Connecting Port Botany

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Introduction

Port Botany is a major shipping Intermodal Terminal located near the end of the south coast peninsular of Sydney's eastern suburbs at the north-eastern end of Botany Bay.

This port has a rather high percentage of freight transferred through it and most of land-side connections are by road freight, even though there is a rail head connection in the port facilities. This port is landlocked behind Sydney's Airport to the west, and by suburban houses to the north leaving just General Holmes Drive as the only heavy duty road access to and from this port facility.

The single line of rail that could be used by freight has three tight bends in it leading through the south of the southern end of the suburb of Mascot, parallel to Qantas Drive, and this adds to the unattractiveness of using rail infrastructure as a primary interface with Port Botany.

Road Connectivity

The heavy duty roads leading in and coming from Port Botany are quite sufficient for the future needs, but beyond the immediate area of the suburbs of Mascot and Botany, there is very significant road congestion that usually coincides with commuter peak hour traffic.

Activity is well underway to widen the M5 motorway, but even then the provision of this extra supply in roads will lead to even more congestion in a few years time as demand naturally increases to match this new supply of road infrastructure.

Widening the road infrastructure (ie the M5 etc) is a short term and fundamentally flawed strategy that as before will again get blocked simply because of the high number of road vehicles required to move thousands of containers to and from the Port Botany internodal sea terminal.

Rail Connectivity

There is a dual line of rail infrastructure leading from / to Port Botany and this connects to Sydenham / Tempe through a rather complex rail switching grid that has tight cornering to connect.

To further frustrate this rail infrastructure usefulness, there are three tight rail corners through the south end of Mascot near Qantas Drive that inhibit the ability for rail traffic to travel at speeds much exceeding 20 to 30 km/h.

Another problem is a level crossing at the south of Mascot from Botany Road to General Holmes Drive.

The rail track from Port Botany diverges north-west from Qantas Drive to cross over the canal north of the Sydney Airport runway before it then loops into Marrickville station through another fairly tight bend again crippling the connectivity and transit speed. This track goes through another tight bend near Belmore Sports ground before leading into the Enfield holding yards.

The upside is that rail freight can carry in excess of 100 containers per train; if the rail is straight enough. Per bulk equivalent load, the carbon footprint using rail is far less than using road freight.

The accompanying upside is that with rail freight being a prime movement instrument to and from Port Botany, then most of the road congestion that was caused by road freight, commuter vehicles and light commercial vehicles (particularly in the M5, and King Georges Road / Pennant Hills Road / Pacific Highway / Hume Highway / F3) will be considerably diminished.

The investment here to improve the freight rail infrastructure connecting with Port Botany will have tremendous knock-on effects in minimising the overall costs for other infrastructure projects in NSW. It is this strategy that makes this project extremely viable, and a very high priority over most road based semi-solutions.

Connecting the Freight Rail Infrastructure

Currently the Southern and Northern Freight corridors is poorly connected to Port Botany as the connection is via Enfield yards and then out to the southern line via Chullora yards towards Liverpool, else back towards Sydney on the Western line and a hook turn west of Strathfield to go up the Epping line towards Hornsby, which has very tight bends at Beecroft.

Connect to the Southern Corridor

My issue is that there is a nearly straight-line rail track easement running from Campbelltown to Glenfield, branch through to Holsworthy then through Kingsgrove to Wolli Creek, through to Port Botany. This rail track could and should be used as the prime connection to the inland Southern corridor, but the Wolli Creek – Port Botany section does not exist.

My strategy here is that west of Wolli Creek station a new rail connection be run that elevates as it transits east crosses over the Princes Highway (just north of the bridge) with a clearance of about 5 m then passes over the northern tip of Tempe Park, levels into the small hill east of the park and runs along the northern side of Airport Drive to join the existing rail freight lines from Port Botany. The elevated rail bridge would be about 1.4 km long

Connect to the South Coast Corridor

The issue here is that the South Coast has a difficult freight rail connection that is done with tight turns near Tempe and Marrickville. With the proposed nearly straight west tracks going towards and through Wolli Creek station, this rail line obliquely crosses over the top of the South Coast line that passes through Hurstville – to Wollongong – Nowra.

My strategy here is that a branch line be run off the elevated line Port Botany – Wolli Creek section and join it in a sweeping turn from Port Botany towards the south.

With this junction in place, quick freight rail connectivity is now possible from the South coast with Port Botany without transiting into Marrickville switching area. This also greatly frees up the commuter traffic, as this junction at Marrickville is a known congestion area.

Connect Direct to Port Botany

My issue here is that literally from Port Botany terminal to Mascot, this rail track is still single line working but there are facilities (bridges and easement) to make this dual line working at any time.

My strategy is that this corridor be made dual line working as a matter of immediate urgency, so that rail traffic can safely and quickly work this section without having to wait for oncoming through traffic.

Very Slow Transit Through Mascot

My issue is the tight bends leading through the south of Mascot is that these tight bends need to be considerably straightened out so that freight rail services can operate smoothly and quietly on a 24/7 basis.

From Port Botany, the two-track freight rail paths hug Qantas Drive around the north-east of Sydney Airport, and here the track that three tight bends just south of Mascot.

My strategy here is that the two lines of track be run about 5 m clearance over the southern part of Mascot suburb so that the bend near the level crossing is opened, the tight bend off the south west end of Robey Street is totally avoided and the tight bend near the eastern end of King Street is considerably opened.

This proposed overhead rail would be about 5 m above ground level and be about 1380 m long. Much of this proposed easement will be in industrial areas and parking lots and vacant land, there would be about 30 houses / factory units that would need to be removed.

Freight trains could then run overhead on standard prestressed concrete beams spaced with supports every 25 m (as done with Fortescue Mining Group for their fully loaded ore trains in WA). The trains would be comparatively quiet because the bends in the tracks would be minimised and the overhead construction would be standard pre-stressed concrete with acoustic reflectors to channel the engine noise.

The picture above shows the proposed rail alignment corridor path as a thick green line over the south of Mascot and from a branch line pair just north of the Airport, over the Prices Highway towards Wolli Creek station into the East Hills line.

At the lower left, the rail branch aligns with the existing Hurstville – Wollongong – Nowra line. At the left the rail aligns with the Wolli Creek – East Hills line, and at the top the rail aligns with the freight line towards Marrickville - Enfield. At the lower right the proposed rail aligns with the current rail with Port Botany, but with a dual carriage way to enable Quick Rail Freight facilities right into Port Botany.

The link from west of Wolli Creek to the proposed junction north of Sydney Airport is very largely over non-suburban territory, so considering the residents in the area and the noise from the very local Sydney Airport the effects of this link will be minimal.

The link from Port Botany over the south area of Mascot is a somewhat of a concern, but on a closer inspection a very high proportion of this proposed freight rail track is either over existing ground level car parks, through existing industrial areas, and through what I believe (Google) to be either vacant land and/or about 30 residential houses and/or factory units in total.

On the positive side, the newly cleared land in the new tight corridor for the overhead rail bridge should be rezoned as parklands, and car parking facilities. The longer original rail path where the tight bends in the original track was should be rezoned / reclaimed as extra housing and light industrial, and car parking facilities.

The length of the existing track at the southern end of Mascot is about 1380 m, while the length of the proposed new overhead track through the southern end of Mascot is about 1150 m, which is about 20% less in length than the current rail easement. This now released rail easement space should provide for about 60 house and factory units not far from where these were originally.

Because this is an overhead bridge (much like the M4 road overpass near Harris Park to Granville), the easement can be quite narrow so the overall affect in this community and businesses in this area should be very positive.

Conclusion

This proposed freight rail corridor to connect Port Botany with a dual freight track in place of the single freight track to and through Mascot / Botany is imperative as the first step to correct this land-locked situation.

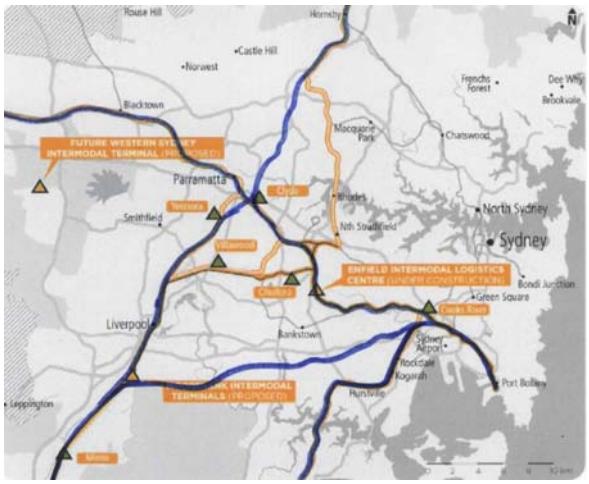
The proposed re-alignment of the dial freight rail track through the southern end of Mascot to connect with the existing line near Qantas Drive / Airport Drive, immediately north of Sydney Airport will provide the capability of quick rail freight without tight bends through this industrial / suburban area.

The associated proposed dual rail link from near Airport Drive directly across to the East Hills line at Wolli Creek with another elevate rail bridge will provide a quick and direct link to the Southern Freight corridor via the East Hills line through Glenfield towards Goulburn.

The associated proposed junction with the South Coast line be an oblique join about 500 m south east of Wolli Creek station will provide the quick freight rail connectivity for Port botany with the South Coast.

If this proposal is followed through the freight rail connectivity of Port Botany will be substantially improved such that quick freight rail infrastructure will considerably unload the present and future road freight traffic congestion in Sydney and on major highways connecting with Sydney. The rail corridors proposed here will considerably alleviate heavy road freight on the M5, Hume Highway, Princes Highway, King Georges Road / Pennant Hills Road, and the Pacific Highway. For commuter traffic on the roads this would be a very welcome break.

If my proposal to construct a Sydney Basin Freight link between Casula and Hornsby, then there is a range of synergies that make rail freight very attractive for NSW. The proposal[1] as an almost straight red line is as shown on the map below left:



My proposed strategy here is by utilising the southern rail link from Casula to Guildford, then tunnelling through to Rose Hill (about 4.0 km), deliberately avoiding Parramatta, then using the rather unutilised Carlingford line and easement to Carlingford, then tunnelling under Carlingford, the M2 and Beecroft to join the "Epping" line just south of Pennant Hills Road and Pennant Hills station; then this directly connects through Hornsby up the Sydney Northern freight corridor.

This direct north / south corridor then opens the rail freight network through Sydney so that the northern end of this link – from Clyde to Hornsby provides a fast freight (and commuter) link through Hornsby without doing a tight U turn west of Strathfield and then freight totally avoids the Epping line including the tight bends at Beecroft / Cheltenham.

With this in place then Sydney's Northern Freight corridor can easily use rail freight as the economic option, again freeing up the Pennant Hills and the F3.

The picture on the right above shows the larger picture of the proposed freight rail infrastructure through the Sydney Basin.

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