

Submission to
Transport for NSW
on the
NSW Freights and Ports Strategy Nov 2012

By

Malcolm Moore

November 2012

Innovative Synergies

Malcolm Moore JP BE(Elect.)

PO Box 147

Turrumurra

NSW 2074

E mmoore@bigpond.net.au

W <http://www.moore.org.au>

Director General of Transport for NSW
 18 Lee Street
 Chippendale NSW 2008

This submission is a response on the NSW Freights and Ports Strategy 2012 and was written in good faith to improve the content and structure of the proposed strategy's report, the NSW Freight infrastructure and the NSW economy.

This submission looks outside the rather myopic vision of Road Freight as the only answer for a highly effective, inexpensive and quick Freight transport solution involving Ports and Intermodal Terminals in NSW.

Inside the Freights and Ports Strategy there is a blind and continuous push for major highways and arterial roads to be constructed and for the existing highways to be widened to accept the existing and expected increased Road Freight traffic (and commuter traffic, particularly in the Sydney Basin region).

Beside the Freights and Ports Strategy, it is blatantly obvious that cost of manufacturing major highways is exceedingly expensive. NSW simply does not have the finance to construct these major highways and keep them in good condition because of the continual damage caused by heavy Road Freight over long distances. The ongoing maintenance bill for the existing major highways to date is blowing out of proportion. This strategy of simply providing more Road Freight is fundamentally flawed.

The Freights and Ports Strategy frequently inferred that Rail Freight was/is highly inefficient. Practical emulations of a range of Road and Rail Freight scenarios demonstrated in this submission show very clearly that in direct comparison, **Road Freight is far more expensive (~400% greater fuel costs, ~500% road damage) than Rail Freight, especially between Ports and Intermodal terminals.**

Road Freight is highly practical and quick for transporting freight at intermodal terminals to/from: warehouses, factories, farms, stock yards, silos, shopping centres etc. .

Outside the Freights and Ports Strategy, there is a covert and very powerful external industry push to maximise the sales of diesel fuel wherever possible. Maximised Road Freight fits this business strategy perfectly. It is very obvious that the oil industry lobby has, over several decades conned, coerced and compromised many Governments and decision makers, and this Freights and Ports Strategy.

In response to the Freights and Ports Strategy 2012, this submission looks well beyond the compromises, and proposes a series of laterally conceived innovative synergies that have not been considered nor covered in this Strategy.

The proposals in Section 5 of this submission include **three prime rational transport related strategies that will provide real relief for peak road network congestion, particularly in the Sydney Basin Region: Port Botany, the M5, the M7, Pennant Hills Road and Sydney's Northern Corridor.** Other proposals in Section 5 are more lateral and forward thinking to decentralise the freight traffic congestion out of Sydney.

It is extremely clear to me that Rail Freight is being very under-utilised, and Road Freight is being well over-utilised; for all the wrong reasons. With Road Freight properly aligned with Ports and Intermodal Terminals, then cargos will have at much faster turnovers, to significantly reduce and even remove the current road congestion in NSW and particularly in the Sydney Basin.

With minor upgrading of Freight Rail infrastructures in NSW, ***Rail Freight can be transported at typically 100 km/h through much of NSW, and the maintenance bill on roads can concurrently be dramatically minimised.*** With further upgrading much of the Rail network would be able to transport ***Rail Freight safely at speeds exceeding 150 km/h, and this is a real game-changer.***

Further, this submission sets up the outline to establish a Ports interface structure that will naturally operate in a 24 / 7 mode through largely automated loading and storing processes that are literally impossible where Road Freight is involved, but almost too easy with developed Rail Freight technologies using standard structures.

With some lateral re-thinking to standardise the structure of Rail Freight trains, quantum efficiencies could be introduced that would dramatically speed up the transfer of containers at Ports and intermodal terminals, to and from Road Freight and adjacent Rail Freight using standard sized train structures and standardised container transfer equipment. These innovations synergise to really build the NSW economy.

Please contact me for further discussions.

Malcolm Moore

Innovative Synergies

Malcolm Moore JP BE(Elect.)

PO Box 147

Turrumurra

NSW 2074

E mmoore@bigpond.net.au

W <http://www.moore.org.au>

Table of Contents

Submission: NSW Freights and Ports Strategy	6
Direct Responses	6
2 Introduction	6
Case Study 1: Castella Wines	6
2.2 Purpose	8
2.3 Strategy Framework	9
Figure 1	9
The Meaning of Efficiency	9
Figure 2 – NSW Transport Planning Framework	10
2.4 Strategy Development	12
Action Prioritisation	12
Targets and Measurement	12
Updating the Strategy Document	12
2.5 Strategic Action Areas Summary	12
3 Freight Movements	15
Double the Volume in 20 years	15
Annualised Growth Patterns	16
National Fuel Imports and State Usage	16
Optimising the NSW Coal Export	18
Freight Movements	20
Moving Freight on Road	21
Moving Freight on Rail	24
4 Partnerships between Government and Industry	25
5 Strategic Action Areas	26
Action 1F: Improve Efficiency of Landside Cargo Transport	26
Comparing Fuel and Response Efficiency of Road Freight and Rail Freight	27
Construct a Freight Rail Bypass for the Sydney Basin	31
Connect Port Botany with Quick Rail Freight Infrastructure	33
Connect Enfield with an Efficient Freight link to the Northern Corridor	36
Re-Construct the Cowan Gorge section of the Northern Corridor	38
Construct a Rail Freight Line from Mascot to Menangle Park	40
Relocate the Cooks River Intermodal Terminal to Menangle Park	42
Electrify Rail Lines to Save on Diesel Fuel and Minimise Pollution	43
Construct an International Air Freight Terminal at Goulburn	44
Standardise Rail Freight Train Structures	46
Re-engineer the Structure of Freight Trains	47
6 Implementing the Strategy	48
Appendix 1	49
Some Fundamental Definitions	49
Commuter Transport	49
Freight and Cargo Transport	49
Bulk and Container	49
Ports	50
Appendix 2	51
Land-Based Freight Technologies	51
Background on Roads	51
Road-Based Freight Transport	51
Rail Freight Technologies	52
Rail Freight in NSW	53

Appendix 3.....	56
The Oil Industry Lobby Activities	56
Poor Historical Record of the OIL	56
Compromised Governments by the OIL	56
Skewed Logistics and the OIL	56
General Motors and the OIL	57
Sydney Trams and the OIL.....	58
Closing Rural and Arterial Rail by the OIL	61
The Blayney – Cowra (Demondrille) line and the OIL	62
Rail Corridor Closures and the OIL	62
Making Road Transport Safer - Lindsay Fox	63

Submission: NSW Freights and Ports Strategy

Direct Responses

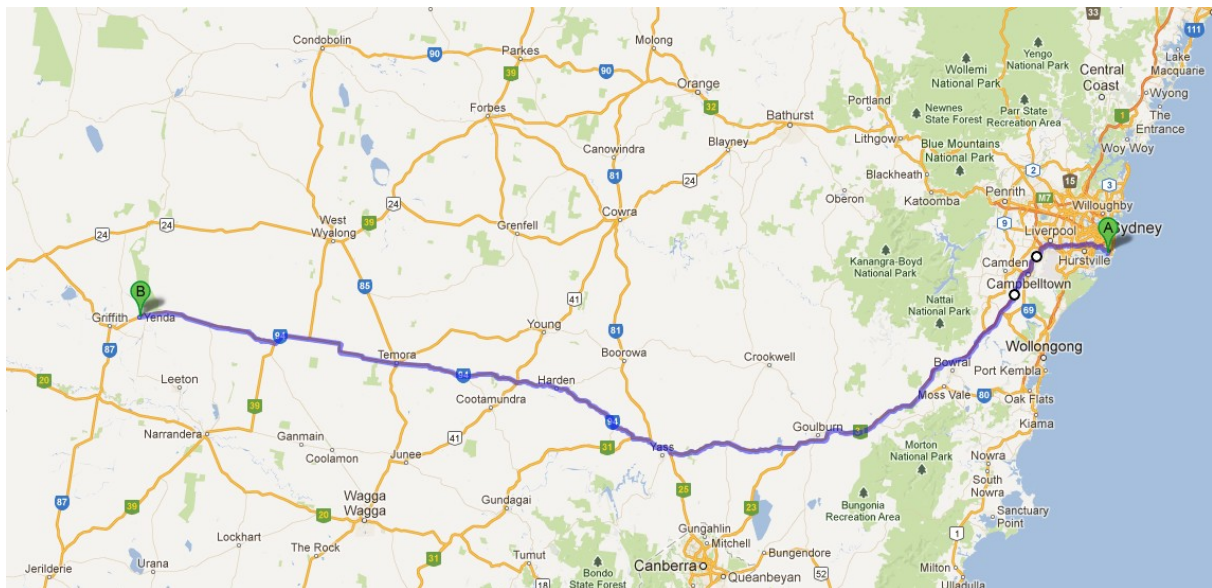
2 Introduction

Case Study 1: Castella Wines

Castella Wines engineered its marketing along the lines of a narrow range of wine flavour with a maximum of product turnover, with a minimum of profit margin. Part of their development growth several years ago included the purchase of a portion of some existing manufacturing plant at Yenda, and some surrounding vineyards, though they (Castella Wines) too, purchase a high proportion of their grapes from the surrounding vineyards to maximise their wine production figures.

As the crow flies, the distance from Yenda to Melbourne is about 415 km and to Sydney it is about 470 km. The land at Yenda (NSW Western Plains) is land is generally flat, by when travelling towards Sydney, east of about Temora, the land becomes undulating then hilly, there is the Great Dividing Range from about Yass onwards towards Wollongong / Sydney.

In NSW there is an almost straight rail line from Yenda to Cootamundra, then Yass, Gunning, Moss Vale and Wollongong – then north, up the Illawarra line towards Sydney (Central).



The map above (thanks to Google) shows the approximate rail / road path. For many logistical reasons rail freight has a real connectivity problem between Campbelltown and Port Botany, because frankly, there is no quick / efficient freight rail path connecting to Port Botany, and the freight lines in the Sydney suburbs require a total re-engineering to make this effective.

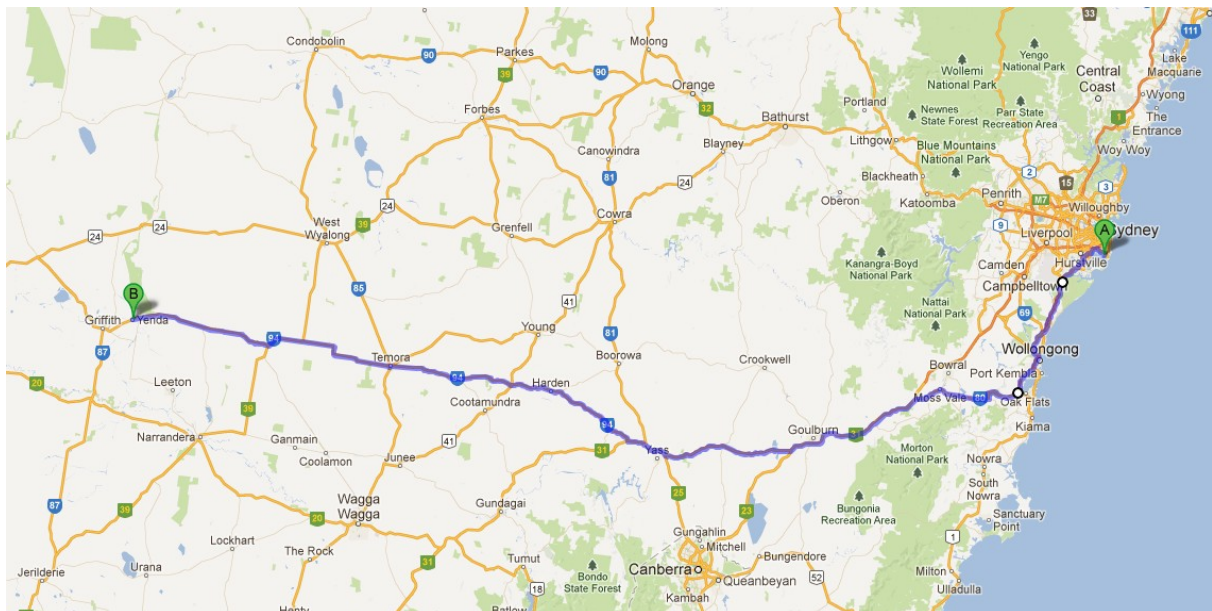
The picture below (again thanks to Google) shows an alternative path to the coast for sea intermodal connection. In this case, the immediate thought is that fully loaded freight trains would be travelling from Yenda, travelling directly past the Port Kembla (Wollongong) intermodal terminal for sea shipping connections and these facilities are not being utilised – why not??

Logistically it makes no sense to have an under-utilised sea shipping port and have fully loaded trains passing directly by and not transferring at Port Kembla.

The complaint about not having suitable Freight interchange at Griffith is somewhat unfounded when in consideration that at Yenda, the Freight Rail line is directly adjacent to the Wine Processing and bottling plant.

Loading a Container onto a Road Freight vehicle and then transporting that into Griffith for transfer to a long haul Road Freight vehicle is rather far-fetched, unless the unthinkable has been done and the intermodal terminal at Griffith is now located in the middle of the commercial area or near the business centre of Griffith.

The alternative of not practically using NSW Rail Freight is that a Road Freight “B-Double” would directly transfer two containers directly from the Castella Wine processing plant at Yenda for direct transport to either: Melbourne, Sydney (Port Botany) or Wollongong (Port Kembla).



Because the **diesel** fuel costs for Rail Freight are significantly less expensive than for Road Freight, it should be far less expensive to package and load the containers at Yenda / Griffith, load these containers directly onto a Rail Freight car. These cars can then be both brought to the Freight interchange terminal at Griffith (without concerns for school slow areas) and connected to the next long-haul Freight Train to Port Kembla (Wollongong) or Port Botany (Enfield).



This picture (thanks to Google) is slightly east of Yenda showing the Griffith – Sydney rail line on the right (north side), the Barton Highway heading towards Griffith, and part of the Castella the wine processing area at Yenda.

Instead of struggling with bringing containers in “B-Doubles” to travel to the intermodal terminal right in the middle of Griffith, a far more intelligent strategy would be to reposition the Griffith intermodal terminal outside Griffith, on the Sydney side, by about 8 to 12 km. The alternative innovative option is to run a spur of this rail line to the south-west so that the intermodal terminal can be located south-east of Griffith by about 8 to 12 km, and have excellent road access so that Road Freight vehicles do not need to go near Griffith city at all.

The real problem facing Transport NSW is the logistical stupidity of not having Port Botany well connected with quick Rail Freight infrastructure to the rest of the Freight Rail network. The Freight Rail connection with Port Botany is absolutely appalling.

This rail-isolated Port Botany problem is one of the prime causes of excessive Road Freight usage in NSW, and a prime cause for excessive main and arterial road damage in NSW, and so much pollution in the M5 tunnel.

A viable inexpensive solution to addressing this Port Botany Rail Isolation problem is not covered in the NSW Freights and Ports Strategy 2012, nor is it covered in any of the NSW Transport Plans, but it is covered in my earlier submission¹ by to Transport NSW, and on pages 32-34 in this submission.

On page 11 of the Strategy it basically states that Melbourne has a better Rail/Sea port facility, so the preference is to go to Melbourne. Surely the NSW prerogative would be to radically improve the Rail/Sea port facilities at both Port Kembla and Port Botany so that potential users like the NSW wine industry would favour using NSW-based shipping ports over using Melbourne facilities.

2.2 Purpose

What is missing here is the goal of interoperability so that road and rail and air and sea freight transportation network systems are engineered to work seamlessly between each other and not separately nor in isolation from each other.

The five goals set out in dot points as identified in “NSW 2021” look to be very aspirational, because these goals are what should be being done on a continuous basis.

Further, dot point two uses the word **quality** and not **Quality** (there is a very subtle difference). If **Quality** were used to its real intended intent, then all the other dot points would be totally redundant as they would all be part of the Total Quality Management² (TQM) as the way of life for continuous incremental improvement in every activity, everywhere.

Going a bit further, the next set of three dot points are all parts of the TQM philosophy where continuous monitoring and reporting through all levels of workmanship through to and including the highest levels of executive management / directing induce

¹ <http://www.moore.org.au/senh/2012/20120910%20Connecting%20Port%20Botany.pdf>

² <http://www.skymark.com/resources/leaders/deming.asp>

strategic changes to the very way that the NSW Freights and Ports Strategy would continually reshape itself for maximum throughput with a minimum of carbon footprint, maximised safety, least expenditure and most profitable for NSW and Australia.

2.3 Strategy Framework

The two dot points spell out that there are substantial expected growths in the transport requirements in the next two decades. The second dot point roughly translated means to push transport pathways through established residential areas.

The problem with the “Challenges” paragraph is the blind thinking that expanded road transport facilities will meet these substantial growth requirements. What has to be realised right now is that the current Road Freight transport lobby is a prime cause for road network congestion.

This situation can be substantially minimised by seriously using alternative modes of transport specifically other than Road Freight for almost everything other than local delivery; and developing and utilising world leading technologies for very quickly and safely transferring container and bulk loads between various modes of transportation.

Figure 1

Challenges – second top block, point 4 should read “Removing Barriers to the highly productive use of the Road, **Rail, Sea and Air** networks”,

For clarification, refer to **2.2 Purpose: *The missing goal is for all modes of freight transport to work seamlessly.***

This figure 1 is fundamentally flawed because Road Freight is incorrectly assumed to be the prime (and only) freight transport mode, when in the longer term Rail Freight will be the prime for distances over 100 km and Road Freight will be the prime for freight transport under 100 km, even 50 km with quick and inexpensive freight transfer technologies.

The Rail Freight network has the capacity to carry far more freight in a comparative time that that transported by Road Freight over most of NSW. Rail Freight has a far less carbon footprint than road comparable load freight weight and volume, so the diesel fuel costs per comparative load is far less (far more efficient) and therefore far less damaging to our national balance of payments (BoP) than Road Freight costs NSW.

The Meaning of Efficiency

The word “efficient” is used several times in this figure, but this word has several meanings that are conspicuously misquoted.

In physics: “efficiency” is the rating of energy out, over energy in. The nearer the figure is to unity, the higher the efficiency.

In business: “efficiency” is the rating of profit out, over expenses in. (the greater the figure the greater the profit). A highly efficient business would have very little overhead and a rather large sales income; and/or have just the Management / Board and extremely few paid workers.

Note that with almost all companies; contractors and consultants are not employed for a couple of days per year so that the (USA contorted) accounting books will show

that these people are not counted as staff, deceitfully making the company look highly “efficient”.

In economics “efficiency” is the count of people employed compared to the total population? In this case a high efficiency means that a very small amount of the population is not employed. This definition is effectively in total opposition to that of business efficiency, but somewhat aligns with physics efficiency.

The over-riding problem is that in this case, transport is an infrastructure service that the NSW government is trying to have run and operated as a commercial business. This is an extremely awkward economic match because the business strategies of infrastructures and competitive businesses are diametrically opposite to each other³.

Figure 2 – NSW Transport Planning Framework

This figure is a matrix but there are massive omissions in the matrix that are conspicuous by their absence.

This figure needs a total restructure to include the **massive chunks of missing strategic plans**.

The **Integrated Modal Strategies** are primarily to do with **passenger transport** and as such are not primary to the Freight Strategy, so they can be put on one side for the meanwhile.

The **Sydney Transport Plans** are in reality the **Sydney Basin Region** as such the heading of the **Sydney Basin Region** should be included under the **Regional Transport Areas**.

Now there are **11 Regions** (not 10): these all require **Corridor Strategies**, and **Access Strategies**, and **Freight and Port Strategies**. These three headings must each include sub-strategies for **Road, Rail and Air**; and include how and where these Freight Transport technologies quickly, inexpensively, and efficiently hold and transfer both Bulk and Container Freight between these freight transport technologies / facilities.

Regional Transport Area	Corridor Strategy	Access Strategy	Freight and Port Strategy
Sydney Basin			
Western			
Central West			
Murray – Murrumbidgee			
Southern			
New England			
Northern Rivers			
Hunter			
Mid-North Coast			
Central Coast			
Illawarra			

³ <http://www.moore.org.au/busn/02/Competitive%20Business%20and%20Infrastructure%20Business.pdf>

On the left of this figure is a grey area that really should be linked to each of the 11 regions and the strategy plan needs to address the four modes of freight transport with the adjoining interstate regions and their capital cities, and their ports. A grid, showing these Regional areas is shown below, and this grid has a number of blank cells for marking off as the details are fleshed out.

As these details are fleshed out, these details will spell out the prime interface points (road, rail, sea, air) that link with the adjoining regional areas, and these interface points then specify the paths of the various technology freight transport corridors through each regional area.

This rational and standardised framework would then clearly spell out what corridors are not in existence, and where these corridors need to be positioned and the priority of these corridors to minimise overall transport congestion.

Now that the corridors for the four modes of freight transport in all these regions have been identified and prioritised for development, the Access Strategy needs to be developed to articulate how and where the freight can be quickly and efficiently moved between transport technologies and/or stored for timely transport from multiple locations in each regional area. This includes warehousing and transport to and from factories, stores and farms, abattoirs, silos, stockpiles, mines etc.

The last part of the Regional Transport Strategy grid looks at what (Sea and Air) port facilities exist, or need to exist in each regional area so that freight can be quickly and efficiently transported to/from these ports, and transported to any of the other 11 areas (and to interstate regions).

The **Freight and Port Strategies** for each Region would then include **Interstate / International Strategies (Air and Sea), their Road Strategies, their Rail Strategies**, and most importantly, how and where these Freight Transport technologies quickly, inexpensively, and efficiently hold and transfer both Bulk and Container Freight between these technologies / facilities.

International Connectivity Plan	Road – Sea	Rail –Sea	Road – Air	Rail – Air
Sydney Basin				
Western				
Central West				
Murray – Murrumbidgee				
Southern				
New England				
Northern Rivers				
Hunter				
Mid-North Coast				
Central Coast				
Illawarra				

This is a simple and consistent matrix that requires inter-working strategies to be fleshed out and followed through.

When these grids are properly fleshed out, there will be strategies for physical corridors for Road, Rail, Air and Sea between every region to every region.

Proof of this grid being filled out (for Sydney alone) will be the realisation that there is no effective Freight Rail Corridor across the Sydney Basin connecting Campbelltown, Penrith, Richmond, Hornsby, Sutherland and Port Botany **for both Rail Freight and Road Freight on an even footing**.

Only when these Rail corridors across the Sydney Basin are signed, sealed and delivered will this Freight and Ports Strategy have any chance of being minimally functional.

2.4 Strategy Development

I am puzzled that a picture of commuter traffic, probably near Broadway in Sydney is shown – with its caption below. What the caption is really saying is that particularly in Sydney, in general people are using private commuter transport in preference to public transport. This Strategy paper is all about Freight Transport, but the accompanying picture does not show severely under-utilised freight rail facilities in the Sydney Basin.

Action Prioritisation

The Action prioritisation will come directly from the grid described above for all modes of freight transport – not just Road Freight, which this strategy paper seems to be very heavily favouring.

Targets and Measurement

If a true Total Quality Management (TQM) approach were to be implemented, then Key Performance Indicators (KPIs) would already be in place and be continually evolving.

Historically, KPIs developed under ISO 9002 Quality Management (which is rather different from TQM) are rigid and inflexible and rather lopsided to reflect bonus payment for what is effectively the minimum Quality performance. I would therefore very strongly recommend against going down the ISO 9002 Quality approach, but use TQM instead.

One of the prime opportunities of TQM is for the staff themselves (including the management) to choose their own KPIs and continuously improve the practices and techniques. This TQM process then causes the KPIs themselves to be continually raised as variation in all aspects of freight transport is decreased, safety is increased, incidents are reduced, and productivity continually increased.

Updating the Strategy Document

With TQM, this Strategy document would be continuously updated with small but discernable increments as Quality processes and practices are improved.

2.5 Strategic Action Areas Summary

While these strategic action areas are commendable, they seem to miss out on looking back at the grid, proposed (above) and initially identifying where the areas of all transport modes have missing infrastructure connection points, missing corridors and missing facilities; ***only then can a coordinated strategic action start to take place.***

These Actions and Tasks in the Freight and Ports Strategy are pitifully poorly thought through, because there is so much that has been blatantly omitted.

Action 1Aa Identify freight movements and network demand. The fundamental flaw here is that freight network movements will immediately favour the current highly used transport modes that are being used for all the wrong reasons.

If TQM had been applied, then this (freight movements) would have been done years ago and a wide range of diverse transport strategies would have already been in place to anticipate and resolve the future network demand over all transport technologies – not just the road network.

This is a classical case of a strategical task that is pitifully thin in being thought out:

Task 1A-5 Promote efficient movement of general Road Freight.

Where are the associated strategical tasks?

- Task 1A-6 Promote efficient movement of general Rail Freight.
- Task 1A-7 Promote efficient movement of general Sea Freight.
- Task 1A-8 Promote efficient movement of general Air Freight.

The term “Efficient”: **Does this mean** transported in a minimum of time, or, the least use of fuel per equivalent freight run, or, the least use of staff, or, the maximum profit possible, or the least collateral damage to the road / rail / airport / seaport / residential / farming / offices / motel / parklands / reserves infrastructure?

When developing a model for a network, the very first task is to identify the area (Region) where the freight will be transported through, then identify at the periphery of that region, the connections that link to other Regional areas. The next step is to identify the nodes in the Region where the freight is transposed from one transport technology to another transport technology.

Bulk and Container freight will be transferred between sea-freight, road-freight, rail-freight and air freight vehicles, **so there are six (6) permutations for each node in every region**. Each of these node transfer mechanisms have to be well-considered or the NSW Freights and Ports Strategy will be an absolute sham.

ACTION 1B Shift more freight movements to off-peak periods.

The fundamental problem with Action 1B is that freight movements should not be in any way affected by peak commuter traffic (be that by road, rail, air or sea) in the first case.

In reading through the short task list under Action 1B, it seems that this whole strategy is based on maximising Road Freight to and from sea shipping ports, when there are massive transfer efficiency gains and State overhead expenses that can be easily and rather inexpensively introduced by looking outside the very narrow minded and rather short-sighted Road/Sea scenario and include Rail Freight to and from Sea Freight/Cargo. Newcastle (Waratah) Rail / Sea port is a classical big scale success.

Task 1B-4 Identify and implement corridors for non-Road Freight transport technologies, so that peak (commuter traffic) periods do not delay freight transport.

Task 1B-5 Move Road Freight technologies to handle distances less than 50 km. (Prioritise Rail Freight for distances greater than 50 km.)

ACTION 1B is fundamentally flawed because it assumes that the majority of freight movements in NSW interfere with peak-commuter traffic (particularly in Sydney). This peak-commuter situation is only prevalent in the major cities and it affects road, rail and air in different ways.

ACTION 1C Develop a seamless interstate freight network, (for Shipping, Air, Rail and Road)

ACTION 1D Improve the productivities of the Rail, Air, Sea and Road freight networks.

Task 1D-0

Task 1D-5

ACTION 1E Maximise network capacity by reforming rail access

Task 1E-1 Conduct NSW Rail Access Review in all Regions (including the Sydney Basin), to identify where and how rail corridors can be established.

Task 1E-2 Identify the potential Bulk and Container storage facilities in every region, and ensure that each of these has an associated rail

Action Area 2 – Network Capacity

Task 2A-0 should read: Identify the current

Task 2A-1 should read: Establish and lock in Road, Rail, Sea and Air freight corridors.

Task 2E-0 Identify existing freight rail yards in the metropolitan areas of Sydney, Wollongong, Newcastle, and transform these into fast intermodal Rail – Road freight interchange terminals.

The response in this area is very far from complete because there are so many missing Actions and lists of Tasks that should be included the Freights and Ports Strategy document.

3 Freight Movements

Double the Volume in 20 years

The sub heading of “Double the Volume in 20 years” really means that there will be an exponential growth that by 20 years the volume will have doubled. Putting meaning this into more manageable terms, this means a nominal 3.52% annual growth on a compound rating.

With Figure 3 put into numbers, we get a much clearer picture of where the growth is and more importantly, which ports should be most affected by these growths. The graph in Figure 3 is missing a substantial amount of detail and it is shown here to show the real perspective:

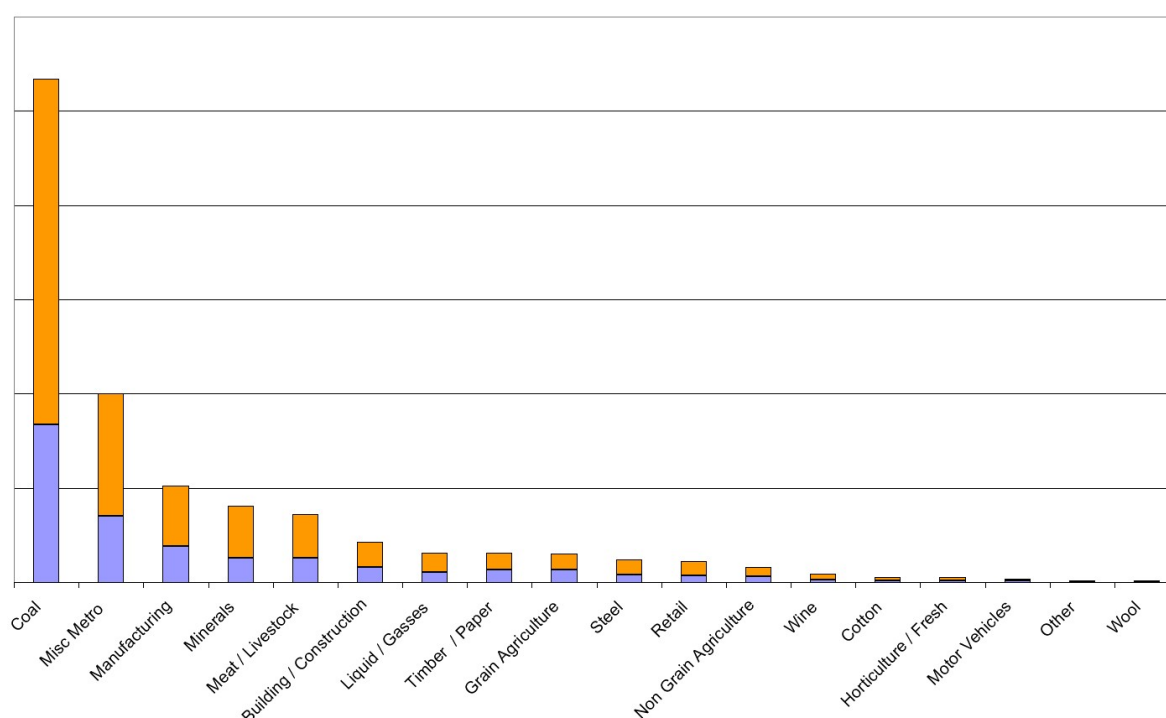


Figure 3a: Commodity Movement Growth as a Parito Chart

One of the standard tools in the Total Quality Management (TQM) is the Parito Chart where a list of causes or situations is charted as a bar chart in descending order.

This chart above shows that the anticipated growth in Coal (exports) is the big-ticket item for NSW, and that Coal absolutely dwarfs everything else. It therefore makes very good TQM sense to look at this big-ticket item and understand what constraints it has and how it affects other causes or situations on the Parito Chart.

Once this big-ticket item of Coal exports has been optimised for least overhead and best return for NSW, then the next big issue can be analysed, knowing that the current big-ticket item will have a maximum influence on all other causes and effects.

Annualised Growth Patterns

Figure 3 in the Strategy gave an outline of the anticipated growth in 20 years but this needs to be put into perspective of how much growth per year. Figure 3b below looks at the data provided in Figure 3a an annualised growth.

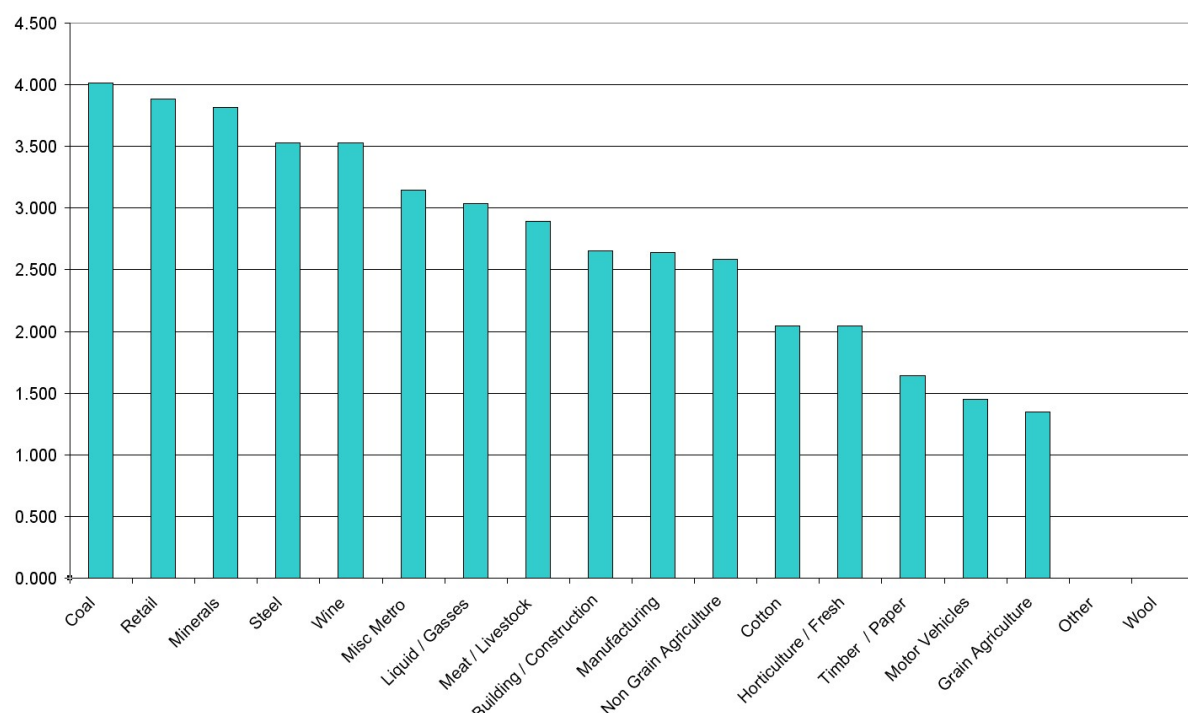


Figure 3b: Annualised Growth of Transport Goods

This figure above tells a very different story than the chart in Figure 3a. What this figure is saying is that the growth of transport to and from Ports will be growing at a nominal rate that is roughly in line with the population and business growth and that this is again roughly in line with inflation (or wage creep).

These two charts together show that with all this increased transport, there is no heading allocation for the transport of **diesel** fuel, which is the primary energy source for virtually all Road Freight and almost all Rail Freight not using electricity.

Surely the omission of diesel and Petrol fuel as a major transport item is not a mistake but has been deliberately omitted to covertly hide this major Bulk Transport Product.

National Fuel Imports and State Usage

Checking in a recent document⁴, Figure 4.1 from that document, shown below, gives an interesting view of the Australian fuel imports as of 2007/8 and 2008.9 on a State-by-State basis, proportion by proportion.

This chart is extremely interesting from another perspective in that NSW, Queensland, Victoria and WA have the lion's share of the petrol fuel imports, which parallels these populations. Diesel fuel usage per State tells another story, where the usage is split on transport and mining, and this usage is fairly well concealed.

⁴ <http://www.accc.gov.au/content/item.php?itemId=906872&nodeId=52d6cf13e460b11c0659f219d0c4c496&fn=Chapter%204.pdf>

Victoria is not a mining State, yet its diesel fuel usage proportions are similar to that in WA and NSW, SA and Tas. WA and Queensland are primarily mining States with long railroads between the mines and ports. NSW has short (diesel powered) mining railroads to its ports. Queensland has considerable (electrified) Rail Freight infrastructure between its coal mines and its ports.

Queensland should have a very similar diesel fuel usage pattern to that in WA, where most of the diesel fuel is used for mining operations and the remainder for Road Freight transport. Proportionally less diesel fuel is used in the WA Rail Freight operations than the other states, except Queensland and NT, which use proportionally more diesel fuel on outback and interstate Road Freight transport.

Immense amounts of rather expensive diesel fuel are being imported to feed the Road Freight industry. Nationally this is very poor Balance of Payments (BoP) economics for Australia. See pages 26-29 of this submission for fuel usage comparisons.

Chart 4.1 Petroleum products throughput by state: 2007-08 and 2008-09

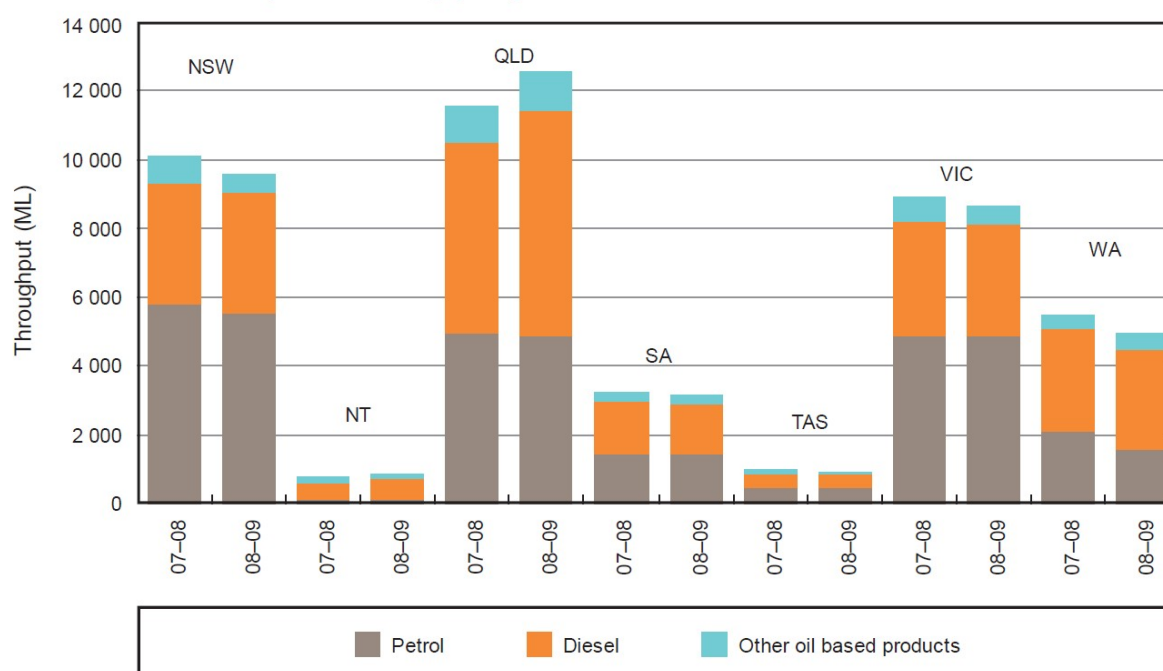


Figure 3c: Liquid Fuel effectively imported into Australia

The chart in Figure 3b tells us that these figures in figure 3c are quite accurate as the difference would at best be a few percent upwards, but consistent, as the Freight Regime really has not changed all that much in three to four years.

We now know that the typical diesel fuel imports into NSW are in the order of 3,500 Mega Litres per year, based on 2009, and that volume figure is destined to increase by about 3% annually. The problem is that the world is quickly running out of **diesel fuel**.

This future shortage of diesel fuel means diesel fuel will become exponentially more expensive – and this is a very important issue that will have a big negative impact on the managed growth on the NSW economy.

We have to find where we are using excessive diesel fuel and find practical ways to minimise the future use of diesel fuel, while maximising our freight transportation opportunities.

Fortunately one answer is staring us in the face from the chart in Figure 3c. Queensland, NSW and Victoria all have high values of annual diesel fuel usage compared with WA. The reason is that ***in WA most of the goods (in particular, iron ore) is transported by Rail Freight***, and Road Freight transports the remainder of all goods.

If we look a little closer, apart from the Rail Freight of Coal to the coast in both Queensland and NSW, then Road Freight basically transports almost all goods. Page 27 of this submission shows that Road Freight uses about 400% more diesel fuel per large-scale load than Rail Freight.

In NSW there is no quick Freight Rail corridor through the Sydney Basin from Campbelltown to Hornsby (see page 30), and in the Northern Corridor the Cowan Gorge is too steep (see page 36) for relatively fast Freight Rail transport, so Road Freight naturally passes through Sydney causing severe road congestion.

Consequently, a large amount of Road Freight vehicles pass through Sydney in their movements between Victoria and Queensland. When the Sydney Basin Corridor is put in service and the Cowan Gorge set back so that its gradient is practical for quick Freight Rail transport, then at least 80% of the current Road Freight passing through Sydney will move over to Rail Freight. Concurrently the diesel fuel usage in NSW, Queensland and Victoria previously used by Road Freight will drop by about 75% and the road damage due to heavy Road Freight will dramatically decrease.

It therefore stands to reason that the excessive use of Road Freight is costing NSW, Victoria and Queensland rather dearly in excessive road building and road maintenance and far higher consumer end prices, which naturally turn down the rest of these economies, leaving these Governments short of funds.

Optimising the NSW Coal Export

What has to be recognised here is that almost all the Coal in NSW now and in the future will come from the upper Hunter valley through to the southern New England area. The nearest and most direct port is through the Newcastle (Waratah) Port, not Port Botany (in southern Sydney). For Port Waratah and its feeds to work most effectively, this Port needs to work in total isolation of facilities in Sydney.

Open cut (Coal) mining is very naturally hungry for diesel fuel to power the large open cut transport machinery in these mines. Concurrently, the coal from these mines is by far most effectively transported to the nearest sea shipping port by bulk Rail Freight.

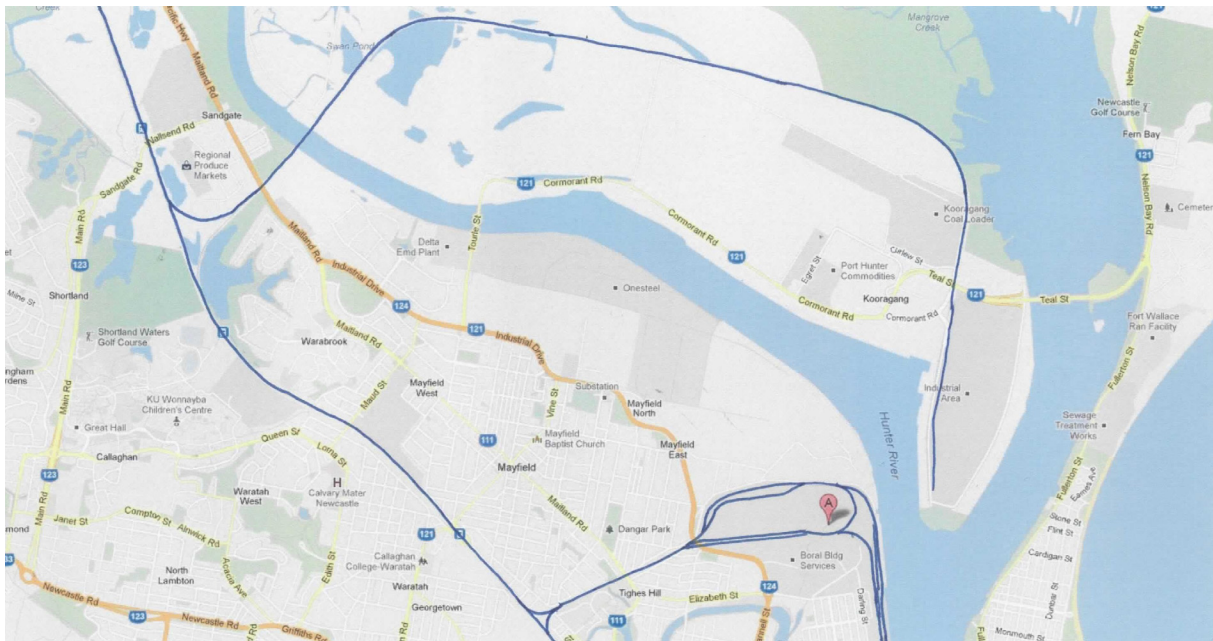
So, every open cut mine has a highly operational railhead that has a direct connection to the feeder Freight Rail lines for Bulk transporting the Coal to the sea shipping Port at Newcastle (Waratah). At the shipping port in Newcastle, the coal is

directly dumped from the Bulk Rail Freight cars into a conveyor belt that directly loads docked sea ships with Bulk Coal.

After a train has dumped all its coal, it is then shunted out and returns empty to the rail head at the mine it came from, and the cycle of loading coal then continues on a virtually 24 / 7 basis.



The picture above (again thanks to Google), shows the landscape of the Port Waratah and directly adjacent to this is a large fuel storage facility that could be very easily connected by rail, so that the synergy of diesel fuel, Bulk transport and rail facilities could be significantly optimised.



The map above (again thanks to Google) is a partial map of this Newcastle area showing the Freight Rail tracks in blue lines.

Recently (2012) in NSW, the refining facilities are closing down and being replaced with direct loading from Bulk Sea shipping from south Asia. It therefore makes excellent business sense on a Government scale to have a high proportion of Diesel fuel directly transferred at Newcastle to the Bulk storage facilities right at this Port.

As these open cut Coal mines already have a rail head directly into these mines, they too will also have Bulk diesel fuel storage facilities in these mines.

With a Bulk fuel car included at the end of the empty Bulk coal cars, then Bulk Diesel fuel can be directly transported from the large storage facility at the Newcastle (Waratah) Port into the open cut mines for direct transfer to the transport vehicles in these mines.

Currently there is a continuous convoy of Road Freight “B Double” vehicles hauling diesel fuel from the oil storage facilities in Kurnell, Matraville and Clyde in the south-eastern suburbs of Sydney. This convoy would easily exceed 60 deliveries to the open cut mines per day every day.

If there are currently in the order of 60 deliveries per day, then in 20 years time the projected number of deliveries (according to the Parito chart above) will more than double. So, the deliveries will be in the order of more than 120, Bulk Road Freight transport vehicle movements using “B Double” vehicles per day, every day.

The innovation of moving the diesel fuel reloading point to the Waratah fuel depot at Newcastle will minimise chronic road congestion in the Hunter valley, assist minimising Road Freight congestion through the South of Sydney (the M5 east tunnel and the M5, King Georges Road), Central and Western Sydney (Rookwood Road, Joseph Street, Silverwater Road, James Ruse Drive, Pennant Hills Road) and the Sydney Northern Basin’s Corridor (Pennant Hills Road, Pacific Highway, the M3).

The monetary damage caused by heavy Road Freight vehicles to these Sydney main highways is immense and getting more far expensive as these Road Freight vehicles get bigger and faster, and the roads get older. If the State government Strategy for Freights and Ports is serious, then it must change course as soon as possible to move as much Freight onto Rail facilities for all Freight movements more than about 100 km.

Freight Movements

In the Freights and Ports Strategy, Figures 4 and 5 show the freight movements in gross terms over a map that is ***only showing the Major Road Highways***. While these maps are showing the gross carriage of freight, there is no reason to show the Roads without also showing the Rail connectivity.

This Road Freight infrastructure omission is a blatant statement that those constructing this Strategy are deliberately ignoring Rail Freight transport.

Figure 5 shows that the Interstate gross movements include

41 M tonnes Victoria – Sydney,
6 M tonnes ACT – Sydney
28 M tonnes Queensland – Sydney
6 M tonnes SA – Sydney

Gustav Kirchoff’s⁵ Law⁶ for network (current) flows shows that these transport flow figures simply do not tally unless the sink of all this is Sydney – Sea Shipping = 81 M tonnes pa.

⁵ http://en.wikipedia.org/wiki/Gustav_Kirchhoff

⁶ http://www.electronics-tutorials.ws/dccircuits/dcp_4.html

Considering that a typical 20' Equivalent Unit (TEU) Container would carry about 25 tonnes of Freight⁷, then for 1 M tonne, this is 40,000 containers per 1 M tonne, so for 81 M tonnes this is 3,240,000 containers per year.

My reconstruction of this network flow indicates that a sizable proportion of the 6 M tonnes from the ACT is largely SA freight, the 28 M tonnes from Queensland would be split roughly 50/50 with NSW and Victoria, and the 41 M tonnes with Victoria would be roughly split 50/50 with Queensland.

So, at least 16 M tonnes pa of Road Freight is destined to travel between Queensland and Victoria, via Sydney. ***This distance is rather long haul, and the question really has to be asked as to why this Freight is being transported by Road and not Rail.***

*The answer is astounding simple in that there is **no Freight Rail corridor across the Sydney Basin connecting Campbelltown to Hornsby**.* This fundamental lack of a North – South Freight Rail corridor across Sydney is the prime reason why there is far too much Road Freight in NSW. This rail corridor is relatively easy to construct using a couple of tunnels about 4 km long, and connecting existing under-utilised rail track.

Considering that a typical container would carry about 25 tonnes of Freight, then for 1 M tonne, this is 40,000 containers per 1 M tonne. If 16 M tonnes were to be transported every year between Melbourne and Brisbane (via Sydney), then this would be a total of about 640,000 containers every year (if all the freight in this path is Containers).

Using Road Freight, this is about 1735 containers per day or about 876 B-Double Road Freight vehicles per day on the Melbourne – Sydney – Brisbane Highway run. About one every 50 seconds!

If this Freight were logically moved onto Rail Freight, then 100 containers would fit on a 50 car train, amounting to about 18 trains per day in total, about 9 trains in each direction per day, spaced out about 2.6 hours apart!

So, the Road highway is already in virtual Road Freight congestion for this link, and the Rail Freight highway is seriously under-utilised.

With improved Rail highway facilities, Rail Freight could very easily run on the hour and very inexpensively increase this Freight throughput by 130% to transport at least 4,600 containers daily between Melbourne – Sydney – Brisbane, leaving the roads far safer because the only Road Freight on these roads would be short haul deliveries.

Moving Freight on Road

Figure 7 paints an interesting picture in that the Hume Highway is shown as the largest amount of Freight per year, per highway at about 31 k tonnes pa rising to about 58 k tonnes pa in 20 years.

The data that is obviously missing is the ***Albury – Illawarra part of the Hume Highway***, which because of its omission must be assumed to have a very similar

⁷ <http://www.freightgate.com/resources/container.tet>

traffic density as the shown part of the Hume Highway north of the Illawarra Highway branch! *From personal observation, only a small proportion of Road Freight branches on / off at the Illawarra Highway.*

The F3 and the Pacific Highway is effectively the same Highway, but the difference is effectively Road Freight between Sydney and Newcastle (Hunter Valley Coal mining). Considering that about 40 to 60 “B Double” Road Freight vehicles per day are transporting diesel fuel from the south of Sydney to the Hunter Valley Coal mines on a daily basis, this difference of about 4,000 k tonnes pa (4 M tonnes) is quite accountable, totally understandable, totally unwarranted and totally unnecessary.

The Coal Port at Newcastle (Port Waratah) already has large fuel storage facilities adjacent to the Coal loader, and logistically is it logistical stupidity to use Road Freight to transfer immense amounts of diesel fuel by Road Freight from the south of Sydney and congest Sydney motorways, and congest the F3. This diesel fuel can be directly sea shipped by to Port Waratah from Asia, and then Bulk carried on the end of empty Coal trains as Rail Freight to the mining heads.

Considering the Road Freight traffic on the Hume Highway (near Sydney), and the Pacific Highway (near Queensland). From observation of the traffic via the M7, M5, M2 and Pennant Hills Road, it would be safe to correctly assume that at least 50% of this traffic is “through Sydney” traffic. So currently about 16,000 k tonnes (16 M tonnes) is shown on the Pacific Highway (near Qld), 32,000 k tonnes (32 M tonnes) is shown near Sydney (Hume Highway) and about 20 k tonnes (20 M tonnes) is shown on the F3.

In round figures at least 10,000 k tonnes (10 M tonnes) passes north/south straight through Sydney annually by Road Freight, and this figure is expected to rise to about 20,000 k tonnes (20 M tonnes) in 20 years. Assuming two 25 tonne containers per “B Double” Road Freight vehicle and this amounts to about 400,000 containers per year, or about 200,000 Road Freight passes per year, or about 1100 Road Freight vehicles per day, or about one “B Double” vehicle on the road every 45 seconds.

If the north-south Rail corridor was constructed in the Sydney Basin then all this Freight could be transported by Rail Freight instead of Road Freight, making the roads far safer with far less Road Freight vehicles passing through Sydney and the NSW coastal highways.

As a direct comparison, assuming that 100 containers would be on each Rail Freight train then for 400,000 pa containers this is a total of 4000 Rail Freight trains pa, or on a daily basis this is 11 Rail Freight trains per day, spaced at about two hours each making end transfers extremely efficient (expedient and quick), and using far less (imported) diesel fuel than before.

This strategy would very simply future proof NSW for greatly increased Freight traffic and substantially minimise the road congestion and air pollution caused by slower moving Road Freight vehicles in suburban areas.

In the Freights and Ports Strategy, Figure 8 is extremely interesting and timely in this submission as it shows the traffic throughput of the M5 tunnel, which coincidentally is the main road feeder for the Rail-locked (out) Port Botany shipping terminal. What

this figure neatly disguises is the average speeds if the traffic through the M5 – and in particular in the Tunnel at the east end of the M5.

The chart below in Figure 8a shows the almost hidden figures for average speed (Y axis) in the M5 compared to the amount of Road Freight traffic (X axis). What has to be realised is that when there are no Road Freight vehicles in the Sydney Harbour Tunnel, this traffic whizzes through at about 80 km/h almost all the time.

Taking this standard into the M5 tunnel there is a stark difference, where in Figure 8 of the Strategy, the Cyan car traffic markers are a total distraction of the cold hard facts that are clearly shown in Figure 8a of this submission, below.

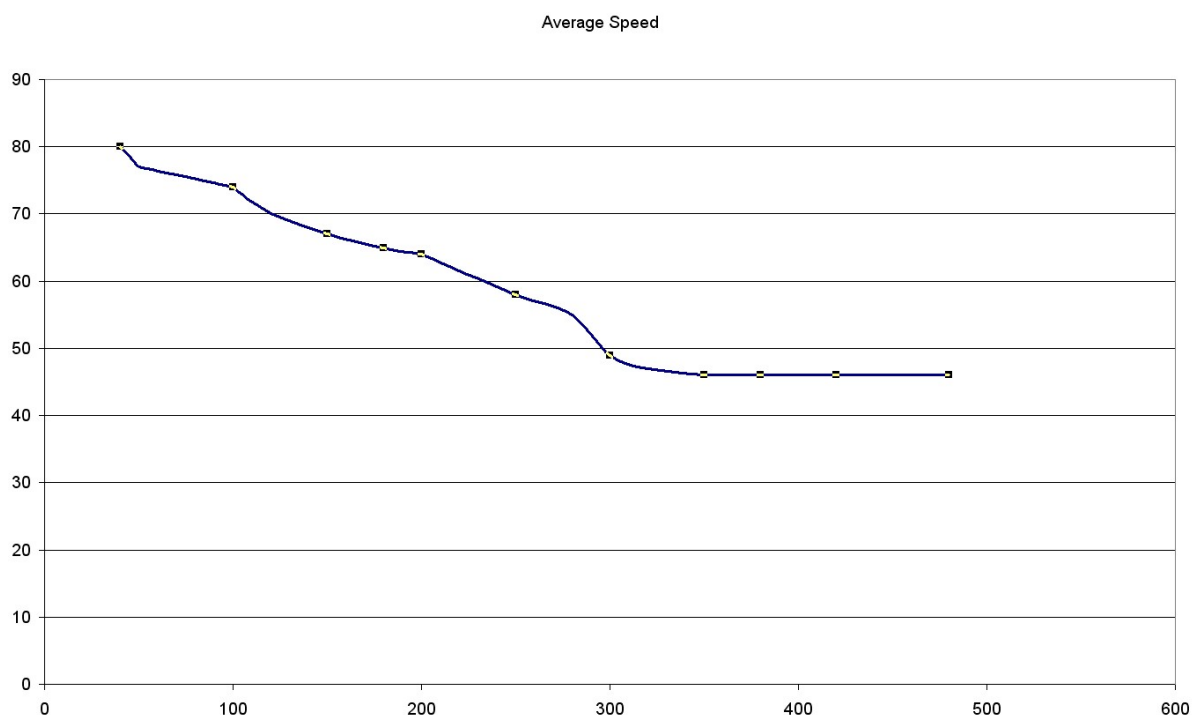


Figure 8a M5 Average Speed (Y axis) v Road Freight vehicle count (X axis)

As the number of Road Freight vehicles increases from about 50 per hour, the average speed is significantly reduced through the M5 tunnel because the climbs at both ends are rather significant, and Road Freight vehicles simply cannot haul their Freight at 80 km/h up these gradients; and the cars cannot overtake because the lanes are blocked.

This now clearly explains why the M5 traffic is so congested (because of slow and overloaded Road Freight vehicles), and why the M5 tunnel is so polluted – because these Road Freight vehicles are doing it tough getting up these gradients and they are using lots of diesel fuel doing this.

Widening the M5 will not make a significant improvement, no matter how much this costs, because the expected increase in Road Freight vehicles will fill this situation in a few years. If not, the extra space will be even more filled out with cars causing more road congestion, until the Road Freight vehicles increase their numbers bringing the whole situation back to worse than when a (doomed) proposed widening

strategy was implemented! Increasing the lanes is an unsustainable and very expensive “fix”.

Modernising the Road fleet is yet another doomed strategy that is extremely expensive for the carriers and for Australia because this will very heavily impact on Australia's Balance of Payments.

Moving Freight on Rail

The core Freight Transport problem facing the NSW Government is the pitifully poorly constructed Rail Freight network through Sydney's suburbs. This network has not really been changed since about 1940, if not before, and substantial changes are urgently required to streamline the corridors – even if it means removing rows of houses, home units and roads to get virtually straight corridors so Rail Freight can move quickly and quietly through the Sydney Basin and properly connect to Port Botany

In the Strategy, Figure 9 shows an interesting set of projections that are dwarfed by the Hunter Valley. If the Hunter Valley component were to be removed and this figure then compared with Figure 9, then a real comparison shows a very different story, as follows:

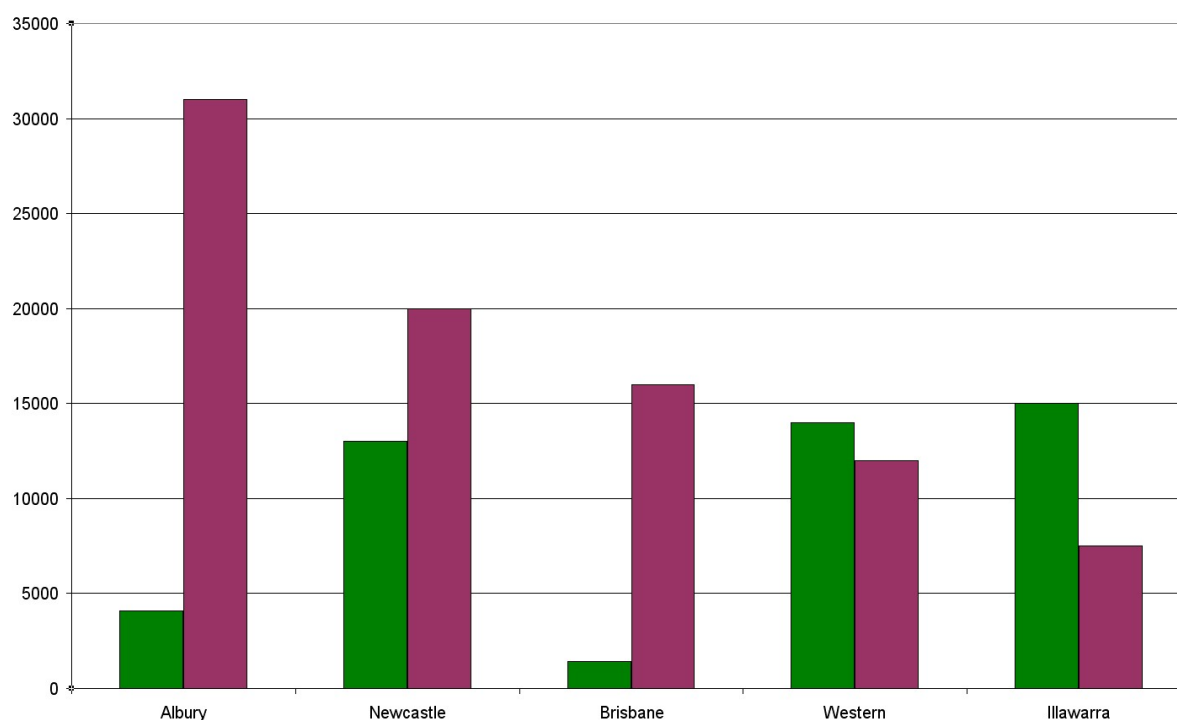


Figure 9a Road and Rail Freight comparison by Haulage and Highway

The Western line is interesting in that neither the Great Western Highway, nor the Western line are anything to be proud about, and the haulage by both Road and Rail Freight is about equal. A new, virtually straight, low gradient Rail Freight line is desperately required from Sydney to Parkes

The Albury and Brisbane reading are rather pertinent in that in both cases the amount of Road Freight far exceeds that by Rail Freight in both case, and again questions have to be answered as to why?

The answer is rather simple in that it is impossible to quickly pass Rail Freight through the Sydney Basin, and the shortest / quickest Road Freight path is via Sydney. So, almost all freight on the eastern coast goes via Road; and for all the wrong reasons!

Figure 10 in the Strategy clearly shows that it is absolutely imperative that excellent Rail Freight access with Port Botany must be extremely highly prioritised, and acted on as a matter of urgency, especially if the Freight industry and the NSW economy are to be future-proofed.

A recent earlier submission⁸ to Transport NSW showed how a few relatively short rail bridges and some innovative thinking would create the urgent Rail Freight connectivity to Port Botany so that the Illawarra and Main South lines would be directly connected, concurrently freeing up the Road Freight congestion in the M5 and its associated tunnel.

Another recent submission⁹ also showed how with the construction of two 4 km tunnels (Guildford – Rosehill, and Carlingford – Pennant Hills), would provide an almost straight line Rail Freight bypass / corridor north / south for the Sydney Basin, allowing most interstate Freight to be transported by Rail Freight instead of Road Freight, almost totally freeing up the Hume Highway, the Pacific Highway, the M3, the M7, the M2 and Pennant Hills Road.

A third recent submission¹⁰ outlined the construction of a far more gentle gradient from Hornsby to the Hawkesbury River, so that Rail Freight could transit this section without the requirement of extra engines to pull the loads up the current much steeper gradient.

These three Capital Works need to be programmed in and scheduled as a matter of urgency to future proof NSW Freight operations and therefore comfortably manage the anticipated Freight growth with the NSW economy.

4 Partnerships between Government and Industry

Nil response.

⁸ <http://www.moore.org.au/senh/2012/20120910%20Connecting%20Port%20Botany.pdf>

⁹ <http://www.moore.org.au/senh/2012/20120809%20Sydney%20Basin%20Freight%20Rail%20Link.pdf>

¹⁰ <http://www.moore.org.au/senh/2012/20121030%20Northern%20Sydney%20Corridor.pdf>

5 Strategic Action Areas

Action 1F: Improve Efficiency of Landside Cargo Transport

The Rail Freight network in Sydney has some major structural problems because it was engineered several decades ago when trains were much shorter and loads were much lighter, and mechanical aids for assisting the loading and unloading of containers was unheard of – as too were containers.

As a direct consequence there are many very tight turning arcs that preclude the quick transport of Rail Freight through the Sydney Basin.

Road Freight is already running in congestion mode as well demonstrated by the M5 average speeds in the Strategy paper (Page 25, Figure 8), and in Figure 8a in this submission showing that as more Road Freight vehicles use the M5 tunnel they simply cannot keep their speeds up near 80 km/h because of their loads. Further, the pollution caused by these Road Freight vehicles is far too high to be acceptable. So, the only practical alternative for land-based freight movements is to re-engineer the Rail Freight infrastructure, starting with fixing problems in the Sydney Basin¹¹.

The Freights and Ports Strategy paper is particularly lacking plausible evidence to demonstrate that that Road Freight traffic / vehicles are far more efficient and faster than Rail Freight. All calculations that I have done have shown that there is a huge upside in the better (more) utilisation of Rail Freight, and the chart on page 26 of the Strategy report (Figure 9) shows just show much Rail Freight techniques can, and do, clearly outstrip the best practices used by Road Freight – yet the NSW Government keeps on blindly pushing the Road Freight buttons for all the wrong reasons!

¹¹ <http://www.moore.org.au/senh/2012/20120809%20Sydney%20Basin%20Freight%20Rail%20Link.pdf>

Comparing Fuel and Response Efficiency of Road Freight and Rail Freight

In this comparison, any distance greater than 100 km is considered long haul. *(I am fully aware that the term “long haul” has specifically been doctored in Australia so that the adjacent interstate capitals: Brisbane, Sydney, Melbourne, Adelaide cannot be considered as “Long Haul”!)*

As a straight example, these efficiency comparison tests were calculated over the nominal distance of 959 km, which is a weighted average of the nominal distance between Brisbane – Sydney (918 km), Sydney – Melbourne (877 km), and Melbourne – Adelaide (739 km), Adelaide – Sydney (1408 km), and Melbourne – Brisbane (1709 km inland, or 1778 via Sydney). The common load was 1000 standard 20 TEU (20' Equivalent Unit) containers weighing approximately 25 tonne including their load) over the common distance of 959 km.

By Road Freight, each “B Double” Road Freight vehicle can carry two (25 tonne) containers, and the number of “B Double” vehicles will be $1000 / 2 = 500$ vehicles.

The total distance travelled will be nominally $959 * 500 = 479,500$ km (one way).

Assume say 20 litres per 100 km (at 100 km/h) = 95,900 litres of Diesel fuel.

By Rail Freight, assume that each train can carry 42 cars and each car can carry 2 containers = 84 containers per train.

So, total number of trains required = $1000 / 84 = 12$ trains

The total distance travelled will be nominally $959 * 12 = 11,508$ km (one way, in the same time, at the same speed).

Assume¹² 200 litres per 100 km (at 100 km/h) = 23,016 litres of diesel fuel.

So, the diesel Rail Freight train covers the same 959 km distance in the same time, traverses only 2.4% of the total distance used by the Road Freight vehicles (comparatively far less overhead and road maintenance), and in total, the Rail Freight trains use only 24% of the diesel fuel used by the Road Freight vehicles to do the identical task over the identical distance, saving about 72,884 litres of diesel fuel.

Rail Freight over a nominal 959 km distance is far more efficient in every respect than Road Freight.

+++++

If the Rail lines were straightened out using the mechanical aids used in open cut mining, then the Rail Freight trains could run much faster. Also, the wind drag of a Rail Freight train is considerably lower when compared with a B Double Road Freight vehicle. Also the wheel drag is substantially lower on a Rail Freight train than with a Road Freight train.

+++++

¹² <http://cs.trains.com/trn/f/111/t/64572.aspx>

Now consider the Rail Freight is travelling at 150 km/h on average instead of 100 km/h as per the earlier example.

Fuel usage, will go up to 2.25 times (due to wind and wheel drag) what it was at 100 km/h, then rated as 200 litres per hour.

As the distance is 959 km the time taken is 9.59 hours at 100 km/h, so at 150 km/h average, the time taken will be 6.39 hours.

So the total diesel fuel consumption will be $200 * 2.25 * 6.39 * 12 = 34,524$ litres.

Road Freight for the equivalent transfer of 1000 containers the Road Freight ran at 100 km/h (max safe limit), took 9.69 hours to start delivery, and consumed a total of 95,900 litres of diesel fuel.

Rail Freight started to deliver in 6.39 hours, (33 % faster or 3.2 hours less time), used 34,524 litres of diesel fuel (64% less diesel fuel used than by the Road Freight), saving total of 61,676 litres of diesel fuel to perform the same task but much faster.

+++++

Now consider the Rail Freight is travelling at 200 km/h on average instead of 100 km/h as per the earlier example.

Fuel usage will go up to four (4) times, due to greatly increased wind and wheel drag than what it was at 100 km/h; then rated as 200 litres per hour.

As the distance is 959 km the time taken is 9.59 hours at 100 km/h, so at 200 km/h average, the time taken will be 4.8 hours.

So the total fuel consumption will be $200 * 4 * 4.8 * 12 = 46,080$ litres.

Compared to Road Freight for the equivalent transfer of 1000 containers the Road Freight ran at 100 km/h, took 9.59 hours to start delivery, and consumed a total of 95,900 litres of diesel fuel.

Rail Freight started to deliver in 4.8 hours, (50 % faster or 4.8 hours less time), used 46,080 litres of diesel fuel (48% less diesel fuel used than by the Road Freight), saving total of 49,820 litres of diesel fuel to perform the same task but much faster.

+++++

So now we have definitive proof that the diesel Rail Freight train will comparatively use far less diesel fuel than the equivalent number of B Double Road Vehicles required to move an equivalent large-scale number of containers.

Further, if this were to be taken to the next level then the Freight train could travel significantly faster, (even more than 200 km/h) and still use far less diesel fuel than the Road Freight vehicles equivalent at 100 km/h. ***With aerodynamic shaping of the Freight Rail-based engine body, the wind drag could again be very significantly reduced, radically increasing the efficiency of Freight Rail transport in Australia.***

Further, if these lines were electrified (at 25 kV AC) then the Freight train could run at more than 200 km/h and not use any (rather expensive) diesel fuel at all, and simply use the electricity from the NSW State operated power generators.

In the above case of the 959 km distance the Rail Freight option came out with a very substantial efficiency rating that frankly made me rather concerned that the people that wrote the ***Freights and Ports Strategy paper had not done any homework at all to compare the relative efficiencies between Rail and Road transport modes.***

For Road Freight transport the condition was based on a standard highway that is predominantly in NSW, including the city parts, and for the Rail Freight transport, the condition was likewise set on a standard Railway highway in NSW including the city parts.

Transport Infrastructure	Time Taken	Time Saving	Diesel Fuel Used	Saved Diesel Fuel
Road (100 km/h)	9.59 Hours	0.00 hours	95,900 litres	0 litres
Rail (100 km/h)	9.59 Hours	0.00 Hours	23,016 litres	72,884 litres
Rail (150 km/h)	6.39 Hours	3.20 Hours	34,524 litres	61,676 litres
Rail (200 km/h)	4.80 Hours	4.80 Hours	46,080 litres	49,820 litres

At a nominal 100 km/h speed (the notional maximum safe limit for B Doubles and B Trebles on roads), and assuming that the NSW rail maintenance standards is such that Rail Freight can safely travel at 100 km/h on average, the following figures were shown above. The option was then to increase the Rail Freight speed because the fuel saved was about 75% using Rail instead of Road, and in the assumption that rail speeds can be significantly increased with a little engineering and the use of mechanical aids to improve the track standards.

The table above clearly shows that Rail Freight uses significantly less diesel fuel than Road Freight to transfer the equivalent consignment, and that when the rail speed is increased to 200 km/h average, the amount of diesel fuel is still less than half that used by a fleet of Road Freight vehicles transporting the identical assignment.

Putting this case another way: In every situation where more than about 10 containers are to be transported from one intermodal terminal / port to another intermodal terminal / port over a distance of about 100 km or more, Rail Freight is more cost effective in terms of fuel expense and / or in time delivery in every case.

Distance (km)	Average Speed	Saved Time (min)	\$\$ Saved Fuel	\$ Saved / Container
100	100	0	\$611,333	\$611
100	150	20	\$450,333	\$450
100	200	30	\$289,333	\$289

A little very straightforward spreadsheet work quickly shows that even with runs where the nominal distance is only 100 km (and 200 km), with Rail Freight the savings over Road Freight costs are enormous.

Distance (km)	Average Speed	Saved Time (min)	\$\$ Saved Fuel	\$ Saved / Container
200	100	0	\$1,222,667	\$1,223
200	150	40	\$900,667	\$901
200	200	60	\$578,667	\$579

In the past two years, the price of diesel fuel has increased¹³ from about \$1.20 to about \$1.38 per litre, or about 7.23% pa on a compound basis. If this is extrapolated over 10 years then the price of diesel fuel will double, over 20 years the price of diesel fuel will quadruple (x 4), and this rate of price increase is well above Australia's inflation rate of about 3.2% pa.

Put more bluntly, if we in NSW keep using Road Freight as our main transport medium, then our NSW State and private business finances will be driven well into heavy and continual international debit, until well after we radically change our Freight transportation methods to minimise the use of diesel fuel for the vast majority of our transport requirements. This is Government business suicide!

One strategy to minimise the exceedingly high amount of diesel fuel is to move the majority of our longer distance transport onto Rail with standardised Bulk and Container train equipment. The table above shows tremendous savings of diesel fuel and a far faster delivery mechanism.

These definitive findings throw extremely serious concerns that the Freights and Ports Strategy 2012 has not been thought out beyond the simplistic basics of increasing Road Freight facilities for Ports.

¹³ http://www.aip.com.au/pricing/facts/Weekly_Diesel_Prices_Report.htm

Construct a Freight Rail Bypass for the Sydney Basin

In September 2012, I produced a submission¹⁴ to extend the Carlingford line through to Pennant Hills with an almost straight 4 km tunnel passing under the M2, Carlingford and Beecroft.

The more recent road-based proposal to build a road tunnel highway off the southern end of the **F3 Freeway connecting Sydney to the north** is yet **another futile and expensive attempt to "fix" Road Freight congestion in the northern end of Sydney** (Hornsby / Wahroonga the Pacific Highway and Pennant Hills Road) as it addresses the symptom, not the problem.

My proposal in this submission:

- **Joins three rather under-utilised heavy rail track sections with two almost straight 4 km tunnels**
- **Frees-up the Enfield / Strathfield - Auburn Network and Switch congestion**
- **Creates an almost straight path rail freeway across the Sydney basin between Campbelltown to Hornsby**
- **Takes less than 25 minutes to traverse this 37 km of Rail track between Casula and Hornsby**
- **Opens the Australian east coast for relatively high-speed "Quick Freight Rail" facilities.**
- **De-congests Pennant Hills Road, the F3, the Hume Highway and the Pacific Highway of long distance road freight vehicles.**
- **Provides the missing link rail commuter "Outer Northern" loop Hornsby - Pennant Hills - Carlingford - Telopea - Dundas - Rose Hill - Clyde - Lidcombe - Strathfield - Central - North Sydney - St Leonard's - Chatswood - Gordon - Hornsby.**
- **De-congests Epping station so that the recently approved North-West Rail Link can comfortably connect with Epping station from Strathfield and from Chatswood.**

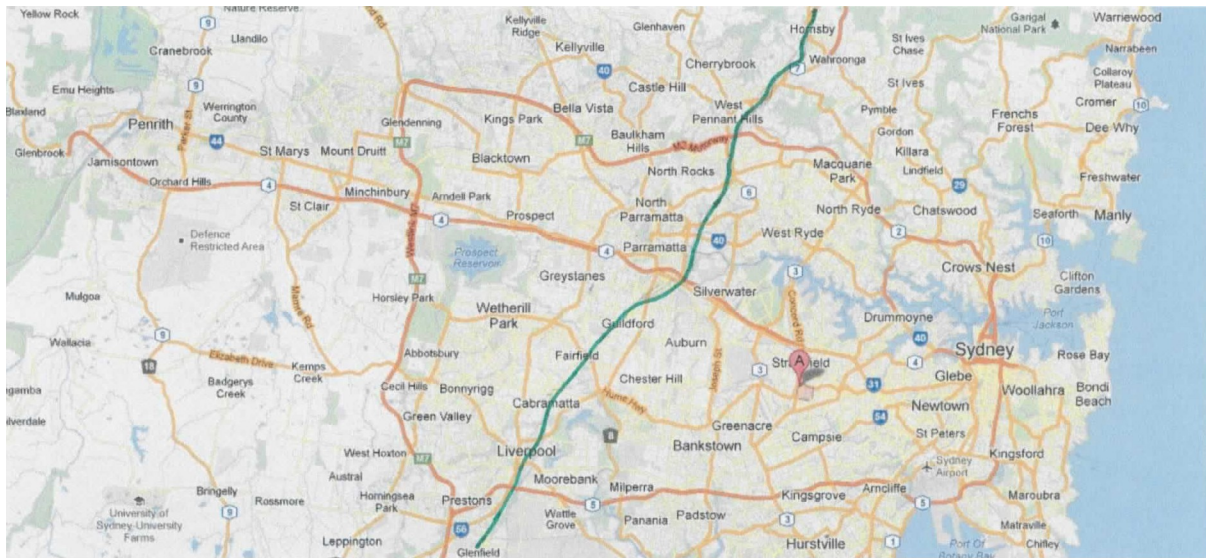
This submission was focussed on providing a Rail Freight bypass of the Sydney Basin from Campbelltown to Hornsby in an almost straight path so that Rail Freight could traverse the Sydney basin in less than 30 minutes.

The GREEN LINE in the below picture shows the proposed Freight Rail corridor that connects in a virtually straight line from Campbelltown to Hornsby, ***totally bypassing the Sydney traffic.***

In that submission a second almost straight 4 km tunnel was proposed to go from Guildford to Rosehill and link into the then proposed extended Carlingford line. The Rail Freight would then pass through Campbelltown, Liverpool, Guildford, Rosehill, Carlingford, Pennant Hills and Hornsby, without the need to stop anywhere on the way through.

¹⁴ <http://www.moore.org.au/senh/2012/20120809%20Sydney%20Basin%20Freight%20Rail%20Link.pdf>

The purpose of this submission was to take long haul Road Freight off the NSW roads, particularly the Hume Highway, the M7, M2, Pennant Hills Road, the F3 and the Pacific Highway, so that these roads would be far safer, and the damage to these main roads caused by heavy vehicles could be minimised.



Even then, Port Botany is not efficiently and effectively connected with the Northern Corridor because the Rail Freight connection via the west of Strathfield and the Epping line has far too many tight bends in it, and in the future, the Epping line and Station will become a major Commuter station

The synergy of this proposal was in a following submission¹⁵ (on page 10) that proposed a much shorter tunnel from Rosehill under Parramatta Road to north of Clyburn station to connect into the extended Carlingford line through to Sydney's northern Corridor.

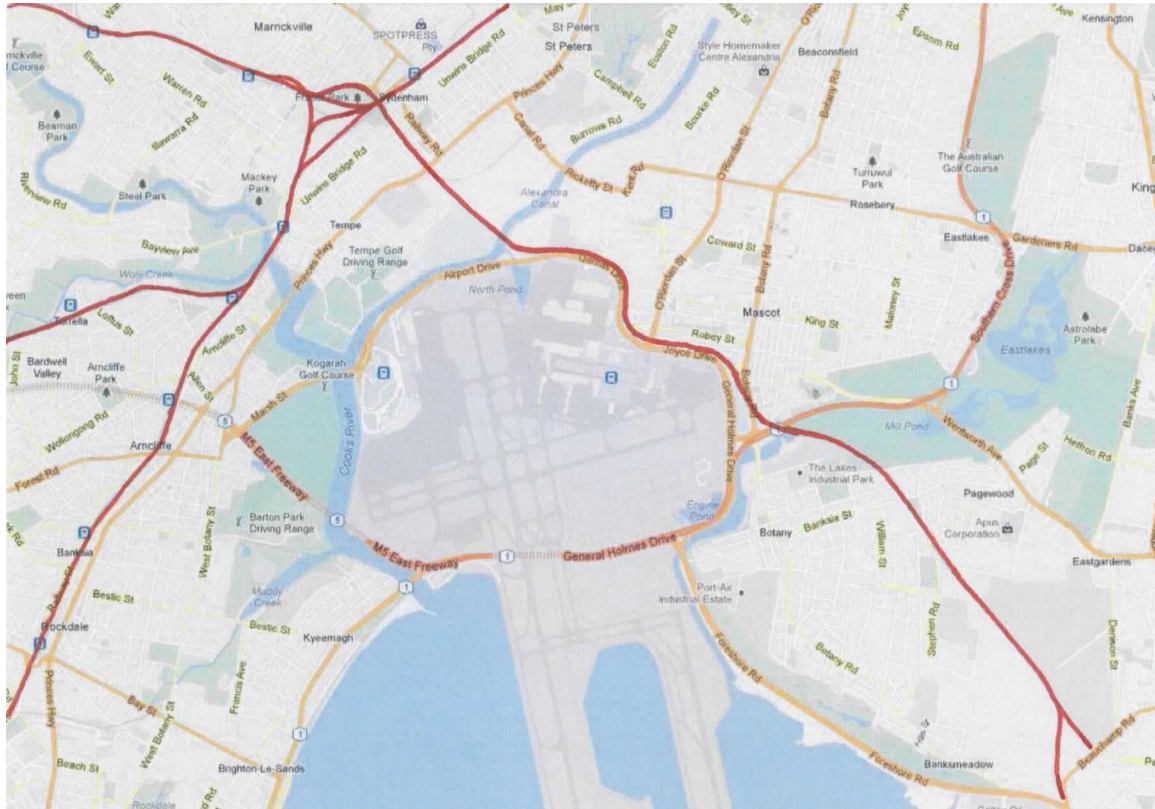
The efficiency advantages of this are in that not only is Parramatta Road free of a frustrating level crossing, which makes the Road Commuter and Road Freight traffic flow that much smoother and more quickly, but this Freight (and Commuter) Rail tunnel would then connect directly onto the Sydney Basin Bypass Corridor, and that connects directly into the Northern Corridor.

¹⁵ <http://www.moore.org.au/senh/2012/20120914%20Sydney%20Commuter%20Rail%20Missing%20Links.pdf>

Connect Port Botany with Quick Rail Freight Infrastructure

In the Strategy paper, according to SPC30 Year Vision, the use of Containers is expected to increase at between 5% and 8% pa over the next 25 years. This figure is far greater than what the Strategy was predicting at nominally 100% in 10 years. 5% pa over 10 years is 163% and 8% over 10 years is a growth of 216%.

So, simply increasing the volume of Road Freight for these Ports is impractical as they and their immediate surrounds are already in (road) congestion.



The prime reason why Rail Freight and Port Botany are currently a bad combination is that the Freight Rail connection to Port Botany is via the extreme south end of Mascot, where the Freight Rail line is single, has three very tight bends and the Freight Rail Line does not have direct corridors to the Illawarra line, the Main South line, the Western Line nor the Northern (corridor) line.

Port Botany is effectively rail isolated so much that even if Rail Freight trains were available to load and unload at Port Botany they cannot because the single very low transit rail line totally prevents this immense efficiency from happening.

The picture above gives an overview in RED LINES of the current Freight Rail paths connecting Port Botany and the south side of Sydney. This Freight Rail line was constructed as late as 1979 and included these tight bends, and is single line working. It seems that this Rail Freight line was designed to fail and leave the Road Freight to continue to be in heavy road network congestion.

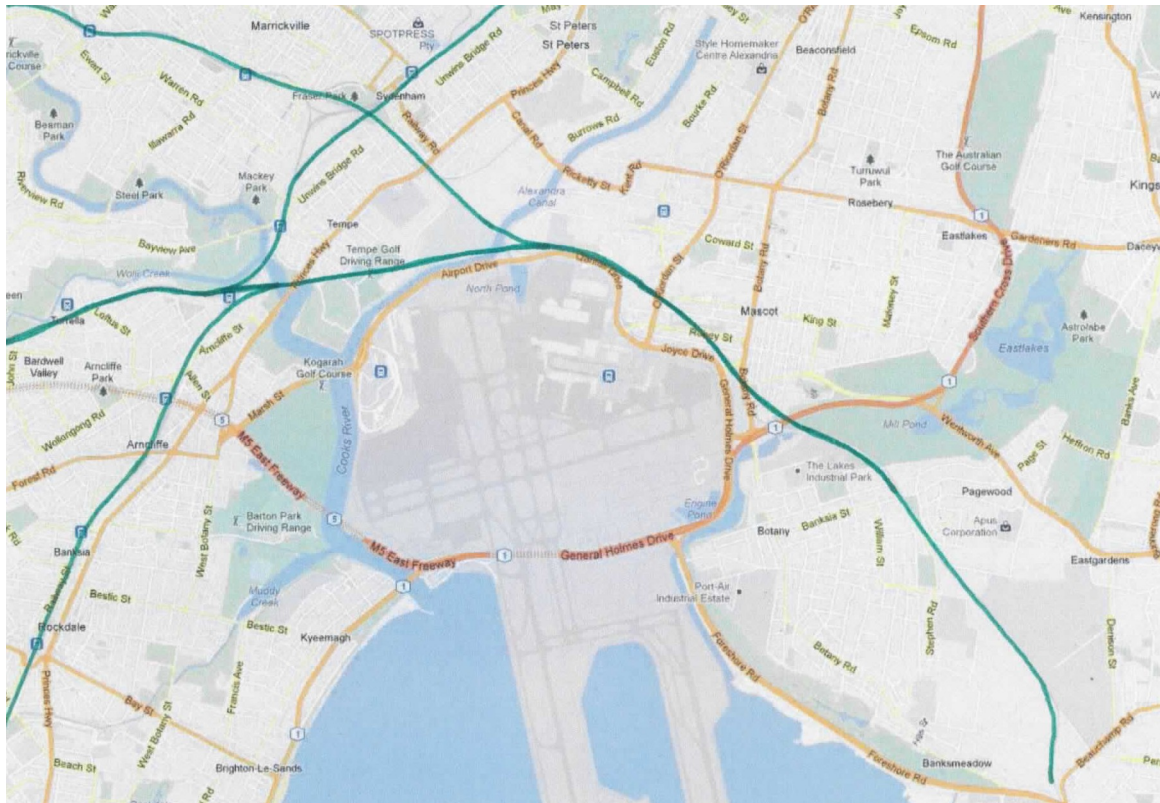
As recently as April 2012, Federal Government approval was given¹⁶ to restructure the Rail at Port Botany so that upwards of 600,000 containers can be moved directly

¹⁶ <http://www.artc.com.au/Article/Detail.aspx?p=6&np=4&id=358>

to Enfield Marshalling yards every year. Although planned changes to the line from Port Botany are on the table to lift its capacity by 30%¹⁷ what is really needed is a total rethink of the current Rail Freight structure in Sydney, and in particularly linking Port Botany with a quick, dual line Freight Rail connectivity arrangement.

I have already produced a submission¹⁸ in September 2012 that would inexpensively connect Port Botany by quick Rail Freight with a double line, permitting duplex operating (concurrent to and from movements) right into the Port Botany marshalling area.

This submission is outlined by the overview map in the below picture.



This innovative plan shown in GREEN LINES smooths out the tight bends at the south of Mascot and makes this into a Freight Rail bridge that passes over the southern part of Mascot (which is almost all open land, a few light industrial buildings and a few houses).

The proposed Freight Rail path then takes out some of the bend just north of Airport Drive and cuts straight through Frazer Park, under the Rail lines coming from Sydenham parallel to Unwins Bridge Road.

This Freight Rail path from Port Botany is now a quick connection through to Enfield, and beyond towards the **Western Corridor** and **Northern Corridors**. With this part of the proposed Rail Freight link in place, ***this could easily and quickly double the back-handling capability of Port Botany.***

¹⁷ http://www.minister.infrastructure.gov.au/aa/releases/2012/april/aa053_2012.aspx

¹⁸ <http://www.moore.org.au/senh/2012/20120910%20Connecting%20Port%20Botany.pdf>

The proposal was also focussed on providing a new branch near Airport Drive that goes West, over the Princes Highway and Cooks River. The importance of this link cannot be underestimated!

This Freight Rail link from Port Botany / Mascot then joins the East Hills line at Wolli Creek and from there, the Freight Rail line is almost straight all the way to Holsworthy, where it then joins the **Main South line (Southern Corridor)** and continues through Campbelltown.

From Port Botany, just before Wolli Creek, the proposed Freight Rail line would also have another junction that connects directly with the **Illawarra line** down the South Coast (**South Coast Corridor**).

Running with this proposed Freight Rail infrastructure would dramatically improve the efficiency of the Landside Cargo (Freight).

These proposed double Freight Rail tracks have no tight bends and therefore would provide quick and quiet Rail Freight infrastructure connectivity, directly connecting Port Botany with the Illawarra (South Coast Corridor), the Southern Main Line (Southern Corridor), and the Enfield Freight Marshalling yards, and far more than double the Freight transfer capacity at Port Botany.

By having this quick Rail Freight interface with the Port Botany shipping terminal, the perceived unreliability issues would be non-existent and this infrastructure could then easily provide an almost continuous supply of Freight Rail cars to transport empty containers as required from the Enfield Marshalling yards to anywhere in the metropolitan area.

Connect Enfield with an Efficient Freight link to the Northern Corridor

Currently, the Freight Rail link from Enfield Marshalling Yards to Hornsby is via Rookwood, Lidcombe. (West) Strathfield, then up the Epping Line through Beecroft to Hornsby through to Gosford and beyond.

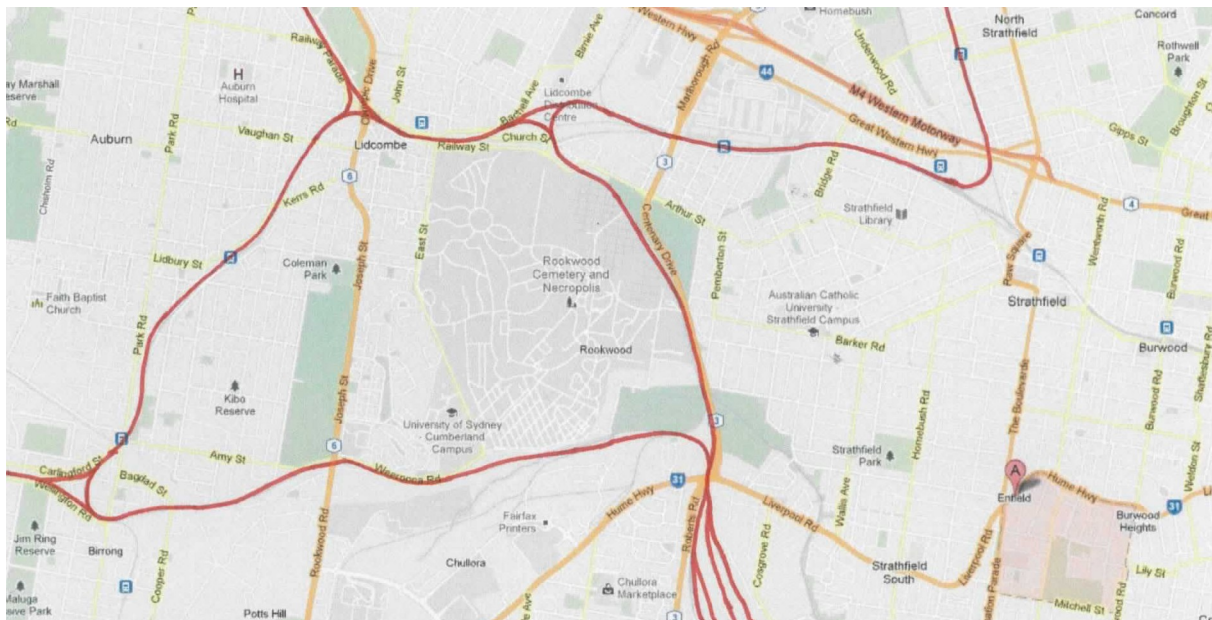
This Rail Freight path has very tight bends in Rookwood – Lidcombe, West of Strathfield Station, and at Cheltenham – Beecroft, making the quick transport of Rail Freight by this path all but impossible, and very inefficient.

It is imperative that either the tight bends are removed from an alternative path be used so that Rail Freight can be moved quickly and efficiently to and from Enfield Marshalling yards to and through Sydney's Northern Corridor.

The picture below shows the Freight Rail lines from Enfield Marshalling yards near the bottom and the three exits. The existing Freight Rail tracks are indicated as red lines.

The exit on the left goes west and eventually joins the **Main South Line** between Canley Vale and Cabramatta. The problem here is that this Freight Rail track goes through a very tight turn just north of Enfield, crippling the possible efficiency of this route. The alternative route is north of Rookwood cemetery, then south, west of Joseph Street to join just before Sefton station. The pinch north of Rookwood cemetery and the relative tight turn just west of Lidcombe station are not helpful.

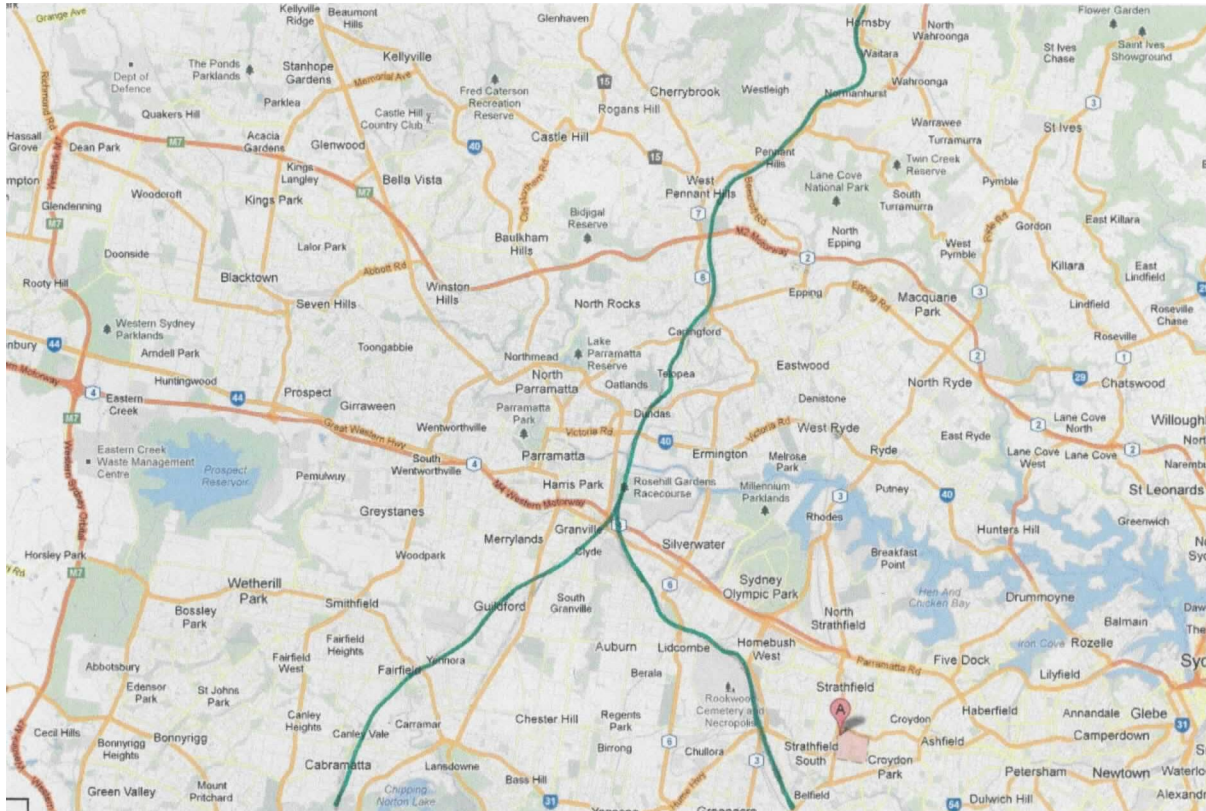
The exit near the left at the top becomes the **Main West Line** via Penrith, and is a choice of a relatively straight run from Enfield with a tight turn north of Rookwood Cemetery. The pinch north of Rookwood cemetery is not helpful for quick Rail Freight transfers.



The exit at the top near the right is the Epping line, which joins the **Northern Corridor** at Hornsby. From Enfield, this track passes through two very tight turns: one between Lidcombe and Flemington stations, and the other just west of Strathfield station. To aggravate the situation there is a “W” shaped set of very tight curves in

the Cheltenham – Beecroft section of the Epping line that further cripples Rail Freight efficiency on this line.

All these tight turns make the transfer of Rail Freight via the Epping line through to the **Northern Corridor** past Hornsby almost impossible, and it is no wonder that Road Freight is the normal, and this situation is costing the NSW Government a huge and growing roads maintenance bill.



Currently there is no alternative Freight Rail path other than going up the North Shore line through Hornsby and the Carlingford line extends from Clyde / Granville only as far as Carlingford. In the near future, Epping will become a major Commuter station due to the North-West link connecting there and this negatively impacts on the Epping line being used for Freight during peak hours.

The synergy is that from Enfield, via this proposed Freight Rail link, and also using part of the proposed Sydney Basin Bypass; there are no tight turns all the way to Hornsby. The GREEN LINE (starting on the lower right of the above map) indicates the proposed route heading north-west from the Enfield Marshalling yards to join the proposed Sydney Basin Bypass at Rosehill.

So, Rail Freight can then travel quite quickly north of Rookwood, go towards Granville and branch into the underpass tunnel north of Clyburn station, surfacing at Rosehill where it then joins the almost straight run north through Hornsby and into the **Northern Corridor**.

With this vital infrastructure Port Botany would then be well connected by a dual and quick Freight Rail infrastructure that can easily treble the Port Botany throughput, primarily by utilising Freight Rail to intermodal terminals that are not crowded over the Port Botany terminal.

Re-Construct the Cowan Gorge section of the Northern Corridor

One of the less conspicuous problems with the Sydney's Northern Corridor is the very steep gradient south of the Hawkesbury River Bridge towards Hornsby. The fundamental problem is one of transporting efficiency where time is money and wasted time is wasted money. This descent is on average about 1:40, which is near the practical limit for safety as any more than this can result in the wheels slipping on the rails.

The situation is that when ascending the Cowan Gorge it is usually necessary to have more than one engine haul the cars and to do that requires extra traction engines and extra staff where if the gradient were much lesser, then this extra equipment and time would be saved and reused on other more productive tasks.

This Railroad was built in the 1880s by hand. Since about 1960 a large range of mechanical aids (heavy machinery) have become available and the techniques for road and rail building have totally changed. So, it is now possible to construct a railroad that cuts through the sides of mesas like the M3 does, and keep the rail track both level and straight – instead of following the contours as was done before 1960.



After careful consideration I realised that the gradient could be significantly reduced by starting the gradient some kilometres south of Cowan, and crossing over to the east side of the M3 just north of Berowra station.

In a recent submission¹⁹ October 2012, to Transport NSW I outlined a proposal to re-appraise the structure of the rail descent from Cowan to the Hawkesbury River Bridge by starting the descent at Berowra and running through the sides of the adjacent gorges.

The picture above (thanks to Google) shows the existing rail track red, and the proposed rail track in Green. Note that the existing rail track skips along the tops of the mesas until it has to go down to the bridge, and starts the descent northwards as late as possible because the manual work is so labour intensive.

The proposed Rail track takes advantage of the new large and powerful mechanical tools as used in open cut mining and like the M3 freeway, cuts its line into the edge of the escarpment to get a much slower gradient. The picture below shows the location of the proposed bridge location to cross the rail line over the top of the M3 just north of Berowra.

The proposed rail bridge would start near to where the power pole is located (centre-left) and proceed diagonally (away) to the right of the freeway. Note the train in the centre of the picture, the differential heights of the train level, the freeway level and the tops of the four large Road Freight vehicles.

These large differential heights (levels) make it relatively easy to construct a rail bridge well clear of the M3 so that Road Freight vehicles can pass under there with plenty of space.



The Railway bridge can begin to have a slight gradient on it, from left to right in this picture, and this path will lead into the adjacent gorge that will form an almost straight and gentle gradient all the way to the Hawkesbury River Bridge.

¹⁹ <http://www.moore.org.au/senh/2012/20121030%20Northern%20Sydney%20Corridor.pdf>

Construct a Rail Freight Line from Mascot to Menangle Park

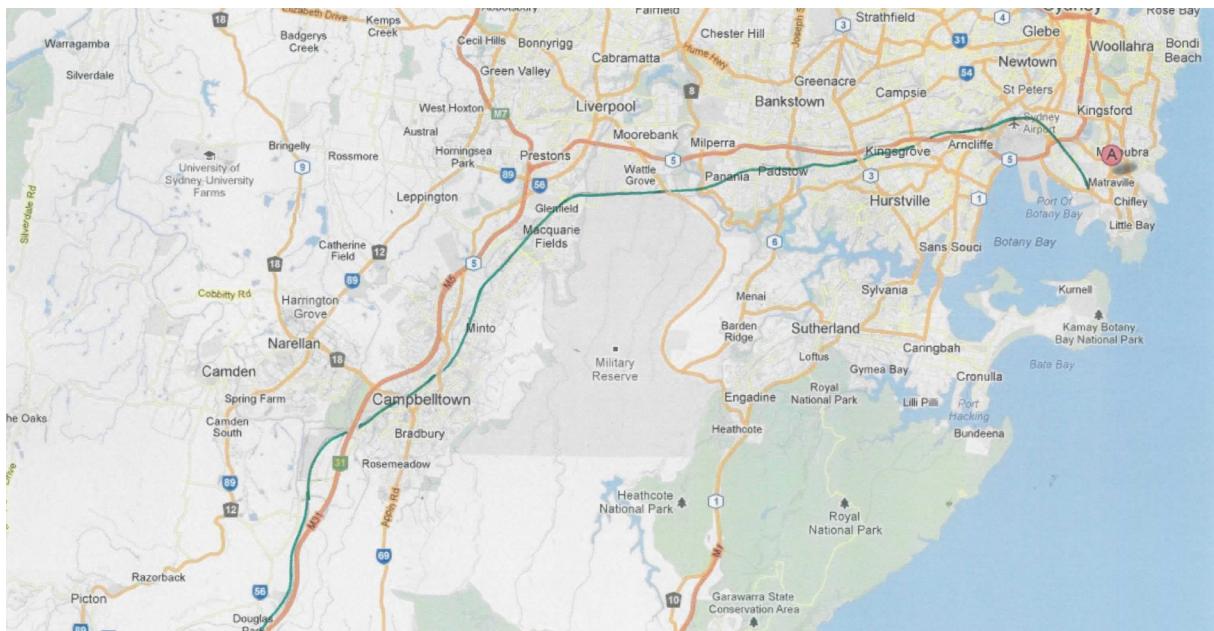
Currently there is no Freight Rail line between Mascot and Menangle Park as this line is fundamentally used for Commuter Rail traffic, and the Strategy Plan for this Commuter Service shows that this line will be in heavy use in the near future. It therefore makes very good Government Business sense to construct a separate Freight line along this route so that Commuter transport using this rail route are unaffected by this efficient Freight Rail transport.

The basic strategy is that 50-car container trains be loaded / unloaded at Port Botany, and these trains then be quickly transferred to Menangle Park and/or Enfield for direct transfer to waiting Road vehicles, and/or be very temporarily in storage held while the Rail or Road vehicle is aligned.

Once outside the rather tight partial network near Port Botany, there really is nothing stopping these Freight Trains from travelling at 120 to 150 km/h for the nominal 55 km distance between Port Botany and the proposed intermodal terminal at / north of Menangle Park.

At these speeds, one typical 50 car Rail Freight train could be transited from Port Botany, to then park at the newly proposed Intermodal terminal at Menangle Park in about 27 minutes. With a single Road Freight “B Double” this would take about 50 minutes and the other 49 “B” Double Road Freight trucks would then come in well after that time, so the Freight Rail option is far more efficient.

The picture above shows the proposed path for the quick Rail Freight train to take, and the proposed location for the new intermodal terminal would be west of the “31” highway sign just south-west of Campbelltown.



The proposed intermodal terminal at Menangle Park comes with a wealth of solutions for a wide range of congestion problems in and around Sydney!

- Because the Rail Freight would transfer all containers from the Port Botany terminal to a number of metropolitan and country-based intermodal terminals,

there would be almost no long-haul Road Freight trucks in the vicinity of Port Botany.

- Because the majority of the containers would be shipped directly to the newly proposed Menangle Park intermodal terminal, there would be almost nil large Road Freight vehicles in the M5 East tunnel and/or on the M5 freeway.
- Because there would be almost no big Road Freight vehicles in the M5 tunnel, there would be an absolute minimum of pollution in and around that tunnel.
- Because the majority of containers would be transferred to Menangle Park, a large proportion of these trains would continue straight through to Goulburn, Wagga Wagga, Cootamundra and Griffith for distribution of their containers at these intermodal terminals.
- Because this Long Haul Rail Freight will prove to be extremely efficient compared to long-haul Road Freight, the ongoing damage to the roads will be substantially reduced, which in turn will substantially reduce the extremely high ongoing costs to maintain these main highways.
- Because there is more NSW treasury money left over due to decreased highway maintenance, the rail tracks can be improved so the Rail Freight trains can run faster and safer over these longer distances.

With the Rail tracks suitably upgraded, Rail Freight will then be able to operate at about 200 km/h for most long distances in the south /west of NSW, at a small fraction of the current Road Freight costs.

Relocate the Cooks River Intermodal Terminal to Menangle Park

The problem with the Cooks River intermodal terminal is that it is very near to the middle of the most congested area of Sydney for Road Freight vehicles. These containers need to be located on a large flat surface where Rail vehicles can be regularly positioned such that container transfer can happen expediently, and Road Freight vehicles can load / unload in an adjacent area such that they can park in and drive out without delay.

If a Rail-based holding bay to hold say 20 by 50 car Rail Freight trains at Menangle Park, then these Rail Freight trains could be sequentially run in via the South Main Line and branched onto the East Hills line to then branch off at Wolli Creek and straight into Port Botany.

Electrify Rail Lines to Save on Diesel Fuel and Minimise Pollution

Another strategy on top of the one above is to utilise Diesel – Electric traction Engines for hauling these standardised bulk and container trains for the vast majority of the distance.

My strategy on this is that the intermodal terminals need to have overhead space so that overhead cranes can efficiently (quickly and accurately) so in these areas and about 2 km up to those areas, there would be absolutely no overhead electrical wiring. Beyond these areas the World standard of 25 kV AC (50 Hz) would be reticulated for all major routes, so that these engines could quickly switch over to electricity and make massive fuel cost and pollution savings, by switching off the diesel motors and run the electrical traction engines from the overhead 25 kV AC.

A typical Electric Traction engine set would require an estimated 3 MW of power, and from the current 1500 DC currently available in the NSW rail grid, this is a major problem. Not only is the control equipment exceedingly expensive, but also the amount of current required per engine would be in the order of 2000 A, and this introduces a large range of operational problems.

To feed a current flow of 2000 A to a moving train this would mean running multiple parallel overhead lines and multiple pantographs so that the current did not hot-spot burn out the overhead wiring. Further, the current on the iron rail would also require bypassing with heavy copper “rope” (busbars), and the power substations would have to be located at about 4 km apart (or closer) so that the voltage drop in the overhead wiring and the ground rails would not be excessive, causing the train to stall.

If the wiring was based on 25 kV AC (as per the world standard), not only is the equipment readily available and rather inexpensive, but for 3 MW of power at the traction engines the required current would be in the order of only 120 A, which is about 6% that required in the 1.5 kV DC case. Multiple overhead wiring may still be required, but the distance between power substations can be increased to about 20 km and possibly up to 60 km with about the same percentage of voltage drop as with the 1.5 kV scenario.

The real saving is that the electricity is already generated with coal / gas / wind / water / nuclear and almost all of this is very low pollution, and a considerable amount is “spare” for long periods of the 24 hour cycle.

So, moving to electrical reticulation for the vast majority of the Freight Rail network is really a no-brainer except for the most inept and / or those conned and/or bought out and / or compromised by the Oil Industry Lobby (OIL).

Construct an International Air Freight Terminal at Goulburn

Currently the only international air-freight port is in Sydney Airport. The problem is that at this airport, it is already running in flight congestion and there is a time curfew from after 10 pm until 6 am, so the airport is operational for only 16 hours per 24 hours, i.e. 66% of the time is useful.

To aggravate this situation Sydney is a sizable distance from other international destinations so this really limits the times that air freight planes can arrive and depart from other airports to fit into this 16-hours-per-day timeslot.

By road (the M5, Hume Highway), Goulburn is about 189 km from Port Botany. The rail distance is assumed to be fractionally more to accommodate lesser gradients, so guessing at 200 km is reasonable at this stage. Goulburn is rather centrally located south of the Southern Highlands, and it is only 92 km from Canberra (the Federal Capital of Australia). Goulburn is also only 138 km from Port Kembla by road, so considering the difference in altitude, if the rail distance were say 160 km then this is reasonable at this stage.

Now, with a little bit of lateral thinking, if these Freight Rail path were to be re-engineered for quick transport, and good mechanical aides used as per open cut mining, then these distances could be trimmed a little, and the Freight rail speeds could be made to accommodate 200 km/h on average.

So, the table below shows the typical times for Freight Rail transport with Goulburn:

Location	Distance (km)	100 km/h (mins)	150 km/h (mins)	200 km/h (mins)
Canberra	92	55	37	28
Menangle Park	137	82	55	41
Harden	145	87	58	44
Port Kembla	160	96	64	48
Port Botany	189	113	76	57
Hornsby	199	120	80	60
Penrith	209	125	84	63
Temora	227	136	91	68
Wagga Wagga	262	157	105	79
Albury	357	214	143	107
Griffith	377	226	151	113

This is a very interesting table because it shows the typical time taken by current Road Freight, based on 100 km/h average speed, and we now know that ***if quick Rail Freight were to be used instead, then the savings of diesel fuel and further savings because of reduced Main Road damage would be immense.***

This table also shows that from most locations in the Sydney Basin (with the Sydney Basin Rail corridor included and the East Hills Freight Rail line included) then the time taken to transport goods to and from the proposed intermodal terminal / port at Goulburn to/from Port Botany, Hornsby, Penrith, Temora would be typically in the order of one hour at 200 km/h Rail Freight.

Connecting with Port Kembla, Canberra and Harden would be in the order of 30 to 50 minutes at 200 km/h Rail Freight, and connecting with Griffith and Albury would be in the order of 120 minutes at 200 km/s Rail Freight.

This proposal is a real game-changer because now the Sydney Airport can be entirely freed of International Freight as all of this can be transferred directly to Goulburn, and a large proportion of the deliveries can be quick Rail Freight to / from Menangle Park in less than an hour.

The altitude of Goulburn is about 642 m above sea level, which means the air is slightly rarefied so the air-strip for cargo planes will have to be longer to take off and land. The airport virtually never has fog problems.

The big synergy is that this airport could also be used for International Commuter flights and that brings with it a whole new community of employment outside Sydney and into a country commercial centre. Thinking laterally, all customs could be handled in the fast Commuter train line between Goulburn and Sydney, or other destinations.

The other big synergy is that an intermodal terminal should be set up near Goulburn too, so that Road Freight can deliver and pick up in a 100 km radius of this intermodal terminal. This way the costs are minimised, the **diesel** fuel expenses are minimised, the road damage is minimised and the delivery times are minimised.

Standardise Rail Freight Train Structures

One of the big inefficiencies with Rail Freight is the chopping and changing of Rail Freight cars with containers on them to make up a train.

In consideration that Rail Freight is unquestionably far less expensive to run than Road Freight, particularly with computer assisted / automatic loading and unloading of containers, and or of bulk materials like bauxite ore, coal and iron ore, if trains were constructed such that they rarely required shunting (other than regular maintenance), then the computing systems around these Freight Trains could minimise the time taken to transfer at both ends of every journey.

If Port facilities were optimally engineered for say Rail Freight 50 cars, carrying say 100 containers, then the intermodal terminals should also be structured such that they too are optimally engineered to work with the identical structure. So, in effect, the intermodal terminals would be virtual replicas of the container Port structures.

Transfers of containers to longer haul Road Freight could then be pre-programmed so that lateral movements between adjacent train cars is minimised. In the same vein, transfers to Road Freight (for local delivery) could be predetermined and timed to the minute such that the Road Freight vehicles could be there and positioned as the Freight trains come in, and be immediately loaded (within a few minutes).

Similarly, for fast freight delivery, Road Freight could communicate ahead with the destination details, and the intermodal terminal would come back with the best location to park the Road Freight vehicle so that the container (or bulk load) can be quickly transferred off the Road Freight vehicle, freeing it up for other work.

This strategy goes very close to the Just In Time (JIT) principles that make Quality workmanship a pleasure to be involved in.

Re-engineer the Structure of Freight Trains

The standard structure of Freight trains is on if the engine(s) up the front, hauling the carriages behind them. This structure is virtually standard, but with commuter electric trains, the traction engines are located in every car or every second car.

The problem with having the engines up front and a very heavy load is that the tension through the links and cars is enormous and this in turn puts an immense strain on the rails and the sleepers particularly in climbing and in turning.

There is an advantage in having the traction engines pushing from the rear, as the tensions are minimum except for braking. The big disadvantage is that the drivers are literally blind, so they cannot see in front, and most of the driving is “seen from being done from the front of a train”.

Distributing the traction engines throughout all the cars in a freight train could be an expensive option and the maintenance could be quite prohibitive, but the thought of distribution opens up many innovations that should be explored.

The lead-up to an innovation that has a tremendous promise is to structure a train with say 50 cars and have two engines, one at each end. This way the train is effectively two trains each with 25 cars and the tensions is more than halved, the two engines can be smaller, the pantographs (for picking up 25 kV AC) can be distributed over both engines, and the diesel fuel tanks can be smaller.

Control Theory has come a long way in the last 50 years, so the stable control of more than one traction engine does not present a problem as it did several years ago. Digital communications has revolutionised the way that computers talk, and with the development of Optical Fibre since 1983 and more recently Wi-Fi technologies (particularly by Australians in the world-wide scene) this opens a wide range of opportunities.

In the last decade, optical camera technology has revolutionised video camera usage and now it is commonplace to have cars with video “rear view” mirrors.

The big innovation is the introduction of a third engine console position in the centre of the train so the structure then takes the form of:

Engine – Car01 – – Car25 – Console Engine – Car 26 – – Car 50 - Engine

So, the engines at both ends are unmanned, the console in the middle is manned, the console manages both engines in concert, the drivers are located in the console, at both ends there is video camera visualisation.

There are a number of synergies that come together with this structure including but not limited to:

- These trains can run in either direction a full speed.
- The leading and trailing engine can be aerodynamically (bullet) shaped to dramatically reduce wind drag for the train.
- The train should be able to safely run at speeds exceeding 200 km/h.
- Loading and unloading can be logistically accelerated.

- Ports and Intermodal terminals could be engineered to maximise this productivity.
- The control is in the centre of the train.
- The driver(s) do not have to move from where they are.
- There are now three (somewhat smaller) power / traction units.
- There is far less tension and compression on the carriages and their hitchings.
- The pantographs can be increased to 6; i.e. two for each traction engine.
- The overhead load current is far more evenly spread.
- Rail traction is significantly improved.
- These engines can run significantly quieter than larger engines.
- These trains would be as quiet as, (or more quiet than) most Commuter trains.

This is a revolutionary different way of looking at transferring Rail Freight in Australia, and this has not been heavily brainstormed.

I have absolutely no doubt that with this type of revolutionary Freight Train structure then Rail Freight could easily travel at speeds well exceeding 200 km/h.

With this game-changing innovation working in concert with Road Freight to deliver to the door from Intermodal Terminals then the best synergy is presented for the NSW Government to manage fast, quiet, safe, inexpensive and reliable Freight transportation in and through NSW.

6 Implementing the Strategy

In the Freight and Port Strategy 2012, Figure 34 is missing a substantial number of Action items and following tasks as outlined before.

Appendix 1

Some Fundamental Definitions

Commuter Transport

When we talk about commuter transport, we are really talking about the transport of living people between defined locations. Commuter transport happens in a number of ways beyond our natural bodies (walking or running) to increase the distance and/or shorten the time between the defined locations.

Assisted propulsion includes but not limited to Skating, Skateboards, Sailing and Cycling, and power-assisted propulsion includes the use of but not limited to motorcycles, motor vehicles, trains, aeroplanes and powered boats.

Commuter transport is predominantly when living people travel between their normal premises and their place of work in a repetitive (usually) daily basis in a time defined manner.

So, Commuter Transport is live people transporting themselves to and from their home premises and their work locations.

Freight and Cargo Transport

All products (or goods) that are transported from one location to another are effectively “Freight” but there is a distinction in the types of freight when it comes to live humans being transported as described above.

The term “Cargo” has a similar meaning to that of “Freight”. The difference here is that the term “Cargo” is commonly used on Sea or Air-based Transport, and Freight is more commonly used on land-based transport.

“Goods” has a virtually identical meaning to “Products”, where the Products have a defined mass.

So, Freight (Cargo) Transport is effectively the physical transportation of products (goods) that are not living people.

With Slave Trade of live humans, the more common descriptive term is “Human Cargo”.

Bulk and Container

When products are being transported one of the very effective ways to transport these products is to pack them in containers that come in a range of standard sizes²⁰. These standard container sizes make the storage and transport logistics particularly predictable, and this in turn can dramatically increase the throughput of containers through any location.

There is a range of products that are rather difficult to transport in containers. Typical examples of these products include coal, grain, oil / fuel, livestock, milk, mineral ores, gravel, wood chips, railway track, and some building materials.

²⁰ <http://www.freightgate.com/resources/container.tet>

These products (or goods) are far more economically transported in vehicles that are specifically engineered to transport these products in the least expensive manner.

So, Container Freight is the transport of products (or goods) in specifically standard sized containers for maximised logistical effectiveness.

So, Bulk Freight is the transport of products (or goods) in specifically engineered carriages or holding structures that are themselves, part of that transport technology.

Ports

Historically, a Port was the location where sea ships were parked to load and unload their Cargo. As stated before Cargo is these days identical to Freight. These days there are not only Sea ships but also Air ships, so now we have Seaports and Airports.

Historically, the Sea-ships were much larger than the road-based carts that delivered and took the Cargo (Freight) of Products (Goods) to and from the Seaports.

In more recent times, this analogy has not changed and generally sea-ships are generally much larger than the Road Freight and Rail Freight vehicles that transport the Containers and Bulk products to and from the holds and decks of the sea-ships and air-ships.

With Airports, the analogy is similar in that the Cargo is transported off land. The difference with Airports is that space on an air-freighter is rather limited so in most cases the Freight to be transported is low volume / high value, and/or required with high urgency. With Seaports, the Freight to be transported is usually high volume low value, and not required with high urgency.

So, a Port is a Freight interchange location where one prime freight technology is not land-based.

Appendix 2

Land-Based Freight Technologies

Background on Roads

The first common method of Freight Transport on land was to physically carry what needed to be positioned elsewhere.

The first level of mechanical aids was for animals to carry the loads of Freight, either on their bodies (their backs) or by dragging that Freight, or constructing a frame to hold that Freight for transport. The use of wheels under the frame dramatically reduced the ground – frame friction.

With common usage in the same transport paths, ground-marked tracks became the first roads. As road construction technology improved, so too did the structure of the roads, and a number of surfaces were progressively developed to withstand the wear and tear caused by road transport of people and freight.

With the more recent development of the motor vehicle, (circa 1890) using oil products as the fuel for power generation within internal combustion engines, horse and oxen drawn Road Freight has now been totally replaced by diesel powered Road Freight vehicles on roads.

In a rather very coincidental move, gravel surfaced roads in Australia have had the by-product of petrol and diesel fuels – bitumen – laid on most road surfaces to dramatically reduce the ripples caused by transport vehicles, and the weather, particularly rain.

The synergy of a growing proportion of bitumen-surfaced roads with the affordability of road vehicles has resulted in Australians now owning a rather high proportion of road vehicles for personal use, and a dominance of much larger Road Freight vehicles on roads, particularly for long distance Road Freight haulage.

Road-Based Freight Transport

Since about 1960, the amount of road based Freight Transport vehicles has steadily increased such that these days, multiple lanes and uni-directional road structures are now commonplace between most major capital cities in NSW to support this from of Road Freight traffic.

The big advantage of bitumen-surfaced Roads is that these can be laid right through a town or city centre, such that the cargo of Road Freight can be relatively easily transported to almost anywhere there is a road, and these roads can have significant gradients.

The big disadvantage of roads is that heavy Road Freight vehicles do highly significant damage to these now commonly bitumen-surfaced roads. This problem is because bitumen is essentially a very viscous oil-based liquid, and the impact caused by Road Freight travelling with significant weight and speed causes the gravel / bitumen mix to minutely crack through.

With dust and air in the freshly opened crack surfaces, the bitumen can no longer remain as a continuous layer, so the cracks gradually spread, and the entire road

falls into a high maintenance state, usually in a few years where heavy Road Freight is involved.

Since about 1940, major road highways are now constructed with steel re-enforced concrete. This construction technique is particularly expensive, but roads made using these construction techniques can last at least 20 years without significant surface or internal structural damage.

The problem is that by about 40 years use, these highways then require total replacement, so concrete-based highways for heavy Road Freight is not as cost effective as Rail roads, which have been successfully engineered to remain in a low maintenance state for over 60 years (particularly with concrete sleepers).

In NSW, the damage of roads caused by the use of heavy and fast Road Freight vehicles is growing exponentially and already these costs have blown out of control.

Rail Freight Technologies

As the development of wood and coal fired external combustion engines (ECEs) using steam as the power transfer medium became popular in the 1850s, the synergy of utilising this power for transport became very popular in the 1860s and onwards.

At this stage Rail technology leapfrogged Road technology. The reasoning was that the ECEs used to power these vehicles were intrinsically very heavy, and the roads of the day could never tolerate this weight (and speed) without immediate and significant damage.

The logical move was to mount these ECEs on rails as used in the mines so that the load would be spread, and the binding posts that held the rails from moving (the sleepers) would be securely held in a solid base of heavy gravel.

The big synergy of rail construction is that it is perfectly matched for heavy and fast loads to be transported over this, and the maintenance of tracks (with concrete sleepers) is now very low, making Railroads much less expensive to manufacture and maintain than equivalent Road highways, that were being used for the equivalent purpose.

The big operational advantage of Railroad transport is that it has a very low coefficient of friction with the rail surface, so rail trains can be moved with relatively little energy compared to road transport.

The other very big synergetic advantage of Rail transport is that because the shape of a train is very long in comparison to its front surface area, the wind drag is exceptionally low. This means that rail trains can travel very safely at speeds far faster than that of road transport vehicles, and have much less wind drag than the equivalent road freight being transported, using much less fuel to perform a very similar transport of freight.

The disadvantage of rail transport is low rail to wheel static friction. Consequently, the gradients of rail tracks can never really exceed more than about 1:40 or about 2.5%. Fortunately, most of Australia is relatively flat, so steep gradients are rarely an issue (except for eastern NSW)!

When rail tracks first went into NSW (circa 1860 – 1900), virtually all of this work was done by hand, with teams of labourers. Apart from cranes, mechanical aides such that we have these days were virtually non-existent, consequently the design of rail tracks generally followed the contour lines of the rolling hills, and only where extremely necessary were tunnels built.

The mechanical aides available from about 1960 have totally changed the technology of how and where roads are now built. The M3 north of Sydney is a classical example of this newer technology using mechanical aides. In this case, the road is typically about 30 m below the mesa peaks, and the spill from the cuttings was used to make the fill in the associated gorges, such that the M3 is substantially level, avoids the contours, and is rather straight, so road vehicles can travel at speeds exceeding 110 km/h most of the way on the M3.

There is a very high “green” value of Rail Freight transport compared to Road Freight, because directly compared; rail freight uses far less fuel. There are a large number of extremely cost-effective open-cut mining tools, equipment and associated technologies that can be directly technology transferred into very inexpensive Railway construction.

It would make tremendous common sense and be highly budgetary responsible to restructure many parts of the existing NSW rail infrastructure so that Rail Freight could travel at speeds exceeding say 220 km/h, particularly for long-haul situations (i.e. greater than say 100 km distances).

By using the technologies similar to that used for the M5, relatively inexpensive rail corridors can be constructed that would cut through the Great Dividing Range and along the NSW eastern coast so that fast freight train technologies could provide low overhead, low carbon emission and low latency cost Freight transport infrastructure for most of NSW in the near future.

The one immense problem thwarting the logical move towards Rail transport as the prime Freight infrastructure in NSW is that continual and intense lobbying persists to keep oil-based fuels, particularly diesel fuel sales at an all-time high, by using Road Freight technologies wherever possible.

Rail Freight in NSW

The first rail lines were built about 1855-56²¹ to connect sea-shipping terminals so that Freight could be efficiently (quickly and in large quantity) transported to and from the loading docks. These terminals were at Darling Harbour in Sydney and in Hexham in Newcastle. By the late 1880s there was a network of rail lines over most of the eastern half of NSW.

As the farming and grazing industries grew following on from the gold rush days in NSW, various Governments of the days saw fit to introduce a network of rail roads extending over more than half the State, to provide low relatively maintenance freight transport infrastructure from station sidings / cattle and sheep yards, to the major towns and cities in the country, and then primarily connecting with Sydney in what is called a “Star” network. (All Rail connects to Sydney!)

²¹ <http://www.nswrail.net/infrastructure/timeline.php>

Before the mid 1950s all train engines were wood or coal fired and used steam to power the traction wheels. These traction engine were effective, but produced a huge amount of pollution because they were burning coal and really there was no chimney filter. To compound this problem, at that time there was no highly efficient mechanical aids to make open cut mining financially effective, and coal was both in short supply and in high demand (for steel manufacture and electricity generation).

With Sydney's commuter network being electrified (with 1500 V DC), a relatively new class of traction locomotive became available in the mid 1950s that ran on electricity and diesel fuel, so these diesel-electric locomotives would be low pollution, and not is restricted to the urban network in Sydney.

The introduction of diesel-electric locomotives was an excellent logical solution for NSW freight transport at that time and the NSW rail grid was used extensively and inexpensively for many decades before and with proper maintenance procedures would last for many decades into the future.

The problem was that NSW rail maintenance was progressively reduced and there was no effective planning to replace the now rotting sleepers that had been in situ for upwards of 70 years. The proper infrastructure maintenance procedures would have been to proactively replace these rotting sleepers, and/or the tracks so that this infrastructure remains in a low maintenance state.

Following WW2 the number of Road Freight vehicles had increased in both number and size, and in Australia a considerable number of Road Freight companies were created having large fleets. (Ken) Thomas National Transport (TNT)²² was one of many Road Freight businesses that had an amazing ascendancy to being a global transport business, with its head office now based out of Australia.

What has to be realised is that as the number and size of Road Freight vehicles grew in the 1950s from a typical "5-tonner" to being articulated, being capable of carrying Containers and Bulk freight, to being road trains with 2 articulated cars now common on the Hume and Pacific highways; the amount of diesel fuel used by these Road Freight vehicles has clearly outstripped that used by Rail Freight locomotives.

The line towards Port Botany started in 1925 from the ever-entangled Marrickville Junction to the old Botany Yards, then extended to Port Botany in 1927 but was never really efficiently functional. In 1979 this line was extended to the ANL / CTAL Container Terminal, and by then Mascot was substantially built-up. The cheap option was to follow the road with its tight bends – so this rail line was never practical, and Port Botany is still isolated from Rail infrastructure – even though Port Botany is now a very large NSW-based sea-interfacing location (Port).

It is now exceedingly obvious that the Freight Rail structure in NSW requires a complete and total review, with a focus on restructuring and rebuilding a grid of virtually straight Freight Rail paths between the major existing and proposed intermodal terminals.

With this grid developed and implemented, the amount of **diesel** fuel imported into Australia will be radically reduced and the knock-on effect will be a far more efficient

²² http://www.tnt.com/express/en_kw/site/home/about_us/about_tnt_express/history.html

import / export infrastructure that will in turn provide for substantial business growth in NSW for the next century. This grid will remove a substantial amount of road-based congestion in the Sydney Basin, which will systematically improve the living standards there. Likewise, because of this efficient and quick Freight Rail infrastructure populations will grow around the intermodal terminals as major inland cities.

Appendix 3

The Oil Industry Lobby Activities

Poor Historical Record of the OIL

Through more than the past century, the Oil Industry Lobby (OIL) has covert and sometimes overt influences on many Governments policies throughout the world.

In his book “Who Won the Oil Wars”²³ (Why Governments wage War for Oil Rights”, Andy Stern shows that well before World War 1 (WW1) the fighting got oil rights was a mature trophy, as oil rights have shaped the western world at the expense of others.

As history is untangled, more and more relatively recent wars have been shown to be caused for real reasons to break up existing empires and earlier alliances so that oil rights are then moved. When these wars are not raging, the OIL works covertly to compromise Governments and their departments everywhere to keep their trade oil continuing for their corporations’, and/or maximise their oil-based corporation profits through covert alliances.

Compromised Governments by the OIL

In the NSW Government we have a Minister for Transport (obviously encompassing Roads, Rail, Air and Sea) and yet a second Minister for Roads, which is part of the Transport portfolio. The obvious question is why do we now have a Minister for Roads when we already have a Minister for Transport, and all local roads are all managed by the respective Local Governments?

Apart from ministerial shuffling, I am very strongly of the opinion that in the shuffle, there was a very strong and covert push to have a Minister for Roads so that main road, motorways and highways legislation can be “rubber stamped” (facilitated) without delay; and financed with the least resistance.

The reasoning is rather difficult to comprehend until it is realised that on a large scale if Freight / Cargo is transported then this uses fuel of one sort or another, and the usually fuel for freight transport is diesel fuel – which is supplied by the oil industry, and road freight is far more profitable than the equivalent rail freight for the oil industry.

Skewed Logistics and the OIL

If say 1000 containers are to be transported from Melbourne to Sydney over a couple of days, then this is too fast for Sea freight, too expensive for Air freight, but can be done with Road Freight vehicles, by making a total of 500 one-way trips, carrying two containers each. Alternatively, 10 Rail Freight trains could transport these 1000 containers in 50 cars per train, two containers per car.

The comparative logistics are astounding!

The Road Freight vehicles would travel a total distance of about
 $959 \times 500 = 479,500$ km.

²³ Stern A, Who Won the Oil Wars (Why Governments wage war for Oil Rights), Collins and Brown, 2005, ISBN 1-84340-291-2

The Rail Freight trains would need to travel a total distance of about $959 * 10 = 9,590$ km.

For the same large-scale load of 1000 containers, the total distance of all the **Road Freight vehicles will travel 50 times further than the equivalent Rail Freight** trains would need to travel in the same timeframe.

Even if each Rail Freight train used 10 times as much diesel fuel per km over the equivalent distance, then the amount of diesel fuel used with Road Freight is five times (that is 400%) greater than that used by the equivalent Rail Freight.

No wonder the OIL is covertly extremely active in Australia and in NSW!

Road Freight has a far bigger wind drag resistance and road/tyre drag than Rail Freight, and Rail infrastructure has a far less gradient than Road infrastructure, so the fuel efficiency of Rail Freight is vastly superior to that of any type of Road Freight arrangement (even road trains).

The logistical figures are screaming out that Rail Freight Transport is far more fuel-efficient than Road Freight Transport, but for some unknown (covert) reason; this NSW Freights and Ports Strategy document is pushing all the buttons for Road Freight, which in the above example is showing to be spending at least 400% more diesel fuel and smashing the highway surfaces. Even then, the current Liberal NSW Government is screaming out that the cost of highways is sending them into further debit, but the push is to keep extending main and arterial roads at the expense of far less expensive rail infrastructure that can last in low maintenance for much longer and operate on far less diesel fuel.

If this NSW Freights and Ports Strategy Nov 2012 were really serious about the sustainable low expense future then this strategy plan should have restored as much Rail Freight paths as possible, and focussed Road Freight to Warehouse – Terminal / Port Delivery.

General Motors and the OIL

Starting in the early 1930s, General Motors (GM) in the USA embarked on a covert programme²⁴ to maximise the use of their private vehicles by systematically purchasing electric powered light rail facilities all over the USA and then closing them down several months later after the purchase was finalised.

The closure of the electric powered light rail infrastructure trams and trolley busses left the people with the option of either walking, cycling, catching busses, which coincidentally were powered by diesel fuel internal combustion engines, or going out to purchase a petrol-powered car for commuting to and from their work. So people bussed until they could afford cars.

²⁴ http://en.wikipedia.org/wiki/General_Motors_streetcar_conspiracy



The picture from <http://en.wikipedia.org/wiki/File:Pacific-Electric-Red-Cars-Awaiting-Destruction.gif> shows a huge pile of Pacific-Electric Red Cars waiting destruction, March 1956.

The end result was that electric powered trolley busses and trams were literally driven off the roads, leaving the roads for busses and cars powered by oil products and not electricity.

This strategy had all the ear-markings of the OIL that was most probably working covertly with the executives of General Motors to assist funding the tram infrastructure purchases on GM's behalf.

The strategic closure of tram and rail services in the USA continued right up until 1949's before the USA Federal Law got in place to stop this light rail infrastructure carnage all over the USA, this infrastructure routing was virtually complete, forcing people into cars and using petrol in far greater volumes than ever before. By then it was far too late, as the infrastructure damage had been done.

Sydney Trams and the OIL

Before the 1960s, Sydney had a very extensive electric tram network with tracks extending virtually everywhere, and the trams were very highly utilised. The obvious problem was that cars and trams were "fighting for the common road" and a very high percentage of people that were commuting caught trams to and from their premises and work.

There was a burst of the equivalent of "Blanket advertising" that we have on TV channels these days. This advertising was that busses would replace electric trams to provide a far more reliable and "cleaner" public transport infrastructure. This decision by the then Labor NSW Government has to go down as one of the worst transport decisions in Australian history.

Covertly underneath all this advertising was the fact that car sales (and of course associated fuel oil sales) were heavily hampered because so many people used trams as their first transport option, and trains as their second option.

Both trams and (commuter) trains were and still are electricity powered, and in Sydney, much of this electrical power came from the White Bay Power Station²⁵, which was coal-fired. As much of the AC electricity was becoming highly sought, the easier option was to replace trams with busses, without comprehending the direct ramifications of commuter peak-hour network congestion caused by diesel or petrol fuelled busses and car commuters.



In a similar vein as electric trams were covertly removed in the USA, in the late 1950s in Sydney, the light rail tram services were removed with astounding speed²⁶, where route tracks were tarred over²⁷ in the evening and the overhead wiring removed the following day or so such that there was no turning back. From <http://www.bondivillage.com/pics2009/tram7802.jpg> an example of the tarring over (this one in Zetland) is shown above:

The overhead wiring was in many cases held by rosettes mounted into buildings, the picture below from <http://www.bondivillage.com/pics2010/tram7300.jpg> shows a pairs of sets of rosettes above the awnings (level with the windows) with the support wires cut off.

²⁵ http://en.wikipedia.org/wiki/White_Bay_Power_Station

²⁶ <http://isput.com.au/media/File/tramstats.pdf>

²⁷ <http://www.bondivillage.com/tramsyd.htm>



To further ensure that trams would never return, a high proportion of these trams were burned near the Tram depot at Randwick. Australia had literally just come out of the major effects of WW2 and that most people over 40 at that time had gone through the rigours of the great Depression of the 1930s.

The picture below from <http://www.realfeel.biz/project/maserati-in-old-tram-sheds/> shows trams in the process of being burned / buried near the Randwick Tram Workshops.



It seems unthinkable that rolling stock would be notionally burned in the late 1950s. It is also equally unthinkable such ruthless demolition of valuable transport would occur that without those trams being first stripped²⁸ for valuables, including the cedar redwood.

²⁸ <http://tdu.to/162829.msg>

Personally, I am extremely suspicious that the OIL was very well positioned behind these activities to compromise the NSW Labor Government and ensure that diesel powered busses replaced the electric powered trams, so that the OIL could maximise its oil fuel-based profits in NSW.

Closing Rural and Arterial Rail by the OIL

Even the most inept executives in the oil industry would have clearly understood that the large majority of their profits were through maximising sales of diesel fuel to the trucking industry, combined with the steady sales of diesel fuel to the Rail Freight industry.

It therefore follows that the oil industry would therefore lobby as intensely and as covertly as possible to ensure that these sales figures keep rising and rising! To lobby at this level it is necessary to have a number of Government and Public Service positions as “Stooges” for the Oil Industry Lobby (OIL).

These “Stooges” would be in pivotal positions of NSW policy and decision-making.

The book “Power Play – the fight for control of the Worlds Electricity²⁹”, by Professor Sharon Beder, from the Wollongong University; has very detailed text on just how far-reaching major corporations are prepared to go to compromise all levels of all Governments and their bodies everywhere.

As these rural and arterial rail tracks aged, engineering reports would have come into the NSW transport head office that these rail tracks were moving into the high maintenance phase, and that major maintenance rebuilding or replacement had to be scheduled in to keep the economy on the correct side of the balance sheet.

Instead of thinking long term, the politicians of the day (as usual) sought re-election with short term thinking and followed the covert strategies / guidance of the OIL to arrange for minimised Rail infrastructure maintenance, so that Rail Freight would move across onto Road Freight.

In this Strategy, page 68 Table 2 confirms this short-term thinking with the Rail Mode Share steadily dropping from 25% in 2000/2001 to 14% in 2010/2011

As best I recall, the reasoning was one of safety, where the wooden sleepers had simply rotted so much that the rails were now unstable. The policy decision of the Governments of the day was to simply close these tracks and use the roads, which by now were largely being tarred by the by-product of diesel fuel, Bitumen.

So, the OIL had a ready market in selling increased supplies of diesel fuel and an ever-increasing market for Bitumen to seal the roads so that even more Road Freight could use even more **diesel** fuel!

Since about 1970 a large number of feeder tracks (and arterial tracks) have been closed, primarily on the basis that the sleepers had rotted out and concrete sleepers had “not been” considered. Road Freight was the one remaining transport medium, and road freight is very thirsty for diesel fuel, which by no surprising coincidence, is the primary sales and profit product of the OIL.

²⁹ Prof S Beder, “Power Play – the fight for control of the Worlds Electricity”, Scribe Publications, Melbourne, 2003, ISBN 0 908011097-0

It was a not-so surprising coincidence that from the mid 1970s a large proportion of Rail Freight facilities in NSW were deliberately closed down³⁰, forcing Road Freight as the only viable option from that time onwards for the vast majority of farmers and graziers to transport their Bulk goods.

The Blayney – Cowra (Demondrille) line and the OIL

As a child, I used to live in Blayney in the central west of NSW. Several years after leaving there I heard that the Blayney – Cowra line was closed in 1988. This line was the prime rail link from the south-west of the State through to Sydney via the Western line and I was very suspicious that this closing was not justifiable.

A short time after the line was closed, the road bridge over the Cowra line on the Orange road was totally filled in with soil, yet as far as I was aware that bridge was in excellent condition. Shortly after that situation, the rail corridor was put up for sale and the rail track was removed in several places. This practice made certain that the existing rail track could never be used again.

What made me even more suspicious that there was a covert force behind these rural and arterial rail closures making these closures very permanent. So there was much more to closing the tracks than the general public were being told, and most of these Rail corridors have since been sold to the farmers and graziers in much the same way as described above.

This certainty of never being able to use the rural and arterial Rail infrastructure again without a very large amount of negotiations had all the similar hallmarks as the tram tracks in Sydney being tarred over, so that these corridors could never be re-opened again without very considerable negotiations and expenses.

Considering the massive profits that can be made by selling at least 400% more diesel fuel then before by arranging the closure of rural and arterial rail infrastructures, and considering the OIL already being involved with the USA and tram closures in recent history, it naturally follows that the NSW Government must have been heavily lobbied to move away from Rail Freight and move to Road Freight as the short-term, compromised strategy.

Considering this strategy put out for comment, it is rather obvious that those who have made this strategic paper (and/or their Executive Management, and/or Ministers) must have been heavily compromised as “Stooges” to keep Rail freight virtually out of every scenario. If this is not the case, then all these levels in the Government and Public Service are demonstrating extremely high levels of gross incompetence.

Rail Corridor Closures and the OIL

As shown above in the “Skewed Logistics” area, Road Freight uses considerably more diesel fuel than the equivalent Rail Freight for the equivalent freight load, so I am again highly suspicious that these heavy rail tracks were deliberately closed through the OIL being conspicuously behind this strategy.

The OIL knows that long haul Road Freight transport more than doubles the sales of its diesel fuel products, and therefore greatly maximises its profits.

³⁰ <http://www.nswrail.net/infrastructure/timeline.php>

It should come as no surprise that the rail corridors linking Sydney for the possibility of fast Rail transport have been to the best of my knowledge disbanded and sold off wherever possible, so that these corridors cannot be used in the future.

With this understanding, it should be absolutely no surprise that the OIL was highly successful in ensuring that Road Freight vehicle businesses pay a pittance in road maintenance commissions compared to the damage caused by these Road Freight vehicles.

If these Road Freight businesses were made to pay an equitable road usage tax to cover the damage caused, then Road Freight would be considerably more expensive for the end users (making Road Freight financially unattractive), and alternate Freight Transport technologies (i.e. Rail, Air, Sea) would be sought without hesitation.

Concurrent with this exponential blow-out of road maintenance expenses is the ever-conspicuous Oil Industry Lobby (OIL) that has, and continues to covertly foster and support the continued and extended use of road transport for every situation (particularly long haul transport).

Making Road Transport Safer - Lindsay Fox

On Channel 9, the Today Tonight show 26th Nov 2012³¹ did a special segment with Lindsay Fox AO (Linfox boss) about making the road freight transport a safer process than it currently is. Looking right through this story, I could clearly see that it was yet another not so cleverly disguised advertorial promoting the use of (Linfox) road freight, and road freight in general.

The basis of the story was that every road freight vehicle should have a Black Box installed on it (as do those operated by Linfox) and that the feedback obtained from these Black Boxes would be pivotal in minimising the "Road Carnage", that is: deaths and injuries caused by road freight vehicle collisions.

While this Linfox strategy was commendable, there were several holes in the story. As said there, freight transport is a national issue, not a state issue because freight is transported virtually everywhere in Australia and beyond its sea and air shipping ports. The incorrect assumption was that all freight inside Australia is via road.

It seems the Black Box road freight strategy may have been raised with the Federal Government, but it received a lukewarm response, because most of that legislation is State-based. It also seems that the Federal Government's Department of Infrastructure and Transport³² is not inclined to be proactive, probably because it may well be a bureaucratic organisation that is critically short of Engineers.

It is interesting to note however that NSW has taken upon itself to have a pilot run of Electronic Working Diaries³³ that intends to record the drivers' travel movements over longer distances only. This is barely a step towards a Black Box technology and this advancement is barely scratching the surface of safety and reliability involved with road freight. This is only a pilot and from what I can see of it, this is only to improve the legibility of documentation of travel records and nothing else.

³¹ <http://aca.ninemsn.com.au/article.aspx?id=8570619>

³² <http://www.infrastructure.gov.au/>

³³ <http://www.ewd.gov.au/>

In aircraft, Black Boxes record the pilot's actions and the communications so that after an incident, the actions and communications can be studied to find out what happened. In this case with Lindsay Fox, it appeared that the Black Box that he was talking about really related to live position monitoring using mobile device technology so that Road Freight could be monitored 24/7.

The term "Black Box" used by Lindsay Fox seriously confuses pre-incident pilot / driver activity recording with pilot / driver 24/7 live monitoring, but it gets the message over to the larger and less educated population that trip monitoring and recording acts as silent policing to reign in "cowboy" road freight transport drivers, and foster reliable road transport by using Linfox as the freight contractor.

The consequence of this 24/7 live monitoring strategy was that it was relatively easy to locate a few Road Freight drivers that really did not want their activities to be closely monitored. As said before, it all goes together to make a good story, but never let the facts get in the way.

Several years ago a technical colleague in Tasmania was installing and testing GPS-based live monitoring of road freight vehicles. He reported to me that this monitoring would not only tell what gear the vehicle was in, its speed, but also the GPS could tell even if the vehicle changed lanes, and what lane the vehicle was in. So this GPS-based live monitoring equipment is by no means new!

The assumption with all 24/7 monitoring anywhere in Australia, that there is substantial telecommunications facilities available with radio base stations utilising either 3G and or 4G technology for connectivity to the Road Freight vehicles, and substantial Backhaul connectivity so that this data can be reliably transported to a location where server facilities can run reliably.

I believe that if Lindsay Fox were really passionate about reducing the road carnage (as it was described), then he would have strongly advocated using rail freight for all long distance transport (i.e. transport further than 100 km distance) and road freight from interchange terminals to the warehouses. This way, long distance road freight would be totally removed from the major roads / highways – where the vast majority of "road carnage" is!

_____oOo_____