support governments give to encouraging alternatives to oil;
• most importantly, whether market signals are sufficiently clear and timely for the necessary investments in new technologies or other adaptations."

Comment: The Federal government hasn't even accepted that peak oil has happened. ACIL Tasman's Liquid Fuels Vulnerability Report says it is decades away.

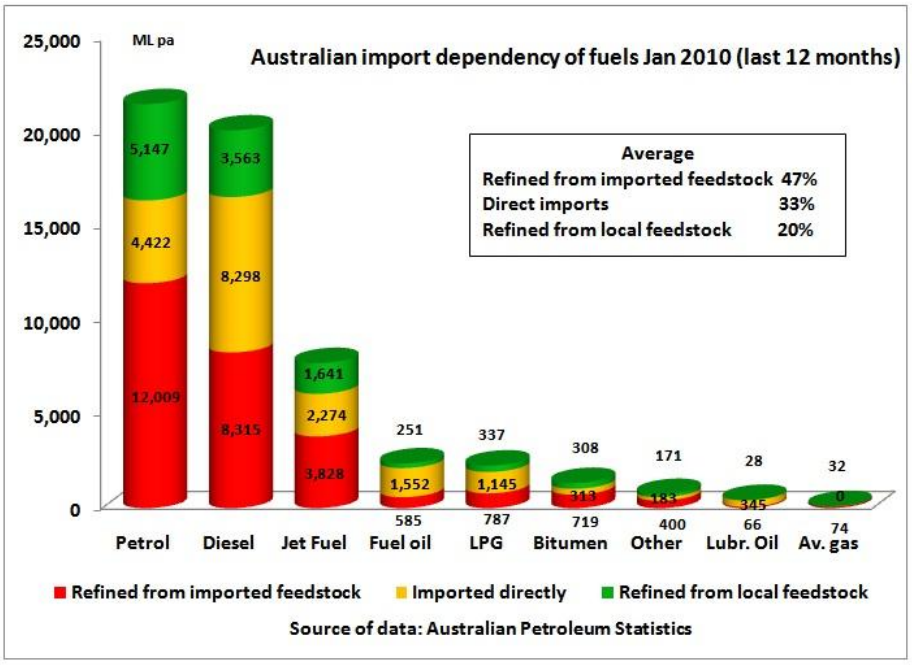
29/5/2009
Critique ACIL Tasman liquid fuel vulnerability
http://www.crudeoilpeak.com/?p=793

The Senate voted down a peak oil and alternative fuels motion of the Greens. It is "believed" that market forces bring about alternative fuels. That will not happen as oil prices are too volatile and energy profit ratios for alternative too low compared to conventional oil.

"One view is that an unexpected rapid onset of much higher oil prices and physical shortages would result in major geo-political disruption, akin to but much more sustained and severe than those experienced following the 1967 and 1973 oil shocks".

Comment: The 1st oil crisis was in 1973 (after the Yom Kippur war), the second oil crisis in 1979 with the Iranian revolution. The 3rd oil crisis started in 2005.

"How a major oil shock would ramify through the Queensland economy will depend on both the underlying resilience of the Australian economy which in turn is a function of both the country's resource endowments and the strength of its political and social institutions. Reaching an informed view on Australia's vulnerability is not easy."



Comment: Australia's dependency on oil imports is easy to calculate: it is 80%.

There is no Strategic Oil Reserve. If something happens in the Middle East, the impact will be felt within 2 weeks.

(4) Contribution from the Federal Government

The Federal government has capped their contribution to $100 million for the financial years 2008/09 – 2013/14 and another $400 in 2014/15.

http://www.nationbuildingprogram.gov.au/publications/administration/pdf/MOU_List_QLD_19_08_2009.pdf

Queensland Projects being funded under the Nation Building Program 2008-09 to 2013-14

Project	Total Estimated Project Cost (outturn dollars)	Total Allocated Australian Government (AG) funding (outturn dollars)	AG Funding provided to 2007-08 inclusive (outturn dollars)	AG Base Funding Contribution 2008-09 to 2013-14 (outturn dollars)	
	$m	$m	$m	$m	
Northern Link tunnel	TBD	500.00		100.00	
This funding will be provided to Brisbane City Council. The Australian Government contribution is capped at $100m in the period 2009-10 to 2013-14. The Australian Government will make a further $400m (capped) available in 2014-15.					

Read:
28/3/2010
Report Card 2009 (part 3) Nation Building Program spends only 23% on rail, long list of motorways
http://www.crudeoilpeak.com/?p=1282

(5) Fuel Availability Analysis

In my submission on the terms of reference for the Northern Link dated 29/1/2008 I listed the following items http://www.crudeoilpeak.com/?p=425

STEP 1: Find which fuels and which clean energies are and could be available when?

STEP 2: Check feasibility of alternative vehicle and transport technologies and their timings

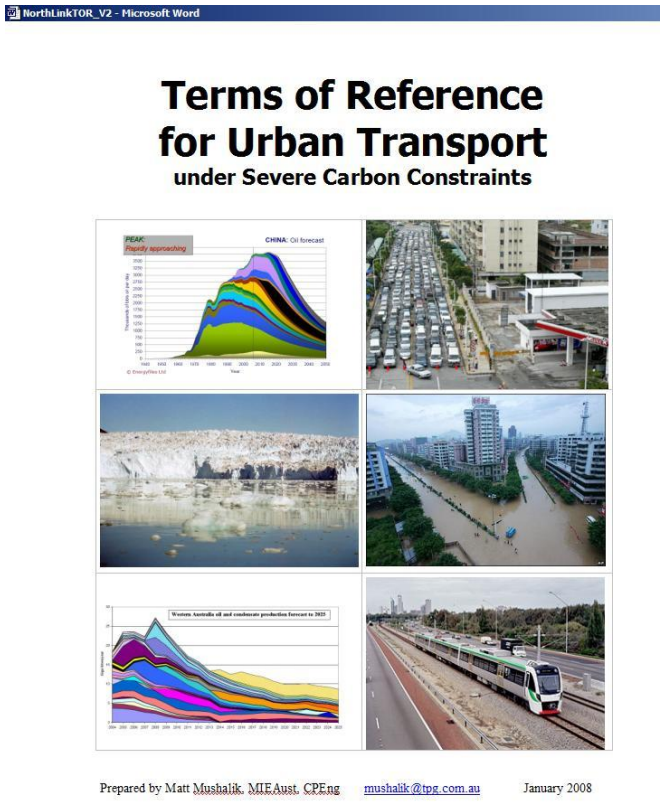
STEP 3: Calculate all emissions from carbon based traffic for various scenarios

STEP 4: Define economic objectives in a carbon constrained environment

STEP 5: List sustainable transport solutions

STEP 6: Prepare a project proposal on the basis of step 5

STEP 7: Do the cost benefit analysis including sensitivity, applying the precautionary principle



None of this analysis was done on a realistic basis

(6) Cost Benefit Analysis (chap. 15.7)

For an indexed toll starting with $3.93:

Vol1_Chapter 15_Economics.pdf - Adobe Reader

- **Table 15-4 Northern Link P50 CBA findings (6% discount rate)**

Output	Value
Present Value of Costs (PVC)	$2,311.1 m
Present Value of Benefits (PVB)	$2,861.0 m
Net Present Value (NPV)	$549.9 m
Benefit Cost Ratio (BCR)	**1.2**

http://www.northernlinkeis.com.au/pdf/eis/Vol1/Vol1_Chapter%205_Traffic%20and%20Transport.pdf

The benefit cost ratio is very low at 1.2. It means a 20% return over the discounted value of the investment for the 45 year period. An oil crisis will wipe out all benefits, the BCR will be less than 1 and the net present value will turn negative. It is incomprehensible how anyone could accept such a high risk.
This graph shows the problems of sovereign debt in the next years ahead of us:
http://www.pimco.com/LeftNav/Featured+Market+Commentary/IO/2010/February+2010+Gross+Ring+of+Fire.htm

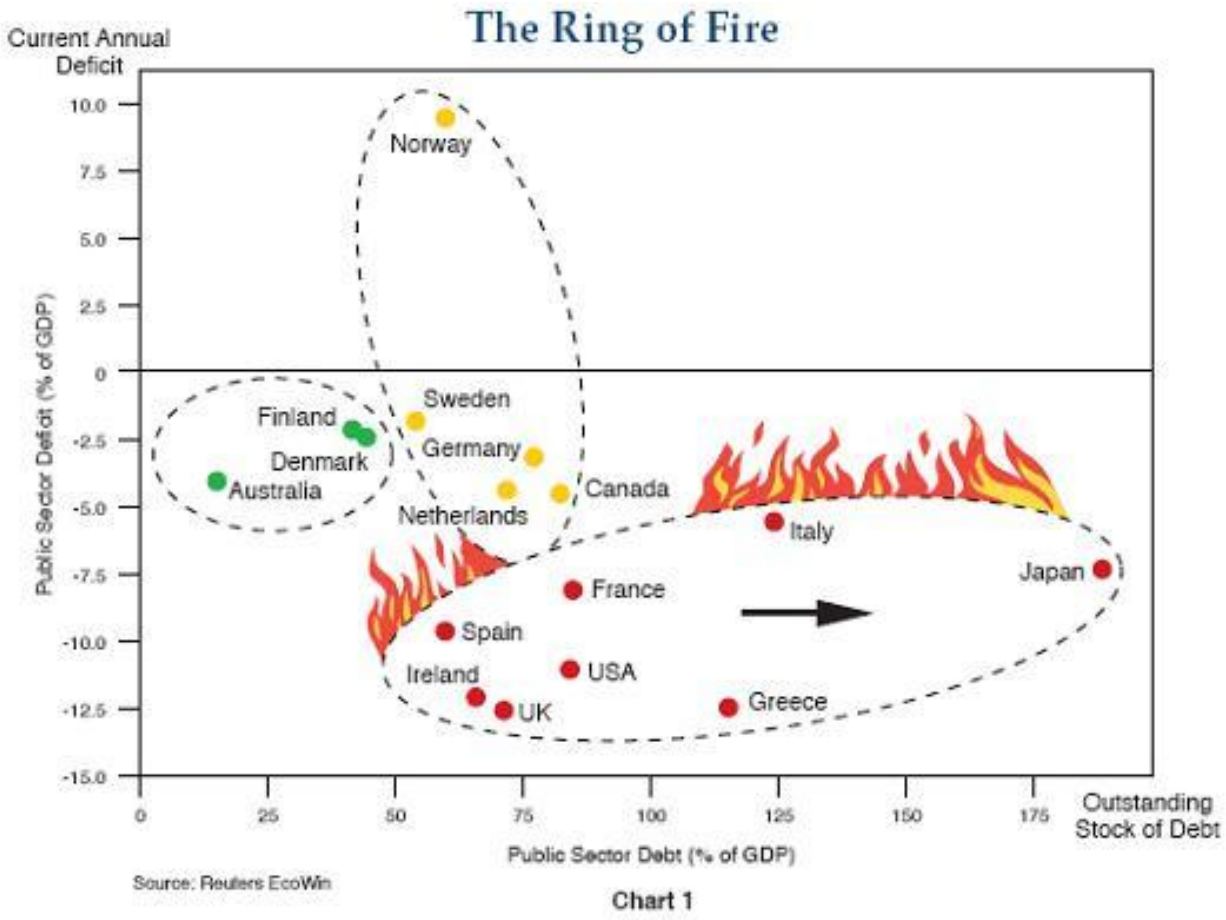


Chart 1

Financing infrastructure will become very difficult in future. If funds are wasted now for freeways, they will not be available later for all necessary public transport projects.

Appendix Time Table 2010-2020

2015 Australian crude oil production has declined to half of 2010 levels

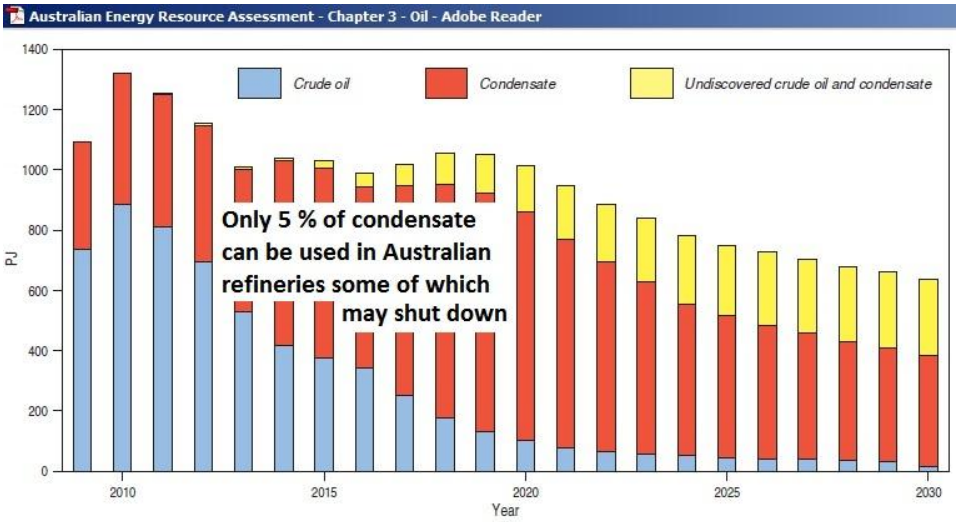


Figure 3.43 Australian oil production outlook from proven hydrocarbon basins AERA 3.43

Note: the production forecast is based on data from an industry survey of producing fields and Geoscience Australia's assessment of undiscovered resources in proven basins

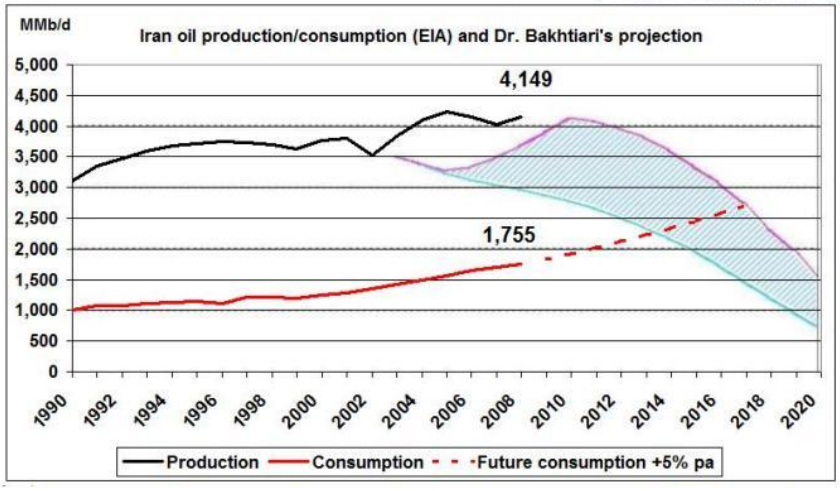
Source: Geoscience Australia

https://www.ga.gov.au/servlet/BigObjFileManager?bigobjid=GA16759

Read analysis here: Australian crude oil production to decline 85% over the next 10 years
http://www.crudeoilpeak.com/?p=1243 and
Australia in last quarter of its oil age http://www.crudeoilpeak.com/?p=182

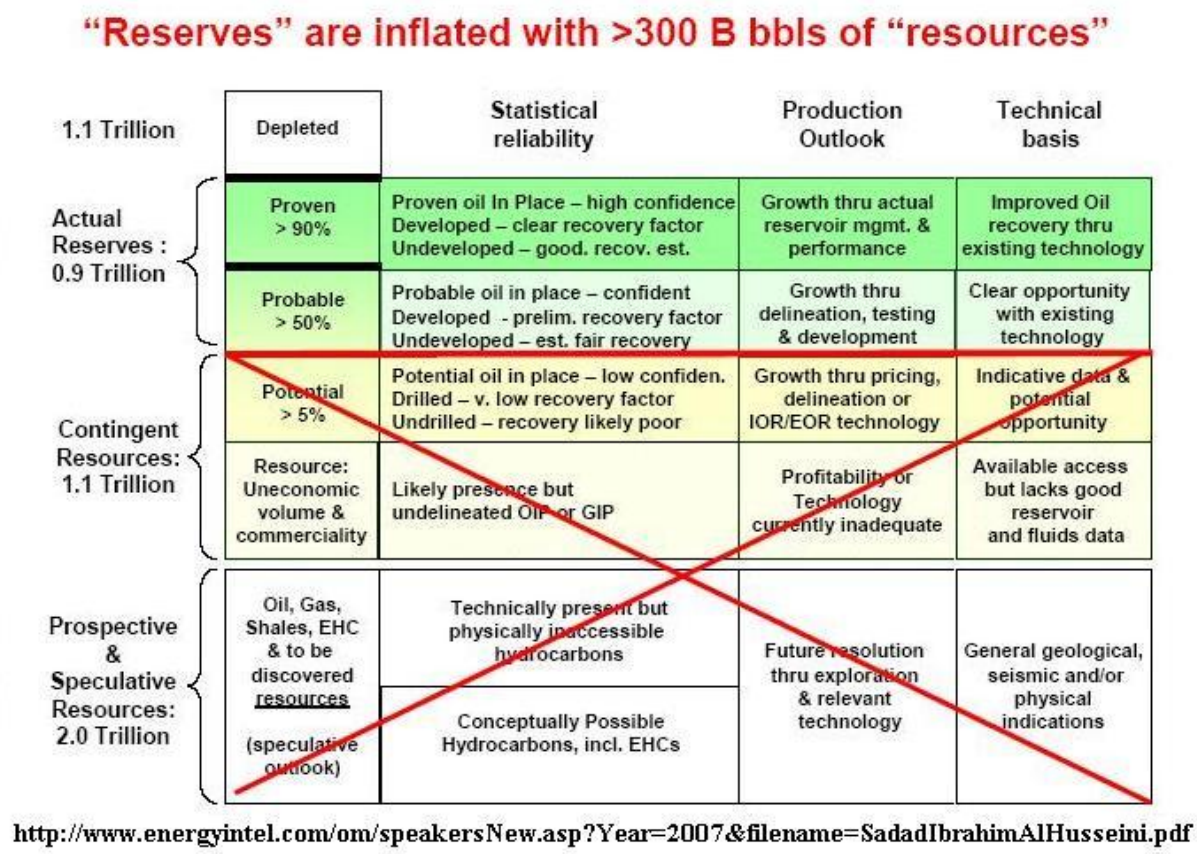
2015 Iran no longer exports oil.We were already warned in 2007: ".....export extinction in 2014–2015 is preceded by a decline to 33–46% of 2006 exports by 2011. Notice, however, that export declines are substantial, even in the least likely, most optimistic scenario. Because government revenue could be sustained only by rising price in all scenarios, absent such a price rise political challenges might overwhelm the regime long before exports go to zero." **http://www.pnas.org/content/104/1/377.full**

Petrol rationing introduced in 2007
Iranian oil exports will end in next decade



Dr. Bakhtiari warned the Senate Inquiry on oil supplies in June 2006 that there will be new economic rules. Hansard: http://www.aph.gov.au/hansard/senate/commttee/S9515.pdf

That may also be the year in which the truth comes out about OPEC's paper barrels. Ex-Saudi-Aramco Chief Sadad-al-Husseini (one of the few people who would know how much oil there really is in Saudi Arabia) crossed out 300 Gb of OPEC proven oil reserves in a presentation to an Oil&Money conference in October 2007 in London:



http://www.energyintel.com/om/speakersNew.asp?Year=2007&filename=SadadIbrahimAlHusseini.pdf

http://www.energyintel.com/om/program.asp?year=2007

See the list of top managers who have attended this conference. Among them the Executive Director of the IEA, Managing Directors of Morgan Stanley and **Lehman Brothers!**

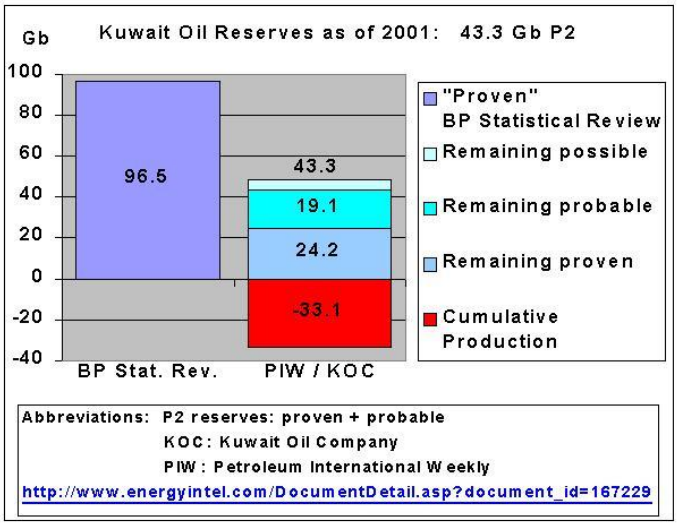
The conference was organised by Energy Intelligence, which also published a report on Kuwait's oil reserves being only half of what is published in the BP Statistical Review
http://www.energyintel.com/documentdetail.asp?document_id=167229

More details are here:

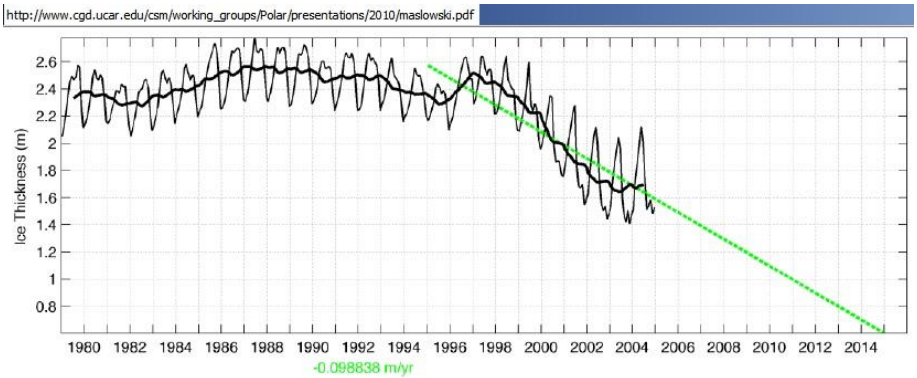
"Key oil figures were distorted by US pressure, says whistleblower"
http://www.crudeoilpeak.com/?p=564

OPEC reserves revisited
http://www.crudeoilpeak.com/?p=355

This time bomb must explode. When the confidence in oil reserves disappears oil hoarding will start and oil markets will freeze like the credit market did. Different Middle East.

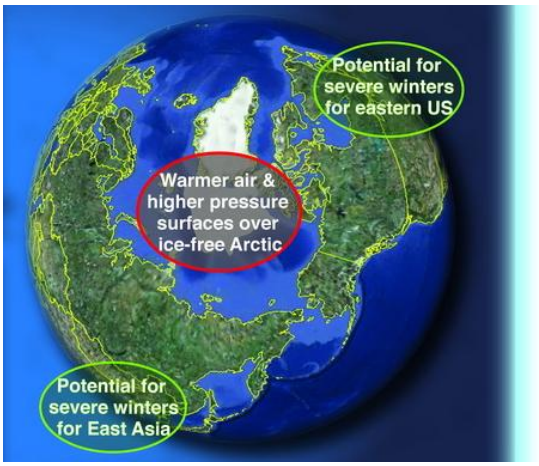


2015 On the climate front, the Arctic summer sea ice is just 60 cm thick, according to the latest study from Dr. Maslowski



http://www.cgd.ucar.edu/csm/working_groups/Polar/presentations/2010/maslowski.pdf

"Higher pressure surfaces above the North Pole, due to the warmer temperatures associated with greatly reduced sea ice, are thought to impact large scale wind patterns over the Northern Hemisphere. Climate models show these connections with cold air moving south, producing low pressure areas and unusually cold winters in the eastern U.S. and eastern Asia, and cooler than usual weather in late winter from Europe to the Far East"



http://www.arctic.noaa.gov/future/impacts.html

2020 End of coal

8/3/2010

NASA climatologist James Hansen at Sydney Uni: "Australia doesn't agree now that they got to stop their coal, but they are going to agree. I can guarantee you that within a decade or so because the climate change will become so strongly apparent that's going to become imperative"

http://www.usyd.edu.au/sydney_ideas/lectures/2010/professor_james_hansen.shtml

Tipping elements in the Earth's climate system (National Academy of Sciences of the USA) "We conclude that the greatest (and clearest) threat is to the Arctic with summer sea-ice loss likely to occur long before (and potentially contribute to) GIS melt. Tipping elements in the tropics, the boreal zone, and West Antarctica are surrounded by large uncertainty and, given their potential sensitivity, constitute candidates for surprising society"
http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2538841

Appendix Population Scenarios

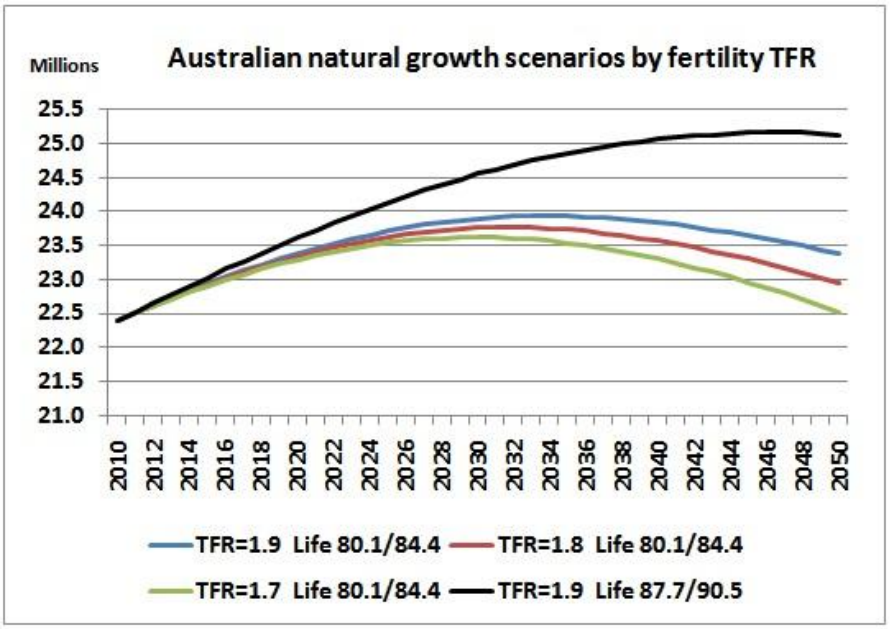
The size of Australia's future population growth including immigration will be largely determined by these events:

1. Fuel shortages after peak oil which started in 2005
2. Food shortages due to failure of governments to prepare for declining oil production
3. Power shortages after global warming events will have forced us to abandon coal (2020)
4. Sea level rises from global warming impacting an coastal cities
5. Climate refugees settling in the North and starting agriculture there

The next oil crunch is predicted for 2012,
http://peakoiltaskforce.net/
which will see a replay of events in 2007/08 predicted by Matthew Simmons in 2005:

„Twilight in the Desert, the coming Saudi Oil Shock and the World Economy"
http://www.simmonsco-intl.com/files/Twilight%20in%20the%20Desert%20Presentation.pdf

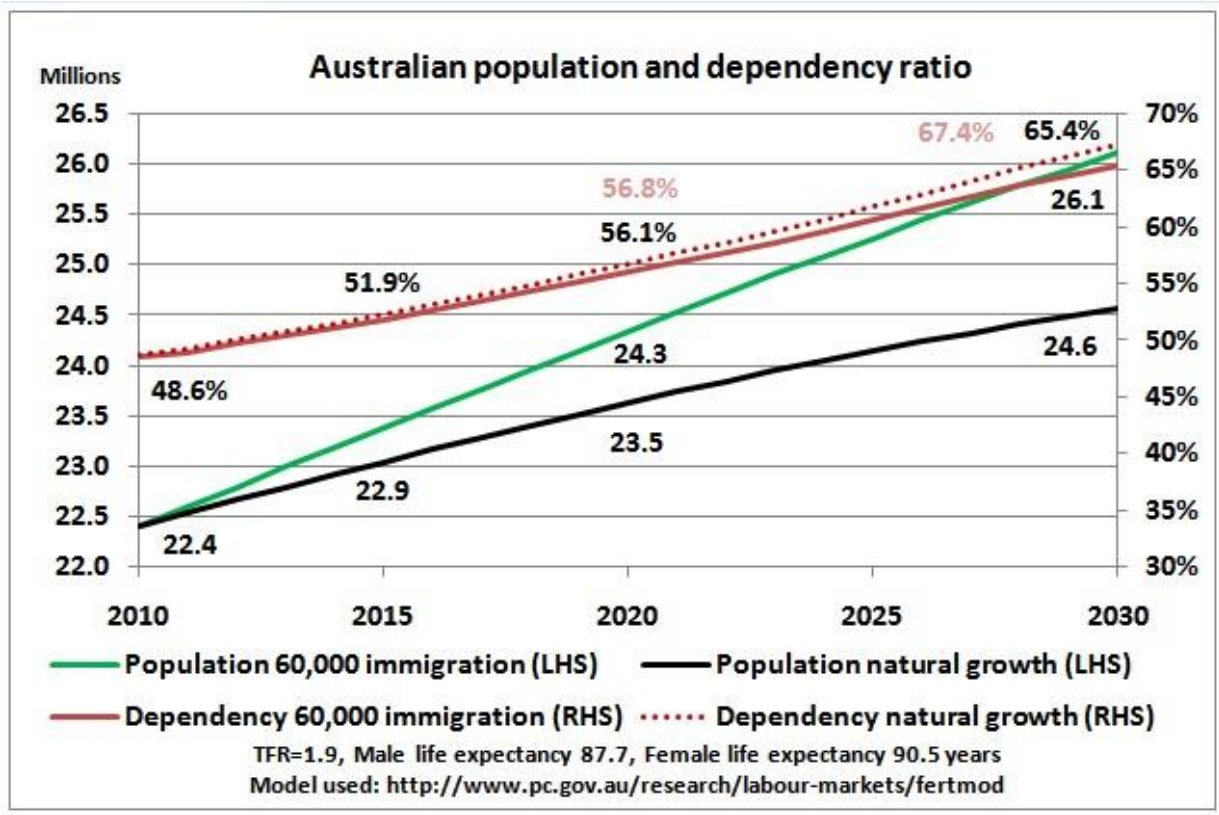
It will morph into a global oil crisis which will uncover the truth about OPEC's paper barrels. This will trigger another financial melt-down, possibly also another peak oil war. At that point Australian motorists will understand that every new arrival will mean longer petrol lines at filling stations. That will be the end of a free choice in immigration levels.



The only given in future population development is natural population growth. Assuming current trends (fertility, improving life expectancy) and barring other unforeseen Black Swan events like bird flue etc. Australia's existing population of 22 million will grow and peak between 2040 and 2050 at around 25 million.

But even that is not certain. It is likely that life expectancy stays at present levels due to funding problems in the health system and heat waves from global warming. Under such an assumption population will peak between 2030 and 2040 at around 23.5 - 24 million depending on fertility rates. For Sydney, this would translate into a growth of between 280 and 390 thousand by 2030.

Whatever immigration governments decide upon in the last years of free choice will add to the problems under (1) and (2) above. Assuming a recession type level of 60,000 pa. until 2020, the additional population to be planned for in the next 10 years is just 1.9 million in this coming decade.



The public should not be brought into thinking, accepting and internalising that we are going to have a population growth bonanza, as pushed by the real estate industry. Although there are many uncertainties, one thing is for sure: the current population debate with a planning horizon 2050 is totally academic.

Therefore, assumptions of future population growth are totally unrealistic.

The Faustian population pact >>>

Immigrants are fed sideways into the population pyramid, creating a bulge which now leads to premature aging. Thus short term economic benefits come at a later cost.

More details on population projections can be found here:

9/4/2010
Australian Population Scenarios in the context of oil decline and global warming
http://www.crudeoilpeak.com/?p=1300