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2 June, 2011

Ms Lisa Chan
Department of Planning and Infrastructure
23-33 Bridge Street
Sydney NSW 2000

Dear Lisa

Major Project Application No.MP 09_0096
Newcatle Port Corporation - Mayfield Concept Plan

1.0 Introduction

AECOM acts on behalf of Newcastle Port Corporation (NPC) who is the proponent for the Mayfield Concept Plan application. We are responding to the further submissions received by the Department of Planning and Infrastructure (DPI) in relation to the Submissions Report prepared by AECOM dated December 2010.

This response has been structured to address the key transport related issues summarised in the letter from DPI to AECOM dated 31 March 2011 and also to address a couple of other discrete issues including the strategic justification for the project and considerations relating to the air quality assessment.

In preparing this response AECOM and NPC have held the following meetings with key government agencies and other stakeholders:

- Meetings with Department of Planning and Infrastructure on 11 April and 25 May 2011;
- Meetings with Transport NSW on 2 and 31 May 2011;
- Meeting with NSW Roads and Traffic Authority (RTA) and Newcastle Council on 4 May and conference call with RTA on 31 May 2011;
- Meeting with Hunter Development Corporation and Buildev on 4 May 2011;
- Meetings with Australian Rail Track Corporation (ARTC) on 16 May and 1 June 2011.

2.0 Key Issues – Transport and Access

The responses provided below are in accordance with the issues outlined in the DPI letter dated 31 March 2011.

2.1 Freight Movement and Mode Splits

2.1.1 DPI Issue

The veracity and achievability of the proposed transport mode split and potentially higher rail mode splits, particularly in relation to current and future local and regional rail network capacity constraints, infrastructure upgrades (including the Northern Sydney Freight Corridor project), available train paths, and train and intermodal characteristics, configurations and capacity, requires further justification. Assumptions relating to origin and destination of truck and train movements should also be provided.

2.1.2 Response

After consultation with Transport NSW and ARTC a revised and improved rail configuration is proposed to service the Concept Plan. There are a number of important drivers/assumptions for the revised configuration:

- The limited number of available train paths on the Main North railway line between Sydney and Newcastle particularly during the peak curfew period;
- No additional train paths will be made available for the Port as a result of Stage 1 of the North Sydney Freight Corridor (NSFC) project. Additional train paths that will be created by Stage 1 are likely to be prioritised for Interstate Freight services;
- Stages 2 and 3 of the NSFC project are not currently funded and therefore cannot be relied upon for the creation of additional train paths;

- The need to maximise the size/length of trains servicing the Port and therefore maximising the volume of containers able to be moved through the Port by rail;
- Ensuring that the size/length of Port trains is compatible with the new intermodal standard that ARTC intends operating from Port Botany (600m rake plus two locomotives in push/pull configuration).

The proposal is for Port trains to utilise some of the train paths that are currently available on the Main North line between the hours of 7pm and 5am each day (outside of the peak curfew period). Based on the submission by Transport NSW and subsequent discussions with that agency it is understood that there are currently up to 10 train paths available in each direction on the Main North line. After Stage 1 of the NSFC project it is understood that there will still be up to 5 train paths available in each direction. Almost all of these train paths are available outside of the peak curfew period.

It is proposed that 3 x 1,300m length trains (3 up paths and 3 down paths) would service the Port each day during the 7pm to 5am night time period. The trains would comprise two x 600m long rakes plus locomotives in a push/pull configuration. Based on the train loading assumptions listed in **Table 1** below, it is expected that 3 trains per day can move a total of approximately 214,500 TEUs per annum. At full development of the Concept Plan in 2034 this would constitute approximately a 21.5% modal split to rail, which is slightly higher than the 20% rail split modelled as the base case in the Environmental Assessment (EA).

Table 1 Port Trains - Loading Assumptions

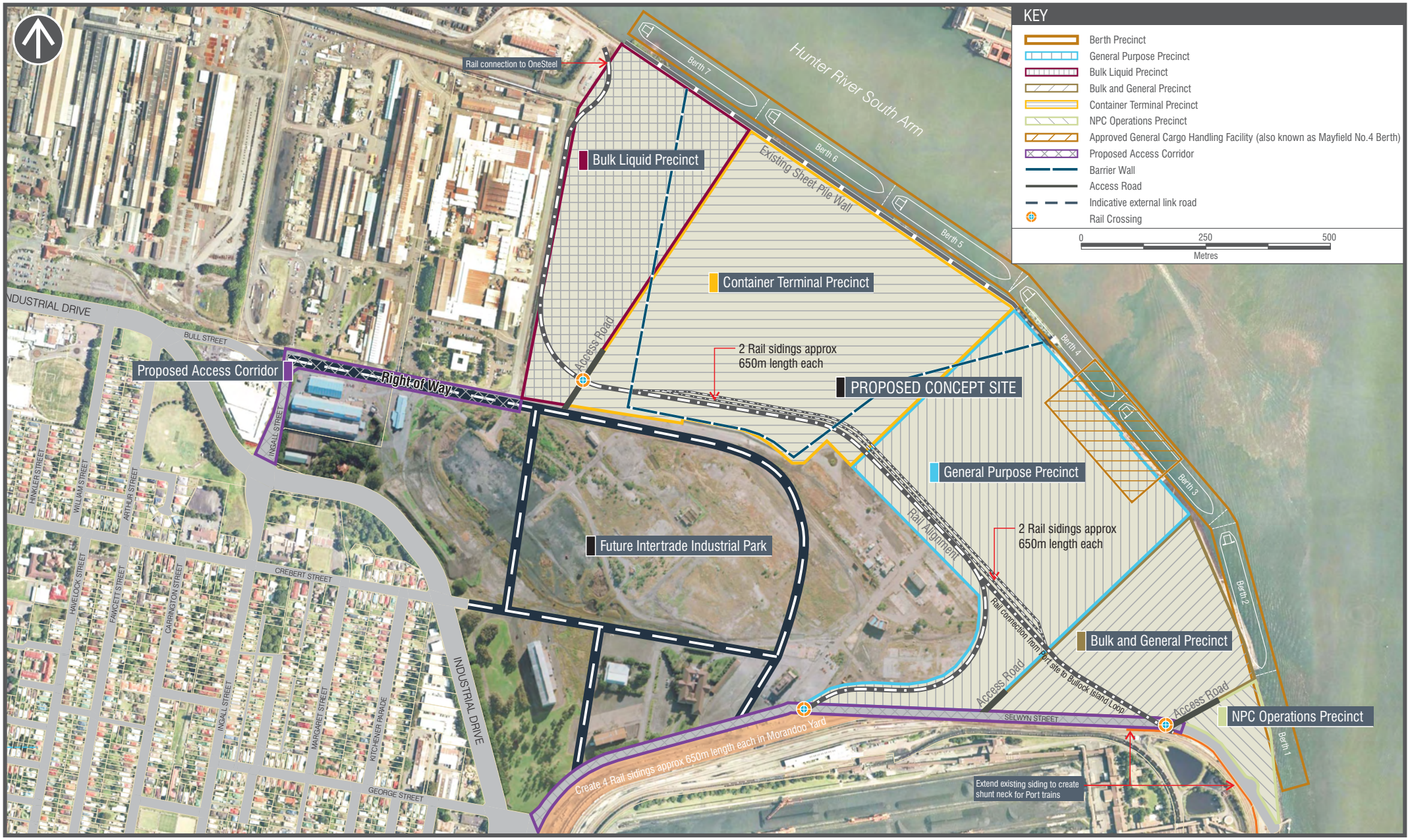
Issue	Assumption
Train length	1,300m (two x 600m rakes plus locomotives)
No of Wagons per Train	80
No of Containers per Train	160
Container Utilisation	85%
Operating Days per Year	315
Number of Trains per Day	3 (3 up and 3 down)
% Import and % Export	60% and 40%
Total Containers	**214,500 TEUs per annum**

The train from Newcastle Port to Sydney would take around 3.5 hours one way. Loading/unloading time for a train at the port is estimated at approximately 4 hours.

To cater for this number and size/length of trains certain upgrades to local rail infrastructure are proposed as detailed below:

- Within the Concept Plan site a new rail line will be extended between the One Steel line and the Bullock Island loop. This rail line will provide more direct access to the site for Port trains and it will also allow for two x 650m length rail sidings to be developed within the Port site to service the longer 1,300m length trains;
- An available shunt neck on the Bullock Island loop will be used and extended to a point some 700m beyond the new rail entry to the Port site to provide for Port trains to enter and exit. Trains will enter the shunt siding and then will be split into two x 650m lengths before entering the sidings either within the Port land or the Morandoo Yard (see below);
- The Morandoo Yard (road numbers 1 to 5) will be reconfigured to provide a total of four x 650m length rail sidings to hold two Port trains while a third train is within the rail sidings within the Port site. Much of the infrastructure within the Morandoo Yard is not currently used or is significantly under utilised. Discussions with ARTC have confirmed that this arrangement is feasible;
- The new operations are designed so that they do not directly impact on train operations on the One Steel line, the Port Waratah line and the Bullock Island loop. The additional Port trains will need to be scheduled within the available timetable slots to avoid conflict with these other train operations.

These works are outlined in **Figure 1** on the following page. For more detail of the proposed rail infrastructure works a detailed track diagram is provided as **Attachment 1** to this letter.



AECOM

ROAD AND RAIL ACCESS CONFIGURATION

Response to Submissions

Mayfield Site Port-Related Activities Concept Plan

Figure 1

In the short/medium term while the container freight volumes are building up it is possible that the train operations could start with only one 1,300m length train per day (71,500 TEUs per annum). Alternatively smaller trains of around 800m length could be used to service the site. The revised rail configuration including the two x 650m length sidings within the site would adequately support either of these scenarios.

In the longer term there is potential for this modal split to rail to be further increased by adding additional rail sidings within the site and by adopting more efficient gantry style loading/unloading operations. For example a 4th 1,300m long train could service the Port if two additional 650m long sidings were provided within the site. This would increase container volumes moved by rail to approximately 286,000 TEUs per annum.

The arrangements proposed above do not rely on additional train paths created by Stage 1 of the NSFC project which is funded or by subsequent Stages 2 and 3 of the project which are currently unfunded. If additional train paths become available at some point in the future to service the Port land, particularly during the current peak curfew period, then the operational arrangements could be reviewed at that time. This scenario could only improve train operations by allowing improved cycling of trains between Sydney and Newcastle and as a result the rail modal split for the Port would also improve.

2.2 Site Integration

2.2.1 DPI Issue

It is unclear how the project would interact with the rail and intermodal requirements of the adjoining Intertrade site, including access to port facilities, impacts on available train paths and the functionality of a future intermodal terminal on this site. Further advice on this matter is required.

2.2.2 Response

The future development of the Mayfield Concept Plan and Intertrade Industrial Park will require a level of integration so to optimise the operations and development of each respective development. NPC is willing to provide easements or similar connections through the site to support access and infrastructure connections from the Intertrade site to the Port land and the waterfront. However, this undertaking is on the proviso that the adjoining site is developed in a manner generally consistent with its intended purpose (Intertrade Industrial Park) and the long standing planning intent for the Mayfield Port land.

Mechanisms have been developed to achieve this, through the establishment of a State Coordination Deed between NPC, Hunter Development Corporation (HDC) and the state Property Authority (SPA) and a Project Coordination Deed between NPC, HDC, SPA and Buildev.

The Project Coordination Deed acknowledges that access interdependencies exists between the lands and works carried out in one area may directly or indirectly affect another area of the Site. As such, the deed provides a framework for co-ordination of development and for consultation between all parties. A copy of the Project Co-ordination Deed can be made available to DPI if requested.

The revised rail arrangements mean that Port trains do not need to use the One Steel line. The One Steel line would be available to service the Intertrade site.

A meeting was held between NPC, Buildev and HDC during the development of this response.

2.3 Road Trip Generation

2.3.1 DPI Issues

As noted in the RTA's submission, the loading assumptions and vehicle rates still appear to be optimistic (based on a review of the Port Botany facility) and potentially underestimate road traffic volumes. Further justification of these assumptions and rates is required.

2.3.2 Response

Through a meeting with the RTA on 4 May 2011, it was determined that the RTA's main concerns are with the trip generation rates used to predict the heavy and light vehicles generated by the Concept Plan.

Heavy Vehicles

The loading assumptions used to generate the number of heavy vehicles trips for the NPC Mayfield development are contained in **Table 2**, together with the rationale for their use. **Table 3** provides further detail specifically in relation to justifying the assumptions used for the container terminal.

Table 2 **Average Loading Assumptions**

Per Truck	Unit	Quantity	Rationale
Bulk	Tonnes	35	Same assumption made in previous freight studies, such as Port Kembla, which have been reviewed and approved by Port and road authorities.
General Cargo	Tonnes	25	Same assumption made in previous freight studies, such as Port Kembla, which have been reviewed and approved by Port and road authorities.
Containers	TEU	1.8	Comparable to the assumptions made in previous Port Botany and Port Kembla studies and in the NSW Container Freight Improvement Strategy (see **Table 3**).
Bulk Liquid	ML	0.05	The yearly loading of 18ML per tanker, rather than the tanker loading of 0.05ML, was erroneously stated in the December 2010 TIA report (0.05ML/tanker x 365 days = 18.25ML, rounded down to 18ML). The total number of trucks per year and per day stated in the TIA report are correct. The loading assumptions and daily trip generation have been confirmed with the likely operators of the Bulk Liquid facility. It is also consistent with the trip generation used in *Proposed Bulk Liquid Storage Depot, Mayfield North, NSW*, Mark Waugh Pty Ltd, September 2008.

Table 3 **Comparison of Container Loading Assumption from Previous Studies**

Study	Container Loading Assumption
Port Botany Traffic and Landside Study, Maunsell, 2002	1.89 - 2.0 TEUs / truck
Port Botany Expansion, URS, 2003	2.1 TEUs / truck
Port Kembla Outer Harbour Traffic Impact Assessment, AECOM, 2010	2.0 TEUs / truck
NSW Container Freight Improvement Strategy, SAHA, 2010	1.8 TEUs / truck
NPC Mayfield Transport Assessment, AECOM, 2010	1.8 TEUs / truck

The loading assumption used to generate the number of heavy vehicles trips for the NPC container terminal is comparable to those assumptions made in Port Botany and Port Kembla Studies in addition to the NSW Container Freight Improvement Strategy.

Light Vehicles

Some questions were raised by the RTA in relation to the assumptions relating to overall employee numbers and light vehicle movements generated by the Concept Plan, particularly having regard to earlier assessments carried out for Port Botany as documented in the *Port Botany Traffic and Landside Study*, Maunsell, 2002.

The analysis of peak hour light vehicle movements below examines this issue in the context of both a land area and employee based comparison.

Land Area-based

In reviewing the *Port Botany Traffic and Landside Study*, Maunsell, 2002, which is referred to in the RTA response, Section 4.3.5 (page 63) of that report indicates that the Port Botany expansion (60ha in size) would generate 48 light vehicles in the peak hour. This equates to 0.8 light vehs/ha.

The NPC Mayfield study assumed 90 light vehicles generated during the peak hour in 2034 (final operation scenario) for a development area of 90ha. Applying the same rate as the Port Botany Study (0.8 light vehs/ha) to the NPC development equates to 72 light vehs / peak hour. This is 18 light vehicles less per hour than what was analysed in the NPC traffic study (90 light vehs / peak hour).

Employee-based

The Maunsell 2002 report indicated that the current port operations had two stevedoring operations (Patrick and P&O) with a total of 730 employees which generated 96 light vehicles in the peak hour. This equates to 0.13 light vehs / employee.

The NPC Mayfield development is expected to have 300 employees in 2034. Applying the same rate as the Port Botany Study (0.13 light vehs / employee) to the NPC development equates to 39 light vehs / peak hour. This is 51 light vehicles less per hour than what was analysed in the NPC traffic study (90 light vehs / peak hour).

The 2002 Maunsell report stated that the projected light vehicle trips for the Port Botany expansion are lower in number than the heavy vehicle trips in the AM and PM peaks due to the fact that shift changeover times do not correspond with the road system peaks. So, the light vehicle traffic generated by the port in the road peaks would be limited to those generated by visitors such as business meetings and trades people.

By comparison the AECOM assessment for the Mayfield Concept Plan has assumed that a much higher percentage of employee traffic would enter and leave in the road peaks and hence this analysis of light vehicles is conservative when compared to the Port Botany Study.

It is also likely that the higher employee numbers at Port Botany were the result of a number of factors including the fact that Port Botany is a significantly larger scale of port facility which at full development will have multiple (3) stevedoring operations as opposed to only one stevedoring operation which is likely at Mayfield. Multiple stevedoring operations create some inefficiencies in respect to staffing numbers.

It should be noted that the estimate of employee numbers for the Concept Plan has been provided by NPC based on its extensive experience and also based on recent discussions with potential operators of the site.

We feel that the above justification is sufficient to confirm that the current light vehicle generation assumptions are robust.

Note

By way of clarification to a query from the RTA, it is noted that Figure 3.6 of the *Port Botany Traffic and Landside Study*, Maunsell, 2002 appears to indicate a large number of light vehicles entering and exiting the Port area during the PM peak at various intersections. In fact this figure is labelled incorrectly and the reference in yellow to 'Light Vehicles' should actually refer to 'Total Vehicles' as per Figure 3.5 which relates to the AM peak.

2.4 Heavy Vehicle Routes

2.4.1 DPI Issue

Indicative heavy vehicle routes from the site need to be further described and mapped, including further advice on the capacity of these routes and associated traffic impacts.

2.4.2 Response

As described in the Submissions Report it is anticipated that the vast majority of traffic from the Concept Plan (80%) will travel north west along Industrial Drive and then connect either to:

- Kooragang Island via the Tourle Street Bridge; or
- the Pacific Highway at Hexham via Maitland Road or;
- the F3 Freeway at Beresfield via the New England Highway and John Renshaw Drive.

The balance of the traffic generated from the Concept Plan (20%) is anticipated to travel south east toward Newcastle and the surrounding urban area and then further south via the Pacific Highway to areas of the Central Coast.

This heavy vehicle route is shown on the attached **Figure 2**. The route follows the main arterial road network and largely avoids nearby residential areas.

It is anticipated that the majority of heavy vehicles will travel north west along Industrial Drive to the Pacific Highway or F3 Freeway travelling along the main haulage route (as shown in **Figure 2**):

- Industrial Drive to Maitland Road (Pacific Highway) and then to Pacific Highway travelling north; or
- Industrial Drive to Maitland Road (Pacific Highway) to New England Highway to John Renshaw Drive and then to F3 Freeway travelling south.

The most recent midblock hourly traffic data has been obtained from the RTA at eight locations along the haulage route. The locations of the midblock hourly counts obtained from the RTA are shown in **Figure 2**. It should be noted that recent hourly counts were not available for all locations specified in the original TIA's broader road network analysis.

Figure 2 Anticipated Haulage Route

The midblock hourly counts have been factored up to represent midblock traffic counts in 2024 and 2034. The growth rate used at each location is based on historical and recent RTA traffic data at that location, with the exception of Industrial Drive where a growth rate of 1% per annum has been applied, as per agreement with the RTA.

Table 4 shows the average annual growth rates at each location calculated from historical published RTA AADT data (1998 – 2004) and recent traffic counts obtained from the RTA (2004 – 2010). The long term trend (1998 – 2010) of average annual traffic growth has also been determined.

Table 4 **Average Annual Growth Rates**

ID	Road	Location	Average annual growth rate
1	Industrial Drive	Mayfield, north west of Woodstock St	1.0%
2	Industrial Drive	Mayfield West, west of Werribi St	1.0%
3	Pacific Highway	B/w Industrial Dr and Wallsend Rd	1.0%
4	Pacific Highway	Hexham, south of Hexham Bridge	3.0%
5	New England Highway	Hexham, North of Pacific Hwy	2.1%
6	John Renshaw Drive	Beresfield, west of New England Hwy	4.1%
7	F3 Freeway	South of John Renshaw Drive	2.2%
8	Pacific Highway	North of Hexham Bridge	1.0%

*Growth rates highlighted in red have been used in the following analysis

Growth rates as provided in

Table 4 **Table 4** were sourced from the RTA. They indicate that growth rates average between 1 – 2 % for the majority of the routes, with the exception of Pacific Highway south of Hexham Bridge and John Renshaw Drive.

The development traffic generated is consistent with the December 2010 TIA analysis, in particular it is assumed that 80% of all vehicles will travel north along Industrial Drive, 20% will then split and travel along Tourle Street to Kooragang Island and then there will be a 50/50 split north and south at the Hexham Bridge.

However, in this analysis below the following additional assumption has been made with regards to development traffic:

- A factor of 3.25 has been used to convert heavy vehicles into PCUs for analysis purposes.

Table 5 shows the average 2010 week day peak hour count at the locations along the haulage route and the road midblock capacity (ref: Guide to Traffic Management: Part 3 Traffic Studies Analysis, Austroads 2009).

The 2024 and 2034 traffic counts presented in the table include both background traffic and background plus development generated traffic.

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Table 5 **Current (2010) and Future (2024, 2034) Peak Hour Counts along Haulage Route**

ID	Road	Location	Direction	Average weekday peak hour count (2010)		Capacity (vehs/hr)	Average annual growth %	Average weekday peak hour count (2024)		Average weekday peak hour count (2024) + dev		Average weekday peak hour count (2034)		Average weekday peak hour count (2034) + dev	
				AM Peak	PM Peak			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
1	Industrial Drive	Mayfield, north west of Woodstock St	Two way	3,861	3,732	3,800	1.0%	4,438	4,290	4,917	4,769	4,902	4,739	5,578	5,414
2	Industrial Drive	Mayfield West, west of Werribi St	EB	1,536	1,324	1,900	1.0%	1,766	1,522	2,050	1,654	1,951	1,681	2,346	1,874
			WB	1,397	1,512	1,900		1,606	1,738	1,705	1,989	1,774	1,920	1,919	2,267
3	Pacific Highway	B/w Industrial Dr and Wallsend Rd	Two way*	3,148	3,294	6,800	1.0%	3,600	3,767	3,983	4,150	3,991	4,177	4,532	4,717
4	Pacific Highway	Hexham, south of Hexham Bridge	Two way**	3,795	4,134	6,800	3.0%	5,912	6,441	6,296	6,824	7,946	8,656	8,486	9,196
5	New England Highway	Hexham, North of Pacific Hwy	NB	1,758	2,862	4,000	2.1%	2,352	3,829	2,401	3,954	2,895	4,713	2,967	4,886
			SB	2,834	2,158	4,000		3,791	2,887	3,933	2,953	4,667	3,554	4,864	3,650
6	John Renshaw Drive	Beresfield, west of New England Hwy	EB	1,394	1,225	4,000	4.1%	2,446	2,150	2,588	2,216	3,656	3,213	3,854	3,309
			WB	1,187	1,470	4,000		2,084	2,580	2,134	2,706	3,115	3,856	3,187	4,030
7	F3 Freeway	South of John Renshaw Drive	NB	1,653	1,329	4,000	2.2%	2,242	1,802	2,384	1,868	2,787	2,241	2,984	2,337
			SB	1,125	1,677	4,000		1,526	2,274	1,575	2,400	1,897	2,827	1,969	3,001
8	Pacific Highway	North of Hexham Bridge	Two-way	3,162	3,373	6,800	1.0%	3,635	3,877	3,827	4,069	4,015	4,283	4,285	4,553

* 2011 counts ** 2009 counts

Table 6 and Table 7 show midblock capacity with and without development traffic present in 2024 and 2034 in the AM and PM peak hours respectively. It should be noted that the analysis is based on the current lane capacities as no upgrades are proposed at present. Those cell shaded red indicate where capacity is exceeded.

Table 6 Midblock Degree of Saturation – AM Peak Hour

ID	Road	Location	Direction	AM Peak				
				2010 Base	2024 Base	2024 + Dev	2034 Base	2034 + Dev
1	Industrial Drive	Mayfield, north west of Woodstock St	Two-way	1.02	1.17	1.29	1.29	1.47
2	Industrial Drive	Mayfield West, west of Werribi St	EB	0.81	0.93	1.08	1.03	1.23
			WB	0.74	0.85	0.90	0.93	1.01
3	Pacific Highway	B/w Industrial Dr and Wallsend Rd	Two-way	0.46	0.53	0.59	0.59	0.67
4	Pacific Highway	Hexham, south of Hexham Bridge	Two-way	0.56	0.87	0.93	1.17	1.25
5	New England Highway	Hexham, North of Pacific Hwy	NB	0.44	0.59	0.60	0.72	0.74
			SB	0.71	0.95	0.98	1.17	1.22
6	John Renshaw Drive	Beresfield, west of New England Hwy	EB	0.35	0.61	0.65	0.91	0.96
			WB	0.30	0.52	0.53	0.78	0.80
7	F3 Freeway	South of John Renshaw Drive	NB	0.41	0.56	0.60	0.70	0.75
			SB	0.28	0.38	0.39	0.47	0.49
8	Pacific Highway	North of Hexham Bridge	Two-way	0.47	0.53	0.56	0.59	0.63

Table 7 **Midblock Degree of Saturation – PM Peak Hour**

ID	Road	Location	Direction	PM Peak				
				2010 Base	2024 Base	2024 + Dev	2034 Base	2034 + Dev
1	Industrial Drive	Mayfield, north west of Woodstock St	Two-way	0.98	1.13	1.26	1.25	1.42
2	Industrial Drive	Mayfield West, west of Werribi St	EB	0.70	0.80	0.87	0.88	0.99
			WB	0.80	0.91	1.05	1.01	1.19
3	Pacific Highway	B/w Industrial Dr and Wallsend Rd	Two-way	0.48	0.55	0.61	0.61	0.69
4	Pacific Highway	Hexham, south of Hexham Bridge	Two-way	0.61	0.95	1.00	1.27	1.35
5	New England Highway	Hexham, North of Pacific Hwy	NB	0.72	0.96	0.99	1.18	1.22
			SB	0.54	0.72	0.74	0.89	0.91
6	John Renshaw Drive	Beresfield, west of New England Hwy	EB	0.31	0.54	0.55	0.80	0.83
			WB	0.37	0.65	0.68	0.96	1.01
7	F3 Freeway	South of John Renshaw Drive	NB	0.33	0.45	0.47	0.56	0.58
			SB	0.42	0.42	0.57	0.60	0.71
8	Pacific Highway	North of Hexham Bridge	Two-way	0.50	0.57	0.60	0.63	0.67

Table 8 to **Table 11** show midblock capacity with and without development traffic present in 2024 and 2034 for hours out of peak times.

Table 8 Industrial Drive Mid Block Analysis Off Peak Westbound

Time	AWT*	2024	v/c#	2024 + dev	v/c	2034	v/c	2034 + dev	v/c
0.00	115	133	0.07	417	0.22	147	0.08	542	0.29
1:00	96	111	0.06	395	0.21	122	0.06	518	0.27
2:00	106	122	0.06	406	0.21	135	0.07	530	0.28
3:00	113	129	0.07	414	0.22	143	0.08	538	0.28
4:00	160	184	0.10	468	0.25	203	0.11	599	0.32
5:00	597	687	0.36	971	0.51	759	0.40	1154	0.61
6:00	1175	1351	0.71	1635	0.86	1492	0.79	1888	0.99
7:00	1413	1624	0.85	1908	**1.00**	1794	0.94	2189	**1.15**
8:00	1536	1766	0.93	2050	**1.08**	1951	1.03	2346	**1.23**
9:00	1189	1367	0.72	1651	0.87	1510	0.79	1905	**1.00**
10:00	1116	1283	0.68	1567	0.82	1417	0.75	1812	0.95
11:00	1084	1246	0.66	1530	0.81	1376	0.72	1772	0.93
12:00	1062	1221	0.64	1353	0.71	1349	0.71	1542	0.81
13:00	1079	1240	0.65	1373	0.72	1370	0.72	1563	0.82
14:00	1168	1342	0.71	1475	0.78	1483	0.78	1676	0.88
15:00	1260	1449	0.76	1581	0.83	1600	0.84	1793	0.94
16:00	1324	1522	0.80	1654	0.87	1681	0.88	1874	0.99
17:00	1288	1481	0.78	1613	0.85	1635	0.86	1828	0.96
18:00	732	842	0.44	974	0.51	930	0.49	1123	0.59

Time	AWT*	2024	v/c#	2024 + dev	v/c	2034	v/c	2034 + dev	v/c
19:00	414	476	0.25	608	0.32	526	0.28	719	0.38
20:00	333	383	0.20	515	0.27	423	0.22	616	0.32
21:00	256	295	0.16	427	0.22	326	0.17	519	0.27
22:00	246	283	0.15	415	0.22	312	0.16	505	0.27
23:00	139	160	0.08	292	0.15	176	0.09	369	0.19

* AWT = Average Weekday Traffic

volume / capacity

Table 9 Industrial Drive Mid Block Analysis Off Peak Westbound

Time	AWT	2024	v/c	2024 + dev	v/c	2034	v/c	2034 + dev	v/c
0.00	122	140	0.07	240	0.13	155	0.08	300	0.16
1:00	104	120	0.06	219	0.12	132	0.07	277	0.15
2:00	116	133	0.07	233	0.12	147	0.08	292	0.15
3:00	147	169	0.09	268	0.14	187	0.10	331	0.17
4:00	221	254	0.13	353	0.19	281	0.15	425	0.22
5:00	501	576	0.30	676	0.36	637	0.34	781	0.41
6:00	928	1067	0.56	1166	0.61	1179	0.62	1324	0.70
7:00	1270	1460	0.77	1559	0.82	1612	0.85	1757	0.92
8:00	1397	1606	0.85	1705	0.90	1774	0.93	1919	**1.01**
9:00	1164	1338	0.70	1437	0.76	1478	0.78	1623	0.85
10:00	996	1144	0.60	1244	0.65	1264	0.67	1409	0.74

Time	AWT	2024	v/c	2024 + dev	v/c	2034	v/c	2034 + dev	v/c
11:00	1027	1180	0.62	1279	0.67	1304	0.69	1448	0.76
12:00	1036	1191	0.63	1442	0.76	1315	0.69	1663	0.88
13:00	1135	1304	0.69	1555	0.82	1441	0.76	1788	0.94
14:00	1293	1486	0.78	1737	0.91	1642	0.86	1989	**1.05**
15:00	1512	1738	0.91	1989	**1.05**	1920	1.01	2267	**1.19**
16:00	1466	1685	0.89	1936	**1.02**	1861	0.98	2209	**1.16**
17:00	1373	1578	0.83	1829	0.96	1743	0.92	2090	**1.10**
18:00	759	872	0.46	1124	0.59	964	0.51	1311	0.69
19:00	439	505	0.27	756	0.40	557	0.29	905	0.48
20:00	379	435	0.23	686	0.36	481	0.25	828	0.44
21:00	394	453	0.24	704	0.37	500	0.26	847	0.45
22:00	296	340	0.18	592	0.31	376	0.20	723	0.38
23:00	202	232	0.12	483	0.25	256	0.13	603	0.32

Table 10 New England Highway Mid Block Analysis Off Peak Northbound

Time	AWT	2024	v/c	2024 + dev	v/c	2034	v/c	2034 + dev	v/c
0.00	180	241	0.06	290	0.07	296	0.07	369	0.09
1:00	142	190	0.05	240	0.06	234	0.06	306	0.08
2:00	162	217	0.05	266	0.07	267	0.07	339	0.08
3:00	194	260	0.06	309	0.08	319	0.08	392	0.10
4:00	365	488	0.12	538	0.13	601	0.15	673	0.17

Time	AWT	2024	v/c	2024 + dev	v/c	2034	v/c	2034 + dev	v/c
5:00	808	1081	0.27	1130	0.28	1331	0.33	1403	0.35
6:00	1415	1893	0.47	1942	0.49	2330	0.58	2402	0.60
7:00	1748	2338	0.58	2388	0.60	2878	0.72	2951	0.74
8:00	1758	2352	0.59	2401	0.60	2895	0.72	2967	0.74
9:00	1559	2085	0.52	2135	0.53	2567	0.64	2640	0.66
10:00	1622	2170	0.54	2219	0.55	2671	0.67	2743	0.69
11:00	1735	2321	0.58	2371	0.59	2857	0.71	2929	0.73
12:00	1799	2407	0.60	2532	0.63	2962	0.74	3136	0.78
13:00	1948	2606	0.65	2731	0.68	3208	0.80	3381	0.85
14:00	2313	3094	0.77	3220	0.80	3809	0.95	3982	**1.00**
15:00	2763	3696	0.92	3822	0.96	4550	1.14	4723	**1.18**
16:00	2862	3829	0.96	3954	0.99	4713	1.18	4886	**1.22**
17:00	2599	3477	0.87	3602	0.90	4280	1.07	4453	**1.11**
18:00	1419	1898	0.47	2024	0.51	2337	0.58	2510	0.63
19:00	842	1126	0.28	1252	0.31	1387	0.35	1560	0.39
20:00	699	935	0.23	1061	0.27	1151	0.29	1325	0.33
21:00	678	907	0.23	1033	0.26	1116	0.28	1290	0.32
22:00	524	907	0.23	1033	0.26	863	0.22	1036	0.26
23:00	327	701	0.18	827	0.21	538	0.13	712	0.18

Table 11 New England Highway Mid Block Analysis Off Peak Southbound

Time	AWT	2024	v/c	2024 + dev	v/c	2034	v/c	2034 + dev	v/c
0.00	166	222	0.06	364	0.09	273	0.07	471	0.12
1:00	130	174	0.04	316	0.08	214	0.05	412	0.10
2:00	117	157	0.04	299	0.07	193	0.05	390	0.10
3:00	161	215	0.05	357	0.09	265	0.07	463	0.12
4:00	356	476	0.12	618	0.15	586	0.15	784	0.20
5:00	1263	1690	0.42	1832	0.46	2080	0.52	2277	0.57
6:00	2390	3197	0.80	3339	0.83	3936	0.98	4133	**1.03**
7:00	2834	3791	0.95	3933	0.98	4667	1.17	4864	**1.22**
8:00	2482	3320	0.83	3462	0.87	4087	1.02	4285	**1.07**
9:00	1925	2575	0.64	2717	0.68	3170	0.79	3368	0.84
10:00	1863	2492	0.62	2634	0.66	3068	0.77	3266	0.82
11:00	1925	2575	0.64	2717	0.68	3170	0.79	3368	0.84
12:00	1873	2506	0.63	2572	0.64	3084	0.77	3181	0.80
13:00	1852	2477	0.62	2544	0.64	3050	0.76	3146	0.79
14:00	1970	2635	0.66	2701	0.68	3244	0.81	3341	0.84
15:00	2158	2887	0.72	2953	0.74	3554	0.89	3650	0.91
16:00	2116	2831	0.71	2897	0.72	3484	0.87	3581	0.90
17:00	2004	2681	0.67	2747	0.69	3300	0.83	3397	0.85
18:00	1307	1748	0.44	1814	0.45	2152	0.54	2249	0.56
19:00	788	1054	0.26	1120	0.28	1298	0.32	1394	0.35

Time	AWT	2024	v/c	2024 + dev	v/c	2034	v/c	2034 + dev	v/c
20:00	643	860	0.22	926	0.23	1059	0.26	1155	0.29
21:00	529	708	0.18	774	0.19	871	0.22	968	0.24
22:00	401	536	0.13	603	0.15	660	0.17	757	0.19
23:00	257	344	0.09	410	0.10	423	0.11	520	0.13

Summary

The mid block capacity analysis has been carried out based on some conservative assumptions including:

- Assuming relatively strong growth rates in traffic on the arterial road network over the full 25 year timeframe of the Concept Plan;
- Assuming peak hour traffic movements from the Concept Plan will coincide with peak hour traffic movements on the arterial road network.

The midblock capacity analysis identifies four main areas of concern during peak hour namely:

- Industrial Drive at two locations (one south and one north of Tourle Street);
- New England Highway (Hexham, north of Pacific Highway);
- Pacific Highway (south of Hexham Bridge).

The analysis indicates that where midblock road capacity is exceeded, it is primarily due to background traffic growth. In 2024 and 2034 background traffic will exceed capacity during peak hour at Industrial Drive (south of Tourle Street) In 2034 background traffic will exceed capacity during peak hour at Industrial Drive (north of Tourle Street) , Pacific Highway (south of Hexham Bridge) and New England Highway (Hexham, north of pacific Highway) again without any contribution from Port traffic.

As expected, traffic from the Concept Plan has the most significant impact on mid block capacity at the two locations on Industrial Drive (closest to the Port site). At other locations more distant from the Port site such as the New England Highway and the Pacific Highway (south of Hexham Bridge) the contribution from Concept Plan traffic is more modest by comparison.

It is noted that the major road upgrades of the Hunter Expressway and the extension of the F3 to Raymond Terrace will reduce the amount of background traffic on sections of the haulage route as discussed below;

- The Hunter Expressway (linking into the F3 Freeway opposite the Newcastle Link Road) is likely to reduce traffic on the relevant sections of the F3 Freeway, John Renshaw Drive, the New England Highway and the Pacific Highway south of Hexham Bridge, increasing the amount of future spare midblock capacity along the route;
- The F3 to Raymond Terrace extension (bypassing the New England Highway and the Hexham Bridge) is likely to also reduce traffic on the relevant sections of the F3 Freeway, John Renshaw Drive and the New England Highway.

The above strategic road network improvements are likely to increase mid block capacity on the haulage route over the 25 year timeframe of the Concept Plan.

Further analysis was undertaken to determine capacity on the route out of peak hours. This has demonstrated that for large periods of the day outside of the peak periods, and for all periods during the weekend, there is adequate mid block capacity to cater for Port traffic. The assessment indicates that peak periods on the road network generally occur between the hours of 6am to 9am and between the hours of 3pm and 6pm on weekdays.

This suggests that capacity on the arterial road network can be utilised by co-ordinating peak Port traffic movements so that they do not coincide with the peak periods on the arterial road network.

Conclusion

Analysis has highlighted a number of capacity constraints on the strategic road network during the peak periods, in particular on Industrial Drive, Pacific Highway and the New England Highway.

The analysis suggests that where midblock capacity is exceeded it is primarily due to background traffic growth which will occur without any contribution from Port traffic. This suggests that arterial road improvements may be required, particularly in the longer term horizon, even if the Mayfield Concept Plan did not proceed. Port traffic associated with the Concept Plan will have the most noticeable impact along Industrial Drive closest to the Concept Plan site.

The analysis is based on a set of broad assumptions relating to background traffic growth, modal split and the timing for development of the Concept Plan and the container terminal in particular.

In the context of the Concept Plan the most effective means of mitigating these potential impacts would be to:

- Strive for an increase in the modal split for rail beyond the base case of 20%. This can be achieved by adopting the recommendations discussed in **Section 2.1** of this response to support the introduction of a 4th train per day for the Port. A higher rail modal split would effectively reduce road traffic on the arterial road network;
- Introduce a traffic management plan which sought to manage peak traffic movements to/from the Port so they occur outside the peak periods (6am to 9am and 3pm to 6pm weekdays) on the arterial road network. It is in the interests of future operators of the Concept Plan and transport operators to ensure that transport movements to/from the Port site occur as efficiently as possible;
- Undertake monitoring of traffic flows generated from the Concept Plan at regular intervals focussing on the adjoining Intertrade site and the associated impacts on Industrial Drive in particular.

Given the indicative nature of this phase and level of study, accurate assessments of traffic impacts cannot be made and it is recommended that the impact of the development, with particular focus on these pinch points be monitored and re-evaluated at the project application stages. At this point more detailed understanding of development proposals and their interaction with the Intertrade site will be known. More recent background traffic growth figures and the likely impact of the strategic road improvements on capacity on can also be assessed at these stages.

2.5 Industrial Drive

2.5.1 DPI Issue

The Submissions Report states that traffic along Industrial Drive will comprise of approximately 7.5% of site traffic and that this is considered a small proportion. The Department requires indicative information on the size of the Industrial Drive catchment at this location (in relation to development potential) and what proportion the project site is of this catchment. Further information should also be provided on mid block capacity on Industrial Drive.

2.5.2 Response

In the immediate Mayfield area the two largest sites with significant development potential include the NPC Port site at Mayfield and the adjoining Intertrade site which is to be developed by Buildev. Both these sites were formerly part of the BHP Steelworks which operated until the late 1990's.

Apart from these developments and looking at a broader catchment, further significant development can reasonably be expected to focus on the Kooragang Island area to the north and the Steel River area to the north west.

The Transport Assessment prepared by AECOM and dated December 2010 included an estimate of traffic volumes from both the NPC Concept Plan and Intertrade developments as part of its cumulative impact assessment. In addition the latest mid block capacity analysis included conservative growth assumptions in relation to background traffic growth on the arterial road network.

This should provide a reasonable degree of confidence that the assessments are conservative in nature and suitable for the purposes of a Concept Plan application. More detailed traffic assessments can be provided as part of future project applications lodged by potential operators of the various precincts.

Further information on the mid block capacity on Industrial Drive at two separate locations (south and north of Tourle Street) has been provided in **Section 2.4** above.

This analysis suggests that capacity on the arterial road network can be managed by co-ordinating peak Port traffic movements so that they do not coincide with the peak periods on the arterial road network.

2.6 Road Infrastructure Upgrades

2.6.1 DPI Issue

The timing of the proposed intersection upgrades and internal link road is not clear as they are based on end time frames. Further advice on potential trigger points should be provided.

2.6.2 Response

AECOM's analysis in the December 2010 TIA indicated that intersection improvements were required in 2024 (600,000 TEUs) and 2034 (1,000,000 TEUs).

A sensitivity analysis has been undertaken to determine more accurately (with the best available information at this Concept Plan stage) how many TEUs produced at the container terminal will trigger the required mitigation measures at the intersection (including the link road). The sensitivity analysis is based on the production of the first containers starting in 2016 (as per advice from NPC) and is based on an 80/20 road/rail modal split.

Three additional scenarios in terms of container TEU production have been tested (2017, 2021 and 2029) in addition to the two scenarios already tested in the December 2010 TIA (2024 and 2034). All 5 scenarios are detailed in **Table 12** below.

Table 12 Container Production Scenarios for Analysis

Scenario	Year
200,000 TEUs	2017
400,000 TEUs	2021
600,000 TEUs	2024
800,000 TEUs	2029
1,000,000 TEUs	2034

Similar to the original analysis, the only changes to development tested are the amount of containers and light vehicles generated. The amount of production at the other precincts remains constant in all scenarios. A growth rate of 1% has been applied to the background traffic in order to derive base traffic counts for the future years.

Modelling results

Results of the modelling for the various scenarios is summarised below:

- SIDRA modelling of the Ingall Street intersection, based on the 200,000 TEUs scenario and the base intersection layout (without any mitigation measures), indicates that in the PM peak the intersection will perform at Level of Service (LoS) F and will operate at capacity with a Degree of Saturation (DoS) of 1.003. Therefore a scenario has been tested where the link road is in place for the production of 200,000 TEUs. Analysis shows that with a link road in place, the intersection will perform at LoS D and with approximately 4% spare capacity in the PM peak. This indicates that the mitigation measure of a link road will be required at this level of TEU production in 2017;
- The intersection will perform at LoS F and will operate with a DoS of 1.031 when 400,000 TEUs is produced in 2021, with a link road in place. This indicates that a left slip on Ingall Street southern approach will be required at this level of production in 2021;
- SIDRA modelling of the Ingall Street intersection based on the 800,000 TEUs scenario with the intersection layout improvements (link road + left slip on Ingall Street south) indicates that in the PM peak, the intersection will perform at LoS E and will operate at capacity (DoS 1). This indicates that the mitigation measure of a separate right turn bay on the Ingall Street northern approach is required at 800,000 TEU production in 2029.

Table 13 summarises the indicative infrastructure works associated with the level of TEU production and estimated timing.

Table 13 Annual Container TEUs and Infrastructure Works Required

Annual TEU Scenario	Year	Indicative works required	Explanation
200,000 TEUs	2017	Link road	To redistribute development trips more equitably between the George Street and Ingall Street intersections
400,000 TEUs	2021	Left turn slip lane on the Ingall Street south approach	To increase the efficiency and capacity of the Ingall Street intersection
600,000 TEUs	2024	Nothing further	
800,000 TEUs	2029	Separate right turn lane on the Ingall Street north approach	To increase the efficiency and capacity of the Ingall Street intersection
1,000,000 TEUs	2034	Nothing further	

Note – assumes an 80/20 road/rail modal split.

2.7 Site Access

2.7.1 DPI Issue

The project application and environmental assessment limit the description of the site to Lot 33 DP 115671. However, the Department understands that the proposal outlined in the Concept Plan would require works on and access to other lots particularly in relation to both road and rail access. The Department requires a map identifying each lot affected by the Concept Plan, ownership details and advice that notification to these owners has been carried out in accordance with clause 8F of the Environmental Planning and Assessment Regulation or that owners consent has been obtained.

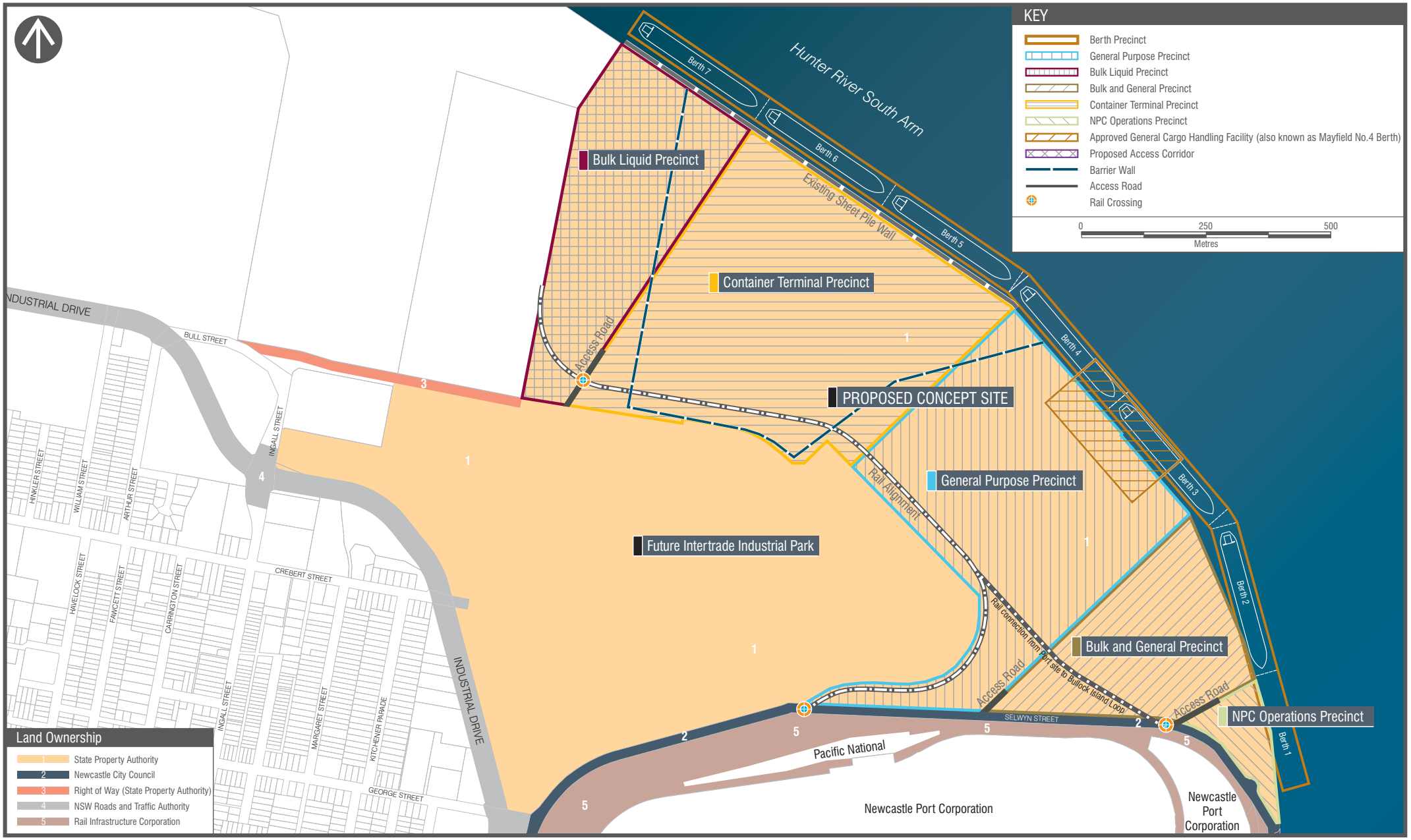
2.7.2 Response:

As part of the EA for the Concept Plan a number of recommendations have been made in relation to works proposed on adjacent land outside the boundary of the Concept Plan site. **Table 14** and **Figure 3** below provides a summary of the various properties involved, the registered owners of each property and the works that are proposed on each property.

Table 14 Land Ownership – Proposed Works on Adjacent Land

Map Reference	General Description	Title Reference	Land Owner	Proposed Works
1	Intertrade Industrial Park	33/1116571	State Property Authority	Link road from Concept Plan site to Ingall Street and Selwyn Street
2	Selwyn Street	NA	Newcastle City Council	Rail crossing of road
3	Right of way (20m wide) connecting to Ingall Street	DP 1032755	State Property Authority	Link road from Concept Plan site to Ingall Street
4	Intersection of Ingall Street/Industrial Drive	NA	RTA (Road Reserve)	Left turn slip lane on northern approach and additional right turn lane on southern approach
5	Bullock Island Loop and Morandoo Yard	2/1097368	Rail Infrastructure Corporation	Rail works to facilitate rail link between Concept Plan site and the Bulloock Island loop Rail works to create four additional 650m long sidings in Morandoo Yard

Letters from NPC advising landowners in accordance with clause 8F of the Environmental Planning and Assessment Regulation for those areas to be affected by the proposed works are included as **Attachment 1**.



AECOM

LAND OWNERSHIP - PROPOSED WORKS ON ADJACENT LAND

Response to Submissions

Mayfield Site Port-Related Activities Concept Plan

Figure 3

2.8 Link Road

2.8.1 DPI Issue

Indicative advice on the location of the internal link road should be provided, including how this link road would maintain access to the site at all times, including during emergency situations and when vehicle access routes are closed during train movements.

2.8.2 Response

It is NPC's preferred position that a link road be provided through the adjoining Intertrade Industrial Park site owned by Buildev to connect the proposed western access road to the Bulk Liquid and Container Terminal Precinct with both Ingall Street and Selwyn Street. This link road would enable traffic from the Concept Plan to be split more evenly between the two intersections.

A link road through the Intertrade site is consistent with the orderly and proper planning for the area and has been shown on the draft masterplan for the Intertrade Industrial Park. The indicative road network proposed for the Intertrade site shows one road connection to Ingall Street, two road connections to Selwyn Street and possibly a direct connection to Industrial Drive via a new intersection midway between Ingall Street and Selwyn Street.

This arrangement would allow Port related traffic to enter/exit the western end of the Concept Plan site where only one crossing of the railway line is required, as opposed to two crossings if an internal link road to Selwyn Street is used. Furthermore only a limited number of One Steel trains will be traversing the rail line at this western crossing by comparison with the eastern crossing which will be more intensively used by Port trains.

If this link road cannot be provided in a timely manner in the manner described above then as a fallback option NPC would look to develop an internal link road which would run from the container terminal in a south east direction to connect with Selwyn Street at a position adjacent to the NPC Operations Precinct. This internal road would be approximately 10m wide to support one lane of truck traffic in each direction and is likely to run parallel to the alignment of the railway line. If it was required, the profile and alignment of this internal link road would be finalised in the future as part of project applications for developments in each precinct.

The provision of a link road is a critical recommendation arising from the AECOM Transport Assessment. The link road allows traffic movements from the Concept Plan, and from the Container Terminal precinct in particular, to be split more evenly between the two intersections thereby using available capacity at the Selwyn Street intersection more effectively.

If an emergency situation occurred on the site or in the area immediately surrounding the site, all train movements to/from the site would immediately cease. This would enable vehicle access routes to remain available for use during an emergency. As there are two main access points proposed to the site this provides a second option if one access point is blocked by a train.

If required in the future, grade separation of one of the rail crossings would also help address the emergency access issue. As detailed in **Section 2.10** of this response a further assessment of the need for, and timing of, grade separation of one of the railway level crossings is recommended at a defined trigger point in the development of the Concept Plan.

The EA document has recommended that an Emergency Response Plan should be developed for each of the facilities at the site as part of subsequent project applications and the plan should be consistent with HIPAP No.1, Emergency Planning Guidelines for Industry (DoP 2008).

2.9 Rail Access

2.9.1 DPI Issue

The project requires the alteration and use of rail infrastructure in the Carrington precinct of the Port (eg Morandoo Yard, Port Waratah Loop, and Bullock Island). The ability to access this infrastructure, including train paths and associated impacts to rail users of this precinct requires further investigation and discussion, including timing and how constraints could affect the desired mode split and confirmation from relevant owners and operators. Greater detail, including how operations are managed and maps of the Morandoo yard and sidings should also be provided. Advice is also required on available train paths from the site to the Main Northern Railway.

2.9.2 Response

The revised rail infrastructure arrangement no longer impacts on any of the above rail users. The new set up, using roads 1 to 5 in the Morandoo Yard, with an extension of the shunt neck to provide access to the Port site from the Bullock Island loop, means that trains can enter and leave the Port site without using any of the rail infrastructure required by other users including Port Waratah Coal Services, Bullock Island grain handling and One Steel.

The only shared infrastructure is the entry to the site, at Islington Junction. The ARTC Train Plan for Islington Junction shows the following arrival times at the junction:

Table 15 ARTC Train Plan for Islington Junction

Train No.	AM Timetable	Train No.	PM Timetable
1	0:32	8	13:08
2	1:46	9	14:28
3	3:01	10	16:55
4	5:09	11	18:21
5	6:26	12	21:36
6	7:06	13	22:40
7	7:26	14	23:57

Trains can access the junction on average around every 30 minutes, therefore between 7pm and 5am (the expected arrival and departure time for Port trains) there are up to 20 arrival slots available. Only six of these arrival slots are currently used during this time meaning that up to 14 slots would be available which is ample for the Port needs.

As detailed earlier in **Section 2.1** of this response, the following rail infrastructure is proposed external to the Concept Plan site to support the revised rail operations proposed for the Port:

- An available siding on the Bullock Island loop will be used and extended to provide for Port trains to enter and exit the Port land. Trains will be split into two x 650m lengths before entering the sidings either within the Port land or the Morandoo Yard;
- The Morandoo Yard (road numbers 1-5) will be reconfigured to provide a total of four x 650m length rail sidings to hold two Port trains while a third train is within the rail sidings within the Port site. Much of the infrastructure within the Morandoo Yard is not currently used or is significantly under utilised. Discussions with ARTC have confirmed that this arrangement is feasible.

The proposed rail operations are designed so that they do not directly impact on train operations on the One Steel line, the Port Waratah loop and the Bullock Island loop.

As previously discussed in **Section 2.1** above, there are sufficient train paths available on the Main North line between Sydney and Newcastle to accommodate 3 trains per day particularly as these train movements would occur outside the peak curfew period (i.e. between 7pm and 5am).

As part of the Concept Plan NPC would commit to investigate in further detail and obtain approval from ARTC in relation to the proposed configuration and operation of the sidings in the Morandoo Yard and the connection between the Port land and the Bullock Island loop.

Beyond the works outlined above, the proposed Port rail operations do not rely on the development of additional sidings, storage yards or intermodal facilities. If intermodal facilities were developed at locations in the wider Newcastle region (such as Hexham) at some point in the future this would only advantage Port train operations by allowing more efficient cycling of trains between the Port and Sydney and as a result reducing truck traffic in the immediate vicinity of the Concept Plan site at Mayfield.

2.10 On Site Rail Level Crossings

2.10.1 DPI Issue

The Submissions Report identifies that grade separation of an onsite rail access may be required in the longer term. However, there is no discussion on when and whether such a separation could be achieved within site constraints.

2.10.2 Response

The Concept Plan proposes two new on-site railway level crossings:- a new western crossing adjacent to the Bulk Liquids and Container Terminal Precinct and a new eastern crossing at Selwyn Street adjacent to the Bulk/General and NPC Operations Precinct.

The proposed rail layout and operations for the Concept Plan are such that the western crossing will only be affected by One Steel trains (3 trains or 6 train movements per day). The crossing would be closed for approximately 5 minutes each time a train crosses as it would be travelling at relatively slow speeds. A full barrier and lights would be installed at the western crossing.

The eastern crossing will only be affected by Port trains (3 trains or 12 train movements per day - as each train is broken in two parts before entering and exiting the site). The crossing would be closed for approximately 5 minutes each time a train crosses as it would be travelling at relatively slow speeds. A full barrier and lights would be installed at the eastern crossing.

Using the above information and the Port generated peak hour traffic volumes from the AECOM Transport Assessment dated December 2010 a revised estimate of queuing at each level crossing has been undertaken for final operations in 2034. The assessment has adopted a worst case scenario at each crossing in respect to truck movements.

Table 16 Rail Crossing Queue Lengths (2034 – Final Operations)

Crossing Location	Truck Movements in peak hour	Truck Movements per minute	Length of Crossing Closure (Minutes)	Queue Length (Trucks)	Queue Length (Metres)
Western Crossing - AM peak hour	134	3	5	15	285
Western Crossing - PM peak hour	76	2	5	10	190
Eastern Crossing - AM peak hour (with link road)	156	3	5	15	285
Eastern Crossing - PM peak hour (with link road)	89	2	5	10	190

This indicates that at 2034 peak queue lengths would be in the order of 285 metres long in the AM peak and 190 metres long in the PM peak for both the western and eastern crossing under the worst case traffic management scenario. At 2024 peak queue lengths would be considerably shorter.

These queue lengths are reasonable and can be managed within the site and on the road network external to the site (eg. Selwyn Street and new roads within the Intertrade site) without unduly impacting other traffic flows and access to adjacent properties.

To manage queue lengths without detrimentally impacting on the performance of the road network in the immediate vicinity of the site and without unreasonably affecting access to adjoining properties a number of options may be available including road line markings, localised road widening or grade separation.

In the medium/long term timeframe grade separation of one of the crossings may be required to ensure efficient movement of trucks to/from the Port and also to provide suitable road/rail safety. To determine if, when and which crossing requires grade separation will depend on a range of factors including:

- Whether the link road is provided as part of the development of the Intertrade site or internal to the Concept Plan site;
- The amount of vehicle traffic utilising the crossing in peak periods;
- The number of trains passing through each crossing and the time of day this occurs;
- The duration that each crossing will be closed as a train passes.

It is proposed that a further assessment of the need for and timing of grade separation at either of the crossings be required no later than:

- container volumes from the Port reaching a level of 200,000 TEUs per annum; or
- daily truck volumes from the Port reaching a level of 415.trucks per day.

A road bridge over the railway line would require a maximum clearance height of 6.0 metres and this would be consistent with many existing road bridges along the Main North line. Allowing for an average 1 in 10 grade then the approach ramps would need to be in the order of 60m in length on each side of the crossing.

Ramps of this length can be provided on both approaches at either crossing location although the ramp alignments could be curved slightly (within the restrictions for truck turning) to minimise the land area impacted. The design of any bridge structures would also need to accommodate access to adjoining land uses such as Port Waratah Coal Services (PWCS) which uses the extension of Selwyn Street for access or the Intertrade Industrial Park whose indicative road network will connect with both Ingall and Selwyn Streets.

2.11 Off Site Rail Level Crossings

2.11.1 DPI Issue

The Submissions Report has not adequately addressed potential impacts to offsite level crossings. Information on the safety and capacity of these level crossings is required.

2.11.2 Response

For trains travelling from the Mayfield site to/from Sydney the vast majority of road crossings of the railway line within the wider Newcastle urban area are grade separated. However, there are two at grade road/rail crossings located at:

- Clyde Street, Islington; and
- St. James Road, Adamstown.

The two crossing locations are shown on **Figure 4** below.

The Concept Plan will generate demand for 3 trains per day during the off peak period between 7pm and 5am when there are a limited number of train paths are available on the Main North line. This means that there will be 6 additional train movements occurring at each crossing. It is estimated that the crossings would remain closed for approximately 3 minutes to allow passage of a 1,300m length train travelling at approximately 40kmh.

Table 17 below provides a summary of the conditions at each at grade road/rail crossing:

Table 17 Off Site Rail Level Crossings

Location and ALCAM Rating	Type of Barrier	Road Configuration	Land Use	Other Comments
Clyde Street, Islington (29 of 300)	Boom gate and flashing lights with separate pedestrian gates on one side only.	One lane in each direction. Road speed limit of 60kmh.	Primarily commercial/industrial.	Road relatively straight and level. View along train line restricted by buildings on each side.
St. James Road, Adamstown (51 of 300)	Boom gate and flashing lights with separate pedestrian gates both sides.	One lane in each direction. Road speed limit of 60kmh.	Retail/commercial on east side and residential on west side.	Road relatively straight but rises slightly to rail line on western side of crossing. Road intersects with Park Avenue/Court Street close to crossing on eastern side. Adamstown railway station is immediately south of crossing.

It is important to note the limited number of additional train movements proposed to/from the Port (6 per day) and the time of their occurrence (between 7pm and 5am) which is outside of peak periods on the road network. On this basis it is considered that the proposal will not unduly impact on the efficiency and safety of road and pedestrian movements at these two crossings.

It is noted that both the NSW and Commonwealth Governments have been progressively committing money toward the progressive upgrade of railway level crossing across NSW. Given the ALCAM rating for the Clyde Street, Islington level crossing in particular (29 of 300) there is a reasonable prospect that this crossing at least will be upgraded over the extended period of the Concept Plan.

A recent report in relation to the Adamstown level crossing recommended a series of operational improvements (eg. increased train speeds, better co-ordination of traffic lights and railway signals) to reduce delays for vehicles waiting at the crossing particularly during peak periods.

AECOM

OFF-SITE RAILWAY CROSSINGS

Response to Submissions

Mayfield Site Port-Related Activities Concept Plan

Figure 4

2.12 Rail Mode Sensitivity Testing

2.12.1 DPI Issue

The EA identified both on and off site requirements in order to increase rail mode share, for example the use of the Intertrade Industrial Park, Port Waratah, Bullock Island, and Carrington. However, these are no longer specifically identified in the revised Transport Technical Paper. Advice on this amendment should be provided. If these requirements and impacts are still relevant, further detail on what measures are needed for each mode shift should be provided.

2.12.2 Response:

Provided in Table 18 is a sensitivity analysis of differing modal splits between road and rail for both 2024 and 2034. The table provides commentary on recommended infrastructure requirements required for each scenario.

Table 18 Road / Rail Modal Split Sensitivity Analysis (2024 and 2034)

Concept Plan Scenario	60/40 Containers		70/30 Containers		80/20 Containers (Base Case Modelled)		90/10 Containers*		100/0 Containers*	
	Trucks per day	Trains per day	Trucks per day	Trains per day	Trucks per day	Trains per day	Trucks per day	Trains per day	Trucks per day	Trains per day
2024 600,000 TEUs	877	3.36	969	2.52	1,060	1.68	1,151	0.84	1,243	0
Comment	Road: Internal Link road required. Rail: Three sidings required within port side and three in Morandoo Yard		Road: Internal link road required and left turn slip lane for Ingall St Rail: Three sidings required within port side and three in Morandoo Yard		Road: Internal link road required and left turn slip lane for Ingall St Rail: Two sidings required within port side and two in Morandoo Yard		Road: Internal link road required and left turn slip lane for Ingall St Rail: One siding required port side and one at Morandoo		Road: Internal link road required and left turn slip lane for Ingall St	
2034 1 million TEUs	1,243	5.60	1,395	4.20	1,547	2.80	1,699	1.40	1,852	0
Comment	Road: Internal link road required and left turn slip lane for Ingall St Rail: May require further investigation		Road: Internal link road required and Ingall St upgrade on north approach impacts acceptable Rail: Four sidings required at port side and 4 sidings at Morandoo required		Road: Internal link road required and Ingall St upgrade on north approach impacts acceptable Rail: Three sidings required port side and three sidings at Morandoo		Road: Level of service potentially unacceptable. Further assessment will be required Rail: Two sidings required within port side and two in Morandoo Yard		Road: Level of service potentially unacceptable. Further assessment will be required	

*These scenarios have been included in the sensitivity analysis at the request of DPI and other government agencies. These modal splits do not represent the plans and expectations of NPC in respect to the Mayfield Concept Plan.

2.13 Statement of Commitments

2.13.1 DPI Issue

Distribution of employee vehicle movements per hour by precinct should be provided.

2.13.2 Response

AECOM has received advice from NPC in relation to estimated employee numbers for the Concept Plan which indicated a total of 200 employees at 2024 (Initial operations) and a total of 300 employees at 2034 (final operations).

It is estimated that at 2034 the vast majority of employees (85%) will be located in the Container Terminal precinct with the balance (15%) spread evenly between the Bulk Liquid, General Purpose, Bulk/General and NPC Operations precincts. The estimated breakdown of employee numbers by precinct at 2024 and 2034 is provided in **Table 14** below.

Table 19 Estimated Employee Numbers by Precinct (2024 and 2034)

Precinct	2024 Employee Numbers	2034 Employee Numbers
Container Terminal	155	255
Bulk Liquid	11	11
General Purpose	11	11
Bulk and General	11	11
NPC Operations	12	12
Total	**200**	**300**

As detailed in the EA document, between 2024 and 2034 the growth in Port capacity and therefore employee numbers will be focussed entirely on the Container Terminal precinct where container volumes are expected to grow from 600,000 TEUs per annum in 2024 to 1 million TEUs per annum in 2034. All other precincts are expected to be at full capacity by 2024.

Please note that the above employee numbers are estimates only at this stage and further detail will be available at the project application stage as the details associated with each development become available.

3.0 Other Issues

3.1 Strategic Justification

3.1.1 Relevant Strategic Policies

The EA document prepared by AECOM for the Mayfield Concept Plan dated July 2010 provides a detailed discussion of the strategic policy justification for this project. The justification is summarised here below and additional discussion has been added where appropriate:

- There is an existing development consent for this site dating back to 2001 which allowed for the remediation of the BHP Closure Area and the development of a multi-purpose terminal (including a container terminal with a capacity of 350,000 containers per annum). This development consent has been acted upon in relation to remediation activities and also the operation of Mayfield Berth 4;
- The *NSW Government Ports Growth Plan* (October 2003) provides a framework within which the Government, industry and community would work to ensure future growth and development of port capacity in NSW. In the *Ports Growth Plan* the Port of Newcastle was identified as the next major container port after Port Botany and the former BHP steelworks site was specifically identified as being integral to future expansion of the Port. The Port of Newcastle was identified as providing the next increment of container port growth in NSW, once container capacity at Port Botany is reached;

- In March 2005, NPC issued a Newcastle *Multi-Purpose Terminal - Call for Detailed Proposals* which clearly documented the long term vision and strategic objectives for the site: These included:
    - Enhancement of economic development of NSW through the provision of an efficient and effective container terminal;
    - Generate employment opportunities;
    - Provide environmental, amenity and safety benefits through reduced road traffic through Sydney metropolitan area;
    - Diversification of the State's ports facilities and increase options for users; and
    - Capture an increased proportion of northern NSW trade for NSW ports.
- The *Lower Hunter Regional Strategy* was prepared by the DoP in October 2006. It outlines the strategic direction for the Lower Hunter Region and includes actions specific to transport. An action identified in the *Lower Hunter Regional Strategy* is to;

    > *"Ensure that local planning provisions reflect and promote the role of the Port of Newcastle as identified in the NSW Port Growth Strategy, as the site for a second container port facility for NSW. This will include ensuring that local planning provisions maintain 'port-related' employment land around the Port of Newcastle for industries that specifically require port access".*

- In 2008, in accordance with the recommendations of *Ports Growth Plan 2003*, the Mayfield site and other strategic land areas around the Port of Newcastle were designated as State Significant Sites in accordance with Schedule 3 of the Major Development SEPP;
- The *NSW State Plan: Investing in a Better Future (NSW State Plan)* was released in March 2010. Priority 10 of the NSW State Plan is aimed at increasing business investment and support jobs. The *Supporting Business and Jobs: Hunter Region – Regional Business Growth Plan* was subsequently released in August 2010. A key opportunity which was identified in the Plan was the "*Development of port-related industry on land beside Port of Newcastle";*
- The Metropolitan Plan for Sydney 2036 includes the following objectives relating to Strategic Direction E6 – *to support Sydney's nationally significant economic gateways* which are relevant to the Mayfield Concept Plan:
    - E6.2 – Build capacity and support economic growth in and around Sydney Airport and Port Botany;
    - E6.3 - Plan for long term capacity improvements for Port Kembla and Port of Newcastle as part of the NSW Freight Strategy and NSW Ports Strategy;
    - E6.4 - Build the capacity of Sydney's rail freight network;
- The NSW Government's Metropolitan Strategy document released in 2010 and in particular the Transport Strategy confirms the following relevant statements in relation port development:
    - Ensure sufficient port capacity is available to serve Sydney;
    - Develop Port Botany's container handling capacity to handle forecast growth in NSW container trade over the next 15-20 years;
    - Secure the former BHP steelworks at Newcastle Port for port related use;
    - Relocate general cargo and car stevedoring from Port Jackson to Port Kembla;
    - Newcastle Port Corporation, the world's largest coal export port, will enter into new discussions with port customers about the future of strategic portside land with deepwater access to increase general cargo and container capacity;
- The recently released National Port Strategy prepared by Infrastructure Australia and the National Transport Commission (December 2010) identifies the importance of ports in Australia and their role in expanding international trade and economic growth. The Strategy has been developed to plan for efficient, sustainable ports and related freight logistics. This includes the consideration of planning issues, infrastructure requirements, land planning and the need for a nationally coordinated approach.

In addition, it is noted that a number of NSW Government strategy documents which may be relevant to the Mayfield Concept Plan are in the process of being prepared but have not been released at this time including the NSW Freight Strategy and the NSW Ports Strategy.

3.1.2 Port of Newcastle Catchment Area Analysis

An analysis of export and import cargoes within the broader Port of Newcastle catchment area has been previously undertaken by NPC. This analysis suggests that there are currently containerised exports and imports that either originate from or are potentially destined for the Hunter, Central Coast, Mid North Coast and North West regions of NSW.

These cargo types include:

- Export – aluminium, cotton, beef and lamb, wool, wine, grains and other;
- Import – machinery and transport, miscellaneous manufacturing, chemicals, paper and paper products, textiles, non metallic minerals, iron and steel, beverages and tobacco, timber and other.

Currently these exports and import cargoes are forced to travel the significant extra distances either by road or rail to Port Botany with associated extra time and costs.

When the container terminal is developed at Mayfield, there will be significant time and cost savings available by providing for this trade through the Port of Newcastle. This analysis suggests that there is already an existing market to support the export/import of containers from within the broader Newcastle catchment area through the Port of Newcastle.

The proposed development of the Concept Plan will increase the availability of port side land for future development, accommodating growth in port-related industry and the long-term operation of the port and facilitating economic growth in the Lower Hunter Region.

3.1.3 NSW Container Trade Growth and Port Botany

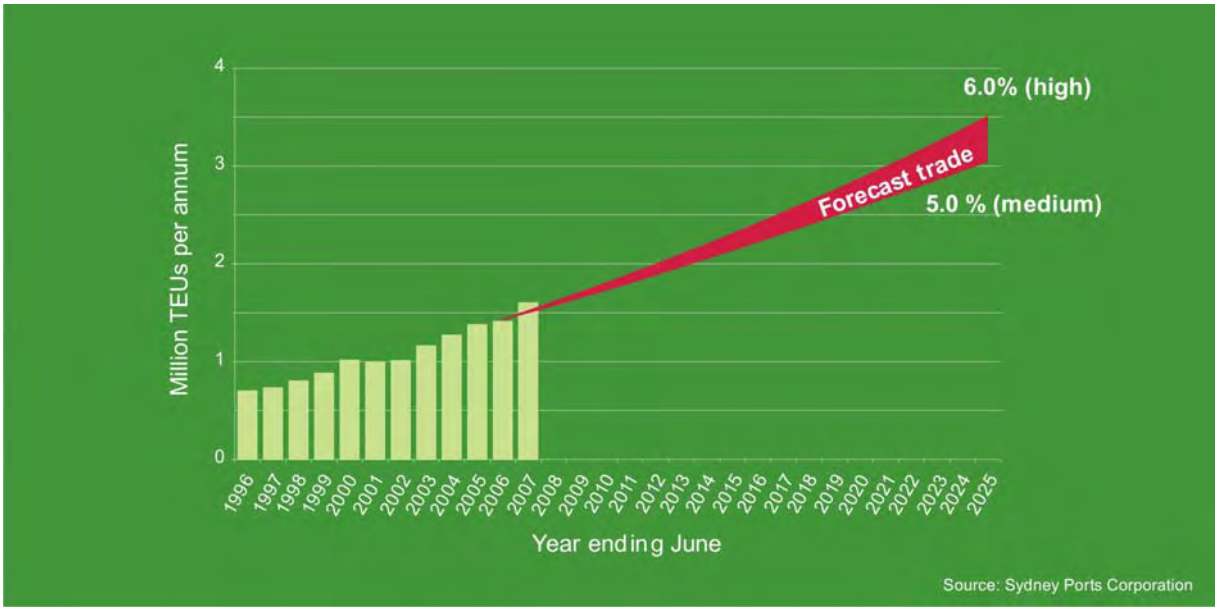
Container trade growth by 2035 to be handled by NSW Ports is expected to be in the order of 6.5 million TEU per annum (Maunsell AECOM, 2005). The approved expansion at Port Botany will provide for 5 additional berths (11 berths in total) and will cater for a total of up to 3.2 million TEUs per annum. Despite this approved expansion at Port Botany, it is anticipated that there could be a container handling short fall in NSW of up to 3 million TEU per annum over the next 25 year period.

Current container volumes at Port Botany are approximately 1.8 million TEUs per annum and growth over the past 10 years has been strong. On current projections, Sydney Ports Corporation estimates that Port Botany will reach its approved 3.2 million TEUs per annum capacity by around 2022. **Figure 5** below shows actual and forecast container growth at Port Botany.

Following this (post 2022) the Mayfield Concept Plan will provide the Port of Newcastle with the opportunity to consolidate its role as Sydney's second container handling facility in support to Port Botany.

Therefore, there is a need to expand the Port of Newcastle in order for the Port to meet its defined strategic role of becoming the State's next major container facility and satisfy the container handling needs of the State.

Figure 5 Actual and Forecast Container Growth at Port Botany



3.2 3.2 Air Quality Queries

3.2.1 Emissions from Port Plant

The AECOM air quality assessment dated July 2010 noted that emissions from port related plant such as electric cranes and forklifts are expected to be minimal and therefore were not included in the air quality modelling.

The plant to be used in the Port operations such as cranes are expected to be predominantly electrically powered with only a relatively small number of gas powered vehicles such as forklifts used on site. The primary pollutant of potential concern from these type of vehicles would be Nitrogen Oxides ($NO_{2)}$.

In Table 9-3 of the AECOM air quality assessment the predicted cumulative 1 hour maximum NO_2 concentration from the Concept Plan operations in 2034 are predicted to be 164.2 ug/m^3 at the worst case receptor (Receptor 10) on Industrial Drive. This is well below the OEH assessment criterion of 246 ug/m^3. Any minor additional contribution from a number of gas powered vehicles on-site is not expected to significantly alter the prediction to the extent that an exceedance of the OEH criteria would result.

3.2.2 Off Site Transport Emissions

The AECOM Air Quality assessment dated July 2010 has not included any assessment of off-site air quality impacts of transport. The Air Quality assessment did assess on-site air quality impacts associated with the expected level of road and rail traffic at full development of the Concept Plan.

In AECOM's experience it is not common practice for off-site air quality impacts of transport to be assessed as part of an EA. For example no such assessment was requested or provided in relation to the Concept Plan approval for the Port Kembla Outer Harbour Development. We also note that:

- In the original Environmental Assessment Requirements issued by the Director General for the Concept Plan dated 29 May, 2009 and in the Adequacy Review comments issued by Department of Planning on 15 January, 2010 there was no specific requirement to undertake an assessment of off-site air quality impacts associated with transport;
- In the submission lodged by DECCW during Adequacy Review and also following public exhibition of the EA there was no issue raised in respect to off-site air quality impacts of transport.

Nonetheless a number of the submissions have raised the issue of increased transport related emissions arising from the proposed increase in traffic along Industrial Drive associated with the Concept Plan. Although no modelling has been undertaken the issue has been discussed from a macro perspective and assessed qualitatively below. No modelling has been undertaken for this analysis.

The AECOM transport assessment dated December 2010 has estimated an increase in daily traffic of 2,955 vehicles per day along Industrial Drive to the south of Tourle Street as a result of the Concept Plan at full development in 2034. As background traffic movements along Industrial Drive at this location are expected to be 41,402 vehicles per day this represents a 7.1% increase. Note that this assessment was prepared on a base case of 80% mode split by road and 20% by rail.

Assuming that the predominant source of NO_2 in the lower Hunter is vehicle emissions, and that any increase in vehicle numbers would result in a linear increase in the NO_2 ground level concentrations, then the increase to the maximum 1 hour average NO_2 concentration can be broadly predicted (NO_2 being the primary vehicle emission of potential concern on roads).

The peak NO_2 concentration measured as part of a variety of air quality studies undertaken in the Port of Newcastle and from monitoring data recorded by NSW OEH was found to be 97ug/m^3 (Orica EIS, 2009, OEH website). This is well below the OEH criteria of 246ug/m^3.

Assuming a linear increase in the NO_2 concentration (due to increased traffic volumes of 7.1%), the maximum NO_2 1 hour average concentrations would be expected to increase to 104ug/m^3, which is still well below the assessment criteria. Note that this is a conservative assumption as there are other non-vehicular sources of NO_2 in the Hunter Valley.

On this basis the predicted increase in traffic volumes from the Concept Plan at full development in 2034 is not expected to result in unacceptable increase in NO_2 concentration nor an adverse impact on the environment.

Over the 25 year timeframe of the Concept Plan it is reasonable to assume that there will be continued tightening of vehicle emission standards and improvements in fuel standards which will reduce the level of transport related emissions.

Other recommendations to reduce transport related emissions associated with increases in truck traffic along Industrial Drive include:

- Striving for an increase in the modal split for rail beyond the base case of 20%. This can be achieved by adopting the recommendations discussed in Section 2.1 of this response to support the introduction of a 4th train per day for the Port. A higher rail modal split would effectively reduce road traffic and related transport emissions;
- Introducing a traffic management plan which sought to manage peak traffic movements to/from the Port so they occur outside the peak periods on the arterial road network. It is in the interests of future operators of the Concept Plan and transport operators to ensure that transport movements to/from the Port site occur as efficiently as possible;
- As part of future project applications applicants should be required to conduct air quality modelling of transport emissions from Port related traffic and assess its potential impact on residential properties along Industrial Drive in close proximity to the site.

3.2.3 Existing Koppers Infrastructure

As discussed in Section 9.8 of the EA document, Koppers currently utilise Ex-BHP No.6 Berth for handling coal tar and pitch products. To facilitate these operations Koppers has an elevated pipeline which runs west to east across the Concept Plan site connecting to this berth. The location of the pipeline easement and Ex-BHP No.6 Berth is shown in Figure 2-4 of the EA document.

In the short term it is anticipated that the Koppers would continue to utilise the existing pipeline infrastructure and EX-BHP No.6 Berth. However, ultimately it is intended that the Koppers infrastructure would relocate to the Bulk Liquids Precinct where it would have access to proposed Berth 7 at the north west corner of the Concept Plan site. Koppers current lease agreement requires 2 years notice to relocate away from its existing berth.

As it is an existing site condition, any air quality emissions from the Koppers pipeline would be included in the background air quality emissions which have been assessed as part of the Air Quality Assessment prepared by AECOM and dated July 2010.

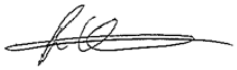
4.0 Conclusion

We believe that the above information provides a comprehensive response to the various raised in the DPI letter dated 31 March, 2011. The response has been prepared after further consultation with key government agencies including Transport NSW, ARTC, RTA and Newcastle Council.

We now look forward to DPI completing its assessment of the Concept Plan application and to the Minister's determination.

Should you have any further queries or questions please contact me on the numbers below.

Yours faithfully



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Attachment One – Landowner Letters

NEWCASTLE PORT CORPORATION

Roads and Traffic Authority
Attn: David Young
Locked Bag 30
Newcastle 2300 NSW

Dear David

Newcastle Port Corporation (NPC) has developed a Concept Plan for the proposed development of port-related activities on a portion of the former BHP Steelworks site located along the South Arm of the Hunter River in Mayfield, Newcastle. The Site covers an area of approximately 90-hectares, which is proposed to be developed by NPC for port-related activities. NPC is the Proponent of the proposed concept. The proposed concept identifies five key land-based operational precincts which would be developed and operated through 2034. The precincts are:

- **NPC Operations Precinct**. The NPC Operations Precinct would have an area of approximately 3 hectares and would be used by NPC for managing all operations within the Port of Newcastle. The precinct would be located at the south eastern end of the site, fronting Berth 1. Various buildings and small-scale facilities, including vehicle and marine equipment maintenance areas, would be located in the precinct. The precinct would also likely be the berthing location for the Newcastle Port Corporation dredge vessel 'David Allan'.
- **Bulk and General Precinct**. The Bulk and General Precinct has an area of approximately 12 hectares would be used for handling and storing bulk goods such as grain and other dry bulk goods, including cement, fertilizer, and coke cargoes, and for other general purposes. The precinct would be located in the south eastern portion of the site, immediately to the north west of the NPC Operations Precinct and fronting Berth 2. Various buildings and infrastructure would be located in the precinct, including covered storage areas, storage silos, conveyor systems and office buildings.
- **General Purpose Precinct**. The General Purpose Precinct would have an area of approximately 25 hectares and would be used for handling and storing cargo containers, heavy machinery, break bulk and Roll On Roll Off cargo. The precinct would be located in the central and north eastern portion of the site, immediately to the north west of the Bulk and General Precinct and fronting Berths 3 and 4. Various buildings and infrastructure would be located in the precinct, including covered storage areas and areas of hardstand.
- **Container Terminal Precinct**. The Container Terminal Precinct would have an area of approximately 35 hectares and would be used for container storage and transfer. The precinct would be located in the central and north western portion of the site, immediately to the north west of the General Purpose Precinct and fronting Berths 5 and 6. Buildings and infrastructure including quayside and mobile cranes, rail mounted gantries, hardstand areas and an administration building would be provided.

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Cnr Scott and Newcomen Streets (PO Box 663) Newcastle NSW 2300 Australia
Telephone: 02 4985 8222 **Toll Free NSW:** 1800 048 205 **Facsimile:** 02 4926 4596
Email: mail@newportcorp.com.au **Website:** www.newportcorp.com.au

- **Bulk Liquid Precinct**. The Bulk Liquid Precinct would have an area of approximately 15 hectares and would be used for receival, storage, blending and distribution of fuels. The precinct would be located in the far north western portion of the site, immediately to the north west of the Container Terminal Precinct and fronting Berth 7. Buildings and structures including tank farms with steel storage tanks, fuel distribution pipelines and administration buildings would be provided.

The proposed concept also includes a Berth Precinct which would contain up to seven berths to support operations within the five land-based operational precincts described above. Access corridors accommodating the necessary infrastructure (e.g. road infrastructure, potable water, electricity, communications, gas and sewerage) to service the facilities would also be provided.

An Environmental Assessment was placed on public exhibition in August and September 2010 pursuant to Part 3A of the *Environmental Planning & Assessment Act 1979*. A number of submissions were received relating to the Concept Approval, and a response to these submissions was provided in December 2010. Further community consultation and exhibition was undertaken in February and March 2011. Key issues which were raised in the recent submissions (April 2011) primarily relate to road and rail operations.

In order to address these issues relating to road and rail operations, further investigations have been undertaken in consultation with the RTA. In order to optimise the traffic movements to and from the site, while maintaining intersection operations, intersection upgrades at Ingall and the Industrial Highway have been identified. It is anticipated that upon achieving a throughput of 400,000 TEUs, a left slip lane on the Ingall Street approach will be required. Further, modelling undertaken for an 800,000 TEU throughput, anticipates that a separate right turn bay on the Ingall Street north approach would be required. It is understood that Ingall Street is a Newcastle City Council road; however there may be requirement for some minor works on Industrial Highway as part of the intersection upgrade. These will be further refined as project approvals are progressed.

Pursuant to Clause 8F of the *Environmental Planning and Assessment Regulation*, NPC is providing notification to the RTA as the land owner as it relates to the proposed works prior to the determination of the Concept Plan Approval. NPC understands that the Roads and Traffic Authority is the legal owner of Industrial Highway. Further consultation will be undertaken with the RTA subject to future project approvals. It would be appreciated if you could forward correspondence providing land owners consent authorising the Concept Approval as it relates to this to the undersigned at your earliest convenience.

If you require further information or have questions relating to this Concept Approval, please do not hesitate to contact the undersigned.

Yours sincerely

Michael Baudinette
GENERAL MANAGER – TRADE & PORT DEVELOPMENT

NEWCASTLE PORT CORPORATION

Hunter Development Corporation
Bob Hawes
General Manager
PO Box 813
Newcastle 2300 NSW

Dear Mr Hawes

Newcastle Port Corporation (NPC) has developed a Concept Plan for the proposed development of port-related activities on a portion of the former BHP Steelworks site located along the South Arm of the Hunter River in Mayfield, Newcastle. The Site covers an area of approximately 90-hectares, which is proposed to be developed by NPC for port-related activities. The NPC land is located directly adjacent to the proposed Intertrade Industrial Site as managed by Hunter Development Corporation (HDC). The proposed concept identifies five key land-based operational precincts which would be developed and operated through 2034. The precincts are:

- **NPC Operations Precinct**. The NPC Operations Precinct would have an area of approximately 3 hectares and would be used by NPC for managing all operations within the Port of Newcastle. The precinct would be located at the south eastern end of the site, fronting Berth 1. Various buildings and small-scale facilities, including vehicle and marine equipment maintenance areas, would be located in the precinct. The precinct would also likely be the berthing location for the Newcastle Port Corporation dredge vessel 'David Allan'.
- **Bulk and General Precinct**. The Bulk and General Precinct has an area of approximately 12 hectares would be used for handling and storing bulk goods such as grain and other dry bulk goods, including cement, fertilizer, and coke cargoes, and for other general purposes. The precinct would be located in the south eastern portion of the site, immediately to the north west of the NPC Operations Precinct and fronting Berth 2. Various buildings and infrastructure would be located in the precinct, including covered storage areas, storage silos, conveyor systems and office buildings.
- **General Purpose Precinct**. The General Purpose Precinct would have an area of approximately 25 hectares and would be used for handling and storing cargo containers, heavy machinery, break bulk and Roll On Roll Off cargo. The precinct would be located in the central and north eastern portion of the site, immediately to the north west of the Bulk and General Precinct and fronting Berths 3 and 4. Various buildings and infrastructure would be located in the precinct, including covered storage areas and areas of hardstand.
- **Container Terminal Precinct**. The Container Terminal Precinct would have an area of approximately 35 hectares and would be used for container storage and transfer. The precinct would be located in the central and north western portion of the site, immediately to the north west of the General Purpose Precinct and fronting Berths 5 and 6. Buildings and infrastructure including quayside and mobile cranes, rail mounted gantries, hardstand areas and an administration building would be provided.

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Telephone: 02 4985 8222 **Toll Free NSW:** 1800 048 205 **Facsimile:** 02 4926 4596
Email: mail@newportcorp.com.au **Website:** www.newportcorp.com.au

- **Bulk Liquid Precinct**. The Bulk Liquid Precinct would have an area of approximately 15 hectares and would be used for receival, storage, blending and distribution of fuels. The precinct would be located in the far north western portion of the site, immediately to the north west of the Container Terminal Precinct and fronting Berth 7. Buildings and structures including tank farms with steel storage tanks, fuel distribution pipelines and administration buildings would be provided.

The proposed concept also includes a Berth Precinct which would contain up to seven berths to support operations within the five land-based operational precincts described above. Access corridors accommodating the necessary infrastructure (e.g. road infrastructure, potable water, electricity, communications, gas and sewerage) to service the facilities would also be provided.

An Environmental Assessment was placed on public exhibition in August and September 2010 pursuant to Part 3A of the *Environmental Planning & Assessment Act 1979.* A number of submissions were received relating to the Concept Approval, and a response to these submissions was provided in December 2010. Further community consultation and exhibition was undertaken in February and March 2011. Key issues which were raised in the recent submissions (April 2011) primarily relate to road and rail operations.

In order to address these issues relating to road and rail operations, further investigations have been undertaken in consultation with various stakeholders. As previously discussed with HDC, the option of an external link road is proposed to be developed in the future. The establishment of such a road will encourage an even split of traffic generated to the Ingall St intersection and an alternative intersection (potentially with Selwyn St). NPC has reviewed the recent plans provided for lot layout for the Intertrade Industrial Site and proposes that such an external link road align with those roads currently proposed. The location of the external link road would be further refined as project approvals are progressed for both sites.

Pursuant to Clause 8F of the *Environmental Planning and Assessment Regulation*, NPC is providing notification to HDC as the land owner (under delegation) as it relates to the proposed works prior to the determination of the Concept Plan Approval. It is NPC's understanding that HDC (under delegation by the State Property Authority) is the legal administrator of the Intertrade Industrial Site (Lot 33 DP 1116571). Further consultation will be undertaken with HDC subject to future project approvals. It would be appreciated if you could forward correspondence providing land owner's consent authorising the Concept Approval as it relates to this to the undersigned at your earliest convenience.

If you require further information or have questions relating to this Concept Approval, please do not hesitate to contact the undersigned.

Yours sincerely

Michael Baudinette
GENERAL MANAGER – TRADE & PORT DEVELOPMENT

NEWCASTLE PORT CORPORATION

Newcastle City Council
Rob Noble
Attn: General Manager
PO Box 489
Newcastle 2300 NSW

Dear Mr Noble

Newcastle Port Corporation (NPC) has developed a Concept Plan for the proposed development of port-related activities on a portion of the former BHP Steelworks site located along the South Arm of the Hunter River in Mayfield, Newcastle. The Site covers an area of approximately 90-hectares, which is proposed to be developed by NPC for port-related activities. NPC is the Proponent of the proposed concept. The proposed concept identifies five key land-based operational precincts which would be developed and operated through 2034. The precincts are:

- **NPC Operations Precinct**. The NPC Operations Precinct would have an area of approximately 3 hectares and would be used by NPC for managing all operations within the Port of Newcastle. The precinct would be located at the south eastern end of the site, fronting Berth 1. Various buildings and small-scale facilities, including vehicle and marine equipment maintenance areas, would be located in the precinct. The precinct would also likely be the berthing location for the Newcastle Port Corporation dredge vessel 'David Allan'.
- **Bulk and General Precinct**. The Bulk and General Precinct has an area of approximately 12 hectares would be used for handling and storing bulk goods such as grain and other dry bulk goods, including cement, fertilizer, and coke cargoes, and for other general purposes. The precinct would be located in the south eastern portion of the site, immediately to the north west of the NPC Operations Precinct and fronting Berth 2. Various buildings and infrastructure would be located in the precinct, including covered storage areas, storage silos, conveyor systems and office buildings.
- **General Purpose Precinct**. The General Purpose Precinct would have an area of approximately 25 hectares and would be used for handling and storing cargo containers, heavy machinery, break bulk and Roll On Roll Off cargo. The precinct would be located in the central and north eastern portion of the site, immediately to the north west of the Bulk and General Precinct and fronting Berths 3 and 4. Various buildings and infrastructure would be located in the precinct, including covered storage areas and areas of hardstand.
- **Container Terminal Precinct**. The Container Terminal Precinct would have an area of approximately 35 hectares and would be used for container storage and transfer. The precinct would be located in the central and north western portion of the site, immediately to the north west of the General Purpose Precinct and fronting Berths 5 and 6. Buildings and infrastructure including quayside and mobile cranes, rail mounted gantries, hardstand areas and an administration building would be provided.

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Email: mail@newportcorp.com.au **Website:** www.newportcorp.com.au

- **Bulk Liquid Precinct**. The Bulk Liquid Precinct would have an area of approximately 15 hectares and would be used for receival, storage, blending and distribution of fuels. The precinct would be located in the far north western portion of the site, immediately to the north west of the Container Terminal Precinct and fronting Berth 7. Buildings and structures including tank farms with steel storage tanks, fuel distribution pipelines and administration buildings would be provided.

The proposed concept also includes a Berth Precinct which would contain up to seven berths to support operations within the five land-based operational precincts described above. Access corridors accommodating the necessary infrastructure (e.g. road infrastructure, potable water, electricity, communications, gas and sewerage) to service the facilities would also be provided.

An Environmental Assessment was placed on public exhibition in August and September 2010 pursuant to Part 3A of the *Environmental Planning & Assessment Act 1979*. A number of submissions were received relating to the Concept Approval, and a response to these submissions was provided in December 2010. Further community consultation and exhibition was undertaken in February and March 2011. Key issues which were raised in the recent submissions (April 20111) primarily relate to road and rail operations.

In order to address these issues relating to road and rail operations, further investigations have been undertaken. In order to optimise the rail movements, re-configuration of the rail line has been required. This includes a rail connection from Port site to the Bullock Island Loop, which will also intersect with Selwyn Street. It is anticipated that due to the potential interaction of road and rail use at this crossing, grade separation may be required in the medium / long term future to ensure efficient movement of trucks to/from the Port and appropriate road/rail safety. If required the overpass will require a clearance of approximately 5.5 m – 6 m with a road grade required of 1 in 10.

Pursuant to Clause 8F of the *Environmental Planning and Assessment Regulation*, NPC is providing notification to the RTA as land owner, as it relates to the proposed works prior to the determination of the Concept Plan Approval. It is NPC's understands that the Newcastle City Council (NCC) is the legal owner of Selwyn Street. Further consultation will be undertaken with NCC if the grade separation is to occur and subject to future project approvals. It would be appreciated if you could forward correspondence authorising the Concept Approval as it relates to this to the undersigned at your earliest convenience.

If you require further information or have questions relating to this Concept Approval, please do not hesitate to contact the undersigned.

Yours sincerely

Michael Baudinette
GENERAL MANAGER – TRADE & PORT DEVELOPMENT

NEWCASTLE PORT CORPORATION

Tim Ryan
General Manger – Hunter Valley
Australian Rail Track Corporation
Locked Bag 1
BROADMEADOW NSW 2292

Dear Mr Ryan

Newcastle Port Corporation (NPC) has developed a Concept Plan for the proposed development of port-related activities on a portion of the former BHP Steelworks site located along the South Arm of the Hunter River in Mayfield, Newcastle. The Site covers an area of approximately 90-hectares, which is proposed to be developed by NPC for port-related activities. NPC is the Proponent of the proposed concept. The proposed concept identifies five key land-based operational precincts which would be developed and operated through 2034. The precincts are:

- **NPC Operations Precinct**. The NPC Operations Precinct would have an area of approximately 3 hectares and would be used by NPC for managing all operations within the Port of Newcastle. The precinct would be located at the south eastern end of the site, fronting Berth 1. Various buildings and small-scale facilities, including vehicle and marine equipment maintenance areas, would be located in the precinct. The precinct would also likely be the berthing location for the Newcastle Port Corporation dredge vessel 'David Allan'.
- **Bulk and General Precinct**. The Bulk and General Precinct has an area of approximately 12 hectares would be used for handling and storing bulk goods such as grain and other dry bulk goods, including cement, fertilizer, and coke cargoes, and for other general purposes. The precinct would be located in the south eastern portion of the site, immediately to the north west of the NPC Operations Precinct and fronting Berth 2. Various buildings and infrastructure would be located in the precinct, including covered storage areas, storage silos, conveyor systems and office buildings.
- **General Purpose Precinct**. The General Purpose Precinct would have an area of approximately 25 hectares and would be used for handling and storing cargo containers, heavy machinery, break bulk and Roll On Roll Off cargo. The precinct would be located in the central and north eastern portion of the site, immediately to the north west of the Bulk and General Precinct and fronting Berths 3 and 4. Various buildings and infrastructure would be located in the precinct, including covered storage areas and areas of hardstand.
- **Container Terminal Precinct**. The Container Terminal Precinct would have an area of approximately 35 hectares and would be used for container storage and transfer. The precinct would be located in the central and north western portion of the site, immediately to the north west of the General Purpose Precinct and fronting Berths 5 and 6. Buildings and infrastructure including quayside and mobile cranes, rail mounted gantries, hardstand areas and an administration building would be provided.

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- **Bulk Liquid Precinct**. The Bulk Liquid Precinct would have an area of approximately 15 hectares and would be used for receival, storage, blending and distribution of fuels. The precinct would be located in the far north western portion of the site, immediately to the north west of the Container Terminal Precinct and fronting Berth 7. Buildings and structures including tank farms with steel storage tanks, fuel distribution pipelines and administration buildings would be provided.

The proposed concept also includes a Berth Precinct which would contain up to seven berths to support operations within the five land-based operational precincts described above. Access corridors accommodating the necessary infrastructure (e.g. road infrastructure, potable water, electricity, communications, gas and sewerage) to service the facilities would also be provided.

An Environmental Assessment was placed on public exhibition in August and September 2010 pursuant to Part 3A of the *Environmental Planning & Assessment Act 1979*. A number of submissions were received relating to the Concept Approval, and a response to these submissions was provided in December 2010. Further community consultation and exhibition was undertaken in February and March 2011. Key issues which were raised in the recent submissions (April 2011) primarily relate to road and rail operations.

In order to address these issues relating to road and rail operations, further investigations have been undertaken. This has resulted in proposed alterations to the configuration of the Morandoo Yard and the Bullock Island Loop. These proposed infrastructure changes have been developed in consultation with Australian Rail Track Corporation (ARTC) and Transport NSW. The suggested changes are further detailed below and provided in the attached figure:

- A revised and improved rail configuration is proposed to service the Concept Plan. The new configuration responds to the restrictions relating to available train paths on the Sydney/Newcastle railway line and allows for larger trains to access the site;
- The proposal is for the Port to utilise some of the existing train paths which are available on the Sydney/Newcastle line outside of the curfew period i.e. Between 7pm and 5am each day;
- The Morandoo Yard will be reconfigured to provide 4 x 650m length sidings to hold Port trains. The Number 1, 2, 3, 4, and 5 roads will be lengthened, and crossover configuration at the eastern end is to be altered to allow shunting of 650m train units.
- Within the Concept Plan site a new rail line will be extended between the Bullock Island loop and the existing One Steel line. This will provide more direct access to the site for Port trains and it will provide for longer (650m length) rail sidings within the site to accommodate the larger Port trains;

Pursuant to Clause 8F of the *Environmental Planning and Assessment Regulation*, NPC is providing notification to ARTC as the land owner as it relates to the proposed works prior to the determination of the Concept Plan Approval. It is NPC's understanding that the Rail Infrastructure Corporation is the legal owner of both the Morandoo Yard and Bullock Island Loop (Lot 2 DP 1097368). Further consultation will be undertaken with the Rail Infrastructure Corporation upon further design of the rail sidings and future project approval applications. It would be appreciated if you could forward correspondence authorising the Concept Approval as it relates to this to the undersigned at your earliest convenience.

If you require further information or have questions relating to this Concept Approval, please do not hesitate to contact the undersigned.

Yours sincerely

Michael Baudinette
GENERAL MANAGER – TRADE & PORT DEVELOPMENT

Attachment Two – Conceptual Rail Siding Configuration

AECOM

CONCEPTUAL RAIL SIDING CONFIGURATION

Response to Submissions

Mayfield Site Port-Related Activities Concept Plan