10 Mtpa Road Transport Monitoring Trial

NSW DP&I Submission Report - Condition 6 of 'Major Project Approval 08_0009'

Project Number: 111019-01/Report 001 Rev 3

Prepared for: Port Kembla Coal Terminal

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Executive Summary

Summary of existing approval conditions & an overview of monitoring trial findings, which satisfy these conditions.

Port Kembla Coal Terminal (PKCT) manages a large export Coal Terminal at Port Kembla. The NSW State Government currently owns the Terminal site and existing infrastructure (although the State Government is in the process of privatising their port assets - Port Kembla Operations Pty Ltd as of June 1st 2013), with management responsibility delegated to the Port Kembla Port Corporation (PKPC). PKCT operate the Terminal in accordance with PKPC directives and based on a 20-year State Government lease with a 20-year option.

In 2008 PKCT submitted an Environmental Assessment (2008 EA) and received consent via Major Project Approval 08_0009, obtained under Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A Act). This allows PKCT to receive up to 10 Million tonnes per annum (Mtpa) of coal and bulk products by public road over a 24 hour, 7 day per week period.

Condition 6 in Schedule 2 of the PKCT Major Project Approval 08_0009 states:

> *6. The Proponent shall not receive more than 7.5 million tonnes of coal and bulk products at the site by public road in any calendar year without the written approval of the Director-General. In seeking this approval, the Proponent shall submit a report to the Director-General that:*
>
> *(a) Reviews the transport related impacts associated with the trucks being used to deliver coal and bulk products to the terminal;*
>
> *(b) Demonstrates that these impacts are generally consistent with the predicted and/or approved impacts; and*
>
> *(c) Examines whether there any other reasonable and feasible measures that could be implemented to minimise these impacts.*
>
> *Once this approval has been obtained, the Proponent shall not receive more than 10 million tonnes of coal and bulk products at the site by public road in any calendar year.*

In addition to Condition 6 a number of other Conditions of Major Project Approval 08_0009 are of relevance to the 10 Mtpa Monitoring Trial, including:

> *7. The Proponent shall only receive coal dispatched from NRE No 1 Colliery at Russell Vale if that coal has been dispatched between the hours of:*
>
> *(a) 7 am to 10 pm Monday to Friday; and*
>
> *(b) 8 am to 6 pm Saturday and Sunday or Public Holidays*
>
> *unless in accordance with a project approval granted to that Colliery under Part 3A of the EP&A Act.*
>
> *8. Subject to conditions 6 and 7 of this schedule, coal and bulk products may be received by the Proponent at the site by road delivery twenty four hours per day, seven days per week.*

Whilst the delivery of 7.5 Mtpa of coal and bulk products by public road has already been approved, the approval to operate to 10 Mtpa is conditional on PKCT submitting a report assessing the likely transport-related impacts to receive greater than 7.5 Mtpa. PKCT has undertaken the necessary monitoring field trial based on public road delivery amounts of at least 6 Mtpa and outside of school and public holidays to provide a suitable comparison between impact predictions from the 2008 EA model and actual impacts, using methodology agreed by the NSW Department of Planning & Infrastructure (DP&I).

This report provides details of the validation review undertaken across a two-week monitoring period between the 15th and 29th August 2011 to assess the transport related impacts resulting from public road coal and bulk products transport to PKCT. It also includes the subsequent analysis, liaison and review of any existing environmental impact mitigation measures currently in place.

A comparison of actual traffic movements at each survey site counted in 2011 were compared with an estimate of the predicted 2011 background traffic movements using the same factors used in the 2008 EA report to predict background traffic movements for 2009, 2013 and 2018. The number of coal trucks required to transport coal to PKCT at a rate of 6.9 Mtpa for comparative analysis, were based on assumptions documented in Section 6 of the 2008 EA report that predicted the number of coal trucks for the 4 Mtpa, 5 Mtpa and 10 Mtpa scenarios.

The 2011 Noise assessment found that at 7.5 Mtpa and 10 Mtpa levels of public road coal deliveries to PKCT, the predicted noise levels are generally consistent with the previous modelling undertaken as part of the 2008 EA noise assessment. The predicted noise levels comply with the Road Noise Policy (RNP) criteria.

Overall, the traffic comparisons from the 2011 traffic assessment show that assumptions made in the 2008 EA traffic assessment of Appin Road, Mount Ousley Road, F6 Freeway, Masters Road and Bellambi Lane are considered appropriate and support the conclusions from 2008 EA, including:

- *"that the predicted coal truck movements will have minimal effects on road traffic performance and will not exacerbate the road network capacity for coal truck movements of 10 Mtpa with 24/7 operations in 2013 and 2018."*

Overall, the 2011 Traffic Assessment comparisons show that assumptions made in the 2008 EA report for Appin Road, Mount Ousley Road, F6 Freeway, Masters Road and Bellambi Lane are appropriate and no further mitigation measures, other than those listed in the previous 2008 EA report, are required, which includes compliance with PKCT Drivers Code of Conduct (DCC).

The existing mitigation measures arising from the 2008 EA include:

- *Limits on coal truck movements to PKCT from Gujarat NRE No 1 Colliery along Bellambi Lane to 15 hours per day on weekdays and 10 hours per day on weekends and public holidays.*
- *Limits on the activation of engine compression brakes while in close proximity to residences.*
- *A requirement that all loads are covered.*
- *A requirement that all tailgates are secured to eliminate rattling noises.*
- *A self-imposed speed limit of 50kmh along Bellambi Lane.*
- *Maintenance of existing operational safeguards to reduce air quality impacts, including the use of the Truck wash when leaving the client mine and after tipping at PKCT, with regular road condition surveillance and roadway cleaning/water cart use as required.*

*A supplementary review of existing traffic studies along the haulage route was undertaken in April 2013 (refer **Annex I**), to review the range of existing traffic studies along the haulage route to compare traffic volumes and assumptions used to forecast deliveries of 6.9 Mtpa, 7.5 Mtpa and 10 Mtpa of coal by public road to PKCT. This supplementary traffic study review shall be considered as an addendum to the existing traffic assessment (**Annex D**). The results of these traffic assessments provide confidence around the assumptions used in the validation noise modelling completed as part of the 10 Mtpa Road Delivery Trial.*

Noise monitoring for the 2011 trial was undertaken by Cardno ITC at 13 separate locations, which was generally consistent with the previous road traffic noise assessment undertaken by Wilkinson Murray in 2008.

The key findings of the 2011 Noise Assessment were:

- *Road haulage of the trial amount, ie equivalent to 6.9 Mtpa was shown to comply with the current project noise criteria at all monitoring locations day/night on weekdays and weekends.*
- *Road haulage of 7.5 Mtpa was predicted to comply with the criteria at all monitoring locations for day/night on weekdays and weekends.*
- *Road haulage of 10 Mtpa was predicted to comply with the criteria at all monitoring locations for day/night on weekdays and weekends.*
- *Traffic noise levels on the major roads such as Mt Ousley, Spring Hill Road and the F6 Freeway for 2013 10 Mtpa were predicted comply with the OEH RNP road traffic noise criteria.*
- *Coal delivery from Gujarat NRE colliery complied with current operating conditions, i.e. 15 hours Monday to Friday and 10 hours Saturday and Sunday and managed an equivalent of approximately 1 Mtpa over the trial period. This is approximately 13% of the total coal delivery to PKCT and BHP Billiton provided the remaining 83% coal delivery. This proportion under "typical" conditions is more evenly distributed, i.e. 30% GNRE and 70% BHP Billiton.*

The results of this report demonstrate that impacts are generally consistent with the predicted and/or approved impacts outlined within the original 2008 EA. The results show that 10 Mtpa levels of coal delivery throughput by public road:

- *Have minimal effects on road traffic performance and/or safety.*
- *Comply with noise criteria at all monitoring locations along the heavy vehicle haulage route.*
- *Require no additional reasonable and feasible mitigation measures, to those outlined in the original 2008 EA.*

PKCT are committed to continuous improvement of environmental management tools to ensure impacts to the community and environment are minimised. PKCT is currently seeking the services of a consultant to undertake a detailed review and audit of the existing DCC across all parties who operate under this instrument. This review and audit will examine DCC performance to assess compliance and to identify improvement opportunities by reviewing previous auditing activities, training/induction, incident/complaints management, vehicle standards, industry certifications, performance measures and record keeping standards.

Coal mining and export is vital to the NSW and Illawarra economies. PKCT has a vital role in the NSW coal supply chain. Without continued infrastructure and operational improvements to meet forecast demands; increased costs, delays and reductions in coal exports are likely to occur. This will be at a significant opportunity cost to affected mining companies, service providers and their employees as well as to the broader socioeconomic environment in the Illawarra and other NSW regional areas.

Forecast increased exports, necessitating increased public road receival capacity to 10 Mtpa, will provide even further, considerable economic benefits to local mining companies, the Illawarra and the state of NSW.

PKCT are proposing to increase their approved public road receival capacity to 10 Mtpa. This report finds that PKCT is able to increase its public road receival capacity to 10 Mtpa in compliance with its approval conditions and through continued application of the mitigation measures outlined in the 2008 EA, including the PKCT Drivers Code of Conduct.

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1 Introduction

This section describes the background to the monitoring trial, the existing Major Project Approval and the proposed application to NSW Department of Planning & Infrastructure to have the existing road receival limit increased.

1.1 Background

Port Kembla Coal Terminal (PKCT) operates the export Coal Terminal at Port Kembla. PKCT is located on Lot 22 DP1128396 and Part Lots 7 and 8 in DP1154760 in the Inner Harbour of Port Kembla, near Wollongong (see **Figures 1** & **2**). The NSW State Government currently owns the Terminal site and existing infrastructure (although the State Government is in the process of privatising many of their Port Kembla assets, which includes the Coal Terminal), with management responsibility delegated to the Port Kembla Port Corporation (PKPC). PKCT operate the Terminal in accordance with PKPC directives and based on a State Government lease on a current 20-year term until 2030.

Currently six equal shareholders, namely Metropolitan Collieries, Oakbridge, Tahmoor Coal, Illawarra Services [BHP Billiton Illawarra Coal (BHPBIC)], Centennial Coal and Gujarat NRE Coking Coal (GNRE) form the PKCT Board of Management to operate the Terminal.

Extensive road and rail infrastructure service PKCT. Currently, PKCT receives and transfers to ship up to 14.3 million tonnes per annum (Mtpa) of coal (2011 financial year), with approximately 41% delivered by road and the remaining 59% by rail. In addition, 359,000 tonnes of bulk products were shipped in the financial year ending June 2011, including coke and slag. All of the coal received is loaded onto ships with approximately 93% destined for export and 7% for the domestic market.

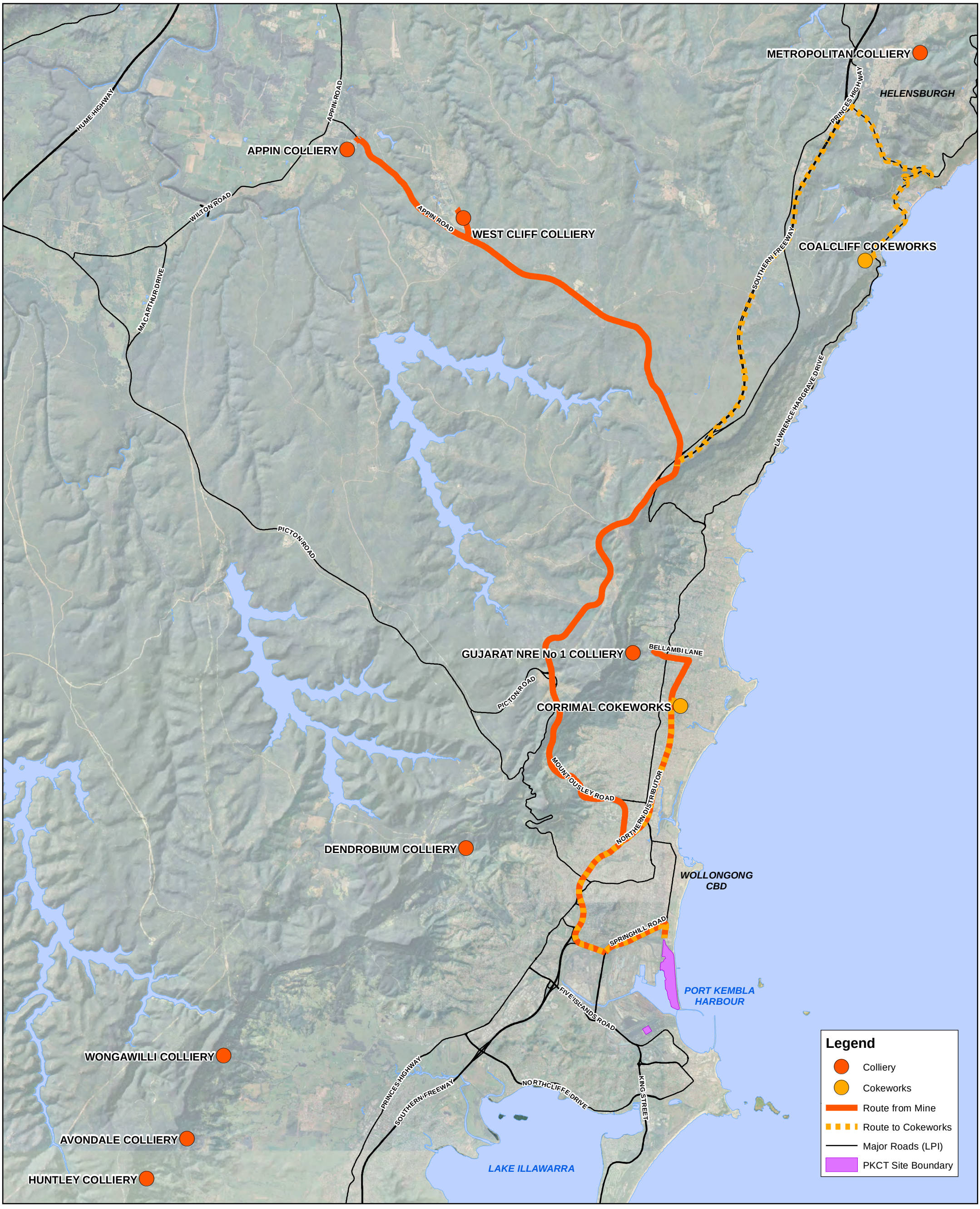
PKCT operations are of State and regional environmental planning significance as identified by the Minister for Planning in the Government Gazette of 21 December 2007. This is because it is the major coal intermodal facility in southern NSW for the transfer of coal from rail and road to ship. The Terminal is responsible for receiving, assembling and loading coal from the Southern and Western coalfields of New South Wales for transport by ship to international and domestic markets. PKCT has two bulk handling facilities; a high capacity Coal Berth that handles the loading of coal, and a Bulk Products Berth (BPB) that loads and unloads a range of bulk products.

In 2008, an Environmental Assessment (*2008 EA*) was prepared and PKCT received approval via Major Project Approval 08_0009, obtained under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to receive up to 10 Mtpa of coal and bulk products by public road over the 24 hour, 7 day per week period. This road receival capacity along with rail transport enables PKCT to currently meet customer receipt and dispatch requirements.

The *2008 EA* prepared in support of PKCT's Major Project Approval 08_0009, identified future demand for coal and bulk product throughput. Condition 6 of this Major Project Approval required that prior to the Terminal being able to exceed a public road throughput of 7.5 Mtpa the original modelling data required real world assessment and comparison to the *2008 EA* environmental impact modelling.

Forecast increases in coal throughput demands require PKCT to secure the Terminal's public road receival capacity from its current approved throughput capacity of 7.5 Mtpa up to 10 Mtpa. In mid-2011, PKCT released an Expression of Interest (EOI) to potential future customers to understand the future throughput requirements of the Terminal. The EOI findings indicate that demand for coal throughputs by road would exceed the current 7.5 Mtpa public road receival limit. Consequently, it is necessary for PKCT to reassess any potential impacts and apply to Department of Planning and Infrastructure (DP&I) to have their current road throughput limit increased to 10 Mtpa.

PKCT has engaged Cardno (NSW/ACT) Pty Ltd (Cardno) to undertake this review of the environmental impacts and to validate previously modeled expectations in order to meet the requirements of Condition 6 of PKCT's Major Project Approval 08_0009. This review report and appendices provides justification for PKCT to have their existing coal and bulk products public road receival limit increased from 7.5 Mtpa to 10 Mtpa as PKCT expects public road receival of coal and bulk products to reach levels above 7.5 Mtpa shortly.



Road Haulage Routes to PKCT

10 MTPA TRIAL STUDY

FIGURE 1

1:110,000 Scale at A3

Kilometres

0 1 2 3 4 5

N W E S

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2012-01-19
Coordinate System: GDA 1994 MGA Zone 56
Project: 111019-01
Map: G1002_MonitoringRoutes.mxd 02

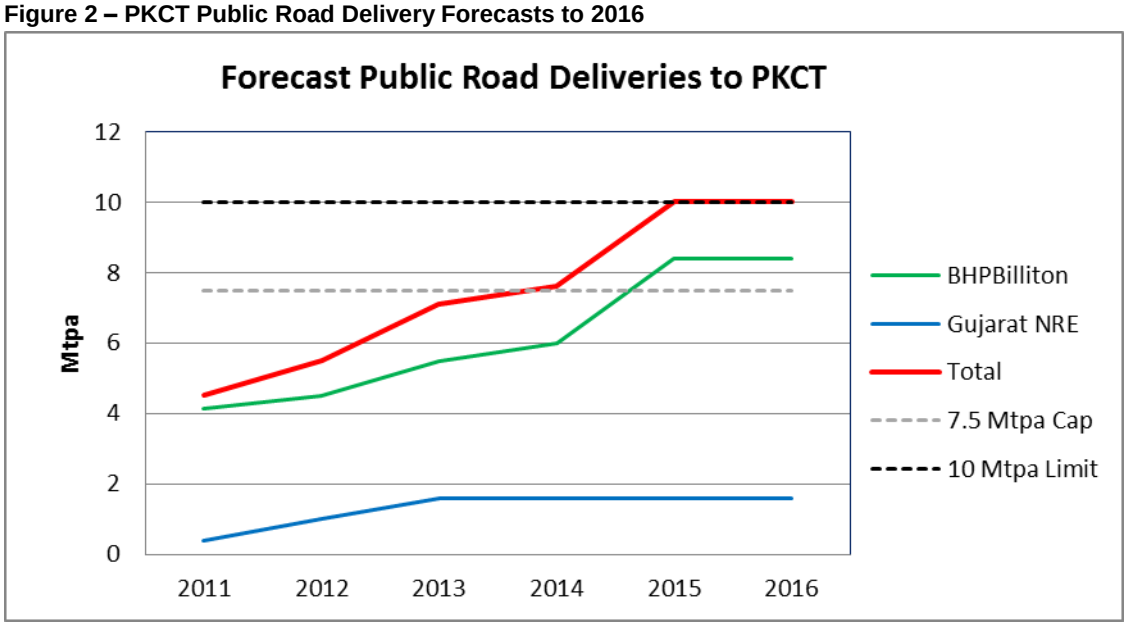
1.1.1 Existing Operations

The transport of coal and bulk products to PKCT is via road and rail from southern and central western NSW. Once received on site, coal is conveyed to three rail mounted luffing stackers, which stack the coal onto stockpiles. The main stockpile area consists of two parallel stockpile pads, each approximately 50 m wide and 1,000 m long, located to the south of the receival area. These provide approximately 850,000 tonnes of storage, however, the working capacity of the stockyard is approximately 600,000 tonnes.

A rail mounted bucket wheel reclaimer undertakes reclaiming of coal from stockpiles. The reclaimers discharge to the conveyor system to the existing coal berth (Berth 102).

The existing total road delivery to PKCT in 2011 calendar year was approximately 4.9 Mtpa. **Figure 2** shows that the current limit of 7.5 Mtpa is likely to be met in the 2013 to 2014 period. This figure is expected to increase to a maximum of 10 Mtpa.

Figure 2 – PKCT Public Road Delivery Forecasts to 2016



(*Source: PKCT 2012*)

The following section provides details specific to truck deliveries and road receival at PKCT.

1.1.2 Road Deliveries and Receival

Road deliveries to PKCT utilise a number of public roads to deliver coal and bulk products from its various current stakeholders (see **Figure 1**).

The onsite road system within the Terminal enables trucks to enter the receival area, discharge coal into receival bins, pass through a washing facility and leave the port area efficiently without intruding into the main facility and without affecting rail deliveries to the port. The truck access roadway and unloading station is located within the rail loop at the northern end of the site. Truck transported coal is received via an enclosed hopper with a capacity of approximately 3,000 tonnes. The Terminal has the capacity to receive two separate coal types into two bins simultaneously. The road receival materials conveying system has a nominal design capacity of approximately 3,700 tonnes per hour.

Coal is conveyed from the road receival area to either the western stockyard or eastern stockyard or to a vessel at Berth 102. Before any trucks depart the Terminal they must travel through a truck wash to remove dust before accessing the public road network. The *PKCT Driver's Code of Conduct* (refer **Annex B**) must be complied with by all delivery contractors to PKCT and includes a requirement to

utilise truck wash facilities prior to exiting the site. This compulsory code of conduct assists the management of truck driver behaviour and minimises potential traffic, noise and dust impacts from trucks on the local community and environment.

1.1.3 Existing Truck Wash Facilities

The existing truck wash facilities on site consist of two separate truck wash stations at both the northern and southern entry/exits of the site. These wash stations clean trucks and trailers after delivery before the vehicles re-enter the public road system. This washing system aims to reduce the tracking out of dust and deposition of any material build up from transport vehicles exiting the site.

1.1.4 Northern Truck Wash Upgrade Project

A Northern Truck Wash effectiveness improvement project with a capital value of approximately $2.35M is approved by PKCT for implementation and should be complete and in use by the end of 2013. This project is part of an operational commitment to meet future operational growth requirements and to comply with the NSW Office of Environment & Heritage (EPA) agreed Environmental Protection Licence (EPL1625) Pollution Reduction Program (PRP) No. 10.

The improvements resulting from the project will include:

- Wash bay modifications;
- New filtration and circulation system;
- New spray water supply system;
- New spray nozzle system; and
- New control system.

The Northern Truck Wash performance improvement criteria expected from the project include:

- Reliable plant and equipment operation that can accommodate the planned increases in truck throughput to 10 Mtpa;
- Improved spray design/configuration to consistently clean coal residue from trucks targeting the tailgates, draw bars, and tyre treads;
- Improved spray design/configuration to reduce/minimise water overspray and aerosols generated by high velocity nozzles;
- Improved spray design to effectively wash trucks without causing damage;
- Prompt and reliable truck wash activation preventing trucks from leaving site part washed; and
- Reduce overspray into the inside of truck trailers which can result in coal residues seeping through the tailgate.

PKCT anticipate the Northern Truck wash project will be completed and operational by the end of 2013.

Refer to **Section 5.3.3** for details of other existing environmental mitigation measures in place or planned at PKCT.

1.2 Project Aims and Objectives

The main aim of this report is to validate the previous 2008 EA predictions of any impacts and to review any potential changes to expected environmental impacts resulting from the proposed increase in road receival capacity to 10 Mtpa. This report aims to provide supporting justification for PKCT to apply for written approval by the Director General to receive more than 7.5 Mtpa of coal and bulk products by public road per calendar year at their site.

Approval for an increase in their public road receival limit to 10 Mtpa is necessary, as PKCT has identified that impending forecast customer requirements are likely to be more than the current 7.5 Mtpa limit to road receival.

Specifically, the 2011 monitoring trial and this report specifically aim to satisfy the objectives and conditions outlined in Condition 6 of Major Project Approval 08_0009 (refer **Section 1.3.1**).

1.3 Statutory Context

PKCT currently operates under consent conditions attached to its 2009 Major Project Approval 08_0009. The Project, approved under Part 3A of the EP&A Act is now known as a "Transitional Part 3A Project". Subject to Clause 2(1) (a) of Schedule 6A of the EP&A Act.

1.3.1 Major Project Approval 08_0009 Conditions

Condition 6 in Schedule 2 of the PKCT Major Project Approval 08_0009 (refer to **Annex A**) states:

> 6. *The Proponent shall not receive more than 7.5 million tonnes of coal and bulk products at the site by public road in any calendar year without the written approval of the Director-General. In seeking this approval, the Proponent shall submit a report to the Director-General that:*
>
> *(a) Reviews the transport related impacts associated with the trucks being used to deliver coal and bulk products to the terminal;*
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> *(b) Demonstrates that these impacts are generally consistent with the predicted and/or approved impacts; and*
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> *Once this approval has been obtained, the Proponent shall not receive more than 10 million tonnes of coal and bulk products at the site by public road in any calendar year.*

In addition to Condition 6 a number of other Conditions of Major Project Approval 08_0009 are of relevance to the 10 Mtpa Trial, including:

> 7. *The Proponent shall only receive coal dispatched from NRE No 1 Colliery at Russell Vale if that coal has been dispatched between the hours of:*
>
> *(a) 7 am to 10 pm Monday to Friday; and*
>
> *(b) 8 am to 6 pm Saturday and Sunday or Public Holidays*
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> *unless in accordance with a project approval granted to that Colliery under Part 3A of the EP&A Act.*
>
> 8. *Subject to conditions 6 and 7 of this schedule, coal and bulk products may be received by the Proponent at the site by road delivery twenty four hours per day, seven days per week.*

Schedule 3 of the Major Project Approval 08_0009 (see below) mainly relates to PKCT's operating site only. As such, these particular conditions do not specifically relate to road noise but are included here for reference only.

Schedule 3 – Specific Environmental Conditions

1. *The Proponent shall ensure that the noise generated by the project at any privately-owned residence does not exceed the criteria specified in **Table 1.1** for the location nearest to that residence.*

Table 1.1 – Noise Impact Assessment Criteria dB(A) $L_{Aeq\ (15mins)}$

Location	Time Period	Noise Criteria $LA_{eq,15min}$(dBA)
Cnr of Swan/Kembla Sts	Day	51
	Evening	50
	Night	49
Cnr of Swan/Corrimal Sts	Day	51
	Evening	50
	Night	49
Cnr of Keira/Fox Sts	Day	55
	Evening	49
	Night	45

Notes:

(a) To determine compliance with the LAeq (15 minute) noise level limits in the above table, noise from the project is to be measured at the most affected point within the residential boundary. To determine compliance with the LA1 (1 minute) noise level limits in the above table, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.

(b) The noise emission limits identified in the above table apply under meteorological conditions of:

- *wind speeds of up to 3 m/s at 10 metres above ground level; or*
- *temperature inversion conditions of up to 3ºC/100m, plus a 2 m/s source-to-receiver component drainage flow wind at 10 metres above ground level for those receivers where applicable in accordance with the NSW Industrial Noise Policy.*

However, if the Proponent has a written negotiated noise agreement with any landowner of the land listed in Table 2, and a copy of this agreement has been forwarded to the Department and DECC, then the Proponent may exceed the noise limits in Table 1 in accordance with the negotiated noise agreement.

2. *The Proponent shall prepare and implement a Noise Monitoring Program for the project to the satisfaction of the Director-General. This program must:*

(a) be submitted to the Director-General for approval within 6 months from the date of this approval, or as otherwise agreed by the Director-General; and

(b) include a:

- *combination of attended and unattended noise monitoring measures;*
- *noise monitoring protocol for evaluating compliance with the noise impact assessment criteria in this approval; and*
- *reasonable and feasible best practice noise mitigation measures to ensure project specific noise criteria are met.*

The conditions outlined in *Schedule 3* above relate to noise emissions from site operations and serve to ensure that amenity of dwellings surrounding the operating site are maintained. PKCT is

committed to regular compliance monitoring campaigns on an ongoing basis to ensure that this occurs.

1.3.2 Environmental Protection Licence Requirements

The PKCT Environmental Protection Licence (EPL1625) under the *Protection of the Environment Operations (POEO) Act 1997* is PKCT's statutory licence to operate and contains environmental conditions additional to those in the Major Project Approval. These conditions provide operational requirements and emission limits, which the Terminal must abide by.

The noise related levels listed as *L4 Noise Limits* in the EPL 1625 replicate the Major Project Approval 08_0009, *Schedule 3 – Specific Environmental Conditions* listed above in **Section 1.3.1**. The 10 Mtpa Trial study has been assessed against this criteria.

There are no additional water quality impacts expected to arise from the 10 Mtpa approval as it relates to road receival only and PKCT already has an existing onsite water control and treatment system in operation with a licenced and monitored discharge point.

1.4 Study Team

Cardno has prepared this report with specialist input from the following sources:

- Noise and acoustics assessment – Cardno ITC.
- Traffic assessment – Cardno (NSW/ACT) Pty Ltd.

2 Consultation

Describes relevant consultation undertaken as part of the 10 Mtpa trial

2.1 NSW Department of Planning & Infrastructure

The NSW Department of Planning & Infrastructure (DP&I) are the statutory approval authority for the existing Major Project Approval 08_0009. PKCT issued a briefing paper to Mr Howard Reed of the DP&I via email on 10th November 2010 that provided advice on PKCTs intent under Schedule 2, Condition 6, 7 & 8 of Project Approval 08_0009, to seek to obtain Director-General approval to receive more than 7.5 Mtpa of coal by public road.

The briefing note included a detailed explanation of the proposed study methodology and Mr Howard Reed provided an email response to Mr Peter Green (PKCT General Manager) on 23rd November 2010 that supported the proposed study approach.

The DP&I agreed methodology utilised in the 2011 Monitoring Trial fulfils the requirements outlined in the briefing note and subsequent discussions with the Department.

2.2 NSW Office of Environment and Heritage

PKCT has an effective working relationship with the NSW Office of Environment and Heritage (OEH) or Environmental Protection Authority (EPA) to ensure the dissemination of regular environmental monitoring, audits and reporting results. This regular agency consultation assists PKCT to maintain their commitment to continual improvement as opportunities for feedback and Pollution Reduction Programs (PRPs) arise during the process of environmental monitoring, audits and liaison.

As the EPA became a separate statutory authority as of 29th February 2012, PKCT will continue to liaise regularly with the EPA as required, to discuss and confirm requirements, source information and to discuss outcomes of environmental monitoring and audits.

2.3 Community Consultative Committee

PKCT has a Community Consultative Committee (CCC) in place that is made up of local residents, businesses and agency stakeholders. The CCC meets every four months, and the findings of the 10 Mtpa trial and subsequent submission to DP&I have been communicated during these meetings.

2.4 PKCT Shippers

PKCT is operated by six equal coal-producing partners (shippers) from the Southern and Western coalfields, who currently lease the Terminal from the NSW Government. The partners are currently Metropolitan Collieries, Oakbridge, Tahmoor Coal, Illawarra Services [BHP Billiton Illawarra Coal (BHPBIC)], Centennial Coal and Gujarat NRE Coking Coal (GNRE).

During the consultation process with shippers required to plan the monitoring trial, an additional monitoring location at 260 Gladstone St, Mount St Thomas was requested and added to the study. This ensured any potential public road transport activity from BHPBIC's Dendrobium Mine Coal Washery, which is located within the BlueScope Steelworks, was included during the trial.

2.5 Local Residents Affected by Noise Monitoring Equipment

Prior to the trial commencing, Cardno sought permission to install noise-monitoring equipment on private residences by directly notifying residents affected by the monitoring equipment installations. Permission was sought to undertake noise monitoring from private properties by hand delivering notification letters informing the resident of the intent to install noise-monitoring equipment on their property for the duration of the two-week trial period. Only after receiving resident permission was the temporary acoustic monitoring equipment installed on properties. The equipment was then installed in positions as close to the original *2008 EA* locations as was possible.

An example notification letter is included in **Annex E**. This letter provided an outline of the proposed noise monitoring trial and included direct contact details if there were any issues or questions that the resident had in relation to the trial.

Where permission could not be obtained to gain access to original survey locations, an alternative location nearest to the original site was chosen. Alternative locations used in the 2011 Monitoring Trial are labelled as Location "B" in **Figure 9** below.

PKCT received no community concerns or complaints during the August 2011 trial period even though truck movements in many areas had increased during this time.

2.6 Road Haulage Companies Servicing PKCT

PKCT consulted with the two main road transport companies contracted by both BHPBIC Coal (Bulktrans) and Gujarat NRE (Brindles) to haul coal and bulk materials to PKCT. This helped to gain a better understanding of each company's commitment to operational and environmental improvements, as well as their individual plans to meet the forecast future demands at the Coal Terminal. The data received during this process also provided up to date input data for the acoustic modelling.

Both Bulktrans and Brindles also use the services of sub-contractors to meet fluctuations in service demands. Notwithstanding, all heavy vehicle operators must comply with the *PKCT Drivers Code of Conduct* and all sub-contractors are encouraged to regularly update and improve their equipment standards to ensure continual environmental performance improvements across the entire truck transport fleet servicing PKCT.

2.6.1 Forecast Changes in Truck Fleet Composition

Brindles is the main road haulage contractor servicing Gujarat NRE's operations from their Russell Vale No.1 Colliery. Brindles' total fleet during the 2011 monitoring trial period consisted of 29 trucks (27 own & 2 sub-contractors). Forecasting to 2015 their fleet is expected to grow to a total fleet of approximately 43 trucks (37 own & 6 sub-contractors).

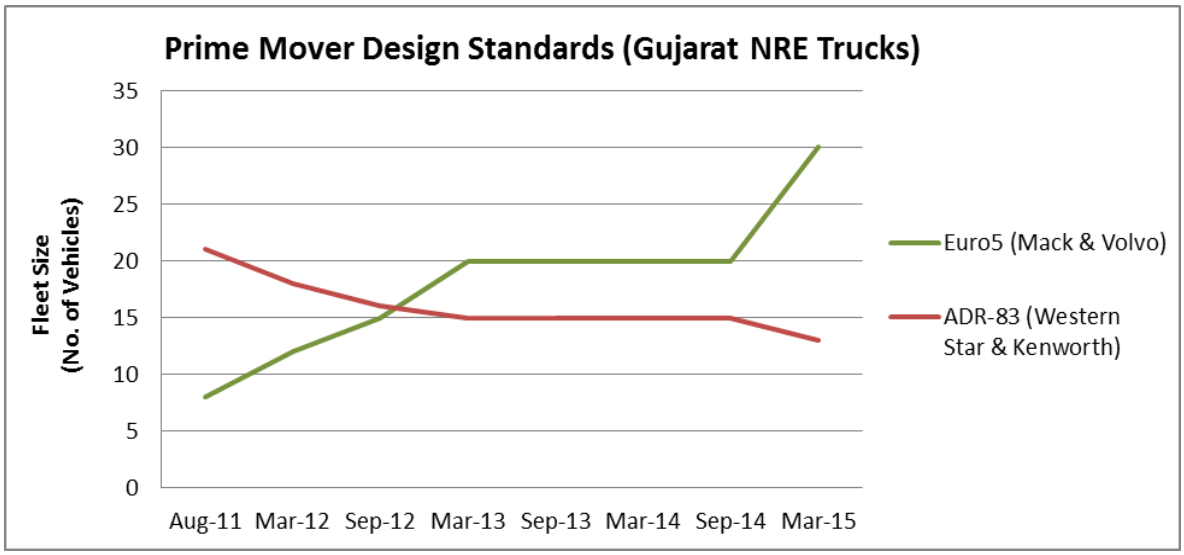
Bulktrans is the main road haulage contractor servicing BHPBIC's operations from their West Cliff and Appin Collieries. Bulktrans' total fleet during the 2011 monitoring trial period consisted of 61 trucks (38 own & 23 sub-contractors). Forecasting to 2015, their fleet is expected to grow to a total fleet of approximately 68 trucks (40 own & 28 sub-contractors).

Australian Design Rule (ADR) governs the acoustic performance of motor vehicles within Australia (including heavy vehicles). Specifically, the function of ADR-83 is to define limits on external noise generated by motor vehicles in order to limit the contribution of motor traffic to community noise.

Empirical evidence provided in a letter of commitments from Brindles (see **Annex F**) and provided data trends shown in **Figure 3**; indicate forecast numbers of Euro5 specification trucks are increasing over time while ADR models are decreasing. This indicates that Brindles is committed to procuring

and utilising a higher proportion of quieter prime mover models (Volvo and Mack), while reducing the proportion of ADR specification models (Western Star and Kenworth) in their truck fleet (including subcontractors) over the coming years (Brindles 2012).

Figure 3 – Forecast Change in Prime Mover Design Standards on Trucks Servicing Gujarat NRE's No.1 Colliery

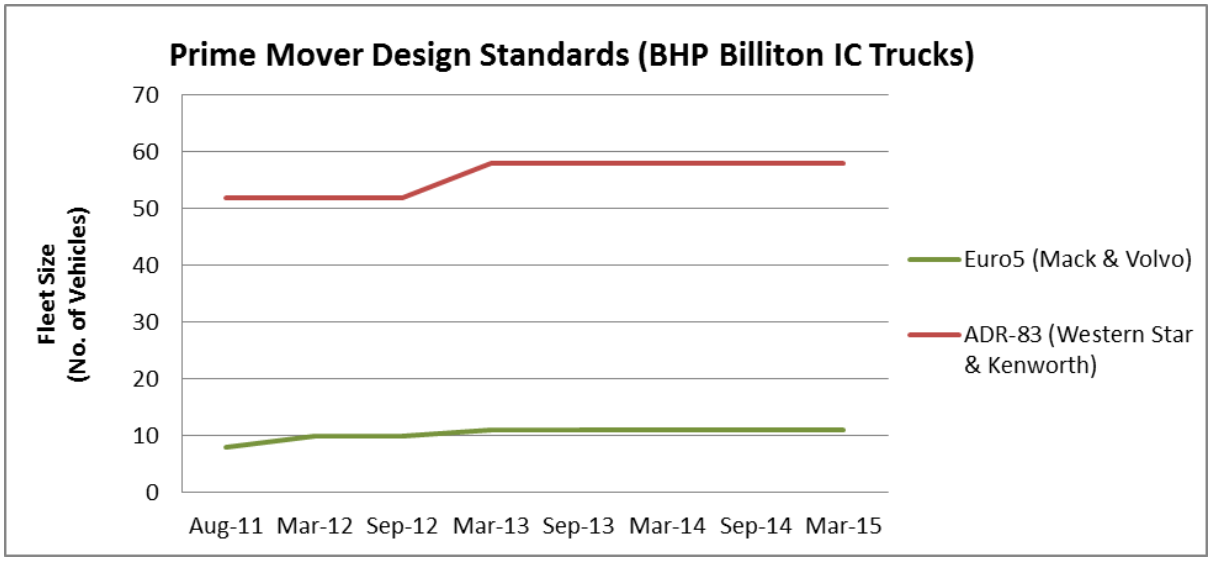


***Note**: Data includes sub-contractors*

(source: Brindles 2012)

The relatively unchanged trend of forecast Euro5 and ADR specification trucks shown in data provided in **Figure 4**, indicates that Bulktrans are planning to maintain their current proportions of prime mover models within in their truck fleet (including subcontractors) over the coming years (Bulktrans 2012).

Figure 4 – Forecast Change in Prime Mover Design on Trucks Servicing BHPBIC Collieries



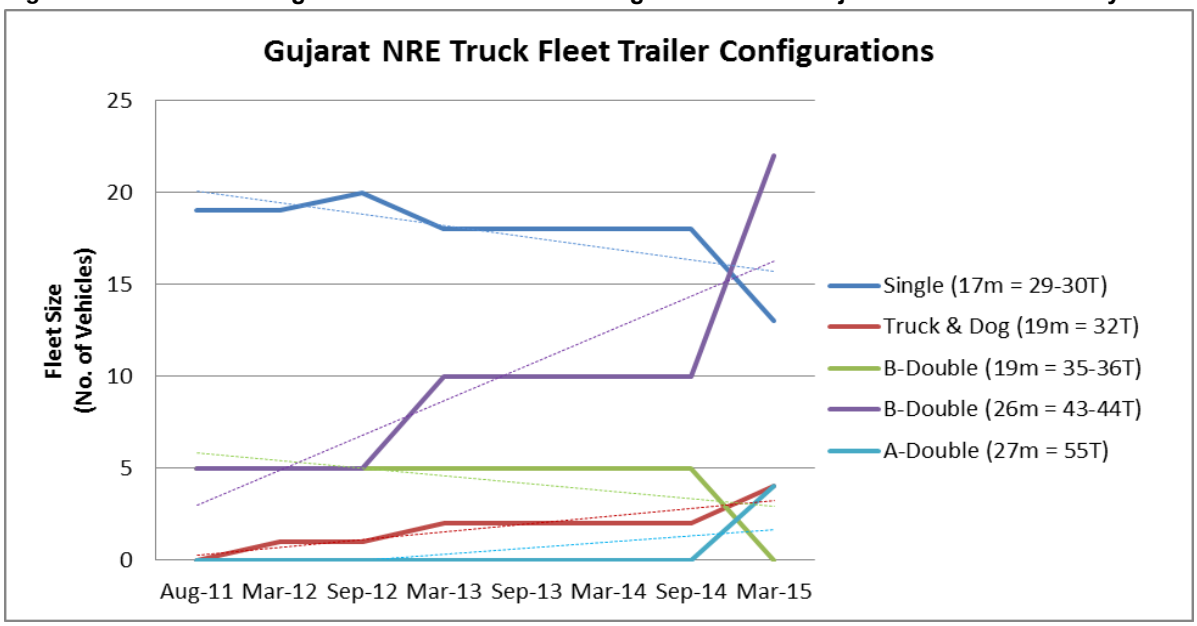
***Note**: Data includes sub-contractors*

(source: Bulktrans 2012)

2.6.2 Forecast Changes in Trailer Fleet Composition

Brindles' commitment to increasing the proportion of larger trailers in their fleet over time is indicated in **Figure 5**, whereby they are planning to increase the amounts of larger 26m *B-Doubles* and the 27m *A-Doubles,* that can carry larger loads per trip. They propose to do this while reducing their fleet of smaller 17 m *Singles* and shorter 19m *B-Doubles*. This commitment will ensure that greater operational efficiency is achievable with more coal and bulk product volumes moved using comparatively fewer trips.

Figure 5 – Forecast Change in Truck Fleet Trailer Configurations from Gujarat NRE's No.1 Colliery



***Note**: Data includes sub-contractors*

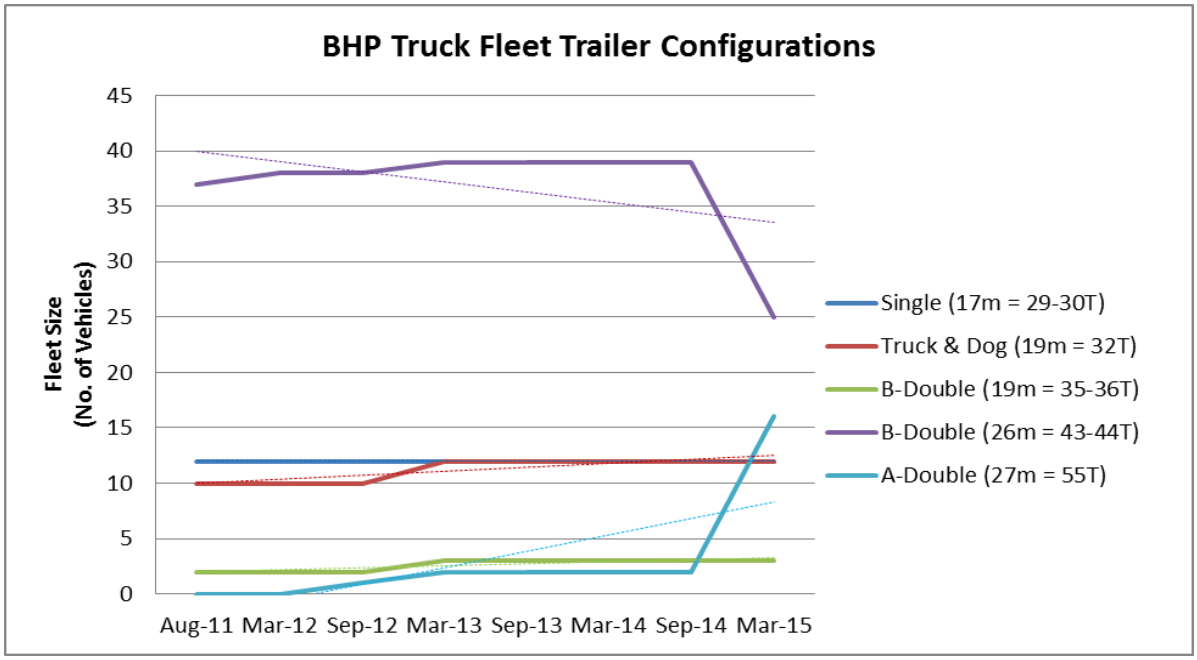
(source: Brindles 2012)

Bulktrans are also committed to increasing the proportion of larger trailers in their fleet over time. This is shown in **Figure 6**, whereby they are planning to increase the quantity of larger 27 m *A-Doubles* that can carry significantly larger loads per trip. They propose to do this while maintaining levels of their existing fleet of smaller 17 m *Singles,* 19 m *Truck & Dogs* and shorter 19 m *B-Doubles*. This commitment will ensure that greater operational efficiency is achievable with more coal and bulk product volumes moved using comparatively fewer trips.

The implications of this are improved safety and efficiency of transport operations and less potential for noise impacts on the community.

It should be noted that the information provided in this section relating to truck types and sizes, whilst based on the best available data at the time of writing, is very dependent on market conditions and the operational requirements of each mine as well as at the port.

Figure 6 – Forecast Change in Truck Fleet Trailer Configurations from BHPBIC Collieries

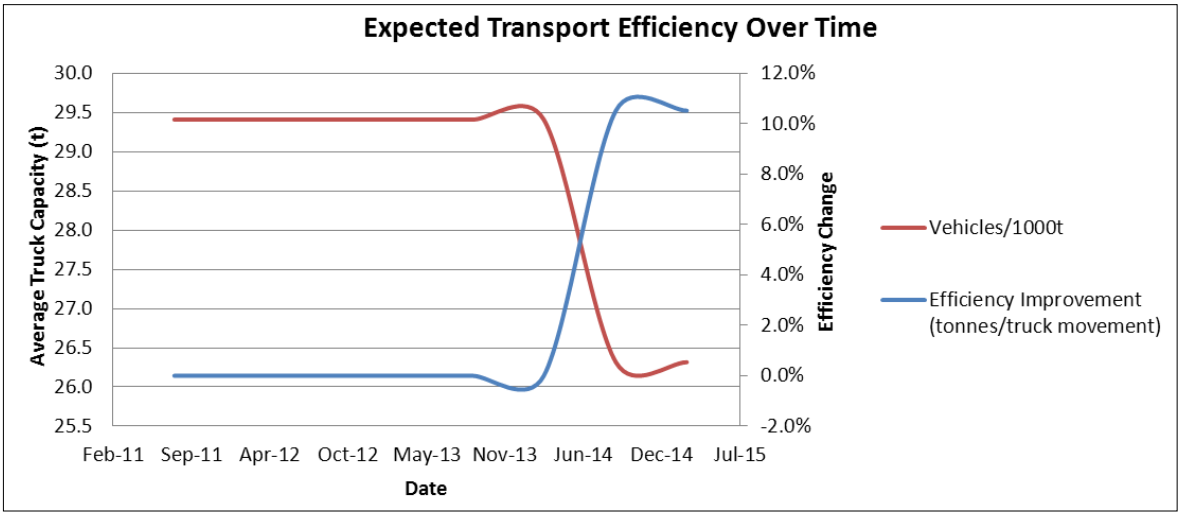


***Note**: Data includes sub-contractors*
(source: Bulktrans 2012)

2.6.3 Expected Changes in Transport Efficiencies

PKCT expects that an increase in transport efficiencies will also occur over time, resulting from the changing composition of the truck fleet servicing the Coal Terminal. As the truck the capacity of trucks are trending towards larger payloads there will be a greater efficiency of material volume moved per truck movement. **Figure 7** below shows that an improvement in efficiency of approximately 10% can be expected as the truck capacities increase from 2013 onwards.

Figure 7 – Forecast Changes in Transport Efficiency



2.6.4 Environmental Commitments

The transport companies who are currently servicing the Coal Terminal have demonstrated a commitment to continuously improving the efficiency and performance of their truck fleet through the implementation of larger, modern, safer, well maintained and quieter vehicles. This will reduce the truck movements per volume of material carted and help to reduce associated environmental impacts on the community. All transport contractors servicing the Coal Terminal have demonstrated a commitment to compliance with *PKCT's Drivers Code of Conduct* and they are continuously seeking to improve the efficiency and environmental performance of their truck fleet.

A letter to PKCT from Brindles (servicing GNRE) outlines more details of their current fleet and commitments to continuous improvement is included in **Annex F**.

A letter to PKCT from Bulktrans (servicing BHPBIC) outlines more details of their current transport fleet and commitments to continuous improvement is included in **Annex G**.

3 The 10 Mtpa Monitoring Trial Project

This section identifies the proposed trial background, methods and associated timeframes.

3.1 Overview

A condition of Major Project Approval 08_0009 was that prior to the Terminal being able to exceed a public road throughput of 7.5 Mtpa the original modelling data requires re-assessment and validation of any predicted impacts.

Forecast increases in coal throughput require PKCT to secure the Terminal's road receival capacity from its current approved public road throughput capacity of 7.5 Mtpa up to 10 Mtpa.

PKCT has engaged Cardno to undertake a review of the road delivery to reassess the environmental impacts and validate previously modeled expectations in order to meet the requirements of 'Condition 6' of PKCT's Major Project Approval 08_0009.

3.2 Three Parts of 'Condition 6' in Major Project Approval 08_0009

The intention of 'Condition 6' (see **Section 1.3.1**) is to demonstrate the impacts predicted in the *2008 EA* from public road delivery of coal and bulk products to PKCT on the road network operation and road traffic noise are reasonably accurate. It is believed the three parts of Condition 6 work to achieve this as follows:

Part (a) – PKCT should identify current road operation and traffic noise from existing public road deliveries of coal and bulk products. This should be achieved by using the same monitoring regime as for the *2008 EA*.

Part (b) – PKCT should compare the impact findings from Part (a) to predictions from the *2008 EA* for the same public road delivery amounts of coal and bulk products. The comparison should be reviewed to identify if Part (a) and Part (b) are consistent. The report should explain this review and discuss any notable differences. The comparison of two data sets is straightforward; however please note the matters in relation to *2008 EA* predictions in the following *Project Restrictions* outlined in **Section 3.3**.

Part (c) – PKCT should consider if there are any other reasonable and feasible mitigation measures for road network operation and traffic noise that are more suitable than those proposed in the *2008 EA*.

3.3 Project Restrictions

Public road delivery volumes to PKCT vary due to influences such as reliance on haulage companies, ship arrivals, coal extraction and mining company delivery preferences. These make it difficult to determine an exact period for a set delivery amount, which is why PKCT obtained agreement from DP&I to undertake the review based on at least 6 Mtpa rather than providing a set figure. PKCT liaised closely with BHPBIC and GNRE to identify the most suitable period to undertake the impact monitoring for Part (a) of the review.

Condition 6 requires comparison of Part (a) results with predictions in the *2008 EA*. This is not strictly possible as the predicted impacts in the *2008 EA* only relate to the receival levels at the time of submitting the *2008 EA* (circa 5 Mtpa) and the desirable limit of 10 Mtpa.

In order to meet Part (b), the *2008 EA* noise and traffic impact models have been rerun using the same assumptions as the *2008 EA* models (where available) for the same public road delivery amounts as monitored for Part (a).

The above understanding of the intent of 'Condition 6' and identified *Project Restrictions* was agreed in writing by DP&I (see **Section 2.1**). This provided guidance to assist in the formulation of the 2011 study methodology outlined in **Section 4**.

4 Methodology

The study methodology considers road network operation and traffic noise through historical information and quantitative data gathering and assessment.

The main aims of the study are:

- To identify performance of the road network during peak periods for at least 6 Mtpa delivery
- Select key residential receivers that may be impacted by road traffic noise associated with PKCT
- Compare road performance and noise levels to forecasts the *2008 EA* would have predicted for the delivery tonnages during the monitoring period for this project
- To identify any correlation of community concern and days of higher public road delivery tonnages
- Identify any opportunities to minimise the impact of coal trucks deliveries to PKCT by public road.

The study findings have been compiled into this report, which includes an assessment of truck movements and their impacts based on a measured throughput of 6.9 Mtpa by public road. The data was extrapolated to identify potential impacts based on 7.5 Mtpa and 10 Mtpa throughput levels. The traffic and truck volumes identified in the traffic assessment and direct liaison with transport companies has informed a standalone noise assessment. The detailed traffic and noise assessments are included in Appendices C & D and are summarised in the following sections.

4.1 Phase 1 – Data Collection & Monitoring

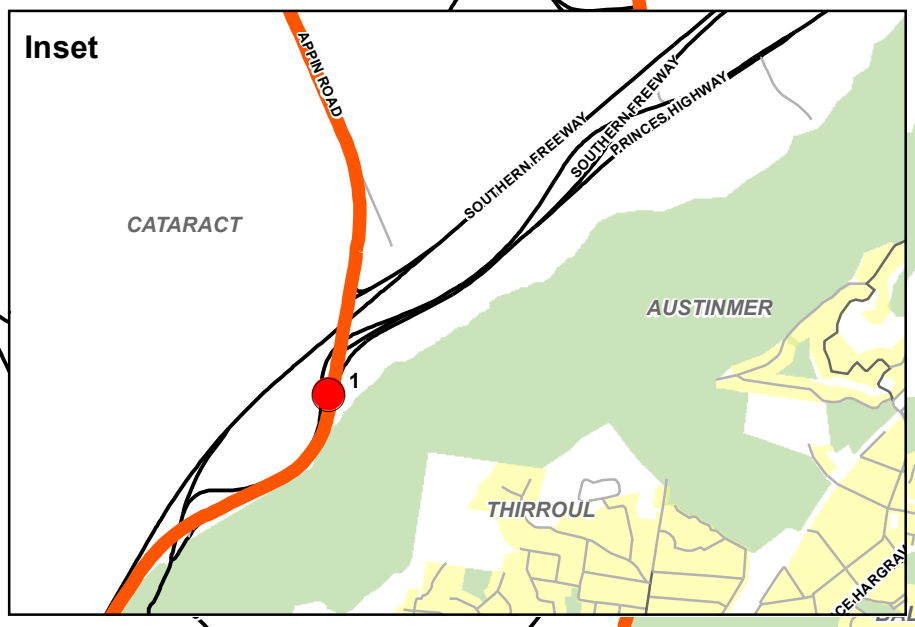
This methodology phase meets the objectives of Part (a) of Condition 6 (see **Section 3.2**) as the information permits a review of transport related impacts associated with trucks delivering coal to the Terminal.

4.1.1 Traffic

The following methodology was utilised to capture traffic data as part of the 10 Mtpa monitoring trial:

- A two week pneumatic tube survey was undertaken, where rubber tubes were placed in the road carriageway to count and identify vehicle movements, at the same locations and parameters used for the *2008 EA* traffic assessment (refer to Figure 8)
- Assessed the road network performance at each site by performing a mid-block Level of Service (LoS) assessment which identified the road's ability to carry traffic without undue delays
- Undertook AM and PM peak hour intersection surveys at the same locations as the Project EA and assessed performance using a SIDRA assessment which is a computer programme that calculates the ability of a road intersection to move traffic and delays encountered for differing traffic volumes
- As part of this phase, 24 hour volume profiles were prepared at each road link that identify 24 hour volumes under current receival arrangements, and a scenario was developed without any coal trucks for input into the acoustic assessment to allow identification of impact.

Site No.	Name	Location
1	Appin Road	Bulli Tops, west of Princes Highway
2	Mount Ousley Road	2.2km south of Clive Bissell Drive
3	Southern Freeway	Mount Ousley, south of Mount Ousley Road
4	Southern Freeway	Gwynneville, Gipps Road overpass
5	Masters Road	Mount St Thomas, west of Springhill Road
6	Springhill Road	Mount St Thomas, north of Masters Road
7	Bellambi Lane	Bellambi, east of Old Princes Highway
8	Northern Distributor	North Wollongong, south of Princes Highway



RUSSELL VALE
WOONONA
7
BELLAMBI
CORRIMAL
EAST CORRIMAL
FERNHILL
BALGOWNIE
TOWRADGI
PRINCES HIGHWAY
FAIRY MEADOW
CORDEAUX
MOUNT PLEASANT
2
MOUNT OUSLEY
MOUNT OUSLEY ROAD
MOUNT KEIRA
8
KEIRAVILLE
NORTH WOLLONGONG
BOURKE STREET
GWYNNEVILLE
FLINDERS STREET
KEIRA STREET
WEST WOLLONGONG
3
CROWN STREET
WOLLONGONG
CORRIMAL STREET
FIGTREE
MANGERTON
4
MOUNT KEMBLA
THE AVENUE
CONISTON
6
MOUNT SAINT THOMAS
5
CORDEAUX HEIGHTS
PRINCES HIGHWAY
SPRING HILL
PORT KEMBLA

Legend

- Major Roads (LPI)
- Distributor Road (LPI)
- Local Road (LPI)
- Route from Mine
- Built Up Areas (LPI)
- Parkland (ABS 2011)

Traffic Count Locations

- Intersection
- Mid-Block

Traffic Monitoring Site Locations

10 MTPA TRIAL STUDY

FIGURE 8

PKCT
PORT KEMBLA COAL TERMINAL

1:30,000 Scale at A3

Metres
0 500 1000 1500 2000

N W E S

Cardno

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2013-05-15
Coordinate System: GDA 1994 MGA Zone 56
Project: 111019-01
Map: G1003_TrafficMonitoringLocations.mxd 06

4.1.2 Noise

Environmental noise loggers were installed at 13 pre-determined noise monitoring locations (with reference to the 2008 assessment) on 11th August, 2011 to provide a basis for reviewing existing traffic noise, prior to the commencement of the 10 Mtpa trial which ran from 15th August until 29th August, 2011. The noise loggers were positioned as close to the original *2008 EA* locations as possible.

During the Terminal shipper consultation process used to plan the 2011 study, a new monitoring location at 260 Gladstone St, Mount St Thomas was requested and added to the assessment to ensure all relevant truck haulage activity from BHPBIC's operations during the trial period was included.

Following discussions with PKCT, truck gate entry and departure information was also recorded to determine numbers of trucks and tonnages received at PKCT. This information was used to correlate traffic movements with noise impacts. Total tonnages for the coal haulage trial were calculated to be 6.9 Mtpa, which exceeds the nominal 6 Mtpa throughput required by the DP&I for a valid coal trial.

The following methodology was utilised to capture noise data:

- Undertook noise logging at generally the same 13 locations and utilising parameters used for the *2008 EA* noise assessment (refer to Figure 9)
- The noise logging coincided with the classified traffic counts
- Reviewed attended noise monitoring of PKCT onsite noise emissions and long term noise data.

Further methodology details are provided in Section 4 of the 2011 Noise Assessment report (see **Annex D**).

Computer Noise Modelling Methodology

Noise modelling was completed using SOUNDPLAN 7.1 proprietary software for the confirmed coal truck haulage routes from the mine sites to PKCT. The computer model used approved Calculation of Road Traffic Noise (CoRTN) algorithms with assessed correction factors added to determine daytime and night time levels in accordance with the OEH Road Noise Policy (RNP).

A verification model has also been prepared to compare the measured noise levels during the trial. Based on this data, noise impact levels have been extrapolated for future increased haulage rates of 6.9 Mtpa – "typical" (for information), 7.5 Mtpa and 10 Mtpa based on information received from the PKCT in relation to forecast number of trucks to achieve the increased haulage quantities.

Further Computer Noise Modelling details are provided in Section 6 of the 2011 Noise Assessment report (see **Annex D**).

ID	Truck Route	Measurement Location	Type	Year Surveyed
1	*Bellambi Lane*	77 Bellambi Lane, Bellambi (front yard)	Road Haulage	2008 and 2011
2A	*Bellambi Lane*	91 Keerong Avenue, Russell Vale (rear yard)	Road Haulage	2008
2B	*Bellambi Lane*	87 Keerong Avenue, Russell Vale	Road Haulage	2011
3	*Northern Distributor*	13 Eagar Street, Corrimal (rear yard)	Road Haulage	2008 and 2011
4A	*Northern Distributor*	7 Albert Street, Corrimal (rear yard)	Road Haulage	2008
4B	*Northern Distributor*	6 Ivor Street, Bellambi	Road Haulage	2011
5	*Spring Hill Road*	392 Keira Street, Wollongong (front yard)	On-Site Activity/Road Haulage	2008 and 2011
6	*Spring Hill Road*	163 Kembla Street, Wollongong (front yard - Swan Street)	On-Site Activity/Road Haulage	2008 and 2011
7	*Spring Hill Road*	260 Gladstone Street, Mount St Thomas	Road Haulage	2008 and 2011
8	*Spring Hill Road*	10 Swan St, Wollongong	On-Site Activity/Road Haulage	2008 and 2011
9	*Mount Ousley Road*	96 Dumfries Avenue, Mt Ousley	Road Haulage	2008 and 2011
10A	*Mount Ousley Road*	6 Binda Street, Keiraville	Road Haulage	2008
10B	*Mount Ousley Road*	4 Binda Street, Keiraville	Road Haulage	2011
11	*F6*	13 Phillips Crescent, Mangerton	Road Haulage	2008 and 2011
12A	*F6*	36 Acacia Avenue, Gwynneville	Road Haulage	2008
12B	*F6*	30 Acacia Avenue, Gwynneville	Road Haulage	2011
13	*F6*	84 Taronga Avenue, Mount St Thomas	Road Haulage	2008 and 2011

RUSSELL VALE
WOONONA
BELLAMBI
CORRIMAL
EAST CORRIMAL
FERNHILL
TOWRADGI
FAIRY MEADOW
PRINCES HIGHWAY
NORTHERN DISTRIBUTOR
CORDEAUX
MOUNT OUSLEY ROAD
MOUNT PLEASANT
MOUNT OUSLEY
MOUNT KEIRA
KEIRAVILLE
SOUTHERN FREEWAY
NORTH WOLLONGONG
BOURKE STREET
GWYNNEVILLE
FLINDERS STREET
MOUNT KEIRA ROAD
WEST WOLLONGONG
CROWN STREET
KEIRA STREET
WOLLONGONG
CORRIMAL STREET
FIGTREE
MANGERTON
THE AVENUE
CONISTON
SPRINGHILL ROAD
MASTERS ROAD
CORDEAUX HEIGHTS
SPRING HILL
PORT KEMBLA

2A 2B 1 4A 4B 3 9 10A 10B 12B 12A 11 13 7 6 8 5

Legend

- Major Roads (LPI)
- Distributor Road (LPI)
- Local Road (LPI)
- Parkland (ABS 2011)
- Route from Mine
- Built Up Areas (LPI)
- Buffer (500m Radius)
- Suburb Labels

Noise Monitoring Locations

- On-Site Truck Activity (Ongoing Compliance)
- Road Haulage (10 Mtpa Trial)

PKCT PORT KEMBLA COAL TERMINAL

1:30,000 Scale at A3

Metres
0 500 1000 1500 2000

Noise Monitoring Site Locations

10 MTPA TRIAL STUDY

FIGURE 9

N W E S

Cardno

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2013-04-17
Coordinate System: GDA 1994 MGA Zone 56
Project: 111019-01
Map: G1001_NoiseMonitoringLocations.mxd 06

4.2 Phase 2 – Comparison

This methodology phase meets the objectives of Part (b) of Condition 6 (see **Section 3.2**) because the comparison of data from the monitoring period for this project with the outputs from the *2008 EA* model for the same delivery tonnages will demonstrate if the *2008 EA* predictions are generally consistent with actual impacts.

4.2.1 Traffic

The following methodology was utilised to compare traffic data:

- A traffic model was prepared using the exact parameters and methodology in the initial Project *2008 EA* traffic assessment to estimate traffic impacts under the current receival arrangements
- This model and traffic volumes were used to assess the performance of the road network at the mid-block sites and the intersection sites and impacts expected to be occurring were identified
- The impacts forecast under this model on the road links and intersections were compared to the impacts identified during Phase 1.

4.2.2 Noise

The following methodology was utilised to compare noise data:

- Calculated the base case road traffic noise levels (LAeq) excluding any effect of coal trucks associated with the movement of coal to PKCT
- Calculated the project specific road traffic noise criteria and the contribution of road traffic noise to each of the key residential receivers
- Calculate data associated with maximum noise levels, during the day and night-time
- A noise model considering the current receival arrangements was prepared using the parameters and methodology in the *2008 EA* noise assessment to estimate emissions under the current receival arrangements
- The noise impacts forecast by this model were compared to the impacts identified during Phase 1.

4.3 Phase 3 – Confirmation of Mitigation Measures

The *2008 EA* proposed various mitigation measures for impacts associated with the public road delivery of coal and bulk products to PKCT. The 2011 trial validation results were then reviewed in conjunction with previous mitigation measures outlined in the 2008 EA, to ensure mitigation measures are appropriate for any identified impacts.

This methodology phase meets the objectives of Part (c) of Condition 6 because the Project Team utilised their knowledge and experience to consider existing mitigation measures and identify any additional reasonable or feasible measures that are required, which are included in **Section 5.4**.

5 Results

5.1 Phase 1 – Data Collection & Monitoring

5.1.1 Traffic Data Collection

The coal and bulk products transported to PKCT via road during the trial were delivered from BHP Billiton Illawarra Coal and Gujarat NRE with PKCT operations recording receival tonnages by road each day.

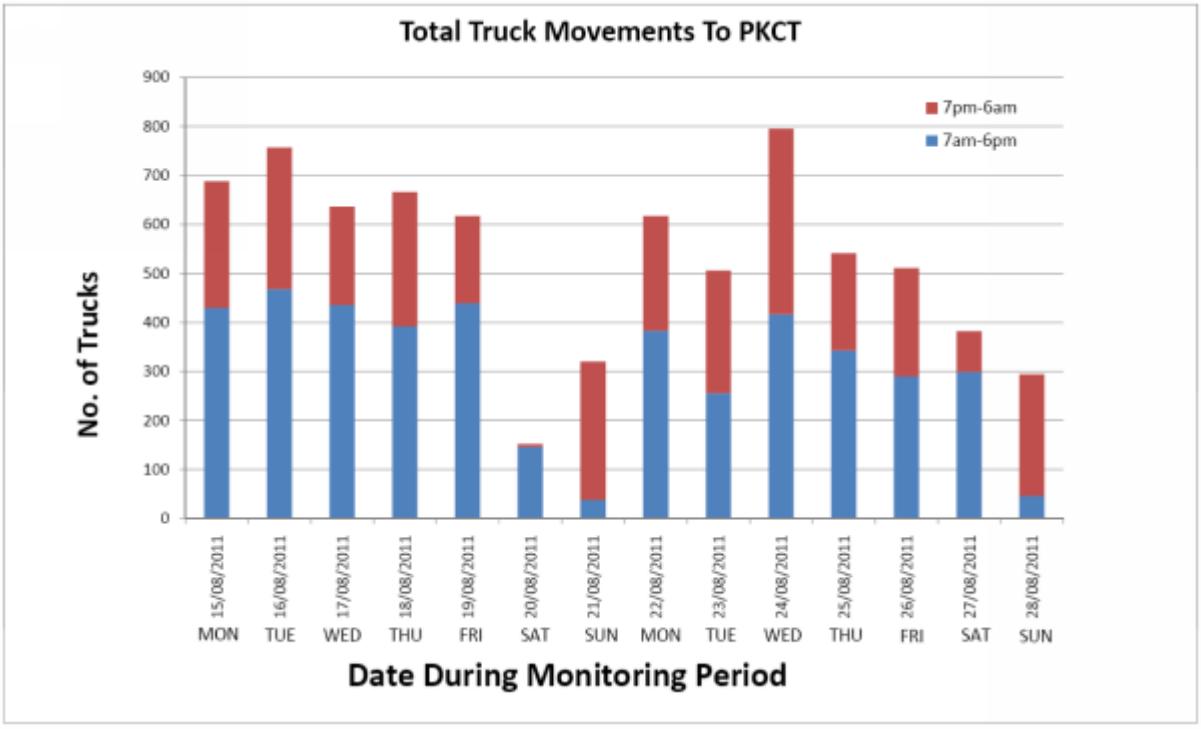
The total throughput rate of 6.9 Mtpa was recorded for the duration of the two week monitoring trial period of 15th to 29th August 2011.

The tonnage of coal reported each day was converted into individual truck movements using the following truck capacity assumptions made in the *2008 EA* report:

- For BHPBIC, the average truck capacity was 36.5 tonnes per truck. The same truck capacity has been assumed for trucks from Centennial Coal.
- For Gujarat NRE, the average truck capacity was 32.2 tonnes per truck.

Figure 10 summarises the coal truck movements to PKCT each day of the Monitoring Period from data provided by the coal companies.

Figure 10 – Daily Coal Truck Deliveries to PKCT during the Monitoring Period



(*Source: Cardno Traffic Assessment 2011*)

Method Used to Estimate 6.9 Mtpa

During the 10 Mtpa trial period the PKCT weighbridge provided receipts for the delivery of 266,501 tonnes of coal during the 14 day period from the 15-29 August 2011. This was at an average of 19,036 tonnes per day (i.e. 266,501/14). Therefore, over a year (365 days) the rate of coal delivery would be approx 6.9 Mtpa.

The number of truck movements was calculated by considering the total tonnages of coal delivered by each mine, based on the weighbridge receipts, and then dividing these tonnages by the average truck capacities used by each mining company.

Table 5.1 below shows the number of daily coal truck movements on each road section during the monitoring period. The data used to calculate average coal truck movements was provided by the coal companies (BHP Billiton, Centennial and Gujarat NRE) and PKCT receival data.

Table 5.1 – Coal Truck Movements during the 10 Mtpa Monitoring Trial Period

Location	*Time Period*	*Number of Coal Trucks during 10 Mtpa Monitoring Trial Period*	
		Average Weekday	*Average Weekend*
Appin Road & Mount Ousley Road	*From PKCT*	562	*252*
	To PKCT	562	*252*
	Two-Way	1,124	*504*
Southern Freeway, Masters Road & Springhill Road	*From PKCT*	668	*280*
	To PKCT	668	*280*
	Two-Way	1,336	*560*
Bellambi Lane & Northern Distributor	*From PKCT*	106	*28*
	To PKCT	106	*28*
	Two-Way	212	*56*

(*Source: Cardno Traffic Assessment 2011 – Refer Annex C*)

Mid-block traffic counts recorded the number of vehicles by vehicle classification and vehicle speed. Intersection turning movements and peak intersection count data was also collected. The detailed results are available in the 2011 Traffic Assessment Report in **Annex C**.

Coal Haulage Route Review

Since the *2008 EA* the only major change to the road network was the completion of the Northern Distributor extension north of Bellambi in 2009. This new four lane divided road provides improved travel times and access to the northern suburbs of Wollongong and reduced the number of vehicles on Bellambi Lane, which is part of the haulage route from Gujarat NRE No.1 Colliery to PKCT.

Coal trucks are also now permitted to use Springhill Road between Masters Road and Tom Thumb Road for deliveries 24 hours a day, 7 days a week.

There were no reported changes to the three key intersections analysed in the 2011 Traffic Assessment Report, which are:

- Springhill Road/Masters Road
- Springhill Road/Port Kembla Road
- Springhill Road/Tom Thumb Road.

A number of changes in major developments have occurred since 2008 near PKCT including:

- PKPC has submitted an application for the expansion of the General Cargo Handling Facility at Port Kembla. Cardno believes that approval has been granted with the associated additional heavy vehicle traffic in operation along Springhill road and up and down Mount Ousley Road.
- Grain Corp received approval on the 20th September 2011 to increase the number of grain trucks delivering grain to PKCT to 192 grain trucks per day. However, it should be noted that the

monitoring trial was conducted on the 15th to 29th August 2011. Therefore, the traffic surveys do not include the additional grain trucks.

- Increasing car carrying operations are occurring from the shipping berths and sites adjacent to PKCT within the Port Kembla Inner Harbour.

5.1.1 Traffic Monitoring

The road capacity of major streets and intersection operating performance was measured to assess the level of operating Level of Service using SIDRA 5.1 software. This was to determine the degree of saturation (DoS), average delay (AVD) in seconds and level of Service (LoS) for each mid-block carriageway and intersection location shown above in **Figure 8**.

The key indicator of performance is LoS, where results are rated between 'A' to 'F', as shown for intersection LoS in **Table 5.2**.

Table 5.2 – Intersection Level of Service (LoS) Ratings

LoS	Traffic Signal / Roundabout	Give Way / Stop Sign / T-Junction control
A	Good operation	Good operation
B	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	Satisfactory	Satisfactory, but accident study required
D	Operating near capacity	Near capacity & accident study required
E	At capacity, at signals incidents will cause excessive delays.	At capacity, requires other control mode
F	Unsatisfactory and requires additional capacity, Roundabouts require other control mode	At capacity, requires other control mode

(*Source: Cardno ITC Acoustic Assessment 2011 – Refer Annex C*)

The traffic monitoring resulted in AM peak carriageway capacity of:

- Appin Road northbound is approaching capacity at a LoS D
- Mount Ousley Road is approaching capacity for southbound traffic to PKCT
- Southern Freeway, north of The Avenue, is approaching capacity for the southbound carriageway, and operating at a LoS F for the northbound traffic
- The newly completed Northern Distributor is operating at a LoS C for southbound traffic and LoS D for the northbound traffic
- Bellambi Lane, Masters Road and Springhill Road are operating at good level of services in the AM peak.

The traffic monitoring resulted in PM peak carriageway capacity of:

- Appin Road southbound is approaching capacity at a LoS D
- Southern Freeway, north of The Avenue, is operating at a LoS E for both southbound and northbound traffic
- The newly completed Northern Distributor is operating at a LoS C for southbound traffic and LoS D for the northbound traffic
- Mount Ousley Road, Bellambi Lane, Masters Road and Springhill Road are operating at good level of services in the PM peak.

5.1.2 Forecast Coal Truck Movements

During the trial, the total tonnage delivered to the Coal Terminal by the road network was equivalent to 6.9 Mtpa. During the trial, it was noted that the percentage split of coal deliveries from BHPBIC and GNRE varied from typical delivery of 6.9 Mtpa and the percentage was more heavily weighted to BHPBIC to achieve this tonnage based on the figures in the 2011 traffic assessment, the percentage split was approximately 87% BHPBIC and 13% GNRE. This percentage split was due to available coal supply from GNRE during the trial.

PKCT has noted that for typical delivery of 6.9 Mtpa, the percentage split is not as heavily weighted towards BHPBIC and is approximately 70% by BHPBIC and 30% by GNRE.

There are two main road transport contractors operating for the collieries to deliver coal via public road to PKCT and these are Brindles (on behalf of GNRE) and Bulktrans (on behalf of BHPBIC). The delivery truck size and fleet configurations is different between the two transport contractors. Based on information received regarding fleet capacities and vehicle types (with varying tonnages), the average fully laden weight of the trucks were calculated and included and used to determine the total vehicle movements.

Three separate studies have been completed in relation to traffic along the coal haulage route to PKCT over the past 5 years, which include:

- Traffic study to support the 2008EA for the PKCT 24/7 and 10 Mtpa application (June 2008)
- Gujarat NRE Traffic Impact Assessment (TIA) and Addendum (2010). To review the impact of increased production from 1 Mtpa to 3 Mtpa at the No.1 Colliery in Russell Vale, NSW.
- PKCT 10 Mtpa Monitoring Trial (Dec 2011) (this report). To determine the actual number of trucks and traffic used during the trial period.

As these studies have been done at different years, with different traffic counts used as baseline values, difference forecast years, different operating hours, and with different forecast volumes of coal to PKCT a supplementary review of traffic studies has been undertaken by Cardno. This study has provided a set of typical traffic volumes at 6.9 Mtpa and estimated traffic volumes for 7.5 Mtpa and 10 Mtpa levels. A copy of this traffic study review report has been provided in **Annex I**, with Appendix A of this supplementary traffic review report providing a comparison table of the traffic volumes between 2008 and 2011.

In reference to this supplementary traffic review, Table 11 and Table 12 of the detailed noise assessment report in **Annex D** provide details of the forecast changes in the coal truck fleet and the additional coal truck estimates used to predict the 7.5 Mtpa and 10 Mtpa noise levels.

5.1.3 Noise Data Collection and Monitoring

Monitoring Trial Period

A summary of noise monitoring results for the trial period are provided in **Table 2** of **Annex D**. For Bellambi Lane, existing traffic noise levels were found to already exceed the traffic noise criteria at both monitoring locations prior to the trial commencing.

Traffic noise on the Northern Distributor was measured to be below the RNP criteria. Monitoring locations along Springhill Road were also below RNP criteria, with the exception of 392 Keira St, Wollongong, closest to Springhill Road, which exceeded both daytime and night time criteria.

It should be noted that results at some sites during weekend monitoring were invalid due to the presence of adverse weather conditions. These were notably extended wind and rain periods from 17th to 18th August, 2011 and 20th to 21st August, 2011. Noise monitoring data corrected for

meteorological conditions is included in Appendix A of the *2011 Noise Assessment Report* (see **Annex D**).

Project Specific Criteria

Following analysis of the baseline noise levels and adjusted levels of the 2011 monitoring trial (excluding coal trucks used during the monitoring period), the noise criteria applicable are summarised in **Table 3** of **Annex D**.

5.1.4 Coal Truck Noise Predictions

Predicted noise levels from modelling using *SoundPlan v 7.1* to extrapolate from actual values measured at 6.9 Mtpa during the 2011 monitoring trial are presented below in **Table 5.3** for the 7.5 Mtpa and **Table 5.4** for the 10 Mtpa scenarios, for both weekday and weekend periods. These tables also include the relevant noise criteria for quick reference and demonstrate that no predicted exceedances of the criteria are evident, as was the case found by Wilkinson Murray in the 2008 EA.

Table 5.3 – Predicted Noise Levels for 7.5 Mtpa (2011 Trial), dB(A)

Location No.	Measurement Location	RNP Criteria, L_{eq}		Traffic Noise Level, L_{eq}		RNP Criteria, L_{eq}		Traffic Noise Level, L_{eq}	
		Weekday				Weekend			
		Day	Night	Day	Night	Day	Night	Day	Night
1	77 Bellambi Lane, Bellambi (front yard)	64.2	55.0	62.8	54.7	60.0	55.0	59.1	54.2
2B	83 Keerong Avenue, Russell Vale (rear yard)	60.0	55.0	57.3	53.4	60.0	55.0	56.9	51.4
3	13 Eagar St, Corrimal	60.0	55.0	56.2	52.1	60.0	55.0	53.1	49.7
4B	6 Ivor St, Bellambi	62.5	55.8	55.3	50.9	60.4	55.5	52.4	48.5
5	392 Keira St, Wollongong (front yard)	65.3	55.7	55.3	51.9	60.2	55.0	54.4	50.1
6	163 Kembla Street Wollongong (front yard)	60.0	55.0	48.8	45.1	60.0	55.0	47.7	43.4
7	260 Gladstone Street, Mt St Thomas	60.0	55.0	55.9	52.3	60.0	55.0	53.9	50.3
8	10 Swan St, Wollongong	62.6	55.8	52.1	49.5	60.0	55.6	48.8	47.8
9	96 Dumfries Avenue, Mt Ousley	67.1	64.1	63.2	60.6	64.4	61.3	62.3	57.6
10B	4 Binda St, Keiraville	61.6	59.7	59.6	57.4	60.0	55.0	56.5	54.7
11	13 Phillips St, Mangerton	60.0	55.0	59.6	55.4	60.0	55.0	56.1	52.6
12B	30 Acacia Avenue, Gwynneville	64.0	60.8	61.9	58.1	60.6	56.3	59.4	55.0
13	84 Taronga Avenue, Mt St Thomas	60.2	56.9	56.8	54.0	60.0	55.0	53.9	51.6

(Source: Cardno ITC Acoustic Assessment 2011 – Refer Annex D)

Table 5.4 – Predicted Noise Levels for 10 Mtpa (2011 Trial), dB(A)

Location No.	Measurement Location	Assessed Criteria, L_{eq}		Traffic Noise Level, L_{eq}		Assessed Criteria, L_{eq}		Traffic Noise Level, L_{eq}	
		Weekday				Weekend			
		Day	Night	Day	Night	Day	Night	Day	Night
1	77 Bellambi Lane, Bellambi (front yard)	64.2	55.0	62.9	55.0	60.0	55.0	57.2	54.7
2B	83 Keerong Avenue, Russell Vale (rear yard)	60.0	55.0	57.6	53.7	60.0	55.0	55.8	51.9
3	13 Eagar St, Corrimal	60.0	55.0	54.8	54.0	60.0	55.0	54.2	50.1
4B	6 Ivor St, Bellambi	62.5	55.8	57.2	52.8	60.4	55.5	53.3	48.9
5	392 Keira St, Wollongong (front yard)	65.3	55.7	55.6	52.2	60.2	55.0	54.0	50.6
6	163 Kembla Street Wollongong (front yard)	60.0	55.0	49.2	45.5	60.0	55.0	47.6	43.9
7	260 Gladstone Street, Mt St Thomas	60.0	55.0	56.2	52.6	60.0	55.0	54.4	50.8
8	10 Swan St, Wollongong	62.6	55.8	52.4	49.8	60.0	55.6	50.8	48.2
9	96 Dumfries Avenue, Mt Ousley	67.1	64.1	63.4	60.8	64.4	61.3	60.5	57.9
10B	4 Binda St, Keiraville	61.6	59.7	58.9	56.7	60.0	55.0	57.2	54.0
11	13 Phillips St, Mangerton	60.0	55.0	59.8	54.9	60.0	55.0	57.1	52.9
12B	30 Acacia Avenue, Gwynneville	64.0	60.8	60.2	56.4	60.6	56.3	57.1	53.3
13	84 Taronga Avenue, Mt St Thomas	60.2	56.9	56.2	53.4	60.0	55.0	55.0	52.2

(Source: Cardno ITC Acoustic Assessment 2011 – Refer Annex D)

5.1.5 Key Findings of 2011 Acoustic Assessment

The key findings of the assessment determined the following:

- Road haulage during the 2011 trial, i.e. equivalent to 6.9 Mtpa was shown to comply with the current project noise criteria at all monitoring locations day/night on weekdays and weekends.
- Road haulage of 7.5 Mtpa was predicted to comply with the criteria at all monitoring locations for day/night on weekdays and weekends.
- Road haulage of 10 Mtpa was predicted to comply with the criteria at all monitoring locations for day/night on weekdays and weekends.

- Traffic noise levels on the major roads such as Mt Ousley, Spring Hill Road and the F6 Freeway for 10 Mtpa were predicted to comply with the OEH RNP road traffic noise criteria.
- Coal delivery from Gujarat NRE colliery complied with current operating conditions, i.e. 15 hours Monday to Friday and 10 hours Saturday and Sunday and managed an equivalent of approximately 1 Mtpa over the trial period. This is approximately 13% of the total coal delivery to PKCT and BHP Billiton provided the remaining 83% coal delivery. PKCT have advised that this proportion under "typical" conditions is more evenly distributed, i.e. 30% GNRE and 70% BHP Billiton.

5.2 Phase 2 - Comparison

This methodology phase meets the objectives of Part (b) of Condition 6 as the comparison of data from the monitoring period for this project with the outputs from the *2008 EA* model for the same delivery tonnages shows the EA predictions are generally consistent with actual impacts.

5.2.1 Traffic Impact Comparison with 2008 Assessment

This phase of the project compares the projected traffic volumes from the *2008 EA* report with the 2011 traffic counts. The *2008 EA* report had previously projected 2009, 2013 and 2018 background traffic volumes using various assumptions. In order to make comparisons with the actual 2011 traffic volumes collected during the monitoring period, similar assumptions were used from *2008 EA* report to achieve 2011 projected volumes (see **Table 5.6**).

The *2008 EA* report predicted the number of coal trucks for future road receival based on the rate of 4 Mtpa, 5 Mtpa and 10 Mtpa scenarios. In order to be consistent with the monitoring trial period, the number of trucks required to transport coal to PKCT at a rate of 6.9 Mtpa were estimated based on the assumptions documented in Section 6 of the *2008 EA* report.

Following the establishment of the 2011 predicted traffic volumes based on *2008 EA* report assumptions, a comparison analysis was undertaken to determine the robustness of the assumptions made during the *2008 EA* assessment. The comparison between the *2008 EA* and 10 Mtpa Trial has been further supported by an additional 2013 *Review of Traffic Volumes* (included in **Annex I**), which also considers the Traffic Impact Assessment (including Addendum) for the Gujarat NRE No. 1 Colliery expansion application from 1 Mtpa to 3 Mtpa (ERM 2013), submitted to DP&I in February 2013.

A summary of the comparison findings between the *2008 EA* and 2011 Monitoring trial is provided in **Table 5.5**. This table provides estimated volumes for "typical" scenarios measured levels of 6.9 Mtpa and predicted traffic volumes at 7.5 Mtpa and 10 Mtpa.

Truck Tonnage and Proportion of Output from Each Mine

The proportion of coal being delivered by road from each colliery to PKCT, and the capacity of these trucks determines the estimated number of coal trucks on each road. The *2008 EA* predicted that 48% of the deliveries would be via Gujarat, however, during the 2011 trial period, coal deliveries from Gujarat accounted for only 15% of the total truck movements to meet the road receivals rate of 6.9mtpa. In the 'typical' scenario in 2011 it is expected that 30% of the coal deliveries to PKCT will come from Gujarat NRE's No.1 Colliery.

The tonnage of the trucks also varies between the studies. The data used for the *2008 EA* study indicated that at the time, the average truck capacity delivering from Gujarat NRE was 31.8 tonnes, and from BHPBIC collieries, the average truck capacity was 36.5 tonnes. Following the 2011 Trial, in the development of the 'Typical' truck movements, the average truck capacity was estimated as 32 tonnes from Gujarat NRE, and 39 tonnes from BHPBIC collieries. It was estimated that for an output of 10Mtpa, the trucks from Gujarat NRE would increase in capacity to an average of 35 tonnes/ truck.

The *2008 EA* and the 2011 trial and 'Typical' coal truck calculations (refer to **Table 5.5**) assume that the total number of coal trucks on Springhill Road consist of trucks from the Gujarat NRE and BHPBIC Appin and West Cliff collieries only. In the 2010 Gujarat NRE Traffic Impact Assessment and the '2011 estimate for 6.9 Mtpa based on 2008 growth rates', coal truck volumes on Springhill Road include an allowance for trucks from the Dendrobium Coal Preparation Plant (which typically arrive via private road).

Comparison of 2008 EA and the PKCT 2011 'Typical'

A summary of the comparison findings between studies undertaken in *2008 EA* and 10 Mtpa Trial (2011) is provided below in **Table 5.6**. This table provides estimated volumes for "typical" scenarios measured levels of 6.9 Mtpa and predicted traffic volumes at 7.5 Mtpa and 10 Mtpa.

The results of this comparison show:

- On Springhill Road, the predicted 2008 EA total traffic volumes were significantly lower than the 2011 volumes. For Springhill Road, a 0% growth rate was assumed in the 2008 EA report due to negative growth rates in recent years and there has subsequently been cumulative growth in the road network surrounding the Port Kembla area, which has led to greater traffic volumes than anticipated in 2008.
- The volume of coal trucks is higher in the 2008 EA predictions on all the roads except Mount Ousley in both the 6.9 Mtpa and 10 Mtpa delivery scenario. The 2008 EA predicted that 48% of the deliveries will be from Gujarat however, during the trial, PKCT noted that coal deliveries from Gujarat are expected to account for 30% of the total coal truck movements to meet road receivals of 6.9Mtpa and 10Mtpa at PKCT. This accounts for fewer coal trucks on Bellambi Lane and the Northern Distributor in the 2011 'Typical' scenario than in the predicted 2008 EA truck volumes.
- The total coal truck volumes are lower in the 6.9 Mtpa and 10 Mtpa (2011 trial) scenarios due to the larger average truck sizes assumed in the 2011 study. The average capacity of the coal trucks was lower in the 2008 EA study than in the 2011 'Typical' study, which accounts for more trucks required to carry the same volume of coal.
- Additional coal trucks from Dendrobium Coal Preparation Plant were expected to use Springhill Road in the 2011 forecast for 6.9 Mtpa from the 2008 EA, and form a higher proportion of total traffic on Springhill Road in this study than in the PKCT 2011 'Typical' study.

Comparison of PKCT 2011 'Typical' and Gujarat NRE 2010Traffic Impact Assessment (TIA)

In comparison to the 2010 Gujarat TIA, the results of the 2011 PKCT 'Typical' traffic volumes are shown in **Table 5.5**.

Table 5.5 – Comparison of 2010 Gujarat NRE 3 Mtpa and 2011 PKCT 10Mtpa Trial

	Study	Bellambi Lane	Northern Distributor	Mount Ousley	F6 (Gwynneville)	F6 (Mangerton)	Masters Road	Springhill Road
Total Traffic	GNRE	6,207	34,384	-	91,860	96,193	25,500	16,941
	PKCT	5,595	29,255	46,594	74,614	76,555	26,633	32,979
Heavy Vehicles	GNRE	854	2,762	-	9,633	9,813	4,068	2,156
	PKCT	751	2,411	4,165	7,973	7,291	3,517	2,936
Coal Trucks	GNRE	460	460	-	1,119	1,119	1,118	1,457
	PKCT	541	541	974	1,515	1,515	1,515	1,515
Coal Trucks as % of Total Traffic	GNRE	7%	1%	-	1%	1%	4%	9%
	PKCT	10%	2%	2%	2%	2%	6%	5%
Coal Trucks as % of Heavy Vehicles	GNRE	54%	17%	-	12%	11%	27%	68%
	PKCT	72%	22%	23%	19%	21%	43%	52%

(Source: Cardno Traffic Review Study 2013 – Refer Annex I)

The comparison of results indicates the following:

- Mount Ousley counts were not included as part of the Gujarat study as the route from the Gujarat colliery to PKCT does not use Mount Ousley.
- The total traffic and heavy vehicle volumes are higher in the Gujarat study for all roads except Springhill Road. The background traffic growth for the 2010 Gujarat TIA forecasts traffic to 2019, while the forecast traffic volumes for the PKCT 'Typical' study are to 2011. This indicates an additional 8 years of background growth in the 2010 Gujarat TIA traffic volumes.
- The Gujarat TIA used the same background traffic volumes from 2007 and 2008 that were used in the 2008 EA, and the same growth rates for background traffic were assumed as for the 2008 EA study, with a forecast to 2019. Since then, the background traffic on Springhill Road has increased more than anticipated, which has been captured in the traffic counts of the 2011 trial period used in the PKCT study.
- All coal truck volumes in the PKCT study are higher than the Gujarat study. The average capacity of coal trucks delivering 3Mtpa from the NRE Gujarat colliery is 38 tonnes/ truck in the 2010 Gujarat TIA, and 35 tonnes/ truck in the PKCT 2011 'Typical' study to deliver 10Mtpa. This would account for more trucks required in the PKCT 2011 'Typical' study to carry the same volume of coal.
- Coal trucks from Dendrobium Coal Preparation Plan to PKCT have been included in the 2010 Gujarat TIA. As these trucks are expected to use Springhill Road in this assessment they form a higher proportion of total traffic than in the PKCT 2011 'Typical' study.

Road Network

Following the completion of the *2008 EA* study, the Northern Distributor extension opened, and coal truck deliveries were permitted to use Springhill Road between Masters Road and Tom Thumb Road. These changes to the road network, and the cumulative growth in the road network surrounding the Port Kembla area, resulted in higher traffic volumes on some roads (particularly the Northern Distributor and Springhill Road) in subsequent studies and traffic counts, than predicted in 2008.

Table 5.6 – Comparison of 2008 EA and 10 Mtpa Trial Period (2011) Traffic Volumes

TRAFFIC COMPARISON TABLES

	2008 Predicted at 6.9 Mtpa for year 2011					2011 measured at 6.9 Mtpa *14 day avg of ADT				
	Total traffic [1]	Heavy vehicles [1]	Coal trucks [2]	Coal trucks as % of total traffic	Coal trucks as % of total HVs	Total traffic [1]	Heavy vehicles [1]	Coal trucks [3]	Coal trucks as % of total traffic	Coal trucks as % of total HVs
Bellambi Lane	5,818	899	542	9%	60%	5,221	377	154	3%	41%
Northern Distributor	24,767	2,212	542	2%	25%	50,294	2,881	154	0%	5%
Mount Ousley	46,435	5,881	619	1%	11%	44,656	3,875	852	2%	22%
F6 (Gwynneville)	78,902	8,228	1,161	1%	14%	71,194	7,106	1,006	1%	14%
F6 (Mangerton)	77,913	7,896	1,161	1%	15%	73,068	6,493	1,006	1%	15%
Masters Road	25,075	4,005	1,161	5%	29%	26,135	3,019	1,006	4%	33%
Springhill Road	16,555	2,148	1,496	9%	70%	32,482	2,438	1,006	3%	41%

	2011 typical at 6.9 Mtpa *ADT for 2011				
	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs
Bellambi Lane	5,459	615	406	7%	66%
Northern Distributor	26,451	2,101	406	2%	19%
Mount Ousley	44,485	3,704	678	2%	18%
F6 (Gwynneville)	71,260	7,172	1,084	2%	15%
F6 (Mangerton)	73,134	6,559	1,084	1%	17%
Masters Road	26,201	3,085	1,084	4%	35%
Springhill Road	32,548	2,504	1,084	3%	43%

	2008 predicted at 7.5 Mtpa					2011 projected 7.5 Mtpa from measured data				
	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs
Bellambi Lane										
Northern Distributor										
Mount Ousley										
F6 (Gwynneville)										
F6 (Mangerton)										
Masters Road										
Springhill Road										

	2011 projected 7.5 Mtpa from typical data for 2012				
	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs
Bellambi Lane	5,479	634	425	8%	67%
Northern Distributor	27,772	2,206	425	2%	19%
Mount Ousley	45,440	3,843	736	2%	19%
F6 (Gwynneville)	72,783	7,414	1,161	2%	16%
F6 (Mangerton)	74,690	6,784	1,161	2%	17%
Masters Road	26,278	3,163	1,161	4%	37%
Springhill Road	32,625	2,581	1,161	4%	45%

	2008 predicted at 10 Mtpa for year 2013					2011 projected 10 Mtpa from measured data				
	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs
Bellambi Lane	6,622	1,157	764	12%	66%					
Northern Distributor	30,219	2,780	764	3%	27%					
Mount Ousley	55,167	7,545	781	1%	10%					
F6 (Gwynneville)	91,879	10,316	1,544	2%	15%					
F6 (Mangerton)	92,241	10,196	1,544	2%	15%					
Masters Road	28,478	5,010	1,549	5%	31%					
Springhill Road	18,188	2,269	1,549	9%	68%					

	2011 projected 10 Mtpa from typical data for 2013				
	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs
Bellambi Lane	5,595	751	541	10%	72%
Northern Distributor	29,255	2,411	541	2%	22%
Mount Ousley	46,594	4,165	974	2%	23%
F6 (Gwynneville)	74,614	7,967	1,515	2%	19%
F6 (Mangerton)	76,555	7,291	1,515	2%	21%
Masters Road	26,633	3,517	1,515	6%	43%
Springhill Road	32,979	2,936	1,515	5%	52%

Source:

Table 7.9 and 7.10 from 2008 EA report (ADT by 2013 for 10Mtpa @24/7 operation
2011 Trial Study predicted volumes using 2008 background growth assumptions
2011 Trial actual volumes measured with coal trucks calculated (14 day ADT)
Estimated Volumes developed for "typical" scenarios
No data available

1 FR111019 - 01 Traffic Profile v5
2 FR111019 *PKCT Monitoring Trial Final report* Table 5.1 and Traffic Profile v5
3 Measured from weighbridge receipts during the trial based on 32T and 39 T/ truck average capacity

Road Capacity Performance

Based on the predicted and actual traffic volumes, a comparison of the road capacity performance was undertaken as part of the 2011 trial. The *2008 EA* traffic assessment stated that coal trucks represented between 0.2% and 4.7% of total traffic on all coal haulage routes. The 2011 'Typical' study looking at forecast growth of traffic to 10 Mtpa has found that coal trucks represent between 2% and 6% of total traffic on all majority of haulage route roads, which the exception of Bellambi Lane, which is expected to increase to approximately 10% of the total traffic.

The road capacity comparison of the AM peak performances indicates that:

- Appin Road, Southern Freeway (North), Bellambi Lane, Masters Road and Springhill Road performed at similar LoS for both the 2011 actual and projected volumes.
- Mount Ousley Road travelling from PKCT performed better at a LoS C for 2011 existing conditions as compared to LoS D based on predicted volumes.
- Southern Freeway (South) travelling to PKCT performed at a LoS D for 2011 existing conditions as compared to a predicted LoS E in the *2008 EA* assessment.
- Northern Distributor travelling from PKCT performed at a LoS D under 2011 existing conditions as compared to a predicted LoS B in the *2008 EA* assessment. This is due to the lower volumes predicted by the RTA on the Northern Distributor before it was opened in 2009 as documented in Section 5.2.1 of the Traffic Assessment Report in **Annex C**.

The comparison of PM peak performances indicated that:

- Appin Road, Mount Ousley Road, Bellambi Lane, Masters Road and Springhill Road performed at similar LoS for both sets of 2011 actual and projected volumes.
- Southern Freeway (North) travelling to PKCT performed at a LoS D under 2011 existing conditions as compared to a predicted LoS C in the *2008 EA* assessment. This is due to the higher PM peak volumes recorded during the traffic surveys as compared to predicted volumes.
- Northern Distributor travelling to and from PKCT performed at a LoS C and LoS D respectively under 2011 existing conditions. This is lower as compared to a predicted LoS B in the *2008 EA* assessment for both directions. This is due to the lower volumes predicted by the RTA on the Northern Distributor before it was opened in 2009 as documented in Section 5.2.1.

Road Safety

The *2008 EA* traffic assessment addressed concerns raised by the RTA in regards to the level of street lighting at the Southern Freeway and Masters Road intersection. A follow up safety audit of the entire coal haulage route was undertaken by a certified Lead Auditor and accredited Level 1 auditor in 2011. This audit identified that the haulage routes acceptably meet road safety standards with no immediate remedial action required.

As there has been no significant change in road conditions along the coal haulage routes since 2008, no additional road safety issues are expected. The proposed level of heavy vehicle increases is not anticipated to have an impact on the safety of the road network.

5.2.2 Noise Impact Comparison with 2008 Assessment

Two separate aspects of potential noise impacts were assessed by Wilkinson Murray in the *2008 EA* as part of the original approval, which were:

- Onsite noise
- Public road delivery noise along coal haulage routes (Traffic Noise).

For the purposes of this 2011 comparative study, only public road delivery noise was reviewed and compared as onsite noise is regularly monitored by PKCT on an ongoing basis. The previous *2008 EA* operational impact assessment (Wilkinson Murray 2008) found that road deliveries up to 10 Mtpa would not create significant noise impacts on the nearest residential receivers from the PKCT onsite operations.

As no detrimental noise impacts to sensitive receivers were predicted there was no requirement for any mitigation measures in addition to those prescribed as part of the *2008 EA* and 24/7 application.

As previously noted, Wilkinson Murray conducted the previous 2008 acoustic assessment and this assessment noted that coal deliveries to PKCT were acceptable up to 10mtpa capacity.

The 2008 acoustic report identified that some noise mitigation was required in order to control the increase in noise levels to the residential receivers along the haulage route and summarised are:

- Limiting operations from Gujarat NRE on Bellambi Lane to base 2008 levels;
- Restricting coal deliveries to PKCT using Bellambi Lane to the daytime period only, that is, 15 hours (daytime) during the week and 10 hours (daytime) on weekends.

This resulted in Condition 7 of Major Project Approval 08_0009, which limits coal truck movements from Gujarat NRE No 1 Colliery along Bellambi Lane to 15 hours per day on weekdays and 10 hours per day on weekends and public holidays.

During the 2011 monitoring trial period, coal truck movements from Gujarat NRE were confirmed to comply with the time restrictions noted in the Wilkinson Murray 2008 acoustic assessment.

The modelled noise impact scenarios for in the *2008 EA* have been compared with those done as part of this 2011 assessment, which are presented within **Table 5.7** below. This table shows that all areas assessed in 2008 are generally consistent with the remodelled results in 2011. The key finding is that all areas along the haulage route are predicted to remain compliant with the assessment criteria.

Table 5.7 – Comparison of 2008 EA and 10 Mtpa Trial Period (2011) Noise Results

Route name	Survey location			Assessment criteria, dB(A) L_{Aeq}				2008 EA predicted result (10mtpa/ 2013), dB(A) L_{Aeq}				2011 Assessment Predicted 10mtpa (2013), dB(A) L_{Aeq}				2011 Assessment Prediction Compliance for 10mtpa with Assessment Criteria			
				Weekday		Weekend		Weekday		Weekend		Weekday		Weekend		Weekday		Weekend	
	2008	2011		Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
Bellambi Lane	Bellambi Lane	Bellambi Lane	(1)	*64.2*	*55.0*	*60.0*	*55.0*	*70.9	*71.1	*70.9	*67.3	63.9	55.0	59.2	54.7	Complies	Complies	Complies	Complies
Bellambi Lane	Keerong Ave	Keerong Ave	(2B)	*60.0*	*55.0*	*60.0*	*55.0*	*56.2	*55.3	*56.1	*51.9	57.9	53.7	56.3	51.9	Complies	Complies	Complies	Complies
Northern Distributor	Eager Street	Eager Street	3	60.0	55.0	60.0	55.0	54.6	49.7	53.8	50.5	54.8	54	54.2	50.1	Complies	Complies	Complies	Complies
Northern Distributor	Albert Street	Ivor Street	(4B)	62.5	55.8	60.4	55.5	61.0	55.2	59.1	55.4	57.2	52.8	53.3	48.9	Complies	Complies	Complies	Complies
N/A	Kiera Street	Kiera Street	(5)	65.3	55.7	60.2	55.0	65.3	53.7	58.2	52.6	55.6	52.2	54.0	50.6	Complies	Complies	Complies	Complies
N/A	Kembla Street	Kembla Street	(6)	*60.0*	*55.0*	*60.0*	*55.0*	-	-	-	-	49.2	45.5	47.6	43.9	Complies	Complies	Complies	Complies
Masters Road	-	Gladstone Street	(7)	*60.0*	*55.0*	*60.0*	*55.0*	-	-	-	-	56.2	52.6	54.4	50.8	Complies	Complies	Complies	Complies
N/A	Swan Street	Swan Street	(8)	62.6	55.8	60.0	55.6	60.6	53.8	57.7	53.6	52.4	49.8	50.8	48.2	Complies	Complies	Complies	Complies
Mount Ousley	Dumfries Ave	Dumfries Ave	(9)	67.1	64.1	64.4	61.3	65.2	62.2	62.5	59.5	63.4	60.8	60.5	57.9	Complies	Complies	Complies	Complies
Mount Ousley	Binda Street	Binda Street	(10B)	61.6	59.7	60.0	55.0	59.7	57.8	57.2	54.7	58.9	56.7	57.2	54.0	Complies	Complies	Complies	Complies
F6 (south) - Mangerton	-	Phillips Street	(11)	*60.0*	*55.0*	*60.0*	*55.0*	-	-	-	-	59.8	54.9	57.1	52.9	Complies	Complies	Complies	Complies
F6 (north) - Gwynneville	Acacia Avenue	Acacia Avenue	(12B)	64.0	60.8	60.6	56.3	62.3	59.3	59.0	55.1	60.2	56.4	57.1	53.3	Complies	Complies	Complies	Complies
Masters Road	Taronga Ave	Taronga Ave	(13)	60.2	56.9	60.0	55.0	59.0	58.2	54.8	53.7	56.2	53.4	55.0	52.2	Complies	Complies	Complies	Complies

NOTES:

1) *Denotes $L_{Aeq\ (1\ hour)}$ prediction as per now superseeded ECRTN used in 2008 assessment. Current criteria as per 2011 study is $L_{Aeq\ (15\ hour)}$ as per NSW Road Noise Policy

2) Blue italic text is estimate criteria as these locations were not included in original 2008 assessment

3) – indicates that this location was not assessed in the 2008 EA

The key findings of the comparative review of the *2008 EA* study and 2011 10 Mtpa monitoring trial are summarised as:

- Since 2008 (and the opening of the Northern Distributor), Bellambi Lane has been re-classified from a "Collector" road in the previous NSW ECRTN to a "Sub-arterial" road. The impact from this change is that the operational noise criteria are now assessed over a different time period, i.e. the previous sub-arterial road are noise levels averaged over a one hour period, whereas the reclassification is now in line with the remainder of the road haulage routes – fifteen hours (daytime) and nine hours (night time). The averaged noise levels over the fifteen and nine hour periods are lower than if assessed as a one hour peak period.
- Based on detailed review of weighbridge receipts and information sourced from the two transport contractors, i.e. Brindles and Bulktrans, the overall number of coal trucks required to deliver 7.5 Mtpa and 10 Mtpa of coal to PKCT are less than those predicted in the 2008 study. This has resulted in the 2011 study predicting lower overall noise levels at each of the noise monitoring locations.
- Overall traffic noise levels on Bellambi Lane surveyed during the during the 2011 study were significantly lower than the monitored baseline traffic noise levels reported in the 2008 study and this is due to the opening of the Northern Distributor in 2009. The opening of the Northern Distributor resulted in a significant reduction in road traffic and associated noise levels on Bellambi Lane, as the majority of traffic utilise the new road.
- **With reference to the findings in the 2008 study, variations in traffic noise due to increased coal haulage rates of 10 Mtpa predicted during the 2011 study were generally consistent and comparable with the previous 2008 assessment for the equivalent tonnage.**

5.2.1 Air Quality Impact Comparison with 2008 Assessment

Air Quality emissions, mainly consisting of dust, are an important environmental issue assessed by Katestone Environmental in the *2008 EA*. Their Air Quality assessment found that the largest source of dust emissions is the coal stockpiles onsite at PKCT. This finding also noted that impacts would be unchanged because of the 24 hour a day and 7 day a week receival requirements.

The main dust producing activities directly associated from road haulage were identified as:

- Dust from truck and rail deliveries of coal
- Dust from the action of truck wheels and truck slip streams on-site and on public roads.

A still relevant conclusion of Katestone Environmental's 2008 Air Quality assessment is:

> *"The emissions from road and rail receival are equivalent per tonne of throughput because the emission controls that are implemented provide an equivalent reduction in total emissions. As a consequence, increasing road receival will not substantially affect coal dust emission rates provided that existing dust controls are diligently applied and tracking-out of coal along access roads is minimised."*

This meant that no further assessment of dust emissions other than PKCTs regular dust monitoring campaigns are required up to receiving 10 Mtpa by road as long as the existing dust controls are diligently applied. PKCT are committed to applying and improving their existing dust control measures to mitigate any offsite dust impacts, which are detailed in **Section 5.3.2**.

5.3 Phase 3 – Review Environmental Impact Mitigation Measures

5.3.1 Existing Environmental Mitigation Measures

A number of environmental protection measures are in place as required by Major Project Approval 08_0009. This includes existing onsite dust control systems, limitations on truck movements to certain times and days and imposed maximum noise levels, which must not be exceeded. To ensure that these measures produce effective outcomes a system of monitoring and review is in place, with improvements undertaken where required.

5.3.2 Environmental Management Plans and Strategies

PKCT has an Environment Management System (EMS) in place to meet its environmental obligations, certified to AS/NZS ISO 14001. Policies, standards, an Environment Management Strategy, management plans and procedures support the EMS.

Key documents used to manage PKCT operations include:

- Sustainable Development Policy PO.HS.291
- Environment Policy PO.HS.85
- Quality Policy PO.BM.236
- Environment Management Strategy MP.HS.464
- Noise Management Plan MP.HS.387
- Air Quality Management Plan MP.HS.386
- Driver Code of Conduct Implementation Plan MP.BM.453

Policies are published on PKCT's web site (www.pkct.com.au). Management Plans required under Project Approval 08_0009 are also published after DP&I approval.

These plans all contain specific mitigation procedures that ensure the successful operation of the Terminal with minimal impact on the natural environment and contain provisions for continued environmental improvement and safeguards in the event that an impact does occur.

PKCT regularly reviews and monitors the effectiveness of their environmental management plans as part of their standard environmental and operating procedures and policies.

The Environmental Management Strategy (EMS) provides the strategic environmental framework for the premises and provides direction for ongoing improvement. This approach ensures PKCT has environmental management as a core aspect of the business and has procedures in place to react to and minimise harm from expected and unexpected environmental impacts.

5.3.3 Existing Traffic and Noise Impact Mitigation Measures

The *2008 EA* findings made no recommendations for any modifications to the existing road system servicing PKCT. However, an administrative control in the form of a PKCT Drivers Code of Conduct (see **Annex B**) was developed and adopted to ensure that any delivery vehicles abide by a number of requirements relating to driver behaviour and delivery time curfews.

The main traffic and noise impact mitigation controls in place at PKCT include:

- A road users "Drivers Code of Conduct" to ensure all road haulage contractors understand the behavioural, operational curfews, speed restrictions and truck washing requirements.

- A limit on road haulage truck movements from Gujarat NRE No.1 Colliery along Bellambi Lane to 15 hours per day on weekdays (between the hours of 7am and 10pm), and 10 hours per day on weekends and public holidays (between the hours of 8am and 6pm).
- Regular PKCT compliance monitoring of noise in accordance with the requirements of EPL 1625 and the Major Project Approval consent conditions is undertaken regularly.

The key areas of traffic and noise impact mitigation within the *PKCT Drivers Code of Conduct* include:

- All delivery trucks to PKCT shall use dedicated haulage routes, which include:
  - Sections of Mt Ousley Road, Bellambi Lane, Northern Distributor, F6 Freeway, Masters Road, Springhill Road, Tom Thumb Road and Port Kembla Road.
- Haulage and road delivery standards, which include:
  - Truck queuing along Tom Thumb Road and Port Kembla Road
  - Limiting compression braking in residential areas
  - Compliance with speed limits
  - Care around steep grades and tight curves
  - Reporting of breakdowns to RTA Transport Management Centre
  - A limit on road haulage truck movements from Gujarat NRE No.1 Colliery along Bellambi Lane to 15 hours per day on weekdays (between the hours of 7am and 10pm), and 10 hours per day on weekends and public holidays (between the hours of 8am and 6pm).
  - Covering of loads
  - Use of truck wash facilities on PKCT site
  - Inspection and reporting of vehicle faults.
- Incident management and reporting.

Section 5 of the PKCT Drivers Code of Conduct identifies the *Noise Minimisation Controls* to address potential noise sources, which must be adhered to by all road haulage contractors.

The following areas have been identified as potential impact sources:

- Compression braking noise
- Tailgate noise
- Speed bump noise

Commitments by Existing Transport Companies

Section 2.6 of this report provides an overview of the existing measures and planned commitments each major transport company servicing PKCT is providing to improving their environmental and safety performance.

Evidence of reasonable and feasible Noise and Traffic impact mitigation measures examined includes:

- Commitment to the self-imposed speed limit of 50kph along Bellambi Lane by trucks servicing Gujarat NRE provides traffic and noise impact benefits to the community
- Commitment of transport companies to procuring higher payload trucks, which reduces the number of trucks for a given annual tonnage

- Commitment of transport companies to regularly replace fleet with quieter trucks and trailers as the opportunity arises, with prime movers meeting Euro 5 emission standards where practical and feasible
- Commitment of transport companies to research, design and procure trailers to minimise tail-gate noise
- Commitment of transport companies to investigate and implement modern brake pad technology to reduce brake squeal.

5.3.4 Air Quality Impact Mitigation Measures

PKCT have a number of Air Quality controls already in place, which include:

- Road receival area is constructed of concrete with a kerb and gutter; road sprays are located adjacent to receival bins
- Trucks are washed on leaving site via an automatic truck wash (at North & South site exits)
- Road users driver code of conduct to ensure all haulage vehicles understand the behavioural, speed restrictions and truck washing requirements
- Roads and sealed areas are cleaned using a sweeper truck and water cart as required to reduce the “tracking-out” of coal dust onto public roads
- Water carts are used as an additional dust control measure across the site to wash down sealed roads and to wet and control dust in unsealed areas
- Misting sprays under yard conveyors control dust escape from trafficable areas.

To address the issue of “tracking-out” of dust from the site onto public roads two automatic truck wash stations are used at the northern and southern access points to the PKCT site. These wash stations are designed to remove any surface dust from the truck under body, wheels and trailers to minimise “tracking-out” or deposition of clumped material onto public roadways. A road sweeper and water cart are also utilised regularly on site for road cleaning and dust suppression.

Evidence of reasonable and feasible Air Quality impact mitigation measures examined includes:

- Commitment of transport companies to research, design and procure trailers to minimise coal build up and potential for carry-out onto public roads
- Commitment of transport companies to regularly replace fleet with quieter trucks and trailers as the opportunity arises, with prime movers meeting Euro 5 emission standards where practical and feasible
- Commitment from PKCT to implement innovations in the new northern truck wash facility.

Details of the proposed upgrade to the Northern Truck Wash facility are outlined in **Section 1.1.4**.

5.4 Identify Additional Environmental Impact Mitigation Measures

Based on the assessment findings there are no additional impacts identified which would warrant the inclusion of any additional mitigation measures.

A list of existing mitigation measures included in this review is included below in **Table 5.8**.

Table 5.8 – Review of Existing Traffic, Noise and Air Quality Impact Mitigation Measures

Category	Existing Mitigation Measures (from *2008 EA*)	Additional Mitigation Measures (resulting from 2011 Review)
Traffic	Comply with *PKCT Drivers Code of Conduct* (specifically): • Limits coal truck movements to PKCT from Gujarat NRE No 1 Colliery along Bellambi Lane to 15 hours per day on weekdays and 10 hours per day on weekends and public holidays.	Nil*****
Noise	• Comply with *PKCT Drivers Code of Conduct* (specifically): ○ Limits coal truck movements to PKCT from Gujarat NRE No 1 Colliery along Bellambi Lane to 15 hours per day on weekdays and 10 hours per day on weekends and public holidays. ○ Limits the activation of engine compression brakes while in close proximity to residences. ○ Requires that all loads are covered. ○ Requires that all tailgates are secured to eliminate rattling noises. ○ Maintain self-imposed speed limit of 50kmh along Bellambi Lane.	Nil*****
Air Quality (Dust)	• Comply with *PKCT Drivers Code of Conduct* • Maintain existing operational safeguards. Including the use of the Truck wash and regular road condition surveillance and roadway cleaning/water cart use as required.	• PKCT expects that the completion of the Northern Truck Wash Upgrade Project (as outlined in **Section 1.1.4**) will improve the performance of truck washing activities in line with forecast increases in truck movement intensity, to reduce the dust potential of trucks leaving the PKCT site.

***Notes:**

1. PKCT are committed to continuous improvement of environmental management tools to ensure impacts to the community and environment are minimised. PKCT is currently seeking the services of a consultant to undertake a detailed review and audit of the existing PKCT Drivers Code of Conduct across all parties who operate under this instrument. This review and audit will examine PKCT Drivers Code of Conduct performance to assess compliance and to identify improvement opportunities by reviewing previous auditing activities, training/induction, incident/complaints management, vehicle standards, industry certifications, performance measures and record keeping standards.

2. The major transport companies servicing PKCT are aiming to ensure that modern vehicles are progressively integrated into the transport fleet as the opportunity arises. This also includes active R&D and trialling of design improvements on trucks, trailers and other vehicle components to improve environmental/safety performance and transport efficiencies.

6 Key Justification for the 10 Mtpa Approval

This section identifies and assesses the benefits and key environmental impacts associated with the proposal.

6.1 Environmental Assessment Criteria

6.1.1 Road Infrastructure Capacity and Traffic Impacts

The 2011 Traffic monitoring study and review in **Section 5.2** against the findings of the *2008 EA* have shown the existing road infrastructure capacity and performance is adequate to allow up to 10 Mtpa of road receival at PKCT.

No recommendations for any modifications to existing carriageways or intersections were included in the 2011 monitoring trial *Traffic Assessment* conclusions (refer **Annex C**).

6.1.1 Noise Impacts

The 2011 noise monitoring trial and validation review of the original 2008 EA noise findings have found that future road haulage at levels of 7.5 Mtpa and 10 Mtpa are predicted to comply with criteria at all monitoring locations day/night on weekdays and weekends.

6.1.2 Sensitive Receivers along the Haulage Routes

A map identifying the location of a number of sensitive receivers in proximity to the existing haulage routes has been included in **Annex H** for reference. From this sensitive receivers map, it is evident that a range of existing facilities including schools, places of worship, hotels, bowling clubs and sporting complexes are situated within 500m of the approved mine haulage routes. A variety of noise barriers have been installed previously along the haulage routes, which assist in reducing noise levels and impacts from the mix of vehicles that utilise the major road network. Further analysis of the majority of these existing mitigation measures was not deemed necessary as no significant noise impacts were predicted by the 2011 noise assessment (refer **Annex D**).

6.2 Social & Economic

6.2.1 Social

Australian Bureau of Statistics information shows the Illawarra Region has historically had higher unemployment than the NSW State average. Over many years, BlueScope Steel Limited (BSL) and various Illawarra coal-mining operations have been significant employers in this Region. Whilst mining continues at a strong rate with high employment levels, the Illawarra steel industry is currently in decline resulting in significant job losses in 2011 and through 2012.

The direct impact of the decline in the Australian steel industry in the Illawarra is shown by the BlueScope Steel press release dated 22 August 2011, which announces that the Port Kembla BlueScope Steel plant made a $487M loss in the 2010-2011 Financial Year (FY). BlueScope Steel announces in this press release that the Port Kembla plant is ceasing its operations in the steel export industry and will focus solely on the Australian domestic market. Furthermore, the No. 6 blast furnace has recently closed meaning that steel production will be likely to reduce to 2.6 Mtpa.

A press release advised that alterations at the BlueScope Steel Port Kembla plant will result in 800 direct job losses. There is no doubt that the recent job losses from BlueScope Steel will have social

impact on the Illawarra as a greater number of individuals and families will encounter mortgage stress and have difficulties meeting grocery, utility and travel expenses.

The continued growth of mining in the Illawarra presents an opportunity to reduce existing and future unemployment rates in the region and thereby reduce social stress levels. An Illawarra Mercury newspaper article published on 25 August 2011 states *"while BlueScope Steel is shedding 800 jobs, 600 were created in the Illawarra mines last year"* (New Coal Mine Jobs Could Soften Blow, 2011, p7).

Sufficient coal logistics and export capacity is a vital aspect of the Illawarra mining operations as PKCT is the only coal loading facility in the region. Should PKCT not be able to continue to meet the export requirements of its coal mining customers it is likely that production will slow, which is likely to result in job losses or a reduction in the availability of new positions. This would counteract the social benefit that mining is providing to the Illawarra.

The ongoing viability of PKCT and its capacity to meet coal export demands is therefore a vital aspect of the NSW Southern and Western Coalfields export supply chain and of great significance to the state and the social well-being of the Illawarra Region. Government support for the ongoing operations at PKCT would demonstrate continued support for the social condition of the Illawarra whilst allowing their existing operations to continue at a raised limit of 10 Mtpa.

6.2.2 Economic

The mining industry is a vital aspect of the Australian, NSW and the Illawarra economies, which is illustrated by the NSW Minerals Council's calculations that State coal exports were worth $8.5 billion in 2009-2010 (NSW Minerals Council, 2010), and that the minerals sector will generate $6.8 billion in royalties between 2010 and 2014. This follows actual royalties in 2008-2009 of $1.28 billion of which coal accounted for 95% (Industry & Investment NSW, Mineral Royalties in NSW, 2011, webpage).

Coal production and associated revenue is anticipated to continue growing, with a 5% increase between 2008-2009 & 2009-2010 (NSW Minerals Council, 2010). The growth between 2008-2009 and 2009-2010 led to an increase in the associated workforce of 13% (NSW Minerals Council, 2010).

The State wide growth in coal production and export is reflected in the Illawarra, with the Illawarra Regional Information Service (IRIS) Insight for Government & Business publication of June 2011 stating that *"production grew [during the year to March 2011] 13.9% to 14.4 Million tonnes, up from 12.6 Million tonnes"* (Insight for Government & Business, 2011, p3) across the NSW Southern Mines. This significant Illawarra growth puts increased pressure on PKCT to meet coal export demands.

The comprehensive and continued growth of coal production and export from southern NSW mines places increased pressure on PKCT to meet coal export demands. Increasing the limit for public road receival to 10 Mtpa would enable PKCT to respond to the continued growth of coal exports from the NSW Southern and Western coalfields. This allows the potential economic opportunities to be maximised for the benefit of State income, public spending and social capital.

In the next five to ten years, coal exports through PKCT are predicted to grow steadily, and increased export opportunities can be realised through the improvement of PKCT's existing coal handling facilities and optimised throughput capacity.

6.2.3 Strategic Justification for the Approval of 10 Mtpa by Public Road

The continued ability of PKCT to meet the coal mining industry requirements is consistent with statements of economic policy contained within the following policy documents:

NSW 2021 is the Liberal Government's new NSW State Plan designed to 'make NSW number one'. A stated aim of this document is to rebuild the economy and an aspect of this is *"growing the capacity*

amongst NSW's exporter base" (NSW 2021, 2011, p5). This following statement further quantifies this aim:

"The NSW Government has a key role to play in restoring our economic health through improving infrastructure, ensuring our taxes are competitive and facilitating increased trade with overseas markets" (NSW 2021 Government, 2011, p6).

The State Infrastructure Strategy 2008-09 has strong links to the State Plan as it details how the Government intends to deliver aspects of the Plan by improving infrastructure. The Infrastructure Strategy expands on the funding of infrastructure improvements in the State Plan. This Strategy provides a 10-year plan, which charts infrastructure upgrades that the State Government will need to make in each of the State's six broad regions.

During the 2007-08 financial year, the NSW Government allocated $60M towards the State Plan and State Infrastructure Strategy. PKCT is an integral part of the Port and the increased throughput and associated economic gains would be in accordance with the overall increase in port-related activities.

The State Infrastructure Strategy states that *"infrastructure to support industry is vital to the NSW economy"* (State Infrastructure Strategy, 2008-09, p5). The opportunities to better utilise and improve existing infrastructure at PKCT to meet the increasing demands of the NSW coal industry is therefore consistent with this policy statement.

The Illawarra Regional Strategy 2006-31 provides detail on the Government's specific proposals for the Illawarra and identifies policy guidance to achieve these. Employment protection and generation is a key theme in the Strategy, which states, *"efficiently utilise existing infrastructure, such as the port of Port Kembla"* (p17, NSW Government, 2006). The proposed increase in road receival capacity to 10 Mtpa at PKCT will help to support job growth in the mining sector and is an example of the efficient use of existing infrastructure.

The NSW Coal & Gas Scoping Paper 2011 provides a starting point for the generation and public consultation of new government policies for the continued development of associated infrastructure and particularly management of land use conflicts with agricultural activities. Key Initiative 7 of this Paper identifies that expansion of coal mining requires improvements to coal distribution infrastructure. Further that *"the [Coal & Gas] Strategy will work with industry and local Councils to identify key infrastructure such as road, rail and port facilities required to facilitate growth of coal industry"* (Coal & Gas Scoping Paper, 2011, p10).

The proposed increase in road receival capacity at PKCT is therefore consistent with the guidance given in Key Initiative 7 of the Scoping Paper.

The importance of coal mining and export to the NSW and Illawarra economies is beyond doubt. PKCT is a vital part of the coal supply chain and without continued infrastructure and operational improvements increased costs, delay and reductions in coal export are likely to occur.

On balance, it is suitable to support PKCT's proposed increase in public road receival capacity at the Terminal to 10 Mtpa as there are economic benefits to Australia, NSW, the Illawarra and potentially to thousands of employees. As this benefit can be achieved without significant environmental risk or harm, the economic justification carries significant weight.

6.3 Alternatives Considered

The "do nothing" alternative will not allow PKCT to meet the future forecast demands of it numerous coal supply chain customers, both local and international.

An increase in rail capacity is an option that PKCT is currently considering; however, this option is not viable for many mining companies, as the rail connections and infrastructure simply do not currently exist or new rail infrastructure is not viable. A mix of road and rail delivery will therefore always be required to meet the mining industry demands.

6.4 Consequences of Not Proceeding

Road transport of coal is the only feasible and reasonable method of transport for a number of collieries that feed material through PKCT. Therefore, if the 10 Mtpa limit were not to be approved then a critical throughput limit will be imposed on PKCT. This will directly impact on the growth potential of its various stakeholders that include BHP Billiton Illawarra Coal (BHPBIC) and Gujarat NRE, both of whom are significant local employers (both directly and indirectly) and contributors to local and state economies. Current forecasts show that the existing 7.5 Mtpa road receival limit will be likely to be met in the 2013 to 2014 period, so any future mining industry growth potential will also be limited.

7 Conclusion

This assessment of PKCT road haulage successfully fulfils the requirements of "PKCT Major Approval Project 08_0009" conditions 6, 7 and 8. This assessment simulated coal road haulage capacities, consistent with the current consent conditions of up to 7.5 Mtpa, with predicted impacts undertaken also for 10 Mtpa.

In order to satisfy their existing Approval Conditions PKCT has:

- Undertaken environmental investigations in accordance with the Director-General's Condition of consent to demonstrate that increasing the road throughput up to the 10 Mtpa limit would not result in significantly greater impacts from those previously modelled
- Undertaken a two-week road monitoring campaign and data review at an equivalent annualised receival rate above 6 Mtpa and outside any public or school holiday periods
- Ensured that the trial is undertaken in accordance with the specific requirements of the Director-General and relevant monitoring standards, to accurately measure the actual traffic and noise impacts
- Undertaken detailed traffic and noise assessment studies to compare and extrapolate the real world data against the modelling used to obtain existing Major Project Approval 08_0009, in order to validate the previous model at 7.5 Mtpa and 10 Mtpa levels to assess the impacts
- Reviewed the real world impact findings and compared them with previously modelled estimates of impacts identified in the *2008 EA*
- Reviewed the expected impacts to ensure that they are generally consistent with the previously predicted results
- Identified if there are any other reasonable and feasible mitigation measures for road network operation and traffic noise that are more suitable than those proposed in the *2008 EA*.

Traffic Results

The 2011 Traffic Assessment showed that the two-way predicted traffic volumes varied slightly from actual volumes and the coal truck movements did not have a significant impact on the 24 hour traffic profile.

The predicted traffic volumes determined from the 10 Mtpa Monitoring trial and subsequent review of other existing traffic studies can be summarised into a range of qualitative and comparative statements for each section of the coal haulage route.

At forecast levels of 10 Mtpa public road throughput at PKCT:

- Approximately 541 coal trucks will utilise Bellambi Lane per day, which is ~10% of the total traffic along Bellambi Lane and ~72% of the total heavy vehicles along this road.
- Approximately 541 coal trucks will utilise the Northern Distributer per day, which is ~2% of the total traffic along Northern Distributer and ~22% of the total heavy vehicles along this road.
- Approximately 974 coal trucks will utilise Mount Ousley per day, which is ~2% of the total traffic along Mount Ousley and ~23% of the total heavy vehicles along this road.
- Approximately 1,515 coal trucks will utilise the F6 Freeway (Mangerton) per day, which is ~2% of the total traffic along F6 Freeway (Mangerton) and ~21% of the total heavy vehicles along this road.
- Approximately 1,515 coal trucks will utilise the Masters Road per day, which is ~6% of the total traffic along Masters Road and ~43% of the total heavy vehicles along this road.
- Approximately 1,515 coal trucks will utilise Springhill Road per day, which is ~5% of the total traffic along Springhill Road and ~52% of the total heavy vehicles along this road.

Overall, the 2011 traffic assessment findings were that road deliveries up to the 10 Mtpa scenario will have minimal effects on the road traffic performance and will not exacerbate any existing road network capacity issues. No detrimental impacts to the existing road or traffic systems were predicted and therefore no direct mitigation measures are required.

Noise Results

The 2011 Noise Assessment has identified that general road traffic noise levels on Bellambi Lane have decreased significantly due to the opening of the Northern Distributor in 2009. The applicable road traffic noise criteria on this road has also been amended as part of the 2011 study due to a re-classification of the road from a *collector road* to a *sub-arterial road* by the NSW OEH. The resultant change in criteria did not have a significant effect on the study results.

Coal truck movements to and from Gujarat NRE's No.1 Colliery were still predicted to comply with the assessed criteria for Bellambi Lane, which can be attributed to maintenance of the *PKCT Drivers Code of Conduct* and upgrades in the coal transport company's (Brindles) fleet.

Another important consideration is that PKCT received no community concerns or complaints during the August 2011 trial period even though truck movements in many areas had increased during this time.

Based on this 10Mtpa Road Delivery Trial assessment and validation of, a total capacity of 10 Mtpa of public road coal deliveries to PKCT is acceptable provided that the mitigation measures outlined in the previous 2008EA report are maintained, which includes continued compliance with the PKCT Drivers Code of Conduct.

7.1 Recommendations

Vehicle Design & Maintenance:

The status of the truck fleet and associated noise standards should be regularly reviewed over time to ensure appropriate mitigation measures are identified and implemented by the respective transport companies. Ensure all new vehicles comply with the Australian Design Rules (ADR's) for vehicle noise emissions and opportunities to seek improved noise performance should be a continuous process.

Ensure sound practices are followed for vehicle operations and maintenance, including:

- Engine maintenance to ensure optimum performance (regular manufacturers scheduled servicing) on all coal trucks;
- Maintenance of exhaust and muffler systems and where required, replacement of deteriorated exhaust and mufflers with improved noise suppression;
- Maintenance of trailers so that loose components on tailgates for example are eliminated;
- Regreasing where required of suspension components to eliminate squeaking as the vehicle is in motion;
- Maintaining correct tyre pressures on all coal trucks, including trailers.

Drivers Code of Conduct

- No additional mitigation measures required along Bellambi Lane, however adherence and compliance with the PKCT Drivers Code of Conduct (including the 50 km/hour self-imposed speed limit) will need to continue.
- No additional mitigation measures required along the Northern Distributor, F6 Freeway, Mount Ousley, Masters Road and Springhill Roads; however adherence and compliance with the PKCT Drivers Code of Conduct will need to continue.
- Cardno agree with PKCT's commitment to seek the services of a consultant to undertake a detailed review and audit of the existing PKCT Drivers Code of Conduct across all parties who operate under this instrument. This review and audit would need to examine PKCT Drivers Code of Conduct performance to assess compliance and to identify improvement opportunities by reviewing previous auditing activities, training/induction, incident/complaints management, vehicle standards, industry certifications, performance measures and record keeping standards.

Cardno recommends that PKCT continue their commitment to implementing reasonable and feasible best practice measures in relation to environmental management and impact mitigation through continued performance benchmarking and dialogue with other Coal Terminals.

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Annex A

A. Major Project Approval 08_0009

Project Approval

Section 75J of the *Environmental Planning and Assessment Act 1979*

I approve the project referred to in Schedule 1, subject to the conditions in Schedules 2 to 4.

These conditions are required to:
- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the on-going environmental management of the project.

The Hon Kristina Keneally MP
Minister for Planning

Sydney 12 June 2009

SCHEDULE 1

Project Application:	08_0009
Proponent:	Port Kembla Coal Terminal
Approval Authority:	Minister for Planning
Land:	Lot 22 DP 1128396, Lot 1 DP 1125445 and Lot 3 DP 1125445, located near Port Kembla Road, Port Kembla
Project:	Port Kembla Coal Terminal Project

TABLE OF CONTENTS

DEFINITIONS

AEMR	Annual Environmental Management Report
BCA	Building Code of Australia
Council	Wollongong City Council
Day	The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
DECC	Department of Environment and Climate Change
Department	Department of Planning
Director-General	Director-General of Department of Planning, or delegate
EA	Environmental assessment titled *Environmental Assessment Existing Operations and Increased Road Receival Hours, Port Kembla Coal Terminal, Volumes 1-2*, dated September 2008
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPL	Environment Protection Licence issued under the *Protection of the Environment Operations Act 1997*
Evening	The period from 6pm to 10pm
Land	Land means the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this approval
Minister	Minister for Planning, or delegate
Night	The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays
Project	The development described within the EA
Proponent	Port Kembla Coal Terminal, or its successors in title
Reasonable and feasible	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements. Feasible relates to engineering considerations and what is practical to build
Response to Submissions	The Proponent's response to issues raised in submissions, dated December 2008
RTA	Roads and Traffic Authority
Site	The land referred to in Schedule 1 and shown in Appendix 1
Statement of Commitments	The Proponent's commitments in Appendix 2

SCHEDULE 2
ADMINISTRATIVE CONDITIONS

Obligation to Minimise Harm to the Environment

1. The Proponent shall implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the operation of the project.

Terms of Approval

2. The Proponent shall carry out the project generally in accordance with the:
   (a) EA;
   (b) Response to Submissions;
   (c) Statement of Commitments (see Appendix 2); and
   (d) conditions of this approval.

3. If there is any inconsistency between the above documents, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this approval shall prevail to the extent of any inconsistency.

4. The Proponent shall prepare revisions of any strategies, plans or programs required under this consent if directed to do so by the Director-General. Such revisions shall be prepared to the satisfaction of, and within a timeframe approved by, the Director-General.

5. The Proponent shall comply with any reasonable requirement/s of the Director-General arising from the Department's assessment of:
   (a) any reports, plans, programs, strategies or correspondence that are submitted in accordance with this approval; and
   (b) the implementation of any actions or measures contained in these reports, plans, programs, strategies or correspondence.

Limits on Approval

6. The Proponent shall not receive more than 7.5 million tonnes of coal and bulk products at the site by public road in any calendar year without the written approval of the Director-General. In seeking this approval, the Proponent shall submit a report to the Director-General that:
   (a) reviews the transport related impacts associated with the trucks being used to deliver coal and bulk products to the terminal;
   (b) demonstrates that these impacts are generally consistent with the predicted and/or approved impacts; and
   (c) examines whether there any other reasonable and feasible measures that could be implemented to minimise these impacts.

   Once this approval has been obtained, the Proponent shall not receive more than 10 million tonnes of coal and bulk products at the site by public road in any calendar year.

7. The Proponent shall only receive coal dispatched from NRE No 1 Colliery at Russell Vale if that coal has been dispatched between the hours of:
   (a) 7 am to 10 pm Monday to Friday; and
   (b) 8 am to 6 pm Saturday and Sunday or Public Holidays

   unless in accordance with a project approval granted to that Colliery under Part 3A of the EP&A Act.

8. Subject to conditions 6 and 7 of this schedule, coal and bulk products may be received by the Proponent at the site by road delivery twenty four hours per day, seven days per week.

Management Plans/Monitoring Programs

9. With the approval of the Director-General, the Proponent may submit any management plan or monitoring program required by this approval on a progressive basis.

Surrender of Consents

10. Within 12 months of the date of this approval, the Proponent shall surrender all existing development consents and existing use rights associated with operations at the site in accordance with clause 97 of the *EP&A Regulation*.

Structural Adequacy

11. The Proponent shall ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.

Notes:

- *Under Part 4A of the EP&A Act, the Proponent is required to obtain construction and occupation certificates for the proposed building works.*
- *Part 8 of the EP&A Regulation sets out the requirements for the certification of the project.*

Demolition

12. The Proponent shall ensure that all demolition work is carried out in accordance with *Australian Standard AS 2601-2001: The Demolition of Structures,* or its latest version.

Operation of Plant and Equipment

13. The Proponent shall ensure that all plant and equipment used on site is:
    (a) maintained in a proper and efficient condition; and
    (b) operated in a proper and efficient manner.

Dispute Resolution

14. In the event that the Proponent and the Council or a Government agency, other than the Department, cannot agree on the specification or requirements of this approval, the matter may be referred by either party to the Director-General for resolution, whose determination of the disagreement shall be final and binding on the parties.

SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS

NOISE

Impact Assessment Criteria

1. The Proponent shall ensure that the noise generated by the project at any privately-owned residence does not exceed the criteria specified in Table 1 for the location nearest to that residence.

Table 1: Noise impact assessment criteria dB(A) $L_{Aeq\ (15\ min)}$

Location	***Time Period***	***Noise Criteria $LA_{eq,15min}$(dBA)***
Cnr of Swan/Kembla Sts	Day	51
	Evening	50
	Night	49
Cnr of Swan/Corrimal Sts	Day	51
	Evening	50
	Night	49
Cnr of Keira/Fox Sts	Day	55
	Evening	49
	Night	45

Notes:

a) To determine compliance with the $L_{Aeq\ (15\ minute)}$ noise level limits in the above table, noise from the project is to be measured at the most affected point within the residential boundary. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.

b) The noise emission limits identified in the above table apply under meteorological conditions of:
- *wind speeds of up to 3 m/s at 10 metres above ground level; or*
- *temperature inversion conditions of up to 3ºC/100m, plus a 2 m/s source-to-receiver component drainage flow wind at 10 metres above ground level for those receivers where applicable*

in accordance with the NSW Industrial Noise Policy.

However, if the Proponent has a written negotiated noise agreement with any landowner of the land listed in Table 1, and a copy of this agreement has been forwarded to the Department and DECC, then the Proponent may exceed the noise limits in Table 1 in accordance with the negotiated noise agreement.

Noise Monitoring Program

2. The Proponent shall prepare and implement a Noise Monitoring Program for the project to the satisfaction of the Director-General. This program must:
   (a) be developed in consultation with DECC;
   (b) be submitted to the Director-General for approval within 6 months from the date of this approval, or as otherwise agreed by the Director-General; and
   (c) include a:
   - combination of attended and unattended noise monitoring measures;
   - noise monitoring protocol for evaluating compliance with the noise impact assessment criteria in this approval; and
   - reasonable and feasible best practice noise mitigation measures to ensure project specific noise criteria are met.

Continuous Improvement

3. The Proponent shall:
   (a) continue to implement all reasonable and feasible best practice noise mitigation measures;
   (b) continue to investigate ways to reduce the noise generated by the project, including maximum noise levels which may result in sleep disturbance; and
   (c) report on these investigations and the implementation and effectiveness of these measures in the AEMR

   to the satisfaction of the Director-General.

TRANSPORT

Monitoring of Coal Transport

4. The Proponent shall keep records of the amount of coal and bulk products received at the site each year, and include these records in the AEMR.

Traffic Management

5. The Proponent shall ensure that vehicles waiting to deliver coal or bulk products to the site do not queue or park on public roads other than Port Kembla Road.

Driver's Code of Conduct

6. The Proponent shall, in consultation with affected mines and principal haulage operators, develop a program to implement the Driver's Code of Conduct (see Appendix 3) to the satisfaction of the Director-General. This program must:
   (a) be submitted to the Director-General for approval within 6 months from the date of this approval, or as otherwise agreed by the Director-General;
   (b) include a driver induction program to cover (but not be limited to) speed limits, compression braking, truck washing, load covering and queuing on local roads; and
   (c) include measures to ensure the Driver's Code of Conduct is enforced.

AIR QUALITY

Impact Assessment Criteria

7. The Proponent shall ensure that dust generated by the project does not cause additional exceedances of the criteria listed in Tables 3 to 5 at any residence.

Table 3: Long term impact assessment criteria for particulate matter

Pollutant	Averaging period	Criterion
Total suspended particulate (TSP) matter	Annual	90 µg/m^3
Particulate matter < 10 µm (PM_{10})	Annual	30 µg/m^3

Table 4: Short term impact assessment criteria for particulate matter

Pollutant	Averaging period	Criterion
Particulate matter < 10 µm (PM_{10})	24 hour	50 µg/m^3

Table 5: Long term impact assessment criteria for deposited dust

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
Deposited dust	Annual	2 g/m^2/month	4 g/m^2/month

Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 1991, AS 3580.10.1-1991: Methods for Sampling and Analysis of Ambient Air - Determination of Particulates - Deposited Matter - Gravimetric Method.

However, if the Proponent has a written negotiated air quality agreement with any landowner to exceed the air quality limits in Table 3, 4 and/or 5, and a copy of this agreement has been forwarded to the Department and DECC, then the Proponent may exceed the air limits in Table 3, 4 and/or 5 in accordance with the negotiated air quality agreement.

Operations

8. The Proponent shall:
   (a) ensure any visible air pollution generated by the project is both minimised and recorded, and that operations are modified as required to minimise any resultant air quality impacts on nearby residences;
   (b) ensure that the real-time air quality monitoring and meteorological monitoring data is assessed regularly; and
   (c) where dust is generated by the project, that operations are modified and/or stopped as required to ensure compliance with the relevant air quality criteria

to the satisfaction of the Director-General.

9. During carrying out of the project, the Proponent shall ensure that:
   (a) all loaded trucks entering or leaving the site have their loads covered; and
   (b) trucks associated with the project pass through a truck wash before entering the public road network to the satisfaction of the Director-General.

Air Quality Monitoring Program

10. The Proponent shall prepare and implement an Air Quality Monitoring Program for the project to the satisfaction of the Director-General. This program must:
   (a) be developed in consultation with DECC;
   (b) be submitted to the Director-General for approval within 6 months from the date of this approval, or as otherwise agreed by the Director-General; and
   (c) include:
      - real-time sampling to monitor the dust emissions of the project;
      - an air quality monitoring protocol for evaluating compliance with the air quality impact assessment criteria in this approval; and
      - reasonable and feasible best practice emissions mitigation measures to ensure project specific assessment criteria are met.

METEOROLOGICAL MONITORING

11. During the life of the project, the Proponent shall ensure that there is a suitable meteorological station on or in the vicinity of the site that generally complies with the requirements in the *Approved Methods for Sampling of Air Pollutants in New South Wales* guideline.

SURFACE WATER

Discharge Limits

12. Except as may be expressly provided in an EPL for the project, the Proponent shall comply with Section 120 of the *Protection of the Environment Operations Act 1997*.

Water Management Plan

13. The Proponent shall prepare and implement a Water Management Plan to the satisfaction of the Director-General. This Plan must:
   (a) be prepared in consultation with DECC;
   (b) be submitted to the Director-General for approval within 12 months of this approval or as otherwise agreed by the Director-General; and
   (c) include:
      - a site water balance, which includes details of sources of water supply, on-site water use and management and off-site water discharges and investigates and describes measures to minimise water use by the project;
      - a sediment control plan for surface works on the site that is consistent with the requirements of the *Managing Urban Stormwater: Soils and Construction Manual* (Landcom 2004, or its latest version);
      - a surface water monitoring program that includes:
         - stormwater effluent discharge criteria;
         - a monitoring protocol for evaluating compliance with the stormwater effluent discharge criteria; and
         - reasonable and feasible mitigation measures to ensure the stormwater effluent discharge criteria are met.

BIODIVERSITY

Green and Golden Bell Frog Management Plan

14. The Proponent shall prepare and implement a Green and Golden Bell Frog Management Plan for the project to the satisfaction of the Director-General. This program must:
   (a) be developed in consultation with DECC; and
   (b) be submitted to the Director-General for approval within 12 months from the date of this approval, or as otherwise agreed by the Director-General.

VISUAL AMENITY

Lighting Emissions

15. The Proponent shall:
    (a) ensure no external lights shine above the horizontal;
    (b) ensure that all external lighting associated with the project complies with *Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting*, or its latest version, and
    (c) take all reasonable and feasible measures to mitigate off-site lighting impacts from the project
    to the satisfaction of the Director-General.

Landscape Management Plan

16. The Proponent shall prepare and implement a Landscape Management Plan to the satisfaction of the Director-General. This Plan must:
    (a) be submitted to the Director-General for approval within 12 months of this approval, or as otherwise agreed by the Director-General; and
    (b) include;
        - details of screening trees to be planted on the road receival earth bund and along the northern site boundary; and
        - an implementation program.

GREENHOUSE & ENERGY EFFICIENCY

Operating Conditions

17. The Proponent shall implement all reasonable and feasible measures to minimise:
    (a) energy use on site; and
    (b) greenhouse gas emissions from the project
    to the satisfaction of the Director-General.

Greenhouse and Energy Efficiency Plan

18. Within 12 months of this approval or as otherwise agreed by the Director-General, the Proponent shall prepare and implement a Greenhouse and Energy Efficiency Plan for the project. This plan must:
    (a) be prepared generally in accordance with the *Guidelines for Energy Savings Action Plans* (DEUS 2005, or its latest version);
    (b) be submitted to the Director-General for approval;
    (c) include a program to estimate/monitor greenhouse gas emissions and energy use generated by the project;
    (d) include a framework for investigating and implementing measures to reduce greenhouse gas emissions and energy use at the project;
    (e) describe how the performance of these measures would be monitored over time; and
    (f) report on the project's greenhouse gas emissions and minimisation measures in the AEMR
    to the satisfaction of the Director-General.

WASTE

Operating Conditions

19. The Proponent shall:
    (a) monitor the amount of waste generated by the project;
    (b) investigate ways to minimise waste generated by the project;
    (c) implement reasonable and feasible measures to minimise waste generated by the project; and
    (d) report on waste management and minimisation in the AEMR
    to the satisfaction of the Director-General.

HAZARDS

Dangerous Goods

20. The Proponent shall ensure that storage, handling and transport of dangerous goods are done in accordance with the relevant *Australian Standards*, particularly *AS1940* and *AS1596*, and the *Dangerous Goods Code*.

Fire Control

21. During the project, the Proponent shall:
    (a) ensure that it maintains suitable equipment to respond to any fires on site; and
    (b) assist the fire and emergency services as much as possible if there is a fire on site.

22. The Proponent shall ensure that it maintains a Fire Management Plan for the site.

SCHEDULE 4
ENVIRONMENTAL MANAGEMENT, MONITORING, AUDITING AND REPORTING

ENVIRONMENTAL MANAGEMENT

1. The Proponent shall prepare and implement an Environmental Management Strategy for the project to the satisfaction of the Director-General. This strategy must:
   (a) be submitted to the Director-General for approval within 12 months of this project approval or otherwise agreed by the Director-General;
   (b) provide for the strategic context for the environmental management of the project;
   (c) identify the statutory requirements that apply to the project;
   (d) describe the procedures that would be implemented to:
      - keep the local community and relevant agencies informed about the operation and environmental performance of the project;
      - receive, handle, respond to, and record complaints;
      - resolve any disputes that may arise during the course of the project;
      - respond to any non-compliance;
      - manage cumulative impacts; and
      - respond to emergencies;
   (e) include an environmental monitoring program for the project that includes all the monitoring requirements of this approval;
   (f) describe how the various incident and approval reporting requirements of the project would be integrated into a single reporting system; and
   (g) describe the role, responsibility, authority and accountability of all the key personnel involved in the environmental management of the project.

REPORTING

Incident Reporting

2. Within 24 hours of detecting the occurrence of an incident that causes (or may cause) material harm to the environment, the Proponent shall notify the Department and other relevant agencies of the incident.

3. Within 21 days of notifying the Department and other relevant agencies of such an incident, the Proponent shall provide the Department and these agencies with a written report that:
   (a) describes the date, time, and nature of the incident;
   (b) identifies the cause (or likely cause) of the incident;
   (c) describes what action has been taken to date; and
   (d) describes the proposed measures to address the incident.

Annual Reporting

4. Within 12 months of this approval, and annually thereafter, the Proponent shall submit an AEMR to the Director-General and all relevant agencies. This report must:
   (a) identify the standards and performance measures that apply to project;
   (b) describe the works carried out in the last 12 months;
   (c) describe the works planned to be carried out in the next 12 months;
   (d) include a summary of the complaints received during the past year, and compare this to the complaints received in previous years;
   (e) include a summary of the monitoring results for the project during the past year;
   (f) include an analysis of these monitoring results against the relevant:
      - impact assessment criteria/limits;
      - monitoring results from previous years; and
      - predictions in the EA or other documents listed in condition 2 of schedule 2;
   (g) identify and discuss all exceedances of approval and licence conditions and other applicable standards and performance measures;
   (h) identify any trends in the monitoring results over the life of the project;
   (i) identify any non-compliance during the previous year; and
   (j) describe what actions were, or are being, taken to ensure compliance.

INDEPENDENT ENVIRONMENTAL AUDIT

5. By 31 March 2011, and every 3 years thereafter, unless the Director-General directs otherwise, the Proponent shall commission and pay the full cost of an Independent Environmental Audit of the project. This audit must:
   (a) be conducted by a suitably qualified, experienced, and independent team of experts whose appointment has been endorsed by the Director-General;
   (b) include consultation with the relevant agencies;

(c) assess the environmental performance of the project and whether it is complying with the relevant requirements in this approval and any relevant EPL (including any strategy, plan or program required under these approvals); and
(d) review the adequacy of strategies, plans and/or programs required under these approvals; and, if appropriate,
(e) recommend measures or actions to improve the environmental performance of the project, and/or any strategy, plan or program required under these approvals.

Note: This audit team should be led by a suitably qualified auditor, and include experts in the field of noise, air quality and traffic management.

6. Within 6 weeks of completing this audit, or as otherwise agreed by the Director-General, the Proponent shall submit a copy of the audit report to the Director-General with a response to any recommendations contained in the audit report.

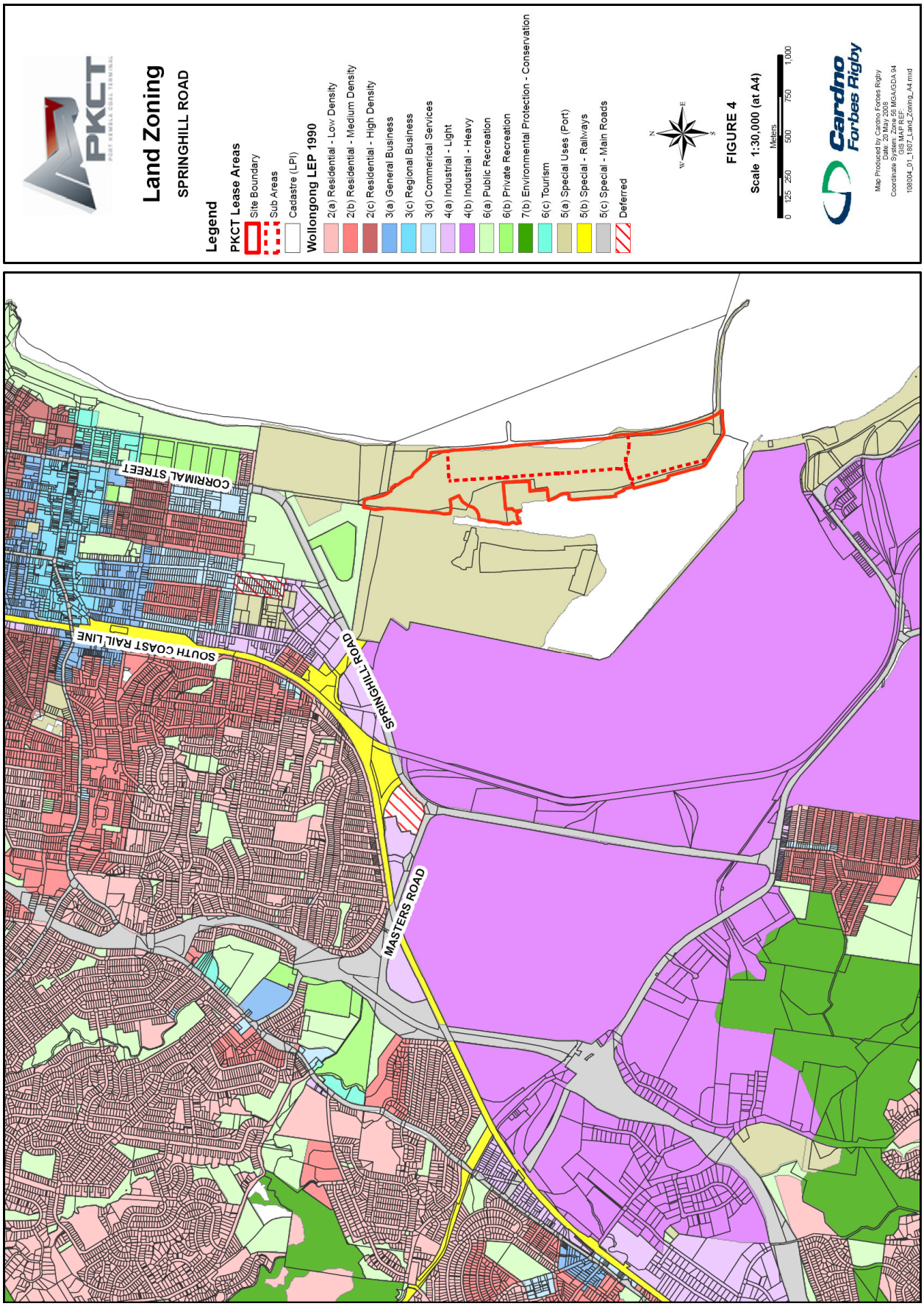
7. Within 3 months of submitting the audit report to the Director-General, the Proponent shall review and if necessary revise the strategies/plans/programs required under this approval, to the satisfaction of the Director-General.

ACCESS TO INFORMATION

8. Within 3 months of the approval of any strategy/plan/program required under this approval (or any subsequent revision of these strategies/plans/programs), or the completion of the audits or AEMR, required under this approval, the Proponent shall:
(a) provide a copy of the relevant document/s to the relevant agencies;
(b) place a copy of the document/s on its website; and
(c) remove superseded copies of strategies/plans/programs from its website.

9. During the project, the Proponent shall:
(a) make a summary of monitoring results required under this approval publicly available on its website; and
(b) update these results on a regular basis (at least every 6 months).

APPENDIX 1
SITE PLANS



Surrounding Land Use

PORT KEMBLA COAL TERMINAL

Legend

- Stacker
- Reclaimer
- Reclaimer Long Travel Rail
- Stacker Long Travel Rail
- Cadastre (LPI)

PKCT Lease Area

- Site Boundary
- Sub Areas

Scale 1:17,000 (at A4)

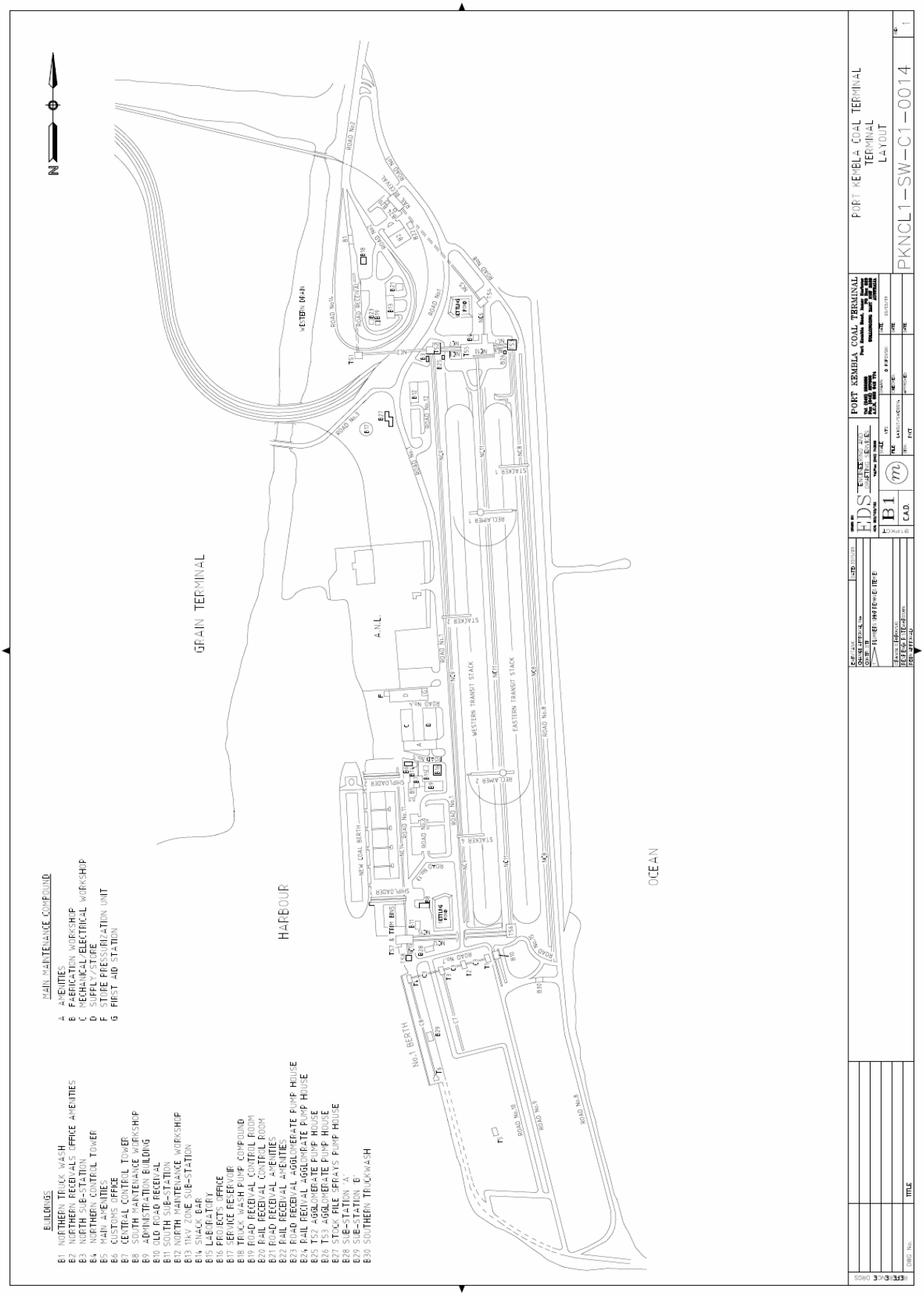
Meters
0 50 100 200 300 400 500

FIGURE 36

Cardno Forbes Rigby

Map Produced by Cardno Forbes Rigby
Date: 13 June 2008
Coordinate System: Zone 56 MGA/GDA 94
GIS MAP REF:
108004_01_1802_Site_Plan_A4_Rev_P3.mxd
Imagery supplied from Google Earth Pro
and associated third party suppliers.

APPENDIX 1
SITE PLANS (CONTINUED)



APPENDIX 2
STATEMENT OF COMMITMENTS

Objective	Commitment
Traffic & Transportation	
• Transport of coal and bulk products to PKCT to be conducted in a manner which does not adversely impact on public safety or amenity of road users. • Safety standards to be maintained by trucks following designated routes procedures. • Internal PKCT roadways to be maintained to minimise coal and bulk products spillage and carry over onto public roadways.	• Public road haulage of coal and bulk products to PKCT will not exceed 10 million tonnes per annum. • Publication of annual throughput tonnages, including in-loading method (ie road and rail received coal and bulk products). • All trucks delivering coal and bulk products to PKCT must follow designated heavy vehicle transport routes. • A driver's code of conduct will be utilised for all transport companies delivering product to PKCT. • Review effectiveness of truck wash facilities to be undertaken. • Unless further or alternative Approval for NRE No 1 Colliery at Russell Vale is in place, PKCT will only receive coal from the NRE No 1 Colliery if that coal has been dispatched from that Colliery by public road between the hours of 7am to 10pm Monday to Friday and 8am to 6pm Saturday and Sunday or Public Holidays.
Air Quality	
• Minimise dust emissions from activities carried out on the PKCT site.	• Installation of two continuous dust monitors to monitor airborne dust emissions. • Maintain appropriate dust suppression systems on site to effectively manage dust both on stockpiles and roadways.
Water Management	
• Minimise use of potable water on site. • Effective management of on site stormwater.	• Reduction in freshwater use on site to be achieved through the implementation of recycled water (Tertiary Treated Effluent) for dust suppression on stockpiles and other non-domestic uses e.g. fire, spillage washdown, conveyor sprays. Staged approach to be implemented which will result in a 360 Megalitre per annum reduction by the end of 2010.
Noise Management	
• Responsible management of PKCT site operational noise.	• Ensure that ongoing compliance is maintained to the New South Wales Industrial Noise Policy. • Development and implementation of a noise management plan for the PKCT site.
Community Relations	
• PKCT to be regarded as a responsible corporate citizen by the community.	• Continued operation of the PKCT Community Consultative Committee. • Continued advertisement and operation of the telephone hotline.
Environmental Monitoring	
• To ensure compliance to the conditions of PKCT's Department of the Environment and Climate Change licence.	• Development and implementation of a management plan which documents the environmental monitoring requirements for PKCT.
Environmental Management System	
• PKCT to maintain certification to ISO 14001.	• PKCT will continue to be certified to ISO 14001 and will be externally audited against the certification criteria on an annual basis.
Greenhouse Gases	
• Minimise the production of greenhouse gas emissions associated with PKCT operations.	• PKCT to review onsite electricity use and identify and implement economically viable opportunities for reduced electricity usage.

Landscaping	
• Improve the visual amenity of PKCT on surrounding community.	• Improve onsite soft landscaping through the planting of trees on the road receival earth bund and along the northern site boundary.
Flora and Fauna	
• Management of Green and Golden Bell Frogs (GGBF).	• Implement Interim Management Plan. • Undertake a GGBF Survey and then develop a Long Term Plan of Management.
Waste	
• Minimise waste generated at the site to reduce the volume of waste requiring disposal to landfill. • Prevent dispersal of waste from the site to receiving environments.	• Develop a Waste Management Plan for the site.

Signed: _____

Peter Green
General Manager

Dated: _____

14 April 2009

APPENDIX 3
DRIVER'S CODE OF CONDUCT

Annex B

B. PKCT Drivers Code of Conduct

PKCT Driver's Code of Conduct

I, the undersigned, hereby agree to abide by the Port Kembla Coal Terminal's Driver's Code of Conduct for the transportation of coal and bulk products and to comply with the:

a) Haulage Routes;
b) Noise Minimisation Controls;
c) Road Delivery Standards;
d) Incident Management and Reporting;
e) Participate in Compliance Monitoring; and
f) Provide the Driver Summary Sheet to Drivers.

Reference: *Port Kembla Coal Terminal Driver's Code of Conduct February 2009, Version 3, (20 February 2009)*

Signature: _____

Name: ANDREW GRAY

Organisation: BHP BILLITON - ILLAWARRA COAL

Date: 2-4-2009.

PKCT Driver's Code of Conduct

I, the undersigned, hereby agree to abide by the Port Kembla Coal Terminal's Driver's Code of Conduct for the transportation of coal and bulk products and to comply with the:

a) Haulage Routes;
b) Noise Minimisation Controls;
c) Road Delivery Standards;
d) Incident Management and Reporting;
e) Participate in Compliance Monitoring; and
f) Provide the Driver Summary Sheet to Drivers.

Reference: *Port Kembla Coal Terminal Driver's Code of Conduct February 2009, Version 3, (20 February 2009)*

Signature: _____

Name: ROBERT COULTHARD

Organisation: BULKTRANS PTY LTD

Date: 2/4/09.

PKCT Driver's Code of Conduct

On behalf of Gujarat NRE Minerals Limited

I, the undersigned, hereby agree to abide by the Port Kembla Coal Terminal's Driver's Code of Conduct for the transportation of coal and bulk products and to comply with the:

a) Haulage Routes;
b) Noise Minimisation Controls;
c) Road Delivery Standards;
d) Incident Management and Reporting;
e) Participate in Compliance Monitoring; and
f) Provide the Driver Summary Sheet to Drivers.

Reference: *Port Kembla Coal Terminal Driver's Code of Conduct February 2009, Version 3, (20 February 2009)*

Signature: C.R. Harvey

Name: CHRISTOPHER ROYCE HARVEY.

Organisation: GUJARAT NRE MINERALS LIMITED.

Date: 6th APRIL 2009

PKCT Driver's Code of Conduct

I, the undersigned, hereby agree to abide by the Port Kembla Coal Terminal's Driver's Code of Conduct for the transportation of coal and bulk products and to comply with the:

a) Haulage Routes;
b) Noise Minimisation Controls;
c) Road Delivery Standards;
d) Incident Management and Reporting;
e) Participate in Compliance Monitoring; and
f) Provide the Driver Summary Sheet to Drivers.

Reference: *Port Kembla Coal Terminal Driver's Code of Conduct February 2009, Version 3, (20 February 2009)*

Signature: _____

Name: SCOTT JONES

Organisation: BRINDLES P/L.

Date: 3/4/09.

Driver's Code of Conduct

Port Kembla Coal Terminal

February 2009
Version 3 (20 February 2009)

Port Kembla Coal Terminal

Drivers Code of Conduct

1. Introduction

As part of the Environmental Assessment for " Existing Operations and Increased Road Recieval Hours at Port Kembla Coal Terminal", a commitment was made that PKCT shall prepare and implement a Driver's Code of Conduct for haulage trucks delivering to the PKCT road receival areas. The purpose of this document is to highlight specific requirements to minimise community impact and increase safety while delivering to PKCT. The code utilises industry best practice to minimise and manage the traffic impact associated with the project and the movement of heavy vehicles to and from the site.

The code has been developed in consultation with the PKCT road recieval customers, and their associated haulage contractors, Roads and Traffic Authority, Department of Environment & Climate Change and the PKCT Community Consultative Committee. The code is to be submitted to the Director General of the New South Wales Department of Planning by 28/2/09.

It is proposed that initially this Code of Conduct will be reviewed after 12 months of operation. Subsequent reviews will be as agreed by the relevant parties.

2. Scope

The Drivers Code of Conduct requires that specific measures are developed in consultation with the RTA, and the DECC to focus on opportunities to minimise, mitigate and manage traffic volume, traffic safety and acoustic impact.

The following documents have been reviewed in the formulation of this Driver's Code of Conduct.

1. PKCT Truck Driver's Rules Procedure
2. PKCT Traffic Management Plan
3. Bulktrans Driver's Handbook
4. Brindles Transport employment and Safety handbook for Drivers
5. Illawarra Coal haulage hazards awareness workbook
6. Port Kembla Port Corporation Transport Code of Conduct
7. Heavy Vehicle Driver's Handbook
8. Transport Accident Commission Safe Driving Policy
9. New South Wales road rules

3. Objectives

The objectives of the Code of Conduct are to:

1. Ensure compliance with the conditions associated with the Department of Planning consent with consideration of matters raised during the consultation process.
2. Encourage application of the Driver's Code of Conduct for all stakeholders associated with PKCT transport operations.
3. Minimise impacts on the community as much as possible.
4. Encourage an environment for safe operations associated with PKCT road delivery operations.
5. Maximise public safety by adhering to the Australian Road Rules and ensuring all potential road safety issues are reported to the Transport Management centre 131700.

4. Haulage Routes

All haulage trucks travelling to and from PKCT will do so by using major arterial roads as outlined in the sections below. The major arterial roads associated with deliveries to PKCT are as follows;

- Mt Ousley Rd
- Bellambi Lane
- Northern Distributor
- F6 Freeway
- Masters Rd
- Springhill Rd
- Port Kembla Rd

Haulage hazards and specific procedures for the above areas are highlighted below.

Appin Road

Appin Road is an undivided road with a speed limit of 100km/hr. Frequent overtaking lanes are found along this route. Special care should be taken when crossing Loddon River bridge which is narrow.

Mt Ousley Rd

Mt Ousley Road traverses through hilly country with steep grades and tight curves. The speed limit is 80Km/hr however the truck speed limit down Mt Ousley is 40km/hr, with trucks being restricted to the outer 2 lanes. Emergency stopping bays are provided in both directions. As Mt Ousley is close to residential receivers, drivers are requested to limit noise wherever possible.

RTA advise - Peak hour traffic 0600-0800 Mon –Fri northbound 1500-1900 Mon-Fri southbound.

In case of a breakdown all vehicles must be towed to the nearest breakdown bay as soon as possible.

All breakdowns must be reported to the RTA TMC (Transport Management Centre) 131700 and the vehicle protected in accordance with the Heavy Vehicle Drivers handbook.

Bellambi Lane

<u>Road haulage of coal is only permitted from Gujarat NRE No 1 mine between 7am and 10pm Monday to Friday, and 8am to 6 pm on Saturday and Sunday.</u>

The speed limit on Bellambi Lane is 60km/hr, however coal trucks have a self imposed speed limit of 50km/hr on Bellambi Lane. As Bellambi lane has a high number of commuter vehicles, drivers are required to be vigilant regarding separation distances. As Bellambi Lane is close to residential receivers, drivers are requested to limit noise wherever possible.
RTA advise - Peak hour traffic 0600-0900 Mon –Fri eastbound 1500-1800 Mon-Fri westbound.

Northern Distributor
The Northern Distributor links Bellambi Lane with the Southern Freeway. The speed limit along the Northern Distributor varies between 80km/hr & 90 Km/hr. Several traffic lighted intersections are found along this route.
RTA advise - Peak hour traffic 0600-0900 Mon –Fri southbound 1500-1800 Mon-Fri northbound.

Southern Freeway
The Southern Freeway forms part of the arterial link between Sydney and Wollongong. The speed limit varies from 80km/hr to 100 km/hr on this route. Caution should be observed around merging lanes.
RTA advise - This section of freeway between North Wollongong and Masters Road is heavily congested between 0600 and 1000 and 1500- 1800 in both directions.

RTA advise - Wollongong University session 1 commences in March and potential traffic queues in lane 2 northbound and lane 1 southbound can be expected between 0815 and 0845 weekdays approaching the Gwynneville Interchange.

Masters Road Northbound on load ramp.
The northbound exit to Figtree and Wollongong is located within 200 metres of this on load ramp can experience morning peaks.

Masters Road

Masters Road is a 1.3 km road with three lanes in either direction separated by a centre median island. The speed limit on Masters Road is 80 Km/hr. Traffic lights are located in the left hand turning lane which allows vehicles to turn onto Springhill Road. Compression braking on this route should be avoided due to community disturbance. Interactions with other heavy vehicle users will be frequent in this area.

Springhill Rd

The section of Springhill Road between Masters Road and Port Kembla Road is 2.3 Km in length and is 3 lanes wide and divided by a median strip. The speed limit is 80km/hr. Several traffic lights and intersections are found along this section of road and drivers are required to pay particular attention to other vehicles crossing the traffic flow. Due to the close proximity to residents, compression brakes are not to be used on the approach to the lights at Springhill and Port Kembla Road. Interactions with other heavy vehicle users will be frequent in this area.

Port Kembla Road

Port Kembla Road is a two lane undivided road. The speed limit on Port Kembla Road is 50km/hr

PKCT Road Receival area

The gates at the end of Port Kembla road denote the start of the PKCT Road Recieval Area. The speed limit is 40KM/hr in this area.

5. Noise Minimisation Controls

This section designates the specific noise mitigation measures which must be adhered to. This will include rules on compression braking, tipping practices and speed limits for the approach to PKCT, when travelling on the site, tipping and leaving the site.

Due to the relatively close proximity to residential areas drivers are requested to limit the noise created in this area as much as possible.

Compression braking noise

Compression brakes can be extremely noisy and adversely impact on public amenity. Wherever possible, use of engine brakes near residences and in built up areas should be avoided. Compression brakes must not be used on the approach to Port Kembla Rd/ Springhill Rd lights when entering or exiting PKCT.

Tailgate Noise

Drivers must ensure that following tipping, the tailgate is locked before leaving PKCT.

Speed hump noise

When traversing the speed hump at the gate of PKCT, drivers are to approach slowly to ensure that excessive noise is not created.

6. PKCT Road Delivery Standards

Road delivery standards, as specified by PKCT and legislation, which require attention when delivering to the PKCT road receival are highlighted in this section.

A driver of a heavy vehicle (capacity greater than 4.5 tonnes) is required to have the appropriate Heavy Vehicle Class Licence and must comply with the various regulations related to the driving of heavy vehicles as well as all relevant road rules.

Heavy Haulage Drivers will observe the following while en route to PKCT or while on the PKCT site:

- **Queuing**
  Queuing at the truck receival area is permitted on Tom Thumb Road and Port Kembla Road. No trucks are permitted to queue on Springhill Road.

- **Braking**
  Brakes must be applied so as not to create excessive noise that could disturb local residents. Compression braking on Springhill and Masters Road should be avoided, and are not to be used at the intersection of Port Kembla Road and Springhill Road.

- **Speed Limits**
  Always observe the posted speed limits with speed adjusted appropriately to suit the conditions. The vehicle speed must be appropriate to ensure the safe movement of the vehicle based on the vehicle configuration.

- **Tipping**
  Trucks are to be positioned over the tipping grates before commencing tipping. Any spillage that occurs during tipping is to be reported to PKCT to enable efficient clean up.

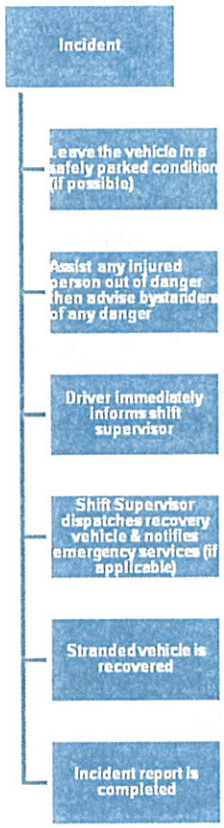
- **Load Covering**
  All trucks delivering to PKCT are required to have an effective cover over their load for the duration of the trip. The load cover may be removed upon arrival at the PKCT road recieval area.

- **Truck Wash**
  All trucks are to pass through a truck wash when leaving the client mine and also after tipping at PKCT, before leaving the site. Any excess coal that is on the body must be cleaned off on site. The speed through the truck is 5 km/h, or as slow as possible.

- **Equipment Performance**
  It is the driver's responsibility to report all vehicle faults and it is the owner's responsibility to ensure that the vehicle is maintained to ensure safe vehicle operations.

7. Incident Management and Reporting

To ensure that traffic impact are minimised in the event of an incident, rapid response from the haulage company is required. In order to ensure rapid response to incidents, drivers must contact the RTA TMC 131700 and their shift supervisor/PKCT Control Tower as soon as the stranded vehicle is safely secured. The following flowchart shows the steps that must be followed to ensure that any incident is cleared as quickly as possible



The following numbers are to be used to contact the shift supervisor:

- Bulktrans Contact No 02 46404109
- NRE Contact Number 02 4223 6837
- PKCT Control Tower 02 42211806 or 0408 426 123
- RTA Transport Management Centre 131700

Spills

If there is a product spill while loading/unloading or en route the driver must;

- Immediately warn persons in the area who may be at risk. If there is flammable material all people there should be warned

- Inform the Shift Supervisor/PKCT Control Tower immediately so that emergency services can be contacted, where applicable, and clean up can be initiated. All spills must be adequately cleaned up and waste disposed of in an acceptable and environmental manner.

- Put out warning triangles where it is safe to do so

8. Compliance Monitoring

It is proposed that initially this Code of Conduct will be reviewed after 12 months of operation. Subsequent reviews will be as agreed by the relevant parties.

It is proposed that regular audits of the code of conduct will be carried out to monitor performance, particularly in relation to noise minimisation around PKCT.

Audits will be completed of the following activities annually:

- Speed of trucks
- Compression braking
- Truck washing
- Load covering

In addition to the above audits, formal observations will be made of compliance by the haulage companies, client mines and PKCT.

Driver Summary Sheet

The aim of the PKCT Driver's Code of Conduct is to minimise the impacts associated with deliveries to PKCT. As a professional driver engaged to deliver product to PKCT, you are required to drive in a responsible manner and adhere to all requirements of the Drivers Code of Conduct.

Travel Times

Gujarat NRE No 1 Mine: Road haulage of coal is permitted to PKCT between 7am and 10pm Monday to Friday, and 8am to 6 pm on Saturday and Sunday

West Cliff Coal Preparation Plant: Road haulage of coal is permitted to PKCT on a 24 hour 7 day per week basis.

Dendrobium Coal Preparation Plant: Road haulage of coal is permitted to PKCT on a 24 hour 7 day per week basis.

PKCT Road Delivery Standards

Heavy Haulage Drivers will observe the following while en route to PKCT or while on the PKCT site:

- Observe all road rules including speed limits
- Limit speed to 50km/hr on Bellambi Lane
- Hold a valid drivers license for the class of vehicle that you operate
- Not apply compression brakes approaching the intersection of Port Kembla Road and Springhill Road
- Utilise the truck wash at PKCT after tipping
- Have the load covered from the mine to the PKCT road recieval area
- Operate the vehicle in a manner that minimises vehicle noise

Incident Management

To ensure quick response, all incidents must be reported immediately to your shift supervisor. Contact Numbers:

• Bulktrans Contact No	02 46404109
• NRE Contact Number	02 4223 6837
• PKCT Control Tower	02 42211806 or 0408 426 123
• RTA Transport Management Centre	131700

Annex C

C. Traffic Assessment Report (2011)

Cardno
Shaping the Future

Port Kembla Coal Terminal Monitoring Trial Assessment

FINAL REPORT

Prepared for
Port Kembla Coal Terminal

transportation | traffic | engineering | planning

December 2011

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DOCUMENT CONTROL

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		Name	**Initials**	**Name**	**Initials**
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1 EXECUTIVE SUMMARY

This study has been undertaken to respond to Condition 6 in Schedule 2 of the *"PKCT Major Project Approval 08_0009"* which requires a comparison of actual transport related impacts with those predicted in the Environmental Assessment (EA) for the Project prior to PKCT receiving more than 7.5mtpa by road transport. The study has identified whether any further measures could reasonably or feasibly be required to minimise these impacts.

A summary of the key points in the report are:

Background:

- Traffic data for this assessment was collected 15-29 August 2011 at eight locations along the haulage routes and at three critical intersections along Springhill Road.
- Coal truck movements during the one week survey period delivered coal to the PKCT at a rate of 6.9mtpa.
- Actual traffic movements at each survey site counted in 2011 were compared with an estimate of the predicted 2011 background traffic movements using the same factors used in the PKCT EA2008 report which for predicting background traffic movements for 2009, 2013 and 2018.
- The number of coal trucks required to transport coal to PKCT at a rate of 6.9mtpa were based on assumptions documented in Section 6 of the EA2008 report which predicted the number of coal trucks for the 4mtpa, 5mtpa and 10mtpa scenarios.

Comparison of 2011 Predicted verses 2011 Actual Traffic Movements:

Appin Road – North of Southern Freeway:

- Two-way predicted traffic volumes were higher than actual traffic volumes by 3% for an average weekday and 18% for an average weekend.
- Coal trucks movements did not have a significant impact on the 24hr traffic profile.
- The predicted traffic movements in the AM and PM peaks performed at a similar LoS as for the AM and PM under 2011 existing conditions.

Mount Ousley Road – 1 km south of New Pleasant Road:

- Two-way predicted traffic volumes were higher than actual traffic volumes by 1% for an average weekday and 10% for an average weekend.
- Coal trucks movements did not have a significant impact on the 24hr traffic profile.
- The predicted level of service for traffic travelling from PKCT was lower at LoS D compared to LoS C under 2011 existing conditions.

Southern Freeway (North) between Mount Kiera Road and Gipps Road:

- Two-way predicted traffic volumes were higher than actual traffic volumes by 6% for an average weekday and 20% for an average weekend.
- Coal trucks movements did not have a significant impact on the 24hr traffic profile.

- In the PM peak the predicted level of service for traffic travelling to the PKCT was higher at LoS C compared to LoS D for 2011 existing conditions. This is due to the higher PM peak volumes recorded during the traffic surveys as compared to predicted volumes.

Southern Freeway (South) – 400m north of The Avenue:

- Two-way predicted traffic volumes were higher than actual traffic volumes by 5% for an average weekday and 9% for an average weekend.
- Coal trucks movements did not have a significant impact on the 24hr traffic profile.
- In the AM peak the predicted level of service for traffic travelling to the PKCT was lower at LoS E compared to LoS D for 2011 existing conditions.

Masters Road – 600m west of Springhill Road:

- Two-way predicted traffic volumes were lower than actual traffic volumes by 2% for an average weekday and 12% for an average weekend due to the lower growth rate assumed in the EA2008 report.
- Coal trucks movements did not have a significant impact on the 24hr traffic profile.

Springhill Road – 100m west of Bridge Street:

- Two-way predicted traffic volumes (17,305 veh/day) were significantly lower than actual traffic volumes (35,771 veh/day) for an average weekday and 65% lower for an average weekend due to the 0% growth rate assumed in the EA2008 report and the cumulative growth in the road network surrounding the Port Kembla area.

Bellambi Lane – 200m west of the Northern Distributor:

- Two-way predicted traffic volumes were higher than actual traffic volumes by 9% for an average weekday and 15% for an average weekend which was partly due to the higher coal truck movements from Gujarat predicted in the EA2008 report to meet the road receivals rate of 6.9mtpa.
- Bellambi Lane performed at LoS A under 2011 existing conditions.

Northern Distributor between Flinders Street ramps and Southern Freeway Ramps:

- Two-way predicted traffic volumes (25,624veh/day) were significantly lower than the actual traffic volumes (54,020veh/day) for an average weekday and 92% lower for an average weekend. This is due to the lower traffic volumes predicted by the RTA on the Northern Distributor before it was opened in 2009. RTA initially provided the projected traffic movements for the Northern Distributor in the EA2008 report and acknowledges that there were anomalies with these predictions.

Impact of Increased Coal Truck Movements on the road network:

- Overall, the comparisons show that assumptions made in the EA2008 report for Appin Road, Mount Ousley Road, Southern Freeway and Bellambi Lane are considered appropriate and support the conclusions from EA2008.
- "that the predicted coal truck movements will have minimal effects on road traffic performance and will not exacerbate the road network capacity for coal truck movements of 10mtpa with 24/7 operations in 2013 and 2018."

2 INTRODUCTION

Port Kembla Coal Terminal (PKCT), is a major intermodal coal handling facility in southern New South Wales (NSW), located in the Inner Harbour of Port Kembla, near Wollongong. The terminal operates 24 hours a day, 365 days per year, currently exporting approximately 10.8 million tonnes of coal per annum and playing a vital role in NSW's coal export industry. PKCT is the major coal intermodal facility in southern NSW for the transfer of coal from rail and road to ship.

The terminal is responsible for receiving, assembling and loading coal from the Southern and Western New South Wales coal fields, which is to be transported by ship to international and domestic markets. PKCT has two bulk handling facilities; a high capacity Coal Berth that handles the loading of coal, and a Bulk Products Berth that loads and unloads a range of bulk products.

PKCT currently operates under consent conditions attached to its 1979 Development Approval. State Environmental Planning Policy (SEPP) (Infrastructure) 2007, has superseded three of these conditions in relation to road haulage and limits the hours in which PKCT is permitted to receive coal deliveries on a specific section of public road to between 7am and 6pm on Monday to Saturday (11/6).

Based on studies of maximum throughput, this time restriction constrains PKCT's maximum capacity to receive coal by public road to 5.2 million tonnes per year. PKCT is ultimately seeking approval to increase road receivals to 24 hours per day 7 days per week (24/7) for a maximum of 10 million tonnes per year of coal received by public road.

This study has been undertaken to respond to Condition 6 in Schedule 2 of the *"PKCT Major Project Approval 08_0009"* which requires a comparison of actual transport related impacts with those predicted in the Environmental Assessment (EA) for the Project prior to PKCT receiving more than 7.5mtpa by road transport. The study has identified whether any further measures could reasonably or feasibly be required to minimise these impacts.

Condition 6 in Schedule of the *"PKCT Major Project Approval"* states:

6. The proponent shall not receive more than 7.5 million tonnes of coal and bulk products at the site by public road in any calendar year without the written approval of the Director-General. In seeking this approval, the Proponent shall submit a report to the Director-General that:

    a) Reviews the transport related impacts associated with the trucks being used to deliver coal and bulk products to the terminal

    b) Demonstrates that these impacts are generally consistent with the predicted and/or approval impacts; and

    c) Examines whether there are any other reasonable and feasible measures that could be implemented to minimise these impacts

Once this approval has been obtained, the Proponent shall not receive more than 10 million tonnes of coal and bulk products at the site by public road in any calendar year.

PKCT is currently approved to receive 7.5 mtpa by road, and while the earlier PKCT Environmental Assessment (EA2008) undertaken in 2008 forecasted impacts for a number of different operational scenarios and future year horizons; no assessment was undertaken for a 7.5mtpa receivals scenario (or similar amount).

2.2 SCOPE OF WORKS

The scope and methodology for the traffic assessment component are outlined below and have been reviewed at a technical staff meeting between Cardno and PKCT.

2.2.1 Data Collection and Monitoring Phase

- A two week pneumatic tube survey was undertaken at the key assessment locations which recorded traffic movements by direction, hour of day, composition of the traffic, and vehicle speed which were the key inputs to the acoustic assessment.
- The key locations which correspond to the locations in the EA2008 were:
  - Appin Road.
  - Mount Ousley Road.
  - Southern Freeway (2 sites).
  - Masters Road.
  - Springhill Road.
  - Bellambi Lane.
  - Northern Distributor.
- A mid-block Level of Service (LoS) was assessment at each site to determine the performance of the road in accordance with Austroads (1988) criteria.
- Undertook AM and PM peak hour intersection surveys at the following locations:
  - Springhill Road/Masters Road.
  - Springhill Road/Tom Thumb Road.
  - Springhill Road/Port Kembla Road.
- Assess the intersection performance at each site using SIDRA 5.1 which identified the key parameters used to define intersection performance such as LoS, Degree of Saturation (a measure of spare capacity at an intersection) and queue lengths.
- Provided a comment on the impacts on road links and intersections for the receivals arrangement of 7.5mtpa during the monitoring phase.
- NOTE: The report actually provides comments for a receivals rate of 6.9mtpa to agree with the actual rate at which coal was delivered during the monitoring period 15-29 August 2011.
- Prepared a profile of the 24 hour traffic volume profiles at each road link during the monitoring phase. A scenario was also developed without any coal trucks that could be used as an input into the acoustic assessment to allow identification of the impacts.

2.2.2 Comparison Phase – Current Receivals Arrangements Model Comparison

- Update the EA2008 model for a 6.9mtpa receivals scenario as the EA only modelled receivals for 5.0mtpa and 10mtpa. The traffic model for the 6.9mtpa receivals option was prepared using the exact parameters and methodology in the initial EA assessment.
- The results of the 6.9mtpa traffic model were used to assess the performance and impacts of the road network at the mid-block sites and the intersection sites.
- The impacts from the 6.9mtpa receivals model were then compared to the actual impacts that occurred during the monitoring phase.

2.3 REFERENCES

The following documents have been referenced as part of this study:

- Environmental Assessment Existing Operations and Increased Road Retrieval Hours for Port Kembla Coal Terminal, Cardno Eppell Olsen August 2008.
- Austroads Guide to Traffic Engineering Practice (AGTEP) Part 2.

2.4 REPORT FRAMEWORK

This report is divided into 5 sections:

- SECTION 1 provides an introduction and background to the study.
- SECTION 2 provides the data collection phase.
- SECTION 3 outlines the monitoring phase.
- SECTION 4 provides a comparison between the projected background and coal truck movements from the 2008 Environmental Assessment (EA) and the traffic and intersection counts collected in the Data Collection phase in 2011.
- SECTION 5 provides the summary and conclusion for the study.

3 DATA COLLECTION PHASE

This chapter provides a summary of the traffic data collected during the Monitoring Period 15-29 August 2011. Coal truck movements during this period were provided by PKCT and Gujarat NRE No.1 in the form of:

- Daily Operations Summary (PKCT).
- Delay Reports (PKCT).
- PKCT Report Summary Emails (GNRE).

Traffic data was collected at the eight mid-block sections and three intersections along the coal haulage routes.

3.1 COAL TRUCK MOVEMENTS

The tonnage of coal shipped to the Port Kembla Coal Terminal (PKCT) was available from Westcliff (BHPA & BHPB), Gujarat Coal (NRED) Companies and Centennial Coal (CENC). No coal truck data was received from Dendrobium Coal mine even though they may have delivered coal through Bluescope Steel site to PKCT via Springhill Road.

The following is a summary of the reports and emails received for the recorded coal truck movements to PKCT during the Monitoring Period 15-29 August 2011:

- The PKCT Daily Operations Summary recorded the tonnages of coal received by road each day from the following locations:
  - BHP Billiton Mines coming from both Appin and Westcliff Collieries (BHPA and BHPB).
  - Centennial Coal coming from Burragorang Valley along Picton Road to Mount Ousley Road to PKCT (CENC).
  - Gujarat NRE No.1 Mine from Bellambi Lane and Northern Distributor.
- An email from Gujarat to PKCT summarised the tonnages, number of trucks and number of loads and start and finish haulage times for coal leaving their mine site each day.
- During the monitoring period, coal was being delivered to PKCT from BHP, Centennial Coal and Gujarat at a rate of 6.9mtpa.

The tonnage of coal reported each day was converted to truck movements based on the following conversion rates:

- For BHP, the average truck capacity was 36.5 tonnes per truck, as per the 2008 EA Report. The same truck capacity has been assumed for trucks from Centennial Coal.
- For Gujarat, the average truck capacity was 32.2 tonnes per truck, based on the tonnages, loads and number of trucks they report to by emails to PKCT during the monitoring period.

Method Used to Estimate 6.9 mtpa

During the survey period the PK weighbridge provided receipts for the delivery of 266,501 tonnes of coal during the 14 day period from the 15-29 August 2011. This was at an average of 19,036 tonnes per day (i.e. 266,501/14). Therefore over a year (365 days) the rate of coal delivery would be 6.948mtpa. This was rounded down to 6.9 mtpa.

The number of truck movements was calculated by considering the total tonnages of coal delivered by each mine, based on the weighbridge receipts, and then dividing these tonnages by the average truck capacities used by each mining company. The number of trucks was rounded up to a whole number of trucks. To calculate the rate of annual coal delivery based on the number of truck movements listed in Table 3.1 will not give the correct result as it will produce a higher annual tonnage because of the rounding up of the truck movements as discussed.

Figure 3.1 summarises the coal truck movements to PKCT each day of the Monitoring Period from data provided the coal companies.

Table 3.1 shows the number of daily coal truck movements on each road section during the monitoring period. The data provided by the coal companies (Westcliff, Centennial and Gujarat) is included in Appendix A.

Figure 3.1 Daily Coal Trucks Deliveries during the Monitoring Period

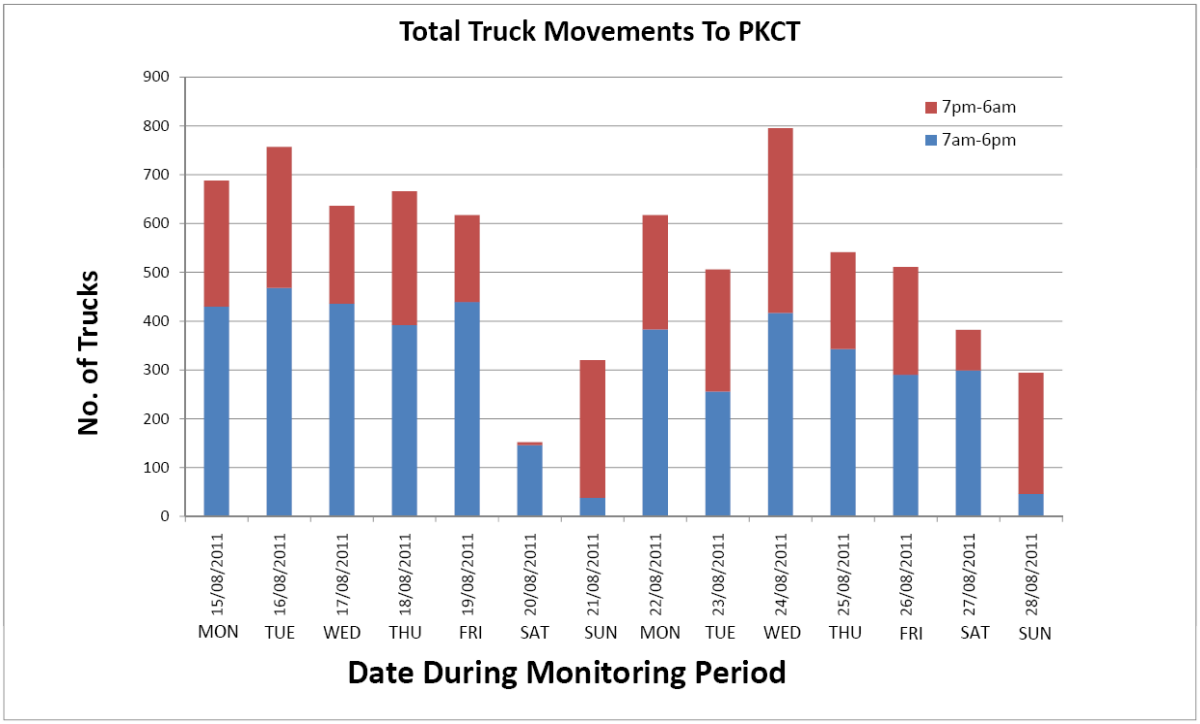


Table 3.1 Coal Truck Movements during Monitoring Period

Location	Direction	Number of Coal Trucks during Monitoring Trial Period	
		Average Weekday	Average Weekend
Appin Road & Mount Ousley Road	From PKCT	562	252
	To PKCT	562	252
	Two-Way	1,124	504
Southern Freeway, Masters Road & Springhill Road	From PKCT	668	280
	To PKCT	668	280
	Two-Way	1,336	560
Bellambi Lane & Northern Distributor	From PKCT	106	28
	To PKCT	106	28
	Two-Way	212	56

3.2 TRAFFIC COUNTS - 2011

The mid-block traffic counts recorded traffic movements in one hour increments over a two week period from 15-29 August 2011. The traffic counts recorded number of vehicles by vehicle classification and vehicle speed. The results are available in **Appendix B.**

Mid-block counts were collected at the following eight locations:

- Appin Road, north of Southern Freeway.
- Mount Ousley Road, 1km south of New Pleasant Road.
- Southern Freeway, between Mount Kiera Road and Gipps Road.
- Southern Freeway, 400 metres north of The Avenue.
- Masters Road, 100 meters west of Springhill Road.
- Springhill Road, 100 metre west of Bridge Street.
- Bellambi Lane, 200 metres west of Northern Distributor.
- Northern Distributor, between Flinders Street Ramps and Southern Freeway Ramps.

Table 3.2 shows a summary of the mid-block counts at the respective locations for an average weekday and an average weekend.

Table 3.2 Summary of Mid-Block Counts

Location	Direction	Average Weekday		Average Weekend	
		Monitored 2011 Traffic Volumes - Total	% HV	Monitored 2011 Traffic Volumes - Total	% HV
Appin Road	From PKCT	5336	14%	4305	6%
	To PKCT	5571	14%	4245	7%
	Two-Way	10907	14%	8550	7%
Mount Ousley Road	From PKCT	22718	10%	20351	4%
	To PKCT	23694	10%	19916	4%
	Two-Way	46412	10%	40267	4%
Southern Freeway (North)	From PKCT	39332	10%	29877	5%
	To PKCT	38585	13%	24510	5%
	Two-Way	77917	11%	54387	5%
Southern Freeway (South)	From PKCT	39386	11%	30773	4%
	To PKCT	39021	10%	28947	4%
	Two-Way	78407	10%	59719	4%
Masters Road	From PKCT	16186	12%	11095	6%
	To PKCT	12243	14%	9304	6%
	Two-Way	28429	13%	20399	0%
Springhill Road	From PKCT	17716	9%	11771	5%
	To PKCT	18055	8%	12488	5%
	Two-Way	35771	8%	24259	0%
Bellambi Lane	From PKCT	2597	9%	1885	3%
	To PKCT	3041	8%	2293	3%
	Two-Way	5638	8%	4178	3%
Northern Distributor	From PKCT	27709	5%	20314	2%
	To PKCT	26520	8%	20145	5%
	Two-Way	54229	6%	40458	3%

3.3 INTERSECTION TURNING MOVEMENTS - 2011

The intersection counts were recorded from 6am-9am and from 3.30pm-6.30pm on Thursday 25 August 2011. The counts recorded vehicle classifications and pedestrian movements in 15 minute intervals. The results are available in **Appendix C**.

The intersection counts were taken at the following three locations:

- Springhill Road/Masters Road.
- Springhill Road/Port Kembla Road.
- Springhill Road/Tom Thumb Road.

Figure 3.2 to Figure 3.4 summarises the peak hour traffic movements through these intersections.

Figure 3.2 Springhill Road/Masters Road AM and PM Peak Intersection Counts

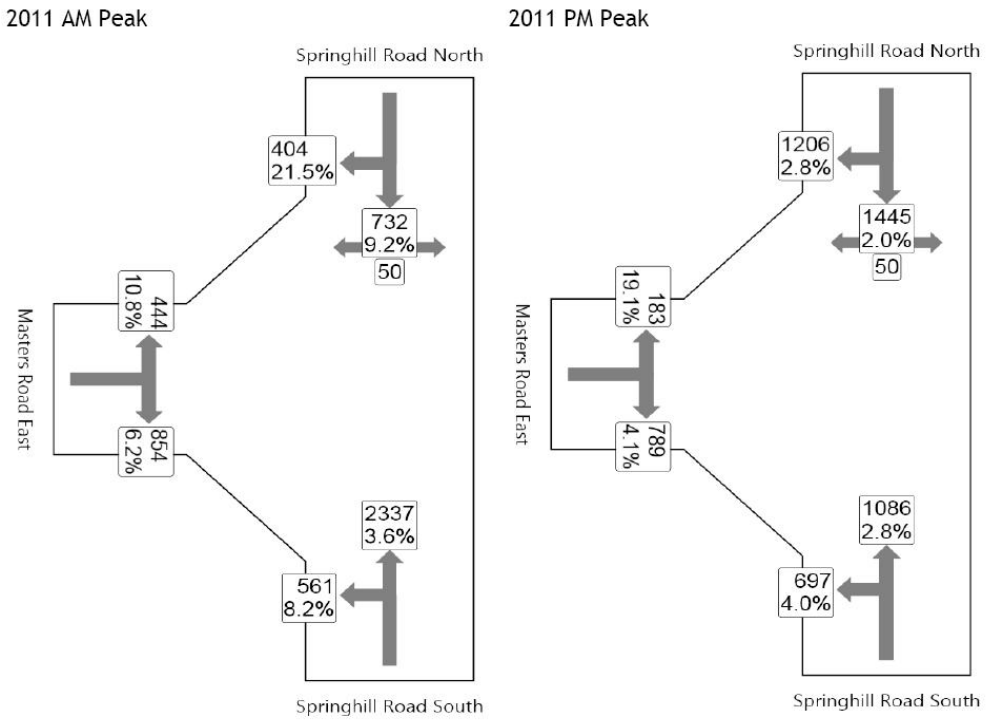


Figure 3.3 Springhill Road/Port Kembla Road AM and PM Peak Intersection Counts

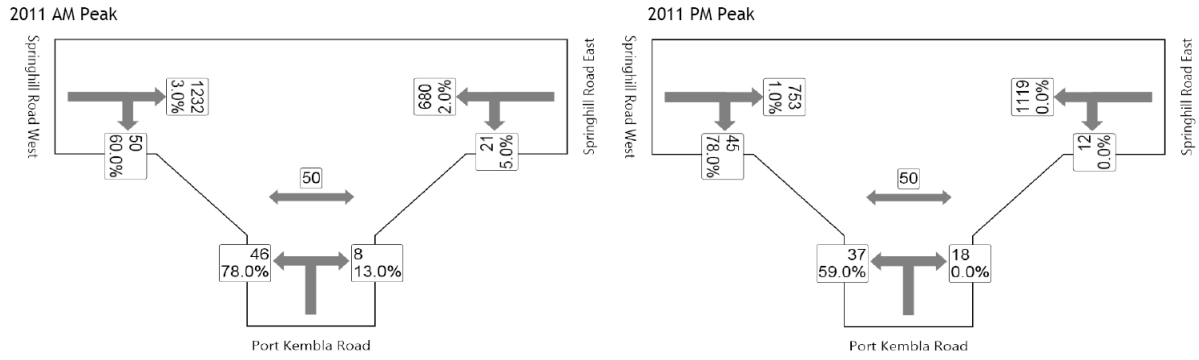
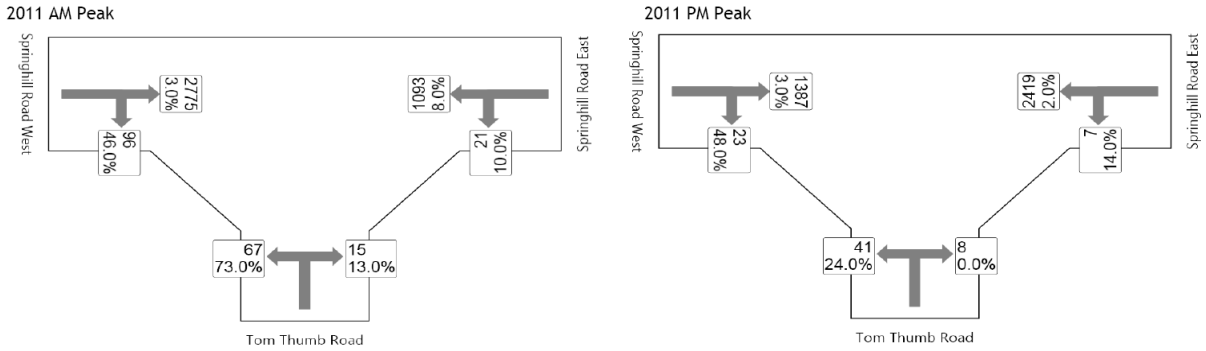


Figure 3.4 Springhill Road/ Tom Thumb Road AM and PM Peak Intersection Counts



4 MONITORING PHASE

This chapter documents the road network and development changes since 2008 when the EA2008 report was undertaken. It also provides a summary of the analysis of current traffic operations based on traffic data collected during the monitoring period.

4.1 ROAD NETWORK CHANGES

4.1.1 Road Network Changes since 2008

Since the EA2008 report, the only major change to the road network was the completion of the Northern Distributor extension north of Bellambi Lane in 2009. This new four lane divided road provides improved travel times and access to the northern suburbs of Wollongong and reduced the number of vehicles on Bellambi Lane which is part of the haulage route from Gujarat NRE No.1 Mine to PKCT.

4.1.2 Coal Truck Delivery Route Changes since 2008

Coal trucks are now permitted to use Springhill Road between Masters Road and Tom Thumb Road for deliveries 24 hours a day, 7 days a week and will not require access through Bluescope Steel site to PKCT.

4.1.3 Intersection Changes since 2008

There have been no physical changes to the three key intersections analysed in this report since 2008.

4.1.4 Development Changes since 2008

Changes in major developments since 2008 included the following:

- Port Kembla Port Corporation submitted an application for the expansion of the General Cargo Handling Facility. It is understood that approval of the proposal has been granted with the associated additional traffic in operation.
- Grain Corp received approval 20 September 2011 to increase the number of grain trucks delivering grain to the PKGT to 192 grain trucks per day. However, it should be noted that the monitoring trial was conducted on the 15th – 29th August 2011. Therefore the traffic surveys do not include the additional Grain Corp grain trucks.

4.2 OPERATION PERFORMANCE

4.2.1 Road Capacity

The capacity of major streets within an urban area can be based on an assessment of their operating Level of Service. Level of Service is defined by Austroads (1988) as a qualitative measure of the effects of a number of features, which include speed and travel time, traffic interruptions, freedom to manoeuvre, safety, driving comfort and convenience and operating costs.

The carriageway traffic volumes during the monitoring trial period and the corresponding carriageway performance along the road haulage routes is provided in Table 4.1 and Table 4.2.

Table 4.1 Mid-Block Carriageway – AM Peak Hour Level of Service

Location	2011 Monitored						LoS	
	AM Peak							
	to PKCT		From PKCT		Both			
	Veh/hr	% HV	Veh/hr	% HV	Veh/hr	flow	to PKCT	from PKCT
Appin Rd	391	13%	614	8%	1,005	61	C	D
Mount Ousley Rd	2,163	8%	1,769	9%	3,932	55	D	C
Southern Fwy (North)	3,335	12%	4,217	9%	7,552	56	C	D
Southern Fwy (South)	2,968	10%	4,096	8%	7,064	58	D	F
Bellambi Ln	310	8%	179	13%	489	63	A	A
Northern Distributor	2,459	8%	2,374	5%	4,833	51	C	D
Masters Rd	1,328	9%	1,006	13%	2,334	57	A	A
Springhill Rd	1,067	9%	2,584	6%	3,651	71	A	A

The AM peak assessment shows that:

- Appin Road northbound is approaching capacity at a LoS D.
- Mount Ousley Road is approaching capacity for southbound traffic to PKCT.
- Southern Freeway, north of The Avenue, is approaching capacity for the southbound carriageway, and operating at a LoS F for the northbound traffic.
- The newly completed Northern Distributor is operating at a LoS C for southbound traffic and LoS D for the northbound traffic.
- Bellambi Lane, Masters Road and Springhill Road are operating at good level of services in the AM peak.

Table 4.2 Mid-Block Carriageway – PM Peak Hour Level of Service

Location	2011 Monitored						LoS	
	PM Peak							
	to PKCT		From PKCT		Both			
	Veh/hr	% HV	Veh/hr	% HV	Veh/hr	flow	to PKCT	from PKCT
Appin Rd	648	5%	377	9%	1,025	63	D	C
Mount Ousley Rd	2,047	6%	1,802	7%	3,849	53	C	C
Southern Fwy (North)	4,398	12%	3,075	8%	7,473	59	D	C
Southern Fwy (South)	3,722	5%	3,110	8%	6,832	54	E	E
Bellambi Ln	264	9%	243	8%	507	52	A	A
Northern Distributor	2,137	9%	2,603	5%	4,740	55	C	D
Masters Rd	971	9%	1,696	4%	2,667	64	A	A
Springhill Rd	2,067	3%	1,324	8%	3,391	61	A	A

The PM peak assessment shows that:

- Appin Road southbound is approaching capacity at a LoS D.
- Southern Freeway, north of The Avenue, is operating at a LoS E for both southbound and northbound traffic.
- The newly completed Northern Distributor is operating at a LoS C for southbound traffic and LoS D for the northbound traffic.
- Mount Ousley Road, Bellambi Lane, Masters Road and Springhill Road are operating at good level of services in the PM peak.

4.2.2 Intersection Performance

The intersection operating performance was assessed using the SIDRA 5.1 software package to determine the degree of saturation (DoS), average delay (AVD) in seconds and level of service (LoS) at each intersection. The SIDRA 5.1 program provides LoS criteria tables for various intersection types. The key indicator of intersection performance is LoS, where results are placed on a continuum from 'A' to 'F', as shown in Table 4.3 below.

Table 4.3 Intersection Level of Service

LoS	Traffic Signal / Roundabout	Give Way / Stop Sign / T-Junction control
A	Good operation	Good operation
B	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	Satisfactory	Satisfactory, but accident study required
D	Operating near capacity	Near capacity & accident study required
E	At capacity, at signals incidents will cause excessive delays.	At capacity, requires other control mode
F	Unsatisfactory and requires additional capacity, Roundabouts require other control mode	At capacity, requires other control mode

The AVD provides a measure of the operational performance of an intersection as indicated below, which relates AVD to LOS. The AVD's should be taken as a guide only as longer delays could be tolerated in some locations (i.e. inner city conditions) and on some roads (i.e. minor side street intersecting with a major arterial route).

For traffic signals, the average delay over all movements should be taken. For roundabouts and priority control intersections (STOP or GIVE WAY sign control) the critical movement for LoS assessment should be the movement with the highest AVD.

Table 4.4 Intersection Average Delay (AVD)

LoS	AVD per Vehicles (seconds/vehicle)
A	Less than 14
B	15 to 28
C	29 to 42
D	43 to 56
E	57 to 70
F	>70

The DoS is another measure of the operational performance of individual intersections. For intersections controlled by traffic signals both queue length and delay increase rapidly as DoS approaches 1. It is common practice to aim to keep DoS to less than 0.9. DoS up to 0.8 generally represents satisfactory intersection operation; when DoS exceeds 0.9 the junction is considered to be approaching capacity, queues usually occur and mitigation is usually required.

As shown in Table 4.5, the critical intersections along Springhill Road operated satisfactorily during the monitoring trial period with the increased coal truck numbers. Masters Road/Springhill Road performed at an overall LoS C during both peaks with average delays of less than 40 seconds. Springhill Road/Port Kembla Road and Springhill Road/Tom Thumb Road operated at LoS A and LoS B respectively in both peaks. Full SIDRA results are attached in **Appendix D.**

Table 4.5 SIDRA Summary of Results

Intersection	Scenario	Degree of Saturation	Average Vehicle Delay (s)	Level of Service	Queue Length (m)
Masters Rd/Springhill Rd	AM Peak	0.909	37.4	C	323
	PM Peak	0.828	32.8	C	156
Springhill Rd/Port Kembla Rd	AM Peak	0.322	5.6	A	29
	PM Peak	0.484	8.7	A	50
Springhill Rd/Tom Thumb Rd	AM Peak	0.846	17.6	B	223
	PM Peak	0.838	16.9	B	175

5 COMPARISON PHASE

5.1 OVERVIEW

This phase of the project compares the projected traffic volumes from the EA2008 report with the 2011 traffic counts. The EA2008 report had previously projected 2009, 2013 and 2018 background traffic volumes using various assumptions. In order to make comparisons with the actual 2011 traffic volumes collected during the monitoring period, similar assumptions were used from EA2008 report to achieve 2011 projected volumes.

5.2 EA 2008 TRAFFIC PROJECTIONS

5.2.1 Projected 2011 Background Traffic Movements

The following assumptions, as per Section 5 of the EA2008 report were made to project 2011 background traffic movements:

- Annual average growth rates for Mount Ousley Road and the Southern Freeway were assumed to be 2.0% per annum for light vehicle traffic and 2.7% per annum for heavy vehicle traffic.
- Annual average growth rate for Northern Distributor was assumed to be 5.0% per annum for all traffic. It should be noted that this is based on modelling data provided by Wilkinson Murray which showed significant anomalies in the directional split of traffic both on Bellambi Lane and the Northern Distributor south of Bellambi Lane as documented in the EA2008 report.
- Annual average growth rate for Appin Road for light vehicles was assumed to be 2.1% per annum.
- Annual average growth rates for Masters Road and Springhill Road for light vehicle were assumed to be 0.0% per annum.
- Additional traffic generated from the proposed General Cargo Handling Facility.

5.2.2 Coal Truck Movements

The EA report predicted the number of trucks for future road receivals based on the rate of 4mtpa, 5mtpa and 10mtpa scenarios. In order to be consistent with the monitoring trial period, the number of trucks required to transport coal to PKCT at a rate of 6.9mtpa has been estimated based on the assumptions documented in Section 6 of the EA2008 report. Table 5.1 presents the number coal truck movements predicted for each road section.

Table 5.1 Predicted Coal Truck Movements

Location	Direction	Predicted 2011 Coal Trucks to meet 6.9mtpa	
		Average Weekday	Average Weekend
Appin Road & Mount Ousley Road	From PKCT	319	285
	To PKCT	319	285
	Two-Way	638	570
Southern Freeway, Masters Road & Springhill Road	From PKCT	619	484
	To PKCT	619	484
	Two-Way	1238	968
Bellambi Lane & Northern Distributor	From PKCT	300	199
	To PKCT	300	199
	Two-Way	600	398

5.3 COMPARISON ANALYSIS

Following the establishment of the 2011 projected traffic volumes based on EA2008 report assumptions, a comparison analysis was undertaken to determine the robustness of the assumptions made during the EA2008 assessment. This was undertaken by comparing the traffic profiles for each mid-block location for an average weekday and average weekend, and their LoS during the AM and PM peak period.

5.3.1 Road Capacity

Table 5.2 and Table 5.2 show the LoS for each road section based on the 2011 monitored and projected peak volumes. The comparison of the AM peak performances indicated that:

- Appin Road, Southern Freeway (North), Bellambi Lane, Masters Road and Springhill Road performed at similar LoS for both the 2011 actual and projected volumes.
- Mount Ousley Road travelling from PKCT performed better at a LoS C for 2011 existing conditions as compared to LoS D based on predicted volumes.
- Southern Freeway (South) travelling to PKCT performed at a LoS D for 2011 existing conditions as compared to a predicted LoS E in the EA2008 assessment.
- Northern Distributor travelling from PKCT performed at a LoS D under 2011 existing conditions as compared to a predicted LoS B in the EA2008 assessment. This is due to the lower volumes predicted by the RTA on the Northern Distributor before it was opened in 2009 as documented in Section 5.2.1.

Table 5.2 Mid-Block Carriageway – AM Peak Level of Service Comparison

Location	AM Peak Comparison			
	2011 Monitored Peak Volumes		Projected 2011 Peak Volumes	
	To PKCT	From PKCT	To PKCT	To PKCT
Appin Rd	C	D	C	D
Mount Ousley Rd	D	C	D	D
Southern Fwy (North)	C	D	C	D
Southern Fwy (South)	D	F	E	F
Bellambi Ln	A	A	A	A
Northern Distributor	C	D	C	B
Masters Rd	A	A	A	A
Springhill Rd	A	A	A	A

The comparison of the PM peak performances indicated that:

- Appin Road, Mount Ousley Road, Bellambi Lane, Masters Road and Springhill Road performed at similar LoS for both sets of 2011 actual and projected volumes.
- Southern Freeway (North) travelling to PKCT performed at a LoS D under 2011 existing conditions as compared to a predicted LoS C in the EA2008 assessment. This is due to the higher PM peak volumes recorded during the traffic surveys as compared to predicted volumes.
- Northern Distributor travelling to and from PKCT performed at a LoS C and LoS D respectively under 2011 existing conditions. This is lower as compared to a predicted LoS B in the EA2008 assessment for both directions. This is due to the lower volumes predicted by the RTA on the Northern Distributor before it was opened in 2009 as documented in Section 5.2.1.

Table 5.3 Mid-Block Carriageway – PM Peak Level of Service Comparison

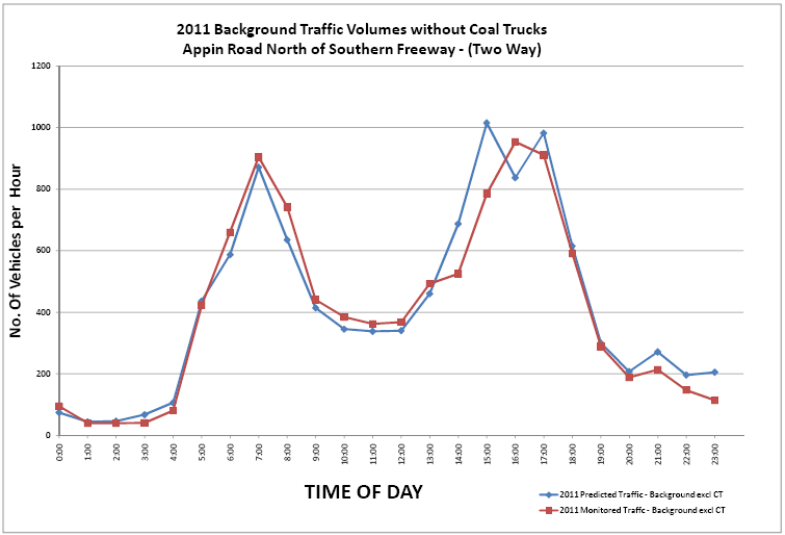
Location	PM Peak Comparison			
	2011 Monitored Peak Volumes		Projected 2011 Peak Volumes	
	To PKCT	From PKCT	To PKCT	to PKCT
Appin Rd	D	C	D	C
Mount Ousley Rd	C	C	C	C
Southern Fwy (North)	D	C	C	C
Southern Fwy (South)	E	E	F	E
Bellambi Ln	A	A	A	A
Northern Distributor	C	D	B	B
Masters Rd	A	A	A	A
Springhill Rd	A	A	A	A

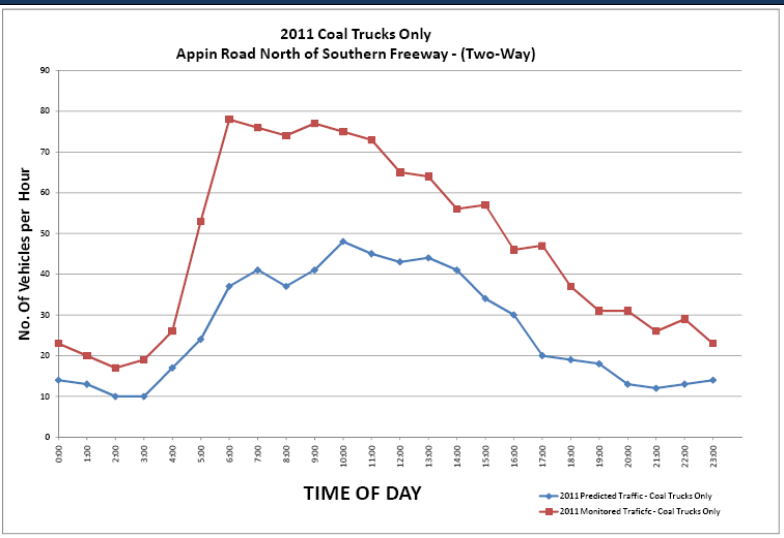
5.3.2 Traffic Profiles

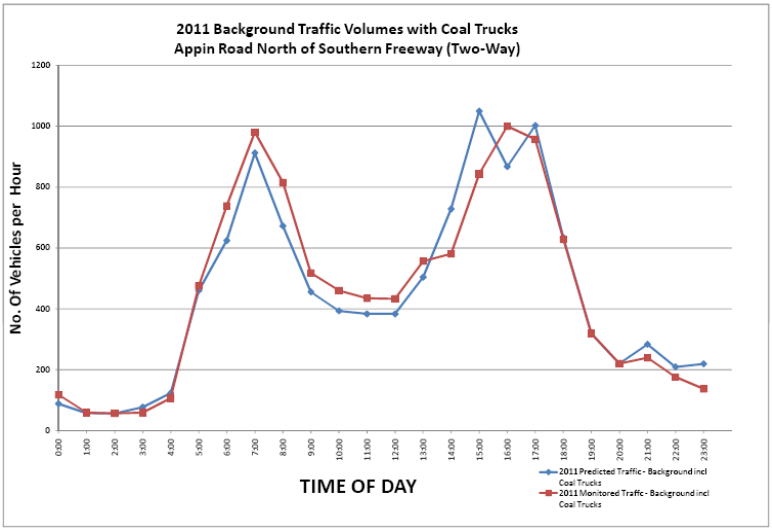
The following sections show the comparisons of traffic profiles for each road section surveyed for an average weekday and an average weekend period. Each section shows the following profiles for the total two-way volumes:

- 2011 Background Traffic Volumes excluding Coal Trucks.
- 2011 Coal Truck Movements Only.
- 2011 Background Traffic Volumes including Coal Truck Movements.
- For the traffic profile graphs presented below, it is to note that the following legend:
- Blue line represents 2011 traffic volumes predicted based on EA2008 assumptions.
- Maroon line represents 2011 traffic volumes collected during the monitoring period.
- The full traffic profiles for each road section are presented in **Appendix E**.

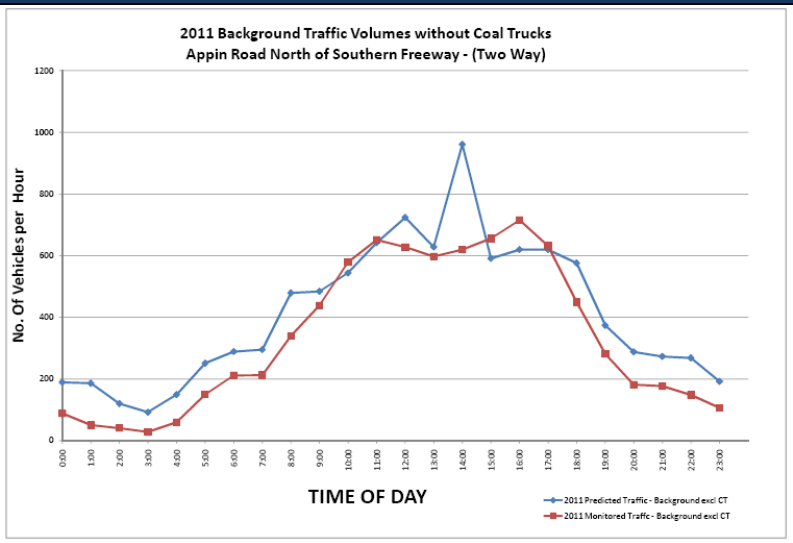
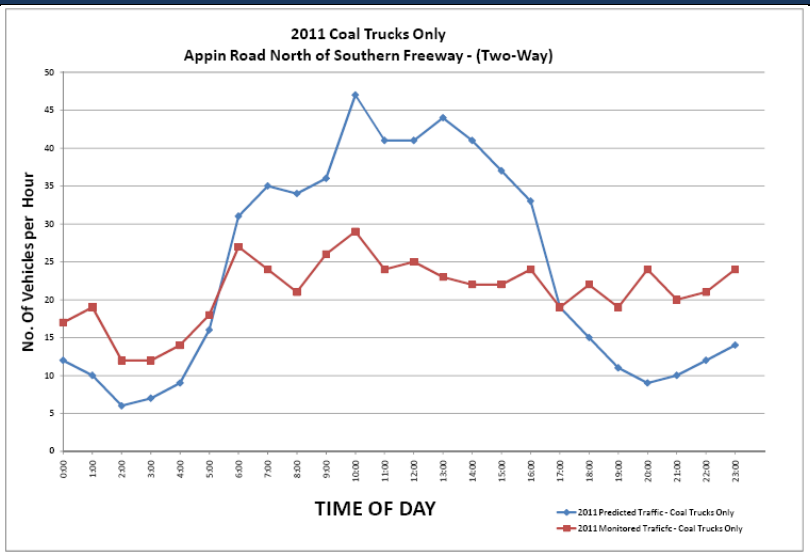
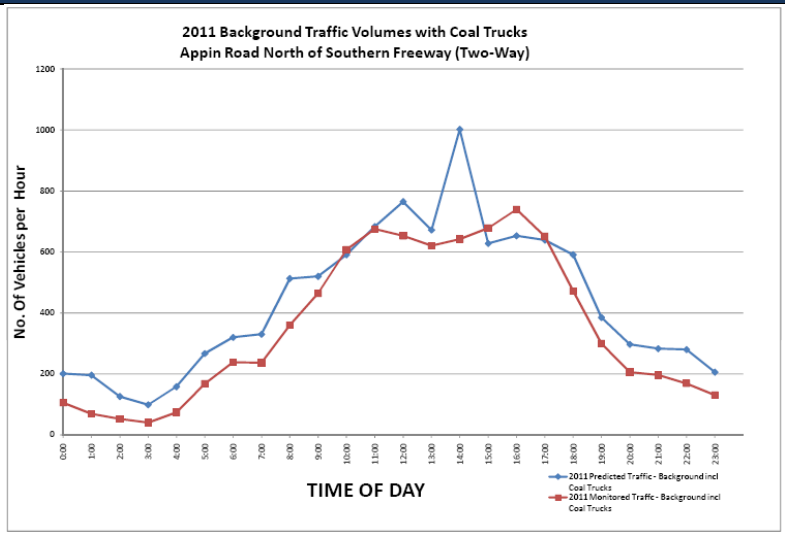
Two Way Average Weekday 24 hr Traffic Profile – Appin Road

Avg Weekday 2011 Background Traffic Vol. without Coal Trucks	Comments
	**Traffic Profile**: Current traffic profile surveyed is similar to the profile predicted based on EA2008 assumptions. **Two-Way Predicted Traffic:** 10,078 **Two-Way Actual Traffic:** 9,784 **ADT Difference**: -3%

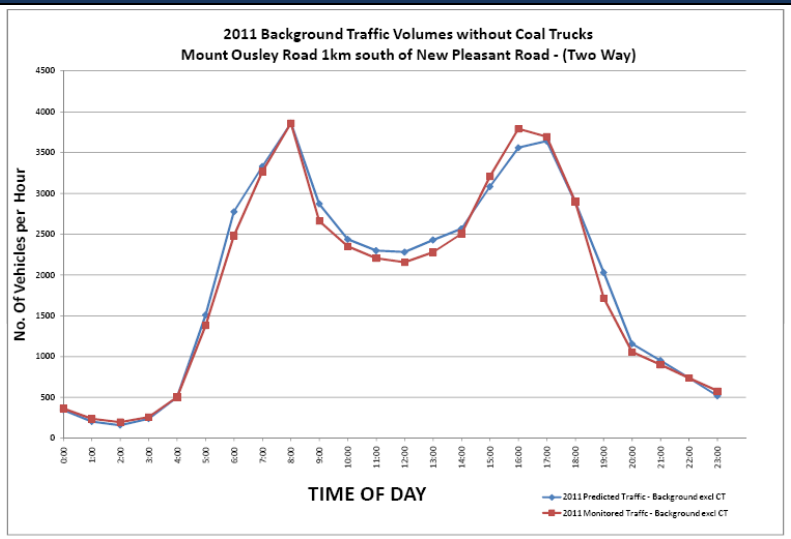
Avg Weekday 2011 Coal Truck Movements Only	Comments
	**Traffic Profile**: Current coal trucks profile similar to predicted, peaking during the 6am – 7am hour. It is noted that there were more coal trucks deliveries than predicted from the Westcliff and Appin Collieries to meet the road receivals rate of 6.9 mtpa.

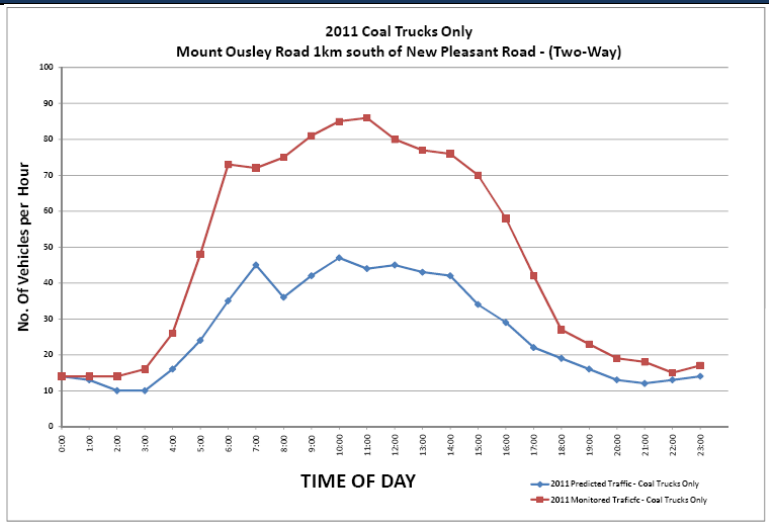
Avg Weekday 2011 Background Traffic Vol. with Coal Trucks	Comments
	**Two-Way Predicted Traffic:** 10,716 **Two-Way Actual Traffic:** 10,907 **ADT Difference**: +2% **Conclusion:** Similar profiles for both the actual and projected 2011 volumes. Current LoS under current conditions reflect the predicted LoS based on the projected traffic volumes.

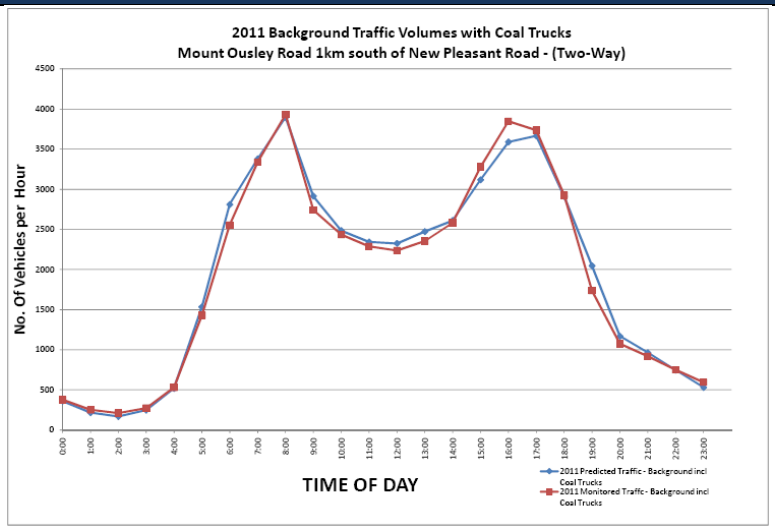
Two Way Average Weekend 24 hr Traffic Profile – Appin Road

Avg Weekend 2011 Background Traffic Vol. without Coal Trucks	Comments
	**Traffic Profile**: Background traffic volumes based on surveyed counts are lower than the predicted traffic volumes by 18%. **Two-Way Predicted Traffic:** 9,835 **Two-Way Actual Traffic:** 8,042 **ADT Difference**: -18%
Avg Weekend 2011 Coal Truck Movements Only	**Comments**
	**Traffic Profile**: Additional coal trucks were predicted to deliver coal via Appin Road during the weekends as compared to the monitoring trial period.
Avg Weekend 2011 Background Traffic Vol. with Coal Trucks	**Comments**
	**Two-Way Predicted Traffic:** 10,405 **Two-Way Actual Traffic:** 8,550 **ADT Difference**: -18% **Conclusion:** A higher growth rate was predicted for background traffic growth during the weekend as per EA2008. The coal trucks did not have a significant impact on the 24hr traffic profile.

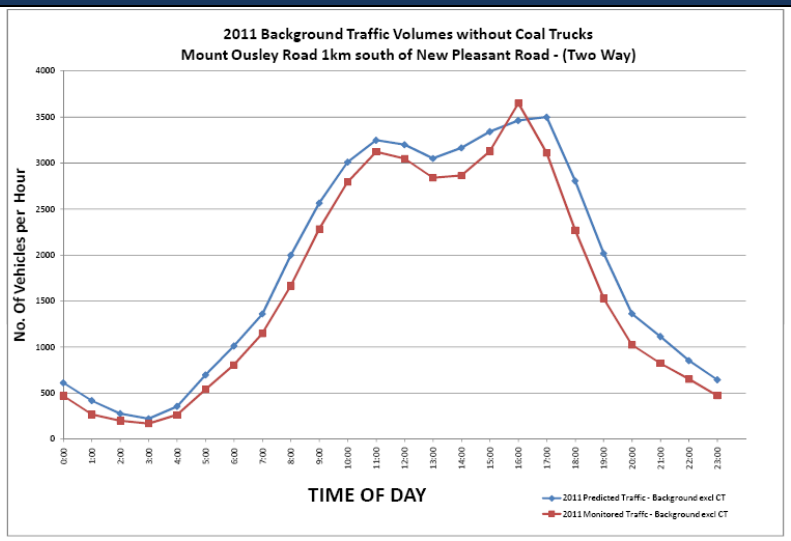
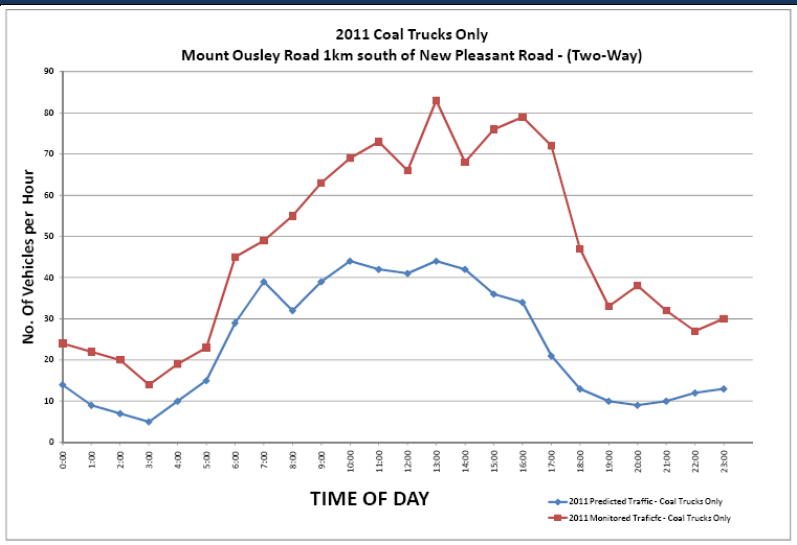
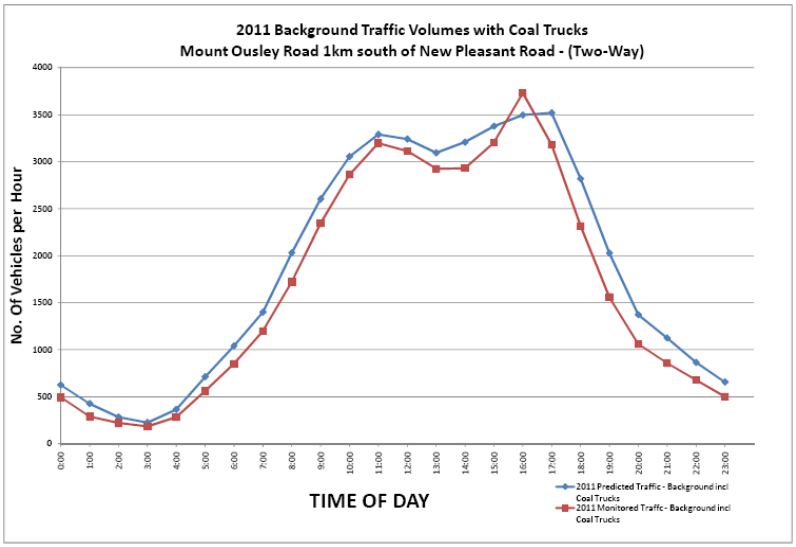
Two Way Average Weekday 24 hr Traffic Profile – Mount Ousley Road

Avg Weekday 2011 Background Traffic Vol. without Coal Trucks	Comments
	**Traffic Profile**: Current traffic profile surveyed is similar to the profile predicted based on EA2008 assumptions. **Two-Way Predicted Traffic:** 46,389 **Two-Way Actual Traffic:** 45,286 **ADT Difference**: -2%

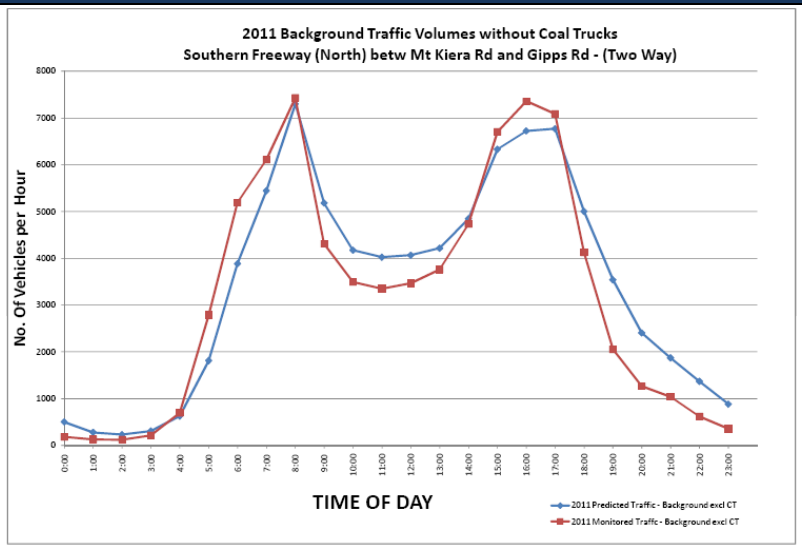
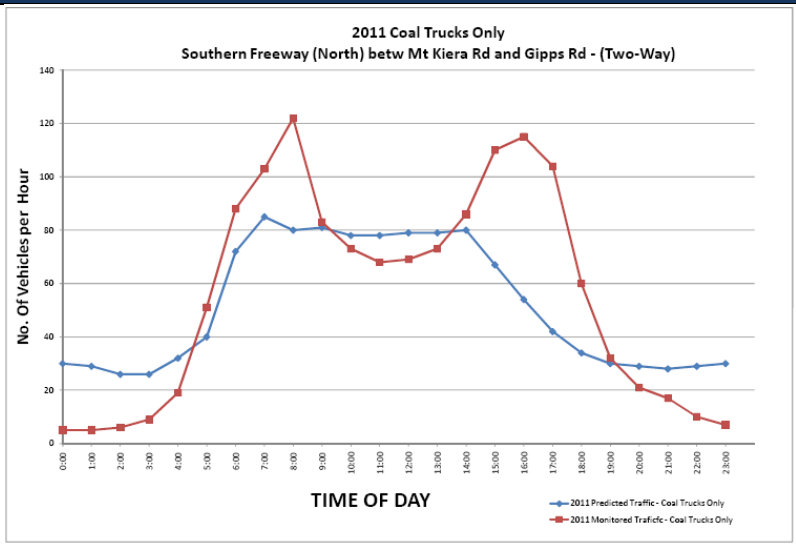
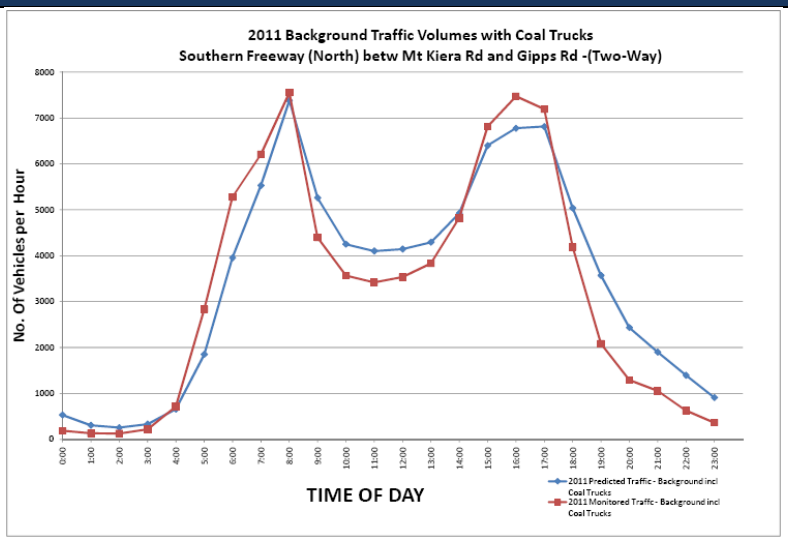
Avg Weekday 2011 Coal Truck Movements Only	Comments
	**Traffic Profile**: Current coal trucks profile similar to predicted, peaking during the 11am – 12pm hour. It is noted that there were more coal trucks deliveries than predicted from the Westcliff and Appin Collieries to meet the road receivals rate of 6.9 mtpa.

Avg Weekday 2011 Background Traffic Vol. with Coal Trucks	Comments
	**Two-Way Predicted Traffic:** 47,027 **Two-Way Actual Traffic:** 46,412 **ADT Difference**: -1% **Conclusion:** Similar profiles for both the actual and projected 2011 volumes. Current LoS under current conditions reflect the predicted LoS based on the projected traffic volumes. The coal trucks did not have a significant impact on the 24hr traffic profile.

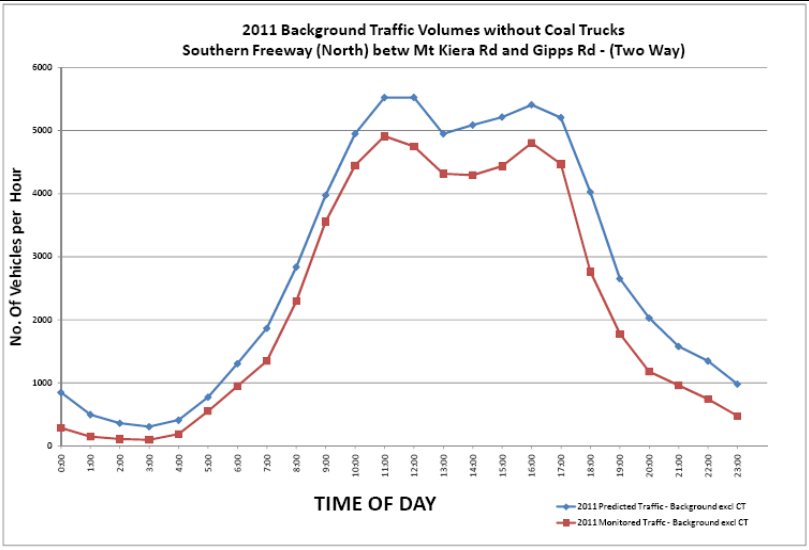
Two Way Average Weekend 24 hr Traffic Profile – Mount Ousley Road

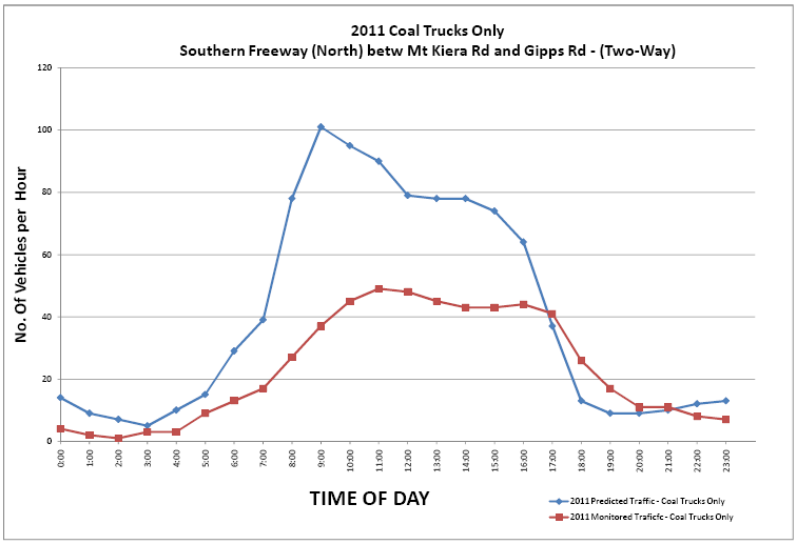
Avg Weekend 2011 Background Traffic Vol. without Coal Trucks	Comments
	**Traffic Profile**: Higher growth rate predicted. Current traffic profile surveyed is similar to the profile predicted based on EA2008 assumptions with the weekend background traffic peaking between 5pm – 6pm. **Two-Way Predicted Traffic:** 44,383 **Two-Way Actual Traffic:** 39,763 **ADT Difference**: -10%
Avg Weekend 2011 Coal Truck Movements Only	**Comments**
	**Traffic Profile**: The coal truck movements profiles show additional coal truck trips on Mount Ousley Road during the monitoring trial period.
Avg Weekend 2011 Background Traffic Vol. with Coal Trucks	**Comments**
	**Two-Way Predicted Traffic:** 44,953 **Two-Way Actual Traffic:** 40,267 **ADT Difference**: -10% **Conclusion:** Similar profiles for both the actual and projected 2011 volumes. The predicted traffic volumes were 10% higher to actual volumes. The coal trucks did not have a significant impact on the 24hr traffic profile.

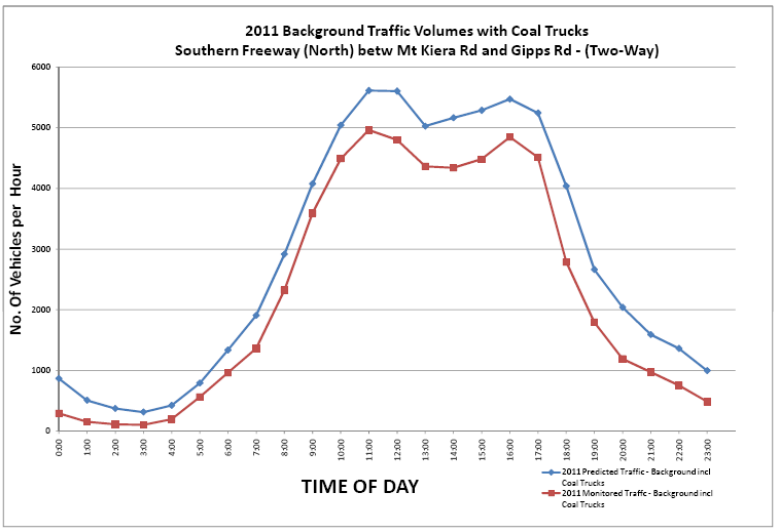
Two Way Average Weekday 24 hr Traffic Profile – Southern Freeway (North)

Avg Weekday 2011 Background Traffic Vol. without Coal Trucks	Comments
	**Traffic Profile**: Higher growth rate predicted. Current traffic profile surveyed is similar to the profile predicted based on EA2008 assumptions with the weekday background traffic peaking between 7am-8am and 4pm-5pm. **Two-Way Predicted Traffic:** 81,783 **Two-Way Actual Traffic:** 76,581 **ADT Difference**: -6%
Avg Weekday 2011 Coal Truck Movements Only	**Comments**
	**Traffic Profile**: The Coal Truck Movements during the monitoring period differ from the profile as predicted in EA2008. The EA2008 predicted that approximately 80 coal trucks are expected on Southern Freeway between 6am to 2pm. Trucks peak at 8am in the morning and 4pm in the afternoon during the monitoring trial period.
Avg Weekday 2011 Background Traffic Vol. with Coal Trucks	**Comments**
	**Two-Way Predicted Traffic:** 83,021 **Two-Way Actual Traffic:** 77,917 **ADT Difference**: -6% **Conclusion:** Similar profiles for both the actual and projected 2011 volumes. The predicted traffic volumes were 6% higher to actual volumes. The coal trucks did not have a significant impact on the 24hr traffic profile.

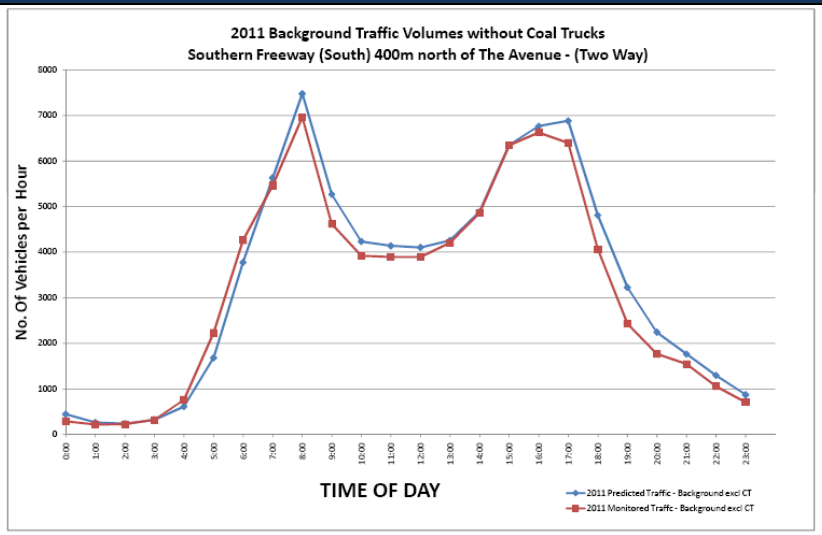
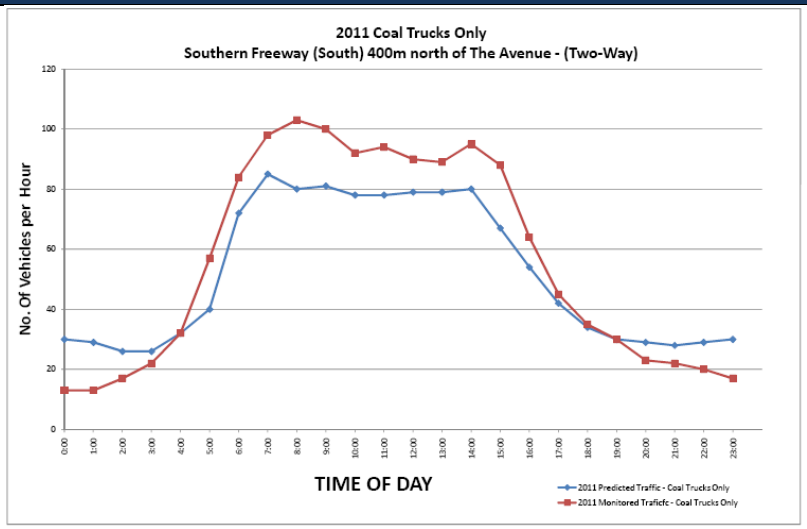
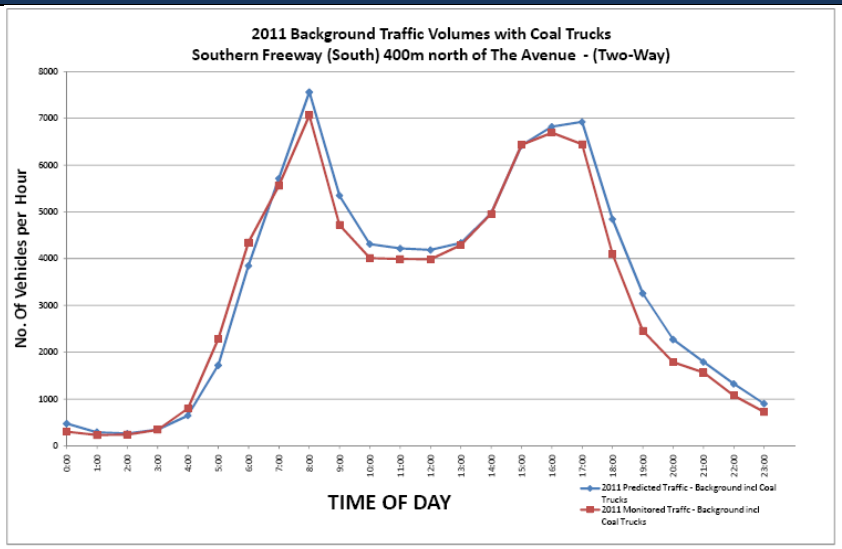
Two Way Average Weekend 24 hr Traffic Profile - Southern Freeway (North)

Avg Weekend 2011 Background Traffic Vol. without Coal Trucks	Comments
	**Traffic Profile**: Two way predicted traffic volumes were 20% higher than actual volumes. Current traffic profile surveyed is similar to the profile predicted based on EA2008 assumptions. **Two-Way Predicted Traffic:** 67,636 **Two-Way Actual Traffic:** 53,833 **ADT Difference**: -20%

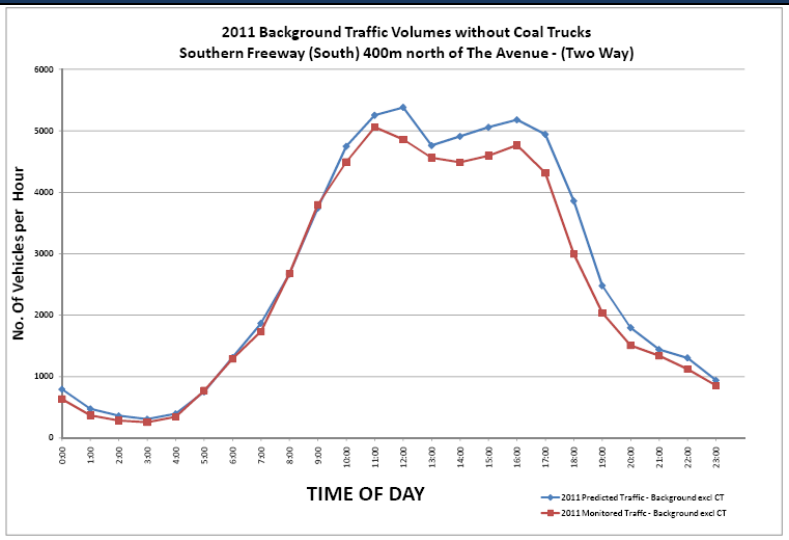
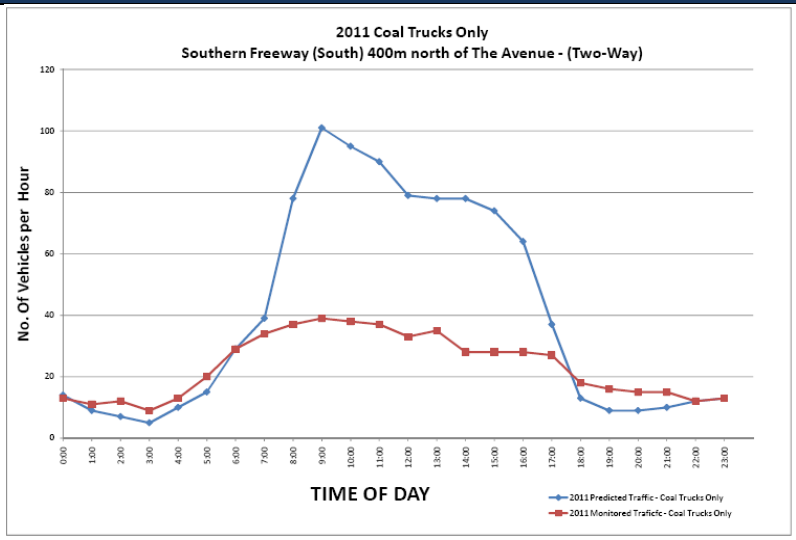
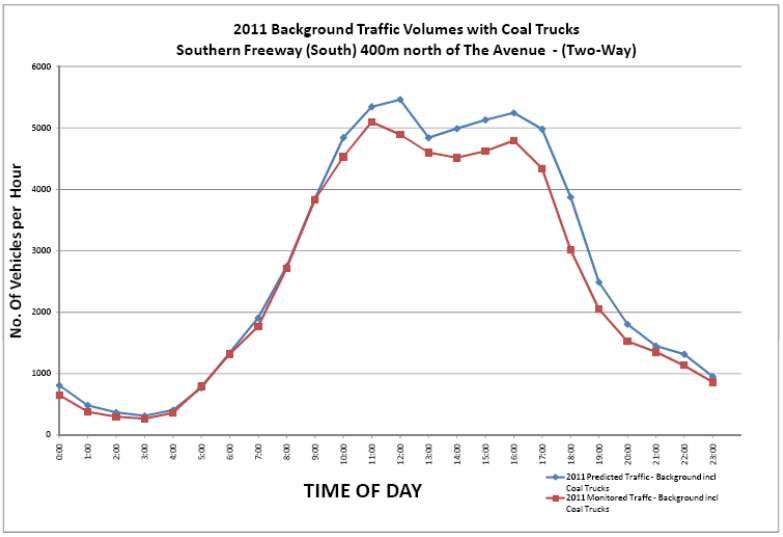
Avg Weekend 2011 Coal Truck Movements Only	Comments
	**Traffic Profile**: The coal truck movements profiles show that there were lesser coal truck trips on Southern Freeway during the monitoring trial period as compared to the predicted movements. This is mainly due to lower truck movements dispatched from the Gujarat NRE mine during the weekend trial period.

Avg Weekend 2011 Background Traffic Vol. with Coal Trucks	Comments
	**Two-Way Predicted Traffic:** 68,604 **Two-Way Actual Traffic:** 54,387 **ADT Difference**: -21% **Conclusion:** Similar profiles for both the actual and projected 2011 volumes. The predicted traffic volumes were 21% higher to actual volumes. The coal trucks did not have a significant impact on the 24hr traffic profile.

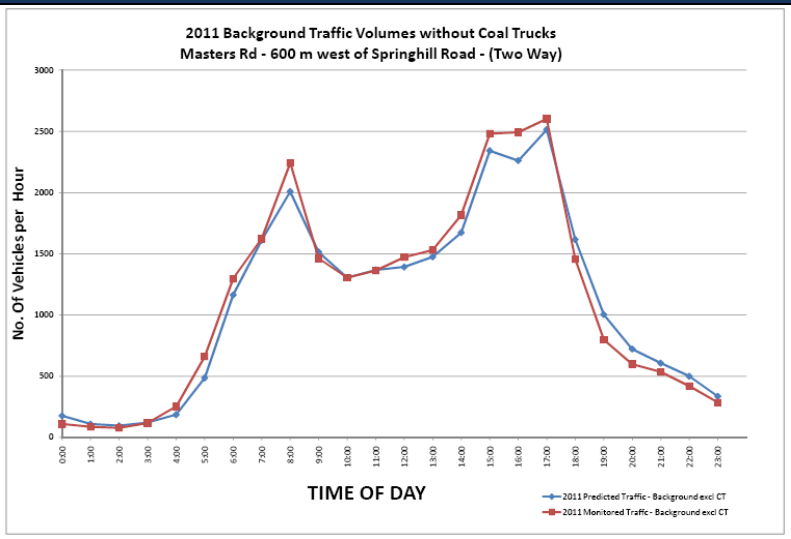
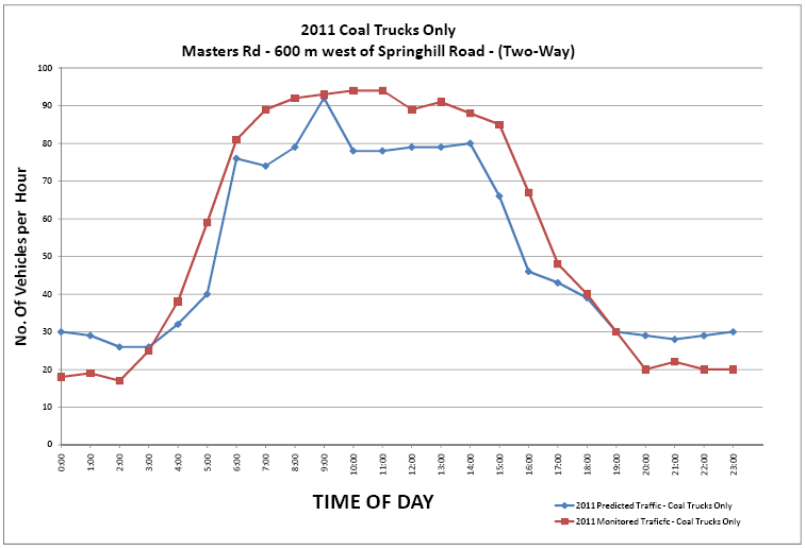
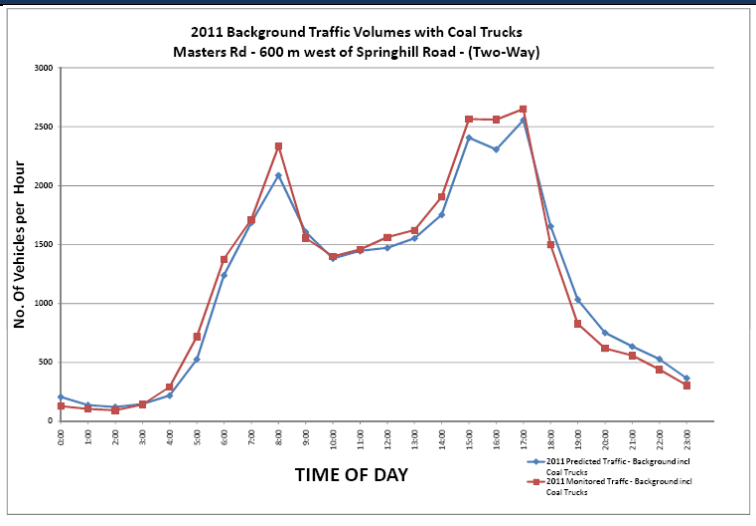
Two Way Average Weekday 24 hr Traffic Profile - Southern Freeway (South)

Avg Weekday 2011 Background Traffic Vol. without Coal Trucks	Comments
	**Traffic Profile**: Two way predicted traffic volumes were 6% higher than actual volumes. Current traffic profile surveyed is similar to the profile predicted based on EA2008 assumptions. **Two-Way Predicted Traffic:** 81,553 **Two-Way Actual Traffic:** 77,064 **ADT Difference**: -6%
Avg Weekday 2011 Coal Truck Movements Only	**Comments**
	**Traffic Profile**: Current coal trucks profile similar to predicted. It is noted that there were more coal trucks deliveries than predicted to meet the road receivals rate of 6.9 mtpa.
Avg Weekday 2011 Background Traffic Vol. with Coal Trucks	**Comments**
	**Two-Way Predicted Traffic:** 82,791 **Two-Way Actual Traffic:** 78,407 **ADT Difference**: -5% **Conclusion:** Similar profiles for both the actual and projected 2011 volumes. The predicted traffic volumes were 5% higher to actual volumes. The coal trucks did not have a significant impact on the 24hr traffic profile.

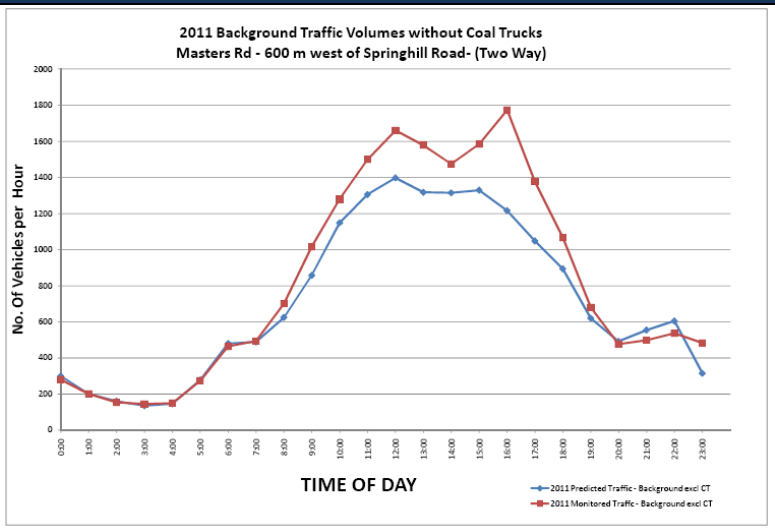
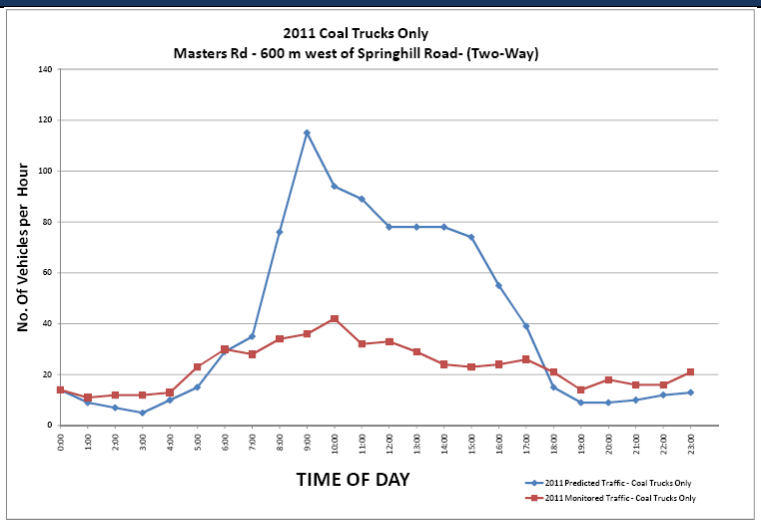
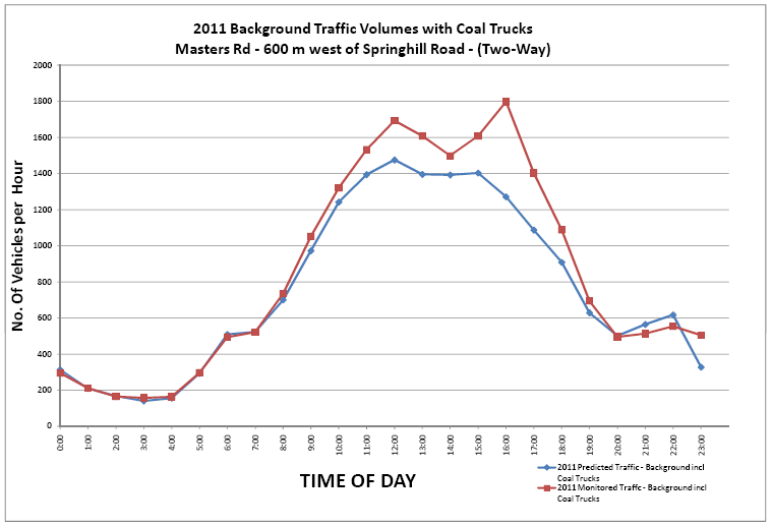
Two Way Average Weekend 24 hr Traffic Profile - - Southern Freeway (South)

Avg Weekend 2011 Background Traffic Vol. without Coal Trucks	Comments
	**Traffic Profile**: Two way predicted traffic volumes were 9% higher than actual volumes. Current traffic profile surveyed is similar to the profile predicted based on EA2008 assumptions. **Two-Way Predicted Traffic:** 64,752 **Two-Way Actual Traffic:** 59,159 **ADT Difference**: -9%
Avg Weekend 2011 Coal Truck Movements Only	**Comments**
	**Traffic Profile**: The coal truck movements profiles show that there were lesser coal truck trips on Southern Freeway during the monitoring trial period as compared to the predicted movements. This is mainly due to lower truck movements dispatched from the Gujarat NRE mine during the weekend trial period.
Avg Weekend 2011 Background Traffic Vol. with Coal Trucks	**Comments**
	**Two-Way Predicted Traffic:** 65,720 **Two-Way Actual Traffic:** 59,719 **ADT Difference**: -9% **Conclusion:** Similar profiles for both the actual and projected 2011 volumes. The predicted traffic volumes were 9% higher to actual volumes. The coal trucks did not have a significant impact on the 24hr traffic profile.

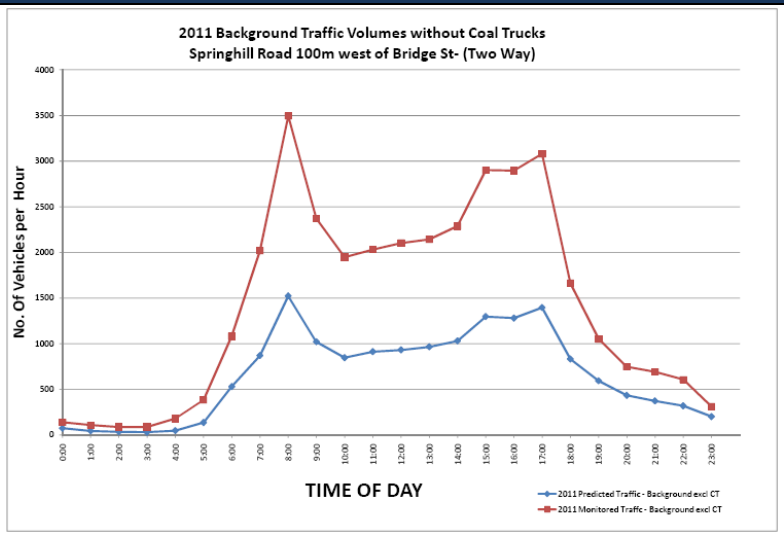
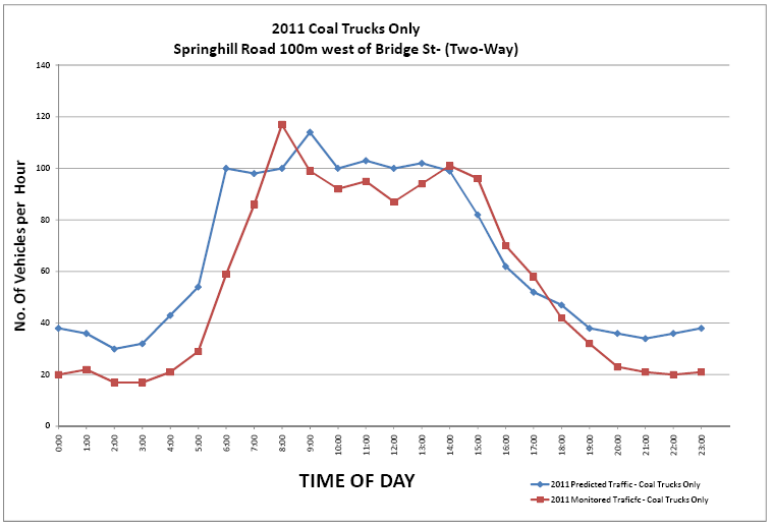
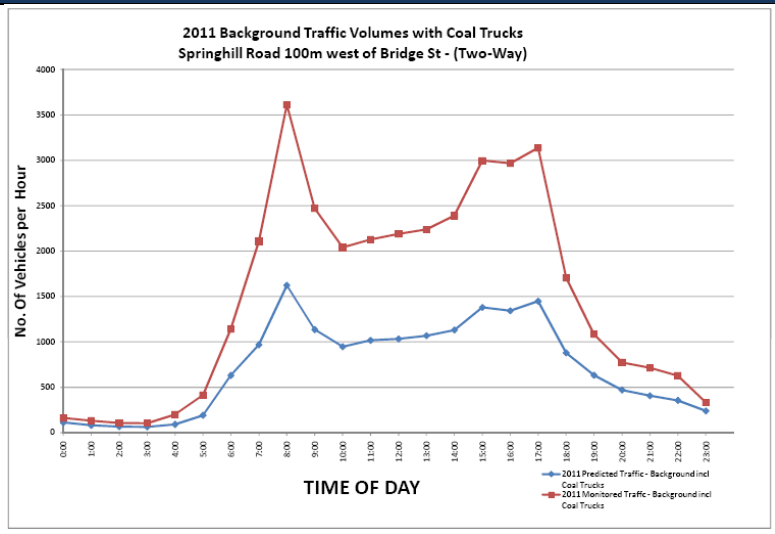
Two Way Average Weekday 24 hr Traffic Profile – Masters Road

Avg Weekday 2011 Background Traffic Vol. without Coal Trucks	Comments
	**Traffic Profile**: Two way monitored traffic volumes were 2% higher than predicted volumes. It should be noted that 0% growth was assumed for Masters Road based on EA2008 assumptions. **Two-Way Predicted Traffic:** 26,590 **Two-Way Actual Traffic:** 27,090 **ADT Difference**: +2%
Avg Weekday 2011 Coal Truck Movements Only	**Comments**
	**Traffic Profile**: Current coal trucks profile similar to predicted. It is noted that there were more coal trucks deliveries than predicted to meet the road receivals rate of 6.9 mtpa.
Avg Weekday 2011 Background Traffic Vol. with Coal Trucks	**Comments**
	**Two-Way Predicted Traffic:** 27,828 **Two-Way Actual Traffic:** 28,429 **ADT Difference**: +2% **Conclusion:** Similar profiles for both the actual and projected 2011 volumes. The actual traffic volumes were 2% higher to predicted volumes. The coal trucks did not have a significant impact on the 24hr traffic profile.

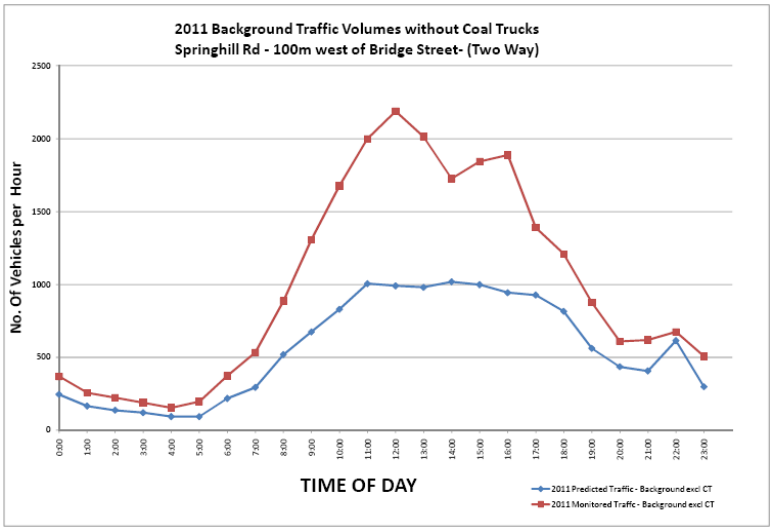
Two Way Average Weekend 24 hr Traffic Profile – Masters Road

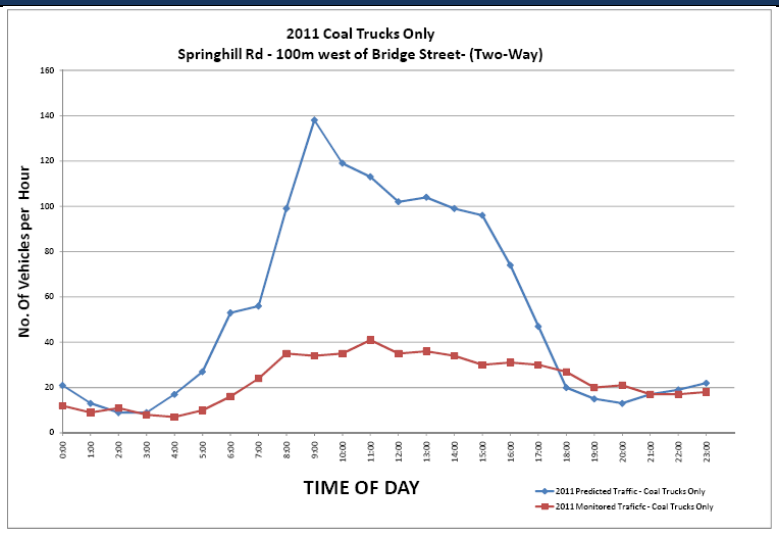
Avg Weekend 2011 Background Traffic Vol. without Coal Trucks	Comments
	**Traffic Profile**: Two way monitored traffic volumes were 15% higher than actual volumes. It should be noted that 0% growth was assumed for Masters Road based on EA2008 assumptions for weekend traffic. **Two-Way Predicted Traffic:** 17,224 **Two-Way Actual Traffic:** 19,847 **ADT Difference**: +15%
Avg Weekend 2011 Coal Truck Movements Only	**Comments**
	**Traffic Profile**: The coal truck movements profiles show that there were lesser coal truck trips on Southern Freeway during the monitoring trial period as compared to the predicted movements. This is mainly due to lower truck movements dispatched from the Gujarat NRE mine during the weekend trial period.
Avg Weekend 2011 Background Traffic Vol. with Coal Trucks	**Comments**
	**Two-Way Predicted Traffic:** 18,192 **Two-Way Actual Traffic:** 20,399 **ADT Difference**: +12% **Conclusion:** The actual traffic volumes were 12% higher to predicted volumes. The coal trucks did not have a significant impact on the 24hr weekend traffic profile.

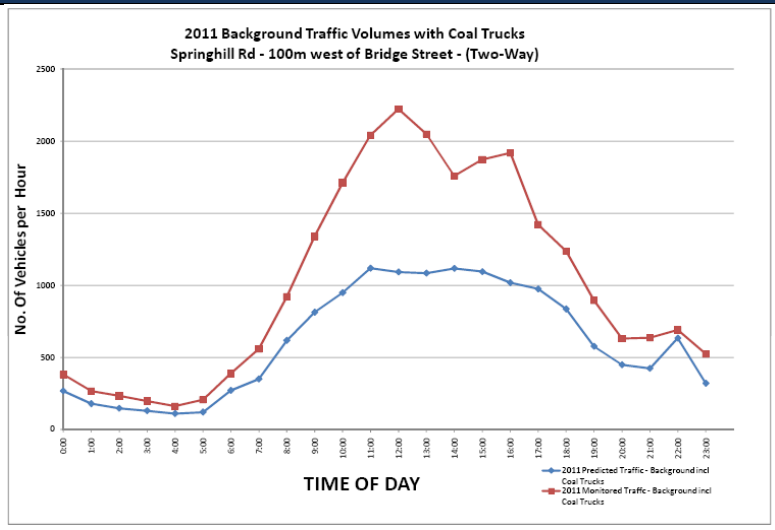
Two Way Average Weekday 24 hr Traffic Profile – Springhill Road

Avg Weekday 2011 Background Traffic Vol. without Coal Trucks	Comments
	**Traffic Profile**: Two way actual traffic volumes were 119% higher than predicted volumes. This was because 0% growth was assumed for Springhill Road EA2008 weekday traffic. The traffic profile (peak hour distribution) is similar to the profile predicted in the EA2008 i.e. the highs and lows occur at about the same times during the day. **Two-Way Predicted Traffic:** 15,731 **Two-Way Actual Traffic:** 34,432 **ADT Difference**: +119%
Avg Weekday 2011 Coal Truck Movements Only	**Comments**
	**Traffic Profile**: Higher truck movements were predicted on Springhill Road as compared to actual coal trucks that participated in the 6.9mtpa monitoring trial period.
Avg Weekday 2011 Background Traffic Vol. with Coal Trucks	**Comments**
	**Two-Way Predicted Traffic:** 17,305 **Two-Way Actual Traffic:** 35,771 **ADT Difference**: +107% **Conclusion:** The actual traffic volumes were 107% higher to predicted volumes. The coal trucks did not have a significant impact on the 24hr weekend traffic profile.

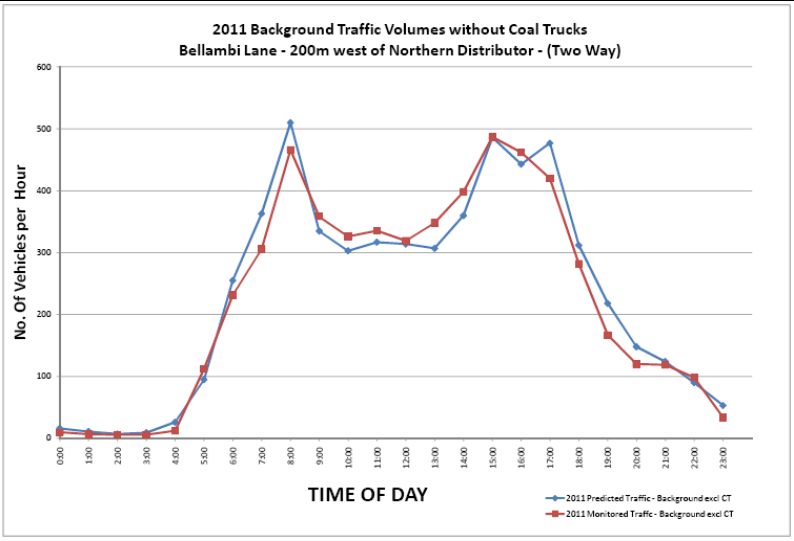
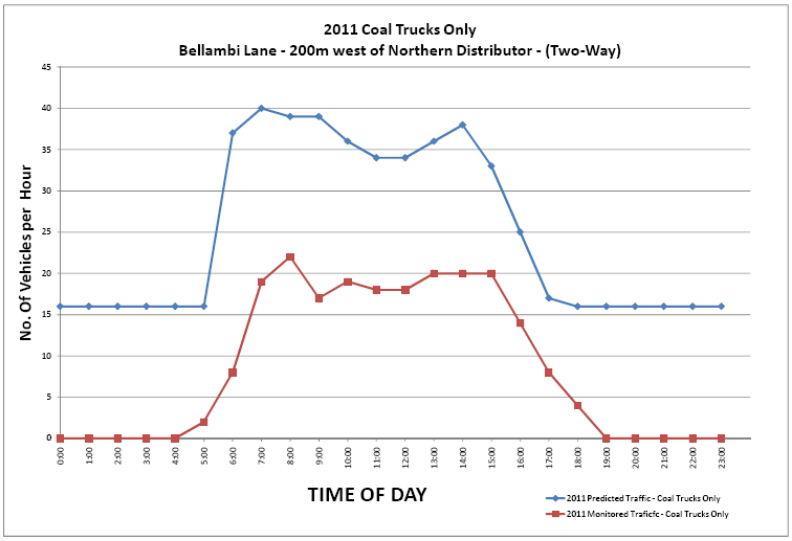
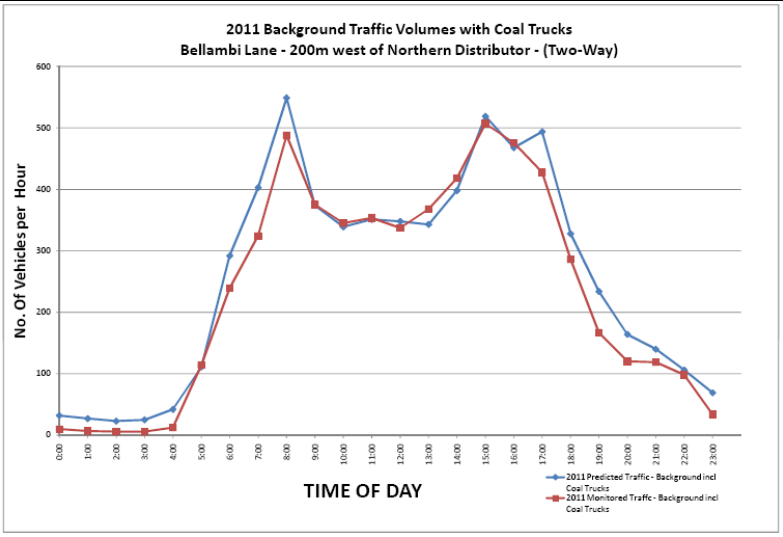
Two Way Average Weekend 24 hr Traffic Profile – Springhill Road

Avg Weekend 2011 Background Traffic Vol. without Coal Trucks	Comments
	**Traffic Profile**: Two way actual traffic volumes were 77% higher than predicted volumes. This was because 0% growth was assumed for Springhill Road EA2008 weekday traffic. The current traffic profile surveyed is similar to the profile predicted in the EA2008 i.e. the highs and lows occur at about the same times during the day.. **Two-Way Predicted Traffic:** 13,377 **Two-Way Actual Traffic:** 23,701 **ADT Difference**: +77%

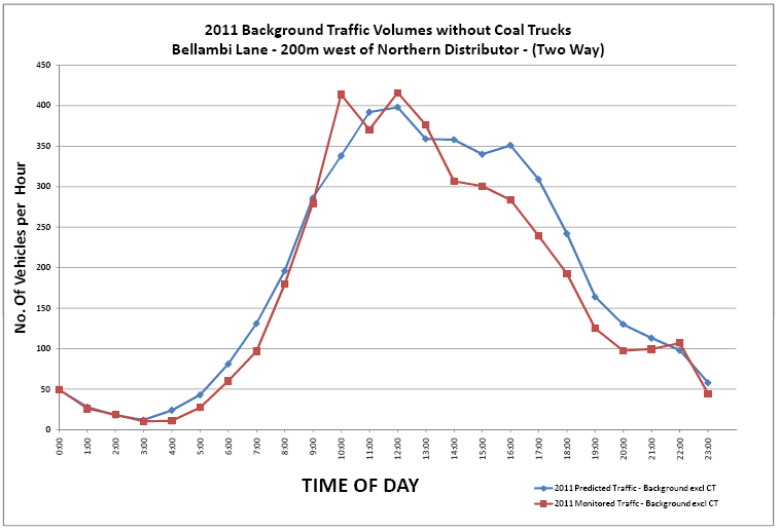
Avg Weekend 2011 Coal Truck Movements Only	Comments
	**Traffic Profile**: Higher truck movements were predicted on Springhill Road as compared to actual coal trucks that participated in the 6.9mtpa monitoring trial period

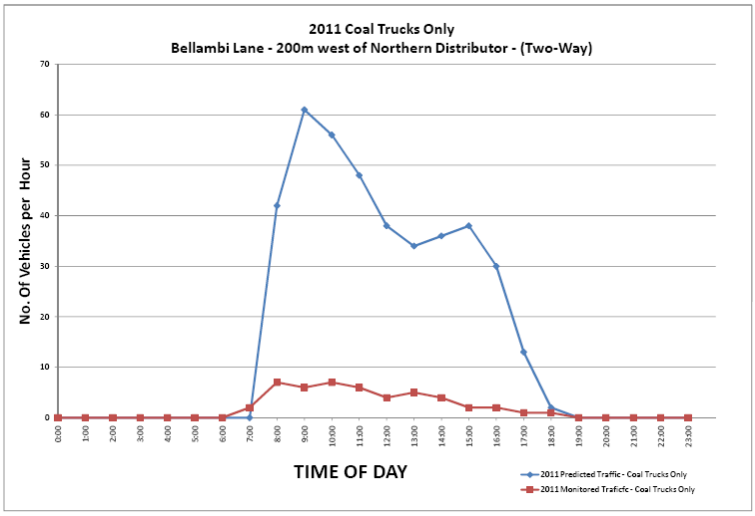
Avg Weekend 2011 Background Traffic Vol. with Coal Trucks	Comments
	**Two-Way Predicted Traffic:** 14,679 **Two-Way Actual Traffic:** 24,259 **ADT Difference**: +65% **Conclusion:** The actual traffic volumes were 65% higher to predicted volumes. The coal trucks did not have a significant impact on the 24hr weekend traffic profile.

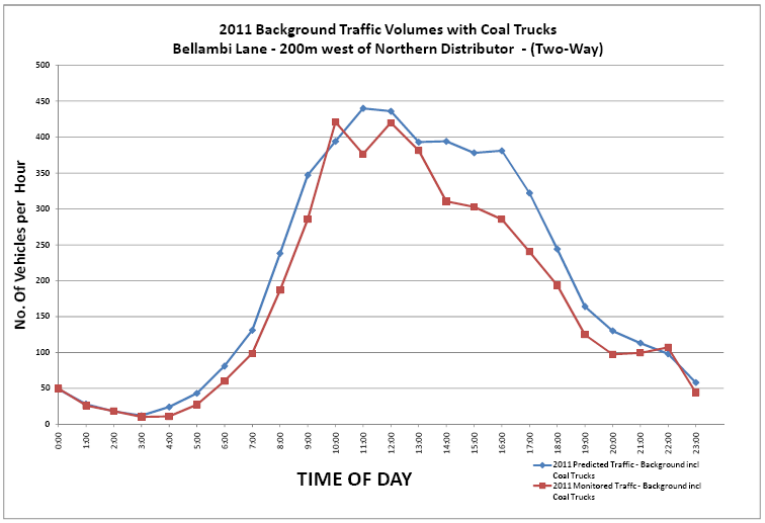
Two Way Average Weekday 24 hr Traffic Profile – Bellambi Lane

Avg Weekday 2011 Background Traffic Vol. without Coal Trucks	Comments
	**Traffic Profile**: Current traffic profile surveyed is similar to the profile predicted based on EA2008 assumptions. **Two-Way Predicted Traffic:** 5,579 **Two-Way Actual Traffic:** 5,429 **ADT Difference**: -3%
Avg Weekday 2011 Coal Truck Movements Only	**Comments**
	**Traffic Profile**: It is noted that there were more predicted coal trucks deliveries from the Gujarat Mine based on EA2008 assessment to meet the 6.9mtpa road receival. No coal was delivered from Gujarat outside the hours between 5am – 6pm.
Avg Weekday 2011 Background Traffic Vol. with Coal Trucks	**Comments**
	**Two-Way Predicted Traffic:** 6,179 **Two-Way Actual Traffic:** 5,638 **ADT Difference**: -9% **Conclusion:** Similar profiles for both the actual and projected 2011 volumes. Current LoS under current conditions reflect the predicted LoS based on the projected traffic volumes.

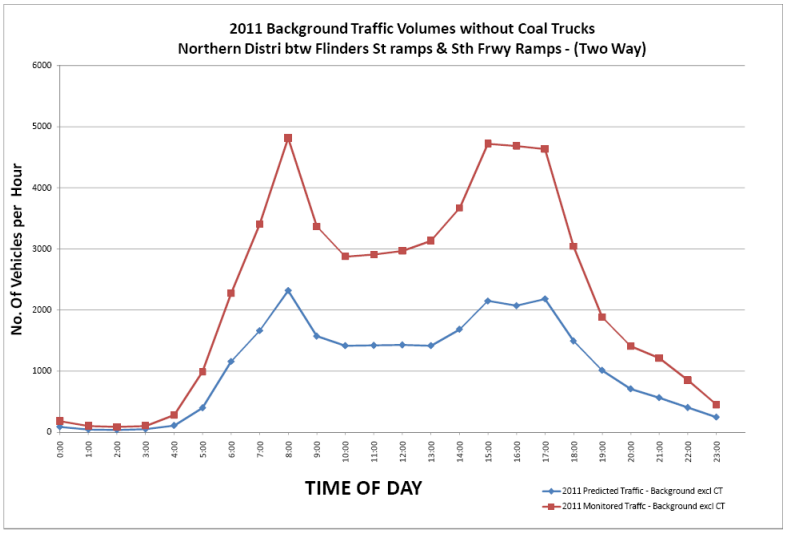
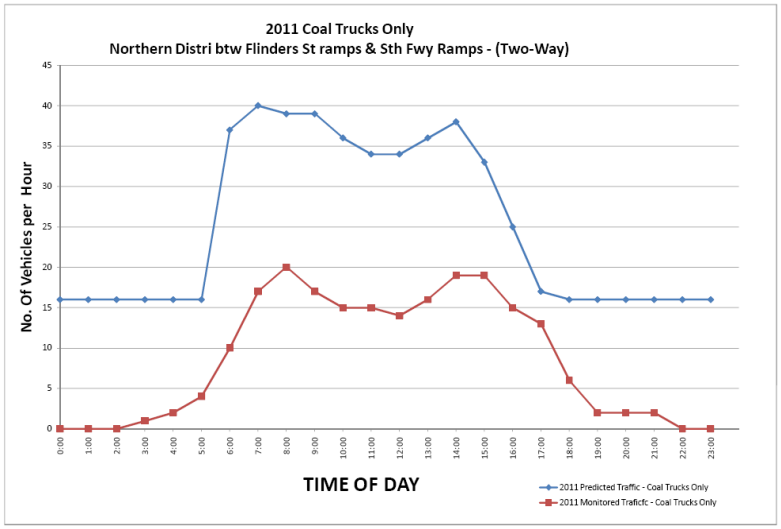
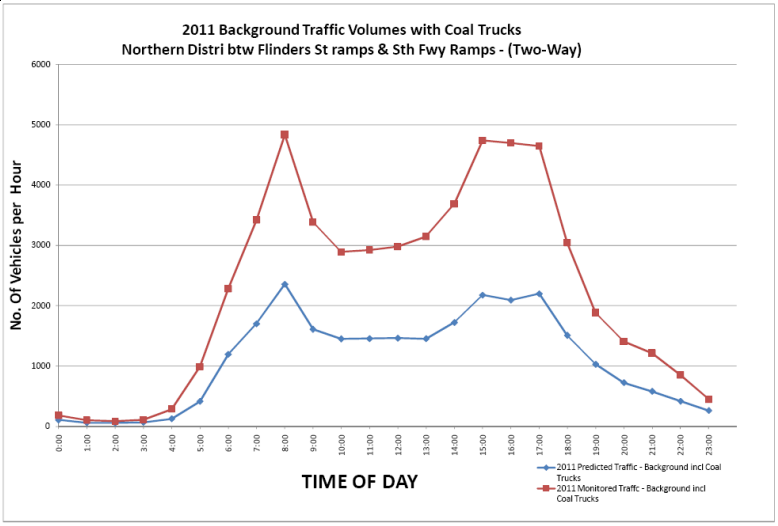
Two Way Average Weekend 24 hr Traffic Profile – Bellambi Lane

Avg Weekend 2011 Background Traffic Vol. Without Coal Trucks	Comments
	**Traffic Profile**: Current traffic profile surveyed is similar to the profile predicted based on EA2008 assumptions. **Two-Way Predicted Traffic:** 4,518 **Two-Way Actual Traffic:** 4,131 **ADT Difference**: -9%

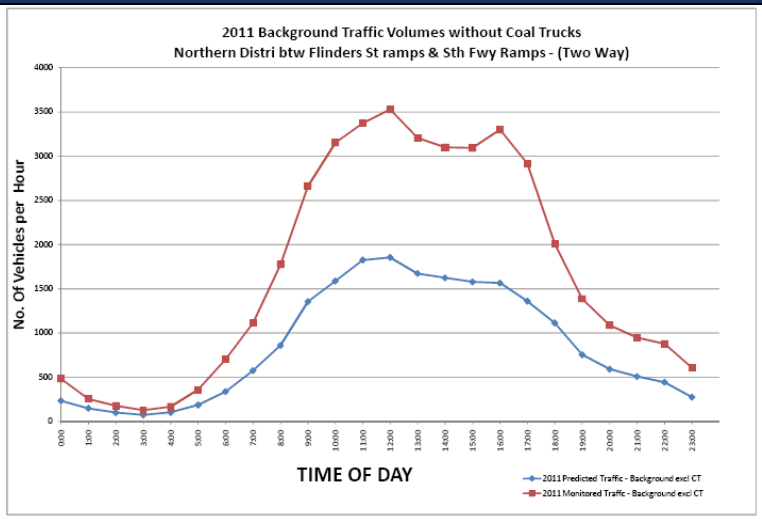
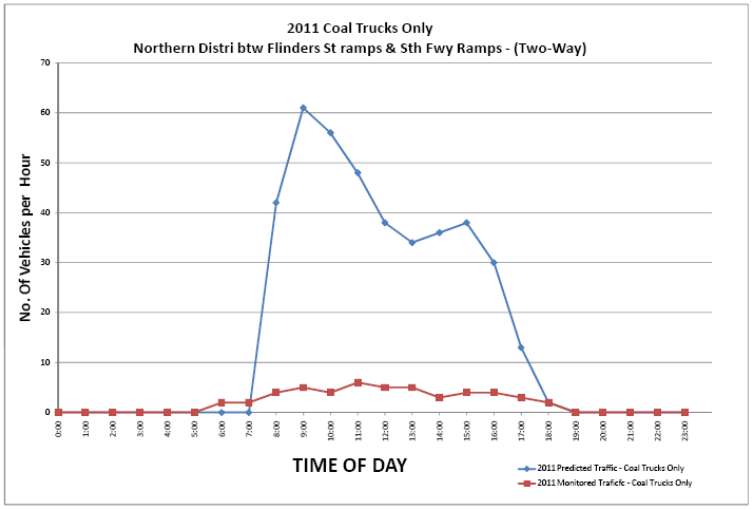
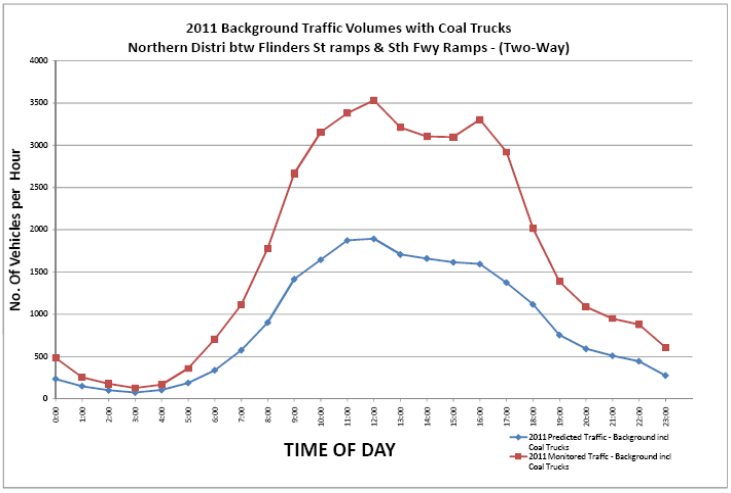
Avg Weekend 2011 Coal Truck Movements Only	Comments
	**Traffic Profile**: It is noted that there were more predicted coal trucks deliveries during the weekend from the Gujarat Mine based on EA2008 assessment to meet the 6.9mtpa road receival. No coal was delivered from Gujarat outside the hours between 5am – 6pm.

Avg Weekend 2011 Background Traffic Vol. with Coal Trucks	Comments
	**Two-Way Predicted Traffic:** 4,916 **Two-Way Actual Traffic:** 4,178 **ADT Difference**: -15% **Conclusion:** The actual traffic volumes were 15% lower than predicted volumes.

Two Way Average Weekday 24 hr Traffic Profile - Northern Distributor

Avg Wkday 2011 Background Traffic Vol. without Coal Trucks	Comments
	**Traffic Profile**: Current traffic profile surveyed is similar to the profile predicted in the EA2008 i.e. the highs and lows occur at roughly the same times during the day. Actual traffic is 111% higher than predicted traffic. This is due to the lower volumes predicted by the RTA on the Northern Distributor before it was opened in 2009. **Two-Way Predicted Traffic:** 25,624 **Two-Way Actual Traffic:** 54,020 **ADT Difference**: +111%
Avg Weekday 2011 Coal Truck Movements Only	**Comments**
	**Traffic Profile**: It is noted that there were more predicted coal trucks deliveries from the Gujarat Mine based on EA2008 assessment to meet the 6.9mtpa road receivals.
Avg Weekday 2011 Background Traffic Vol. with Coal Trucks	**Comments**
	**Two-Way Predicted Traffic:** 26,224 **Two-Way Actual Traffic:** 54,229 **ADT Difference**: +107% **Conclusion:** Similar profiles for both the actual and projected 2011 volumes. The actual traffic volumes were 107% higher to predicted volumes. The coal trucks did not have a significant impact on the 24hr weekend traffic profile.

Two Way Average Weekend 24 hr Traffic Profile - Northern Distributor

Avg Weekend 2011 Background Traffic Vol. without Coal Trucks	Comments
	**Traffic Profile**: Actual traffic is 95% higher than predicted traffic. This is due to the lower volumes predicted by the RTA on the Northern Distributor before it was opened in 2009. **Two-Way Predicted Traffic:** 20,727 **Two-Way Actual Traffic:** 40,409 **ADT Difference**: +95%
Avg Weekend 2011 Coal Truck Movements Only	**Comments**
	**Traffic Profile**: It is noted that there were more predicted coal trucks deliveries from the Gujarat Mine based on EA2008 assessment to meet the 6.9mtpa road receival
Avg Weekend 2011 Background Traffic Vol. with Coal Trucks	**Comments**
	**Two-Way Predicted Traffic:** 21,125 **Two-Way Actual Traffic:** 40,458 **ADT Difference**: 92% **Conclusion:** Similar profiles for both the actual and projected 2011 volumes. The actual traffic volumes were 107% higher to predicted volumes. The coal trucks did not have a significant impact on the 24hr weekend traffic profile

6 SUMMARY & CONCLUSION

This study has been undertaken to respond to Condition 6 in Schedule 2 of the *"PKCT Major Project Approval 08_0009"* which requires a comparison of actual transport related impacts with those predicted in the Environmental Assessment (EA) for the Project prior to PKCT receiving more than 7.5mtpa by road transport. The study has identified whether any further measures could reasonably or feasibly be required to minimise these impacts.

PKCT is currently approved to receive 7.5 mtpa by road, and while the earlier PKCT Environmental Assessment (EA2008) undertaken in 2008 forecasted impacts for a number of different operational scenarios and future year horizons; no assessment was undertaken for a 7.5mtpa receivals scenario (or similar amount).

The assessment was undertaken in 3 phases, a data collection phase, monitoring phase and the comparison phase.

The data collection phase occurred between the 15-29 August 2011 in which mid-block counts were undertaken at eight locations along the haulage routes from Appin Colliery, Westcliff Colliery and Gujarat NRE. Intersection counts were also undertaken for three critical intersections along Springhill Road. Coal truck movements collected from PKCT show there were an average of 1,336 deliveries on a weekday and 560 deliveries on an average weekend to meet the road receivals rate of 6.9mtpa.

This monitoring phase provides a summary of the current traffic operation based on the traffic data collected during the monitoring period. It also documents the road network and development changes since 2008 when the EA2008 report was undertaken.

Based on existing 2011 mid-block traffic volumes, the AM peak assessment shows that:

- Appin Road northbound is approaching capacity at a LoS D.
- Mount Ousley Road is approaching capacity for southbound traffic to PKCT.
- Southern Freeway, north of The Avenue, is approaching capacity for the southbound carriageway, and operating at a LoS F for the northbound traffic.
- The newly completed Northern Distributor is operating at a LoS C for southbound traffic and LoS D for the northbound traffic.
- Bellambi Lane, Masters Road and Springhill Road are operating at good LoS in the AM peak.

The PM peak assessment shows that:

- Appin Road southbound is approaching capacity at a LoS D.
- Southern Freeway, north of The Avenue, is operating at a LoS E for both southbound and northbound traffic.
- The newly completed Northern Distributor is operating at a LoS C for southbound traffic and LoS D for the northbound traffic.
- Mount Ousley Road, Bellambi Lane, Masters Road and Springhill Road are operating at good level of services in the PM peak.

The comparison phase of the project compares the projected traffic volumes from the EA2008 report with the 2011 traffic counts. The EA2008 report has previously projected 2009, 2013 and 2018 background traffic volumes using various assumptions. In order to make comparisons with the actual 2011 traffic volumes collected during the monitoring period, similar assumptions were used from EA2008 report to achieve 2011 projected volumes.

The EA2008 report predicted the number of trucks for future road receivals based on the rate of 4mtpa, 5mtpa and 10mtpa scenarios. In order to be consistent with the monitoring trial period, the number of trucks required to transport coal to PKCT at a rate of 6.9mtpa has been estimated. Based on the assumptions documented in the EA2008 report, there will be an average of 1,238 deliveries on a weekday and 968 deliveries on an average weekend to meet to road receivals rate of 6.9mtpa.

It is important to note that the EA2008 predicted that 48% of the deliveries will be via Gujarat, however, during the monitoring period, coal deliveries from Gujarat accounted for only 15% of the total truck movements to meet the road receivals rate of 6.9mtpa.

Based on the predicted and actual traffic volumes, a comparison of the road capacity performance was undertaken.

The comparison of the AM peak performances indicated that:

- Appin Road, Southern Freeway (North), Bellambi Lane, Masters Road and Springhill Road performed at similar LoS for both sets of 2011 actual and projected volumes.
- Mount Ousley Road travelling from PKCT performed better at a LoS C under 2011 existing conditions as compared to LoS D based on predicted volumes.
- Southern Freeway (South) travelling to PKCT performed at a LoS D under 2011 existing conditions as compared to a predicted LoS E in the EA2008 assessment.
- Northern Distributor travelling from PKCT performed at a LoS D under 2011 existing conditions as compared to a predicted LoS B in the EA2008 assessment. This is mainly due to the anomalies in the assumptions to predict future volumes for Northern Distributor before it was opened in 2009.

The comparison of the PM peak performances indicated that:

- Appin Road, Mount Ousley Road, Bellambi Lane, Masters Road and Springhill Road performed at similar LoS for both sets of 2011 actual and projected volumes.
- Southern Freeway (North) travelling to PKCT performed at a LoS D under 2011 existing conditions as compared to a predicted LoS C in the EA2008 assessment. This is due to the higher PM peak volumes recorded during the traffic surveys as compared to predicted volumes.
- Northern Distributor travelling to and from PKCT performed at a LoS C and LoS D respectively under 2011 existing conditions. This is lower as compared to a predicted LoS B in the EA2008 assessment for both directions. This is due to the lower volumes predicted by the RTA on the Northern Distributor before it was opened in 2009.

The comparison phase also included a presentation of the hourly traffic profiles (average weekday and average weekend) for both the predicted and actual volumes for the surveyed locations. The analyses revealed the following:

Appin Road – North of Southern Freeway

- Actual average weekday traffic volumes reflected the background traffic growth rates assumed in the EA2008.
- Two-way predicted traffic volumes were higher than actual traffic volumes by 3% for an average weekday and 18% for an average weekend.
- The coal truck movements did not have a significant impact on the 24hr traffic profile.

Mount Ousley Road – 1 km south of New Pleasant Road

- Actual average weekday traffic volumes reflected the background traffic growth rates assumed in the EA2008.
- Two-way predicted traffic volumes were higher than actual traffic volumes by 1% for an average weekday and 10% for an average weekend.
- The coal truck movements did not have a significant impact on the 24hr traffic profile.

Southern Freeway (North) between Mount Kiera Road and Gipps Road

- Actual average weekday traffic volumes reflected the background traffic growth rates assumed in the EA2008.
- Two-way predicted traffic volumes were higher than actual traffic volumes by 6% for an average weekday and 20% for an average weekend.
- The coal truck movements did not have a significant impact on the 24hr traffic profile.

Southern Freeway (South) – 400 metres north of The Avenue

- Actual average weekday traffic volumes reflected the background traffic growth rates assumed in the EA2008.
- Two-way predicted traffic volumes were higher than actual traffic volumes by 5% for an average weekday and 9% for an average weekend.
- The coal truck movements did not have a significant impact on the 24hr traffic profile.

Masters Road – 600 metres west of Springhill Road

- Two-way predicted traffic volumes were lower than actual traffic volumes by 2% for an average weekday and 12% for an average weekend.
- This is due to 0% growth rate assumed in the EA2008 report.
- The coal truck movements did not have a significant impact on the 24hr traffic profile.

Springhill Road – 100 metres west of Bridge Street

- Two-way predicted traffic volumes (17,305veh/day) were significantly lower than actual traffic volumes (35,771veh/day) for an average weekday.
- Similarly for the average weekend, the predicted traffic volumes were 65% lower than actual traffic volumes.
- This is mainly due to 0% growth rate assumed in the EA2008 report and the cumulative growth in the road network surrounding the Port Kembla area.

Bellambi Lane – 200 metres west of Northern Distributor

- Actual average weekday traffic volumes reflected the background traffic growth rates assumed in the EA2008.
- Two-way predicted traffic volumes were higher than actual traffic volumes by 9% for an average weekday and 15% for an average weekend.
- This is partly due to the higher coal truck movements from Gujarat predicted in the EA2008 to meet the road receivals rate of 6.9mtpa. However, the impact is insignificant to the performance of the carriageway which remains at a LoS A.

Northern Distributor between Flinders Street ramps and Southern Freeway Ramps

- Two-way predicted traffic volumes (25,624veh/day) were significantly lower than actual traffic volumes (54,020veh/day) for an average weekday.
- Similarly for the average weekend, the predicted traffic volumes were 92% lower than actual traffic volumes.
- This is due to the lower traffic volumes predicted by the RTA on the Northern Distributor before it was opened in 2009.
- RTA initially provided the projected traffic movements for the Northern Distributor in the EA2008 report and acknowledge that there were anomalies with these predictions

Overall, the comparisons show that assumptions made in the EA2008 report for Appin Road, Mount Ousley Road, Southern Freeway and Bellambi Lane are considered appropriate and no further mitigation measures, other than those listed in the previous EA2008 report, is required.

APPENDICES

Appendix A

Monitoring Trial Period Coal Trucks Data

Recieval Profile - Tonnages (Time Trucks Leave Mine)	WEEK 1														WEEK 2															
	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Monday		Tuesday			Wednesday		Thursday		Friday		Saturday		Sunday	Monday
	15/08/2011		16/08/2011		17/08/2011		18/08/2011		19/08/2011		20/08/2011		21/08/2011		22/08/2011		23/08/2011			24/08/2011		25/08/2011		26/08/2011		27/08/2011		28/08/2011	29/08/2011
Time	BHPA	NRE	BHPA	NRE	BHPA	NRE	BHPA	NRE	BHPA	NRE	BHPA	NRE	BHPA	NRE	BHPA	NRE	BHPA	BHPB	CENC	BHPA	NRE	BHPA	CENC	BHPA	CENC	BHPA	NRE	BHPA	BHPA
0:00					805.7272727		718.2857143		699.2						911.5		873			807.6666667		1124.666667		1211		799		480.75	1054.125
1:00			573.8571429		805.7272727		718.2857143		699.2		670.75				911.5		873			1347		1124.666667				799		480.75	861.8333333
2:00			573.8571429		805.7272727		718.2857143		699.2		670.75				911.5		873			606.3333333		1124.666667							597.3333333
3:00			573.8571429		805.7272727		718.2857143		699.2		670.75						873			606.3333333				378				322.5	597.3333333
4:00			573.8571429		805.7272727		718.2857143		699.2		670.75				991.3333333		873			606.3333333		1339		1702	257	1719		322.5	597.3333333
5:00			573.8571429		805.7272727		718.2857143		699.2		565				991.3333333							1339		482		759			597.3333333
6:00	1079.75		573.8571429		805.7272727		718.2857143		699.2		1048				991.3333333		1868			1609		1339				700		41	597.3333333
7:00	1079.75		1723.857143		1492.333333		730.25		1799.333333		114				1077.5				867	1058		939.6666667		1222		941		60	807
8:00	1079.75		1150		1492.333333		730.25		1799.333333						1077.5			938		1058		939.6666667		1222	767	941			807
9:00	1079.75		1150		1492.333333		730.25		1799.333333	361	839				1077.5			938		1907.25	488	939.6666667				941			
10:00	1120	565	1150		1094.5	773	730.25	404.5	1270	361	435	369			1077.5			725		849.25			30		622				
11:00	1120		1007.333333	968	1094.5		1221	404.5	1270	604	346.75	369			774.5	845			763	849.25		1325.5		1369.5		834			
12:00	1120	526	1007.333333		1094.5		1221		1095		346.75				774.5	330		2071		849.25		1325.5		1369.5		1105	791		
13:00	990		1007.333333	378	1094.5	880	780.6666667	783	1095	526	346.75				708				422	904.3333333	901		1142		562	1105	917		
14:00	990		1143	378	939.3333333		780.6666667				346.75				708	916		988		904.3333333		1128		709		954			
15:00	990	596	1143		939.3333333		780.6666667	512		511	314	481			631	426		988		904.3333333		1128	766	709		954			
16:00	1087	596	1143	921	939.3333333	956	795.5	512	1719		451				1184					1071	716	453.5		709					
17:00	1087		1075.5		459		795.5	668	131	508			682.25					33		679.5	296	453.5	382	709	329	606		789.625	
18:00	1087		1075.5		459	188	915		515		195		682.25		967	621			446	679.5	440	1357					344	789.625	
19:00	593	542	491		430.4		915				195		682.25		658.5		577.3333333			916.5		1131						789.625	
20:00	1158.5		805.7272727	687	430.4		915		677				998.25		658.5		577.3333333			916.5			330	799				789.625	
21:00	1158.5		805.7272727		430.4		915	502	677				597				577.3333333			916.5		1536		799		221		789.625	
22:00	1158.5		805.7272727		430.4		699.2		677				597				807.6666667			916.5	663			799		480.75		789.625	
23:00	1158.5		805.7272727		430.4		699.2						1508.5		873		807.6666667			1763				799		480.75		789.625	
Total	19137	2825	20932.90909	3332	20383.09091	2797	19382.4	3786	19418.4	2871	8226	1219	5747.5	0	17955.5	3138	9580.333333	6681	2498	22725.66667	3504	20048	2650	14988	2537	14339.5	2052	7234.875	6516.625
Grand Total	266505.8																												
Average Capacity Coal Trucks Assumed	BHPA	36.5	tons	ref:EA 2008 report																									
	GNRE	32.2	tons	ref: Phil Perkiss emails (Gujaret NRE) PKCT report																									

Recieval Profile - Trucks Per Hour	WEEK 1														WEEK 2															
	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Monday		Tuesday			Wednesday		Thursday		Friday		Saturday		Sunday	Monday
	15/08/2011		16/08/2011		17/08/2011		18/08/2011		19/08/2011		20/08/2011		21/08/2011		22/08/2011		23/08/2011			24/08/2011		25/08/2011		26/08/2011		27/08/2011		28/08/2011	29/08/2011
Time	BHPA	NRE	BHPA	NRE	BHPA	NRE	BHPA	NRE	BHPA	NRE	BHPA	NRE	BHPA	NRE	BHPA	NRE	BHPA	BHPB	CENC	BHPA	NRE	BHPA	CENC	BHPA	CENC	BHPA	NRE	BHPA	BHPA
0:00	0	0	0	0	23	0	20	0	20	0	0	0	0	0	25	0	24	0	0	23	0	31	0	34	0	22	0	14	29
1:00	0	0	16	0	23	0	20	0	20	0	19	0	0	0	25	0	24	0	0	37	0	31	0	0	0	22	0	14	24
2:00	0	0	16	0	23	0	20	0	20	0	19	0	0	0	25	0	24	0	0	17	0	31	0	0	0	0	0	0	17
3:00	0	0	16	0	23	0	20	0	20	0	19	0	0	0	0	0	24	0	0	17	0	0	0	11	0	0	0	9	17
4:00	0	0	16	0	23	0	20	0	20	0	19	0	0	0	28	0	24	0	0	17	0	37	0	47	8	48	0	9	17
5:00	0	0	16	0	23	0	20	0	20	0	16	0	0	0	28	0	0	0	0	0	0	37	0	14	0	21	0	0	17
6:00	30	0	16	0	23	0	20	0	20	0	29	0	0	0	28	0	52	0	0	45	0	37	0	0	0	20	0	2	17
7:00	30	0	48	0	41	0	21	0	50	0	4	0	0	0	30	0	0	0	24	29	0	26	0	34	0	26	0	2	23
8:00	30	0	32	0	41	0	21	0	50	0	0	0	0	0	30	0	0	26	0	29	0	26	0	34	22	26	0	0	23
9:00	30	0	32	0	41	0	21	0	50	12	23	0	0	0	30	0	0	26	0	53	16	26	0	0	0	26	0	0	0
10:00	31	18	32	0	30	25	21	13	35	12	12	12	0	0	30	0	0	20	0	24	0	0	1	0	18	0	0	0	0
11:00	31	0	28	31	30	0	34	13	35	19	10	12	0	0	22	27	0	0	21	24	0	37	0	38	0	23	0	0	0
12:00	31	17	28	0	30	0	34	0	30	0	10	0	0	0	22	11	0	57	0	24	0	37	0	38	0	31	25	0	0
13:00	28	0	28	12	30	28	22	25	30	17	10	0	0	0	20	0	0	0	12	25	28	0	32	0	16	31	29	0	0
14:00	28	0	32	12	26	0	22	0	0	0	10	0	0	0	20	29	0	28	0	25	0	31	0	20	0	27	0	0	0
15:00	28	19	32	0	26	0	22	16	0	16	9	15	0	0	18	14	0	28	0	25	0	31	21	20	0	27	0	0	0
16:00	30	19	32	29	26	30	22	16	48	0	13	0	0	0	33	0	0	0	0	30	23	13	0	20	0	0	0	0	0
17:00	30	0	30	0	13	0	22	21	4	16	0	0	19	0	0	0	0	1	0	19	10	13	11	20	10	17	0	22	0
18:00	30	0	30	0	13	6	26	0	15	0	6	0	19	0	27	20	0	0	13	19	14	38	0	0	0	0	11	22	0
19:00	17	17	14	0	12	0	26	0	0	0	6	0	19	0	19	0	16	0	0	26	0	31	0	0	0	0	0	22	0
20:00	32	0	23	22	12	0	26	0	19	0	0	0	28	0	19	0	16	0	0	26	0	0	10	22	0	0	0	22	0
21:00	32	0	23	0	12	0	26	16	19	0	0	0	17	0	0	0	16	0	0	26	0	43	0	22	0	7	0	22	0
22:00	32	0	23	0	12	0	20	0	19	0	0	0	17	0	0	0	23	0	0	26	21	0	0	22	0	14	0	22	0
23:00	32	0	23	0	12	0	20	0	0	0	0	0	42	0	24	0	23	0	0	49	0	0	0	22	0	14	0	22	0
Total	532	90	586	106	568	89	546	120	544	92	234	39	161	0	503	101	266	186	70	635	112	556	75	418	74	402	65	204	184

Port Kembla Coal Terminal - Daily Operations Summary

For Period 15/08/2011 07:00 to 16/08/2011 07:00

Rail Receivals :

Stockpile	Brand	Trains	Tonnes	Ship
10	CENC	1	2426	CORONA MAJESTY
12	CENC	5	14592	CORONA MAJESTY
16	TAHA	2	6904	SEA GRACE
19	NREA	2	2826	MONA CENTURY
20	CLXD	2	6644	DOUBLE HARMONY
24	CENC	1	2724	KIND SALUTE
	Totals:	13	36116	

Road Receivals :

Stockpile	Brand	Tonnes	Ship
4	BHPA	19137	STAR OF ABU DHABI
18	NRED	2825	MONA CENTURY
	Totals:	21962	

Ship Loading:

Berth: 2

Current Ship:	CSL BRISBANE	GIEWONT
Period Tonnes:	2914	32879
Tonnes On Ship:	2914	32879
Tonnes To Go:	37886	0
Completed At:		16-08-2011 00:28
Ship Status:	Loading	Complete

Next Vessels

Berth 2: LEONARDO LEMBO
Eta: 12-08-2011 13:00

Berth 1: HR ENDEAVOUR
Eta: 22-08-2011 00:00

Comments:

Signature (for Operations Manager): _____

Printed: 16-AUG-2011 07:30

Port Kembla Coal Terminal - Daily Operations Summary

For Period 16/08/2011 07:00 to 17/08/2011 07:00

Rail Receivals :

Stockpile	Brand	Trains	Tonnes	Ship
12	CENC	6	17302	CORONA MAJESTY
16	TAHA	3	10682	SEA GRACE
19	NREA	1	1308	MONA CENTURY
20	CLXD	1	3348	DOUBLE HARMONY
	Totals:	11	32640	

Road Receivals :

Stockpile	Brand	Tonnes	Ship
4	BHPA	26573	STAR OF ABU DHABI
18	NRED	3332	MONA CENTURY
	Totals:	29905	

Ship Loading:

Berth: 2

Current Ship:	CSL BRISBANE
Period Tonnes:	37651
Tonnes On Ship:	40565
Tonnes To Go:	85
Completed At:	17-08-2011 00:15
Ship Status:	Complete

Next Vessels

Berth 2:	STAR OF ABU DHABI	**Berth 1:**	HR ENDEAVOUR
Eta:	13-08-2011 02:00	**Eta:**	22-08-2011 00:00

Comments:

Signature (for Operations Manager): _____

Printed: **17-AUG-2011 08:41**

Port Kembla Coal Terminal - Daily Operations Summary
For Period 17/08/2011 07:00 to 18/08/2011 07:00

Rail Receivals :

Stockpile	Brand	Trains	Tonnes	Ship
12	CENC	1	2350	CORONA MAJESTY
16	TAHA	2	7416	SEA GRACE
19	NREA	3	3710	MONA CENTURY
20	CLXD	3	9378	DOUBLE HARMONY
24	CENC	1	3450	KIND SALUTE
	Totals:	10	26304	

Road Receivals :

Stockpile	Brand	Tonnes	Ship
4	BHPA	14743	STAR OF ABU DHABI
18	NRED	2797	MONA CENTURY
	Totals:	17540	

Ship Loading:

Berth: 2

Current Ship:	LEONARDO LEMBO
Period Tonnes:	72137
Tonnes On Ship:	72608
Tonnes To Go:	0
Completed At:	18-08-2011 05:21
Ship Status:	Complete

Next Vessels

Berth 2:	STAR OF ABU DHABI	**Berth 1:**	HR ENDEAVOUR
Eta:	13-08-2011 02:00	**Eta:**	22-08-2011 00:00

Comments:

Signature (for Operations Manager): _____

Printed: **18-AUG-2011 08:51** **Page 1 of 1**

Port Kembla Coal Terminal - Daily Operations Summary

For Period 18/08/2011 07:00 to 19/08/2011 07:00

Rail Receivals :

Stockpile	Brand	Trains	Tonnes	Ship
12	CENC	5	13178	CORONA MAJESTY
16	TAHA	1	3788	SEA GRACE
19	NREA	2	2380	MONA CENTURY
20	CLXD	2	6770	CORAL SAPPHIRE
	Totals:	10	26116	

Road Receivals :

Stockpile	Brand	Tonnes	Ship
4	BHPA	14324	STAR OF ABU DHABI
5	BHPA	10652	WANGARATTA
18	NRED	3786	MONA CENTURY
	Totals:	28762	

Ship Loading:

Berth: 2

Current Ship:	STAR OF ABU DHABI	LEONARDO LEMBO
Period Tonnes:	5954	471
Tonnes On Ship:	16318	72608
Tonnes To Go:	62432	0
Completed At:		18-08-2011 07:15
Ship Status:	Loading	Complete

Next Vessels

Berth 2:	KIND SALUTE	**Berth 1:**	HR ENDEAVOUR
Eta:	16-08-2011 17:15	**Eta:**	22-08-2011 00:00

Comments:

Signature (for Operations Manager): _____

Printed: 19-AUG-2011 09:01 **Page 1 of 1**

21 St

Port Kembla Coal Terminal - Daily Operations Summary
For Period 21/08/2011 07:00 to 22/08/2011 07:00

Rail Receivals : *Nil Rail Receivals for Report Period*

Road Receivals :

Stockpile	Brand	Tonnes	Ship
5	BHPA	11456	WANGARATTA
	Totals:	11456	

Ship Loading:

Berth: 2

Current Ship:	KIND SALUTE
Period Tonnes:	38718
Tonnes On Ship:	87271
Tonnes To Go:	0
Completed At:	21-08-2011 17:46
Ship Status:	Complete

Next Vessels

Berth 2:	DOUBLE HARMONY	**Berth 1:**	HR ENDEAVOUR
Eta:	16-08-2011 19:05	**Eta:**	22-08-2011 00:00

Comments:

Signature (for Operations Manager): _____

Printed: 22-AUG-2011 08:42 **Page 1 of 1**

28th.

Port Kembla Coal Terminal - Daily Operations Summary

For Period 28/08/2011 07:00 to 29/08/2011 07:00

Rail Receivals :

Stockpile	Brand	Trains	Tonnes	Ship
2	CENC	5	16436	ENERGY PYXIS
19	NREA	1	1344	MONA CENTURY
20	CLXD	2	6536	CORAL SAPPHIRE
	Totals:	8	24316	

Road Receivals :

Stockpile	Brand	Tonnes	Ship
3	BHPA	10531	IRON CHIEFTAIN
	Totals:	10531	

Ship Loading:

Berth: 2

Current Ship:	SEA GRACE
Period Tonnes:	80552
Tonnes On Ship:	104393
Tonnes To Go:	26607
Completed At:	
Ship Status:	Loading

Next Vessels

Berth 2:	ENERGY PYXIS	**Berth 1:**	HR ENDEAVOUR
Eta:	19-08-2011 12:00	**Eta:**	22-08-2011 00:00

Comments:

Signature (for Operations Manager): _____

Printed: **29-AUG-2011 08:44** **Page 1 of 1**

27th

Port Kembla Coal Terminal - Daily Operations Summary

For Period 27/08/2011 07:00 to 28/08/2011 07:00

Rail Receivals :

Stockpile	Brand	Trains	Tonnes	Ship
2	CENC	3	8002	ENERGY PYXIS
7	HELB	1	3206	INDIGO SPERA
19	NREA	3	4130	MONA CENTURY
20	CLXD	1	3300	CORAL SAPPHIRE
21	TAHA	3	10024	C POLARIS
	Totals:	11	28662	

Road Receivals :

Stockpile	Brand	Tonnes	Ship
3	BHPA	11170	IRON CHIEFTAIN
18	NRED	2052	MONA CENTURY
	Totals:	13222	

Ship Loading:

Berth: 2

Current Ship:	SEA GRACE	IKAN BAGAT
Period Tonnes:	16136	45077
Tonnes On Ship:	104393	69284
Tonnes To Go:	26607	0
Completed At:		27-08-2011 21:24
Ship Status:	Loading	Complete

Next Vessels

Berth 2: ENERGY PYXIS
Eta: 19-08-2011 12:00

Berth 1: HR ENDEAVOUR
Eta: 22-08-2011 00:00

Comments:

Signature (for Operations Manager):

Printed: 29-AUG-2011 08:45

26th

Port Kembla Coal Terminal - Daily Operations Summary

For Period 26/08/2011 07:00 to 27/08/2011 07:00

Rail Receivals :

Stockpile	Brand	Trains	Tonnes	Ship
2	CENC	4	11644	ENERGY PYXIS
7	HELB	3	9320	INDIGO SPERA
16	TAHA	1	3324	C POLARIS
19	NREA	1	1324	MONA CENTURY
20	CLXD	1	3268	CORAL SAPPHIRE
21	TAHA	1	3494	C POLARIS
	Totals:	11	32374	

Road Receivals :

Stockpile	Brand	Tonnes	Ship
2	CENC	1513	ENERGY PYXIS
3	BHPA	7972	IRON CHIEFTAIN
6	BHPA	8019	IKAN BAGAT
10	CENC	767	ENERGY PYXIS
	Totals:	18271	

Ship Loading:

Berth: 2

Current Ship:	IKAN BAGAT	WANGARATTA
Period Tonnes:	24207	15694
Tonnes On Ship:	69284	65342
Tonnes To Go:	0	0
Completed At:	27-08-2011 05:57	26-08-2011 12:12
Ship Status:	Complete	Complete

Next Vessels

Berth 2: ENERGY PYXIS
Eta: 19-08-2011 12:00

Berth 1: HR ENDEAVOUR
Eta: 22-08-2011 00:00

Comments:

Signature (for Operations Manager):

Printed: **29-AUG-2011 08:45**

25th

Port Kembla Coal Terminal - Daily Operations Summary

For Period 25/08/2011 07:00 to 26/08/2011 07:00

Rail Receivals :

Stockpile	Brand	Trains	Tonnes	Ship
2	CENC	3	5808	ENERGY PYXIS
7	HELB	1	3090	INDIGO SPERA
20	CLXD	3	10102	CORAL SAPPHIRE
21	TAHA	1	3518	C POLARIS
	Totals:	8	22518	

Road Receivals :

Stockpile	Brand	Tonnes	Ship
6	BHPA	20447	IKAN BAGAT
10	CENC	2907	ENERGY PYXIS
	Totals:	23354	

Ship Loading:

Berth: 2

Current Ship:	WANGARATTA	HR ENDEAVOUR
Period Tonnes:	49648	6085
Tonnes On Ship:	59806	6085
Tonnes To Go:	5994	15
Completed At:		25-08-2011 09:15
Ship Status:	Loading	Complete

Next Vessels

Berth 2: ENERGY PYXIS
Eta: 19-08-2011 12:00

Berth 1: HR ENDEAVOUR
Eta: 22-08-2011 00:00

Comments:

Signature (for Operations Manager):

Printed: 26-AUG-2011 08:48

24th

Port Kembla Coal Terminal - Daily Operations Summary

For Period 24/08/2011 07:00 to 25/08/2011 07:00

Rail Receivals :

Stockpile	Brand	Trains	Tonnes	Ship
2	CENC	5	13614	ENERGY PYXIS
16	TAHA	1	3554	C POLARIS
19	NREA	2	2654	MONA CENTURY
20	CLXD	1	3230	CORAL SAPPHIRE
	Totals:	9	23052	

Road Receivals :

Stockpile	Brand	Tonnes	Ship
6	BHPA	20517	IKAN BAGAT
18	NRED	3504	MONA CENTURY
	Totals:	24021	

Ship Loading:

Berth: 2

Current Ship:	CORONA MAJESTY
Period Tonnes:	60865
Tonnes On Ship:	76779
Tonnes To Go:	0
Completed At:	24-08-2011 23:49
Ship Status:	Complete

Next Vessels

Berth 2:	ENERGY PYXIS	**Berth 1:**	HR ENDEAVOUR
Eta:	19-08-2011 12:00	**Eta:**	22-08-2011 00:00

Comments:

Signature (for Operations Manager): _____

Printed: 25-AUG-2011 08:40 **Page 1 of 1**

Port Kembla Coal Terminal - Daily Operations Summary

For Period 23/08/2011 07:00 to 24/08/2011 07:00

Rail Receivals :

Stockpile	Brand	Trains	Tonnes	Ship
2	CENC	4	11760	ENERGY PYXIS
12	CENC	3	8786	CORONA MAJESTY
19	NREA	4	5528	MONA CENTURY
20	CLXD	1	2400	CORAL SAPPHIRE
21	TAHA	2	4966	SEA GRACE
	Totals:	14	33440	

Road Receivals :

Stockpile	Brand	Tonnes	Ship
6	BHPA	10798	IKAN BAGAT
9	BHPB	6681	HR ENDEAVOUR
10	CENC	2498	ENERGY PYXIS
	Totals:	19977	

Ship Loading:

Berth: 2

Current Ship:	CORONA MAJESTY	DOUBLE HARMONY
Period Tonnes:	15914	38832
Tonnes On Ship:	28548	69954
Tonnes To Go:	48452	0
Completed At:		23-08-2011 20:15
Ship Status:	Loading	Complete

Next Vessels

Berth 2: HR ENDEAVOUR
Eta: 19-08-2011 14:45

Berth 1: HR ENDEAVOUR
Eta: 22-08-2011 00:00

Comments:

Signature (for Operations Manager): _____

Printed: 24-AUG-2011 08:56 **Page 1 of 1**

22nd

Port Kembla Coal Terminal - Daily Operations Summary

For Period 22/08/2011 07:00 to 23/08/2011 07:00

Rail Receivals :

Stockpile	Brand	Trains	Tonnes	Ship
12	CENC	2	5128	CORONA MAJESTY
19	NREA	4	5304	MONA CENTURY
20	CLXD	1	3270	CORAL SAPPHIRE
21	TAHA	2	7174	SEA GRACE
	Totals:	9	20876	

Road Receivals :

Stockpile	Brand	Tonnes	Ship
5	BHPA	10057	WANGARATTA
6	BHPA	6555	IKAN BAGAT
18	NRED	3138	MONA CENTURY
	Totals:	19750	

Ship Loading:

Berth: 2

Current Ship:	DOUBLE HARMONY
Period Tonnes:	31122
Tonnes On Ship:	38076
Tonnes To Go:	32124
Completed At:	
Ship Status:	Loading

Next Vessels

Berth 2:	CORONA MAJESTY	**Berth 1:**	HR ENDEAVOUR
Eta:	18-08-2011 07:00	**Eta:**	22-08-2011 00:00

Comments:

Signature (for Operations Manager): _____

Printed: **23-AUG-2011 08:40** **Page 1 of 1**

20th

Port Kembla Coal Terminal - Daily Operations Summary
For Period 20/08/2011 07:00 to 21/08/2011 07:00

Rail Receivals : *Nil Rail Receivals for Report Period*

Road Receivals :

Stockpile	Brand	Tonnes	Ship
5	BHPA	4413	WANGARATTA
18	NRED	2129	MONA CENTURY
	Totals:	6542	

Ship Loading:

Berth: 2

Current Ship:	KIND SALUTE	STAR OF ABU DHABI
Period Tonnes:	48553	3351
Tonnes On Ship:	87271	78395
Tonnes To Go:	0	0
Completed At:	21-08-2011 05:19	20-08-2011 09:27
Ship Status:	Complete	Complete

Next Vessels

Berth 2: DOUBLE HARMONY
Eta: 16-08-2011 19:05

Berth 1: HR ENDEAVOUR
Eta: 22-08-2011 00:00

Comments:

Signature (for Operations Manager):

Printed: 22-AUG-2011 08:43 **Page 1 of 1**

19th.

Port Kembla Coal Terminal - Daily Operations Summary

For Period 19/08/2011 07:00 to 20/08/2011 07:00

Rail Receivals :

Stockpile	Brand	Trains	Tonnes	Ship
12	CENC	3	8008	CORONA MAJESTY
16	TAHA	1	3660	SEA GRACE
19	NREA	3	3910	MONA CENTURY
20	CLXD	1	3442	CORAL SAPPHIRE
21	TAHA	2	4812	SEA GRACE
	Totals:	10	23832	

Road Receivals :

Stockpile	Brand	Tonnes	Ship
5	BHPA	18337	WANGARATTA
18	NRED	2871	MONA CENTURY
	Totals:	21208	

Ship Loading:

Berth: 2

Current Ship:	STAR OF ABU DHABI
Period Tonnes:	69090
Tonnes On Ship:	78395
Tonnes To Go:	0
Completed At:	20-08-2011 06:23
Ship Status:	Complete

Next Vessels

Berth 2:	DOUBLE HARMONY	**Berth 1:**	HR ENDEAVOUR
Eta:	16-08-2011 19:05	**Eta:**	22-08-2011 00:00

Comments:

Signature (for Operations Manager):

Printed: **22-AUG-2011 08:43** **Page 1 of 1**

PKCTAdmin

From: Phil Perkiss [pperkiss@gujaratnre.com.au]
Sent: Monday, 29 August 2011 08:00
To: Mark Beale
Cc: Kristy Jones
Subject: NRE haulage 25th
Attachments: NRE1SWCD.Weighbridge.2011.08.27.csv

Mark,

PKCT report for the 25th 2907t NRED delivered to stockpile 10

Still to receive return amount and confirm R/V weigher, will send when report is in

Start haulage 7.10am / finish haulage 6.12pm, no delays

Sat 27th haulage PKCT report 2052t NRED delivered

Start 8.10am / finish 3.12 pm, out of screened coal and no delays to report

Thanks

Phil Perkiss
R/Vale Site Supervisor

Gujarat NRE Coking Coal Limited
PO Box 281, Fairy Meadow, NSW 2519
Ph:+61(0)242236824
Mo:+61(0)412544895
Fx:+61(0)242837449

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PKCTAdmin

From: Phil Perkiss [pperkiss@gujaratnre.com.au]
Sent: Tuesday, 23 August 2011 08:27
To: Mark Beale
Cc: John Gorman
Subject: 22nd haulage

Mark,

PKCT report for 22nd 3138t

R/V weigher report for 22nd 3142t, 12 trucks used for 95 trips

Start haul at 7.30am. Boom gates down at 4.45pm for grid clean up, trucks finished haul at 5.10pm from R/V weigher

Wed we expect to extend the haulage as long as possible and maybe backload PKCT spillage coal if all works out

Could you check if a loader is available to backload during D/S and is there any requirements for Brindles to meet for this procedure

Thanks

Phil Perkiss
R/Vale Site Supervisor

Gujarat NRE Coking Coal Limited
PO Box 281, Fairy Meadow, NSW 2519
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PKCTAdmin

From: Phil Perkiss [pperkiss@gujaratnre.com.au]
Sent: Thursday, 25 August 2011 09:32
To: Mark Beale
Subject: 24th nre haulage
Attachments: NRE1SWCD.Weighbridge.2011.08.24.csv

Mark,

PKCT report 3504t delivered 24th

R/Vale weigher report still working out, there were no delays in the zone 3

Waiting the drivers records to confirm tons, spillage material returned has to be also worked out but approx 2500t hauled back, last truck back from PKCT 6.25pm

Start haulage 7.06 am/ finish haulage 9.40 pm 12 trucks used for 125 trips

Thanks

Phil Perkiss
R/Vale Site Supervisor

Gujarat NRE Coking Coal Limited
PO Box 281, Fairy Meadow, NSW 2519
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PKCTAdmin

From: Phil Perkiss [pperkiss@gujaratnre.com.au]
Sent: Monday, 22 August 2011 07:31
To: Mark Beale
Subject: NRE 20th deliveries
Attachments: NRE1SWCD.Weighbridge.2011.08.20.csv

Mark,

PKCT report 2129t for the 20th

R/Vale weigher report 2145t, 14 trucks used for 65 trips to PKCT, compressed haulage for 3 hours for trial

No delays with the zone, start 8.10am finish early 11.59am

Loading from the stockpiles, no loader drivers after mid day and a shortage of screened coal

Gearing up for a rush on Wed 24th and a longer haul period to about 9.00pm

Thanks

Phil Perkiss
R/Vale Site Supervisor

Gujarat NRE Coking Coal Limited
PO Box 281, Fairy Meadow, NSW 2519
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PKCTAdmin

From: Phil Perkiss [pperkiss@gujaratnre.com.au]
Sent: Saturday, 20 August 2011 09:28
To: Mark Beale
Subject: NRE 19th haulage
Attachments: NRE1SWCD.Weighbridge.2011.08.19.csv

Mark,

PKCT report for the 19th 2871t

NRE weigher report 2812t, 9 trucks used for 81 haulage trips

Start haulage 7.29am / finish haulage 4.12 pm

Delays waiting to clear the hopper Zone 3 approx 4.00pm

Thanks

Phil Perkiss
R/Vale Site Supervisor

Gujarat NRE Coking Coal Limited
PO Box 281, Fairy Meadow, NSW 2519
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Mo:+61(0)412544895
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PKCTAdmin

From: Jennifer Arber
Sent: Friday, 19 August 2011 08:51
To: PKCTAdmin
Subject: FW: NRE 18th haulage

Regards

Jennifer Arber
Admin Assistant
Port Kembla Coal Terminal Ltd
Phone: 42211820
Email: jennifer.arber@pkct.com.au

-----Original Message-----
From: Mark Beale
Sent: Friday, 19 August 2011 08:50
To: Jennifer Arber
Subject: FW: NRE 18th haulage

Please provide to melissa

Sent from my Android phone using TouchDown (www.nitrodesk.com)

-----Original Message-----
From: Phil Perkiss [pperkiss@gujaratnre.com.au]
Received: Friday, 19 Aug 2011, 8:31
To: Mark Beale [Mark.Beale@pkct.com.au]
Subject: NRE 18th haulage

Mark,

PKCT ops report 3786t delivered 18th road

NRE report 3791t delivered, 12 trucks used for 116 trips

Start 7.20am/ finish 7.18pm

No delays to report, close to the delivery requirements

Thanks

Phil Perkiss
R/Vale Site Supervisor

Gujarat NRE Coking Coal Limited
PO Box 281, Fairy Meadow, NSW 2519
Ph:+61(0)242236824
Mo:+61(0)412544895
Fx:+61(0)242837449

PKCTAdmin

From: Phil Perkiss [pperkiss@gujaratnre.com.au]
Sent: Thursday, 18 August 2011 08:31
To: Mark Beale
Subject: NRE haulage 17th
Attachments: NRE1SWCD.Weighbridge.2011.08.17.csv

Mark,

PKCT Report for 17th haulage 2797t NRED for Mona Century

NRE weigher report 2778t, 10 trucks used for 88 trips

Haulage start 7.25am / haulage finish 5.23pm

Delays not known at this stage, at late aft zone 3 was full (train unloading)

Thanks

Phil Perkiss
R/Vale Site Supervisor

Gujarat NRE Coking Coal Limited
PO Box 281, Fairy Meadow, NSW 2519
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Mo:+61(0)412544895
Fx:+61(0)242837449

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PKCTAdmin

From: Phil Perkiss [pperkiss@gujaratnre.com.au]
Sent: Wednesday, 17 August 2011 08:33
To: Mark Beale
Subject: 16th haulage data
Attachments: NRE1SWCD.Weighbridge.2011.08.16.csv

Mark,

Attached weigher data

Report PKCT road haulage for 16th 3332t for Mona Century

R/Vale haulage figures 3345t, 11 trucks used for 100 loads delivered

Delays 11.45am to 12.15am boom gates down for grid clean at the zones

Start haulage 7.15am / finish haulage 6.46pm

Thanks

Phil Perkiss
R/Vale Site Supervisor

Gujarat NRE Coking Coal Limited
PO Box 281, Fairy Meadow, NSW 2519
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25th

Road Receival Log Report:

25/08/2011 07:00:00 **To** 26/08/2011 07:00:00 *26/08/2011 08:47:56*

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**24/08/2011**								
04:24	07:01	Z1&2	BHPA	STK2	6			157	4017	
Log for Date :		**25/08/2011**								
07:02	07:45						WAIT ON CARGO	43		X
							filling bins			
07:42	09:58	Z1&2	BHPA	STK2	6			136	2819	
09:56	10:18						CHANGING ZONES	22		O
							and reposition stacker			
10:16	10:33	Z3	CENC	STK2	10			17	30	
10:31	10:55						CHANGING ZONES	24		O
							and reposition stacker			
10:53	12:53	Z1&2	BHPA	STK2	6			120	2651	
11:22	11:53					CCS	COMMUNICATION FAULT	31		E
							citec system fault			
12:53	13:20						CHANGING ZONES	27		O
							and reposition stacker			
13:18	13:42	Z3	CENC	STK2	10			24	1142	
13:42	14:08						CHANGING ZONES	26		O
							and reposition stacker			
14:06	15:34	Z1&2	BHPA	STK2	6			88	2256	
15:37	16:02	Z3	CENC	STK4	10			25	766	
16:03	16:16						CHANGING ZONES	13		O
16:08	16:09	Z3	CENC	STK4	10			1	0	
16:14	17:15	Z1&2	BHPA	STK2	6			61	907	

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
17:16	17:52	Z3	CENC	STK4	10			36	382	
17:30	18:02					NC1	LANYARD OPERATED	32		E
18:00	18:06	Z1&2	BHPA	STK2	6			6	226	
18:08	19:38	Z1&2	BHPA	STK2	6			90	2262	
19:38	20:14						CHANGING ZONES	36		O
20:11	20:49	Z3	CENC	STK4	10			38	330	
20:51	21:48	Z1&2	BHPA	STK2	6			57	1536	
21:49	00:25						WAIT ON CARGO	156		X
							Filling Bins			
00:23	00:52	Z1&2	BHPA	STK4	6			29	1211	
00:53	03:37						DUMPING TRAIN TO WEST	164		O
							Tipping train on stockpile 7			
03:35	03:45	Z1&2	BHPA	STK4	6			10	378	
03:45	04:05					STK2	PACE COLLISION STOP	20		E
04:03	04:45	Z1&2	BHPA	STK2	6			42	1702	
04:49	05:01	Z3	CENC	STK4	10			12	257	
05:01	05:07						CHANGING ZONES	6		O
05:05	05:25	Z1&2	BHPA	STK2	6			20	482	
05:25	07:30						DUMPING TRAIN TO WEST	125		O

Road Receival Log Report: 19/08/2011 07:00:00 To 20/08/2011 07:00:00 *22/08/2011 08:39:02*

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**18/08/2011**								
04:55	07:00					STK4	PACE COLLISION STOP	125		E
							Magnet missing			
06:58	09:43	Z1&2	BHPA	STK2	5			165	5398	
Log for Date :		**19/08/2011**								
09:46	10:18	Z3	NRED	STK4	18			32	722	
10:11	10:30						CHANGING ZONES	19		O
10:28	11:43	Z1&2	BHPA	STK2	5			75	2540	
11:38	11:51						CHANGING ZONES	13		O
11:48	12:07	Z3	NRED	STK4	18			19	604	
12:05	12:16						CHANGING ZONES	11		O
12:14	13:28	Z1&2	BHPA	STK2	5			74	2190	
13:30	13:52	Z3	NRED	STK4	18			22	526	
13:48	14:05						CHANGING ZONES	17		O
13:57	14:59	Z1&2	BHPA	STK2	5			62	0	
14:05	15:57					PF2LT_GBOX	FAULT	112		E
							Oil Pump contactor falut			
15:09	15:12	Z1&2	BHPA	STK2	5			3	0	
15:16	15:36	Z1&2	BHPA	STK2	5			20	0	
15:37	16:05	Z3	NRED	STK4	18			28	511	

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
16:06	16:13						CHANGING ZONES	7		O
16:11	16:53	Z1&2	BHPA	STK2	5			42	1719	
16:53	16:59						CHANGING ZONES	6		O
16:57	17:26	Z3	NRED	STK4	18			29	508	
17:24	17:34						CHANGING ZONES	10		O
17:32	17:57	Z1&2	BHPA	STK2	5			25	131	
17:39	18:39						WAIT ON TRUCKS *Filling bins.*	60		X
18:37	19:00	Z1&2	BHPA	STK2	5			23	515	
19:00	20:22						DUMPING TRAIN TO WEST	82		O
20:20	22:48	Z1&2	BHPA	STK2	5			148	2031	
22:41	01:08						WAIT ON TRUCKS *Filling bins.*	147		X
01:06	04:11	Z1&2	BHPA	STK2	5			185	2683	
04:10	05:07						WAIT ON TRUCKS *Filling bins.*	57		X
05:05	06:20	Z1&2	BHPA	STK2	5			75	1130	
06:20	06:44						WAIT ON TRUCKS *Filling Bins*	24		X
06:42	07:06	Z1&2	BHPA	STK2	5			24	483	

28+4.

Road Receival Log Report:

28/08/2011 07:00:00 **To** 29/08/2011 07:00:00 *29/08/2011 08:39:03*

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**27/08/2011**								
06:53	07:14	Z1&2	BHPA	STK2	3			21	82	
Log for Date :		**28/08/2011**								
07:15	07:25	Z3	BHPA	STK2	3			10	19	
17:23	00:27	Z1&2	BHPA	STK2	3			424	6317	
19:34	21:04					NC2	BELT RIP TRIP	90		E
21:12	21:45					NC2	BELT RIP TRIP	33		E
00:27	00:34						CHANGING ZONES	7		O
00:31	01:15	Z3	BHPA	STK2	3			44	529	
00:50	01:20						CHANGING ZONES	30		O
01:17	06:32	Z1&2	BHPA	STK2	3			315	3584	
03:53	04:07					NC9	CONVERTOR HEAVY FAULT	14		E
06:56	08:23	Z1&2	BHPA	STK2	3			87	1614	

Road Receival Log Report: 27/08/2011 07:00:00 To 28/08/2011 07:00:00 *29/08/2011 08:39:27*

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**27/08/2011**								
07:20	09:33	Z1&2	BHPA	STK2	3			133	2823	
09:34	11:33						DUMPING TRAIN TO WEST	119		O
11:31	11:52	Z1&2	BHPA	STK2	3			21	834	
11:53	11:59						CHANGING ZONES	6		O
12:00	12:18	Z3	NRED	STK4	18			18	791	
12:17	12:23						CHANGING ZONES	6		O
12:21	13:22	Z1&2	BHPA	STK2	3			61	2210	
13:24	14:06	Z3	NRED	STK4	18			42	917	
14:00	14:11						CHANGING ZONES	11		O
14:09	15:55	Z1&2	BHPA	STK2	3			106	1908	
15:54	17:28						DUMPING TRAIN TO WEST	94		O
17:29	17:54	Z1&2	BHPA	STK2	3			25	606	
17:53	18:00						CHANGING ZONES	7		O
17:57	18:16	Z3	NRED	STK4	18			19	344	
21:38	21:49	Z1&2	BHPA	STK2	3			11	221	
21:50	22:02						POSITION STACKER	12		O
22:00	01:41	Z1&2	BHPA	STK2	3			221	1923	

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
01:33	03:27						WAIT ON CARGO	114		O
03:24	04:29	Z1&2	BHPA	STK2	3			65	645	
04:29	06:56						DUMPING TRAIN TO WEST	147		O
06:53	07:14	Z1&2	BHPA	STK2	3			21	82	

27th.

Road Receival Log Report:

27/08/2011 07:00:00 **To** 28/08/2011 07:00:00 *29/08/2011 08:42:57*

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**27/08/2011**								
07:20	09:33	Z1&2	BHPA	STK2	3			133	2823	
09:34	11:33						DUMPING TRAIN TO WEST	119		O
11:31	11:52	Z1&2	BHPA	STK2	3			21	834	
11:53	11:59						CHANGING ZONES	6		O
12:00	12:18	Z3	NRED	STK4	18			18	791	
12:17	12:23						CHANGING ZONES	6		O
12:21	13:22	Z1&2	BHPA	STK2	3			61	2210	
13:24	14:06	Z3	NRED	STK4	18			42	917	
14:00	14:11						CHANGING ZONES	11		O
14:09	15:55	Z1&2	BHPA	STK2	3			106	1908	
15:54	17:28						DUMPING TRAIN TO WEST	94		O
17:29	17:54	Z1&2	BHPA	STK2	3			25	606	
17:53	18:00						CHANGING ZONES	7		O
17:57	18:16	Z3	NRED	STK4	18			19	344	
21:38	21:49	Z1&2	BHPA	STK2	3			11	221	
21:50	22:02						POSITION STACKER	12		O
22:00	01:41	Z1&2	BHPA	STK2	3			221	1923	

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
01:33	03:27						WAIT ON CARGO	114		O
03:24	04:29	Z1&2	BHPA	STK2	3			65	645	
04:29	06:56						DUMPING TRAIN TO WEST	147		O
06:53	07:14	Z1&2	BHPA	STK2	3			21	82	

Road Receival Log Report:

26/08/2011 07:00:00 **To** 27/08/2011 07:00:00 *29/08/2011 08:39:46*

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**25/08/2011**								
05:25	07:30						DUMPING TRAIN TO WEST	125		O
Log for Date :		**26/08/2011**								
07:28	08:33	Z1&2	BHPA	STK2	6			65	2444	
08:32	08:38						CHANGING ZONES	6		O
08:36	08:59	Z3	CENC	STK4	10			23	767	
09:00	09:53						DUMPING TRAIN TO WEST	53		O
09:51	10:56	Z3	CENC	STK1	2			65	622	
10:52	11:07						CHANGE ROAD FROM EAST TO WES	15		O
11:09	12:46	Z1&2	BHPA	STK4	6			97	2739	
11:10	11:29					PF2	CALIBRATION ERROR	19		E
							Electrician doing isolations for dayshift job.			
12:47	13:27						WAIT ON TRUCKS	40		X
							Filling bins.			
13:25	13:48	Z3	CENC	STK1	2			23	562	
13:46	13:57						CHANGE ROAD FROM EAST TO WES	11		O
13:55	17:26	Z1&2	BHPA	STK4	6			211	2836	
15:56	16:04					PF2	CONTACT MONITOR FAULT	8		E

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
17:25	18:02						WAIT ON TRUCKS	37		X
							Filling bins.			
17:59	18:47	Z3	CENC	STK1	2			48	329	
19:57	01:41	Z1&2	BHPA	STK2	3			344	4794	
01:39	04:11						DUMPING TRAIN TO WEST	152		O
04:09	04:52	Z1&2	BHPA	STK2	3			43	1719	
04:54	05:13	Z3	BHPA	STK2	3			19	59	
05:15	06:44	Z1&2	BHPA	STK2	3			89	1400	

24th

Road Receival Log Report:

24/08/2011 07:00:00 **To** 25/08/2011 07:00:00 *25/08/2011 08:39:09*

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**23/08/2011**								
06:22	07:00	Z1&2	BHPA	STK2	6			38	1609	
Log for Date :		**24/08/2011**								
07:02	09:10	Z1&2	BHPA	STK2	6			128	3174	
07:46	08:00					PF2	FAULT	14		E
							rotor vvvf drive fault			
09:06	09:15						CHANGING ZONES	9		O
09:13	09:39	Z3	NRED	STK4	18			26	488	
09:35	09:47						CHANGING ZONES	12		O
09:45	12:51	Z1&2	BHPA	STK2	6			186	3397	
10:05	10:20					PF2	FAULT	15		E
							rotor vvvf drive fault			
12:48	12:57						CHANGING ZONES	9		O
12:55	13:21	Z3	NRED	STK4	18			26	901	
13:20	13:32						CHANGING ZONES	12		O
13:26	15:50	Z1&2	BHPA	STK2	6			144	2713	
15:50	15:57						CHANGING ZONES	7		O
15:54	16:17	Z3	NRED	STK4	18			23	716	
16:14	16:24						CHANGING ZONES	10		O
16:22	17:10	Z1&2	BHPA	STK2	6			48	1071	

25th

Road Receival Log Report:

25/08/2011 07:00:00 **To** 26/08/2011 07:00:00 *26/08/2011 08:47:56*

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**24/08/2011**								
04:24	07:01	Z1&2	BHPA	STK2	6			157	4017	
Log for Date :		**25/08/2011**								
07:02	07:45						WAIT ON CARGO	43		X
							filling bins			
07:42	09:58	Z1&2	BHPA	STK2	6			136	2819	
09:56	10:18						CHANGING ZONES	22		O
							and reposition stacker			
10:16	10:33	Z3	CENC	STK2	10			17	30	
10:31	10:55						CHANGING ZONES	24		O
							and reposition stacker			
10:53	12:53	Z1&2	BHPA	STK2	6			120	2651	
11:22	11:53					CCS	COMMUNICATION FAULT	31		E
							citec system fault			
12:53	13:20						CHANGING ZONES	27		O
							and reposition stacker			
13:18	13:42	Z3	CENC	STK2	10			24	1142	
13:42	14:08						CHANGING ZONES	26		O
							and reposition stacker			
14:06	15:34	Z1&2	BHPA	STK2	6			88	2256	
15:37	16:02	Z3	CENC	STK4	10			25	766	
16:03	16:16						CHANGING ZONES	13		O
16:08	16:09	Z3	CENC	STK4	10			1	0	
16:14	17:15	Z1&2	BHPA	STK2	6			61	907	

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
17:16	17:52	Z3	CENC	STK4	10			36	382	
17:30	18:02					NC1	LANYARD OPERATED	32		E
18:00	18:06	Z1&2	BHPA	STK2	6			6	226	
18:08	19:38	Z1&2	BHPA	STK2	6			90	2262	
19:38	20:14						CHANGING ZONES	36		O
20:11	20:49	Z3	CENC	STK4	10			38	330	
20:51	21:48	Z1&2	BHPA	STK2	6			57	1536	
21:49	00:25						WAIT ON CARGO	156		X
							Filling Bins			
00:23	00:52	Z1&2	BHPA	STK4	6			29	1211	
00:53	03:37						DUMPING TRAIN TO WEST	164		O
							Tipping train on stockpile 7			
03:35	03:45	Z1&2	BHPA	STK4	6			10	378	
03:45	04:05					STK2	PACE COLLISION STOP	20		E
04:03	04:45	Z1&2	BHPA	STK2	6			42	1702	
04:49	05:01	Z3	CENC	STK4	10			12	257	
05:01	05:07						CHANGING ZONES	6		O
05:05	05:25	Z1&2	BHPA	STK2	6			20	482	
05:25	07:30						DUMPING TRAIN TO WEST	125		O

Road Receival Log Report: 19/08/2011 07:00:00 To 20/08/2011 07:00:00 *22/08/2011 08:39:02*

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**18/08/2011**								
04:55	07:00					STK4	PACE COLLISION STOP	125		E
							Magnet missing			
06:58	09:43	Z1&2	BHPA	STK2	5			165	5398	
Log for Date :		**19/08/2011**								
09:46	10:18	Z3	NRED	STK4	18			32	722	
10:11	10:30						CHANGING ZONES	19		O
10:28	11:43	Z1&2	BHPA	STK2	5			75	2540	
11:38	11:51						CHANGING ZONES	13		O
11:48	12:07	Z3	NRED	STK4	18			19	604	
12:05	12:16						CHANGING ZONES	11		O
12:14	13:28	Z1&2	BHPA	STK2	5			74	2190	
13:30	13:52	Z3	NRED	STK4	18			22	526	
13:48	14:05						CHANGING ZONES	17		O
13:57	14:59	Z1&2	BHPA	STK2	5			62	0	
14:05	15:57					PF2LT_GBOX	FAULT	112		E
							Oil Pump contactor falut			
15:09	15:12	Z1&2	BHPA	STK2	5			3	0	
15:16	15:36	Z1&2	BHPA	STK2	5			20	0	
15:37	16:05	Z3	NRED	STK4	18			28	511	

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
16:06	16:13						CHANGING ZONES	7		O
16:11	16:53	Z1&2	BHPA	STK2	5			42	1719	
16:53	16:59						CHANGING ZONES	6		O
16:57	17:26	Z3	NRED	STK4	18			29	508	
17:24	17:34						CHANGING ZONES	10		O
17:32	17:57	Z1&2	BHPA	STK2	5			25	131	
17:39	18:39						WAIT ON TRUCKS *Filling bins.*	60		X
18:37	19:00	Z1&2	BHPA	STK2	5			23	515	
19:00	20:22						DUMPING TRAIN TO WEST	82		O
20:20	22:48	Z1&2	BHPA	STK2	5			148	2031	
22:41	01:08						WAIT ON TRUCKS *Filling bins.*	147		X
01:06	04:11	Z1&2	BHPA	STK2	5			185	2683	
04:10	05:07						WAIT ON TRUCKS *Filling bins.*	57		X
05:05	06:20	Z1&2	BHPA	STK2	5			75	1130	
06:20	06:44						WAIT ON TRUCKS *Filling Bins*	24		X
06:42	07:06	Z1&2	BHPA	STK2	5			24	483	

28+4.

Road Receival Log Report:

28/08/2011 07:00:00 **To** 29/08/2011 07:00:00 *29/08/2011 08:39:03*

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**27/08/2011**								
06:53	07:14	Z1&2	BHPA	STK2	3			21	82	
Log for Date :		**28/08/2011**								
07:15	07:25	Z3	BHPA	STK2	3			10	19	
17:23	00:27	Z1&2	BHPA	STK2	3			424	6317	
19:34	21:04					NC2	BELT RIP TRIP	90		E
21:12	21:45					NC2	BELT RIP TRIP	33		E
00:27	00:34						CHANGING ZONES	7		O
00:31	01:15	Z3	BHPA	STK2	3			44	529	
00:50	01:20						CHANGING ZONES	30		O
01:17	06:32	Z1&2	BHPA	STK2	3			315	3584	
03:53	04:07					NC9	CONVERTOR HEAVY FAULT	14		E
06:56	08:23	Z1&2	BHPA	STK2	3			87	1614	

Road Receival Log Report: 27/08/2011 07:00:00 To 28/08/2011 07:00:00 *29/08/2011 08:39:27*

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**27/08/2011**								
07:20	09:33	Z1&2	BHPA	STK2	3			133	2823	
09:34	11:33						DUMPING TRAIN TO WEST	119		O
11:31	11:52	Z1&2	BHPA	STK2	3			21	834	
11:53	11:59						CHANGING ZONES	6		O
12:00	12:18	Z3	NRED	STK4	18			18	791	
12:17	12:23						CHANGING ZONES	6		O
12:21	13:22	Z1&2	BHPA	STK2	3			61	2210	
13:24	14:06	Z3	NRED	STK4	18			42	917	
14:00	14:11						CHANGING ZONES	11		O
14:09	15:55	Z1&2	BHPA	STK2	3			106	1908	
15:54	17:28						DUMPING TRAIN TO WEST	94		O
17:29	17:54	Z1&2	BHPA	STK2	3			25	606	
17:53	18:00						CHANGING ZONES	7		O
17:57	18:16	Z3	NRED	STK4	18			19	344	
21:38	21:49	Z1&2	BHPA	STK2	3			11	221	
21:50	22:02						POSITION STACKER	12		O
22:00	01:41	Z1&2	BHPA	STK2	3			221	1923	

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
01:33	03:27						WAIT ON CARGO	114		O
03:24	04:29	Z1&2	BHPA	STK2	3			65	645	
04:29	06:56						DUMPING TRAIN TO WEST	147		O
06:53	07:14	Z1&2	BHPA	STK2	3			21	82	

27th.

Road Receival Log Report:

27/08/2011 07:00:00 **To** 28/08/2011 07:00:00 *29/08/2011 08:42:57*

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**27/08/2011**								
07:20	09:33	Z1&2	BHPA	STK2	3			133	2823	
09:34	11:33						DUMPING TRAIN TO WEST	119		O
11:31	11:52	Z1&2	BHPA	STK2	3			21	834	
11:53	11:59						CHANGING ZONES	6		O
12:00	12:18	Z3	NRED	STK4	18			18	791	
12:17	12:23						CHANGING ZONES	6		O
12:21	13:22	Z1&2	BHPA	STK2	3			61	2210	
13:24	14:06	Z3	NRED	STK4	18			42	917	
14:00	14:11						CHANGING ZONES	11		O
14:09	15:55	Z1&2	BHPA	STK2	3			106	1908	
15:54	17:28						DUMPING TRAIN TO WEST	94		O
17:29	17:54	Z1&2	BHPA	STK2	3			25	606	
17:53	18:00						CHANGING ZONES	7		O
17:57	18:16	Z3	NRED	STK4	18			19	344	
21:38	21:49	Z1&2	BHPA	STK2	3			11	221	
21:50	22:02						POSITION STACKER	12		O
22:00	01:41	Z1&2	BHPA	STK2	3			221	1923	

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
01:33	03:27						WAIT ON CARGO	114		O
03:24	04:29	Z1&2	BHPA	STK2	3			65	645	
04:29	06:56						DUMPING TRAIN TO WEST	147		O
06:53	07:14	Z1&2	BHPA	STK2	3			21	82	

Road Receival Log Report:

26/08/2011 07:00:00 **To** 27/08/2011 07:00:00 *29/08/2011 08:39:46*

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**25/08/2011**								
05:25	07:30						DUMPING TRAIN TO WEST	125		O
Log for Date :		**26/08/2011**								
07:28	08:33	Z1&2	BHPA	STK2	6			65	2444	
08:32	08:38						CHANGING ZONES	6		O
08:36	08:59	Z3	CENC	STK4	10			23	767	
09:00	09:53						DUMPING TRAIN TO WEST	53		O
09:51	10:56	Z3	CENC	STK1	2			65	622	
10:52	11:07						CHANGE ROAD FROM EAST TO WES	15		O
11:09	12:46	Z1&2	BHPA	STK4	6			97	2739	
11:10	11:29					PF2	CALIBRATION ERROR	19		E
							Electrician doing isolations for dayshift job.			
12:47	13:27						WAIT ON TRUCKS	40		X
							Filling bins.			
13:25	13:48	Z3	CENC	STK1	2			23	562	
13:46	13:57						CHANGE ROAD FROM EAST TO WES	11		O
13:55	17:26	Z1&2	BHPA	STK4	6			211	2836	
15:56	16:04					PF2	CONTACT MONITOR FAULT	8		E

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
17:25	18:02						WAIT ON TRUCKS	37		X
							Filling bins.			
17:59	18:47	Z3	CENC	STK1	2			48	329	
19:57	01:41	Z1&2	BHPA	STK2	3			344	4794	
01:39	04:11						DUMPING TRAIN TO WEST	152		O
04:09	04:52	Z1&2	BHPA	STK2	3			43	1719	
04:54	05:13	Z3	BHPA	STK2	3			19	59	
05:15	06:44	Z1&2	BHPA	STK2	3			89	1400	

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
17:13	17:26	Z3	NRED	STK4	18			13	296	
17:25	17:35						CHANGING ZONES	10		O
17:32	18:38	Z1&2	BHPA	STK2	6			66	1359	
18:39	18:46						WAIT ON CARGO	7		X
							filling bins			
18:43	19:07	Z3	NRED	STK4	18			24	440	
19:05	19:16						WAIT ON CARGO	11		X
							filling bins			
19:14	22:13	Z1&2	BHPA	STK2	6			179	3666	
22:12	22:23						WAIT ON CARGO	11		X
							filling bins			
22:20	22:50	Z3	NRED	STK4	18			30	663	
22:42	23:01						CHANGING ZONES	19		O
22:59	23:53	Z1&2	BHPA	STK2	6			54	1763	
23:52	00:30						WAIT ON CARGO	38		X
							filling bins			
00:28	02:58	Z1&2	BHPA	STK2	6			150	3374	
02:50	04:26						WAIT ON CARGO	96		X
							filling bins			
04:24	07:01	Z1&2	BHPA	STK2	6			157	4017	
05:01	05:11					STK2	RACK FAULT	10		E

Road Receival Log Report: 23/08/2011 07:00:00 To 24/08/2011 07:00:00 *24/08/2011 08:55:38*

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**22/08/2011**								
06:06	07:06	Z1&2	BHPA	STK2	6			60	1868	
Log for Date :		**23/08/2011**								
07:01	07:25						CHANGING ZONES	24		O
07:23	07:56	Z3	CENC	STK4	10			33	867	
07:54	08:22						CHANGING ZONES	28		O
08:20	10:01	Z1&2	BHPB	STK4	9			101	1876	
09:01	09:26					NC1	LANYARD OPERATED	25		E
10:02	10:27						POSITION STACKER	25		O
10:25	10:51	Z1&2	BHPB	STK2	9			26	725	
10:50	11:12						CHANGING ZONES *Also reposition stacker*	22		O
11:10	11:46	Z3	CENC	STK2	10			36	763	
11:44	12:03						CHANGING ZONES *Also reposition stacker*	19		O
12:01	13:08	Z1&2	BHPB	STK2	9			67	2071	
13:06	13:24						CHANGING ZONES *Also reposition stacker*	18		O
13:22	13:45	Z3	CENC	STK2	10			23	422	
13:46	14:02						CHANGING ZONES *And reposition stacker*	16		O

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
14:00	15:45	Z1&2	BHPB	STK2	9			105	1976	
15:50	17:33						DUMPING TRAIN TO WEST	103		O
17:30	17:49	Z1&2	BHPB	STK2	9			19	33	
18:10	18:38	Z3	CENC	STK4	10			28	446	
19:44	21:36	Z1&2	BHPA	STK2	6			112	1732	
21:36	22:31						WAIT ON CARGO	55		X
							Filling Bins			
22:29	00:31	Z1&2	BHPA	STK2	6			122	2423	
00:26	01:01						WAIT ON CARGO	35		X
							filling bins			
00:58	01:47	Z1&2	BHPA	STK2	6			49	1347	
01:47	02:40						WAIT ON CARGO	53		X
							filling bins			
02:38	04:20	Z1&2	BHPA	STK2	6			102	1819	
04:17	06:24						WAIT ON CARGO	127		X
							filling bins			
06:22	07:00	Z1&2	BHPA	STK2	6			38	1609	

Road Receival Log Report: 22/08/2011 07:00:00 To 23/08/2011 07:00:00

23/08/2011 08:33:57

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**22/08/2011**								
07:01	10:59	Z1&2	BHPA	STK2	5			238	4310	
08:22	08:28					STK2BH	ULTIMATE LIMIT TRIP	6		E
09:43	10:12					STK2BH	ULTIMATE LIMIT TRIP	29		E
10:15	10:32					STK2BH	ULTIMATE LIMIT TRIP	17		E
10:58	11:09						CHANGING ZONES	11		O
11:07	11:30	Z3	NRED	STK4	18			23	845	
11:31	11:38						CHANGING ZONES	7		O
11:36	12:25	Z1&2	BHPA	STK2	5			49	1549	
12:29	12:46	Z3	NRED	STK4	18			17	330	
12:40	12:57						WAIT ON CARGO	17		X
12:55	14:18	Z1&2	BHPA	STK2	5			83	1416	
14:18	14:36						CHANGING ZONES	18		O
14:21	15:06	Z3	NRED	STK4	18			45	916	
15:06	15:15						CHANGING ZONES	9		O
15:13	15:29	Z1&2	BHPA	STK2	5			16	631	
15:32	15:54	Z3	NRED	STK4	18			22	426	

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
15:53	16:00						CHANGING ZONES	7		O
15:58	16:31	Z1&2	BHPA	STK2	5			33	1184	
16:31	18:20						DUMPING TRAIN TO WEST	109		O
18:18	18:44	Z1&2	BHPA	STK2	5			26	967	
18:46	19:07	Z3	NRED	STK4	18			21	621	
19:04	19:14						CHANGING ZONES	10		O
19:12	20:50	Z1&2	BHPA	STK2	6			98	1317	
20:45	23:32						WAIT ON TRUCKS *Filling bins.*	167		X
23:30	04:26	Z1&2	BHPA	STK2	6			296	5238	
04:26	06:08						DUMPING TRAIN TO WEST *nil truck delay*	102		O
06:06	07:06	Z1&2	BHPA	STK2	6			60	1868	

Road Receival Log Report:

20/08/2011 07:00:00 **To** 21/08/2011 07:00:00 *22/08/2011 08:38:31*

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**19/08/2011**								
06:42	07:06	Z1&2	BHPA	STK2	5			24	483	
Log for Date :		**20/08/2011**								
07:06	07:35	Z1&2	BHPA	STK2	5			29	114	
07:28	08:59						WAIT ON TRUCKS *Filling Bins*	91		X
08:56	09:29	Z1&2	BHPA	STK2	5			33	839	
09:31	09:59	Z3	NRED	STK4	18			28	910	
09:59	10:07						CHANGING ZONES	8		O
10:06	10:41	Z1&2	BHPA	STK2	5			35	435	
10:35	10:46						CHANGING ZONES	11		O
10:44	11:18	Z3	NRED	STK4	18			34	738	
11:18	11:27						CHANGING ZONES	9		O
11:25	14:14	Z1&2	BHPA	STK2	5			169	1387	
15:16	15:32	Z1&2	BHPA	STK2	5			16	314	
15:33	15:37						CHANGING ZONES	4		O
15:35	16:07	Z3	NRED	STK4	18			32	481	
15:38	15:50					PF1	FAULT	12		E
16:08	16:17						CHANGING ZONES	9		O

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
16:15	17:03	Z1&2	BHPA	STK2	5			48	451	
18:45	19:25	Z1&2	BHPA	STK2	5			40	390	

Road Receival Log Report:

18/08/2011 07:00:00 **To** 19/08/2011 07:00:00 *19/08/2011 09:00:24*

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**16/08/2011**								
16:29	11:05						UNKNOWN	2556		O
Log for Date :		**17/08/2011**								
00:22	07:15	Z1&2	BHPA	STK2	4			413	5028	
Log for Date :		**18/08/2011**								
07:16	10:35	Z1&2	BHPA	STK2	4			199	2921	
10:19	10:54						CHANGING ZONES	35		O
10:51	11:15	Z3	NRED	STK4	18			24	809	
11:15	11:23						CHANGING ZONES	8		O
11:21	12:59	Z1&2	BHPA	STK2	4			98	2442	
12:57	13:03						CHANGING ZONES	6		O
13:01	13:32	Z3	NRED	STK4	18			31	783	
13:28	13:39						CHANGING ZONES	11		O
13:37	15:39	Z1&2	BHPA	STK2	4			122	2342	
15:43	16:12	Z3	NRED	STK4	18			29	1024	
16:10	16:17						CHANGING ZONES	7		O
16:15	17:35	Z1&2	BHPA	STK2	4			80	1591	
17:38	18:04	Z3	NRED	STK4	18			26	668	

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
18:03	18:13						CHANGING ZONES	10		O
18:11	21:13	Z1&2	BHPA	STK2	5			182	3660	
19:57	20:22					PF2	FAULT *Rotor drive fault*	25		E
21:09	21:37						CHANGING ZONES	28		O
21:15	21:51	Z3	NRED	STK4	18			36	502	
21:50	21:59						CHANGING ZONES	9		O
21:57	06:56	Z1&2	BHPA	STK2	5			539	6992	
04:55	07:00					STK4	PACE COLLISION STOP *Magnet missing*	125		E

Road Receival Log Report: 17/08/2011 07:00:00 To 18/08/2011 07:00:00 *18/08/2011 08:50:07*

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**16/08/2011**								
20:33	07:00	Z1&2	BHPA	STK2	4			627	8863	
Log for Date :		**17/08/2011**								
07:00	10:06	Z1&2	BHPA	STK2	4			186	4477	
09:58	10:10					NC9_BELT	UNDERSPEED	12		E
10:07	10:29	Z3	NRED	STK4	18			22	773	
10:27	10:35						CHANGING ZONES	8		O
10:33	13:11	Z1&2	BHPA	STK2	4			158	4378	
13:10	13:18						CHANGING ZONES	8		O
13:15	13:38	Z3	NRED	STK4	18			23	880	
13:36	13:44						CHANGING ZONES	8		O
13:42	16:37	Z1&2	BHPA	STK2	4			175	2818	
16:40	17:07	Z3	NRED	STK4	18			27	956	
17:03	17:13						CHANGING ZONES	10		O
17:11	18:23	Z1&2	BHPA	STK2	4			72	918	
18:21	18:34						CHANGING ZONES	13		O
18:32	18:47	Z3	NRED	STK4	18			15	188	
18:43	18:57						CHANGING ZONES	14		O

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
18:54	00:02	Z1&2	BHPA	STK2	4			308	2152	
19:12	19:49						WAIT ON CARGO	37		X
20:52	21:46						WAIT ON CARGO	54		X
23:09	00:24						WAIT ON CARGO	75		X
00:22	07:15	Z1&2	BHPA	STK2	4			413	5028	
03:02	03:51						WAIT ON CARGO	49		X
05:15	05:33						WAIT ON CARGO	18		X

Road Receival Log Report:

16/08/2011 07:00:00 **To** 17/08/2011 07:00:00 *17/08/2011 08:40:03*

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**14/08/2011**								
03:21	12:39						UNKNOWN	1998		O
Log for Date :		**15/08/2011**								
01:46	07:16	Z1&2	BHPA	STK2	4			330	4017	
06:32	07:09					PF2	CONTACT MONITOR FAULT *ELECTRICIAN WORKING ON RECLAIMER*	37		E
Log for Date :		**16/08/2011**								
07:16	10:54	Z1&2	BHPA	STK2	4			218	4600	
10:54	11:00						CHANGING ZONES	6		O
10:57	11:21	Z3	NRED	STK4	18			24	968	
11:21	11:29						CHANGING ZONES	8		O
11:27	13:34	Z1&2	BHPA	STK2	4			127	3022	
12:29	12:34					CCS	COMMUNICATION FAULT	5		E
13:37	14:15	Z3	NRED	STK4	18			38	756	
14:13	14:22						CHANGING ZONES	9		O
14:20	16:36	Z1&2	BHPA	STK2	4			136	3429	
16:36	16:42						CHANGING ZONES	6		O
16:40	17:03	Z3	NRED	STK4	18			23	921	
17:06	18:49	Z1&2	BHPA	STK2	4			103	2151	

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
18:50	19:52	Z1&2	BHPA	STK2	4			62	491	
19:50	19:59						CHANGING ZONES	9		O
19:56	20:26	Z3	NRED	STK4	18			30	687	
20:16	20:35						CHANGING ZONES	19		O
20:33	07:00	Z1&2	BHPA	STK2	4			627	8863	
22:18	22:39						WAIT ON CARGO	21		X
01:15	01:24					PF2	FAULT *Plough feeder stopped. No faults recorded*	9		E
03:16	04:08						WAIT ON CARGO	52		X
06:09	06:27					PF2	FAULT *rotor drive fault*	18		E

Road Receival Log Report:

15/08/2011 07:00:00 **To** 16/08/2011 07:00:00 *16/08/2011 16:02:06*

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
Log for Date :		**14/08/2011**								
03:21	12:39						UNKNOWN	1998		O
06:38	09:46	Z1&2	BHPA	STK2	4			188	4319	
Log for Date :		**15/08/2011**								
09:42	09:54						CHANGING ZONES	12		O
09:51	10:15	Z3	NRED	STK4	18			24	565	
10:09	10:21						CHANGING ZONES	12		O
10:19	12:33	Z1&2	BHPA	STK2	4			134	3360	
12:36	13:05	Z3	NRED	STK4	18			29	526	
13:06	13:12						CHANGING ZONES	6		O
13:10	15:36	Z1&2	BHPA	STK2	4			146	2970	
15:35	15:42						CHANGING ZONES	7		O
15:39	16:11	Z3	NRED	STK4	18			32	1192	
16:10	16:18						CHANGING ZONES	8		O
16:16	18:53	Z1&2	BHPA	STK2	4			157	3261	
18:02	18:18					PF2	FAULT *ROTOR VVVF DRIVE FAULT*	16		E
18:51	19:00						CHANGING ZONES	9		O
18:57	19:29	Z3	NRED	STK4	18			32	542	

From	To	O1	O2	D1	D2	Equipment	Delay_Description	Min	Tonnage	Cat
19:41	19:56	Z1&2	BHPA	STK2	4			15	593	
20:07	00:16	Z1&2	BHPA	STK2	4			249	4634	
00:17	01:47						DUMPING TRAIN TO WEST	90		O
01:46	07:16	Z1&2	BHPA	STK2	4			330	4017	
03:20	03:35						WAIT ON TRUCKS	15		X
06:32	07:09					PF2	CONTACT MONITOR FAULT *ELECTRICIAN WORKING ON RECLAIMER*	37		E

Appendix B

Mid-Block Counts

Road	Appin Rd - north of Southern Freeway (Week
Location	Bulli Tops
Site No.	1
Start Date	15-Aug-11
Day	Weekday Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	85%
LGV	4%
OGV1 & PSV	1%
OGV2	10%

	NB						SB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	13	1	0	9	23	0	69	1	0	22	92	0	82	2	0	31	116
1:00	0	8	1	0	14	23	0	19	0	0	15	34	0	27	1	0	29	57
2:00	0	13	2	0	8	23	0	19	0	0	10	29	0	31	2	0	19	52
3:00	0	19	1	0	11	31	0	11	0	0	14	25	0	31	1	0	25	56
4:00	0	48	2	0	13	64	0	21	0	0	18	40	0	70	2	0	31	103
5:00	2	304	12	0	33	351	2	85	6	1	24	117	3	389	17	1	57	468
6:00	1	397	18	2	27	445	1	231	17	4	45	299	2	628	35	6	72	744
7:00	0	534	21	2	29	586	1	317	12	1	38	370	1	850	33	4	67	956
8:00	1	368	12	2	34	417	1	331	15	2	37	387	2	699	28	4	71	804
9:00	3	217	16	2	35	274	1	185	13	4	40	243	4	402	30	6	75	517
10:00	0	184	17	2	35	239	1	179	14	2	39	235	1	363	31	4	74	474
11:00	1	165	14	3	36	220	2	165	12	2	33	214	3	331	26	5	69	434
12:00	1	161	13	2	30	206	2	164	12	3	35	215	3	325	25	5	64	422
13:00	1	277	20	3	31	332	2	179	10	3	31	224	3	456	30	6	62	556
14:00	1	227	15	2	21	267	1	264	14	4	25	308	2	492	29	6	47	575
15:00	2	296	16	1	24	339	1	453	12	2	25	494	3	750	29	3	48	833
16:00	1	319	17	1	17	355	3	615	13	3	14	649	4	934	30	4	31	1004
17:00	2	284	9	0	16	312	1	513	8	1	16	539	3	797	17	2	33	851
18:00	0	181	6	0	14	202	0	313	4	1	19	337	1	494	9	1	34	539
19:00	0	84	3	0	15	103	0	124	3	0	16	144	0	209	6	0	32	247
20:00	0	66	3	0	15	84	0	88	1	0	17	106	0	154	3	0	32	190
21:00	0	108	3	0	10	121	0	72	0	0	16	90	0	180	3	0	26	210
22:00	0	69	1	0	15	85	0	57	1	0	17	74	0	126	1	0	32	159
23:00	0	24	1	0	12	37	0	67	0	0	14	82	0	91	1	0	26	119
Total	16	4368	224	25	507	5139	19	4543	169	34	582	5347	35	8911	393	59	1088	10487

Road	Appin Rd - north of Southern Freeway (Week
Location	Bulli Tops
Site No.	1
Start Date	15-Aug-11
Day	7 Day Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	87%
LGV	3%
OGV1 & PSV	0%
OGV2	9%

	NB						SB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	17	1	0	9	27	0	65	1	0	17	83	0	82	2	0	26	110
1:00	0	13	0	0	12	26	0	20	1	0	12	33	0	33	1	0	24	59
2:00	0	15	2	0	7	23	0	18	0	0	9	27	0	33	2	0	15	50
3:00	0	18	1	0	9	28	0	12	0	0	11	23	0	29	1	0	20	51
4:00	0	45	1	0	11	58	0	20	0	0	15	36	0	65	2	0	26	94
5:00	1	247	10	0	26	284	1	71	4	1	19	96	2	317	14	1	45	380
6:00	1	314	14	1	22	353	1	188	14	3	36	241	2	502	28	4	58	594
7:00	0	411	17	2	23	452	1	249	9	1	31	291	1	659	25	3	54	743
8:00	1	320	10	1	27	359	1	271	12	2	29	314	2	591	21	3	56	674
9:00	3	221	14	2	28	268	3	178	10	3	33	227	6	399	24	4	61	494
10:00	0	205	15	1	28	249	2	201	12	2	33	250	3	406	26	3	61	499
11:00	2	195	12	2	30	241	2	214	10	1	27	255	4	410	22	4	57	495
12:00	1	196	10	2	24	233	2	199	9	2	28	242	3	395	20	4	52	475
13:00	2	269	17	2	23	313	3	205	8	2	26	244	5	474	25	4	49	557
14:00	2	239	12	2	17	273	1	273	11	3	20	308	3	512	23	4	37	581
15:00	2	297	13	1	19	332	2	408	10	2	20	441	4	705	23	2	38	773
16:00	2	323	13	1	15	353	2	528	11	2	13	557	4	851	24	3	28	911
17:00	2	281	8	0	13	304	1	449	6	1	13	470	3	729	14	1	26	774
18:00	0	180	5	0	12	198	0	290	3	1	17	311	1	470	8	1	29	509
19:00	0	100	3	0	12	115	0	130	2	0	15	147	0	230	5	0	27	263
20:00	0	71	3	0	14	88	0	86	1	0	15	102	0	157	3	0	29	190
21:00	0	97	2	0	8	108	0	80	1	0	14	95	0	177	3	0	22	203
22:00	0	72	1	0	13	85	0	64	0	0	14	79	0	135	1	0	27	164
23:00	0	34	1	0	11	46	0	64	0	0	13	77	0	98	2	0	24	123
Total	19	4181	183	19	413	4815	25	4281	136	27	479	4948	43	8462	319	46	893	9763

Road	Appin Rd - north of Southern Freeway (Week
Location	Bulli Tops
Site No.	1
Start Date	22-Aug-11
Day	Weekday Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	86%
LGV	4%
OGV1 & PSV	1%
OGV2	10%

	NB						SB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	16	2	0	11	30	0	71	1	0	17	89	0	87	4	0	28	119
1:00	0	12	0	0	11	24	0	20	1	0	16	37	0	33	1	0	27	61
2:00	0	12	1	0	11	24	0	22	1	0	12	36	0	34	3	0	23	60
3:00	0	19	1	0	14	35	0	14	1	0	13	27	0	33	2	0	27	62
4:00	0	53	2	0	14	69	0	18	1	1	21	41	0	71	3	1	35	110
5:00	1	323	10	0	29	363	1	86	8	1	24	120	2	409	17	2	53	483
6:00	0	403	16	3	29	450	0	226	15	5	36	282	0	629	31	7	65	733
7:00	1	593	18	2	27	641	2	304	16	3	38	363	3	898	35	5	65	1004
8:00	2	378	15	3	35	432	0	346	13	5	30	394	2	724	28	8	65	826
9:00	1	220	15	2	36	273	0	193	12	3	35	244	1	413	27	4	71	517
10:00	1	172	16	2	32	222	2	174	10	2	34	223	3	346	26	4	66	445
11:00	2	161	16	4	32	214	3	169	13	3	33	222	5	330	30	7	64	436
12:00	1	172	14	2	27	218	2	184	11	2	28	227	3	357	25	4	55	444
13:00	2	274	17	2	19	315	3	196	10	2	32	242	5	470	27	4	51	557
14:00	1	240	18	4	20	283	2	266	12	2	21	303	3	506	30	6	41	586
15:00	2	299	18	2	22	343	2	475	13	2	17	510	4	774	31	4	39	852
16:00	2	314	16	1	16	349	2	616	11	2	16	647	4	929	27	2	33	995
17:00	2	398	13	2	27	442	1	584	12	1	22	621	3	982	26	3	50	1064
18:00	0	236	7	1	20	264	1	420	8	1	24	453	1	655	15	2	43	717
19:00	0	128	4	0	16	148	1	216	8	0	19	244	1	344	11	1	35	392
20:00	0	79	3	0	17	98	1	122	3	1	24	150	1	201	5	1	41	249
21:00	0	123	3	0	18	145	0	100	1	1	21	123	0	223	5	1	39	268
22:00	0	73	3	0	20	96	0	75	1	0	19	96	0	148	4	1	39	192
23:00	0	36	2	0	15	54	0	79	1	0	21	101	0	114	3	0	36	154
Total	19	4734	230	30	519	5532	24	4976	184	37	572	5794	44	9710	415	68	1091	11326

Road	Appin Rd - north of Southern Freeway (Week
Location	Bulli Tops
Site No.	1
Start Date	22-Aug-11
Day	7 Day Ave.
Description	Class Summary

M'Cycle & P'Cycle	1%
Cars	87%
LGV	3%
OGV1 & PSV	0%
OGV2	8%

	NB						SB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	25	2	0	10	37	0	64	1	0	16	81	0	89	3	0	26	118
1:00	0	17	0	0	12	29	0	20	1	0	15	36	0	37	1	0	27	65
2:00	0	15	1	0	9	26	0	21	2	0	11	34	0	36	3	0	21	60
3:00	0	18	1	0	13	32	0	13	1	0	11	25	0	31	2	0	24	57
4:00	0	47	2	0	12	62	0	21	1	1	17	39	0	68	3	1	29	101
5:00	1	261	8	0	23	293	1	76	6	1	19	102	2	336	14	1	42	396
6:00	0	322	13	2	23	360	1	192	12	3	28	237	1	514	25	5	51	597
7:00	1	457	14	1	21	494	2	251	13	2	30	298	2	708	27	4	51	792
8:00	2	329	11	2	27	372	1	287	11	4	23	325	3	616	22	6	50	697
9:00	3	231	13	1	26	274	1	196	10	2	27	236	4	426	23	3	53	510
10:00	1	220	14	1	25	262	5	202	8	2	26	243	6	422	22	3	51	505
11:00	2	199	12	3	24	240	6	227	11	3	25	272	8	426	23	5	49	512
12:00	4	203	12	2	21	242	5	238	9	2	21	275	9	441	21	4	43	517
13:00	4	280	14	2	15	315	4	241	8	2	24	278	8	521	21	4	39	593
14:00	3	261	15	3	15	297	4	285	11	2	17	319	7	546	26	5	32	616
15:00	3	315	14	1	18	352	4	436	11	2	14	466	7	751	25	3	32	818
16:00	4	349	12	1	14	379	3	533	9	1	14	561	7	883	21	2	28	940
17:00	2	390	11	1	22	428	1	508	10	1	18	538	4	899	21	2	41	966
18:00	0	232	6	1	17	256	1	374	7	1	19	401	2	606	12	2	35	657
19:00	1	128	4	0	12	145	1	196	6	0	18	220	1	324	9	0	30	365
20:00	0	81	2	0	16	100	1	117	3	1	21	141	1	198	5	1	36	241
21:00	0	109	3	0	17	128	0	101	2	0	19	123	0	210	5	0	36	251
22:00	0	68	2	0	18	89	0	75	2	0	17	95	0	144	4	1	35	184
23:00	0	40	2	0	15	57	0	69	2	0	19	89	0	109	3	0	34	147
Total	33	4597	190	23	425	5268	42	4743	154	30	468	5436	74	9340	344	53	893	10703

Road	Mt Ousley Rd - 1km south of New Pleasant R
Location	Mt Ousley
Site No.	2
Start Date	15-Aug-11
Day	Weekday Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	87%
LGV	3%
OGV1 & PSV	1%
OGV2	8%

	EB						WB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	141	6	2	27	176	0	43	3	1	30	78	0	184	9	3	57	254
1:00	0	75	5	3	29	112	0	46	2	2	35	85	0	121	7	5	64	197
2:00	0	54	4	2	25	85	0	47	6	4	47	104	0	102	9	6	73	189
3:00	0	56	3	2	33	94	0	132	5	3	65	206	0	188	8	5	98	300
4:00	0	82	9	3	52	146	1	484	16	6	98	605	1	566	25	9	150	751
5:00	0	277	17	9	92	395	1	1528	43	12	124	1707	1	1805	60	20	215	2101
6:00	1	780	59	18	124	983	5	1829	68	15	133	2050	7	2609	127	33	257	3033
7:00	2	1470	54	20	113	1659	3	1682	63	17	136	1901	5	3153	117	37	248	3560
8:00	3	1957	54	19	111	2144	4	1192	59	16	133	1404	7	3149	113	35	244	3548
9:00	6	1174	56	22	112	1370	3	971	59	23	158	1215	9	2146	115	45	270	2584
10:00	4	1035	54	19	110	1222	2	893	58	20	147	1120	6	1928	112	39	256	2342
11:00	6	962	49	16	123	1157	5	881	51	18	119	1074	10	1843	100	34	242	2230
12:00	3	903	47	12	117	1081	4	937	54	13	114	1123	6	1840	101	26	231	2203
13:00	3	958	55	13	117	1146	7	1078	62	9	109	1264	10	2036	117	22	226	2410
14:00	3	1137	61	16	113	1331	4	1101	66	10	98	1280	7	2238	127	26	212	2610
15:00	4	1563	64	8	94	1733	7	1331	54	9	80	1481	11	2893	118	17	175	3214
16:00	6	1893	60	6	68	2032	5	1490	43	8	67	1614	11	3383	103	14	135	3646
17:00	2	1841	41	5	49	1939	5	1393	34	5	55	1492	7	3234	75	10	105	3430
18:00	1	1554	19	2	43	1618	1	749	13	4	54	821	2	2303	32	6	97	2439
19:00	1	882	18	2	32	935	0	403	9	2	49	464	1	1284	27	4	81	1399
20:00	0	538	13	3	34	588	0	334	7	2	45	388	0	872	20	5	79	976
21:00	1	442	10	2	37	492	1	327	7	3	40	378	1	769	17	5	77	870
22:00	0	358	7	1	28	394	0	219	5	3	40	268	1	578	11	5	68	662
23:00	1	284	5	1	37	327	0	95	4	1	38	138	1	378	8	2	75	465
Total	47	20417	767	207	1720	23158	57	19185	792	208	2016	22258	105	39601	1560	415	3736	45416

Road	Mt Ousley Rd - 1km south of New Pleasant R
Location	Mt Ousley
Site No.	2
Start Date	15-Aug-11
Day	7 Day Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	89%
LGV	3%
OGV1 & PSV	1%
OGV2	7%

	EB						WB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	179	7	2	21	209	0	69	4	1	26	100	0	248	11	3	47	309
1:00	0	99	5	2	23	128	0	56	2	2	30	90	0	154	7	4	52	218
2:00	0	69	3	2	20	94	0	53	5	3	38	99	0	122	8	5	58	193
3:00	0	64	2	2	24	92	0	122	5	3	50	181	0	186	7	4	75	273
4:00	0	85	7	3	39	133	1	400	14	5	75	494	1	485	21	8	114	628
5:00	0	256	14	7	67	343	1	1209	33	10	94	1347	1	1465	47	17	161	1691
6:00	1	662	46	15	92	816	4	1445	54	12	101	1616	5	2107	100	27	193	2432
7:00	1	1187	41	15	86	1331	3	1377	50	14	105	1549	4	2564	92	30	190	2880
8:00	4	1612	44	14	84	1757	4	1096	48	13	104	1265	8	2708	92	27	187	3022
9:00	6	1132	46	17	83	1283	3	1021	48	18	121	1211	9	2153	93	35	204	2494
10:00	5	1109	44	14	86	1259	2	1007	48	17	113	1186	7	2116	92	31	199	2445
11:00	5	1128	42	14	95	1284	5	996	42	16	94	1152	10	2124	84	30	189	2436
12:00	4	1050	40	9	90	1192	4	1010	46	11	89	1160	8	2059	86	21	179	2352
13:00	5	1042	44	11	91	1193	7	1098	51	9	86	1250	12	2140	95	19	176	2443
14:00	3	1189	49	12	86	1340	4	1145	54	10	78	1291	8	2334	103	22	164	2631
15:00	4	1519	52	7	71	1652	8	1385	45	9	65	1511	11	2904	96	16	136	3163
16:00	5	1735	48	5	52	1845	5	1528	36	9	58	1637	10	3263	84	14	110	3481
17:00	2	1693	34	5	40	1774	4	1367	32	6	46	1454	6	3060	66	11	86	3228
18:00	1	1440	16	2	34	1494	1	775	14	4	43	837	2	2216	30	6	77	2331
19:00	1	842	15	2	25	885	0	461	9	3	39	512	1	1303	24	5	64	1397
20:00	0	524	11	2	26	563	0	346	8	2	38	395	1	870	19	4	64	958
21:00	1	441	9	2	27	480	0	323	6	3	33	366	1	763	16	5	61	845
22:00	0	363	6	1	22	392	0	243	4	3	33	284	1	606	10	4	56	676
23:00	1	287	5	1	28	322	0	114	4	1	31	150	1	401	9	2	59	473
Total	49	19708	630	165	1311	21862	57	18645	663	183	1591	21138	105	38352	1292	348	2902	43000

Road	Mt Ousley Rd - 1km south of New Pleasant R
Location	Mt Ousley
Site No.	2
Start Date	22-Aug-11
Day	Weekday Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	89%
LGV	4%
OGV1 & PSV	2%
OGV2	5%

	EB						WB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	219	7	3	16	245	0	46	5	3	21	75	1	265	11	5	37	320
1:00	0	126	4	4	13	146	0	49	4	4	30	86	0	175	7	8	43	232
2:00	0	96	4	2	16	118	0	55	11	7	28	101	0	151	15	9	44	220
3:00	0	115	3	2	11	132	0	131	15	9	48	203	0	247	18	11	59	335
4:00	0	178	10	5	20	213	1	444	24	9	69	547	1	622	34	14	89	760
5:00	1	447	18	12	39	518	4	1462	61	22	78	1627	5	1910	79	35	117	2145
6:00	1	1055	62	17	45	1180	6	1851	77	21	84	2039	7	2906	138	38	129	3219
7:00	3	1516	56	24	53	1652	4	1738	68	21	86	1917	7	3254	124	45	139	3568
8:00	3	2036	63	21	58	2181	4	1236	58	28	105	1431	7	3272	121	49	163	3612
9:00	3	1303	57	31	74	1468	4	965	66	28	108	1171	6	2268	124	59	181	2638
10:00	3	1077	66	35	86	1267	2	860	55	29	102	1049	5	1938	121	64	188	2317
11:00	3	997	63	33	94	1191	3	818	48	36	98	1003	6	1815	112	69	193	2194
12:00	1	953	59	31	86	1131	3	931	61	25	95	1115	4	1884	120	57	181	2246
13:00	3	1024	49	33	82	1191	4	1012	63	25	78	1182	7	2036	113	57	161	2373
14:00	2	1143	55	31	71	1302	2	1065	62	26	73	1228	4	2208	117	57	144	2530
15:00	4	1520	60	23	58	1666	6	1320	66	18	76	1485	10	2840	126	41	134	3151
16:00	3	1938	63	15	42	2061	5	1402	44	16	63	1530	8	3340	108	31	105	3591
17:00	4	1941	43	12	28	2027	3	1397	34	12	57	1504	7	3338	78	23	85	3531
18:00	3	1617	27	5	20	1674	2	789	22	10	48	871	5	2406	49	16	69	2545
19:00	2	974	19	5	21	1020	1	428	10	5	45	489	3	1402	29	10	66	1510
20:00	1	564	10	7	17	599	1	319	13	5	31	369	2	883	23	12	48	968
21:00	1	463	6	6	16	491	1	329	8	4	35	377	1	792	14	10	51	868
22:00	0	395	6	5	17	423	0	191	7	5	35	238	1	586	13	10	51	661
23:00	1	308	6	4	17	336	1	101	6	7	38	152	2	409	11	11	54	488
Total	42	22005	817	366	1000	24231	57	18941	888	374	1531	21791	99	40947	1705	740	2531	46021

Road	Mt Ousley Rd - 1km south of New Pleasant R
Location	Mt Ousley
Site No.	2
Start Date	22-Aug-11
Day	7 Day Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	91%
LGV	3%
OGV1 & PSV	1%
OGV2	5%

	EB						WB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	1	232	6	3	14	255	0	71	4	2	20	98	1	303	10	5	34	353
1:00	0	137	4	3	12	156	0	56	3	4	26	90	0	194	7	7	38	246
2:00	0	99	3	2	14	119	0	59	10	5	25	99	0	158	13	7	39	217
3:00	0	108	2	2	10	122	0	117	12	7	40	176	0	224	14	9	50	298
4:00	0	161	8	4	16	190	0	372	20	7	56	456	1	533	28	12	72	646
5:00	1	389	14	10	31	444	3	1166	46	17	64	1296	4	1554	61	27	95	1741
6:00	1	872	48	14	37	973	5	1461	61	16	69	1613	6	2333	109	31	106	2585
7:00	3	1257	44	18	43	1365	3	1432	53	18	71	1577	6	2689	97	36	114	2941
8:00	3	1683	50	17	46	1800	5	1142	45	21	85	1297	8	2825	94	38	131	3097
9:00	5	1243	46	25	58	1378	4	1025	54	22	85	1191	10	2268	100	48	143	2568
10:00	5	1160	52	26	68	1311	4	994	44	23	85	1151	9	2154	96	49	153	2462
11:00	6	1208	51	25	75	1365	5	928	38	27	80	1078	11	2136	89	52	155	2443
12:00	4	1191	46	23	68	1332	6	1002	49	20	75	1152	10	2193	95	44	143	2484
13:00	4	1183	41	26	66	1320	7	1077	52	19	64	1217	10	2260	93	44	130	2538
14:00	4	1187	44	23	56	1314	4	1138	51	21	61	1276	9	2326	95	44	117	2590
15:00	4	1451	49	17	47	1568	9	1394	54	16	63	1535	12	2845	103	33	110	3104
16:00	4	1745	50	12	33	1845	7	1618	39	15	56	1734	11	3363	88	27	90	3579
17:00	3	1806	35	10	24	1879	4	1458	32	11	49	1554	8	3264	67	21	73	3432
18:00	3	1484	23	5	17	1532	2	836	19	9	41	907	5	2321	41	14	59	2439
19:00	2	916	16	4	18	956	1	473	9	4	36	524	4	1389	26	9	54	1481
20:00	1	552	8	5	15	581	1	343	12	4	29	390	2	895	21	10	44	971
21:00	1	453	6	5	14	479	1	320	8	3	31	363	2	773	13	8	45	841
22:00	1	390	6	4	15	416	0	214	6	4	30	254	1	604	12	8	44	670
23:00	1	311	6	4	13	334	1	125	5	6	33	170	1	436	11	9	47	504
Total	57	21218	659	289	810	23034	71	18822	725	302	1276	21197	129	40041	1384	592	2086	44231

Road	Southern Freeway - btw Mt Kiera Rd and Gip
Location	Keiraville
Site No.	3
Start Date	15-Aug-11
Day	Weekday Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	89%
LGV	3%
OGV1 & PSV	1%
OGV2	7%

	NB						SB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	58	2	1	17	78	0	133	5	2	28	168	0	191	7	2	44	246
1:00	0	48	2	1	21	72	0	82	3	1	26	112	0	130	5	2	47	184
2:00	1	55	5	2	24	87	0	55	5	1	26	88	1	110	11	3	50	175
3:00	1	138	10	3	48	199	0	56	5	1	27	89	1	194	14	4	75	289
4:00	2	517	14	4	80	617	1	122	7	2	41	172	3	638	21	6	121	789
5:00	5	1800	37	17	143	2002	1	478	25	6	82	593	7	2278	62	24	224	2595
6:00	9	2766	60	24	173	3032	4	1581	91	28	144	1847	12	4347	150	52	317	4879
7:00	9	3096	67	31	195	3398	6	2170	113	35	159	2483	15	5266	179	67	354	5880
8:00	9	3749	69	35	209	4071	4	2865	133	48	196	3246	13	6613	203	83	406	7318
9:00	8	2212	64	31	173	2488	6	1704	94	28	138	1970	14	3916	158	59	312	4458
10:00	6	1644	52	24	149	1876	7	1543	90	29	135	1804	13	3187	143	54	284	3680
11:00	4	1565	53	25	127	1774	10	1544	84	33	141	1812	14	3109	137	57	268	3586
12:00	4	1578	54	22	130	1788	6	1635	83	28	147	1899	10	3213	137	50	277	3687
13:00	6	1764	59	20	128	1977	7	1649	82	29	141	1907	12	3413	141	49	268	3884
14:00	4	1980	69	29	120	2203	12	2351	115	38	178	2694	16	4331	184	68	299	4897
15:00	10	2754	59	29	137	2989	13	3251	152	46	225	3687	23	6005	211	75	362	6676
16:00	13	2970	50	19	138	3191	11	3639	153	48	244	4095	24	6610	203	67	383	7286
17:00	5	2857	36	17	105	3021	8	3510	137	44	220	3919	13	6367	174	61	325	6940
18:00	6	1698	18	6	68	1794	4	2115	82	27	150	2377	9	3812	100	33	217	4171
19:00	3	924	11	6	51	996	1	1049	43	14	83	1189	4	1973	54	20	134	2185
20:00	1	622	7	3	43	675	3	640	21	8	54	726	4	1262	28	11	97	1402
21:00	3	568	8	5	45	629	1	492	17	5	41	556	5	1059	24	11	86	1185
22:00	0	346	5	2	25	378	1	305	12	4	40	363	1	651	17	7	65	741
23:00	1	204	3	2	25	235	1	183	6	2	20	213	2	387	10	4	45	448
Total	111	35912	813	360	2374	39570	105	33152	1559	507	2687	38010	216	69065	2372	866	5061	77580

Road	Southern Freeway - btw Mt Kiera Rd and Gip
Location	Keiraville
Site No.	3
Start Date	15-Aug-11
Day	7 Day Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	90%
LGV	3%
OGV1 & PSV	1%
OGV2	6%

	NB						SB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	104	2	1	17	124	0	135	5	1	21	162	0	239	7	2	38	286
1:00	0	69	3	1	20	93	0	74	3	0	19	97	0	143	5	2	39	189
2:00	1	65	5	2	22	94	0	51	4	1	19	75	1	115	9	3	41	169
3:00	1	124	10	2	38	175	0	46	3	1	20	70	1	170	13	3	58	245
4:00	2	422	12	3	62	501	0	94	5	1	29	130	2	516	17	4	92	631
5:00	4	1412	32	13	110	1570	1	364	19	4	59	447	5	1776	50	17	169	2017
6:00	7	2150	50	18	133	2358	3	1212	66	21	105	1407	10	3362	116	39	238	3765
7:00	7	2456	57	24	150	2693	5	1667	84	26	117	1898	12	4123	141	50	266	4591
8:00	9	3061	59	27	165	3321	4	2288	101	35	147	2575	13	5349	159	63	312	5895
9:00	7	2104	56	27	141	2334	6	1644	76	22	109	1857	13	3749	132	49	250	4191
10:00	6	1796	50	21	124	1996	8	1670	75	24	110	1887	14	3466	124	45	234	3884
11:00	7	1783	48	23	108	1968	9	1783	73	27	118	2010	17	3566	121	49	225	3978
12:00	5	1787	52	19	108	1972	7	1786	72	23	120	2009	12	3573	124	42	228	3980
13:00	7	1870	56	18	104	2055	8	1715	69	24	115	1931	15	3585	125	42	219	3986
14:00	6	2037	61	24	102	2229	10	2204	92	30	140	2476	16	4241	153	54	242	4705
15:00	12	2622	52	26	112	2823	11	2846	120	36	173	3185	23	5468	172	61	284	6008
16:00	11	2858	46	18	116	3049	10	3069	118	36	185	3418	21	5928	164	54	301	6467
17:00	5	2660	37	15	87	2803	7	2988	107	34	168	3304	12	5648	144	49	254	6107
18:00	4	1634	21	5	56	1720	4	1865	65	21	115	2070	8	3499	86	26	171	3791
19:00	3	948	12	6	43	1012	1	911	33	11	63	1019	4	1859	46	17	105	2031
20:00	1	642	8	3	37	690	2	565	18	6	41	632	3	1206	26	9	78	1322
21:00	2	575	9	5	37	629	1	437	14	4	31	487	3	1012	23	9	69	1116
22:00	0	375	5	2	22	404	1	303	10	3	31	348	1	678	15	5	53	752
23:00	1	231	4	2	22	260	1	182	5	2	16	206	2	413	9	4	38	465
Total	107	33782	745	304	1933	36871	98	29902	1237	394	2070	33701	205	63684	1982	698	4003	70573

Road	Southern Freeway - btw Mt Kiera Rd and Gip
Location	Keiraville
Site No.	3
Start Date	22-Aug-11
Day	Weekday Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	88%
LGV	4%
OGV1 & PSV	1%
OGV2	7%

	NB						SB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	29	2	0	4	35	0	76	4	1	8	90	0	105	6	1	12	125
1:00	0	39	2	1	6	48	0	23	2	0	3	28	0	62	4	1	9	76
2:00	0	42	4	1	9	56	0	23	1	0	3	27	0	64	5	2	12	83
3:00	0	109	7	2	16	133	0	16	1	0	3	20	0	124	8	2	18	153
4:00	1	503	24	5	43	577	0	50	3	1	7	61	1	554	27	6	50	638
5:00	4	2395	96	26	140	2662	0	350	19	7	38	414	4	2746	115	33	178	3076
6:00	4	3360	135	35	192	3726	2	1690	93	30	137	1953	6	5050	228	65	329	5679
7:00	5	3497	147	41	203	3892	4	2293	123	39	188	2646	9	5790	270	80	391	6539
8:00	5	3906	155	51	246	4363	3	2973	155	51	243	3424	7	6879	310	102	489	7787
9:00	4	2214	103	28	168	2516	3	1555	87	29	143	1817	7	3768	189	57	311	4333
10:00	2	1584	75	25	132	1819	2	1392	82	28	130	1635	4	2976	157	53	262	3453
11:00	2	1421	67	19	110	1619	4	1383	81	27	134	1628	5	2804	148	46	244	3247
12:00	2	1486	69	21	114	1694	4	1441	85	29	135	1693	6	2927	154	50	250	3387
13:00	3	1653	78	23	116	1873	4	1625	91	31	157	1909	7	3278	169	54	274	3782
14:00	2	1857	87	25	126	2096	5	2284	128	41	191	2648	7	4141	214	66	316	4744
15:00	5	2729	123	34	166	3057	6	3377	180	58	273	3894	11	6106	302	93	439	6951
16:00	4	2647	115	33	160	2959	9	4103	206	67	316	4701	13	6750	320	100	476	7660
17:00	3	2553	109	31	148	2844	8	4039	192	65	296	4600	11	6592	301	96	445	7445
18:00	2	1269	54	15	77	1417	4	2444	116	38	181	2782	6	3712	170	53	258	4200
19:00	0	530	22	7	35	594	2	1224	58	20	93	1397	2	1754	80	27	128	1991
20:00	0	376	16	4	25	422	2	657	31	11	55	756	2	1032	48	15	81	1177
21:00	0	365	15	5	26	411	0	450	22	7	39	518	0	815	37	12	65	929
22:00	0	154	6	2	13	176	0	297	13	5	25	341	1	451	20	7	39	517
23:00	0	91	4	1	8	104	0	151	7	3	16	177	0	242	11	4	24	281
Total	50	34808	1515	436	2285	39094	61	33915	1780	588	2814	39159	112	68723	3296	1024	5099	78253

Road	Southern Freeway - btw Mt Kiera Rd and Gip
Location	Keiraville
Site No.	3
Start Date	22-Aug-11
Day	7 Day Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	89%
LGV	4%
OGV1 & PSV	1%
OGV2	6%

	NB						SB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	32	2	0	3	37	0	96	4	1	7	107	0	128	5	1	10	144
1:00	0	38	2	1	4	45	0	33	2	0	2	37	0	71	4	1	6	82
2:00	0	34	3	1	6	44	0	30	1	0	2	34	0	64	4	1	9	78
3:00	0	89	5	1	12	107	0	17	1	0	2	20	0	105	6	1	14	127
4:00	1	388	18	4	32	443	0	45	3	1	5	54	1	434	20	5	37	497
5:00	3	1825	71	19	105	2024	0	282	15	5	29	330	3	2107	86	24	133	2354
6:00	4	2551	100	26	143	2823	2	1306	69	22	102	1501	6	3857	169	48	245	4324
7:00	4	2701	109	30	153	2998	3	1797	92	29	139	2060	7	4499	200	59	292	5058
8:00	4	3143	118	39	189	3493	3	2389	116	38	182	2728	7	5532	234	76	371	6221
9:00	5	2107	84	23	135	2353	5	1573	71	23	114	1787	10	3681	155	46	249	4140
10:00	4	1785	67	21	114	1991	5	1580	70	23	108	1786	9	3365	137	44	222	3777
11:00	4	1661	61	18	97	1841	6	1683	71	23	113	1896	10	3344	131	40	211	3737
12:00	7	1742	63	19	100	1932	7	1666	73	24	113	1883	14	3408	136	43	214	3814
13:00	6	1819	69	20	101	2014	6	1734	76	25	127	1969	12	3553	145	45	228	3983
14:00	4	1987	75	21	108	2196	6	2174	102	32	150	2464	10	4161	177	53	258	4660
15:00	8	2723	103	29	139	3002	6	2890	138	44	207	3285	14	5613	241	73	346	6287
16:00	7	2810	100	28	139	3084	9	3440	157	51	238	3894	16	6250	257	79	377	6979
17:00	5	2577	93	27	127	2829	8	3486	148	49	226	3916	12	6063	241	76	353	6745
18:00	2	1293	46	13	66	1421	4	2101	90	29	137	2361	6	3394	136	42	204	3782
19:00	1	566	19	6	30	622	3	1211	49	16	74	1354	4	1778	68	22	104	1976
20:00	0	386	14	4	22	426	2	691	26	9	46	774	2	1077	41	12	67	1200
21:00	0	339	12	4	22	377	1	509	20	7	33	571	1	848	33	10	55	947
22:00	0	165	5	2	12	184	1	350	13	4	24	391	1	515	18	6	35	575
23:00	0	92	3	1	7	103	0	202	7	2	14	226	1	294	10	4	21	329
Total	68	32855	1243	356	1867	36390	78	31286	1412	456	2195	35426	146	64140	2655	812	4062	71815

Road	Southern Freeway - 400m north of the Avenu
Location	Mangerton
Site No.	4
Start Date	15-Aug-11
Day	Weekday Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	89%
LGV	4%
OGV1 & PSV	1%
OGV2	5%

	NB						SB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	85	6	5	29	125	1	100	5	3	24	133	1	185	11	8	53	257
1:00	0	75	6	4	36	121	0	57	4	3	25	89	0	132	10	7	61	210
2:00	1	60	13	5	35	113	0	78	7	4	38	126	1	138	19	9	73	240
3:00	1	135	19	5	60	220	1	77	7	2	37	123	1	212	26	7	97	343
4:00	1	450	24	5	98	578	1	143	11	4	58	217	2	593	36	9	156	795
5:00	4	1400	58	29	130	1620	1	520	35	11	95	661	4	1920	93	39	226	2282
6:00	5	2201	111	22	139	2478	5	1560	94	29	117	1804	10	3761	204	51	256	4283
7:00	7	2775	144	25	137	3088	3	2123	113	33	133	2405	11	4898	257	58	269	5493
8:00	9	3721	130	35	156	4051	2	2667	140	33	131	2973	11	6389	269	68	287	7024
9:00	4	2347	134	39	157	2681	6	1796	119	36	138	2095	10	4143	253	75	294	4775
10:00	3	1815	107	34	143	2102	4	1665	103	34	133	1940	7	3480	210	69	276	4042
11:00	3	1746	113	34	136	2033	8	1729	110	35	146	2027	11	3475	223	69	282	4060
12:00	3	1699	101	37	135	1974	6	1790	105	33	145	2078	8	3488	206	70	280	4052
13:00	5	1905	125	31	112	2180	4	1882	96	30	142	2154	10	3787	221	62	254	4334
14:00	3	2099	153	29	106	2390	7	2316	119	32	136	2611	11	4415	272	61	242	5001
15:00	7	2881	124	20	101	3133	10	3045	134	22	114	3326	17	5927	258	43	215	6459
16:00	5	2780	91	16	76	2967	12	3524	106	14	77	3733	17	6304	197	30	153	6701
17:00	4	2622	66	11	56	2759	10	3525	63	13	59	3669	14	6147	129	24	115	6429
18:00	3	1658	41	5	63	1770	5	2243	41	5	56	2350	8	3901	83	10	119	4121
19:00	3	896	21	5	53	978	2	1396	34	7	51	1491	5	2292	55	12	104	2469
20:00	1	666	17	4	41	729	1	985	14	6	46	1052	2	1650	32	10	87	1781
21:00	1	606	13	4	45	669	2	828	17	5	46	898	3	1433	30	9	91	1567
22:00	0	370	8	6	42	425	3	608	18	4	39	673	3	978	26	10	81	1098
23:00	1	263	6	4	36	311	1	381	7	2	47	438	2	644	14	6	83	749
Total	74	35255	1631	415	2120	39495	95	35037	1503	401	2033	39068	169	70292	3134	816	4153	78563

Road	Southern Freeway - 400m north of the Avenu
Location	Mangerton
Site No.	4
Start Date	15-Aug-11
Day	7 Day Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	91%
LGV	4%
OGV1 & PSV	1%
OGV2	5%

	NB						SB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	123	5	4	25	157	0	175	7	3	22	208	1	298	12	7	48	365
1:00	0	90	6	4	30	130	0	96	4	2	22	124	0	186	10	6	52	254
2:00	0	70	11	4	29	115	0	97	6	3	32	138	0	167	17	7	61	253
3:00	0	126	16	4	47	194	1	86	6	2	29	123	1	212	22	6	77	317
4:00	1	373	20	4	76	473	0	133	9	4	46	193	1	506	30	8	122	666
5:00	3	1119	46	21	101	1289	0	446	28	9	73	556	3	1564	74	30	174	1845
6:00	4	1745	87	17	108	1960	4	1265	75	23	91	1458	8	3010	161	40	199	3418
7:00	5	2203	113	19	109	2449	3	1728	88	25	105	1949	8	3931	201	44	213	4397
8:00	8	3021	101	27	124	3280	3	2254	109	25	104	2495	10	5274	211	51	228	5775
9:00	4	2190	105	31	125	2455	7	1781	97	27	106	2019	11	3971	202	57	231	4473
10:00	4	1906	87	25	113	2136	9	1785	84	27	107	2013	13	3692	171	53	220	4149
11:00	5	1933	92	27	107	2165	9	1931	89	27	114	2170	15	3864	181	54	221	4335
12:00	4	1871	87	28	103	2094	7	1940	86	26	111	2169	11	3811	173	54	214	4262
13:00	8	1988	103	25	86	2210	7	1944	80	23	110	2164	16	3932	183	48	196	4374
14:00	5	2129	120	21	82	2356	7	2249	95	25	104	2480	11	4378	215	46	185	4836
15:00	9	2742	99	17	78	2945	9	2757	105	17	86	2974	18	5499	204	34	164	5919
16:00	5	2739	77	14	60	2896	10	3055	83	11	60	3220	16	5795	160	25	120	6116
17:00	4	2503	60	10	46	2623	9	3017	53	11	49	3137	13	5520	112	21	95	5760
18:00	3	1600	36	4	48	1691	4	2000	35	4	45	2089	7	3600	71	8	93	3780
19:00	2	918	20	4	41	985	2	1257	28	6	40	1334	5	2175	48	10	82	2319
20:00	1	664	17	3	35	719	1	906	14	4	38	963	2	1570	30	8	72	1682
21:00	1	606	13	4	37	661	1	766	15	4	37	824	3	1372	28	8	74	1485
22:00	0	384	6	4	34	429	2	617	17	3	32	672	2	1001	23	8	66	1101
23:00	1	277	6	3	30	317	1	392	8	2	38	441	2	669	14	5	68	758
Total	79	33319	1333	323	1674	36728	98	32677	1221	314	1600	35911	177	65996	2554	637	3274	72639

Road	Southern Freeway - 400m north of the Avenu
Location	Mangerton
Site No.	4
Start Date	22-Aug-11
Day	Weekday Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	89%
LGV	4%
OGV1 & PSV	1%
OGV2	5%

	NB						SB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	84	6	3	26	119	1	179	8	3	38	229	1	263	13	7	64	349
1:00	0	65	5	4	32	107	0	98	6	3	36	143	0	163	11	7	68	249
2:00	1	63	14	5	36	118	0	72	6	3	35	116	1	135	21	8	71	235
3:00	0	133	18	5	58	214	0	79	8	3	34	124	1	212	26	7	92	338
4:00	1	455	26	6	91	579	0	144	14	5	53	215	1	600	39	11	144	794
5:00	3	1410	59	28	123	1623	1	535	30	8	98	672	3	1946	89	36	221	2295
6:00	6	2260	109	22	137	2534	6	1626	99	27	121	1879	11	3886	208	49	258	4413
7:00	8	2865	147	27	138	3185	5	2160	114	35	134	2448	13	5025	260	63	272	5633
8:00	9	3805	132	41	155	4142	4	2661	137	34	126	2962	13	6466	269	74	282	7104
9:00	5	2308	128	37	151	2629	5	1757	112	36	127	2037	9	4065	240	73	278	4666
10:00	4	1782	103	35	139	2064	5	1637	107	40	130	1919	9	3420	211	75	268	3983
11:00	4	1696	103	38	135	1976	9	1652	111	38	138	1948	13	3348	214	76	272	3923
12:00	3	1675	106	35	130	1950	7	1690	102	32	135	1966	11	3365	208	67	265	3915
13:00	6	1836	120	33	112	2107	8	1861	103	33	140	2144	13	3697	223	66	252	4251
14:00	4	2045	149	29	103	2330	10	2288	121	32	131	2582	14	4332	271	61	234	4912
15:00	8	2825	127	23	105	3088	13	3027	140	24	117	3321	21	5851	267	47	222	6408
16:00	7	2779	91	16	81	2974	15	3494	104	15	82	3711	22	6273	195	31	164	6685
17:00	4	2637	65	11	66	2783	12	3531	66	12	61	3681	16	6169	130	23	127	6464
18:00	3	1585	45	6	65	1704	6	2264	44	4	49	2367	9	3849	89	11	113	4071
19:00	3	859	25	5	54	945	3	1412	38	5	50	1508	6	2271	63	9	104	2453
20:00	1	672	18	5	41	737	3	984	20	5	48	1060	4	1656	38	10	89	1796
21:00	1	610	12	4	45	672	3	823	17	6	43	892	4	1433	29	10	88	1565
22:00	0	357	8	6	40	412	4	570	17	4	45	641	4	927	25	10	86	1053
23:00	1	231	7	5	41	285	1	355	10	3	41	409	2	586	17	8	82	694
Total	82	35038	1625	429	2103	39277	120	34901	1533	409	2011	38974	202	69939	3158	838	4114	78251

Road	Southern Freeway - 400m north of the Avenu
Location	Mangerton
Site No.	4
Start Date	22-Aug-11
Day	7 Day Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	91%
LGV	4%
OGV1 & PSV	1%
OGV2	4%

	NB						SB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	1	126	5	3	23	157	1	233	9	2	34	280	2	359	14	5	58	437
1:00	0	85	6	3	28	122	0	130	6	3	30	169	0	216	12	6	57	291
2:00	0	74	12	4	30	120	0	95	6	2	32	135	0	169	18	6	62	256
3:00	0	126	16	4	46	192	0	90	7	2	30	129	0	216	22	6	76	321
4:00	1	380	22	5	71	478	0	140	12	4	42	197	1	520	33	8	113	675
5:00	2	1134	47	21	96	1299	1	467	25	7	79	578	3	1601	72	27	175	1878
6:00	4	1798	86	17	107	2012	5	1334	78	21	96	1534	9	3132	164	38	203	3546
7:00	6	2282	116	21	110	2534	5	1798	90	27	106	2026	10	4080	206	48	216	4560
8:00	9	3105	103	31	124	3371	5	2256	109	27	101	2497	13	5360	212	58	225	5868
9:00	4	2196	101	30	122	2453	11	1778	90	28	101	2009	16	3974	192	58	223	4462
10:00	5	1923	85	26	111	2150	11	1791	87	31	103	2023	16	3714	172	57	214	4173
11:00	6	1942	85	30	107	2170	14	1871	89	30	108	2112	21	3812	175	59	215	4282
12:00	5	1897	92	27	100	2120	12	1884	82	23	105	2106	16	3781	174	50	204	4226
13:00	9	1979	100	26	86	2200	11	1953	86	25	111	2186	19	3932	186	50	197	4386
14:00	6	2131	118	21	80	2355	14	2235	95	25	101	2470	20	4366	213	46	181	4825
15:00	10	2746	102	19	81	2958	14	2725	110	18	90	2956	23	5471	212	37	171	5914
16:00	7	2787	79	14	64	2951	15	3063	82	11	63	3235	21	5850	160	26	128	6185
17:00	4	2555	59	10	53	2681	11	3125	54	9	50	3248	15	5680	113	19	103	5930
18:00	3	1575	39	5	50	1671	5	2038	38	4	39	2123	8	3613	77	8	88	3794
19:00	2	909	22	4	43	980	3	1306	33	5	41	1389	6	2215	56	9	83	2369
20:00	1	681	17	4	35	738	2	943	18	5	39	1007	3	1624	35	9	74	1745
21:00	1	620	13	4	37	675	2	790	16	5	36	850	4	1411	29	9	73	1526
22:00	0	382	7	5	34	428	3	594	15	4	39	655	3	976	22	9	73	1083
23:00	1	260	7	4	33	305	1	410	11	4	34	460	2	670	18	8	68	766
Total	86	33692	1339	334	1670	37121	146	33051	1248	321	1608	36374	232	66743	2587	656	3278	73496

Road	Masters Rd - 600m west of Springhill Rd (We
Location	Mt St Thomas
Site No.	5
Start Date	15-Aug-11
Day	Weekday Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	87%
LGV	3%
OGV1 & PSV	1%
OGV2	9%

	EB						WB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	35	3	1	20	60	0	47	4	1	18	71	0	83	7	3	38	131
1:00	0	21	3	1	21	47	1	35	5	2	19	61	1	56	9	3	40	108
2:00	0	19	1	1	18	39	0	30	6	1	19	56	0	49	6	2	37	95
3:00	0	25	3	1	23	52	1	48	9	3	29	89	1	72	11	4	52	141
4:00	0	59	5	0	39	103	1	120	10	3	54	188	1	179	15	4	93	291
5:00	2	212	11	0	55	280	1	334	20	5	70	430	2	546	31	6	125	710
6:00	5	627	22	8	66	729	2	505	35	9	74	624	7	1131	57	17	140	1353
7:00	3	819	33	8	79	942	2	639	31	13	74	758	5	1458	64	21	152	1700
8:00	4	1254	29	10	85	1382	2	833	44	11	74	965	6	2087	74	22	159	2347
9:00	1	631	28	10	76	747	1	662	48	15	92	818	2	1294	76	25	169	1566
10:00	0	499	29	12	73	614	2	653	47	15	84	802	2	1152	76	27	157	1416
11:00	1	481	27	11	79	599	1	714	48	14	86	864	2	1195	75	25	166	1463
12:00	1	515	29	10	77	632	2	792	39	13	74	921	3	1307	68	23	151	1553
13:00	1	521	32	9	77	641	2	848	44	14	76	985	4	1369	76	24	153	1626
14:00	2	597	27	10	74	710	4	1050	49	11	71	1185	6	1647	76	21	145	1895
15:00	1	768	34	6	73	884	6	1558	46	12	65	1687	7	2327	81	18	138	2571
16:00	3	804	28	7	53	896	4	1557	36	6	58	1661	8	2360	64	13	111	2557
17:00	2	813	17	4	36	872	4	1686	23	5	43	1760	6	2499	39	8	79	2632
18:00	1	529	7	2	41	579	3	861	16	5	43	929	5	1390	23	6	84	1508
19:00	0	305	7	1	30	343	2	447	14	1	34	498	2	751	20	3	64	841
20:00	0	228	3	1	26	258	2	360	6	1	23	391	2	588	9	2	49	650
21:00	1	188	3	1	31	224	2	325	7	1	23	359	3	513	10	2	54	582
22:00	1	140	3	0	23	167	1	259	5	2	29	295	1	399	8	2	52	462
23:00	0	82	1	1	27	111	0	156	2	2	22	183	1	238	3	3	49	294
Total	32	10170	385	119	1204	11910	46	14520	594	165	1254	16579	78	24690	978	284	2459	28490

Road	Masters Rd - 600m west of Springhill Rd (We
Location	Mt St Thomas
Site No.	5
Start Date	15-Aug-11
Day	7 Day Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	88%
LGV	3%
OGV1 & PSV	1%
OGV2	8%

	EB						WB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	52	3	1	18	75	0	72	3	1	16	93	0	125	7	2	34	168
1:00	0	28	3	1	18	50	0	53	4	2	16	75	0	81	8	3	33	125
2:00	0	24	1	1	15	41	0	40	5	1	16	62	0	64	6	2	31	103
3:00	0	25	2	1	18	47	0	55	7	2	23	88	0	80	9	3	41	135
4:00	0	53	4	0	31	89	0	104	8	3	41	157	1	157	12	3	72	245
5:00	2	181	9	0	43	234	0	277	16	4	55	352	2	457	24	4	97	585
6:00	4	492	18	7	51	571	2	420	27	6	59	514	5	912	44	13	110	1086
7:00	3	633	25	6	61	728	2	522	25	10	57	615	5	1155	50	16	118	1343
8:00	3	982	23	7	67	1083	1	682	33	9	60	785	5	1664	57	16	127	1869
9:00	1	576	22	8	61	669	1	607	37	11	74	730	2	1183	59	19	135	1399
10:00	1	501	23	9	60	593	2	635	39	12	69	758	3	1136	61	21	130	1351
11:00	2	512	23	9	64	608	2	734	36	11	68	852	4	1245	59	20	132	1460
12:00	1	536	25	7	60	629	3	809	32	10	59	913	4	1344	57	18	119	1542
13:00	2	521	24	7	60	615	3	848	35	11	58	955	4	1369	59	18	119	1569
14:00	2	573	22	8	57	662	3	986	38	8	55	1091	5	1559	60	17	112	1752
15:00	1	681	26	5	54	767	5	1385	36	9	51	1486	6	2066	62	14	105	2253
16:00	3	698	22	6	41	769	4	1363	29	5	44	1445	7	2061	50	10	86	2214
17:00	2	705	14	3	30	754	4	1392	19	4	35	1453	5	2097	33	7	66	2208
18:00	1	477	6	1	32	518	3	778	15	4	34	834	4	1255	22	5	66	1352
19:00	0	279	5	1	25	311	2	430	12	1	27	473	2	709	17	3	52	784
20:00	0	208	2	1	21	232	2	329	6	1	19	356	2	536	8	2	40	588
21:00	1	182	2	0	26	211	1	298	7	1	19	326	2	480	9	1	45	538
22:00	1	140	3	0	20	163	0	268	4	2	24	299	1	408	7	2	43	462
23:00	0	86	1	1	23	112	0	159	3	1	18	182	0	245	4	3	42	294
Total	29	9146	308	93	956	10532	43	13244	476	129	1000	14891	71	22389	785	222	1956	25424

Road	Masters Rd - 600m west of Springhill Rd (We
Location	Mt St Thomas
Site No.	5
Start Date	22-Aug-11
Day	Weekday Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	86%
LGV	3%
OGV1 & PSV	1%
OGV2	9%

	EB						WB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	30	3	3	22	57	0	48	4	2	16	69	0	77	7	5	38	127
1:00	0	17	1	3	20	42	0	32	4	4	22	62	0	49	6	6	42	103
2:00	0	18	2	1	19	39	0	28	5	1	19	54	0	46	6	2	38	93
3:00	0	24	3	2	25	53	0	46	9	3	33	91	0	70	11	5	58	145
4:00	1	62	5	1	40	108	1	122	10	4	46	183	1	185	15	4	86	291
5:00	2	220	11	0	59	292	1	338	17	5	76	437	3	558	28	6	135	729
6:00	4	645	25	6	73	754	2	519	33	11	81	646	6	1164	58	17	154	1400
7:00	5	817	32	8	87	948	3	650	37	8	78	776	7	1467	69	16	165	1724
8:00	4	1229	29	9	81	1351	3	826	42	9	90	970	7	2055	70	18	170	2321
9:00	2	616	29	8	69	724	2	670	49	15	86	821	4	1286	77	23	155	1545
10:00	1	476	31	10	77	594	3	647	43	14	81	789	4	1123	74	24	158	1383
11:00	1	460	27	9	72	569	3	730	45	16	90	883	4	1189	71	25	162	1452
12:00	2	502	30	12	75	621	5	813	38	13	81	950	7	1315	68	25	156	1571
13:00	2	510	29	12	78	631	3	849	47	15	74	988	5	1359	76	27	153	1619
14:00	4	604	31	11	64	715	5	1055	51	15	73	1198	9	1659	82	26	137	1914
15:00	2	760	35	5	66	868	7	1558	50	11	68	1694	9	2317	84	17	134	2561
16:00	3	810	27	7	51	898	5	1557	38	8	58	1666	8	2367	65	15	109	2564
17:00	2	822	18	4	38	883	5	1699	26	6	50	1786	7	2521	43	10	89	2670
18:00	1	532	7	1	37	577	3	843	19	4	40	909	4	1375	26	5	77	1486
19:00	1	267	7	1	26	302	3	466	13	1	33	516	4	733	20	2	59	818
20:00	1	175	1	2	22	201	1	355	7	0	24	387	2	529	8	2	46	587
21:00	2	150	2	0	23	177	2	319	7	0	29	357	4	469	9	0	51	534
22:00	1	116	3	0	21	141	1	248	4	2	22	276	2	364	7	2	43	418
23:00	0	70	1	1	22	94	1	190	3	3	24	222	1	260	4	4	46	316
Total	39	9930	387	116	1166	11639	61	14606	600	170	1294	16730	100	24536	987	287	2460	28369

Road	Masters Rd - 600m west of Springhill Rd (We
Location	Mt St Thomas
Site No.	5
Start Date	22-Aug-11
Day	7 Day Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	88%
LGV	3%
OGV1 & PSV	1%
OGV2	8%

	EB						WB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	44	3	2	20	69	0	76	4	2	15	96	0	119	7	4	36	165
1:00	0	26	1	2	18	47	0	55	4	3	18	81	0	81	5	5	36	128
2:00	0	24	1	1	18	43	0	45	5	1	17	68	0	69	6	2	35	112
3:00	0	24	3	1	21	49	0	55	7	2	28	93	0	79	10	3	50	142
4:00	1	57	4	1	32	94	0	111	8	3	36	158	1	167	12	3	68	252
5:00	2	190	9	0	47	249	1	277	14	4	63	358	2	467	23	4	110	607
6:00	4	507	19	5	57	592	2	440	27	8	66	543	5	946	47	13	123	1134
7:00	4	645	26	6	68	748	2	537	30	7	62	639	6	1182	56	13	130	1387
8:00	3	967	22	7	64	1064	3	691	33	8	72	807	6	1659	55	15	136	1871
9:00	3	577	24	7	56	666	2	625	39	12	69	747	5	1202	62	18	125	1413
10:00	1	487	26	8	60	582	3	655	36	11	66	771	5	1142	61	19	126	1353
11:00	1	496	22	8	57	584	3	741	34	12	70	861	4	1237	56	20	127	1444
12:00	2	529	24	9	58	622	5	835	32	10	63	946	8	1364	56	19	121	1568
13:00	3	525	24	9	61	621	3	850	38	11	59	961	6	1374	62	20	120	1582
14:00	4	571	25	9	50	659	5	973	39	11	57	1085	9	1544	64	20	107	1744
15:00	2	680	27	4	52	765	7	1353	39	9	52	1461	9	2033	66	13	104	2226
16:00	3	711	21	5	39	780	4	1421	30	7	47	1510	7	2132	52	13	86	2290
17:00	1	729	15	3	31	779	5	1440	22	5	41	1513	6	2169	37	8	72	2292
18:00	1	488	7	1	29	526	3	768	16	3	33	823	3	1255	23	4	62	1348
19:00	1	266	6	1	22	296	3	434	11	1	26	475	3	700	17	2	49	771
20:00	1	190	2	1	19	214	1	325	7	0	23	355	1	515	9	1	42	569
21:00	2	170	2	0	21	194	2	306	7	1	25	341	3	476	9	1	45	535
22:00	1	137	3	0	21	163	1	263	4	2	20	290	2	400	7	2	40	452
23:00	0	85	1	2	20	108	1	229	3	3	24	260	1	314	4	4	45	368
Total	38	9124	316	91	943	10513	57	13506	490	137	1052	15241	95	22631	806	228	1995	25755

Road	Springhill rd - 100m west of Bridge St (Week
Location	Coniston
Site No.	6
Start Date	15-Aug-11
Day	Weekday Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	91%
LGV	3%
OGV1 & PSV	1%
OGV2	4%

	EB						WB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	44	3	0	20	67	0	69	2	0	18	89	1	112	6	0	38	156
1:00	0	30	2	0	14	47	0	43	6	1	19	69	0	73	8	1	33	116
2:00	0	29	2	0	13	45	0	35	5	0	15	55	0	64	7	0	28	100
3:00	0	31	3	1	14	48	0	30	2	1	13	47	0	61	6	2	27	96
4:00	0	99	6	2	16	122	1	46	2	1	18	69	1	145	8	3	34	191
5:00	3	206	13	3	18	243	2	121	6	2	18	150	5	326	19	6	37	393
6:00	6	632	27	12	44	721	3	357	17	4	30	412	9	990	43	17	75	1133
7:00	3	1263	48	18	51	1383	5	571	29	9	35	649	7	1834	77	27	86	2032
8:00	8	2412	56	28	78	2582	4	889	52	8	39	992	12	3302	107	36	117	3575
9:00	5	1392	47	14	59	1518	8	833	42	7	45	935	13	2225	89	22	104	2453
10:00	3	980	43	19	50	1096	4	855	43	10	42	954	6	1836	87	29	93	2050
11:00	2	941	41	15	58	1057	4	991	45	14	43	1097	6	1932	86	28	101	2154
12:00	4	941	42	12	46	1044	4	1045	39	8	37	1133	8	1986	81	19	83	2177
13:00	6	896	44	13	49	1008	4	1095	40	10	44	1194	10	1991	84	23	93	2201
14:00	4	898	51	14	50	1018	4	1242	51	12	51	1360	8	2141	102	26	101	2378
15:00	6	1210	45	12	53	1326	4	1550	46	9	38	1648	10	2760	91	22	91	2973
16:00	4	1032	27	8	43	1114	6	1761	30	8	42	1848	10	2793	57	16	85	2962
17:00	1	981	16	6	35	1040	7	1950	16	12	38	2024	8	2931	32	19	73	3064
18:00	3	719	13	6	28	769	3	886	18	4	26	937	6	1605	31	10	54	1706
19:00	1	477	9	3	18	507	1	534	15	2	18	570	1	1011	24	5	36	1077
20:00	1	250	6	1	17	275	1	458	7	1	16	483	2	708	13	2	33	759
21:00	2	233	4	1	15	255	1	405	7	1	16	430	3	638	10	3	31	684
22:00	1	160	3	1	16	181	1	479	6	1	19	505	2	639	8	1	36	686
23:00	0	94	3	1	18	116	0	157	2	0	19	179	1	252	5	1	37	296
Total	65	15949	555	189	824	17583	67	16404	529	127	702	17828	132	32353	1084	316	1526	35411

Road	Springhill rd - 100m west of Bridge St (Week
Location	Coniston
Site No.	6
Start Date	15-Aug-11
Day	7 Day Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	92%
LGV	3%
OGV1 & PSV	1%
OGV2	4%

	EB						WB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	67	3	0	16	87	0	105	2	0	14	123	1	173	6	0	31	210
1:00	0	42	2	0	11	55	0	72	5	1	15	94	0	114	7	2	27	149
2:00	0	39	2	0	11	53	0	56	5	0	12	73	0	95	7	1	24	126
3:00	0	37	3	0	11	52	0	55	2	1	11	69	0	92	6	1	22	121
4:00	0	89	5	1	12	108	1	54	2	1	14	71	1	143	6	2	26	179
5:00	2	175	10	3	14	205	2	108	6	2	15	133	5	284	16	4	29	338
6:00	5	515	21	10	33	584	3	292	14	4	24	336	8	807	35	13	57	921
7:00	3	986	39	14	37	1079	4	457	23	7	26	517	7	1443	62	21	63	1596
8:00	7	1869	45	21	62	2005	4	721	41	6	32	804	11	2591	86	28	93	2809
9:00	5	1205	39	11	48	1308	6	739	33	5	37	821	11	1944	72	16	85	2129
10:00	3	952	34	15	44	1047	4	817	35	7	35	898	6	1768	69	22	79	1945
11:00	3	963	34	13	48	1060	4	974	36	10	37	1061	7	1936	70	23	85	2122
12:00	3	954	34	9	39	1039	5	1022	32	6	30	1096	9	1976	66	15	69	2135
13:00	5	884	35	9	41	974	4	1071	34	9	35	1153	9	1955	69	18	76	2127
14:00	4	873	41	11	39	968	3	1152	41	10	39	1246	7	2025	82	21	78	2214
15:00	5	1096	36	11	42	1189	4	1423	36	8	30	1502	9	2519	72	19	72	2691
16:00	3	960	23	7	35	1028	6	1503	24	7	35	1575	9	2463	47	14	70	2603
17:00	1	873	15	6	30	926	6	1578	15	10	32	1640	7	2452	30	16	62	2567
18:00	3	682	11	5	26	727	2	804	18	3	22	849	5	1487	29	8	48	1577
19:00	1	449	8	3	16	477	1	531	14	2	16	563	1	980	22	5	33	1041
20:00	0	243	6	1	15	266	2	432	7	1	14	456	2	674	13	2	30	722
21:00	1	228	3	1	13	247	1	388	6	1	15	411	2	616	10	2	28	658
22:00	1	161	3	1	14	180	1	472	5	1	18	497	2	633	8	1	32	676
23:00	0	103	3	1	16	123	0	176	3	0	16	195	0	279	6	2	32	318
Total	58	14444	457	155	676	15789	63	15003	439	103	575	16183	121	29447	896	258	1251	31972

Road	Springhill rd - 100m west of Bridge St (Week
Location	Coniston
Site No.	6
Start Date	22-Aug-11
Day	Weekday Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	91%
LGV	3%
OGV1 & PSV	1%
OGV2	4%

	EB						WB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	45	2	0	21	68	0	76	2	1	20	99	0	121	4	1	40	167
1:00	0	31	2	1	23	58	0	59	5	2	21	87	0	91	7	3	44	145
2:00	1	31	3	0	16	51	0	40	3	0	19	63	1	71	6	0	35	113
3:00	0	37	3	2	16	58	1	37	3	1	15	56	1	74	6	3	31	114
4:00	1	107	5	3	17	134	0	53	2	1	19	76	1	161	7	5	36	210
5:00	3	215	11	5	25	259	2	145	5	2	20	174	5	361	16	7	45	433
6:00	6	628	28	15	36	712	5	383	17	5	27	436	11	1010	45	20	63	1149
7:00	4	1331	42	17	58	1453	5	644	33	8	36	725	9	1975	75	25	94	2178
8:00	6	2425	59	23	72	2586	4	957	53	11	40	1066	10	3382	113	35	112	3651
9:00	6	1415	55	17	47	1540	6	848	50	11	36	950	12	2264	104	28	82	2491
10:00	4	951	39	18	46	1059	6	877	41	9	39	973	10	1828	81	27	86	2031
11:00	5	955	45	16	44	1065	5	937	44	9	41	1036	9	1892	89	26	85	2101
12:00	4	963	41	15	47	1071	4	1035	43	12	39	1133	9	1998	84	27	86	2204
13:00	7	898	45	14	50	1015	9	1148	49	14	39	1259	15	2046	94	29	90	2274
14:00	5	917	55	10	45	1031	5	1263	50	11	42	1372	10	2180	105	21	86	2402
15:00	3	1212	49	14	43	1322	8	1587	52	10	42	1699	11	2799	101	25	85	3021
16:00	6	1094	23	12	34	1169	10	1718	26	10	39	1804	16	2812	49	22	74	2973
17:00	2	1036	19	7	36	1101	8	2033	22	11	37	2111	10	3069	41	19	73	3211
18:00	4	715	12	6	23	761	3	895	18	4	24	944	7	1610	29	10	47	1704
19:00	1	433	10	5	20	469	2	584	15	4	18	622	3	1017	24	9	38	1092
20:00	1	241	5	2	18	266	2	492	7	1	17	519	3	732	12	3	35	785
21:00	1	256	4	3	18	282	1	435	6	1	18	460	2	691	9	4	36	742
22:00	2	171	3	1	19	195	1	347	5	2	18	373	3	518	8	3	37	568
23:00	1	104	2	1	17	125	2	219	2	1	21	245	2	323	5	2	38	371
Total	74	16212	562	210	791	17849	87	16813	552	142	687	18282	161	33025	1114	352	1478	36130

Road	Springhill rd - 100m west of Bridge St (Week
Location	Coniston
Site No.	6
Start Date	22-Aug-11
Day	7 Day Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	92%
LGV	3%
OGV1 & PSV	1%
OGV2	4%

	EB						WB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	72	2	1	18	93	0	125	2	1	17	146	0	197	5	2	35	239
1:00	0	51	2	1	20	73	0	92	4	2	17	116	0	143	6	3	37	189
2:00	1	47	2	0	13	63	0	75	4	1	16	96	1	122	6	2	30	159
3:00	0	46	3	2	13	64	0	60	2	1	13	77	1	106	5	2	27	141
4:00	1	97	5	3	14	119	0	61	1	2	16	81	1	158	6	4	29	199
5:00	3	181	8	4	20	215	2	130	5	2	16	154	4	311	13	5	36	370
6:00	5	509	21	11	30	576	4	311	14	4	21	355	10	820	35	15	51	931
7:00	4	1047	35	14	46	1146	5	516	26	6	30	583	9	1562	62	20	77	1729
8:00	7	1893	48	19	57	2023	3	768	42	9	34	855	10	2661	90	27	90	2878
9:00	7	1225	43	14	40	1328	6	756	39	8	30	839	12	1980	82	22	71	2167
10:00	5	939	32	14	41	1031	7	837	34	7	33	918	12	1776	66	20	74	1949
11:00	5	979	38	13	39	1075	5	926	35	8	36	1009	11	1905	73	21	75	2084
12:00	5	1053	33	12	44	1147	5	1036	34	9	34	1117	10	2089	67	21	78	2265
13:00	7	945	36	12	42	1042	9	1104	40	12	34	1198	16	2049	76	24	75	2240
14:00	5	869	43	9	39	964	6	1151	40	9	36	1242	11	2019	83	17	75	2206
15:00	4	1074	38	12	35	1162	7	1407	41	9	35	1499	11	2480	79	20	70	2661
16:00	6	990	20	9	29	1053	8	1607	22	9	34	1680	14	2597	42	18	62	2733
17:00	2	913	16	6	31	969	6	1693	19	9	31	1758	8	2607	36	15	62	2727
18:00	4	679	11	6	20	719	3	804	16	3	21	847	7	1482	27	9	41	1566
19:00	1	426	9	4	19	459	1	529	12	4	15	561	2	955	21	8	34	1020
20:00	1	249	4	2	17	273	2	440	6	2	18	469	3	689	11	4	35	741
21:00	1	268	4	2	17	292	1	408	6	2	16	432	2	676	9	4	33	724
22:00	2	196	3	1	17	219	1	370	5	2	18	396	3	566	8	3	35	615
23:00	1	119	2	1	17	140	1	290	3	2	21	317	2	409	5	3	38	457
Total	76	14865	459	170	675	16245	83	15496	451	122	594	16745	159	30361	911	292	1269	32991

Road	Bellambi Lne - 200m west of Northern Distrib
Location	Bellambi
Site No.	7
Start Date	15-Aug-11
Day	Weekday Ave.
Description	Class Summary

M'Cycle & P'Cycle	1%
Cars	90%
LGV	4%
OGV1 & PSV	1%
OGV2	4%

	EB						WB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	3	0	0	0	3	0	6	0	0	0	7	0	9	1	0	0	10
1:00	0	4	0	0	0	4	0	2	0	0	0	2	0	6	0	0	0	6
2:00	0	4	0	0	0	4	0	2	0	0	0	3	0	6	1	0	0	7
3:00	0	2	0	0	0	3	0	3	1	0	0	4	0	5	1	0	0	6
4:00	0	6	1	0	0	7	0	5	0	0	0	5	0	10	1	0	0	12
5:00	1	48	2	0	0	51	1	58	1	0	0	60	2	106	3	0	0	111
6:00	2	125	6	1	1	134	0	90	6	2	2	100	2	215	12	3	2	234
7:00	0	169	10	3	7	190	0	110	11	6	4	131	1	279	21	8	11	320
8:00	0	281	17	3	8	309	0	157	11	4	10	183	0	438	28	7	18	491
9:00	1	195	10	2	8	216	2	140	6	4	9	162	3	335	16	6	18	378
10:00	2	160	13	3	9	186	4	131	9	5	7	157	6	291	22	8	16	343
11:00	1	175	8	3	8	195	2	140	8	4	12	165	3	315	15	6	20	360
12:00	1	173	9	2	10	195	1	141	11	5	7	164	1	313	20	7	17	359
13:00	1	161	11	3	11	187	3	148	9	3	10	173	4	308	21	6	21	361
14:00	4	216	13	2	11	246	2	164	8	3	10	188	7	380	20	6	21	434
15:00	4	229	13	3	10	259	1	217	10	1	11	239	5	446	22	4	21	499
16:00	2	207	8	2	8	226	2	224	5	1	8	240	4	431	13	3	16	466
17:00	1	199	4	1	6	209	0	205	4	0	4	214	1	404	8	1	10	423
18:00	0	144	1	0	4	149	0	134	2	0	3	139	1	278	3	0	7	289
19:00	0	81	1	0	0	82	0	83	1	0	0	83	0	163	2	0	1	166
20:00	0	61	1	0	0	62	0	59	1	0	0	60	0	120	2	0	0	122
21:00	0	54	1	0	0	55	0	65	1	0	0	66	0	118	1	0	0	120
22:00	0	57	1	0	0	58	0	47	1	0	0	47	0	104	1	0	0	105
23:00	0	16	0	0	0	16	0	14	0	0	0	14	0	30	0	0	0	30
Total	22	2765	129	27	102	3045	20	2344	105	38	98	2606	42	5109	234	66	200	5651

Road	Bellambi Lne - 200m west of Northern Distrib
Location	Bellambi
Site No.	7
Start Date	15-Aug-11
Day	7 Day Ave.
Description	Class Summary

M'Cycle & P'Cycle	1%
Cars	92%
LGV	3%
OGV1 & PSV	1%
OGV2	3%

	EB						WB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	9	0	0	0	9	0	13	0	0	0	13	0	21	1	0	0	22
1:00	0	7	0	0	0	7	0	4	0	0	0	4	0	10	0	0	0	11
2:00	0	6	0	0	0	6	0	5	0	0	0	6	0	11	0	0	0	11
3:00	0	3	0	0	0	4	0	3	0	0	0	4	0	7	1	0	0	7
4:00	0	5	1	0	0	6	0	4	0	0	0	4	0	9	1	0	0	10
5:00	1	40	2	0	0	42	1	44	1	0	0	46	1	84	3	0	0	88
6:00	1	97	4	1	0	104	0	71	5	1	1	79	2	168	9	2	2	183
7:00	0	135	7	2	5	150	0	88	8	4	4	104	1	223	15	6	9	254
8:00	0	230	13	2	8	254	0	131	9	3	9	152	0	361	22	5	17	406
9:00	1	183	8	1	8	201	2	130	5	3	8	148	3	313	13	4	17	349
10:00	2	181	9	2	9	203	3	146	7	4	8	169	5	327	16	6	17	372
11:00	1	183	6	2	8	201	2	147	6	3	10	168	3	331	12	5	18	369
12:00	1	197	7	2	7	214	1	150	9	4	5	168	2	347	16	5	12	382
13:00	1	172	9	2	8	192	3	156	7	3	7	176	4	328	16	5	15	368
14:00	4	206	9	2	8	229	3	155	6	2	7	173	6	361	16	4	15	402
15:00	3	211	9	2	7	233	1	197	7	1	8	214	4	408	17	3	15	447
16:00	2	188	6	1	6	203	2	201	4	1	6	213	3	388	11	2	11	416
17:00	1	179	3	0	4	187	0	174	3	0	3	180	1	352	6	1	7	367
18:00	0	133	2	0	3	138	0	120	1	0	2	124	0	254	3	0	5	262
19:00	0	76	1	0	0	78	0	78	1	0	0	78	0	154	2	0	0	156
20:00	0	58	0	0	0	59	0	55	1	0	0	56	0	114	1	0	0	115
21:00	0	50	1	0	0	51	0	63	0	0	0	64	0	113	1	0	0	114
22:00	0	55	1	0	0	56	0	51	0	0	0	52	0	107	1	0	0	108
23:00	0	17	0	0	0	18	0	16	0	0	0	16	0	33	0	0	0	34
Total	19	2620	101	20	83	2843	17	2204	82	28	79	2410	37	4824	183	48	162	5253

Road	Bellambi Lne - 200m west of Northern Distrib
Location	Bellambi
Site No.	7
Start Date	22-Aug-11
Day	Weekday Ave.
Description	Class Summary

M'Cycle & P'Cycle	1%
Cars	91%
LGV	4%
OGV1 & PSV	1%
OGV2	3%

	EB						WB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	5	0	0	0	5	0	5	0	0	0	5	0	9	0	0	0	10
1:00	0	3	0	0	0	3	0	4	0	0	0	4	0	7	0	0	0	7
2:00	0	3	0	0	0	3	0	2	0	0	0	2	0	5	0	0	0	5
3:00	0	3	0	0	0	3	0	2	1	0	0	3	0	5	1	0	0	5
4:00	0	6	0	0	0	7	1	5	0	0	0	6	1	11	1	0	0	13
5:00	1	50	3	0	0	54	0	63	1	0	0	64	1	112	3	0	0	118
6:00	2	129	8	1	0	140	0	96	6	2	1	104	2	225	14	3	1	244
7:00	1	182	12	3	5	202	1	107	13	3	3	127	1	289	25	6	8	329
8:00	1	288	14	4	4	310	1	154	10	4	6	174	1	441	24	8	10	485
9:00	1	195	9	2	5	212	4	141	6	3	6	161	5	337	15	5	12	373
10:00	1	175	11	4	6	196	3	129	11	3	6	152	4	303	22	7	11	348
11:00	2	170	9	4	6	190	1	137	8	2	9	157	3	307	17	6	15	347
12:00	2	152	9	2	9	175	1	124	7	4	5	141	3	276	16	6	14	316
13:00	3	167	10	4	8	191	2	163	8	4	7	184	4	330	18	9	14	375
14:00	4	204	11	4	8	231	3	149	10	3	7	172	7	352	21	7	15	403
15:00	4	241	13	2	8	269	3	227	8	2	7	247	6	468	22	5	15	515
16:00	3	221	9	3	6	242	2	228	5	2	6	243	5	448	15	4	12	485
17:00	1	196	6	1	5	208	1	218	4	0	2	225	2	413	10	1	7	433
18:00	1	135	1	0	2	140	0	139	2	0	2	144	1	274	4	1	4	283
19:00	0	78	0	0	2	81	0	84	1	0	2	87	0	162	2	0	4	168
20:00	0	54	1	0	2	56	0	60	1	0	1	62	0	114	2	0	3	118
21:00	0	48	1	0	1	50	0	65	1	0	1	67	0	114	2	0	1	117
22:00	1	52	0	0	0	53	0	38	0	0	0	39	1	91	0	0	0	92
23:00	0	18	0	0	0	18	0	19	0	0	0	19	0	37	0	0	0	37
Total	26	2772	129	34	76	3037	23	2356	104	33	71	2588	49	5129	233	67	147	5625

Road	Bellambi Lne - 200m west of Northern Distrib
Location	Bellambi
Site No.	7
Start Date	22-Aug-11
Day	7 Day Ave.
Description	Class Summary

M'Cycle & P'Cycle	1%
Cars	92%
LGV	4%
OGV1 & PSV	1%
OGV2	2%

	EB						WB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	11	0	0	0	12	0	8	0	0	0	9	0	20	1	0	0	20
1:00	0	7	0	0	0	7	0	7	0	0	0	7	0	13	0	0	0	13
2:00	0	4	0	0	0	4	0	3	0	0	0	3	0	7	0	0	0	7
3:00	0	4	0	0	0	4	0	2	1	0	0	3	0	6	1	0	0	7
4:00	0	7	0	0	0	7	1	5	0	0	0	6	1	12	1	0	0	14
5:00	1	40	2	0	0	43	0	47	1	0	0	48	1	87	2	0	0	91
6:00	1	103	6	1	0	112	0	75	5	1	1	81	1	178	11	2	1	193
7:00	1	148	9	2	3	164	1	87	10	2	3	103	1	236	19	4	6	266
8:00	1	236	11	3	4	255	1	127	7	3	5	143	2	363	18	6	10	398
9:00	1	185	7	2	5	201	4	132	5	3	6	150	5	317	12	5	11	350
10:00	1	189	9	3	5	207	3	135	9	2	5	155	4	324	18	5	11	362
11:00	2	178	7	3	6	195	1	139	7	2	7	156	2	317	14	5	13	352
12:00	3	169	7	2	7	188	1	138	5	3	5	152	3	306	13	5	12	339
13:00	2	176	9	3	7	197	2	162	7	4	6	180	4	338	15	7	12	376
14:00	3	188	9	3	7	210	3	144	8	3	6	163	6	333	16	6	13	373
15:00	3	210	11	2	6	232	3	202	7	2	5	218	6	413	17	4	11	450
16:00	2	195	7	2	4	210	3	204	4	1	4	217	5	399	11	3	9	427
17:00	1	180	4	1	3	188	1	187	3	0	2	193	1	367	7	1	5	381
18:00	0	125	1	0	2	128	0	125	2	0	1	129	1	250	3	1	3	257
19:00	0	73	0	0	1	74	0	77	1	0	1	79	0	150	1	0	3	154
20:00	0	53	1	0	1	55	0	55	1	0	1	57	0	109	1	0	2	112
21:00	0	47	1	0	0	48	0	62	1	0	0	63	0	109	2	0	1	112
22:00	1	51	0	0	0	52	0	41	0	0	0	42	1	92	0	0	0	94
23:00	0	19	0	0	0	19	0	21	0	0	0	21	0	39	0	0	0	40
Total	24	2595	103	26	64	2812	22	2187	83	26	59	2377	46	4782	186	52	123	5189

Road	Northern Distributor - btw Flinders St ramps a
Location	Gwynneville
Site No.	8
Start Date	15-Aug-11
Day	Weekday Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	93%
LGV	4%
OGV1 & PSV	1%
OGV2	2%

	NB						SB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	74	2	1	1	79	0	89	4	0	1	96	1	164	7	1	2	175
1:00	1	41	2	1	2	46	0	60	3	1	1	65	1	100	5	2	3	111
2:00	0	32	4	1	1	39	0	41	4	1	1	46	0	73	8	1	2	85
3:00	0	47	6	0	1	54	0	46	3	1	3	53	1	92	9	1	3	107
4:00	0	134	8	1	1	145	0	122	9	2	3	137	1	256	18	4	4	282
5:00	4	461	18	7	3	493	2	435	29	6	8	480	6	896	47	13	12	973
6:00	7	974	55	11	18	1064	2	1068	70	13	24	1178	9	2042	125	24	42	2242
7:00	4	1491	82	13	24	1614	5	1665	96	20	47	1833	9	3156	178	33	71	3447
8:00	2	2329	85	19	21	2456	2	2280	105	21	58	2466	4	4609	189	40	79	4922
9:00	2	1558	89	16	26	1692	4	1651	98	19	41	1814	6	3210	187	36	67	3505
10:00	4	1317	73	17	22	1434	4	1351	99	21	38	1512	8	2668	172	39	60	2946
11:00	3	1401	77	14	26	1521	5	1339	85	17	36	1481	8	2740	162	31	61	3002
12:00	5	1403	70	19	19	1516	5	1381	85	20	33	1524	10	2785	155	39	52	3041
13:00	4	1475	80	17	26	1602	4	1451	90	19	41	1605	8	2926	171	36	67	3207
14:00	3	1757	100	20	25	1906	4	1657	97	20	45	1824	8	3414	197	41	70	3729
15:00	9	2447	86	23	34	2599	7	1954	108	18	54	2141	16	4401	194	41	89	4741
16:00	5	2431	65	18	31	2550	4	1980	78	13	50	2124	9	4411	143	31	81	4675
17:00	6	2385	45	22	22	2480	3	2015	58	13	42	2129	8	4400	102	35	64	4609
18:00	3	1692	28	6	8	1737	3	1302	29	3	20	1357	6	2994	57	10	28	3095
19:00	2	980	14	2	3	1001	2	862	20	2	8	893	4	1842	34	4	11	1895
20:00	2	695	10	1	2	710	3	709	19	2	6	738	5	1404	29	3	8	1448
21:00	2	594	10	1	2	609	2	594	12	1	5	614	4	1188	23	3	7	1223
22:00	1	402	7	1	1	412	1	483	8	2	4	498	2	885	15	3	5	910
23:00	1	210	3	0	2	215	1	205	4	1	2	212	2	414	7	1	4	427
Total	69	26329	1022	233	323	27976	63	24738	1211	237	572	26821	132	51067	2232	470	895	54797

Road	Northern Distributor - btw Flinders St ramps a
Location	Gwynneville
Site No.	8
Start Date	15-Aug-11
Day	7 Day Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	94%
LGV	4%
OGV1 & PSV	1%
OGV2	1%

	NB						SB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	119	3	0	1	123	0	137	5	0	1	144	1	255	8	1	2	267
1:00	0	59	2	1	2	63	0	83	3	1	1	88	0	142	5	2	3	152
2:00	0	44	3	1	1	49	0	57	3	1	1	62	0	101	7	1	2	111
3:00	0	47	5	0	0	54	0	53	2	1	2	58	0	100	8	1	2	112
4:00	0	114	6	1	1	122	0	110	7	2	3	122	0	224	14	3	4	244
5:00	3	376	15	5	3	402	1	357	23	5	6	392	4	732	38	10	9	794
6:00	5	777	42	8	14	846	3	851	55	10	18	937	8	1628	97	18	32	1783
7:00	3	1199	62	10	19	1293	4	1326	74	15	36	1454	7	2525	136	25	55	2748
8:00	2	1897	66	14	18	1997	2	1875	82	17	46	2023	4	3772	148	31	64	4019
9:00	3	1449	72	14	22	1560	5	1558	79	16	35	1692	8	3006	151	30	57	3252
10:00	4	1382	59	14	20	1479	4	1385	81	18	34	1523	8	2767	140	33	54	3001
11:00	6	1488	62	13	22	1591	5	1428	72	15	33	1553	11	2915	134	28	56	3145
12:00	6	1497	62	15	16	1596	7	1442	72	17	32	1571	13	2940	134	32	48	3167
13:00	5	1503	66	15	21	1610	5	1463	74	16	36	1595	11	2966	140	31	57	3205
14:00	5	1685	79	16	21	1805	4	1603	79	17	37	1741	10	3287	158	33	58	3546
15:00	9	2183	67	19	27	2306	6	1808	86	14	44	1959	15	3992	153	34	71	4265
16:00	4	2206	55	14	25	2304	5	1792	65	11	40	1913	9	3999	119	25	65	4217
17:00	6	2132	40	17	18	2212	3	1786	47	11	33	1880	9	3917	87	28	51	4092
18:00	3	1518	23	5	7	1556	3	1192	26	3	17	1242	6	2710	49	9	24	2798
19:00	2	917	12	1	2	935	2	802	17	2	7	830	4	1719	29	3	9	1764
20:00	1	649	9	1	2	663	3	669	15	1	6	694	4	1318	25	2	8	1357
21:00	1	564	10	1	2	577	2	561	10	1	5	578	3	1125	20	2	6	1156
22:00	1	395	6	1	1	404	1	495	8	2	4	511	2	891	14	3	5	915
23:00	1	222	3	0	2	228	1	241	3	1	2	247	2	463	7	1	3	475
Total	71	24421	830	189	266	25777	68	23074	991	197	479	24809	139	47496	1822	386	744	50586

Road	Northern Distributor - btw Flinders St ramps a
Location	Gwynneville
Site No.	8
Start Date	22-Aug-11
Day	Weekday Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	93%
LGV	4%
OGV1 & PSV	1%
OGV2	2%

	NB						SB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	101	2	1	1	105	1	75	3	1	1	80	1	175	4	2	2	185
1:00	1	41	2	1	1	46	0	44	2	0	1	47	1	85	5	1	2	94
2:00	0	30	3	0	2	37	0	42	2	2	1	48	0	72	6	2	4	84
3:00	0	45	7	1	0	53	0	43	4	2	2	50	0	88	10	3	3	104
4:00	0	142	7	0	1	151	1	125	7	1	3	137	1	267	15	1	4	288
5:00	2	480	19	5	4	509	2	449	32	5	8	497	4	929	51	11	11	1006
6:00	6	1023	43	9	17	1098	3	1100	70	14	31	1217	9	2123	113	23	48	2315
7:00	3	1457	72	15	20	1567	6	1654	97	22	46	1824	9	3111	169	37	66	3391
8:00	5	2165	78	21	25	2293	3	2251	112	31	55	2452	7	4416	189	52	80	4745
9:00	3	1449	65	20	19	1556	3	1539	96	24	44	1706	6	2988	162	43	63	3262
10:00	6	1241	50	13	14	1324	2	1363	82	25	39	1511	8	2603	132	38	53	2835
11:00	4	1274	47	12	17	1353	7	1339	81	24	39	1490	11	2612	128	36	56	2843
12:00	3	1357	48	10	16	1434	8	1332	80	21	41	1482	11	2688	128	31	57	2916
13:00	6	1387	56	13	19	1481	6	1451	89	22	38	1606	12	2838	145	35	57	3088
14:00	5	1682	77	15	27	1805	7	1653	101	27	54	1842	12	3335	177	42	81	3647
15:00	5	2492	65	13	31	2606	7	1936	112	23	55	2133	12	4429	177	36	86	4739
16:00	5	2550	49	14	25	2643	5	1935	74	18	50	2082	10	4485	123	31	75	4725
17:00	5	2526	42	14	18	2605	4	1970	51	14	41	2080	9	4497	93	28	59	4685
18:00	3	1637	23	4	7	1675	2	1257	39	6	19	1325	6	2894	62	11	27	2999
19:00	4	979	16	2	5	1006	3	828	21	5	10	867	7	1807	36	7	15	1873
20:00	2	745	10	1	3	761	2	578	18	2	7	607	5	1323	27	4	9	1368
21:00	3	668	7	1	1	679	2	502	13	4	7	527	4	1170	19	4	8	1206
22:00	0	390	3	2	2	397	3	383	6	1	4	397	3	773	10	3	6	794
23:00	1	252	4	0	1	258	1	204	5	1	1	213	2	456	9	2	2	471
Total	72	26113	793	187	276	27442	77	24051	1197	296	598	26219	149	50164	1990	483	874	53661

Road	Northern Distributor - btw Flinders St ramps a
Location	Gwynneville
Site No.	8
Start Date	22-Aug-11
Day	7 Day Ave.
Description	Class Summary

M'Cycle & P'Cycle	0%
Cars	94%
LGV	3%
OGV1 & PSV	1%
OGV2	2%

	NB						SB						Combined					
	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total	M'Cycle & P'Cycle	Cars	LGV	OGV1 & PSV	OGV2	Total
0:00	0	128	1	1	1	131	1	128	2	1	2	134	1	256	4	2	2	265
1:00	0	60	2	1	1	64	0	72	2	1	1	76	1	132	4	1	2	140
2:00	0	39	3	0	2	44	0	61	2	2	1	67	0	100	5	2	3	111
3:00	0	46	5	1	0	52	0	52	4	1	2	59	0	99	9	2	2	112
4:00	1	126	6	0	1	133	1	115	6	1	3	125	1	241	12	1	3	259
5:00	1	389	15	4	3	412	2	374	25	5	7	412	3	764	40	9	9	825
6:00	5	843	33	7	13	900	3	881	56	12	23	974	7	1723	89	19	36	1874
7:00	3	1212	55	12	16	1298	5	1340	78	18	36	1476	8	2552	132	30	51	2774
8:00	4	1789	59	16	20	1888	4	1849	90	24	46	2013	8	3638	149	41	66	3901
9:00	4	1406	51	15	17	1493	7	1464	80	20	41	1613	11	2870	131	36	58	3105
10:00	6	1324	40	12	12	1393	5	1404	71	21	40	1540	10	2727	111	32	51	2932
11:00	4	1369	38	10	15	1436	9	1385	73	22	37	1525	13	2753	111	32	52	2961
12:00	4	1478	40	9	15	1547	8	1419	70	19	42	1559	12	2897	110	29	57	3106
13:00	7	1432	44	11	17	1511	7	1473	75	19	40	1614	14	2906	119	30	57	3125
14:00	5	1627	59	12	21	1724	9	1609	86	22	47	1772	14	3236	145	34	68	3496
15:00	5	2245	51	10	25	2336	8	1777	90	19	46	1940	13	4022	141	29	71	4276
16:00	5	2325	40	12	20	2401	6	1855	61	16	44	1983	12	4180	101	28	64	4384
17:00	4	2240	34	12	15	2306	5	1809	45	12	38	1909	9	4049	79	24	53	4215
18:00	3	1461	19	4	7	1492	2	1154	35	5	17	1213	5	2614	53	9	24	2705
19:00	4	889	12	2	4	910	3	773	19	5	9	810	6	1662	31	7	13	1720
20:00	2	677	9	1	2	691	2	561	15	2	5	585	4	1237	25	3	7	1276
21:00	2	603	6	1	1	613	1	487	11	3	6	509	3	1090	17	4	7	1122
22:00	0	379	3	1	2	386	2	404	7	2	4	419	2	784	10	3	6	804
23:00	1	247	3	0	1	252	2	251	6	1	2	262	2	498	9	2	3	514
Total	70	24334	629	153	229	25415	91	22697	1009	254	537	24588	160	47031	1638	406	767	50002

Appendix C

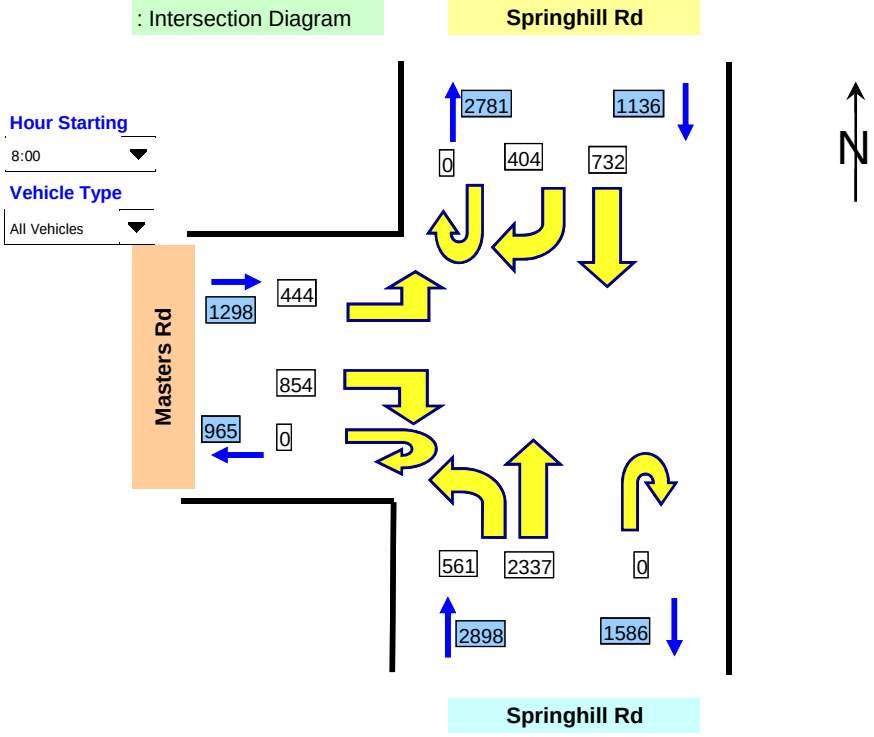
Intersection Counts

Job No. : N674
Client : Cardno
Suburb : Port Kembla
Location : 1. Springhill Rd / Masters Rd

SKYHIGH - THE TRAFFIC SURVEY COMPANY

Day/Date : Thu, 25th August 2011
Weather : Fine
Description : Classified Intersection Count

: Intersection Diagram

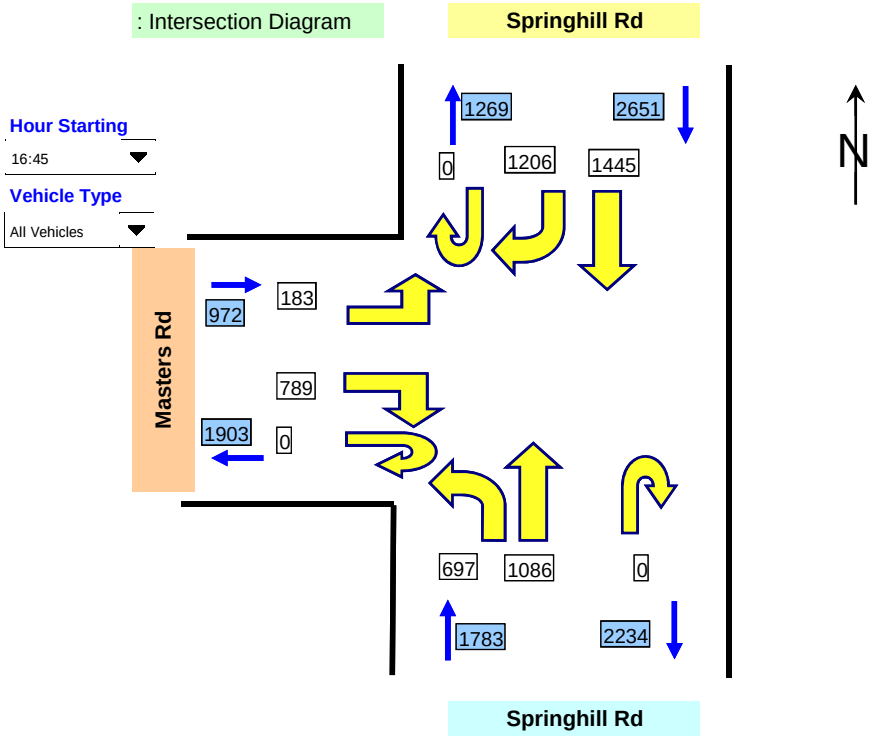


* Note : Sum figures are not included each U-turn.

Job No. : N674
Client : Cardno
Suburb : Port Kembla
Location : 1. Springhill Rd / Masters Rd

SKYHIGH - THE TRAFFIC SURVEY COMPANY

Day/Date : Thu, 25th August 2011
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram



* Note : Sum figures are not included each U-turn.

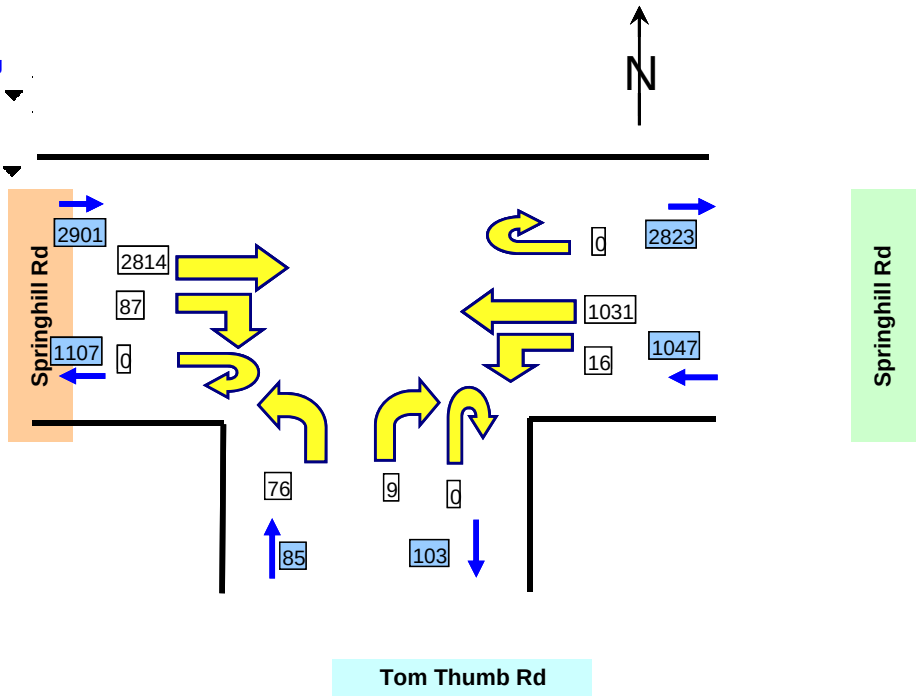
Job No. : N674
Client : Cardno
Suburb : Port Kembla
Location : 2. Springhill Rd / Tom Thumb Rd

SKYHIGH - THE TRAFFIC SURVEY COMPANY

Day/Date : Thu, 25th August 2011
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

Hour Starting
8:00

Vehicle Type
All Vehicles



* Note : Sum figures are not included each U-turn.

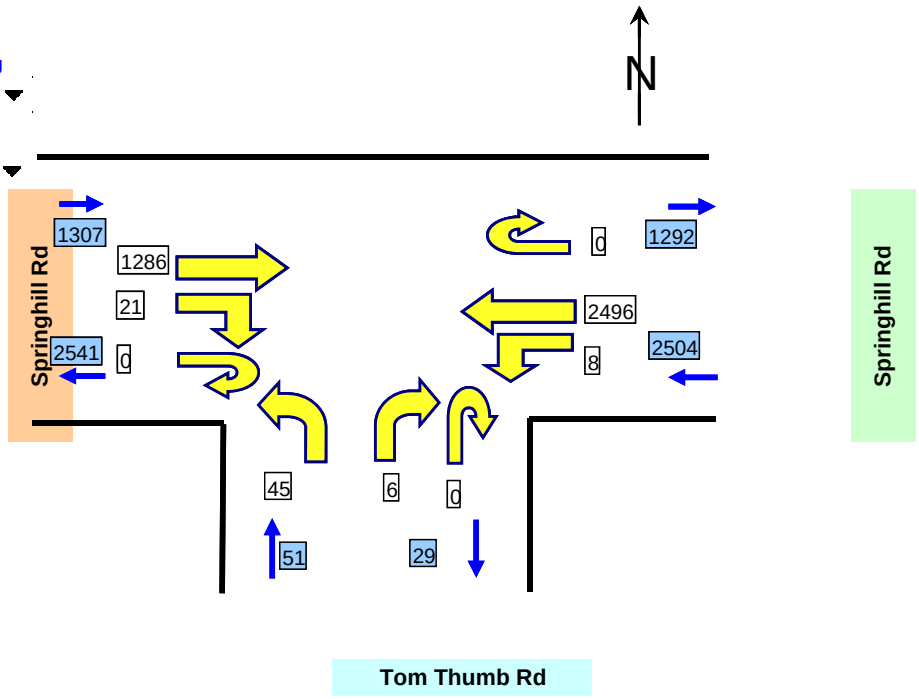
Job No. : N674
Client : Cardno
Suburb : Port Kembla
Location : 2. Springhill Rd / Tom Thumb Rd

SKYHIGH - THE TRAFFIC SURVEY COMPANY

Day/Date : Thu, 25th August 2011
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

Hour Starting
16:45

Vehicle Type
All Vehicles



* Note : Sum figures are not included each U-turn.

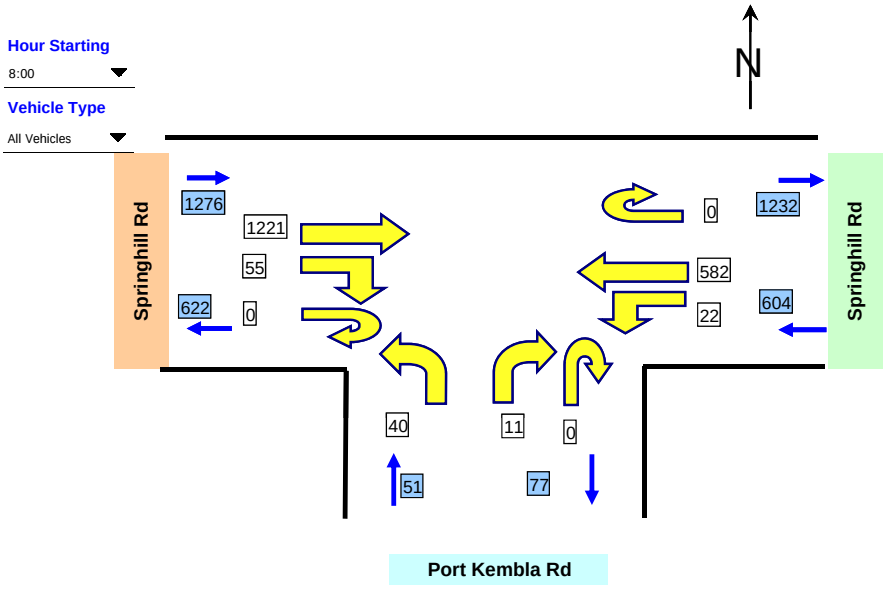
Job No. : N674
Client : Cardno
Suburb : Port Kembla
Location : 3. Springhill Rd / Port Kembla Rd

SKYHIGH - THE TRAFFIC SURVEY COMPANY

Day/Date : Thu, 25th August 2011
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

Hour Starting
8:00

Vehicle Type
All Vehicles



* Note : Sum figures are not included each U-turn.

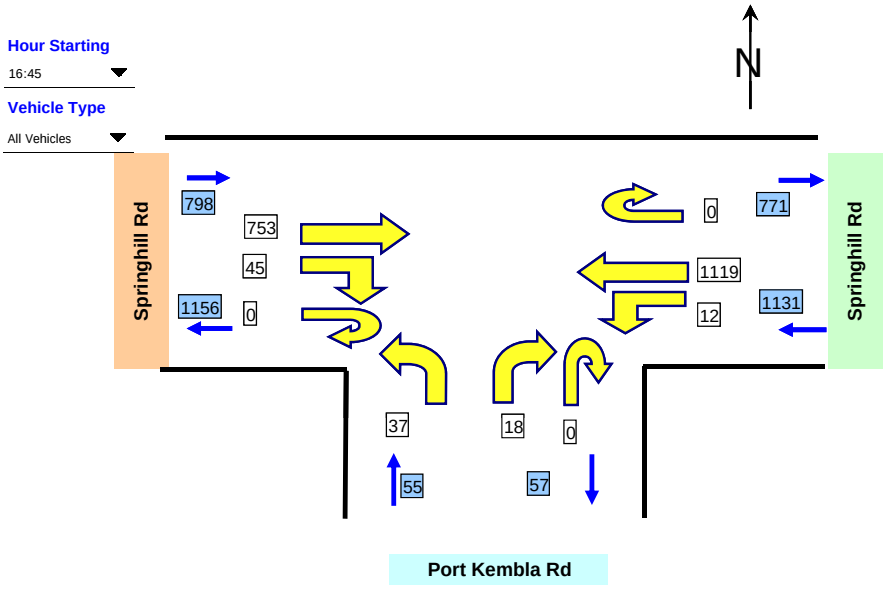
Job No. : N674
Client : Cardno
Suburb : Port Kembla
Location : 3. Springhill Rd / Port Kembla Rd

SKYHIGH - THE TRAFFIC SURVEY COMPANY

Day/Date : Thu, 25th August 2011
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

Hour Starting
16:45

Vehicle Type
All Vehicles



* Note : Sum figures are not included each U-turn.

Appendix D
SIDRA Summaries

MOVEMENT SUMMARY

Site: 2011 AM Peak Masters Rd/Springhill Road

Masters Road/Springhill Road
2011 AM Peak
Signals - Fixed Time Cycle Time = 100 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Springhill Road South											
1	L	561	8.2	0.410	15.2	LOS B	8.7	65.2	0.35	0.76	54.0
2	T	2337	3.6	0.909	43.2	LOS D	44.7	322.5	1.00	1.07	31.5
Approach		2898	4.5	0.909	37.8	LOS C	44.7	322.5	0.87	1.01	34.3
North: Springhill Road North											
8	T	732	9.2	0.326	10.1	LOS A	8.6	64.7	0.52	0.46	57.0
9	R	404	21.5	0.836	68.6	LOS E	7.4	61.3	1.00	0.94	24.9
Approach		1136	13.6	0.836	30.9	LOS C	8.6	64.7	0.69	0.63	39.3
West: Masters Road East											
10	L	444	10.8	0.595	35.1	LOS C	16.5	126.1	0.82	0.85	37.7
12	R	854	6.2	0.595	45.8	LOS D	12.3	90.6	0.92	0.84	32.1
Approach		1298	7.8	0.595	42.2	LOS C	16.5	126.1	0.89	0.84	33.8
All Vehicles		5332	7.2	0.909	37.4	LOS C	44.7	322.5	0.84	0.89	35.1

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS E. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue Pedestrian	Average Back of Queue Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P5	Across N approach	50	44.2	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		50	44.2				0.94	0.94

Level of Service (Aver. Int. Delay): LOS E. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS E. LOS Method for individual pedestrian movements: Delay (HCM).

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MOVEMENT SUMMARY

Site: 2011 AM Peak Springhill Rd/Port Kembla Rd

Springhill Road/Port Kembla Road
2011 AM Peak
Signals - Fixed Time Cycle Time = 50 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Port Kembla Road											
1	L	46	78.0	0.306	24.8	LOS B	0.8	9.1	0.69	0.74	40.9
3	R	8	13.0	0.039	31.9	LOS C	0.2	1.4	0.91	0.67	34.9
Approach		54	68.4	0.306	25.9	LOS B	0.8	9.1	0.73	0.73	39.9
East: Springhill Road East											
4	L	21	5.0	0.304	21.6	LOS B	4.0	28.3	0.72	1.02	49.1
5	T	680	2.0	0.304	11.3	LOS A	4.0	28.4	0.72	0.60	54.2
Approach		701	2.1	0.304	11.6	LOS A	4.0	28.4	0.72	0.61	54.0
West: Springhill Road West											
11	T	1232	3.0	0.322	0.1	NA [9]	NA [9]	NA [9]	NA [9]	0.00	79.9
12	R	50	60.0	0.321	36.6	LOS C	1.2	13.2	0.95	0.75	35.0
Approach		1282	5.2	0.322	1.5	LOS A	1.2	13.2	0.04	0.03	76.5
All Vehicles		2037	5.8	0.322	5.6	LOS A	4.0	28.4	0.29	0.25	65.5

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

9 Continuous movement

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue Pedestrian	Average Back of Queue Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P1	Across S approach	50	13.7	LOS B	0.1	0.1	0.74	0.74
All Pedestrians		50	13.7				0.74	0.74

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS B. LOS Method for individual pedestrian movements: Delay (HCM).

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MOVEMENT SUMMARY

Site: 2011 AM Peak Springhill Rd/Tom Thumb

Springhill Road/Tom Thumb Road
2011 AM Peak
Signals - Fixed Time Cycle Time = 70 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Tom Thumb Road											
1	L	67	73.0	0.213	33.8	LOS C	1.9	21.3	0.82	0.76	32.3
3	R	15	13.0	0.103	42.3	LOS C	0.5	3.9	0.95	0.69	28.0
Approach		82	62.0	0.213	35.3	LOS C	1.9	21.3	0.85	0.75	31.4
East: Springhill Road East											
4	L	21	10.0	0.016	8.4	LOS A	0.1	0.5	0.18	0.62	48.8
5	T	1093	8.0	0.344	8.6	LOS A	6.6	49.6	0.57	0.49	46.4
Approach		1114	8.0	0.344	8.6	LOS A	6.6	49.6	0.56	0.50	46.5
West: Springhill Road West											
11	T	2775	3.0	0.846	19.5	LOS B	31.0	222.5	0.90	0.92	37.0
12	R	96	46.0	0.801	50.9	LOS D	3.8	37.1	1.00	0.96	25.5
Approach		2871	4.4	0.846	20.5	LOS B	31.0	222.5	0.90	0.92	36.4
All Vehicles		4067	6.6	0.846	17.6	LOS B	31.0	222.5	0.81	0.80	38.6

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

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MOVEMENT SUMMARY

Site: 2011 PM Peak Masters Rd/Springhill Road

Masters Road/Springhill Road
2011 PM Peak
Signals - Fixed Time Cycle Time = 90 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Springhill Road South											
1	L	697	4.0	0.643	23.8	LOS B	19.8	143.5	0.70	0.84	45.3
2	T	1086	2.8	0.810	40.2	LOS C	16.6	119.2	1.00	0.94	32.8
Approach		1783	3.3	0.810	33.8	LOS C	19.8	143.5	0.88	0.90	36.7
North: Springhill Road North											
8	T	1445	2.0	0.662	14.5	LOS A	21.9	155.7	0.75	0.68	50.7
9	R	1206	2.8	0.828	51.0	LOS D	18.8	134.4	1.00	0.93	30.0
Approach		2651	2.4	0.828	31.1	LOS C	21.9	155.7	0.86	0.79	38.7
West: Masters Road East											
10	L	183	19.1	0.177	19.2	LOS B	3.3	26.7	0.44	0.76	50.2
12	R	789	4.1	0.486	39.4	LOS C	9.6	69.4	0.87	0.83	35.0
Approach		972	6.9	0.486	35.6	LOS C	9.6	69.4	0.79	0.81	37.2
All Vehicles		5406	3.5	0.828	32.8	LOS C	21.9	155.7	0.86	0.83	37.7

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue Pedestrian	Average Back of Queue Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P5	Across N approach	50	39.2	LOS D	0.1	0.1	0.93	0.93
All Pedestrians		50	39.2				0.93	0.93

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS D. LOS Method for individual pedestrian movements: Delay (HCM).

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MOVEMENT SUMMARY

Site: 2011 PM Peak Springhill Rd/Port Kembla Rd

Springhill Road/Port Kembla Road
2011 PM Peak
Signals - Fixed Time Cycle Time = 50 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Port Kembla Road											
1	L	37	59.0	0.221	23.7	LOS B	0.6	6.5	0.69	0.73	41.0
3	R	18	0.0	0.081	31.5	LOS C	0.4	2.9	0.92	0.70	34.8
Approach		55	39.7	0.221	26.3	LOS B	0.6	6.5	0.76	0.72	38.8
East: Springhill Road East											
4	L	12	0.0	0.484	22.4	LOS B	7.0	49.0	0.79	1.02	49.0
5	T	1119	0.0	0.484	12.3	LOS A	7.0	49.1	0.79	0.68	52.7
Approach		1131	0.0	0.484	12.4	LOS A	7.0	49.1	0.79	0.68	52.7
West: Springhill Road West											
11	T	753	1.0	0.194	0.0	NA [9]	NA [9]	NA [9]	NA [9]	0.00	79.9
12	R	45	78.0	0.314	37.6	LOS C	1.1	13.1	0.95	0.75	35.0
Approach		798	5.3	0.314	2.1	LOS A	1.1	13.1	0.05	0.04	75.1
All Vehicles		1984	3.2	0.484	8.7	LOS A	7.0	49.1	0.49	0.42	59.2

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

9 Continuous movement

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue Pedestrian	Average Back of Queue Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P1	Across S approach	50	13.7	LOS B	0.1	0.1	0.74	0.74
All Pedestrians		50	13.7				0.74	0.74

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS B. LOS Method for individual pedestrian movements: Delay (HCM).

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MOVEMENT SUMMARY

Site: 2011 PM Peak Springhill Rd/Tom Thumb

Springhill Road/Tom Thumb Road
2011 PM Peak
Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Tom Thumb Road											
1	L	41	24.0	0.086	25.6	LOS B	0.9	7.4	0.75	0.73	35.7
3	R	8	0.0	0.043	35.6	LOS C	0.2	1.6	0.93	0.66	30.4
Approach		49	20.1	0.086	27.3	LOS B	0.9	7.4	0.78	0.72	34.7
East: Springhill Road East											
4	L	7	14.0	0.005	8.6	LOS A	0.0	0.2	0.21	0.62	48.7
5	T	2419	2.0	0.838	20.0	LOS B	24.5	174.1	0.93	0.96	36.6
Approach		2426	2.0	0.838	19.9	LOS B	24.5	174.1	0.93	0.96	36.6
West: Springhill Road West											
11	T	1387	3.0	0.483	10.8	LOS A	9.0	64.7	0.71	0.62	44.0
12	R	23	48.0	0.166	38.8	LOS C	0.7	6.6	0.95	0.71	29.7
Approach		1410	3.7	0.483	11.2	LOS A	9.0	64.7	0.71	0.62	43.6
All Vehicles		3885	2.9	0.838	16.9	LOS B	24.5	174.1	0.84	0.83	38.9

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

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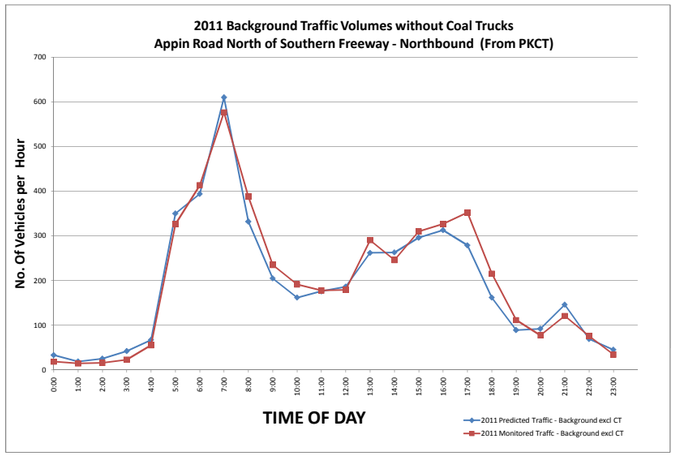
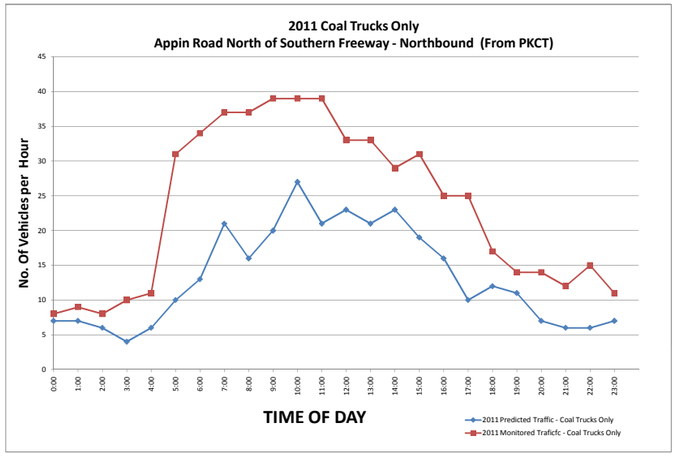
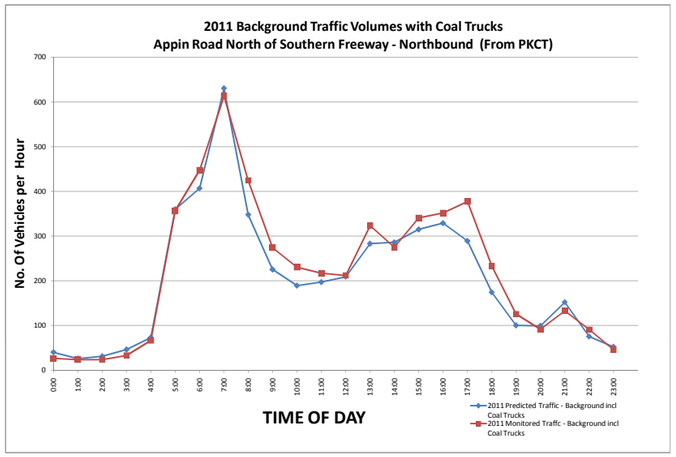
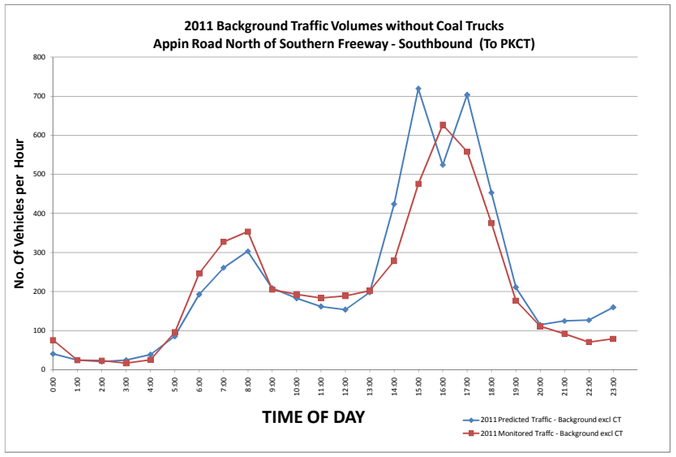
Appendix E
Traffic Profiles

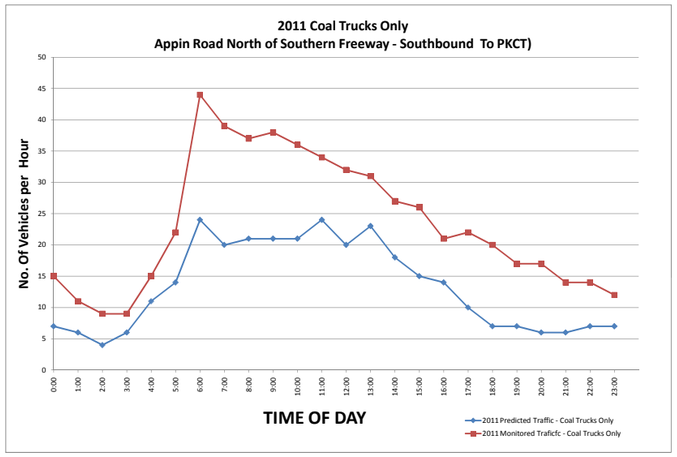
Average Weekday Traffic Volumes
Appin Road north of Southern Freeway

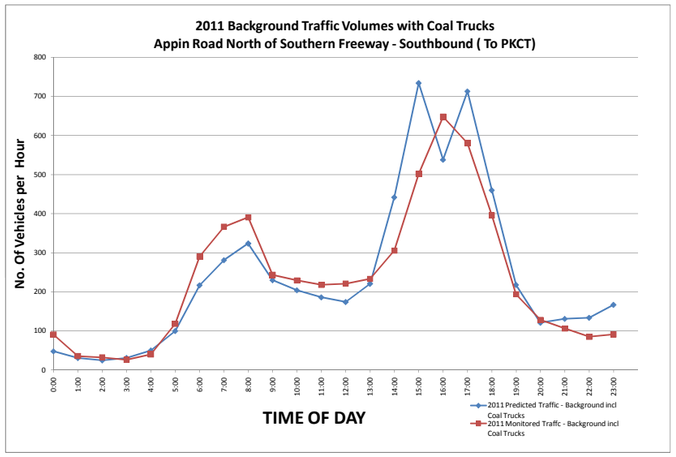


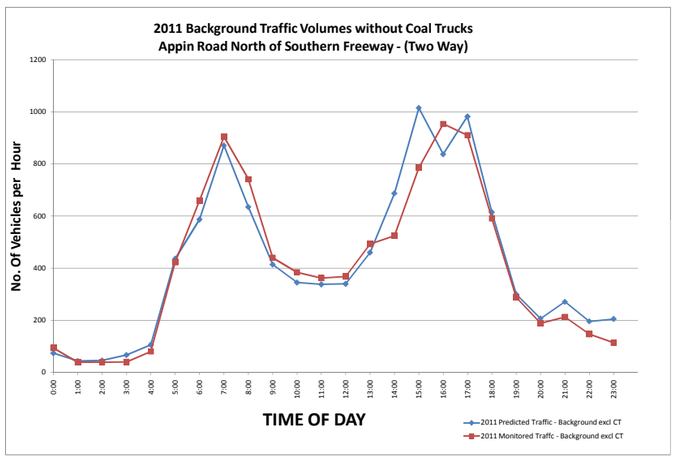


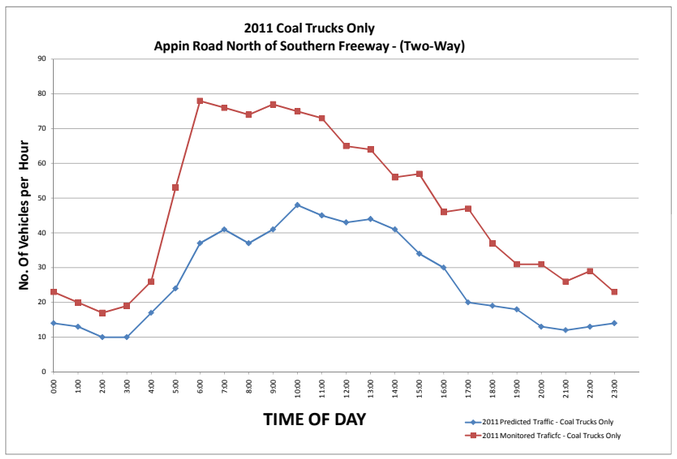


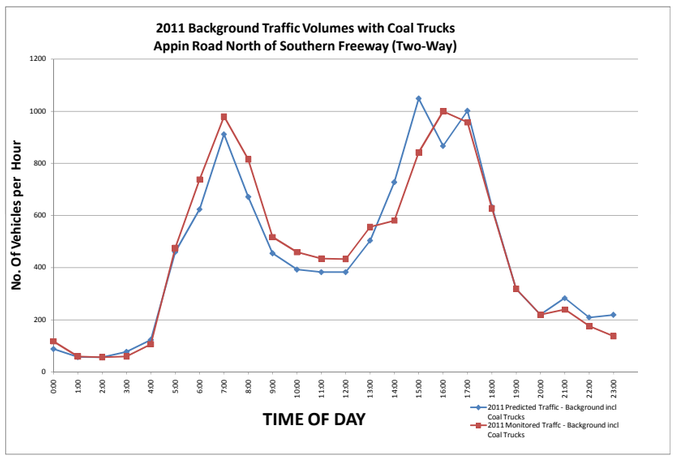




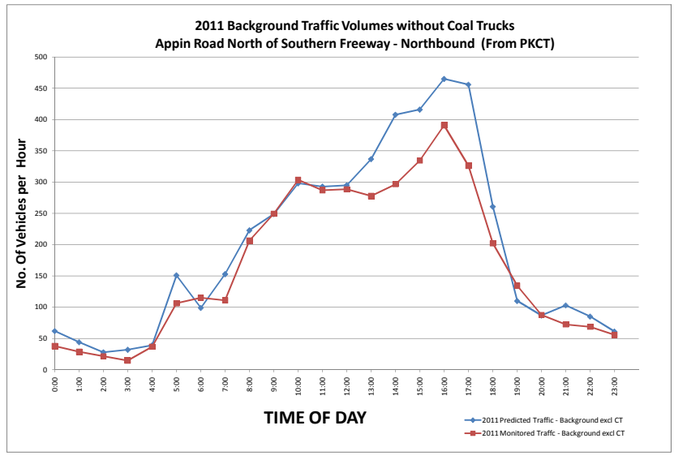


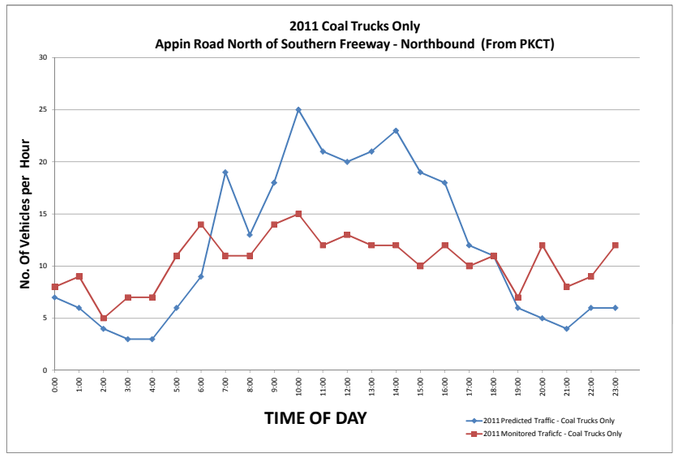


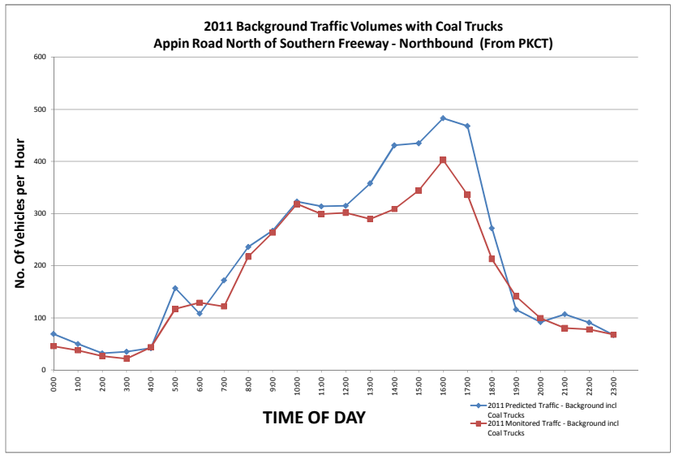


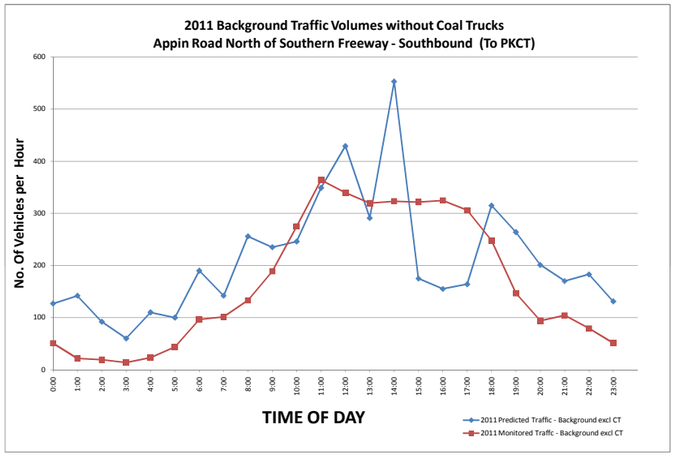


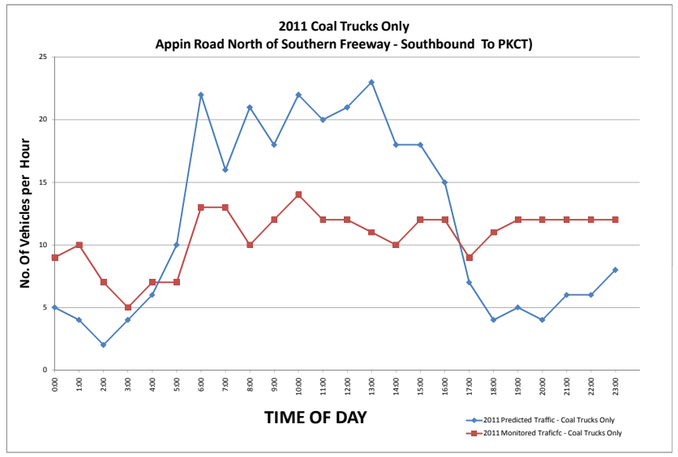
Average Weekend Traffic Volumes
Appin Road north of Southern Freeway

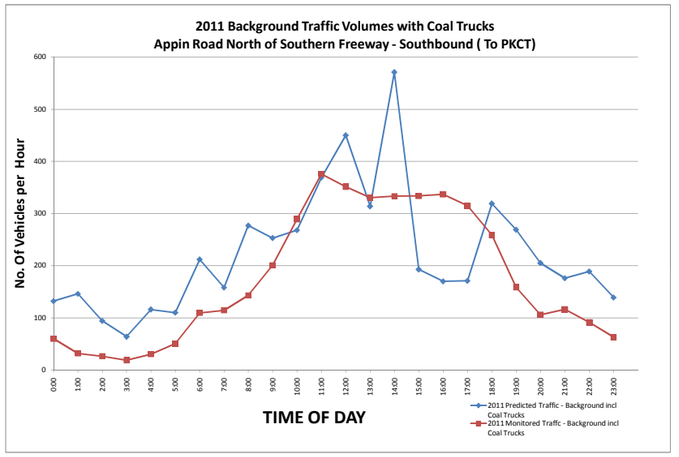


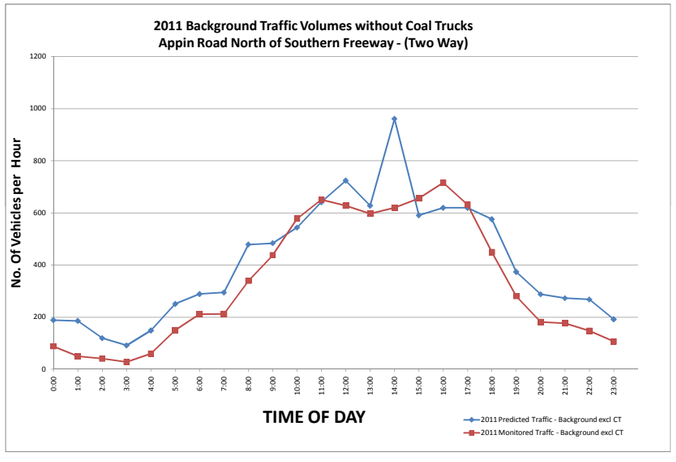


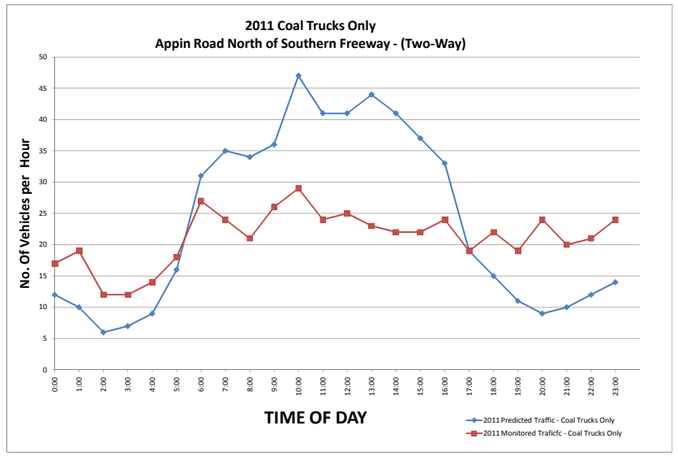


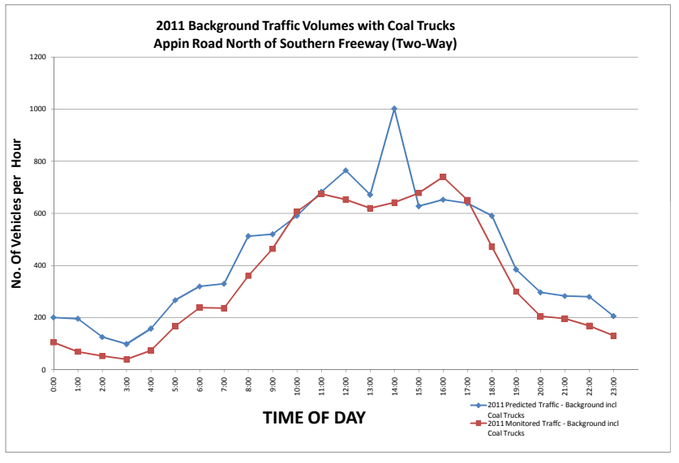




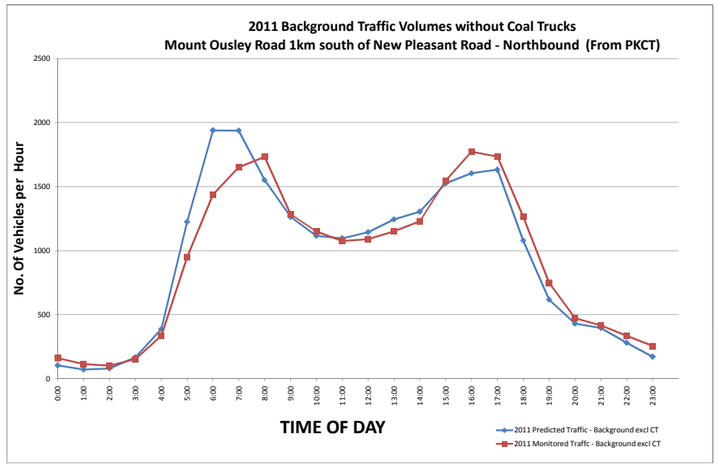


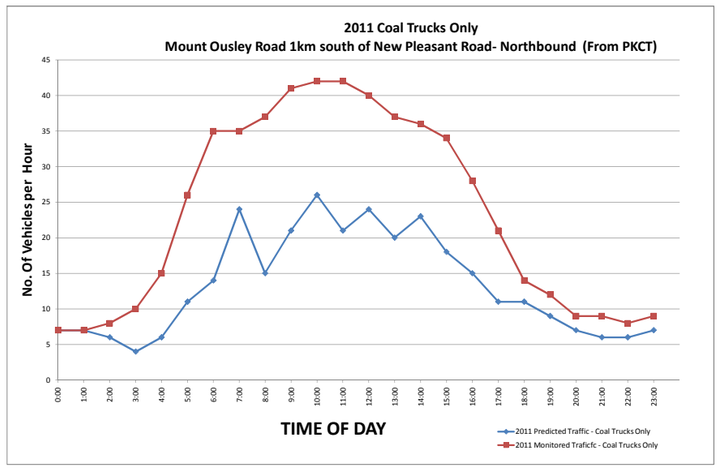


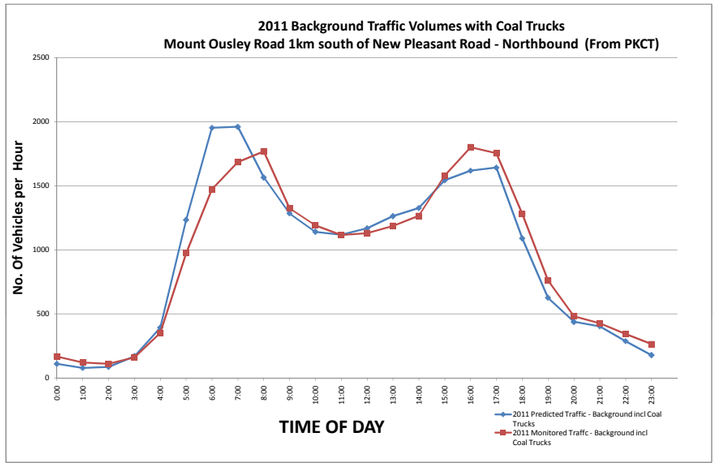


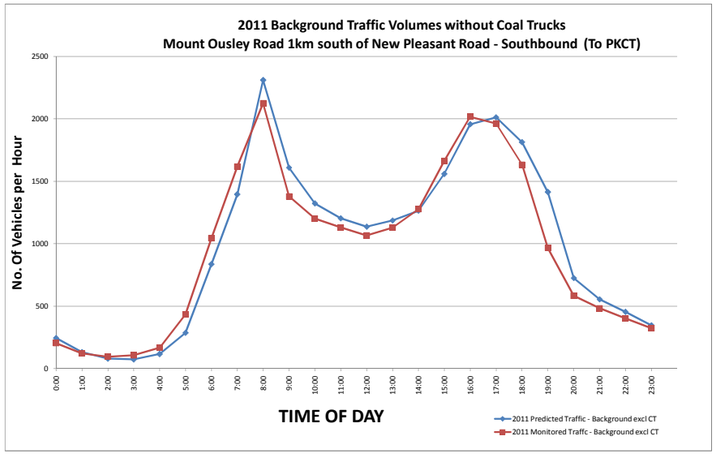


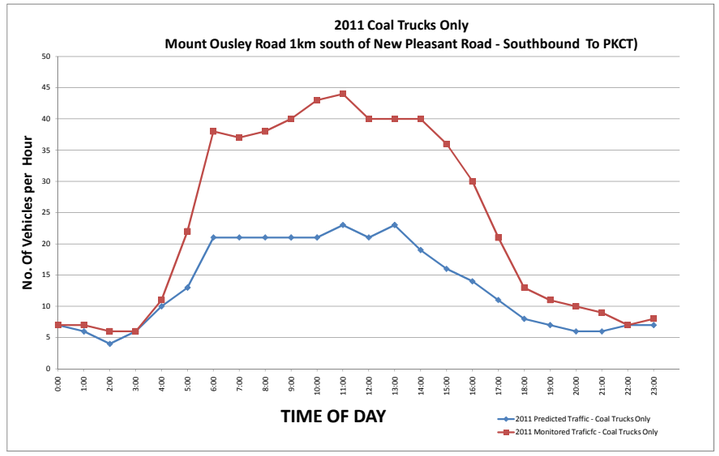
Average Weekday Traffic Volumes
Mount Ousley Road 1km south of New Pleasant Road

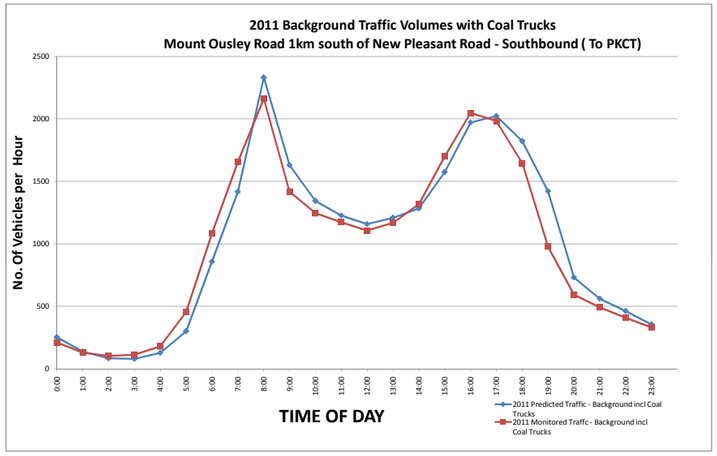


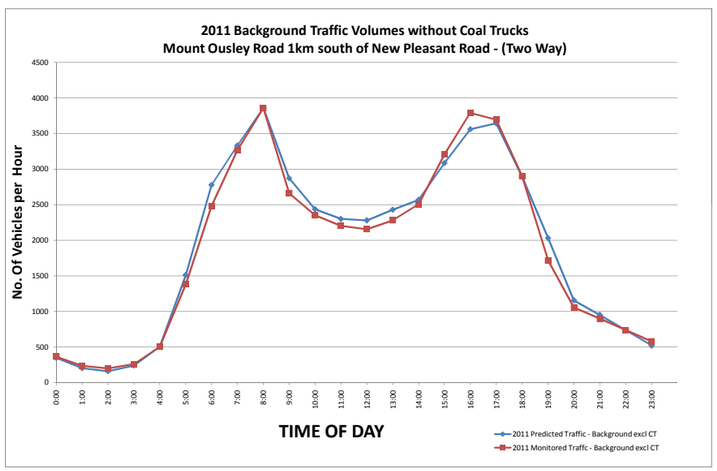


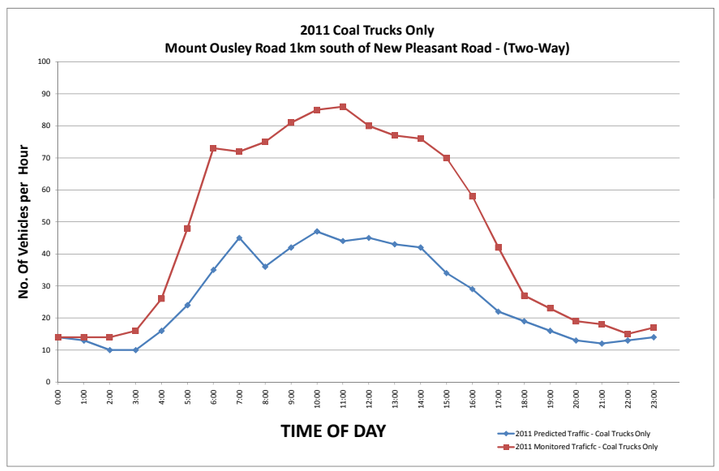


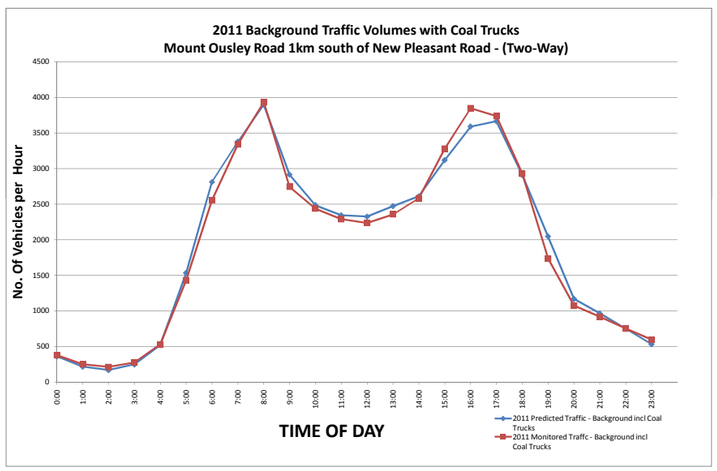




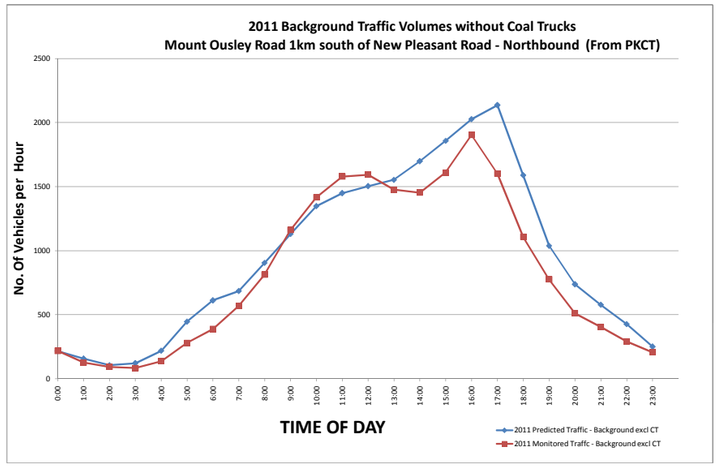


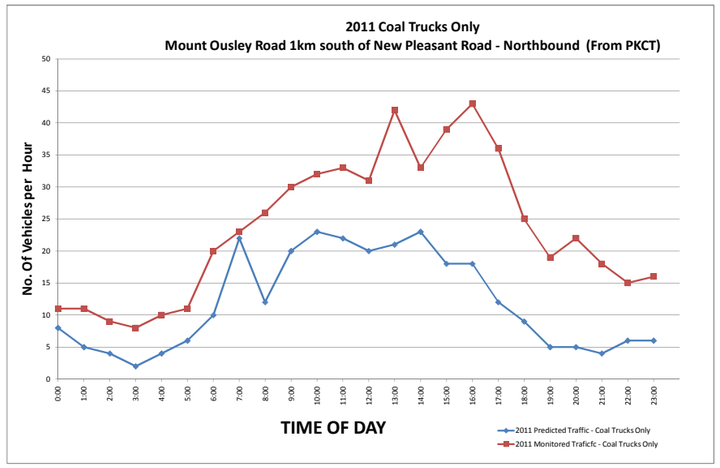


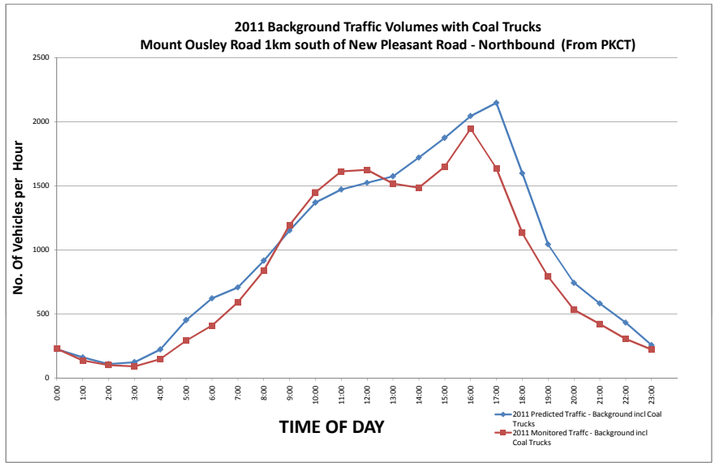


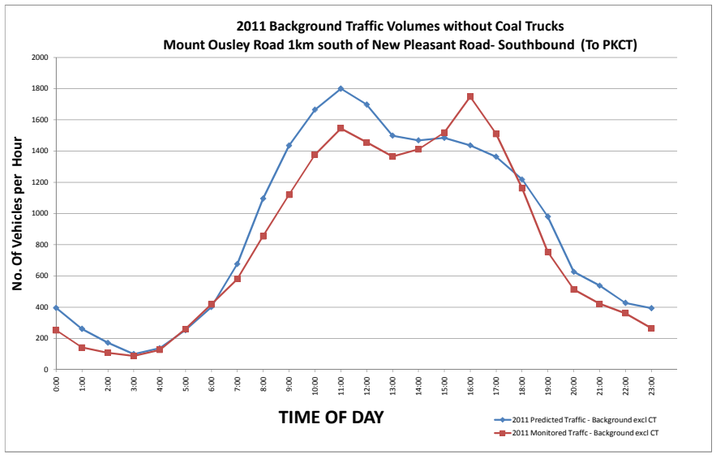


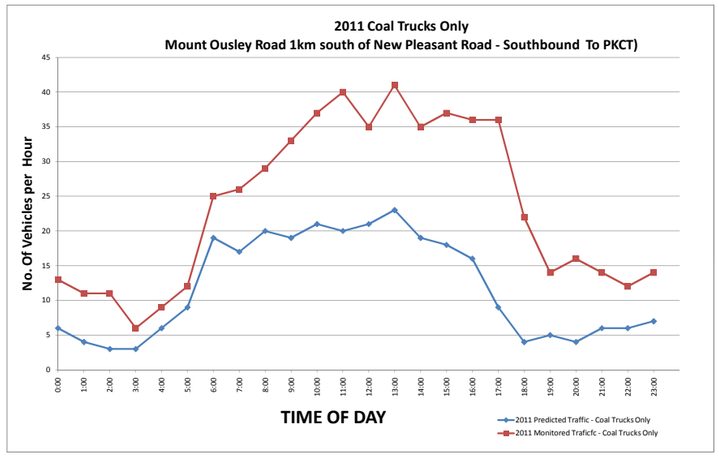
Average Weekend Traffic Volumes
Mount Ousley Road 1km south of New Pleasant Road

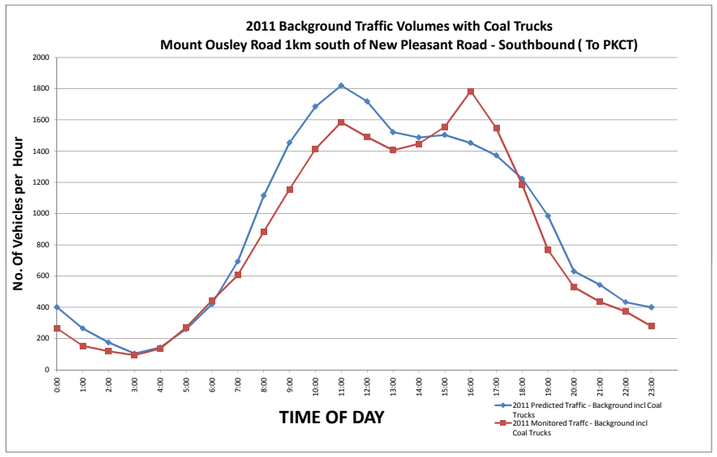


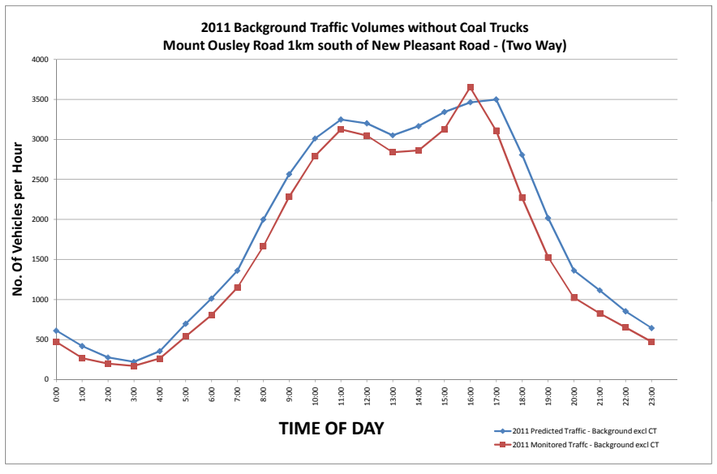


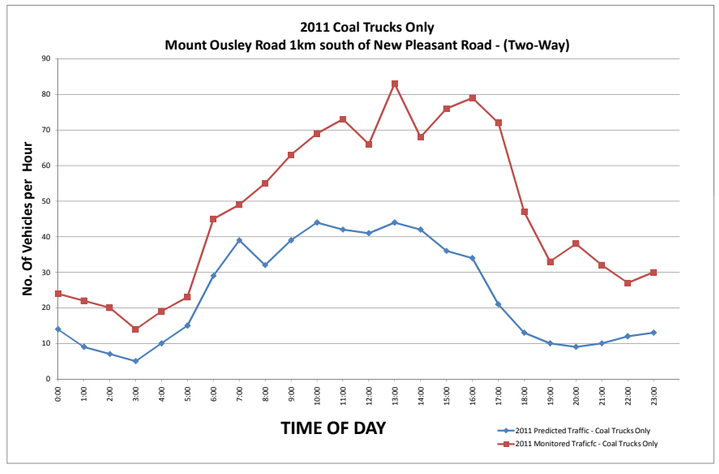


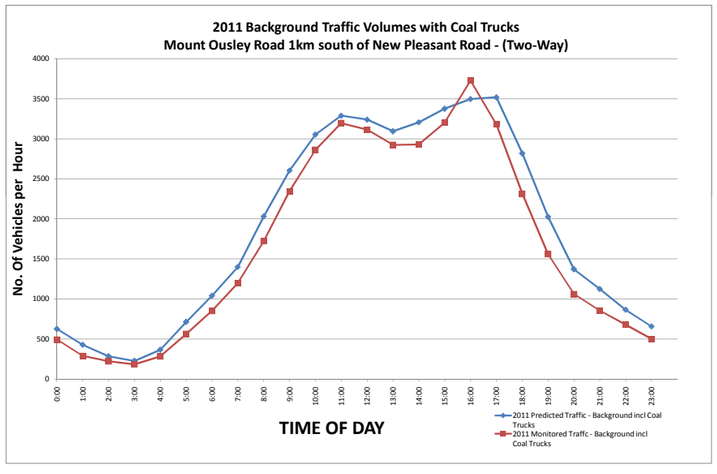




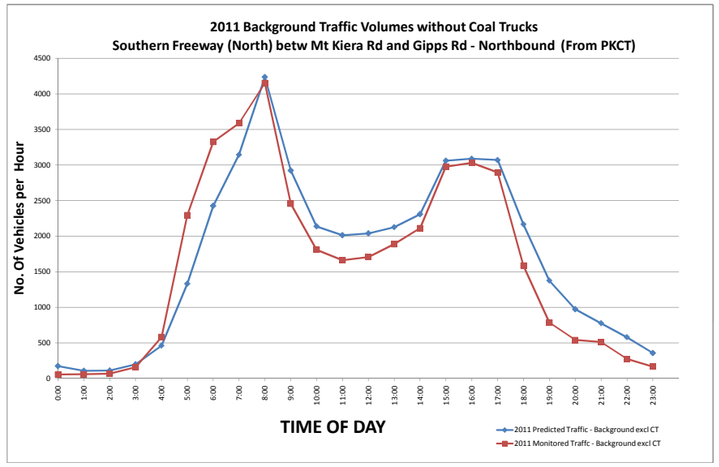


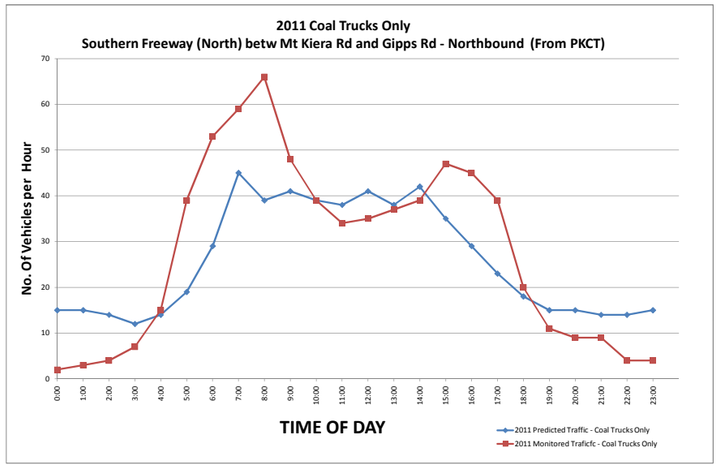


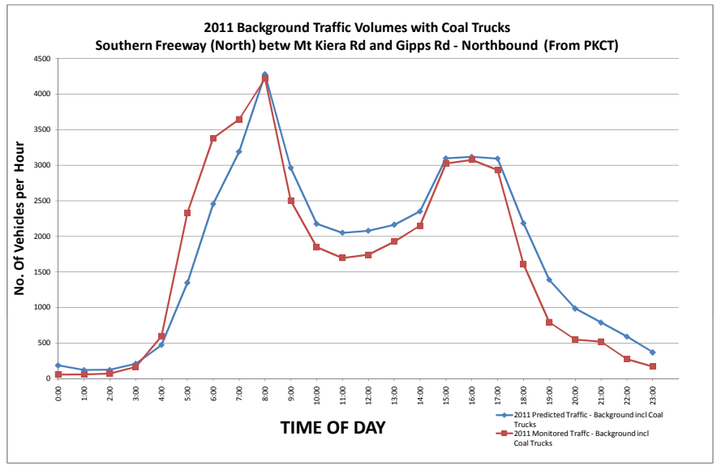


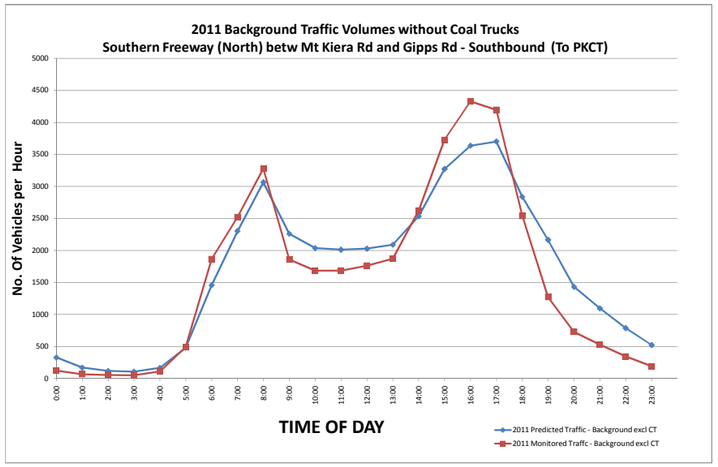


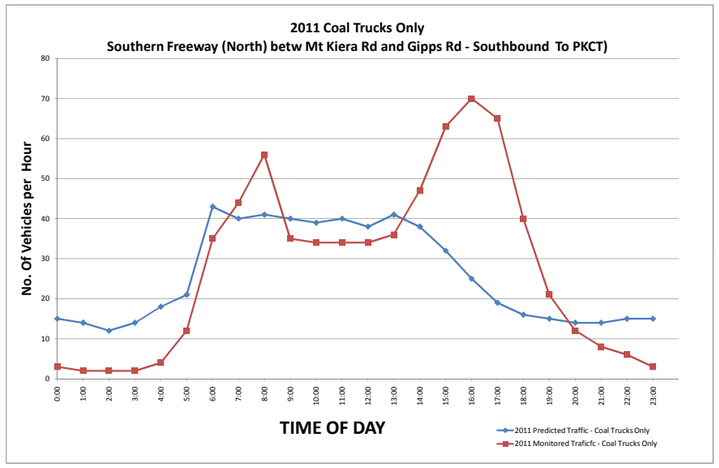
Average Weekday Traffic Volumes
Southern Freeway (North) betw Mt Kiera Rd and Gipps Rd

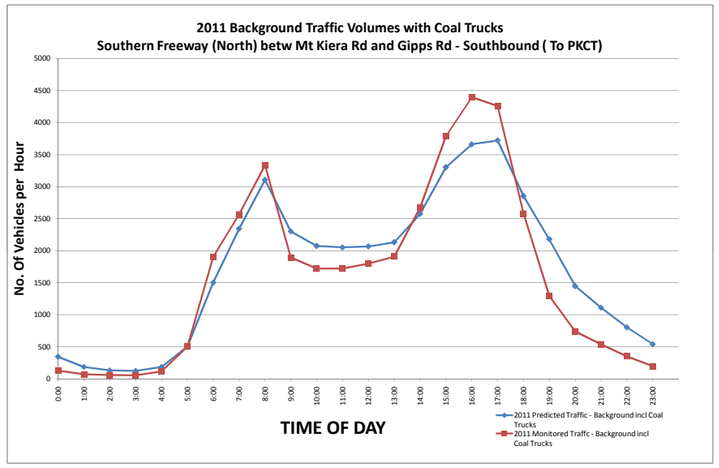


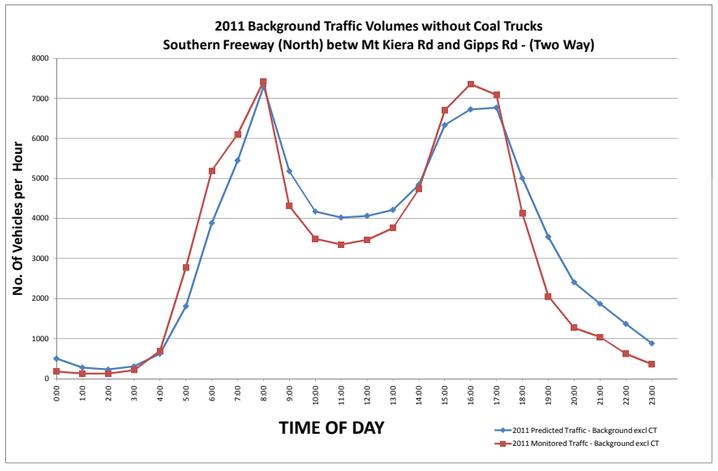


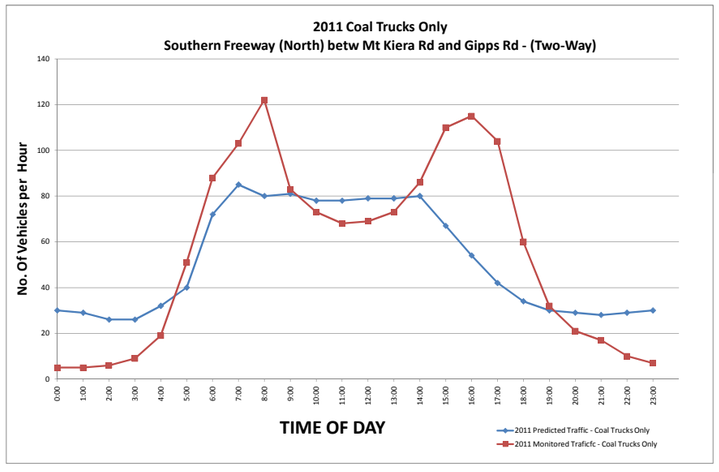


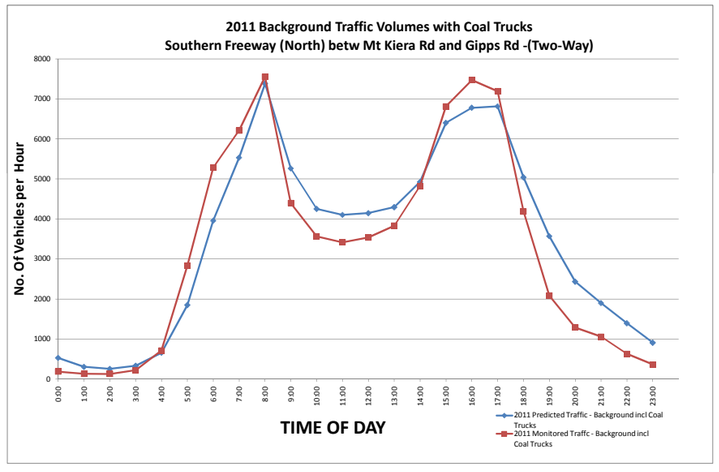




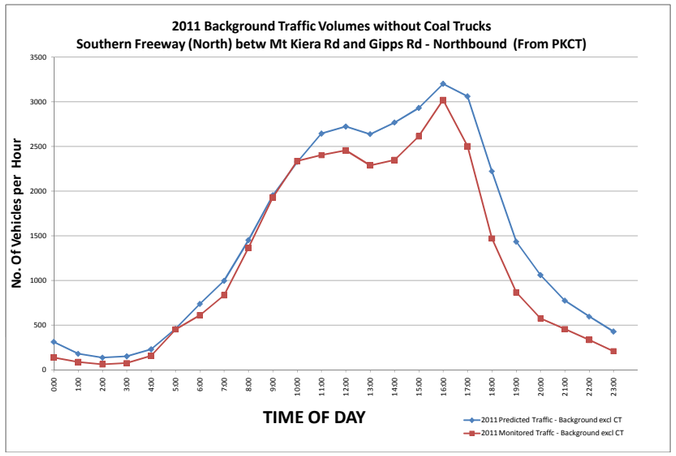


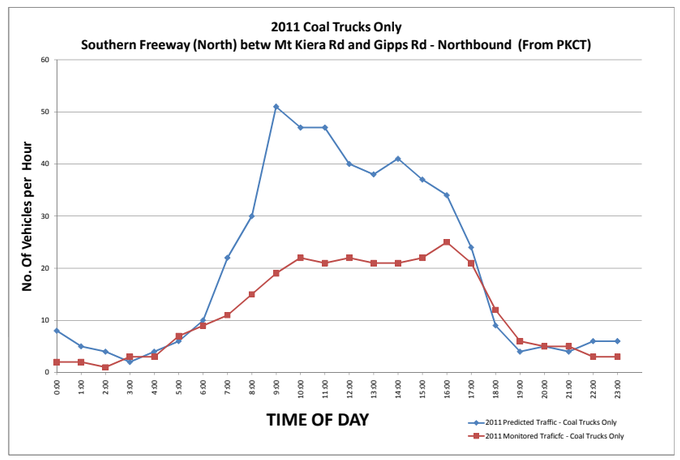


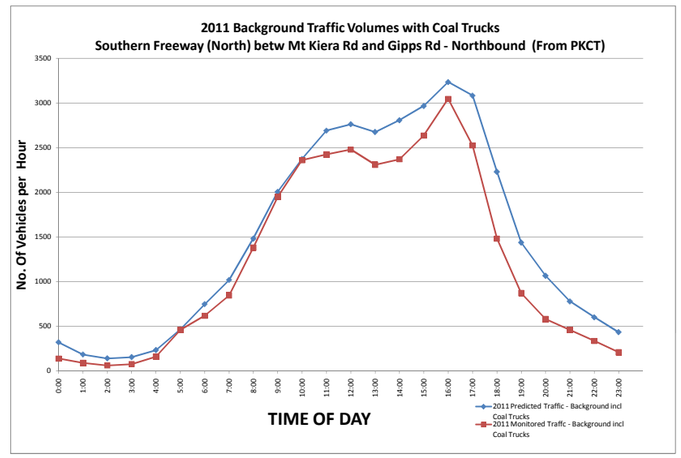


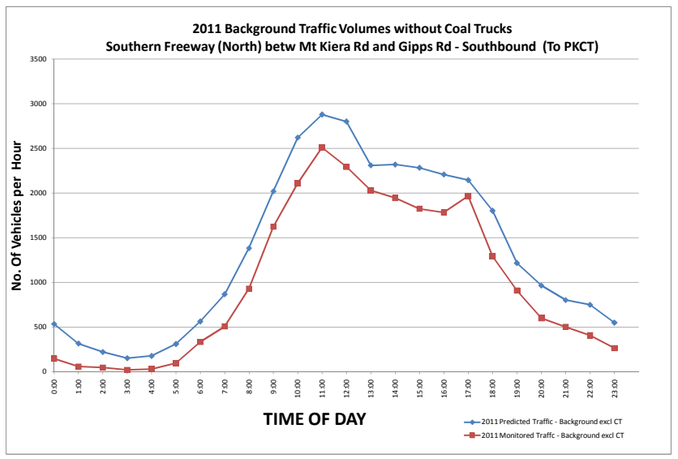


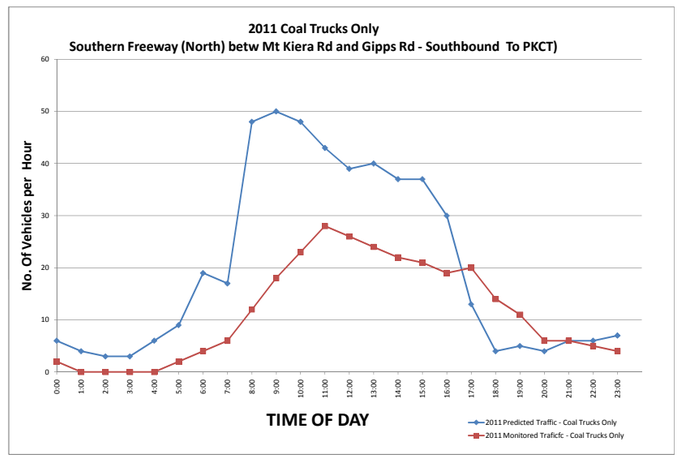
Average Weekend Traffic Volumes
Southern Freeway (North) betw Mt Kiera Rd and Gipps Rd

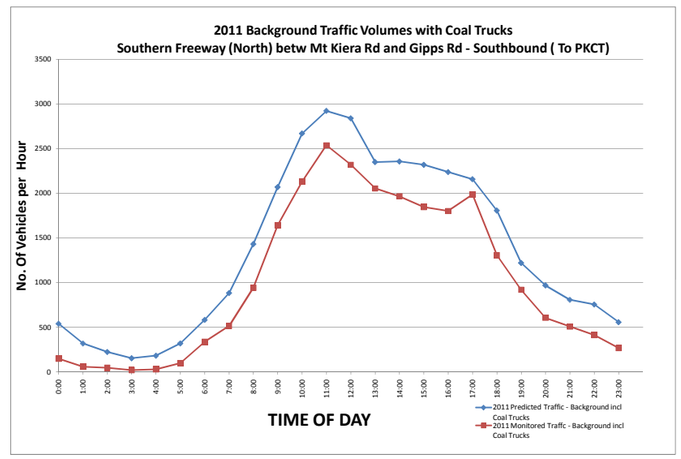


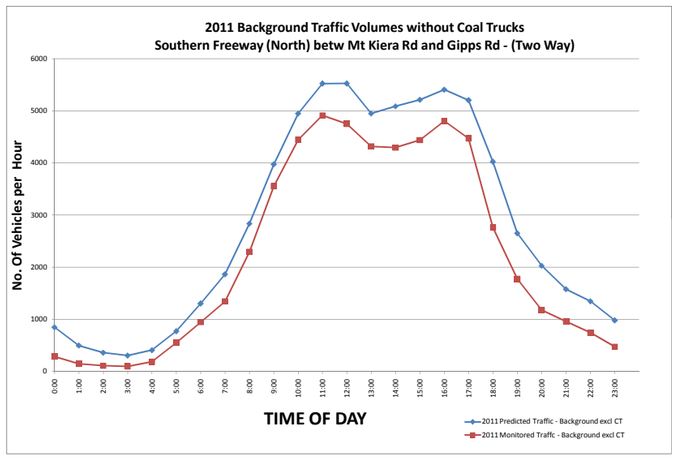


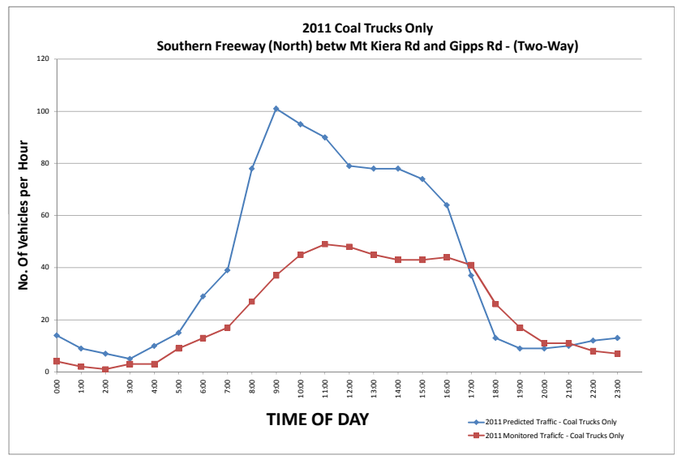


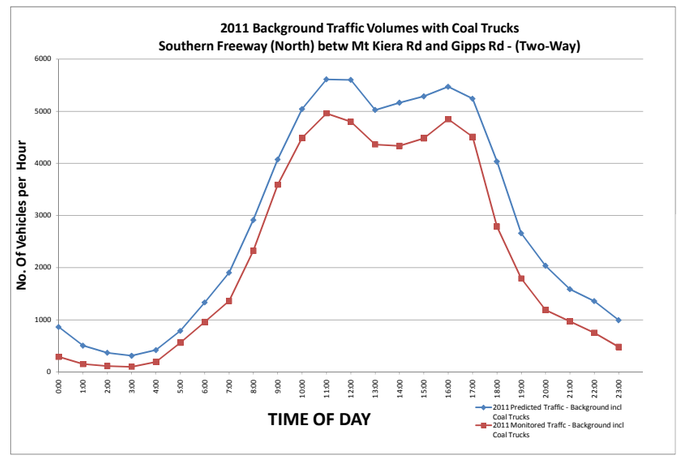




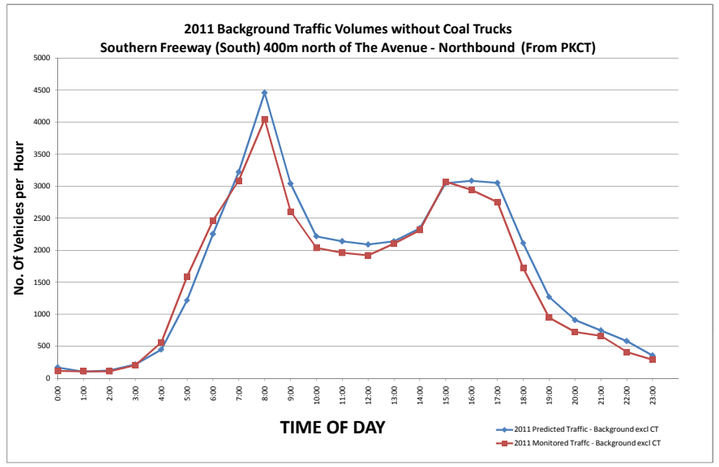


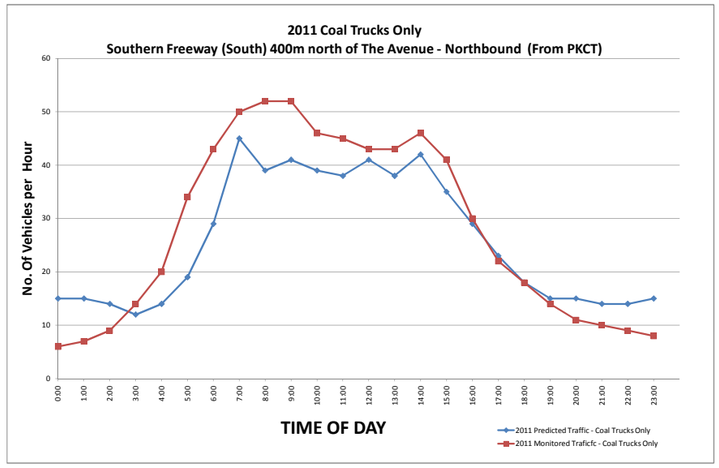


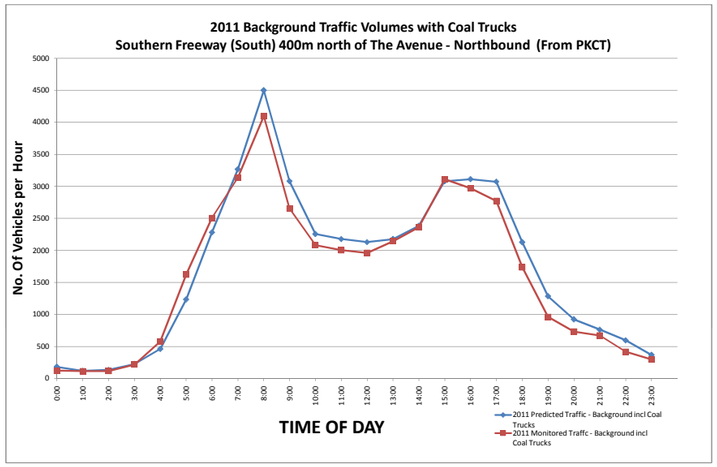


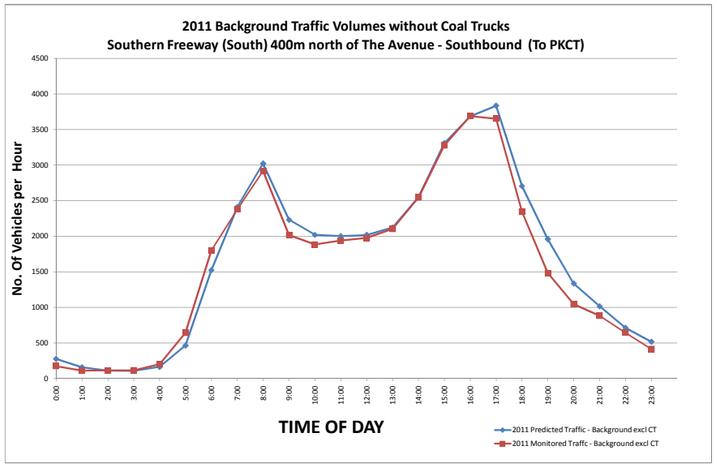


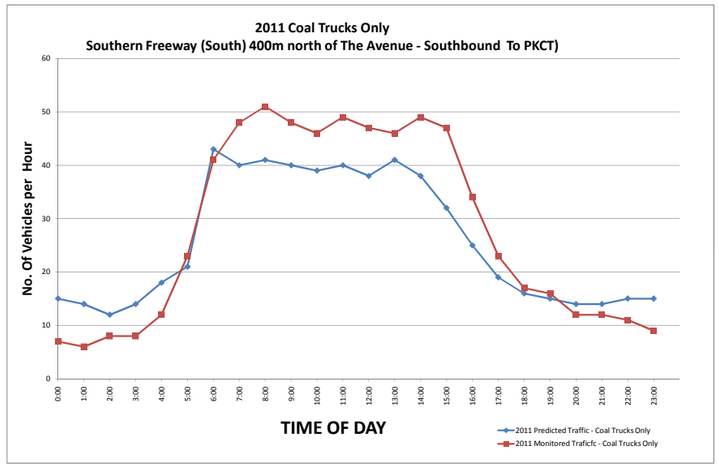
Average Weekday Traffic Volumes
Southern Freeway (South) 400m north of The Avenue

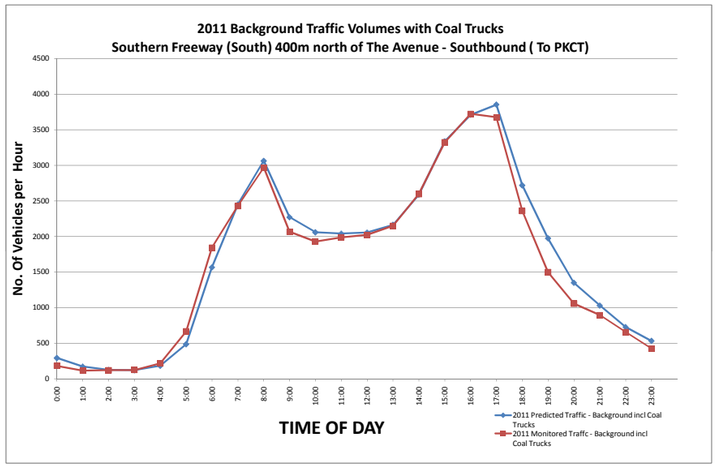


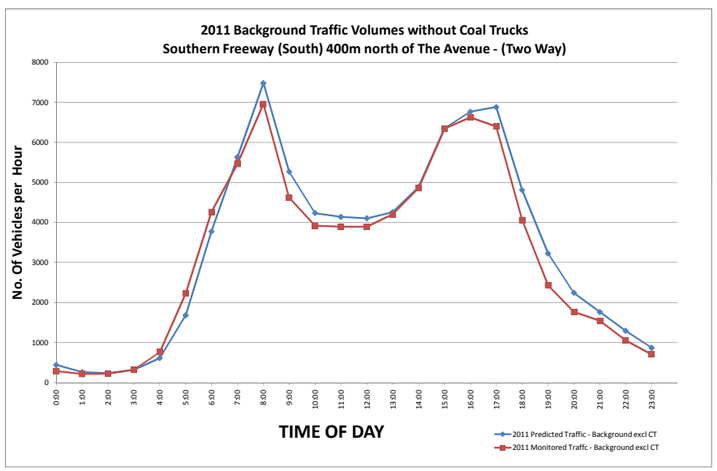


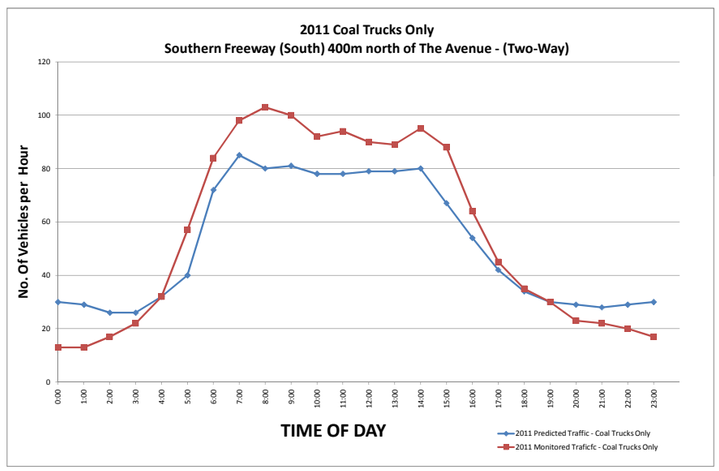


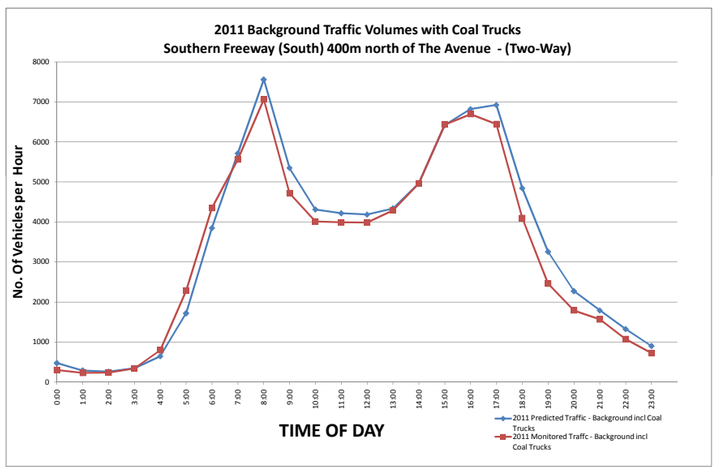




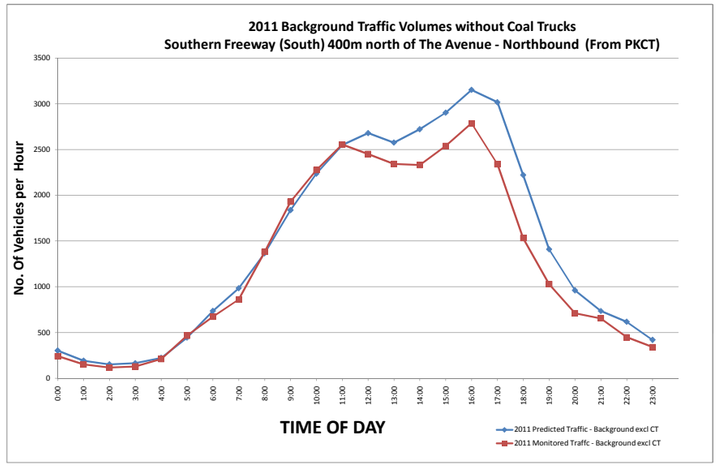


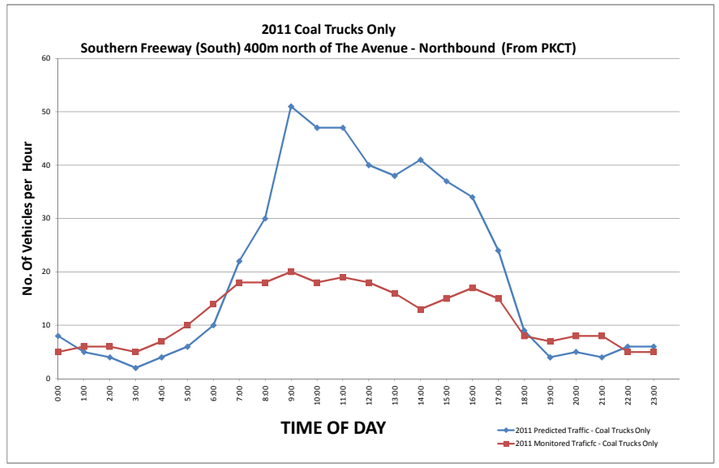


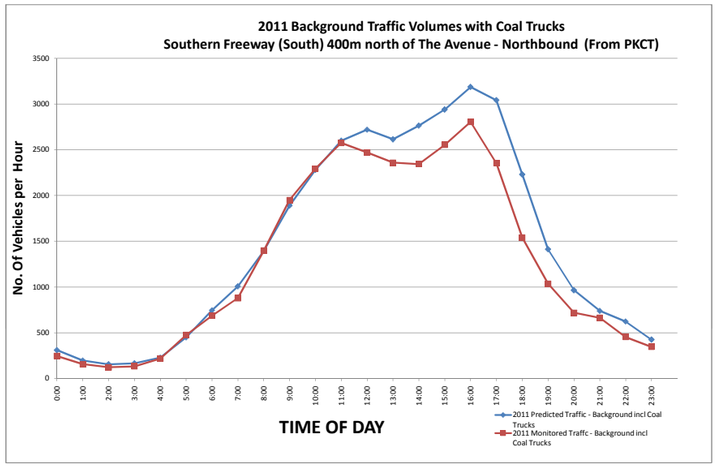


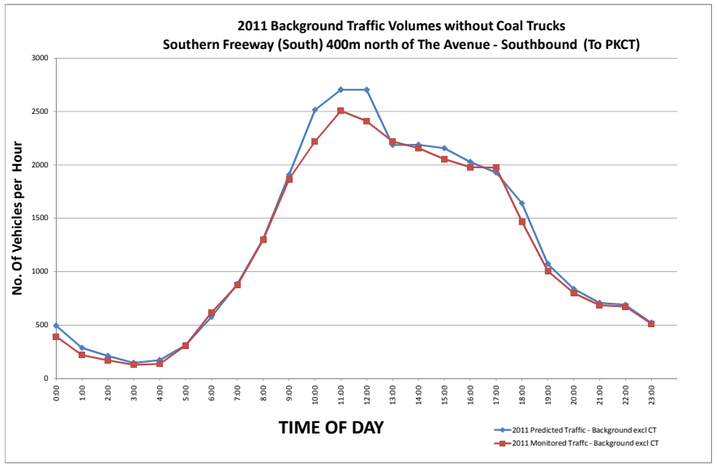


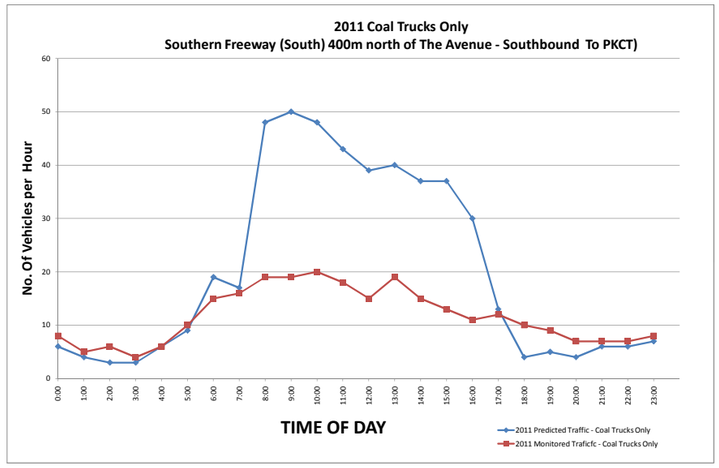
Average Weekend Traffic Volumes
Southern Freeway (South) 400m north of The Avenue

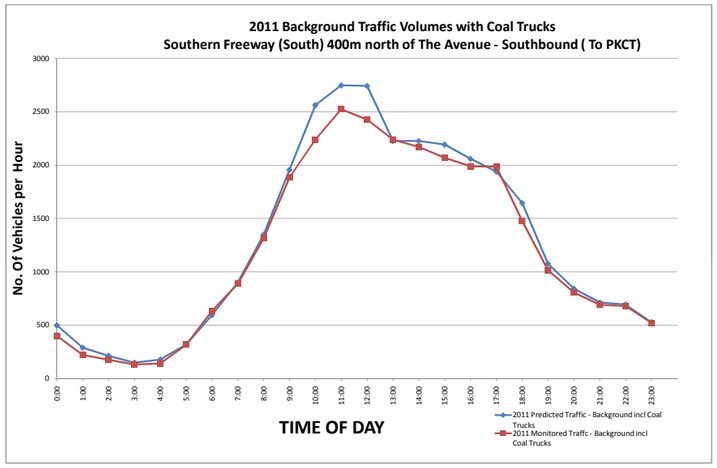


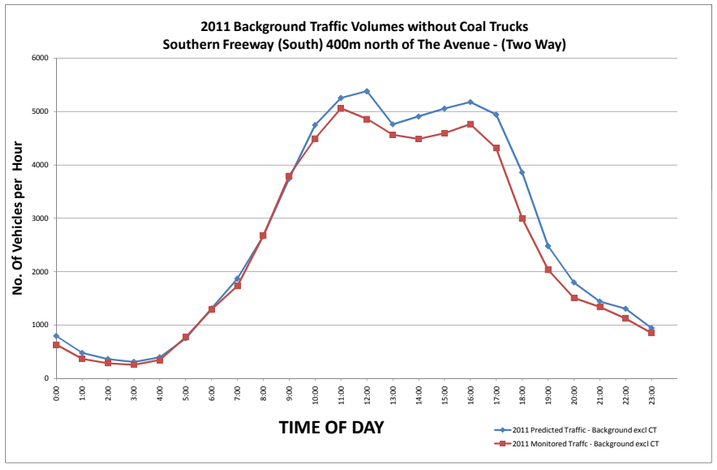


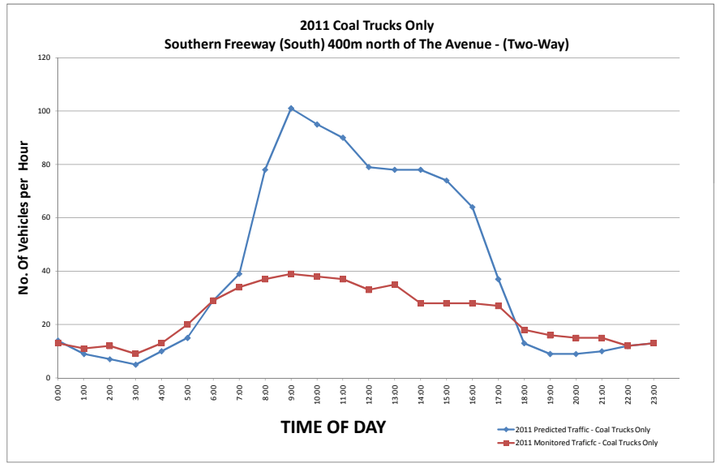


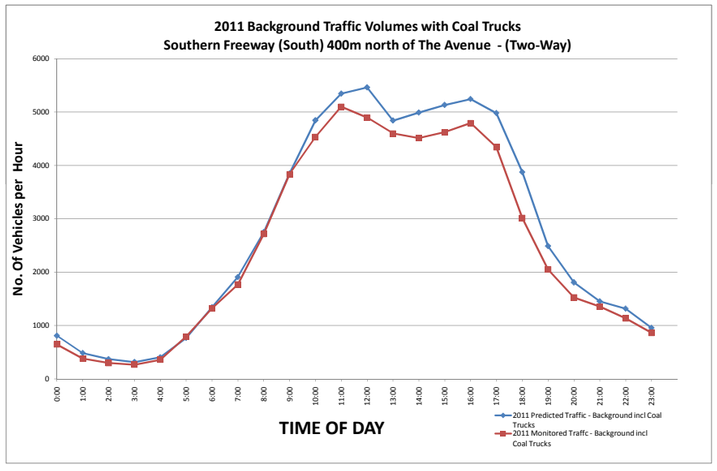




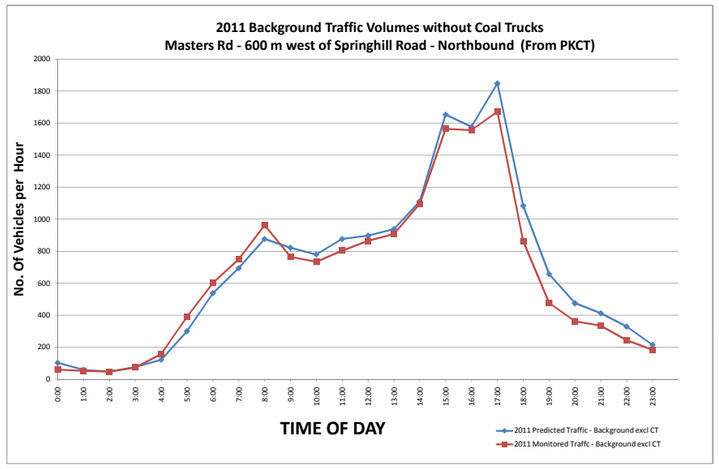


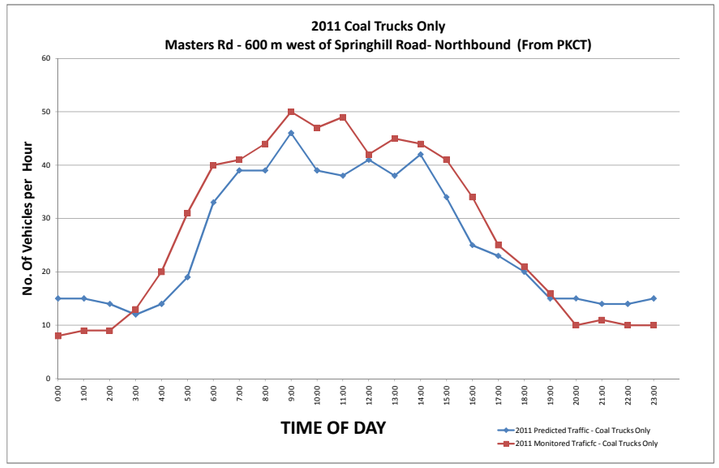


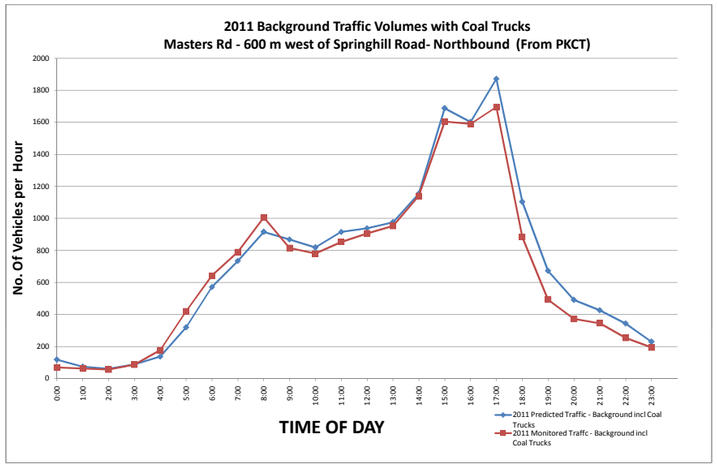


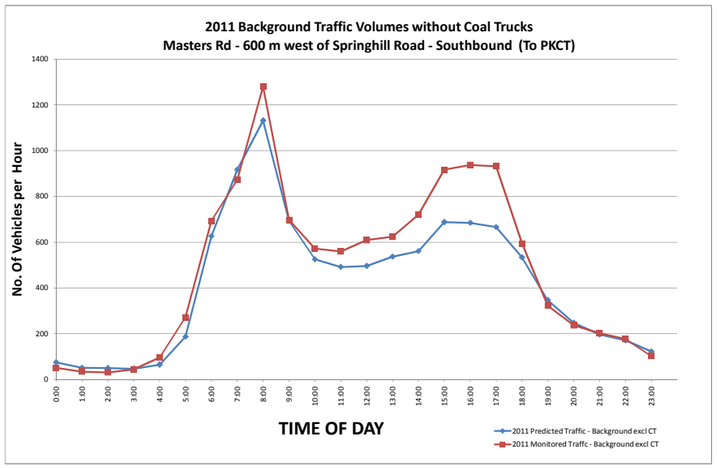


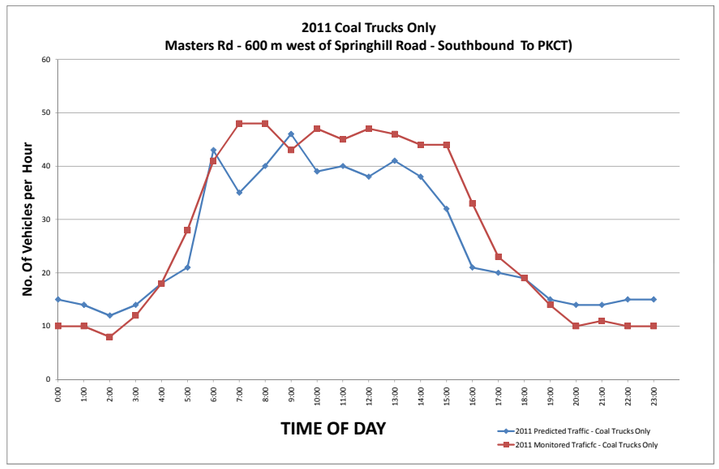
Average Weekday Traffic Volumes
Masters Rd - 600 m west of Springhill Road

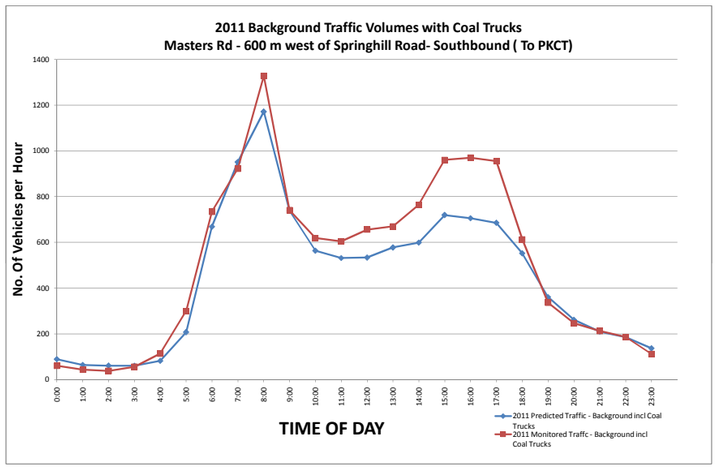


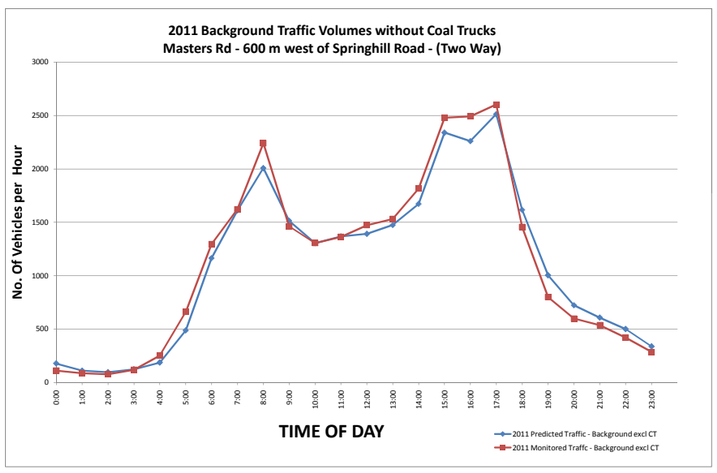


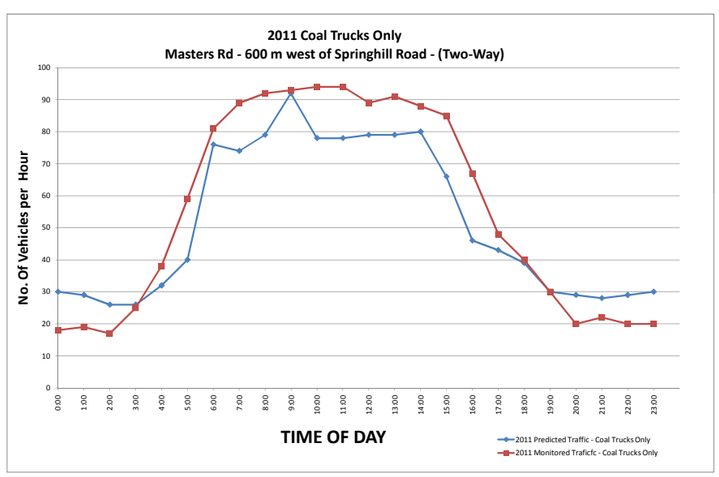


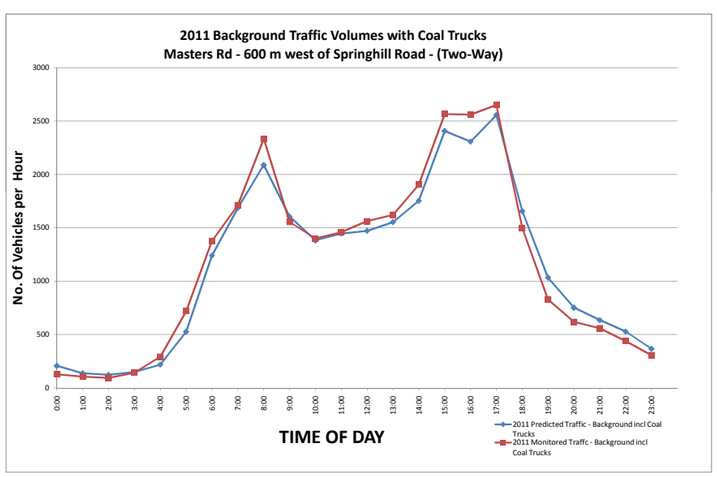




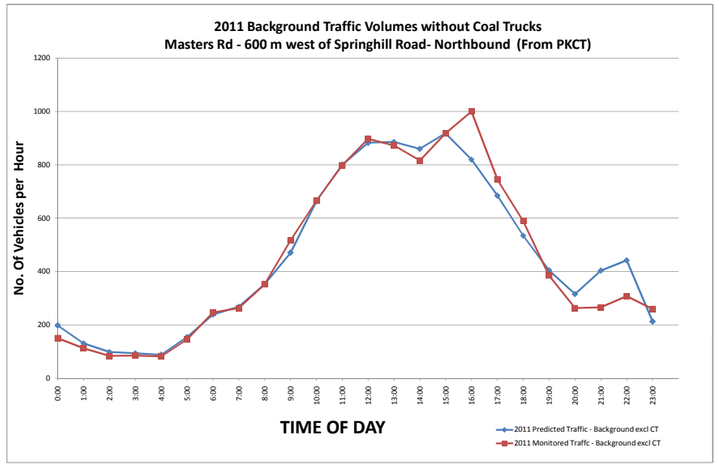


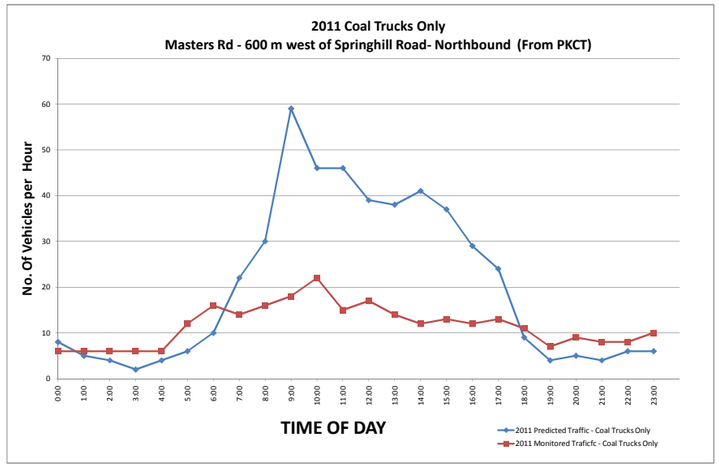


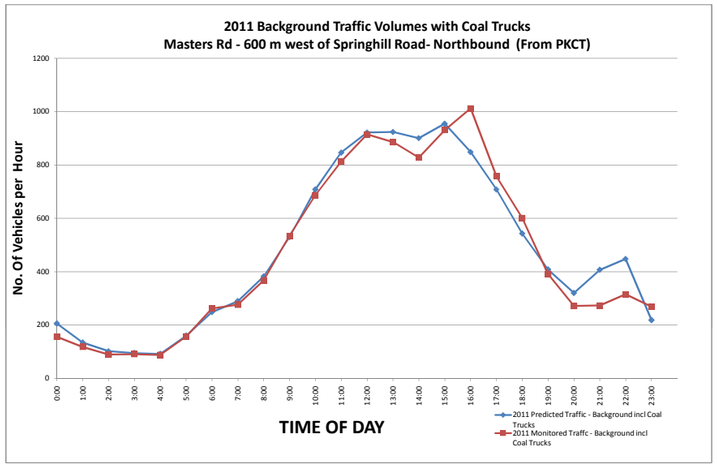


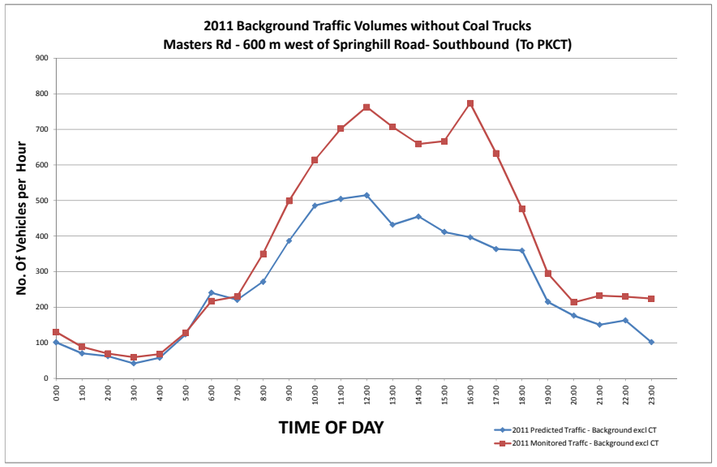


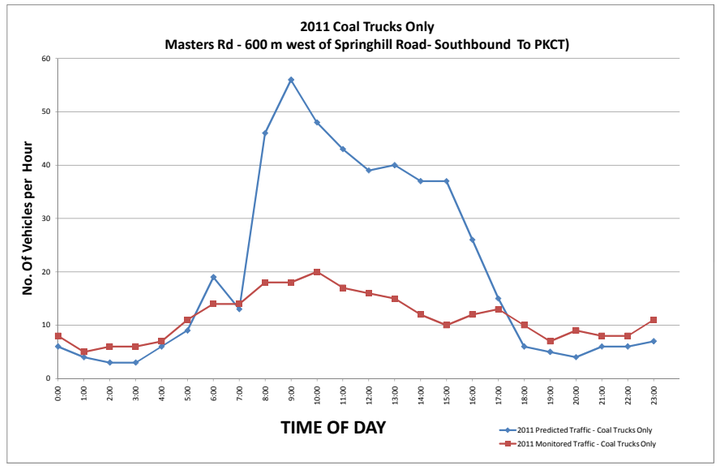
Average Weekend Traffic Volumes
Masters Rd - 600 m west of Springhill Road

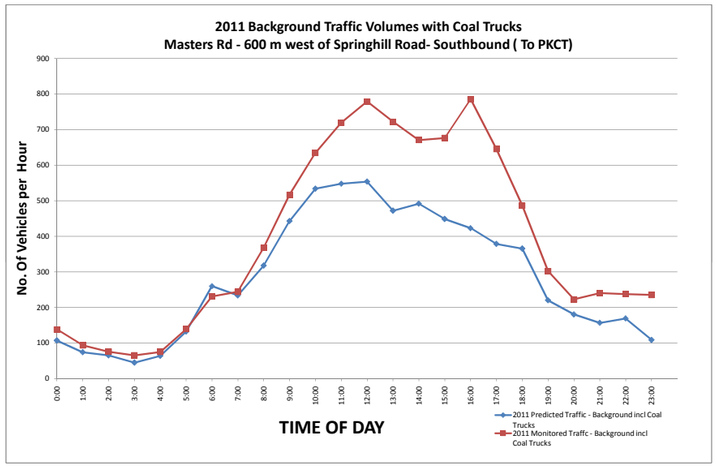


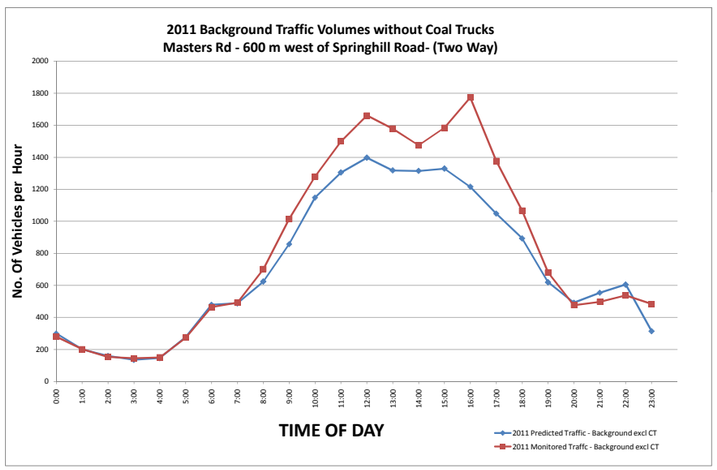


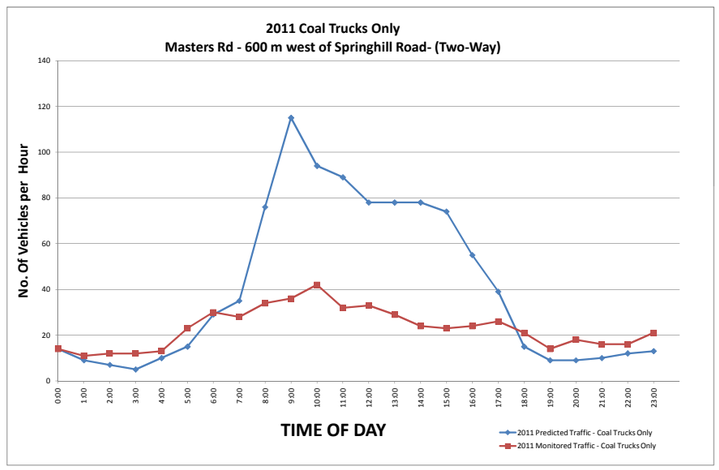


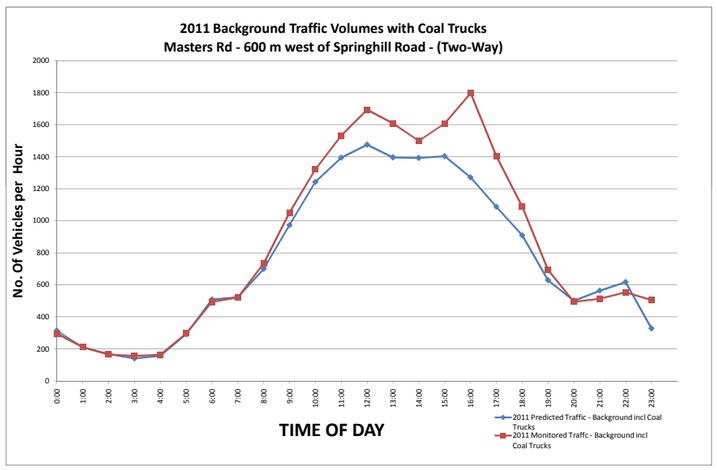




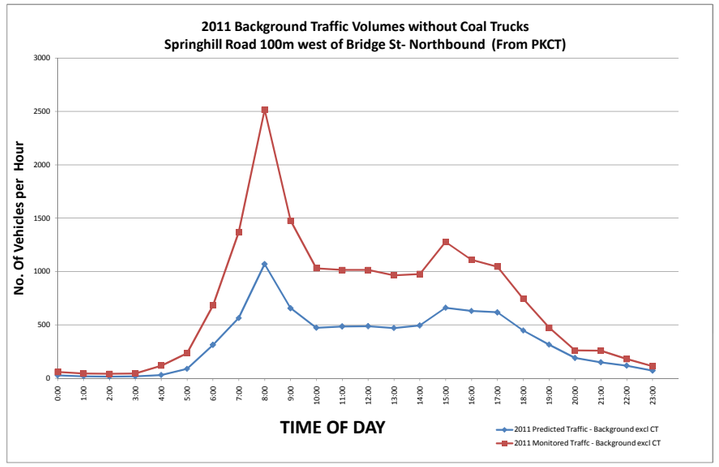


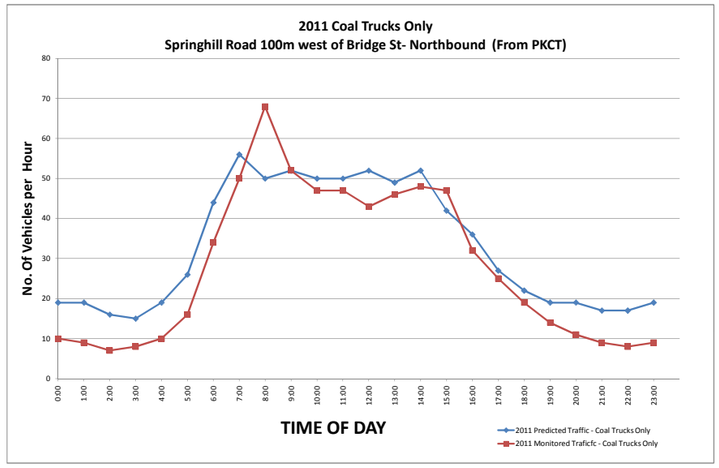


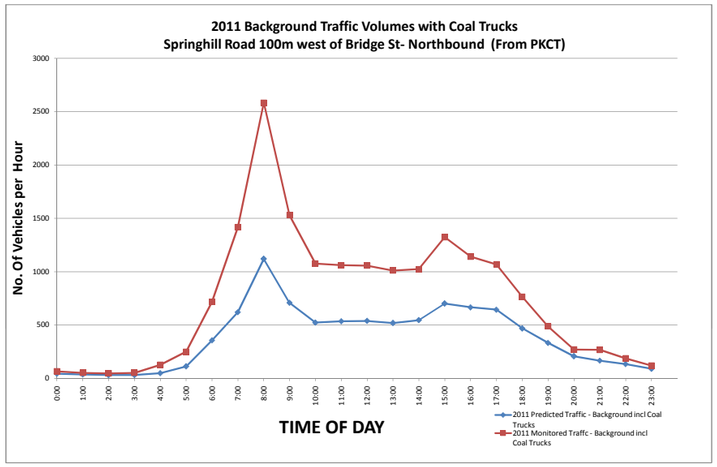


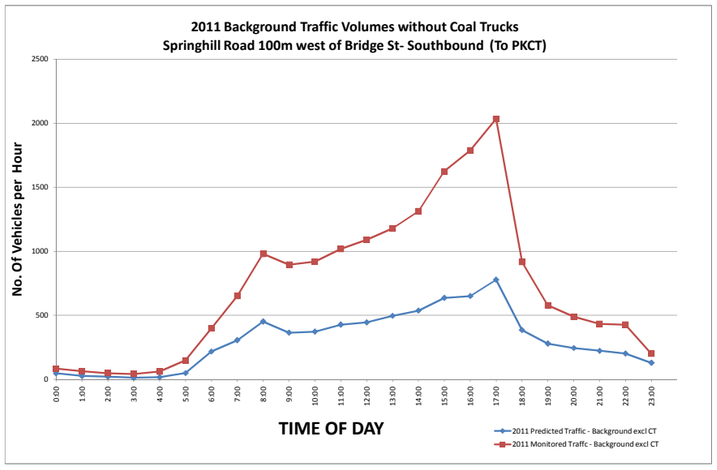


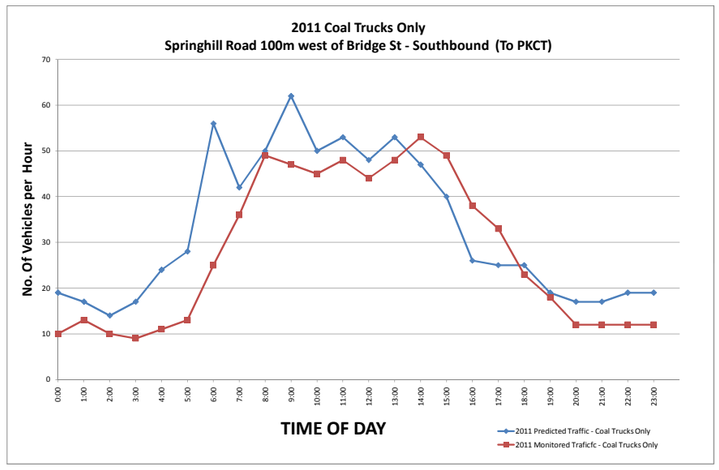
Average Weekday Traffic Volumes
Springhill Rd - 100m west of Bridge Street

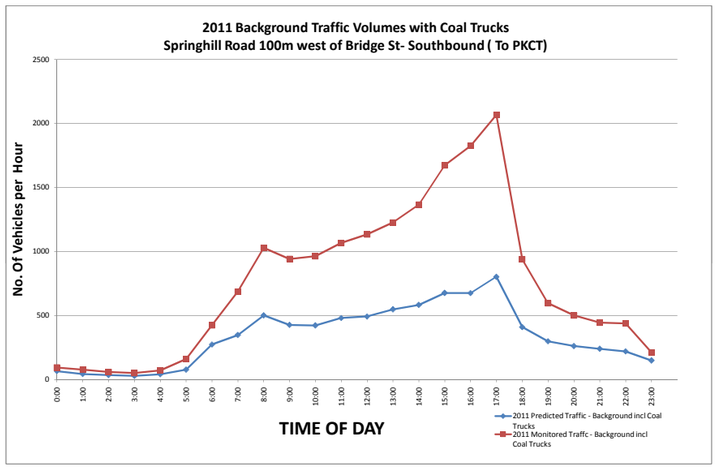


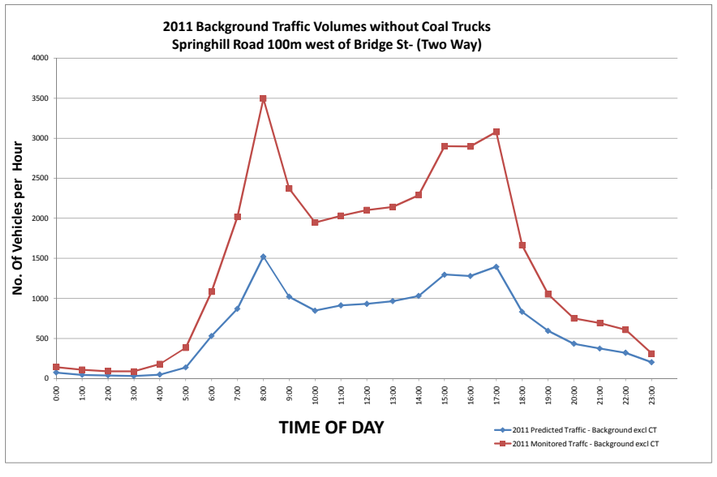


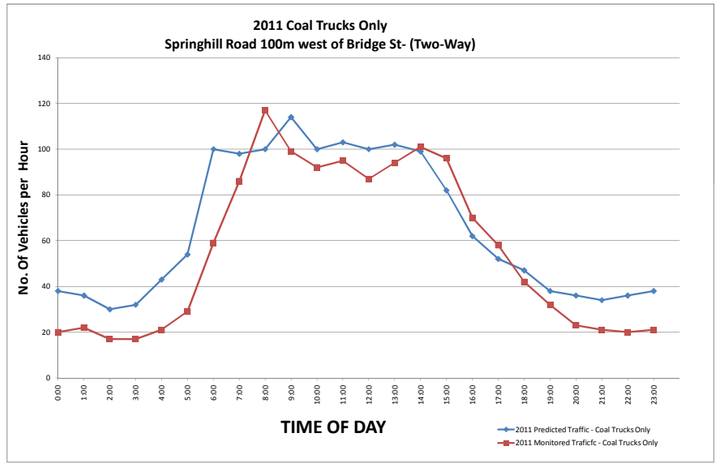


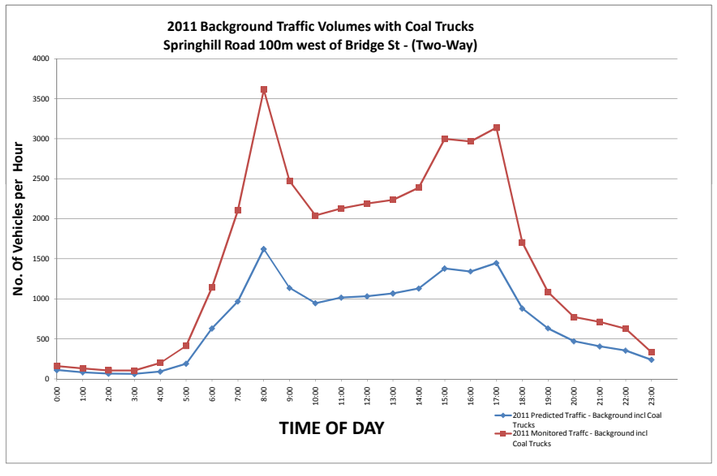




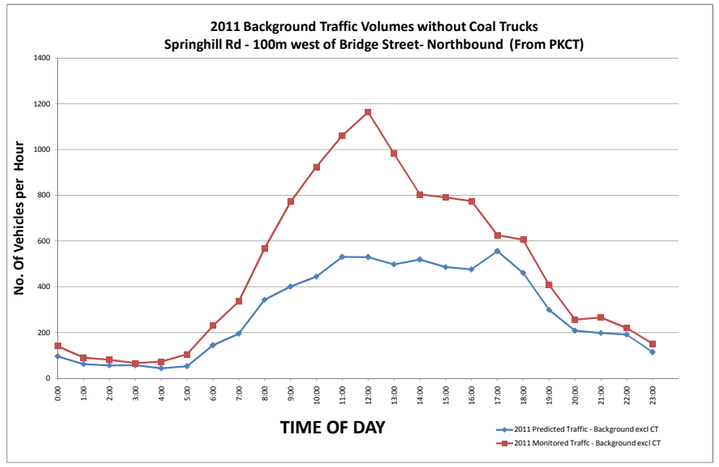


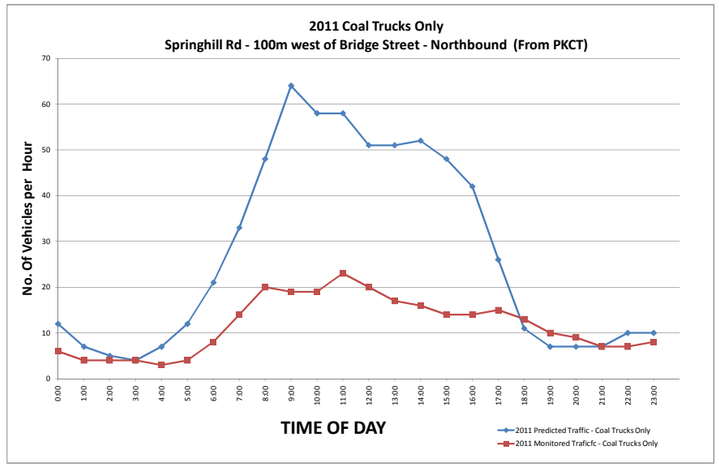


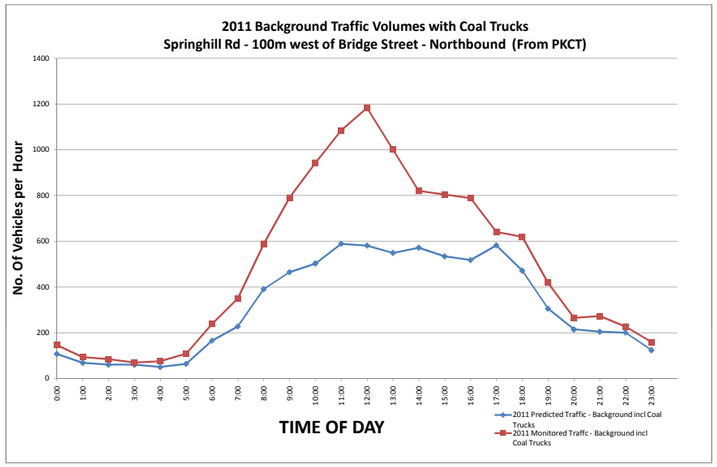


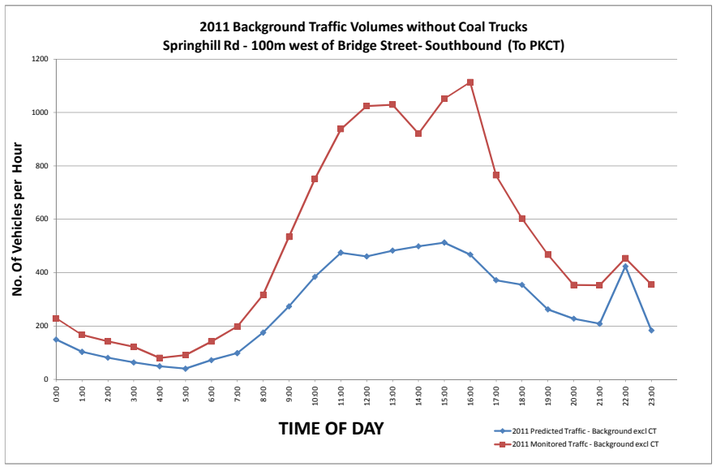


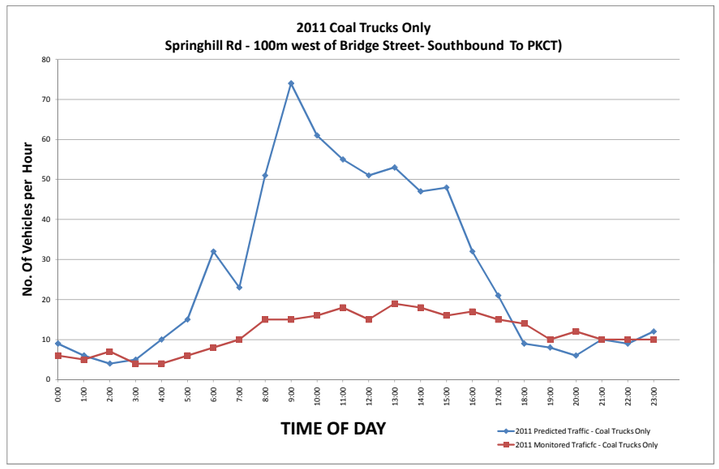
Average Weekend Traffic Volumes
Springhill Rd - 100m west of Bridge Street

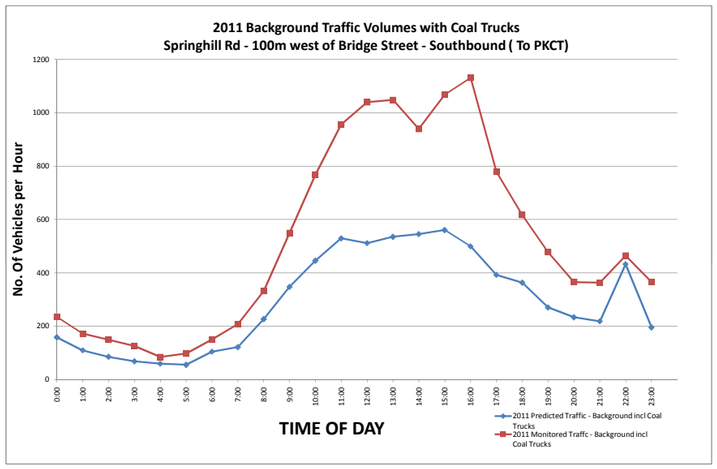


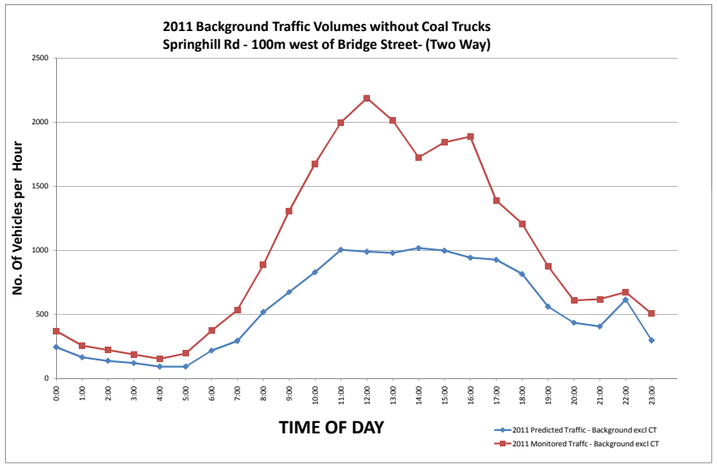


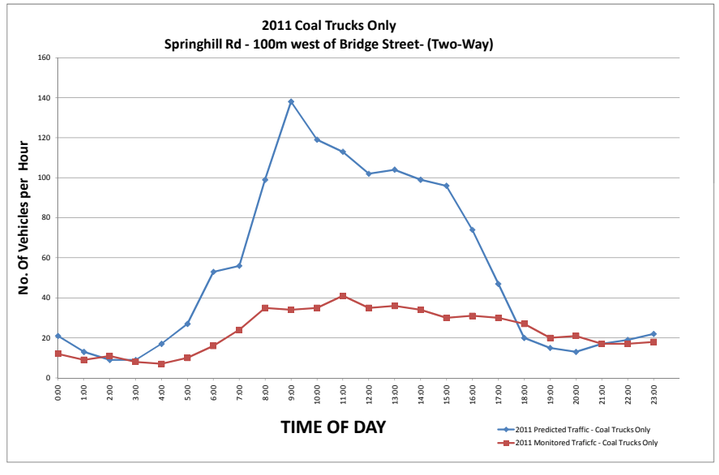


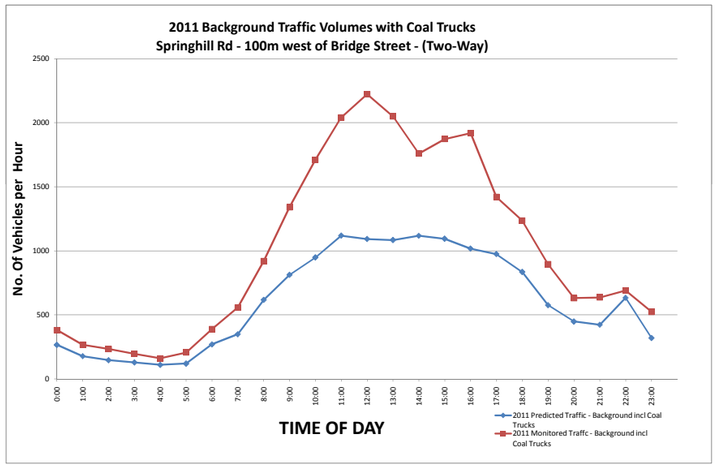




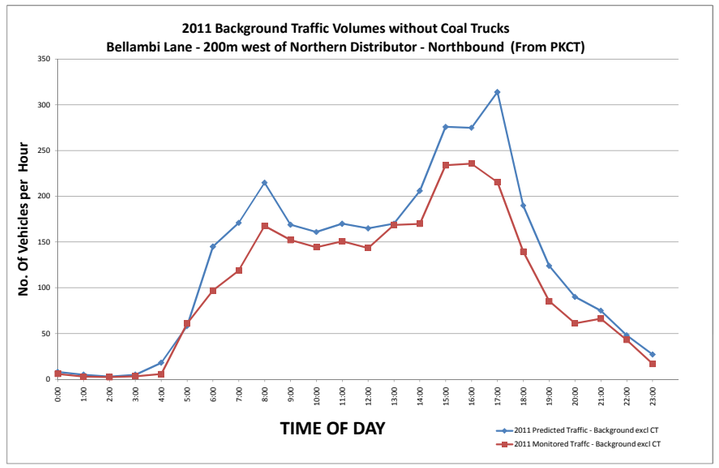


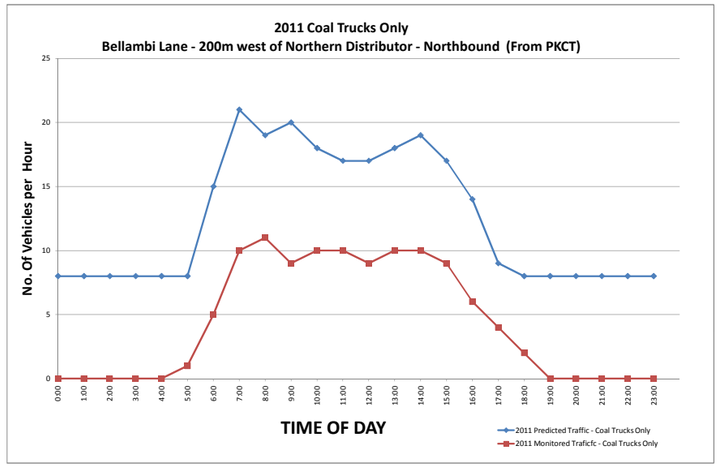


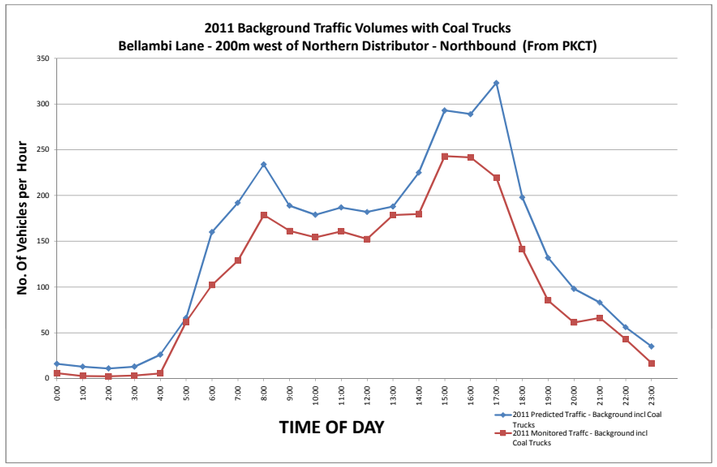


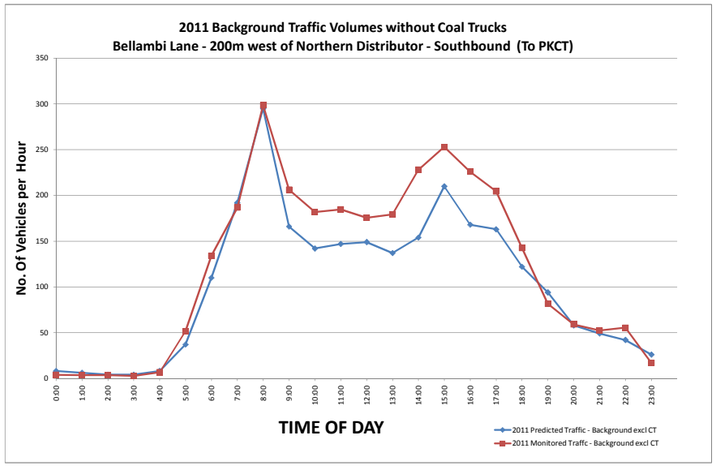


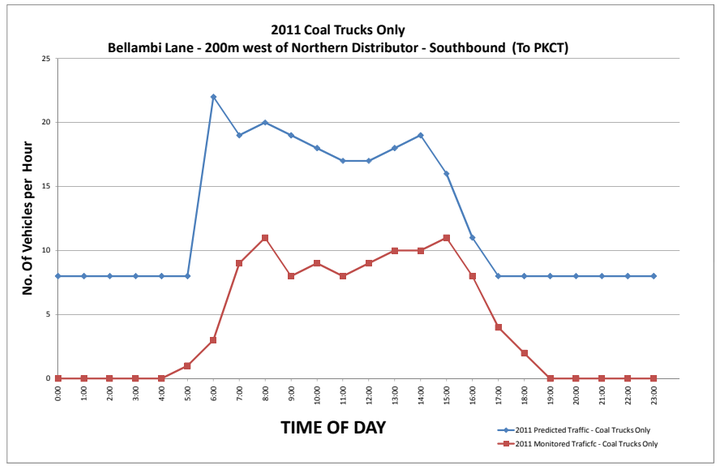
Average Weekday Traffic Volumes
Bellambi Lane - 200m west of Northern Distributor

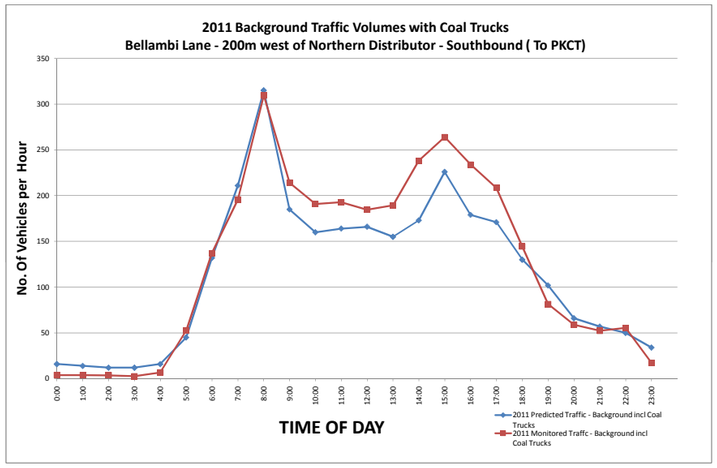


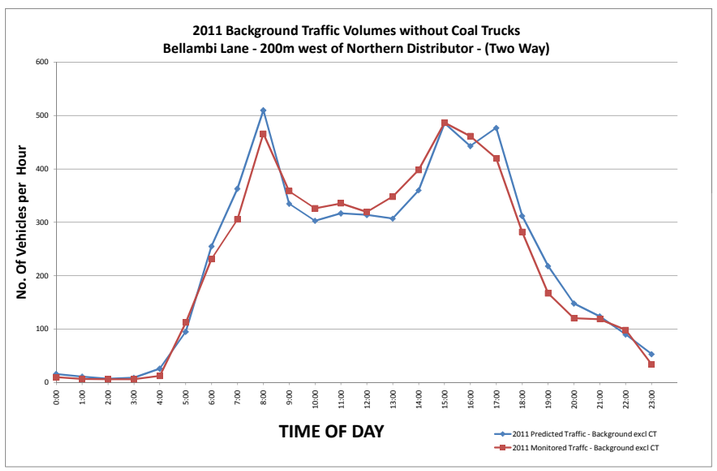


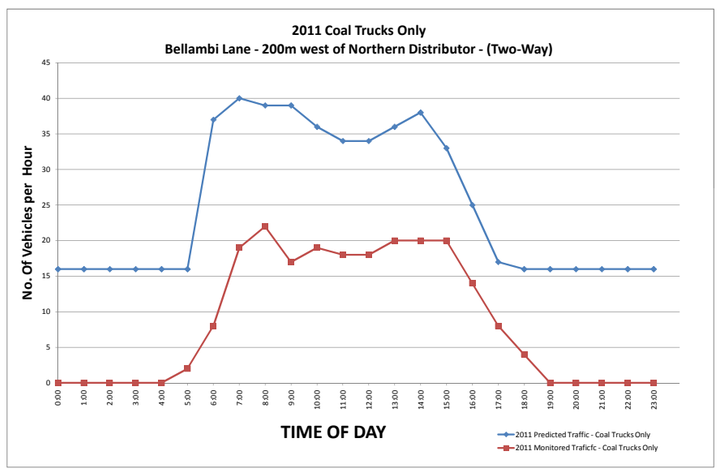


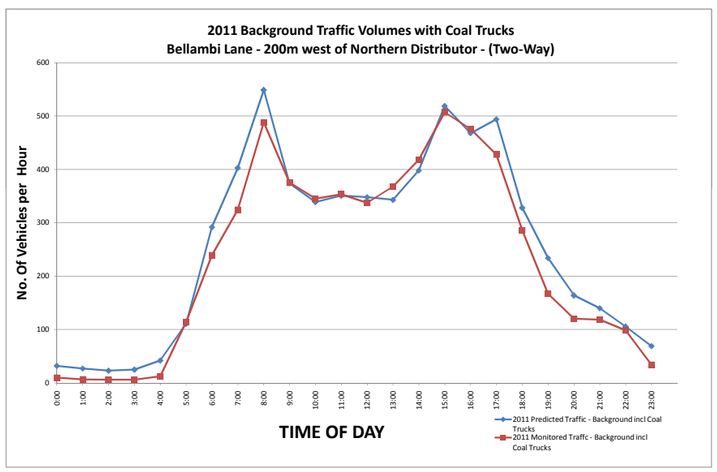




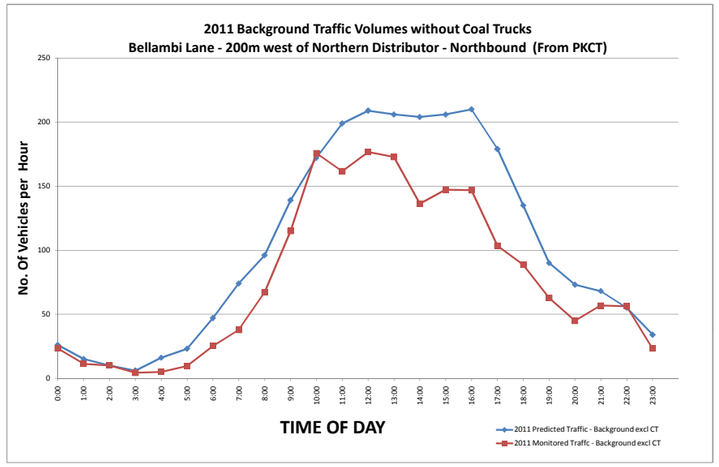


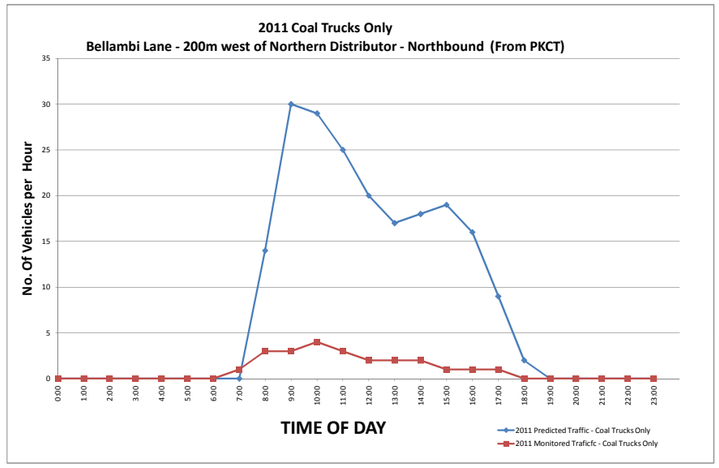


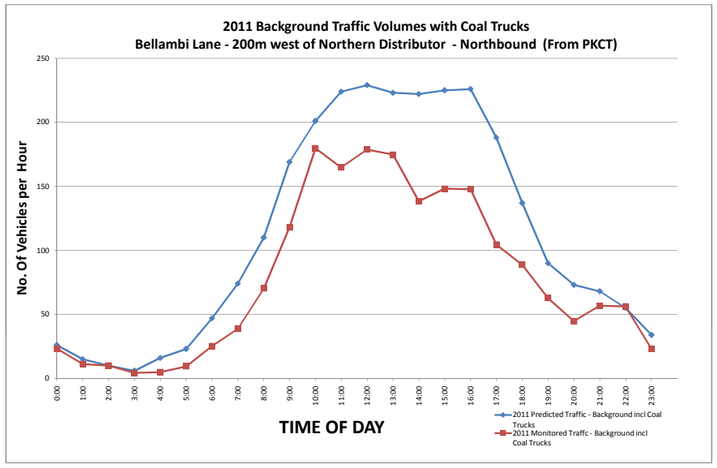


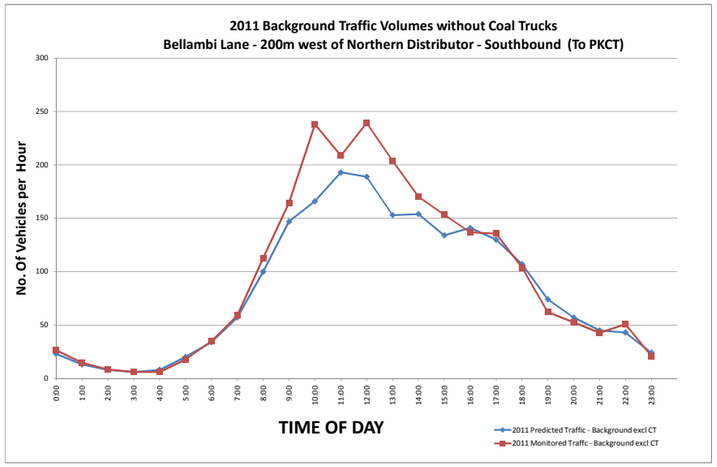


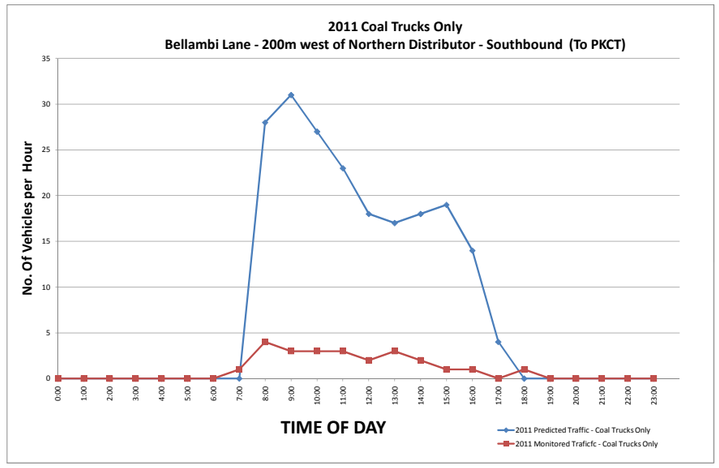
Average Weekend Traffic Volumes
Bellambi Lane - 200m west of Northern Distributor

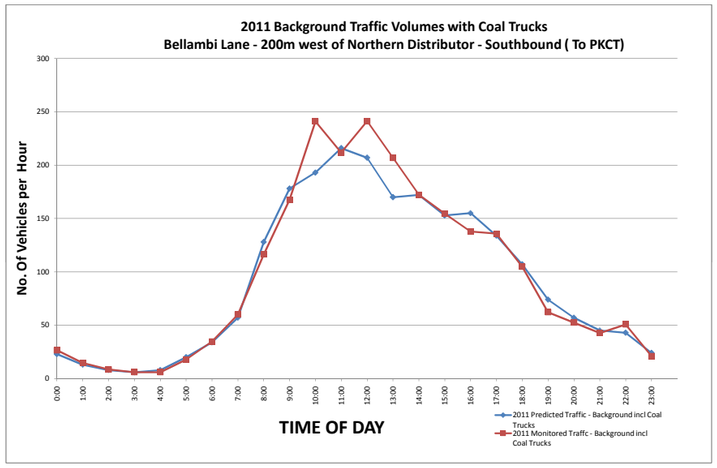


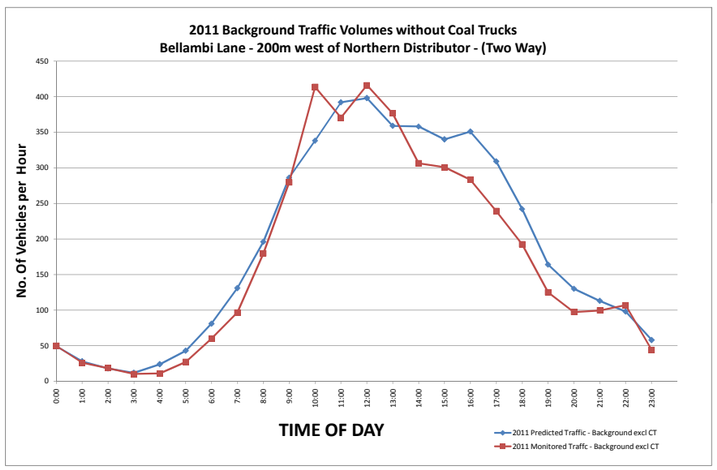


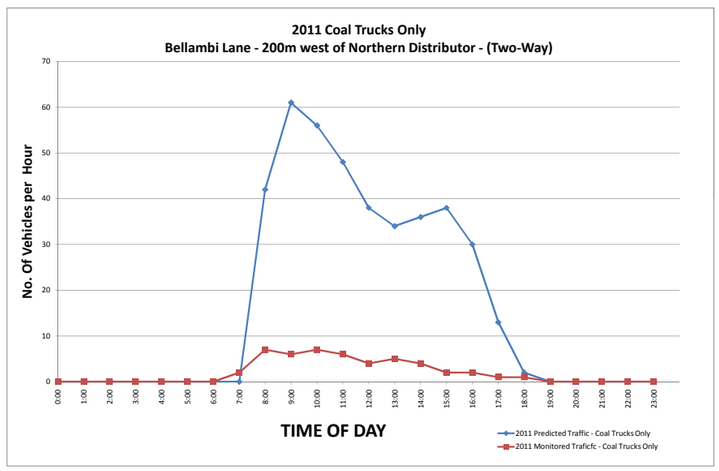


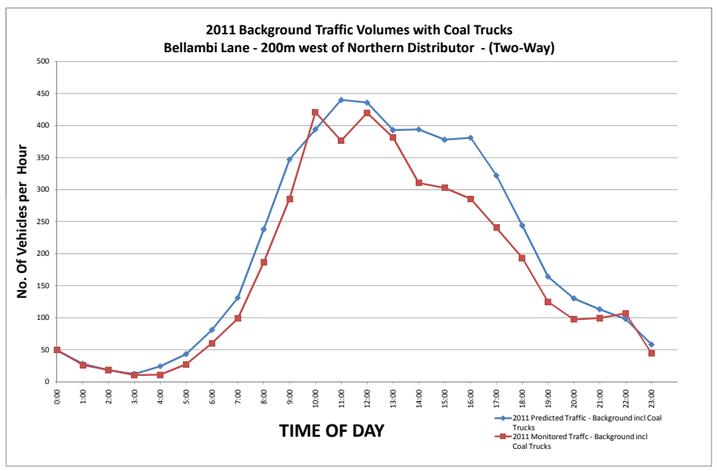




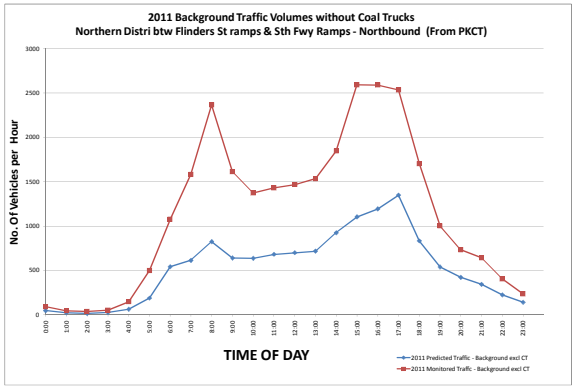


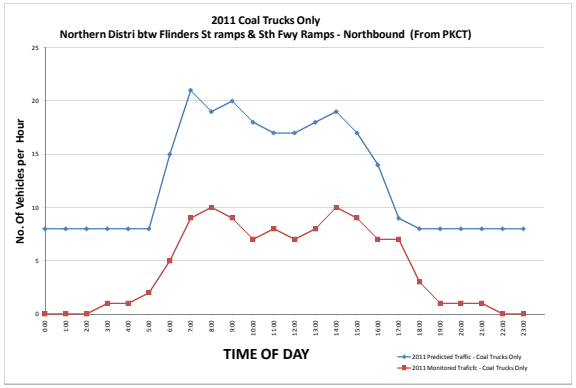


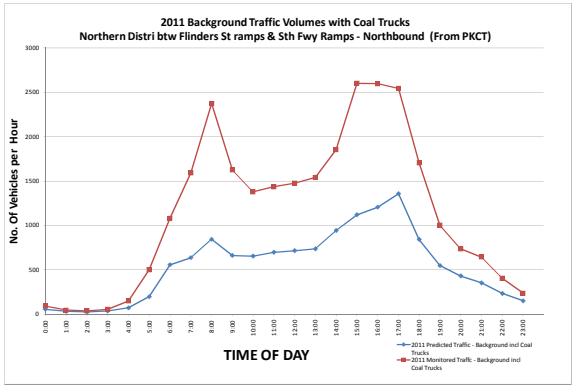


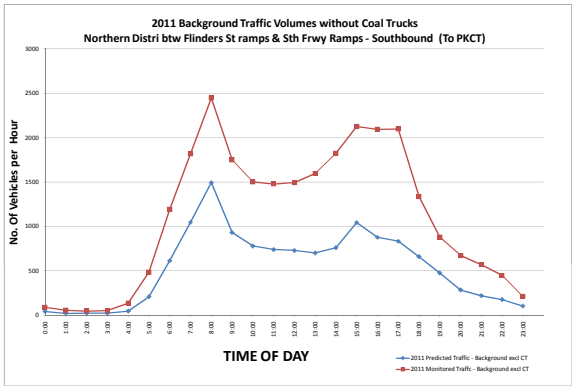


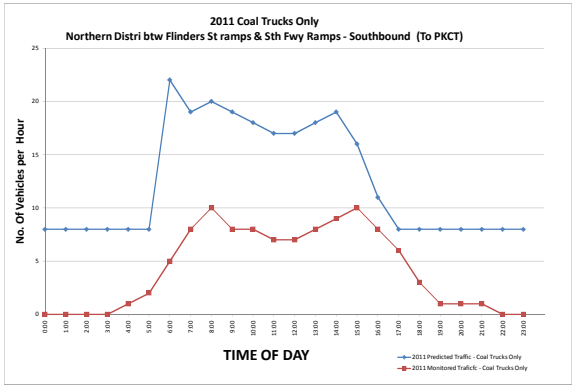
Average Weekday Traffic Volumes
Northern Distributor btw Flinders St ramps and Southern Freeway Ramps

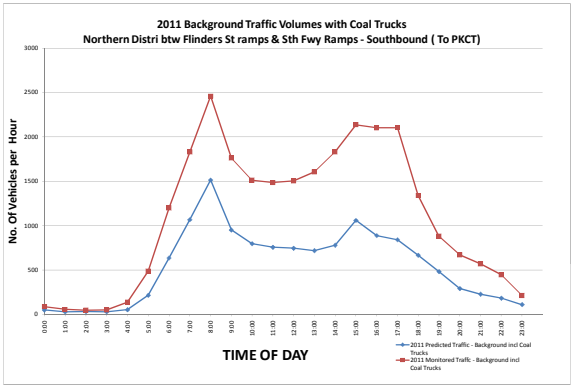


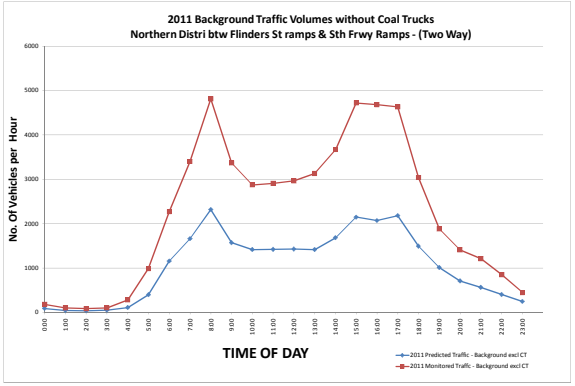


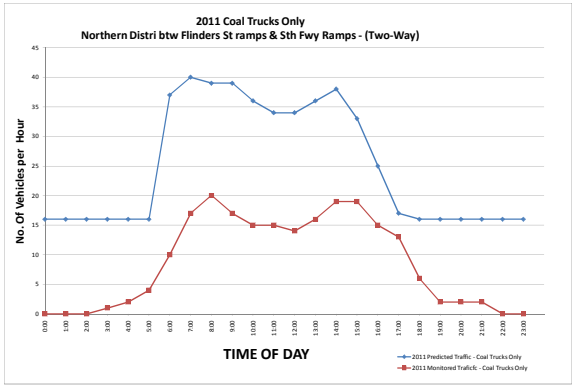


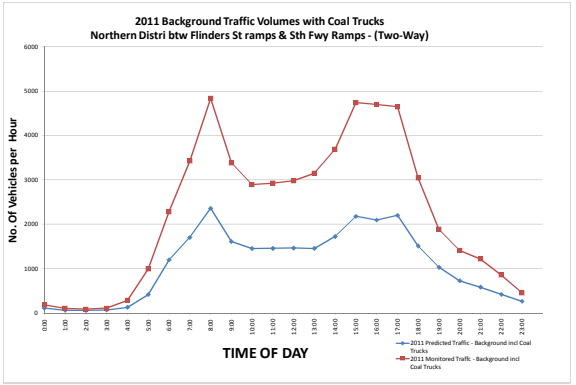




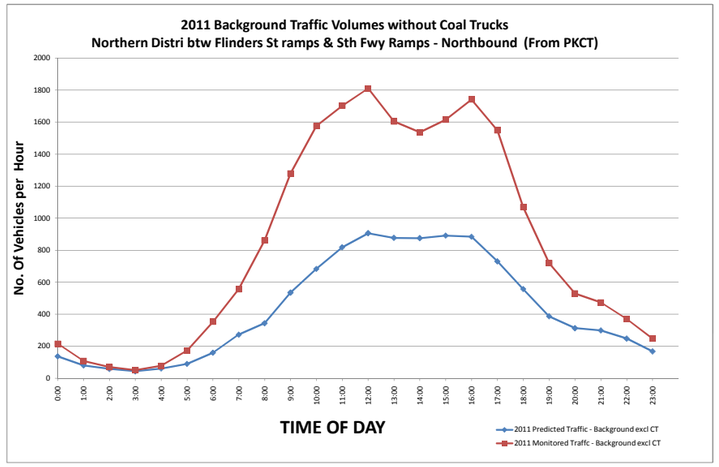


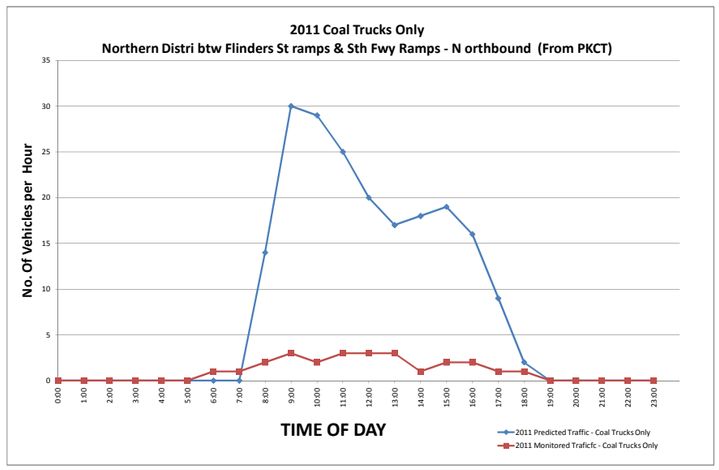


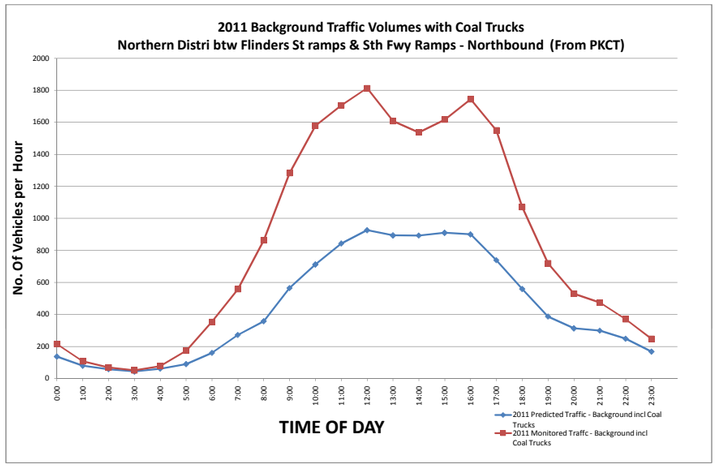


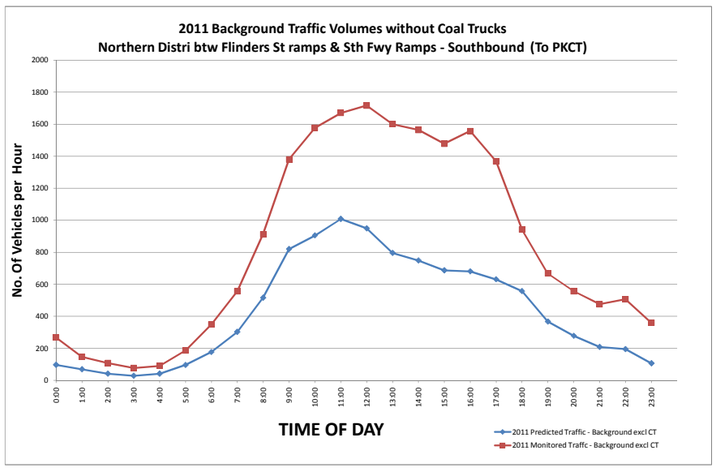


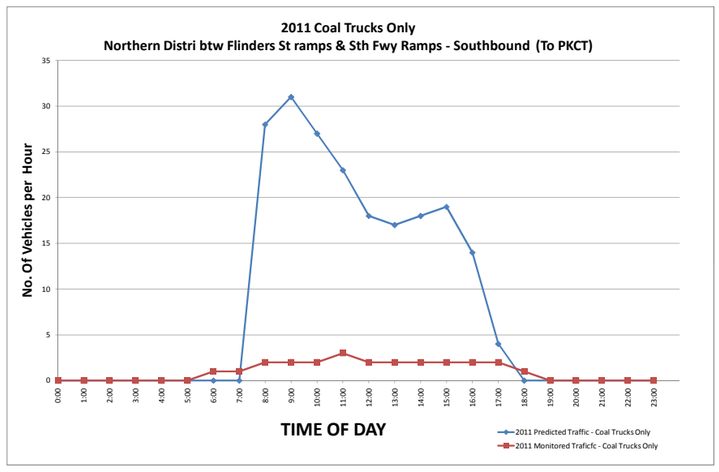
Average Weekend Traffic Volumes
Northern Distributor btw Flinders St ramps and Southern Freeway Ramps

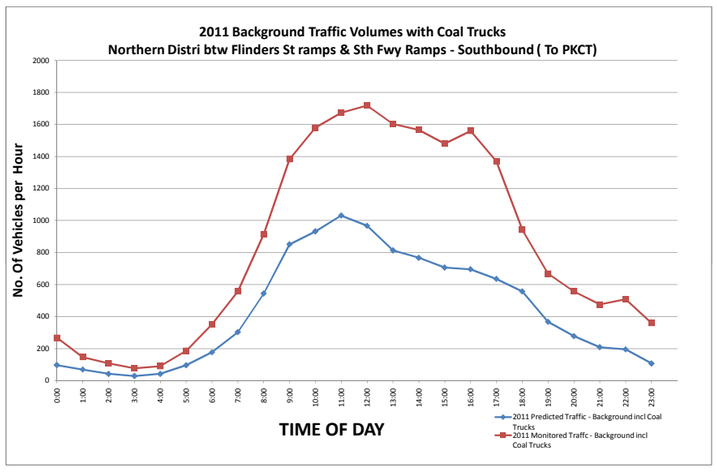


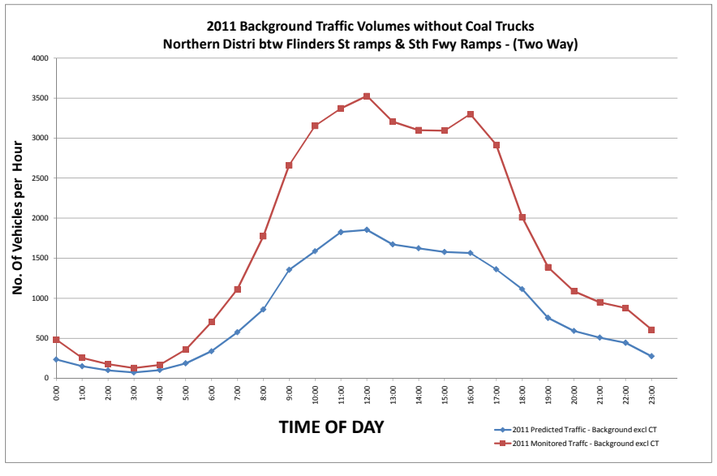


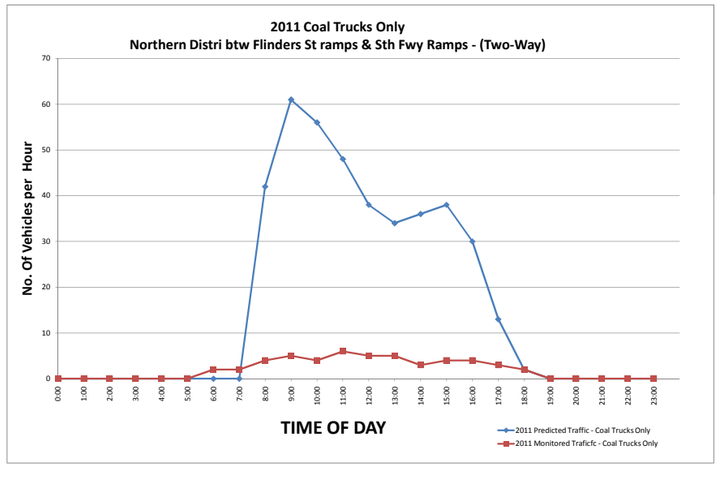


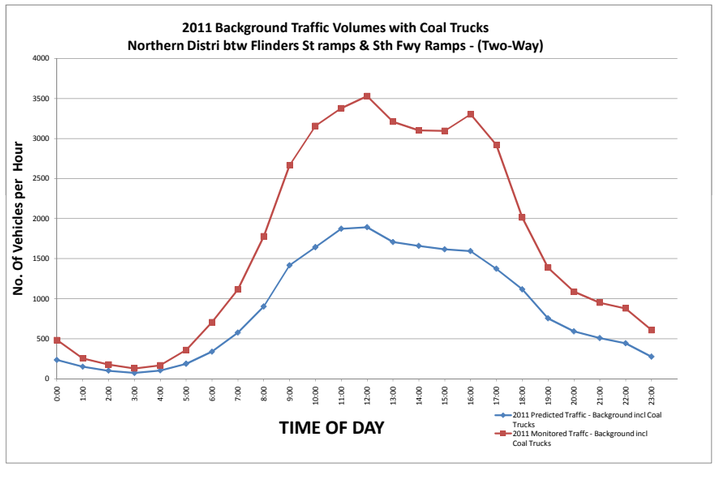












Annex D

D. Noise Assessment Report (2011)

PORT KEMBLA COAL TERMINAL
10mtpa COAL TRIAL
NOISE ASSESSMENT OF ROAD HAULAGE

For: PORT KEMBA COAL TERMINAL
PORT KEMBLA ROAD,
INNER HARBOUR,
WOLLONGONG, NSW 2500

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Cardno ITC Pty Ltd Quality System			
Issue	**B**	**Initials**	**Date**
Revision	**2**	**AP**	**26/4/2013**
Internal Check		**AJL**	**17/4/2013**
Preliminary Issue			
Final Issue		**AP**	**26/4/2013**

26 April 2013 **FR111019**

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B	1	18/4/2013	47	Final
B	2	26/4/2013	49	Final

DOCUMENT APPROVAL:

Approved by: Adam Paolino Date: 26/4/2013

CONTENTS

1 EXECUTIVE SUMMARY

This acoustic assessment has been undertaken to respond to the NSW Department of Planning and Infrastructure Project Approval 08_0009 Schedule 2, which requires that noise impacts associated with increased coal delivery tonnages to Port Kembla Coal Terminal by the road haulage network are within predicted and/or approved limits. The project approval requires that noise impacts on the road network are within those predicted in the Environmental Assessment for the project to Port Kembla Coal Terminal (PKCT), whilst receiving more than 7.5mtpa by road transport.

1.1 Comparison with 2008 Assessment

Noise monitoring was conducted along the existing road haulage routes at 13 locations, including critical locations at Bellambi Lane and Springhill Road. The noise monitoring locations were selected to be consistent with the previous 2008 Environmental Assessment (EA) monitoring locations. Several locations were required to be relocated to an adjoining property due to access issues.

A summary of the key points identified comparing the 2008 and 2011 acoustic assessments are as follows:

- A comparison between the 2011 assessment findings and 2008 findings indicate that at most of the monitoring locations, the trend in increases in traffic noise levels (inclusive of road haulage to 10mtpa) is generally consistent. The 2011 study also concludes that residences along Keerong Avenue (residences facing Bellambi Lane) comply with the project specific acoustic criteria for these operating scenarios largely due to set back distances and fences, as per the 2008 assessment.

- The 2011 assessment findings have concluded that the predicted noise emission from 7.5mtpa and 10mtpa road haulage operations to PKCT comply with the project acoustic criteria and that no further mitigation measures are required. The results of the 2011 study are based on a more detailed review of forecast coal truck fleet details provided by the two transport companies, ie Bulktrans and Brindles and review of weighbridge receipts obtained during the trial period in August 2011.

- With reference to the acoustic report prepared by Wilkinson Murray for the 2008 EA, one of the noise mitigation measures for Bellambi Lane was to limit coal truck movements along this road from Gujarat NRE's No.1 Colliery to daytime hours. Based on review of the Cardno Traffic report for the 2011 trial period, coal truck movements from this mine are being carried out in accordance with the recommendations of the 2008 EA.

- Since the 2008 acoustic assessment, general road traffic noise levels along Bellambi Lane have decreased significantly due to the opening of the Northern Distributor in 2009, which has provided a more efficient alternative route for vehicular traffic that would otherwise have used Bellambi Lane.

- The applicable road traffic noise criteria that was used for the 2008 EA for Bellambi Lane and Keerong Avenue monitoring locations has been amended to reflect the re-classification of Bellambi Lane, in accordance with the current Road Noise Policy (NSW). The amended criteria are now in line with the remaining haulage route, ie $L_{Aeq\ 15hr}$ (daytime) and $L_{Aeq\ 9hr}$ (night time).

- Variations in traffic noise due to increased coal haulage rates of 10mtpa predicted during the 2011 study were comparable with the previous 2008 EA for the equivalent tonnage.

1.2 2011 Acoustic Assessment Findings

- Coal truck movements during the 2011 trial period delivered coal to the PKCT at an equivalent total rate of 6.9-mtpa.
- Based on coal supply from the collieries during the trial period, there was a higher tonnage of coal being delivered to PKCT by BHP Billiton Illawarra Coal in order to achieve the trial rate of 6.9-mtpa. This was due to supply from Gujarat NRE being slightly lower than "typical" (to achieve 6.9mtpa) and the approximate percentage per supplier is noted as:
    - Gujarat NRE: 13%
    - BHP Billiton: 87%
- Detailed review of weighbridge tickets obtained for the 2011 trial period and coal truck fleet data from the two main transport companies servicing Gujarat NRE and BHP Billiton has been undertaken in preparation of this assessment. It is noted that Brindles, who service Gujarat NRE will be updating their truck fleet which will result in trucks with higher load capacities which in turn results in fewer trips from colliery to PKCT to deliver the required coal. This is forecast to occur in 2012 and 2013.
- Maximum noise level events at 163 Kembla Street were relatively low, with only 3 events recorded over the trial period. Based on review of the Cardno Traffic Report (2011), truck activity to the coal terminal generally increased during the early morning period (from 4am to approximately 7am) compared to relatively steady (or slight reduction of) coal truck movements from 10pm to 4am, and that some activity from coal trucks may result in a minor likelihood of sleep disturbance events, during the early morning activity only. No maximum noise level events were determined during the weekend period at this location.
- Review of the overall increase in noise levels due to increased tonnage above the baseline 2011 values, ie to 7.5 and 10mtpa indicate that the majority of the increases are in the order of 0.1 to 0.7dB(A) and are comparable to the 2008 study findings.
- The mitigation measures outlined in the 2008 EA are still appropriate as the 2011 trial and review findings have not found any additional impacts.

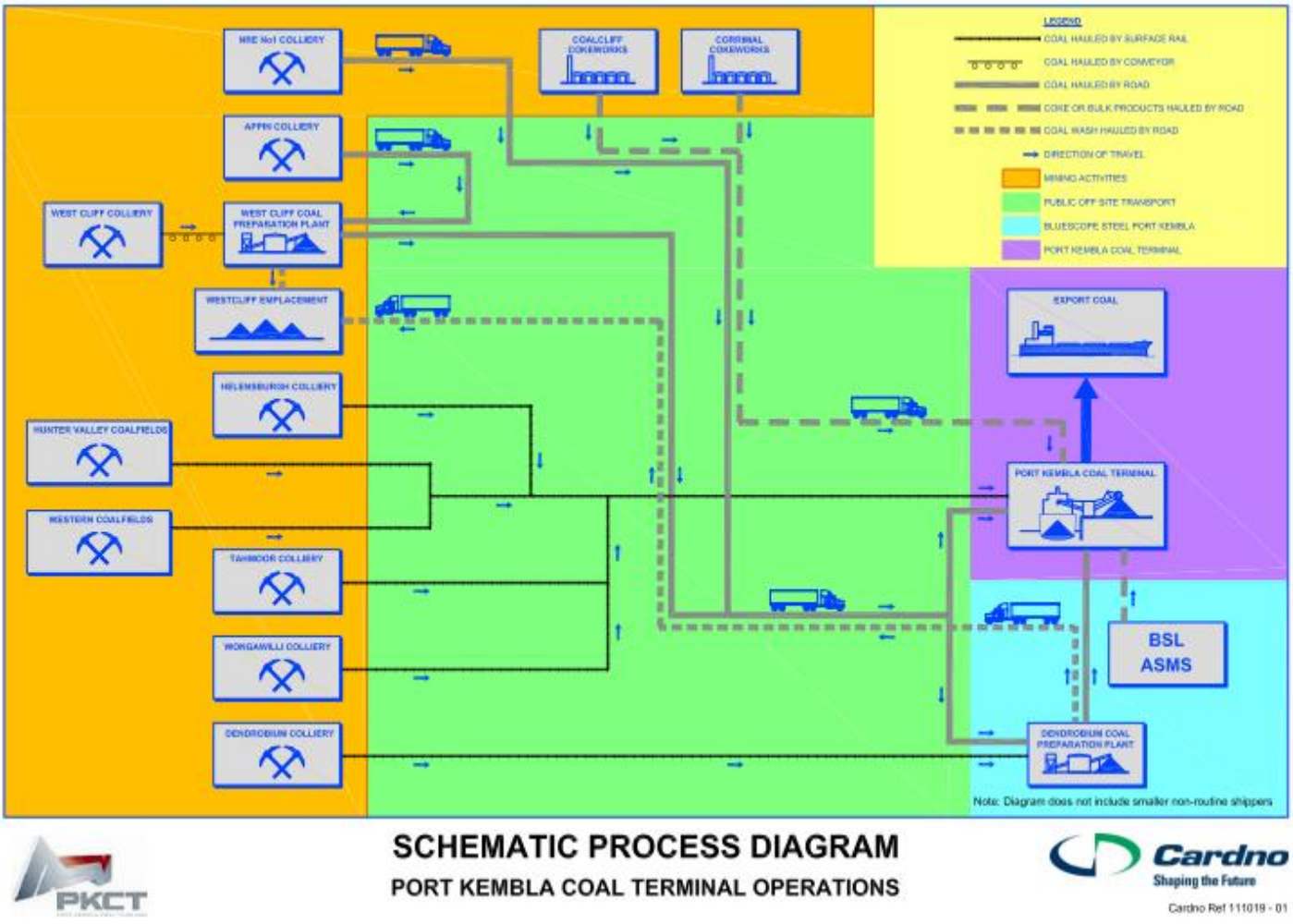
2 INTRODUCTION

2.1 Assessment Outline

Port Kembla Coal Terminal (PKCT) is a coal receiving and ship loading facility, located in the Inner Harbour of Port Kembla, at Wollongong in NSW. The PKCT facility currently receives coal from coal mines located in Western and Southern NSW, which are delivered by road and/or rail where it is stockpiled onsite and loaded onto ships for transport. The coal terminal is located approximately 30 to 40 minutes from the southern coal fields, with the majority of trucks transporting materials to the terminal being B-Double with a typical coal carrying capacity of approximately 30 to 40 tonnes per truck. Coal is stockpiled on site at PKCT and loaded onto ships using rotary bin arm plough feeders, which can load coal onto ships at a rate of 4,400 tonnes per hour.

Current colliery transport routes to PKCT are shown below in Figure 1.

Figure 1: Port Kembla Coal Terminal Operations.



The designated road haulage routes are as follows:

- Gujarat NRE (GNRE) No.1 Colliery – transporting coal via Bellambi Lane to the Northern Distributor, F6. Masters Road and Springhill Road;
- Appin Colliery (BHP Billiton Illawarra Coal) – transporting coal via West Cliff Colliery;

- West Cliff Colliery (BHP Billiton Illawarra Coal) – transporting coal via Appin Road, Mt Ousley Road, F6, Masters Road and Springhill Road;

PKCT road routes are shown below in Figure 2. Proposed coal delivery scheduled for the trial was scheduled for 24 hours per day, 7 days per week. With reference to Figure 2, it is important to note that a separate acoustic assessment was being undertaken simultaneously to the 10mtpa trial acoustic assessment by Wilkinson Murray (acoustic consultants). The separate acoustic assessment was for Port Kembla Coal Terminal but specific to noise emission from the Coal Terminal itself. The 10mtpa Road Haulage Trial acoustic assessment relates specifically to noise emission from coal haulage routes external to the Coal Terminal.

Several noise monitoring locations, ie 5, 6 and 8 have been reported for information in the 10mtpa trial period acoustic assessment report. These monitoring locations are more relevant to on-site activities, as discussed further in this report.

ID	Truck Route	Measurement Location	Type	Year Surveyed
1	*Bellambi Lane*	77 Bellambi Lane, Bellambi (front yard)	Road Haulage	2008 and 2011
2A	*Bellambi Lane*	91 Keerong Avenue, Russell Vale (rear yard)	Road Haulage	2008
2B	*Bellambi Lane*	87 Keerong Avenue, Russell Vale	Road Haulage	2011
3	*Northern Distributor*	13 Eagar Street, Corrimal (rear yard)	Road Haulage	2008 and 2011
4A	*Northern Distributor*	7 Albert Street, Corrimal (rear yard)	Road Haulage	2008
4B	*Northern Distributor*	6 Ivor Street, Bellambi	Road Haulage	2011
5	*Spring Hill Road*	392 Keira Street, Wollongong (front yard)	On-Site Activity/Road Haulage	2008 and 2011
6	*Spring Hill Road*	163 Kembla Street, Wollongong (front yard - Swan Street)	On-Site Activity/Road Haulage	2008 and 2011
7	*Spring Hill Road*	260 Gladstone Street, Mount St Thomas	Road Haulage	2008 and 2011
8	*Spring Hill Road*	10 Swan St, Wollongong	On-Site Activity/Road Haulage	2008 and 2011
9	*Mount Ousley Road*	96 Dumfries Avenue, Mt Ousley	Road Haulage	2008 and 2011
10A	*Mount Ousley Road*	6 Binda Street, Keiraville	Road Haulage	2008
10B	*Mount Ousley Road*	4 Binda Street, Keiraville	Road Haulage	2011
11	*F6*	13 Phillips Crescent, Mangerton	Road Haulage	2008 and 2011
12A	*F6*	36 Acacia Avenue, Gwynneville	Road Haulage	2008
12B	*F6*	30 Acacia Avenue, Gwynneville	Road Haulage	2011
13	*F6*	84 Taronga Avenue, Mount St Thomas	Road Haulage	2008 and 2011

RUSSELL VALE
WOONONA
BELLAMBI
CORRIMAL
EAST CORRIMAL
FERNHILL
TOWRADGI
FAIRY MEADOW
CORDEAUX
MOUNT PLEASANT
MOUNT OUSLEY
MOUNT KEIRA
KEIRAVILLE
NORTH WOLLONGONG
GWYNNEVILLE
WEST WOLLONGONG
WOLLONGONG
FIGTREE
MANGERTON
CONISTON
MOUNT SAINT THOMAS
CORDEAUX HEIGHTS
SPRING HILL
PORT KEMBLA
PRINCES HIGHWAY
NORTHERN DISTRIBUTOR
SOUTHERN FREEWAY
MOUNT OUSLEY ROAD
MOUNT KEIRA ROAD
BOURKE STREET
FLINDERS STREET
KEIRA STREET
CROWN STREET
CORRIMAL STREET
THE AVENUE
MASTERS ROAD
SPRINGHILL ROAD

Legend

- Major Roads (LPI)
- Distributor Road (LPI)
- Local Road (LPI)
- Route from Mine
- Built Up Areas (LPI)
- Parkland (ABS)

Noise Monitoring Locations

- On-Site Truck Activity (Ongoing Compliance)
- Road Haulage (10 Mtpa Trial)

1:30,000 Scale at A3

Metres

0 500 1000 1500 2000

Noise Monitoring Site Locations

10 MTPA TRIAL STUDY

FIGURE 2

N W E S

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2011-08-15
Coordinate System: GDA 1994 MGA Zone 56
Project: 111019-01
Map: G1001_NoiseMonitoringLocations.mxd 04

A previous road traffic noise assessment was undertaken by Wilkinson Murray for PKCT in the 2008 EA This assessment predicted PKCT coal deliveries by road will reach haulage capacity of 10 million tonnes per annum (mtpa) in 2013.

To assess the impacts of the proposed new tonnage capacities prior to receiving volumes greater than 7.5mtpa, a noise monitoring trial was organised between the Client, collieries and Port Kembla Coal Terminal to deliver stockpiled coal via the road network to simulate as close as possible to 7.5mtpa. It should be noted that the Department of Planning and Infrastructure constitute that a valid coal haulage trial is at least 6mtpa.

During the trial, the total haulage received by PKCT was 6.9mtpa. Projected road traffic noise impacts for 7.5mtpa (current licence approval conditions) and 10mtpa (new licence approval conditions) were assessed as the basis of this report against relevant traffic noise criteria.

2.2 Assessment Aims

The primary aims of the 2011 acoustic assessment are as follows:

- To assess current compliance with the noise criteria for existing coal delivery tonnage via the road network (at a rate of 6.9mtpa during the monitoring trial period).
- To assess and compare findings of the previous 2008 acoustic assessment with current 2011 acoustic assessment, including increased tonnages confirmed by Port Kembla coal Terminal as 7.5mtpa and 10mtpa.
- Identify any additional feasible and reasonable mitigation measures where noise mitigation is required to achieve the project noise criteria.

3 ACOUSTIC CRITERIA

3.1 Department of Planning and Infrastructure

The following conditions of consent required by NSW Department of Planning and Infrastructure" Major Project Approval 08_0009 Schedule 2 Administrative Conditions Limits of Approval states the following:

Limits of Approval

6. The Proponent shall not receive more than 7.5 million tonnes of coal and bulk products at the site by public road in any calendar year without the written approval of the Director-General. In seeking this approval, the Proponent shall submit a report to the Director-General that:
(a) reviews the transport related impacts associated with the trucks being used to deliver coal and bulk products to the terminal;
(b) demonstrates that these impacts are generally consistent with the predicted and/or approved impacts;
and
(c) examines whether there are any other reasonable and feasible measures that could be implemented to minimise these impacts.
Once this approval has been obtained, the Proponent shall not receive more than 10 million tonnes of coal and bulk products at the site by public road in any calendar year.

7. The Proponent shall only receive coal dispatched from NRE No.1 Colliery at Russell Vale if that Coal has been dispatched between the hours of:
(a) 7am to 10pm Monday to Friday; and
(b) 8am to 6pm Saturday and Sunday or Public Holidays
Unless in accordance with a project approval granted to that Colliery under Part 3A of the EP&A Act.

8. Subject to conditions 6 and 7 of this schedule, coal and bulk products may be received by the Proponent at the site by road delivery twenty four hours per day, seven days per week.

3.2 NSW Road Noise Policy (RNP)

The NSW Office of Environment and Heritage (OEH) approved the use of a new road traffic noise policy, the NSW Road Noise Policy (RNP), which was enacted on 1 July, 2011. This policy supersedes the OEH Environmental Criteria for Road and Traffic Noise (ECRTN) and provides guidance for land use developments generating additional traffic on existing roads.

The opening of the Northern Distributor in 2009 has resulted in substantial reductions in traffic volumes on Bellambi Lane. This road was classified as a "Collector" road in the 2008 assessment, to offset predicted losses in traffic volumes.

Under Table 2 of the RNP, Bellambi Lane has been re-classified as a "Sub-arterial" road, as it provides a connection between local and arterial roads, supports arterial roads during peak periods and can serve major traffic generating developments and support non-local traffic.

Relevant RNP criteria for summarised below in Table 1.

Table 1: NSW RNP criteria for PKCT transport routes.

Road Category	Type of project/land use	Assessment Criteria – dB(A)	
Freeway/arterial/sub-arterial roads	1. Existing residences affected by **additional traffic** on existing freeways/arterial/sub-arterial roads generated by land use developments.	$L_{Aeq\ (15\ hour)}$ 60 External	$L_{Aeq\ (9\ hour)}$ 55 External
Where the controlling criteria are already exceeded and are not achievable the NSW RNP states that for: *"existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise level should be limited to 2dB above that of the corresponding 'no build' option."*			

3.3 Maximum Noise Level Events

Sleep disturbance criteria in the Road Noise Policy provides a range of information regarding sleep related disturbance and relevant research.

However for road traffic noise assessment purposes, the RTA Environmental Noise Manual (2001) 'Practice Note iii' defines a maximum noise level event as:

$$L_{max} \geq L_{eq\ 1hr,}\ \textit{where}\ L_{max}\ \textit{noise levels are >65 dB(A)}$$

Detailed assessment and analysis was carried out at Kembla Street, Wollongong, consistent with the previous acoustic study for the 2008 EIS. The findings are:

- 163 Kembla Street, Wollongong – to assess typical maximum noise level conditions along Springhill Road.

To eliminate extraneous noise sources, the L_{A1} descriptor was selected for this assessment. This descriptor is consistent with best practice for sleep disturbance assessments.

4 EXISTING NOISE ENVIRONMENT

4.1 Noise Monitoring Methodology

Environmental noise loggers were installed at 13 pre-determined noise monitoring locations with reference to the 2008 assessment (see Figure 2) on 11th August, 2011 to provide a basis for reviewing existing traffic noise, prior to the commencement of the 10mtpa trial which ran from 15th August until 29th August, 2011.

During the customer user group consultation process, a new monitoring location at 260 Gladstone St, Mount St Thomas was requested and added to the assessment to ensure any potential public road heavy vehicle activity was included from BHP Billiton's Dendrobium Washery located within the BlueScope Steel site.

The noise loggers were positioned as close to the original locations as possible. This was done through referencing the 2008 Wilkinson Murray report and in direct liaison with the resident where possible through the use of an explanatory letter outlining the purposes of the assessment, prior to gaining consent. Where access could not be obtained, an alternative location nearest to the original site was chosen. For the purposes of the current assessment, alternative location numbers have been labelled as Location "B". A summary of current and previous locations is summarised in Figure 2 (refer to Section 2.1).

Prior to the commencement of the trial, confirmation regarding the operation and capacity of the coal terminal to provide coal to PKCT was provided. During the assessment, GNRE No.1 colliery confirmed that current output from the mine was not sufficient to achieve a full 2-week delivery period. Truck deliveries from GNRE No.1 were limited to only 1-week during the trial and this is discussed further in this report.

Weather conditions during the assessment were determined from 15-minute meteorological station data provided by the Bureau of Meteorology. These meteorological stations were:

- Bellambi (Station No. 068228);
- Port Kembla (Station No. 068253).

Noise monitoring data was adjusted for adverse weather conditions as required by the NSW RTA Environmental Noise Management Manual (2001), and Australian Standard AS1055 – Part 1.

Where wind speeds >5.0m/s or where rainfall events were recorded, the affected data excluded from the analysis. All valid data used in the assessment in presented in Appendix A of this report.

Following discussions with the coal terminal, truck gate entry and departure information was also recorded to determine numbers of trucks and tonnages received at the coal terminal. This was used to correlate traffic movements with noise impacts. Total tonnages for the coal haulage trial were calculated to be an equivalent rate of 6.9mtpa, which exceeds the nominal 6mtpa tonnage required by the Department of Planning and Infrastructure for a valid coal trial.

4.2 Trial Period Noise Monitoring

Noise monitoring was carried out during the 2011 trial study to be used as a basis for reviewing the computer model and reviewing general traffic noise at each location used in the 2008 assessment. A summary of the measured results is provided in Table 2.

Table 2: Trial Noise Monitoring results for 15th August-29th August 2011, dB(A).

Location No.	Coal Truck Route	Measurement Location	Traffic Noise Level, L_{eq}			
			Weekday		Weekend	
			Day	Night	Day	Night
1	Bellambi Lane	77 Bellambi Lane, Bellambi (front yard)	62.2	53.6	-	-
2B	Bellambi Lane	83 Keerong Avenue, Russell Vale (rear yard)	55.5	46.2	-	-
3	Northern Distributor	13 Eagar St, Corrimal	54.3	49.7	-	-
4B	Northern Distributor	6 Ivor St, Bellambi	55.8	50.9	-	-
5	Springhill Road	392 Keira St, Wollongong (front yard)	64.0	56.6	*	*
6	Springhill Road	163 Kembla Street Wollongong (front yard)	59.1	53.8	57.0	53.3
7	Springhill Road/Masters Road	260 Gladstone Street, Mt St Thomas	59.1	56.0	59.9	57.8
8	Springhill Road	10 Swan St, Wollongong	55.3	52.7	55.4	54.4
9	F6	96 Dumfries Avenue, Mt Ousley	63.2	60.6	61.6	57.2
10B	F6	4 Binda St, Keiraville	58.6	56.4	56.2	55.0
11	F6	13 Phillips St, Mangerton	57.8	53.3	57.2	52.5
12B	F6	30 Acacia Avenue, Gwynneville	58.8	54.1	56.7	52.1
13	F6/Masters Road	84 Taronga Avenue, Mt St Thomas	56.1	53.3	56.5	52.7

(-) Measured levels affected by adverse weather conditions resulting in insufficient valid data.

(*) Measurements affected by malfunctioning noise logger battery resulting in insufficient data for valid analysis.

With reference to Table 2, the daytime period is noted as $L_{eq,\ 15hr}$ and the night time period, this is noted as $L_{eq,\ 9hr}$ as per the OEH Road Noise Policy. The corresponding times for 15hr and 9hr are:

- Day: 15hr (07:00 to 22:00)
- Night: 9hr (22:00 to 07:00)

Noise monitoring data was affected during the trial due to adverse weather conditions, notably extended wind and rain periods from Wednesday 17th to Thursday 18th August, 2011 and Saturday 20th to Sunday 21st August, 2011, which resulted in a substantial proportion of data being invalid during these periods. The significant portion of invalid data has also

contributed to several acoustic issues including higher road traffic noise levels during the night time weekend period compared to weekday daytime periods for example. Noise monitoring data, both non-corrected and corrected for meteorological conditions is presented in Appendix A and B respectively, for reference.

Monitoring sites were in some cases also affected by malfunctioning batteries and resulted in some noise loggers stopping prior to the end of the trail period. The noise logger at 392 Keira St, Wollongong, recorded trial data from Monday 15th to Friday 19th August only. Most noise loggers continued to log noise levels until approximately Tuesday 23rd to Thursday 25th August.

Generally, the trial period noise monitoring results show typical trends in noise levels between daytime and night time periods that are similar to those expected for major arterial roads/ freeways. Measured noise levels along Bellambi Lane are significantly less than previously measured in the 2008 study due to the opening of the northern distributor which has reduced traffic volumes on Bellambi Lane.

5 Project Specific Criteria

With reference to the original EA in 2008, Table 3 summarises the baseline noise criteria for the project and is the baseline criteria developed and confirmed in the 2008 EA.

With reference to the haulage route along Bellambi Lane, the noise criteria confirmed in the previous 2008 EA study was an $L_{eq,1hr}$ value, based on the road classification at the time, ie a "collector" road.

As noted previously in this report, the Environmental Criteria for Road Traffic Noise (ECRTN) has now been superseded by the OEH Road Noise Policy and the noise criteria for Bellambi Lane as a result of the re-classification has been based on measured 2011 trial values. This was considered appropriate based the equivalent tonnage from Gujarat NRE in 2011 during the trial being approximately the same as what was delivered to PKCT during the 2008 study.

Table 3: Summary of traffic noise criteria, dB(A).

Location No.	Measurement Location	Criteria L_{eq}			
		Weekday		Weekend	
		Day	Night	Day	Night
1	77 Bellambi Lane, Bellambi	64.2	55.0	60.0	55.0
2B	83 Keerong Avenue, Russell Vale	60.0	55.0	60.0	55.0
3	13 Eagar St, Corrimal	60.0	55.0	60.0	55.0
4B	6 Ivor St, Bellambi	62.5	55.8	60.4	55.5
5	392 Keira St, Wollongong (front yard)	65.3	55.7	60.2	55.0
6	163 Kembla Street Wollongong (front yard)	60.0	55.0	60.0	55.0
7	260 Gladstone Street, Mt St Thomas	60.0	55.0	60.0	55.0
8	10 Swan St, Wollongong	62.6	55.8	60.0	55.6
9	96 Dumfries Avenue, Mt Ousley	67.1	64.1	64.4	61.3
10B	4 Binda Street, Keiraville	61.6	59.7	60.0	55.0
11	13 Phillips St, Mangerton	60.0	55.0	60.0	55.0
12B	30 Acacia Avenue, Gwynneville	64.0	60.8	60.6	56.3
13	84 Taronga Avenue, Mt St Thomas	60.2	56.9	60.0	55.0

6 MAXIMUM NOISE LEVEL SUMMARY

Maximum noise level events for the pre-coal trial and coal trial periods at the representative location outlined in Section 3.3 is presented below in Table 5. These events represent the total number of recorded maximum noise levels over the period against the average hourly $L_{Aeq,1\ hour}$ value at night.

At 163 Kembla St, maximum noise level events were relatively low (refer Table 6), with only 3 events recorded over the trial period. Measured traffic volumes reported by Cardno Traffic Report (2011) FR111019 indicates that truck activity to the coal terminal increased, and that some activity from coal trucks may result in a minor likelihood of sleep disturbance events,

during the early morning period. No maximum noise level events were determined during the weekend period at this location.

Table 4: Trial Maximum Noise Level Events – 163 Kembla St, Wollongong

Time	$L_{Aeq, 1hour}$ dB(A)	Total Events L_{max}>L_{eq} 15 and >L_{max} 65 dB(A)	Time	$L_{Aeq, 1hour}$ dB(A)	Total Events L_{max}>L_{eq} 15 and >L_{max} 65 dB(A)
Weekdays			**Weekends**		
10pm	57.4	None	10pm	53.6	None
11pm	55.9	None	11pm	50.8	None
12am	54.4	None	12am	48.7	None
1am	53.4	None	1am	48.5	None
2am	50.9	None	2am	50.3	None
3am	50.2	None	3am	49.7	None
4am	49.6	None	4am	48.4	None
5am	49.6	None	5am	65.4	None
6am	48.7	Up to 2	6am	57.6	None
7am	48.1	Up to 1	7am	57.3	None

It should be noted that the methodology for assessing sleep disturbance in this assessment was carried out in accordance with regulatory authority guidelines (NSW RTA ENMM), which reflects the lower numbers of reported events by comparison with the 2008 assessment by Wilkinson Murray. The 2008 assessment used an internal method, which may have been conservatively high in the number of events recorded.

7 ROAD TRAFFIC NOISE ASSESSMENT

7.1 Computer Noise Modelling Methodology

Noise modelling using SoundPlan 7.1 proprietary software has been undertaken for the confirmed coal truck haulage route from the mine sites to PKCT and has been used in preparation of this acoustic report. This computer model uses approved Calculation of Road Traffic Noise (CoRTN) algorithms with assessed correction factors added to determine daytime and night time levels in accordance with the OEH Road Noise Policy (RNP).

A verification model has been prepared to compare the measured noise levels during the trial and based on this data, noise impact levels have been extrapolated for future increased haulage rates of 7.5mtpa and 10mtpa based on information received from the PKCT in relation to forecast number of trucks to achieve the increased haulage quantities. Noise predictions for 7.5mtpa and 10mtpa have been documented in this report to satisfy the Conditions of Consent in Section 3.1.

The model predicted the $L_{A10,\ 18hr}$ at each receiver location outlined in this report and the model output was then adjusted with a correction factors outlined in Table 5 to predict $L_{Aeq,\ 15hr}$ results. The night time traffic impacts were determined by using the calculated $L_{A10,\ 18hr}$ noise levels and applying a correction factors outlined in Table 5 to the result to obtain the $L_{Aeq,9hr}$.

The time correction factors were determined by comparing the measured $L_{A10,18hr}$ with the $L_{Aeq,15hr}$ and $L_{Aeq,\ 9hr}$. These were then applied to the predicted $L_{A10,18hr}$ levels for the trial period. The adopted correction factors to convert to $L_{Aeq,15hr}$ and $L_{Aeq,9hr}$ are provided in Table 5.

Table 5: Computer Model Inputs

Input Parameter	Input Source
Ground Elevation Geometry	Survey data supplied by Cardno Pty Ltd
Existing vertical alignment	Survey data supplied by Cardno Pty Ltd
Existing and future Traffic Flow Data	Existing traffic flows based on Traffic counts supplied by Cardno in the Cardno Traffic Report (refer to figures in Table 7). Per annum traffic growth supplied by Cardno in the Cardno Traffic Report. Future predicted traffic flows (coal trucks) supplied by PKCT.
Road Surface Type	Existing – estimated to be Dense Grade Asphalt based on visual survey, indicating that no correction factors for pavement surface were required.
Ground absorption	100% soft ground absorption surfaces between road and receivers.
Façade Reflection (where applicable)	+ 2.5 dB(A)
Correction to CoRTN for Australian Conditions	-1.7 dB(A) for facade correction
L_{A10} to L_{Aeq} conversion	Refer to Table 6
Receiver height	1.2 metre above ground as per noise logger microphone heights for the verification model.

Table 6: Conversion factors from $L_{A10,\ 18hr}$ to daytime and night time L_{Aeq}

			Conversion factors	
Location number	**Coal Truck Route**	**Noise Logger Location**	**$L_{A10,18hr}$ to $L_{Aeq,\ 15hr}$**	**$L_{A10,\ 18hr}$ to $L_{Aeq,\ 9hr}$**
1	Bellambi Lane	77 Bellambi Lane	-3.1	-6.2
2B	Bellambi Lane	83 Keerong Ave	-1.8	-5.7
3	Northern Distributor	13 Eager Street	-1.6	-5.7
4B	Northern Distributor	6 Ivor Street	-2.1	-6.5
5	Springhill Road	392 Keira St	-2.6	-6.0
6	Springhill Road	163 Kembla Street	-2.3	-6.0
7	Springhill Road/Masters Road	260 Gladstone Ave	-2.4	-6.0
8	Springhill Road	10 Swan St	-0.2	-2.8
9	F6	96 Dumfries Ave	-2.2	-4.9
10B	F6	4 Binda Street	-0.2	-4.9
11	F6	13 Phillips Crescent	-1.7	-6.1
12B	F6	30 Acacia Ave	-2.4	-6.2
13	F6/Masters Road	84 Taronga Ave	-1.7	-4.5

Baseline traffic data for the trial period is provided in Table 7 and Table 8. The ADT values have been converted into 18hr traffic volumes by applying a standard CoRTN correction factor.

Table 7: Vehicular traffic input data – 2011 trial period (all traffic)

	Combined Direction		Signposted traffic speed, km/h
Location	**ADT**	**Average % HGV**	
Bellambi Lane	5221	7.22	60*
Northern Distributor	26213	7.11	80
Mount Ousley	44656	8.68	80
F6 – North (Gwynneville)	71194	9.98	100
F6 – south (Mangerton)	73068	8.89	100
Masters Road	26135	11.55	80
Springhill Road	32482	7.51	80

* With reference to the PKCT Drivers Code of Conduct, the maximum speed permissible for coal trucks on Bellambi Lane is 50km/h in each direction.

Table 8: Vehicular traffic input data – 2011 "typical" 6.9mtpa (for information)

	Combined Direction		Signposted traffic speed, km/h
Location	**ADT**	**Average % HGV**	
Bellambi Lane	5459	11.26	60*
Northern Distributor	26451	7.94	80
Mount Ousley	44485	8.33	80
F6 – North (Gwynneville)	71260	10.07	100
F6 – south (Mangerton)	73134	8.97	100
Masters Road	26201	11.78	80
Springhill Road	32548	7.69	80

* With reference to the PKCT Drivers Code of Conduct, the maximum speed permissible for coal trucks on Bellambi Lane is 50km/h in each direction.

Table 9: Vehicular traffic input data – 2012 7.5mtpa

	Combined Direction		Signposted traffic speed, km/h
Location	**ADT**	**Average % HGV**	
Bellambi Lane	5479	11.58	60*
Northern Distributor	27772	7.94	80
Mount Ousley	45440	8.46	80
F6 – North (Gwynneville)	72783	10.19	100
F6 – south (Mangerton)	74690	9.08	100
Masters Road	26278	12.03	80
Springhill Road	32625	7.91	80

* With reference to the PKCT Drivers Code of Conduct, the maximum speed permissible for coal trucks on Bellambi Lane is 50km/h in each direction.

Table 10: Vehicular traffic input data – 2013 10mtpa

	Combined Direction		Signposted traffic speed, km/h
Location	ADT	Average % HGV	
Bellambi Lane	5595	13.41	60*
Northern Distributor	29255	8.24	80
Mount Ousley	46594	8.94	80
F6 – North (Gwynneville)	74614	10.64	100
F6 – south (Mangerton)	76555	9.52	100
Masters Road	26633	13.21	80
Springhill Road	32979	8.90	80

* With reference to the PKCT Drivers Code of Conduct, the maximum speed permissible for coal trucks on Bellambi Lane is 50km/h in each direction.

7.1.1 Model Verification

Based on available road traffic information provided by the Cardno Traffic Report (2011), the 2011 trial period was used to compare the measured noise levels at each noise survey location. The verification model used the input data in Table 5, Table 6 and Table 7 and generally for monitoring locations directly affected by the haulage routes, the variation between the measured and predicted $L_{Aeq,\ 15hr}$ and $L_{Aeq,\ 9hr}$ noise levels for weekday periods were approximately +/-1dB. This is considered satisfactory, given several estimations of features in the model such as road surface and actual installed noise wall heights and berms along the haulage route.

However, the predicted $L_{Aeq,\ 15hr}$ and $L_{Aeq,\ 9hr}$ noise levels were generally higher than measured levels on weekend periods and this was determined to be a result of insufficient valid noise level data on weekends due to inclement weather conditions, which were required to be removed from the analysis.

Two locations in particular along the Northern Distributor varied significantly between the measured and predicted levels (excluding coal trucks), ie 13 Eager Street and 6 Ivor Street, Bellambi. In these cases, the predicted levels were significantly higher than the measured and are therefore considered to be conservatively high.

Our review of the site survey data and ground topography at these locations indicate that the ground survey data may not be correctly taking into account changes in ground elevation at the receiver and ground elevation on the Northern Distributor. This may be a result of ground contours being surveyed as the Northern Distributor was being constructed for example and therefore not including berms or noise barrier footings relative levels (RL's).

Survey locations at Kembla Street, Keira Street, Gladstone Avenue and Swan Street were not directly affected by coal truck movements due to considerable distance from the entrance to PKCT and haulage roads, and the predicted levels were significantly below the measured levels during the trial period. This indicates that noise levels at these locations are from local sources and traffic only. At Gladstone Street, Mount St Thomas, rail noise and local vehicular traffic was considered to impact the noise monitoring results. Monitoring locations at Swan

Street and Kembla Street were more for the purposes of noise emission from the coal terminal itself.

7.1.2 Forecast Coal Truck Movements

There are two road transport contractors operating for the collieries to deliver coal to PKCT and these are Brindles – on behalf of GNRE and Bulktrans – on behalf of BHPB. The delivery truck size is different between to the two transport contractors and based on information received regarding fleet capacities and vehicle types (with varying tonnages), the average fully laden weight of the trucks is shown in Table 11.

During the trial, the total tonnage delivered to the coal terminal by the road network was equivalent to 6.9mtpa. During the trial, it was noted that the percentage split of coal deliveries from BHPB and GNRE varied from typical delivery of 6.9mtpa and the percentage was more heavily weighted to BHPB to achieve this tonnage based on the figures in the Cardno Traffic Report, the percentage split was approximately 87% BHPB and 13% GNRE. This percentage split was due to available coal supply from GNRE during the trial.

PKCT has noted that for typical delivery of 6.9mtpa, the percentage split is not as heavily weighted towards BHPB and is approximately 70% by BHPB and 30% by GNRE and is shown in Table 12.

Table 11: Changes in coal truck fleet

	Forecast coal delivery		
Supplier	**2011 "Typical" 6.9mtpa**	**2012: 7.5mtpa**	**2013: 10mtpa**
Brindles	32 tonnes	33 tonnes	35 tonnes
Bulktrans	39 tonnes	39 tonnes	39 tonnes
Note: The values presented above are inclusive of subcontractors to each of these contractors			

With reference to the fully laden coal truck weights above, the additional number of vehicles per day required to deliver the extra coal to the terminal has been estimated and is provided in Table 12.

Table 12: Projected additional coal trucks required to achieve forecast tonnage

	Condition	Supplier		Total vehicles
		Gujarat NRE	BHP Billiton	
Baseline values – per day	Baseline 6.9mtpa (trial)	77	425	502
	6.9mtpa (typical)	203	339	542
Forecast **additional** vehicles – per day	6.9mtpa (typical) to 7.5mtpa	10	29	39
	7.5mtpa to 10mtpa	58	119	177
**Quoted vehicles are one way, ie from colliery to PKCT.*				

Predicted increase in noise levels are provided in Section 7.2 of this report.

7.2 Coal Truck Noise Predictions

Predicted noise levels for 7.5mtpa and 10mtpa coal delivery scenarios for weekdays and weekend periods are presented below in Table 13 and Table 14 respectively. For the 10mtpa scenario, coal deliveries are based on the current operating conditions of 15 hours per day on weekdays and 10 hours per day (daytime) on weekends.

Table 13: Predicted noise levels for 7.5mtpa

Location No.	Measurement Location	RNP Criteria, L_{eq}		Traffic Noise Level, L_{eq}		RNP Criteria, L_{eq}		Traffic Noise Level, L_{eq}	
		Weekday				Weekend			
		Day	Night	Day	Night	Day	Night	Day	Night
1	77 Bellambi Lane, Bellambi (front yard)	64.2	55.0	62.8	54.7	60.0	55.0	58.1	54.2
2B	83 Keerong Avenue, Russell Vale (rear yard)	60.0	55.0	57.3	53.4	60.0	55.0	55.9	51.4
3	13 Eagar St, Corrimal	60.0	55.0	56.2	52.1	60.0	55.0	53.1	49.7
4B	6 Ivor St, Bellambi	62.5	55.8	55.3	50.9	60.4	55.5	52.4	48.5
5	392 Keira St, Wollongong (front yard)	65.3	55.7	55.3	51.9	60.2	55.0	54.4	50.1
6	163 Kembla Street Wollongong (front yard)	60.0	55.0	48.8	45.1	60.0	55.0	47.7	43.4
7	260 Gladstone Street, Mt St Thomas	60.0	55.0	55.9	52.3	60.0	55.0	53.9	50.3
8	10 Swan St, Wollongong	62.6	55.8	52.1	49.5	60.0	55.6	48.8	47.8
9	96 Dumfries Avenue, Mt Ousley	67.1	64.1	63.2	60.6	64.4	61.3	62.3	57.6
10B	4 Binda St, Keiraville	61.6	59.7	59.6	57.4	60.0	55.0	56.5	54.7
11	13 Phillips St, Mangerton	60.0	55.0	59.6	55.4	60.0	55.0	56.1	52.6
12B	30 Acacia Avenue, Gwynneville	64.0	60.8	61.9	58.1	60.6	56.3	59.4	55.0
13	84 Taronga Avenue, Mt St Thomas	60.2	56.9	56.8	54.0	60.0	55.0	53.9	51.6

Table 14: Predicted noise levels for 10mtpa

Location No.	Measurement Location	Assessed Criteria, L_{eq}		Traffic Noise Level, L_{eq}		Assessed Criteria, L_{eq}		Traffic Noise Level, L_{eq}	
		Weekday				Weekend			
		Day	Night	Day	Night	Day	Night	Day	Night
1	77 Bellambi Lane, Bellambi (front yard)	64.2	55.0	63.9	55.0	60.0	55.0	59.2	54.7
2B	83 Keerong Avenue, Russell Vale (rear yard)	60.0	55.0	57.9	53.7	60.0	55.0	56.3	51.9
3	13 Eagar St, Corrimal	60.0	55.0	54.8	54.0	60.0	55.0	54.2	50.1
4B	6 Ivor St, Bellambi	62.5	55.8	57.2	52.8	60.4	55.5	53.3	48.9
5	392 Keira St, Wollongong (front yard)	65.3	55.7	55.6	52.2	60.2	55.0	54.0	50.6
6	163 Kembla Street Wollongong (front yard)	60.0	55.0	49.2	45.5	60.0	55.0	47.6	43.9
7	260 Gladstone Street, Mt St Thomas	60.0	55.0	56.2	52.6	60.0	55.0	54.4	50.8
8	10 Swan St, Wollongong	62.6	55.8	52.4	49.8	60.0	55.6	50.8	48.2
9	96 Dumfries Avenue, Mt Ousley	67.1	64.1	63.4	60.8	64.4	61.3	60.5	57.9
10B	4 Binda St, Keiraville	61.6	59.7	58.9	56.7	60.0	55.0	57.2	54.0
11	13 Phillips St, Mangerton	60.0	55.0	59.8	54.9	60.0	55.0	57.1	52.9
12B	30 Acacia Avenue, Gwynneville	64.0	60.8	60.2	56.4	60.6	56.3	57.1	53.3
13	84 Taronga Avenue, Mt St Thomas	60.2	56.9	56.2	53.4	60.0	55.0	55.0	52.2

8 ASSESSMENT FINDINGS

8.1 2011 Acoustic Assessment

Noise monitoring was undertaken at 13 locations for the 2011 assessment, consistent with the previous road traffic noise assessment undertaken for PKCT by Wilkinson Murray in 2008. Noise monitoring data was partially limited due to adverse weather conditions however overall findings determined that the operation of the 2011 trial was compliant with the existing Department of Planning and Infrastructure Conditions (refer to Section 3.1). Predicted traffic noise impacts for the forecast 7.5mpta and 10mpta scenarios have shown that the road haulage up to 10mtpa is also compliant with the Department of Planning and Infrastructure Conditions.

The total coal haulage achieved during the trial period was equivalent to 6.9mtpa, which formed the basis of assessments for two scenario predictions at 7.5mtpa and 10mtpa.

The key findings of the assessment determined the following:

- Coal delivery from Gujarat NRE colliery complied with current operating conditions, ie 15 hours Monday to Friday and 10 hours Saturday and Sunday and managed an equivalent of approximately 1mtpa over the trial period. This is approximately 13% of the total coal delivery to PKCT and BHP Billiton provided the remaining 83% coal delivery. This proportion under “typical” conditions is more evenly distributed, ie 30% GNRE and 70% BHP Billiton.
- Road haulage of 7.5mtpa was predicted to comply with the criteria at all monitoring locations for day/night on weekdays and weekends.
- Road haulage of 10mtpa was predicted to comply with the criteria at all monitoring locations for day/night on weekdays and weekends.
- Traffic noise levels on the major roads such as Mt Ousley, Spring Hill Road and the F6 Freeway for 2013 10mtpa were predicted comply with the OEH RNP road traffic noise criteria.
- Some minor sleep disturbance impacts were predicted at 163 Kembla Street, associated with early morning activity along Kembla Street but not related to coal truck movements. The noise survey location at 163 Kembla Street is affected by local sources and it is unlikely that sleep disturbance events would occur as a result of activity on Springhill Road, due to distance from the noise source to the receiver location. However it should be noted that the assessment method was undertaken in accordance RTA Road Traffic Manual (2001) criteria. This may have resulted in some discrepancy with sleep disturbance analysis undertaken in 2008.

8.2 Comparison with the 2008 Assessment

As previously noted, Wilkinson Murray conducted the previous 2008 acoustic assessment and this assessment noted that coal deliveries to PKCT were acceptable up to 10mtpa capacity.

The 2008 acoustic report identified that some noise mitigation was required in order to control the increase in noise levels to the residential receivers along the haulage route and summarised are:

- Limiting operations from Gujarat NRE on Bellambi Lane to base 2008 levels;

- Restricting coal deliveries to PKCT using Bellambi Lane to the daytime period only, that is, 15 hours (daytime) during the week and 10 hours (daytime) on weekends.

The modelled scenarios in the 2008 EA were 4mtpa and 10mtpa. For comparison purposes, Table 15 presents the findings of the 2008 EA and the 2011 assessment for the 2013 10mtpa coal road haulage scenario.

Table 15: Comparison of 2008 EA predicted noise levels with 2011 predicted levels – for year 2013 10mtpa scenario

Route name	Survey location		Assessment criteria, dB(A) L_{Aeq}				2008 EA predicted result (10mtpa/ 2013), dB(A) L_{Aeq}				2011 Assessment Predicted 10mtpa (2013), dB(A) L_{Aeq}				2011 Assessment Prediction Compliance for 10mtpa with Assessment Criteria			
			Weekday		Weekend		Weekday		Weekend		Weekday		Weekend		Weekday		Weekend	
	2008	2011	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
Bellambi Lane	Bellambi Lane	Bellambi Lane (1)	*64.2*	*55.0*	*60.0*	*55.0*	*70.9	*71.1	*70.9	*67.3	63.9	55.0	59.2	54.7	Complies	Complies	Complies	Complies
Bellambi Lane	Keerong Ave	Keerong Ave (2B)	*60.0*	*55.0*	*60.0*	*55.0*	*56.2	*55.3	*56.1	*51.9	57.9	53.7	56.3	51.9	Complies	Complies	Complies	Complies
Northern Distributor	Eager Street	Eager Street 3	60.0	55.0	60.0	55.0	54.6	49.7	53.8	50.5	54.8	54	54.2	50.1	Complies	Complies	Complies	Complies
Northern Distributor	Albert Street	Ivor Street (4B)	62.5	55.8	60.4	55.5	61.0	55.2	59.1	55.4	57.2	52.8	53.3	48.9	Complies	Complies	Complies	Complies
N/A	Kiera Street	Kiera Street (5)	65.3	55.7	60.2	55.0	65.3	53.7	58.2	52.6	55.6	52.2	54.0	50.6	Complies	Complies	Complies	Complies
N/A	Kembla Street	Kembla Street (6)	*60.0*	*55.0*	*60.0*	*55.0*	-	-	-	-	49.2	45.5	47.6	43.9	Complies	Complies	Complies	Complies
Masters Road	-	Gladstone Street (7)	*60.0*	*55.0*	*60.0*	*55.0*	-	-	-	-	56.2	52.6	54.4	50.8	Complies	Complies	Complies	Complies
N/A	Swan Street	Swan Street (8)	62.6	55.8	60.0	55.6	60.6	53.8	57.7	53.6	52.4	49.8	50.8	48.2	Complies	Complies	Complies	Complies
Mount Ousley	Dumfries Ave	Dumfries Ave (9)	67.1	64.1	64.4	61.3	65.2	62.2	62.5	59.5	63.4	60.8	60.5	57.9	Complies	Complies	Complies	Complies
Mount Ousley	Binda Street	Binda Street (10B)	61.6	59.7	60.0	55.0	59.7	57.8	57.2	54.7	58.9	56.7	57.2	54.0	Complies	Complies	Complies	Complies
F6 (south) - Mangerton	-	Phillips Street (11)	*60.0*	*55.0*	*60.0*	*55.0*	-	-	-	-	59.8	54.9	57.1	52.9	Complies	Complies	Complies	Complies
F6 (north) - Gwynneville	Acacia Avenue	Acacia Avenue (12B)	64.0	60.8	60.6	56.3	62.3	59.3	59.0	55.1	60.2	56.4	57.1	53.3	Complies	Complies	Complies	Complies
Masters Road	Taronga Ave	Taronga Ave (13)	60.2	56.9	60.0	55.0	59.0	58.2	54.8	53.7	56.2	53.4	55.0	52.2	Complies	Complies	Complies	Complies

NOTES:

1) *Denotes $L_{Aeq\ (1\ hour)}$ prediction as per now superseeded ECRTN used in 2008 assessment. Current criteria as per 2011 study is $L_{Aeq\ (15\ hour)}$ as per NSW Road Noise Policy

2) Blue italic text is estimate criteria as these locations were not included in original 2008 assessment

3) – indicates that this location was not assessed in the 2008 EA

The key findings of the review of the 2008 study and 2011 trial monitoring period are summarised as:

- Since 2008 (and the opening of the Northern Distributor), Bellambi Lane has been re-classified from a “Collector” road in the previous NSW ECRTN to a “Sub-arterial” road. The impact from this change is that the operational noise criteria are now assessed over a different time period, ie the previous sub-arterial road are noise levels averaged over a one hour period, whereas the reclassification is now in line with the remainder of the road haulage routes – fifteen hours (daytime) and nine hours (night time). The averaged noise levels over the fifteen and nine hour periods are lower than if assessed as a one hour peak period.

- Based on detailed review of weighbridge receipts and information sourced from the two transport contractors, ie Brindles and Bulktrans, the overall number of coal trucks required to deliver 7.5mtpa and 10mtpa of coal to PKCT are less than those predicted in the 2008 study. This has resulted in the 2011 study predicting lower overall noise levels at each of the noise monitoring locations.

- Overall traffic noise levels on Bellambi Lane surveyed during the during the 2011 study were significantly lower than the monitored baseline traffic noise levels reported in the 2008 study and this is due to the opening of the Northern Distributor in 2009. The opening of the Northern Distributor resulted in a significant reduction in road traffic and associated noise levels on Bellambi Lane, as the majority of traffic utilise the new road.

- With reference to the findings in the 2008 study, variations in traffic noise due to increased coal haulage rates of 10mtpa predicted during the 2011 study were comparable with the previous 2008 assessment for the equivalent tonnage.

- Noise mitigation measures outlined in the 2008 assessment were found to be acceptable based on the 2011 assessment predictions.

9 NOISE MITIGATION MEASURES

Based on the assessment findings in Section 8, the study has concluded that no additional noise mitigation measures to those referenced in the 2008 EA study are required to achieve the project specific criteria. Current operational Conditions are outlined in Section 9.1.

9.1 Conditions and Best Practice Measures

As previously described, there are two main contractors transporting coal from the collieries to PKCT via the existing road network. Further to discussions through PKCT with these contractors, it is noted that each contractor maintains a set of best practice measures which include some of the best practice measures outlined ahead in this section.

It is important to highlight that the contractors periodically upgrade their fleet for newer and potentially quieter running prime movers. With the fleet upgrade, we note that there is a general trend to use trucks with higher tonnage capacity in an effort to reduce the total number of trucks required to deliver the forecast increased tonnage of coal to PKCT per day and this has been included in the modelling for the 7.5mtpa (2012) and 10mtpa (2013) scenarios.

Generally, it is expected that maintaining the PKCT Drivers Code of Conduct on all roads be continued but also the general maintenance of all coal trucks will be undertaken as an ongoing operational measure. Maintenance measures include the following:

- Engine maintenance to ensure optimum performance (regular manufacturers scheduled servicing) on all coal trucks;
- Maintenance of exhaust and muffler systems and where required, replacement of deteriorated exhaust and mufflers with improved noise suppression;
- Maintenance of trailers so that loose components on tailgates for example are eliminated;
- Regreasing suspension components where required to eliminate squeaking as the vehicle is in motion;
- Maintaining correct tyre pressures on all coal trucks, including trailers.

10 CONCLUSION

An assessment of Port Kembla Coal Terminals coal deliveries by public road haulage was conducted as per NSW Department and Planning Infrastructure “PKCT Major Approval Project 08_0009” conditions 6, 7 and 8. The assessment was to undertaken to simulate coal road haulage capacities consistent with the current consent conditions of up to 7.5mtpa, with predicted impacts undertaken also for 10mtpa.

Based on the assessment, it has been identified that general road traffic noise levels on Bellambi Lane have decreased significantly due to the opening of the Northern Distributor in 2009 and also the applicable road traffic noise criteria on this road has also been amended due to a re-classification by the NSW OEH.

Coal truck movements to and from Gujarat NRE No.1 Colliery, Russell Vale were predicted to comply with the assessed criteria for Bellambi Lane and the Northern Distributor. This can be attributed to adherence of the PKCT Drivers Code of Conduct (including a self-imposed reduction in coal truck speed along Bellambi Lane) and upgrades in the coal transport company’s (Brindles) fleet.

The 2011 trial period and predictions to 7.5mtpa and 10mtpa to PKCT have shown that the operation up to these capacities comply with the operational road noise criteria up to 10mtpa capacity at all locations.

On the basis of the 2011 acoustic assessment, coal delivery capacities up to 10mtpa to PKCT is achievable with no additional noise mitigation requirements and that the previous noise mitigation is satisfactory. However it is expected that current best practice measures including continued compliance with the PKCT Drivers Code of Conduct and other current measures will be maintained.

11 REFERENCES

- Australian Standard AS1055.1-1997 Acoustics – Description and measurement of environmental noise. Part 1: General Procedures
- Cardno (2011) Traffic Report FR111019 'Port Kembla Coal Terminal Monitoring Trial Assessment'.
- NSW Office of Environment and Heritage (1999) Environmental Criteria for Road Traffic Noise.
- NSW Office of Environment and Heritage (2011) Road Traffic Noise Policy.
- NSW Road Traffic Authority (2001) Environmental Noise Management Manual.
- Port Kembla Coal Terminal Drivers Code of Conduct (2009)
- Wilkinson Murray (2008) Report 07355 'Port Kembla Coal Terminal Noise Assessment of Site Activities and Road Haulage'.
- Vehicle Standard (Australian Design Rule 83/00 - External Noise) 2005
- "Reducing vehicle noise" – NSW Roads and Maritime Services website

12 GLOSSARY OF TERMS

A-weighted Level: As per dB(A) defined below.

Ambient Sound: Of an environment: the all-encompassing sound associated with that environment, being a composite of sounds from many sources, near and far. Usually taken to mean the L_{Aeq} value.

Background Sound Level: The average of the lowest levels of the sound levels measured in an affected area in the absence of noise from occupants and from unwanted external ambient noise sources. Usually taken to mean the L_{A90} value.

Decibel, dB: Unit of acoustic measurement. Measurements of power, pressure and intensity may be expressed in dB relative to standard reference levels.

dB(A): Unit of acoustic measurement electronically weighted to approximate the sensitivity of human hearing to sound frequency.

L_{90}, L_{10} etc: A statistical measurement giving the sound pressure level which is exceeded for the given percentile of an observation period, ie L_{90} is the level which is exceeded for 90 percent of an observation period. L_{90} is commonly referred to as a basis for measuring the background sound level.

$L_{Aeq, T}$: Equivalent continuous A-weighted sound pressure level. The value of the A-weighted sound pressure level of a continuous steady sound that, within a measurement time interval T, has the same A-weighted sound energy as the actual time-varying sound.

L_{Aeq}, 1hr: the tenth percentile hourly L_{eq} noise level between 7am and 10pm or between 10pm and 7am, whichever is relevant to the particular criterion in question.

$L_{Aeq, 15hr}$: the L_{eq} noise level for the 15 hour period between 7am and 10pm.

$L_{Aeq, 9hr}$: the L_{eq} noise level for the 15 hour period between 10pm and 7am.

Sound Pressure Level, L_p, dB (of a sound): A measurement obtained directly obtained using a microphone and sound level meter. Sound pressure level varies with distance from a source and with changes to the measuring environment. Sound pressure level equals 20 times the logarithm to the base 10 of the ratio of the r.m.s. sound pressure to the reference sound pressure of 20 microPascals.

Sound Power Level, L_w, dB (of a source): Sound power level is a measure of the sound energy emitted by a source, does not change with distance, and cannot be directly measured. Sound power level of a machine may vary depending on the actual operating load and is calculated from sound pressure level measurements with appropriate corrections for distance and/or environmental conditions. Sound power level is equal to 10 times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power of 1 picoWatt.

APPENDIX A

NOISE MONITORING DATA

(NOTE: Data not filtered for extraneous noise events and weather effected data)

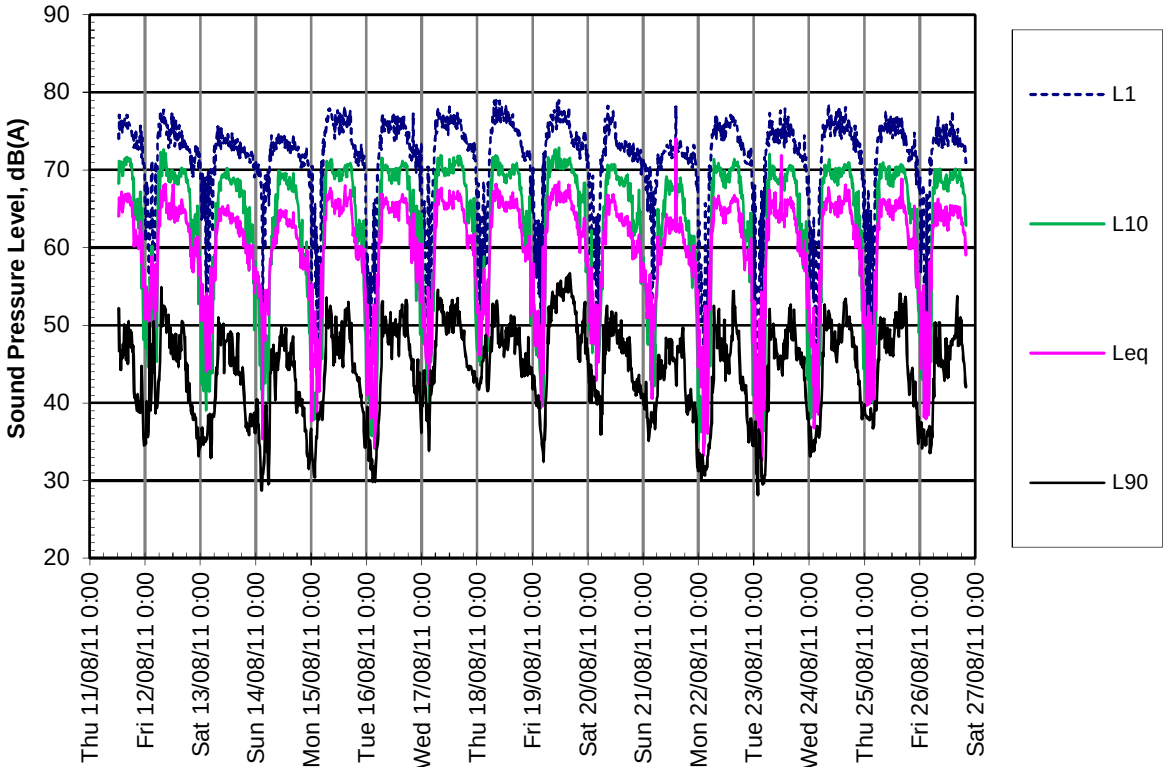


Figure 3: Location 1: 77 Bellambi Lane, Bellambi

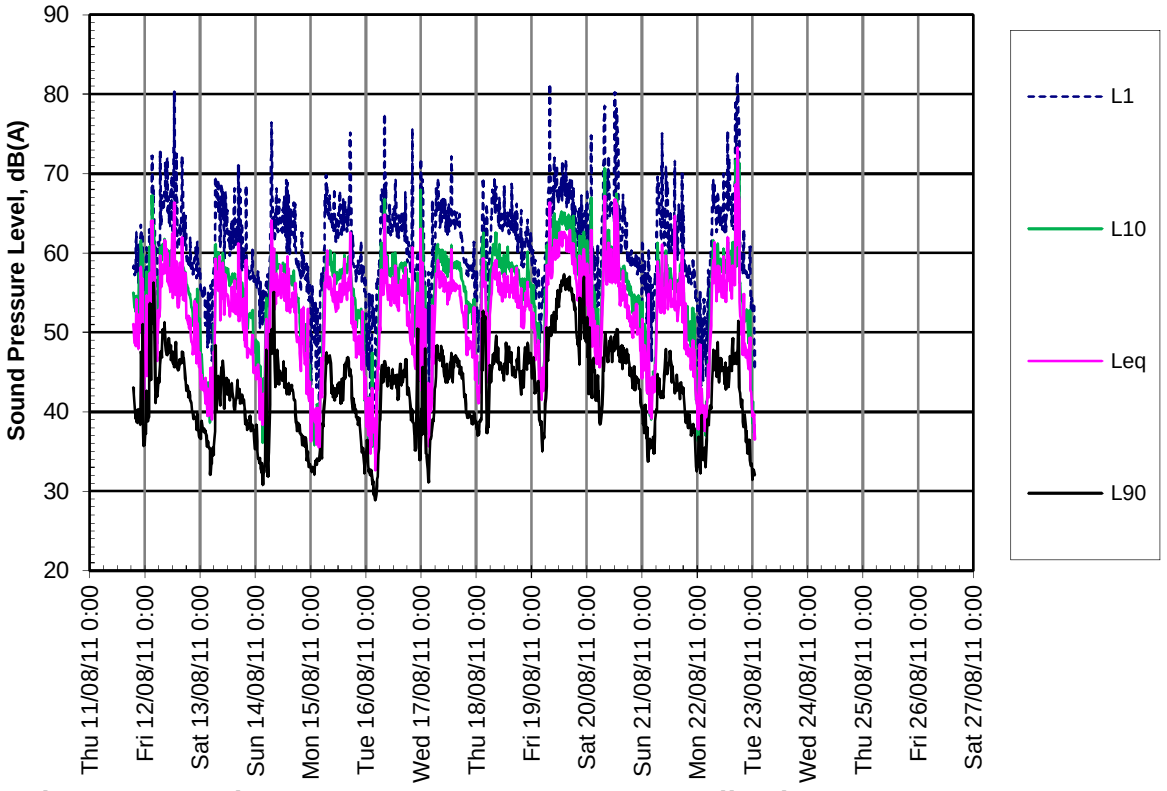


Figure 4: Location 2B: 83 Keerong Avenue, Russell Vale

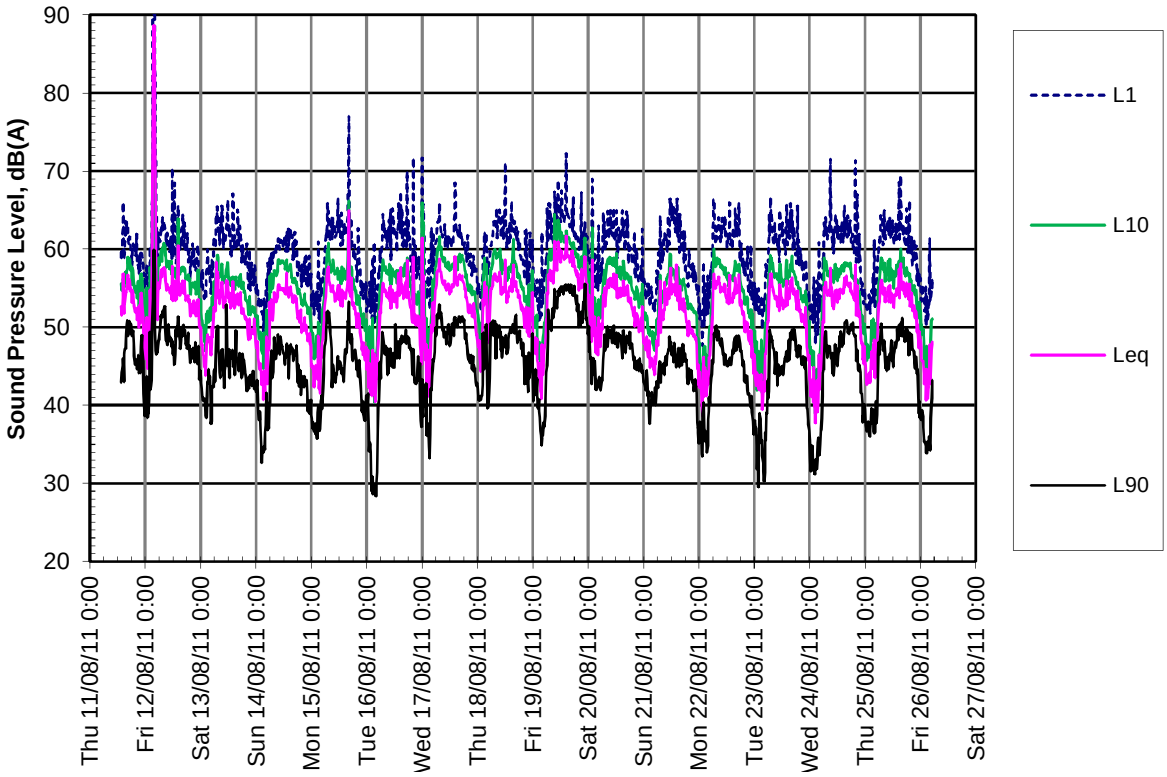


Figure 5: Location 3: 13 Eagar Street, Corrimal

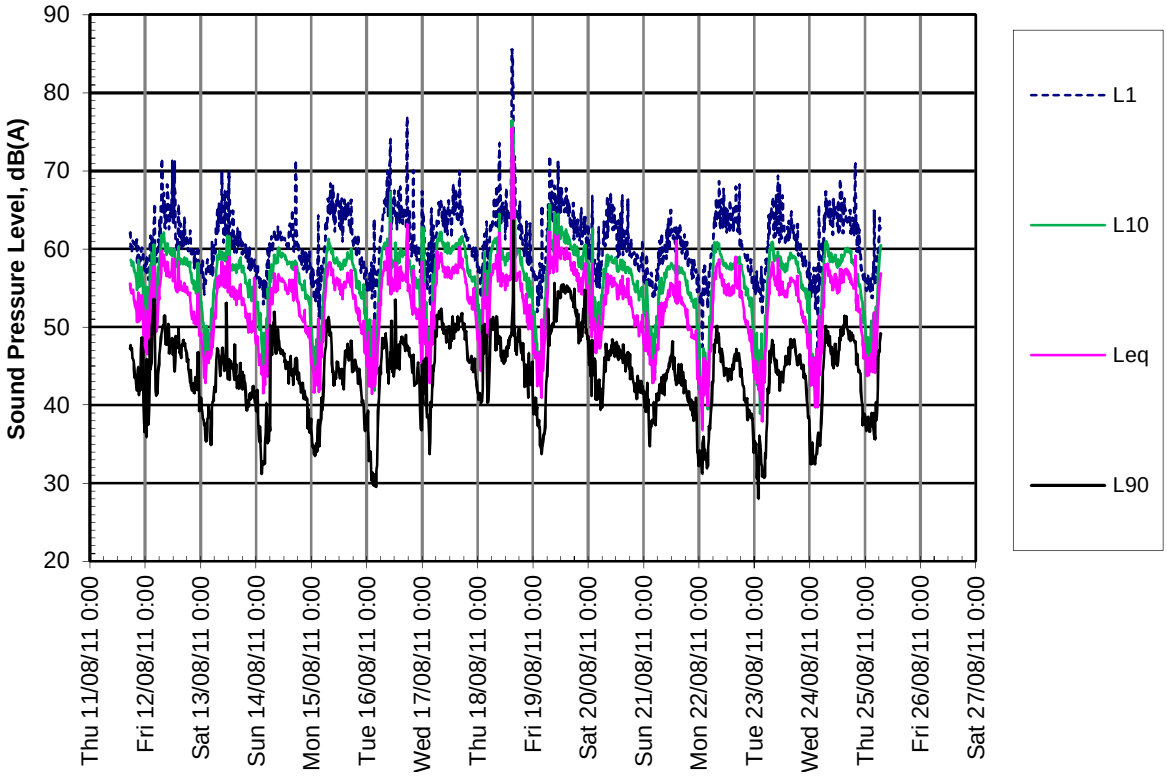


Figure 6: Location 4B: 6 Ivor Street, Bellambi

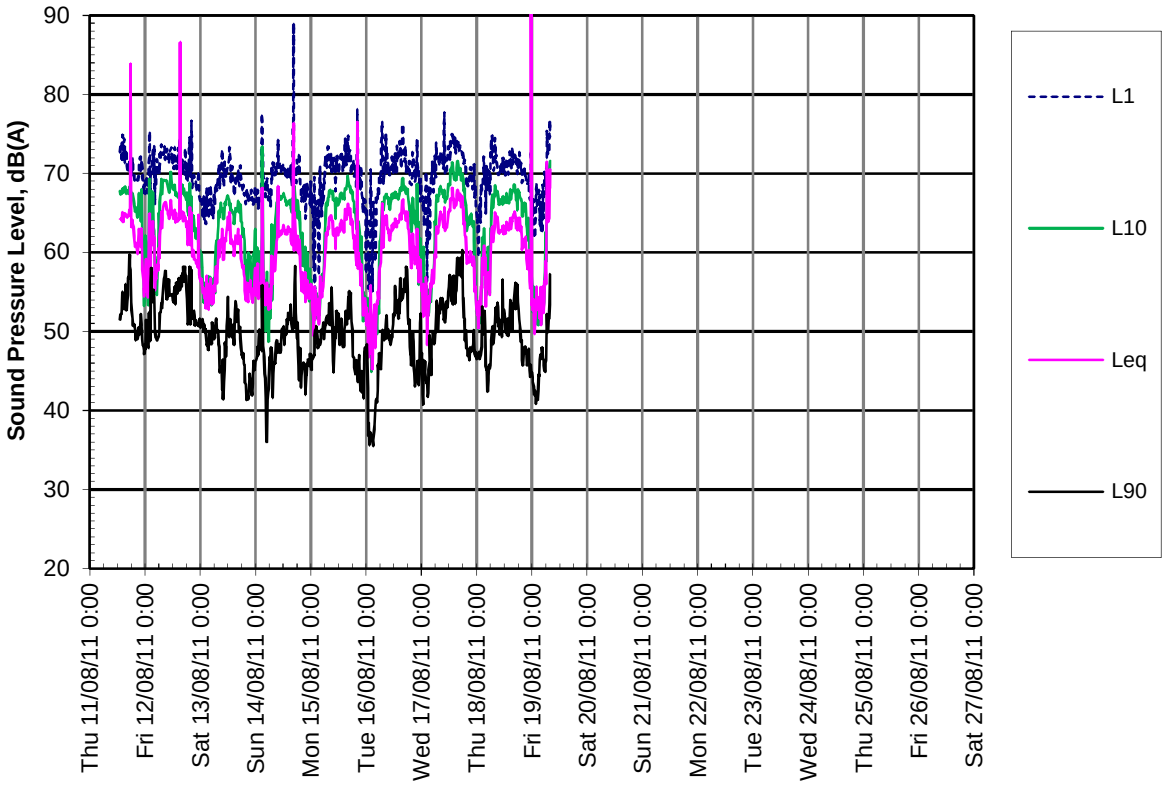


Figure 7: Location 5: 392 Keira Street, Wollongong

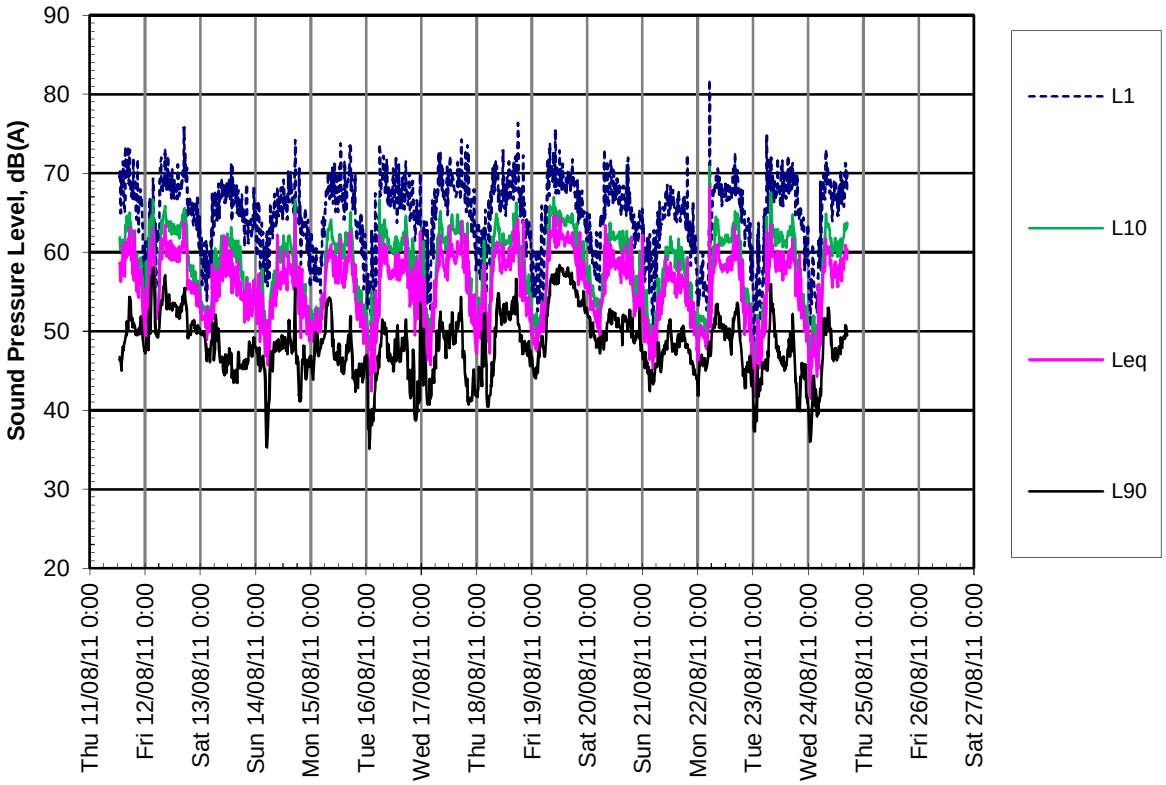


Figure 8: Location 6: 163 Kembla Street, Wollongong

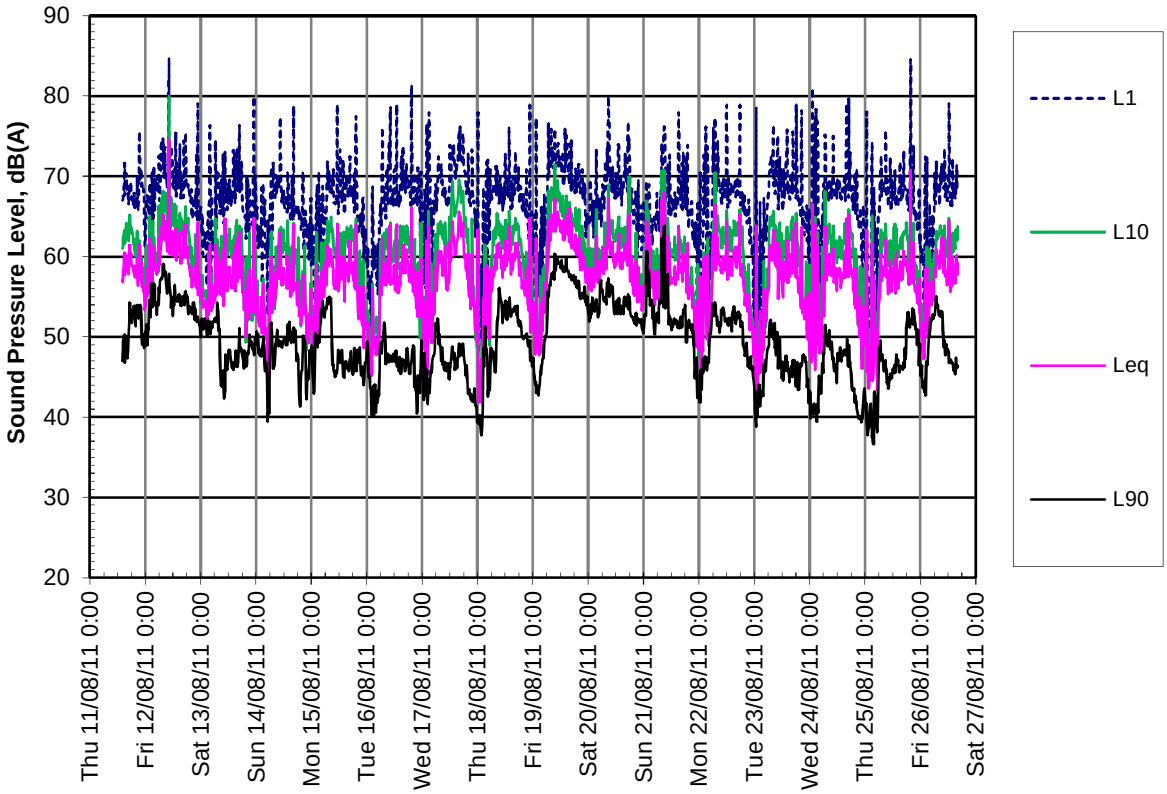


Figure 9: Location 7: 260 Gladstone St, Mount St Thomas

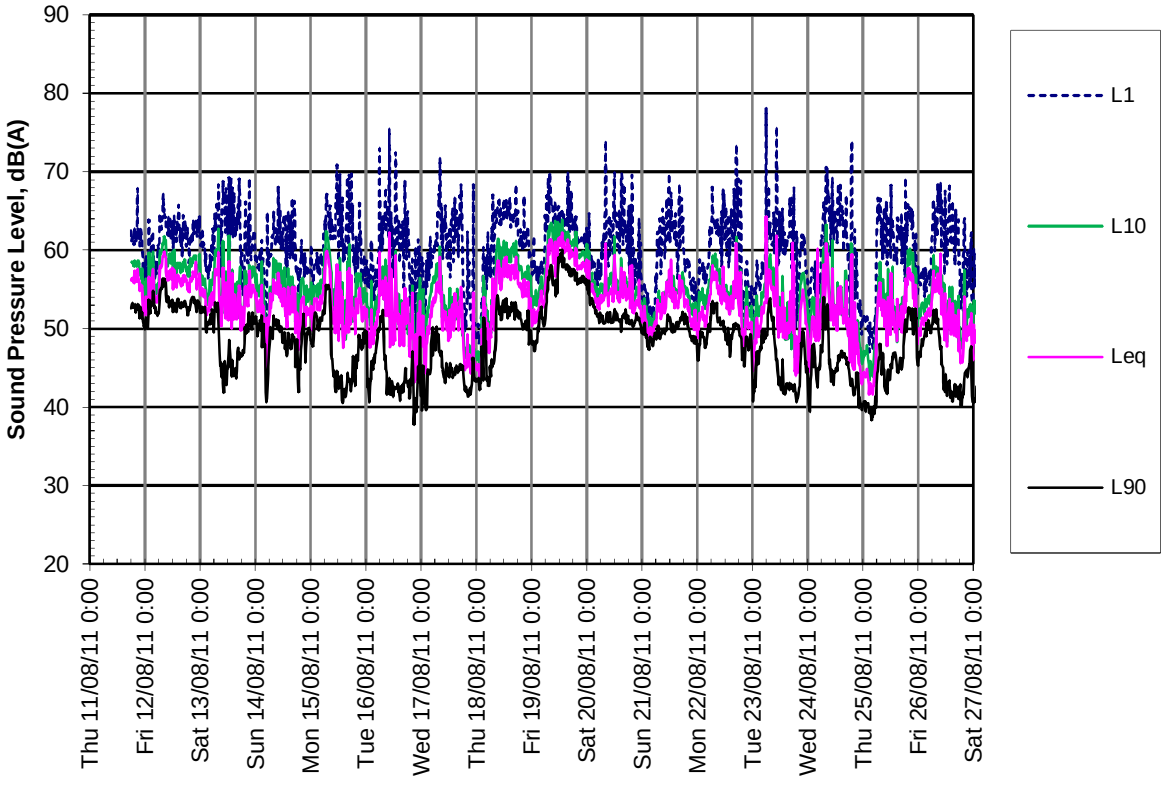


Figure 10: Location 8: 10 Swan St, Wollongong

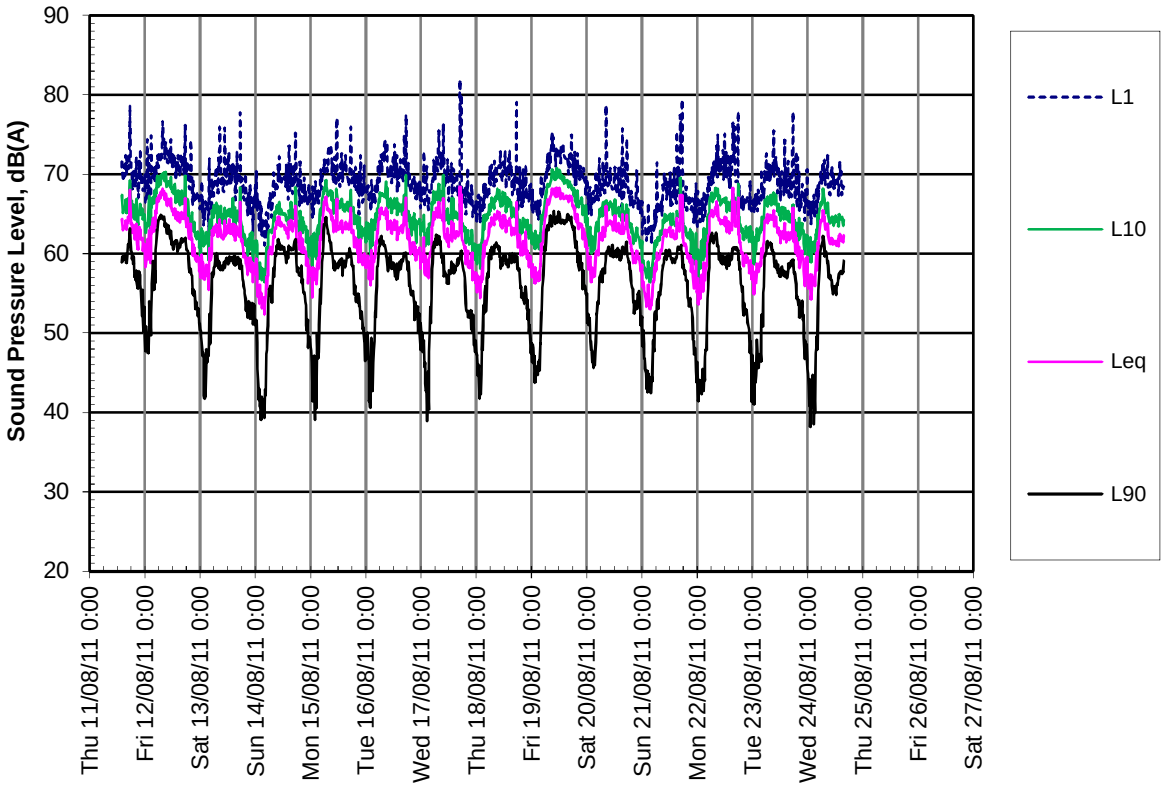


Figure 11: Location 9: 96 Dumphries Avenue, Mt Ousley

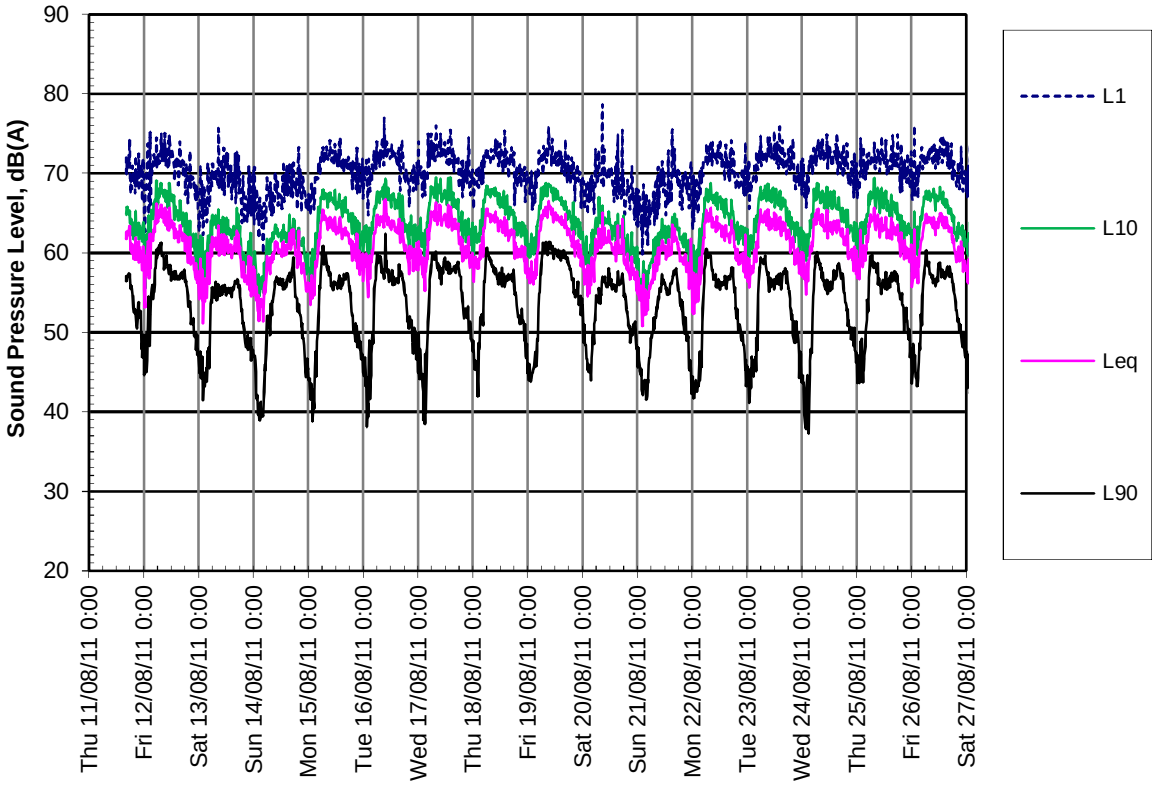


Figure 12: Location 10B: 4 Binda St, Keiraville

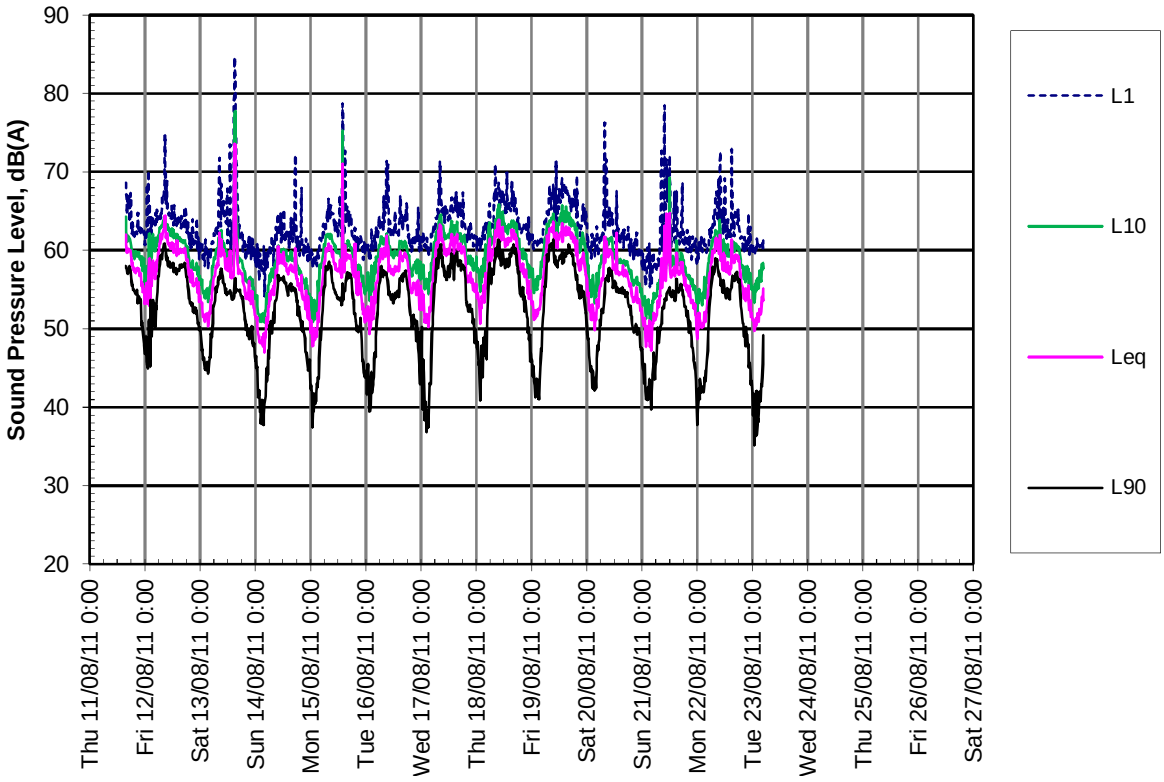


Figure 13: Location 11: 13 Phillips St, Mangerton

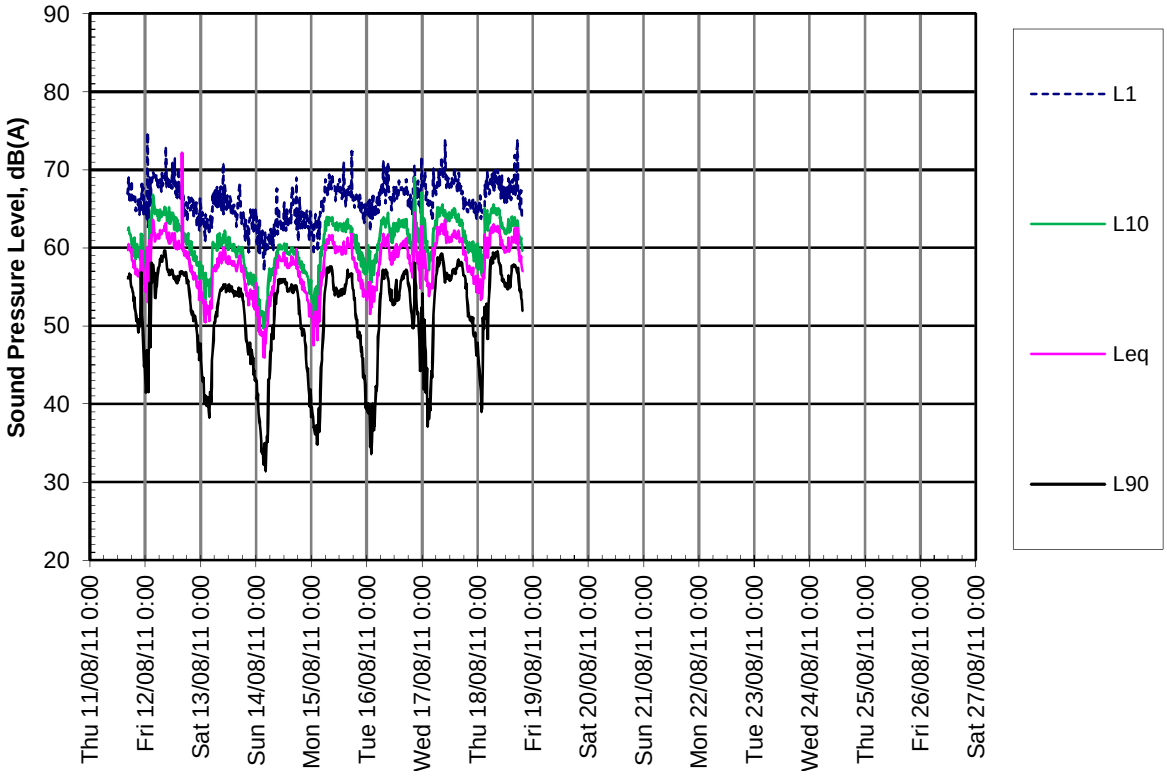


Figure 14: Location 12B: 30 Acacia Avenue, Gwynneville

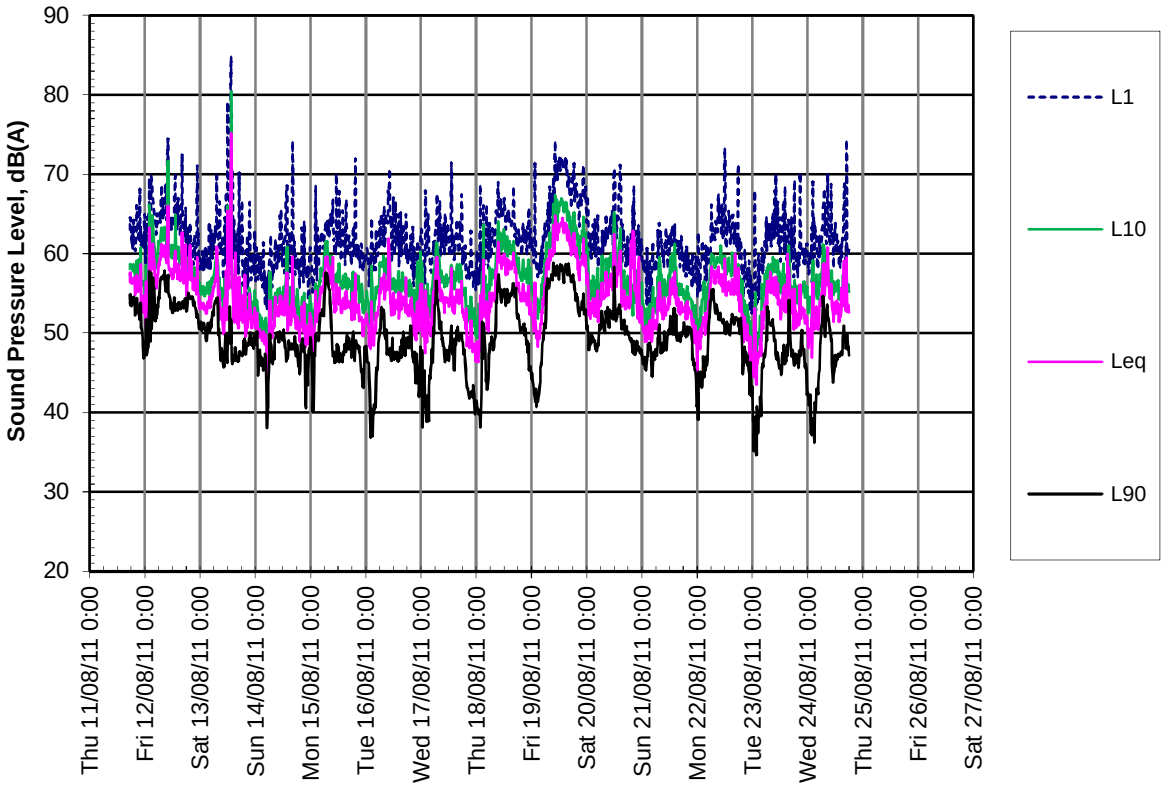


Figure 15: Location 13: 84 Taronga Avenue, Mount St Thomas

APPENDIX B

NOISE MONITORING DATA

(NOTE: Data filtered to exclude extraneous noise events and weather effected data)

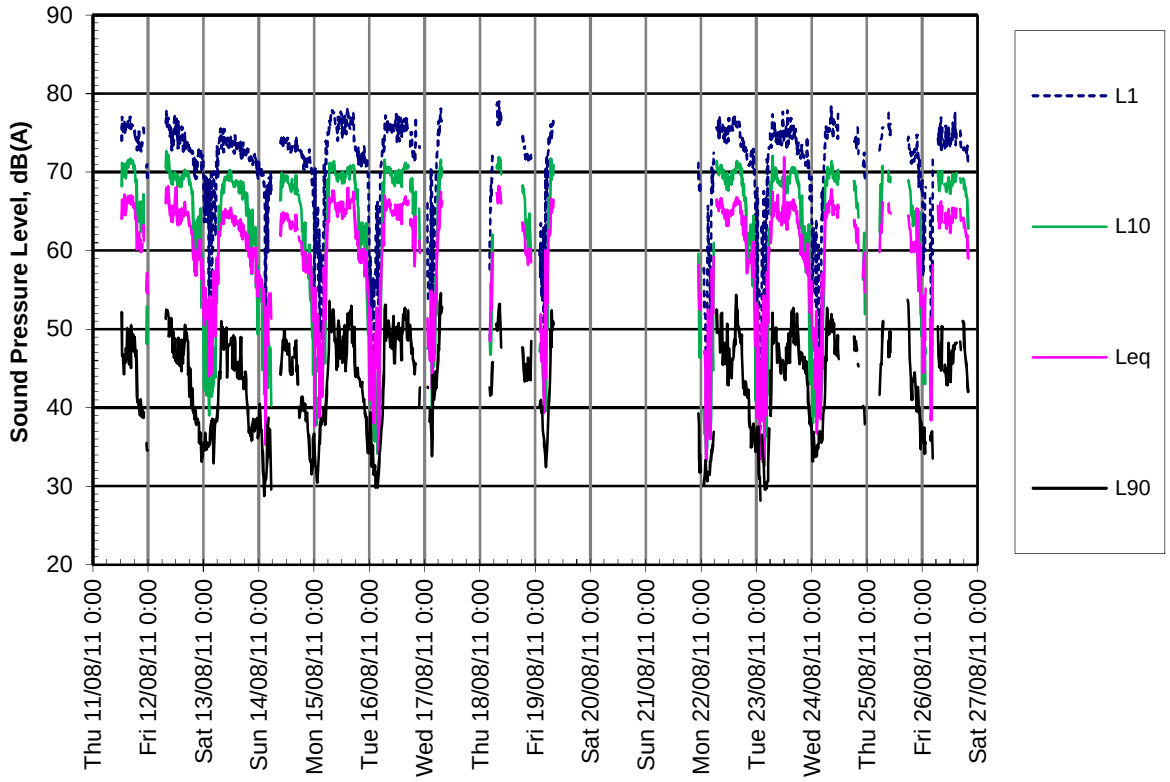


Figure 16: Location 1: 77 Bellambi Lane, Bellambi

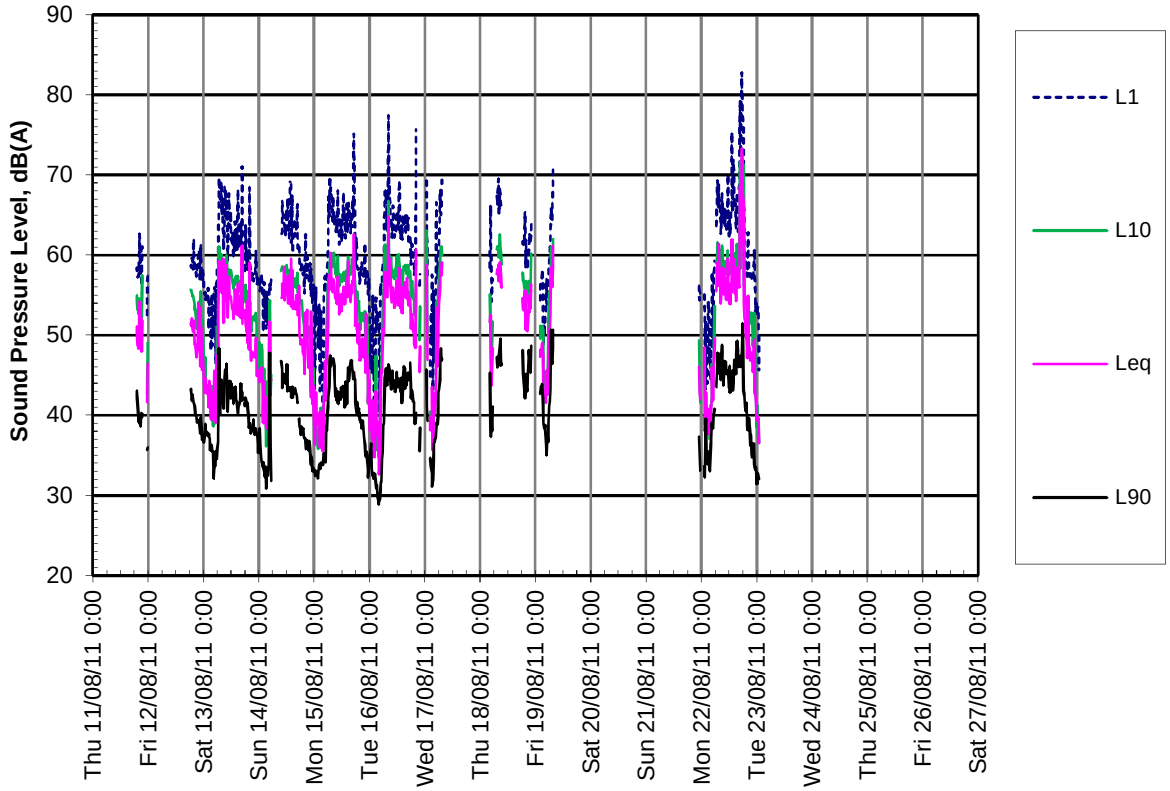


Figure 17: Location 2B: 83 Keerong Avenue, Russell Vale

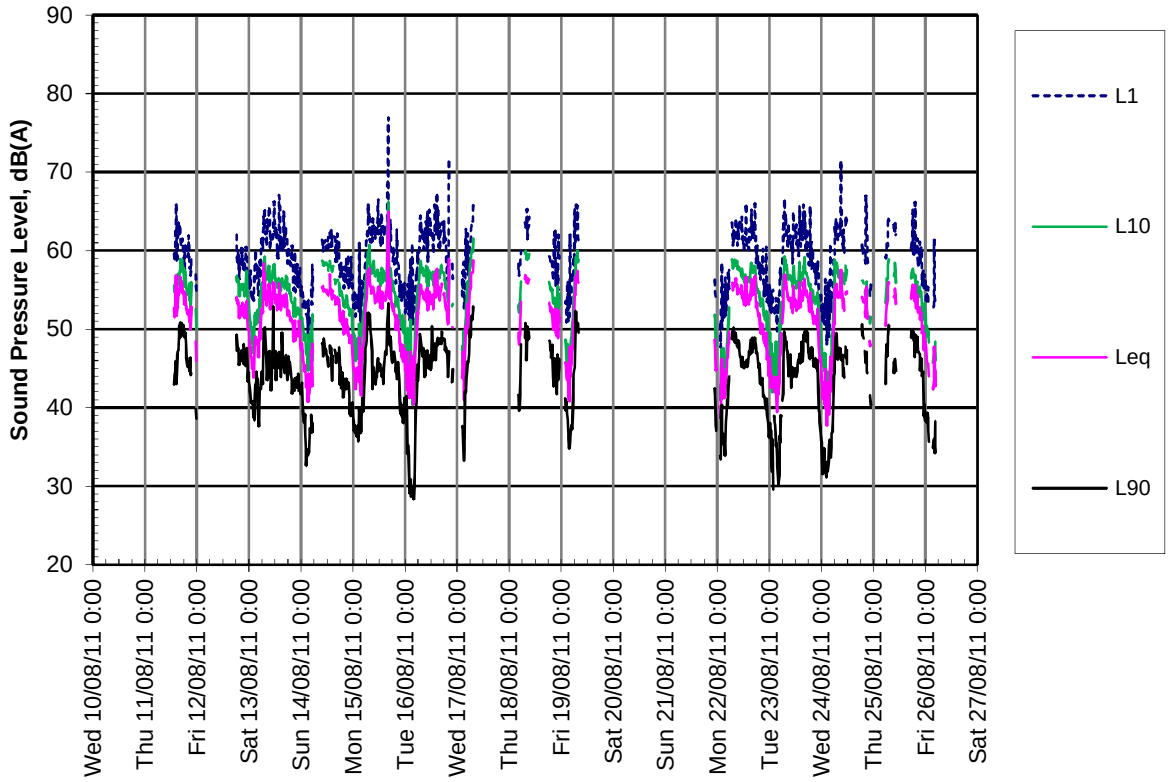


Figure 18: Location 3: 13 Eagar Street, Corrimal

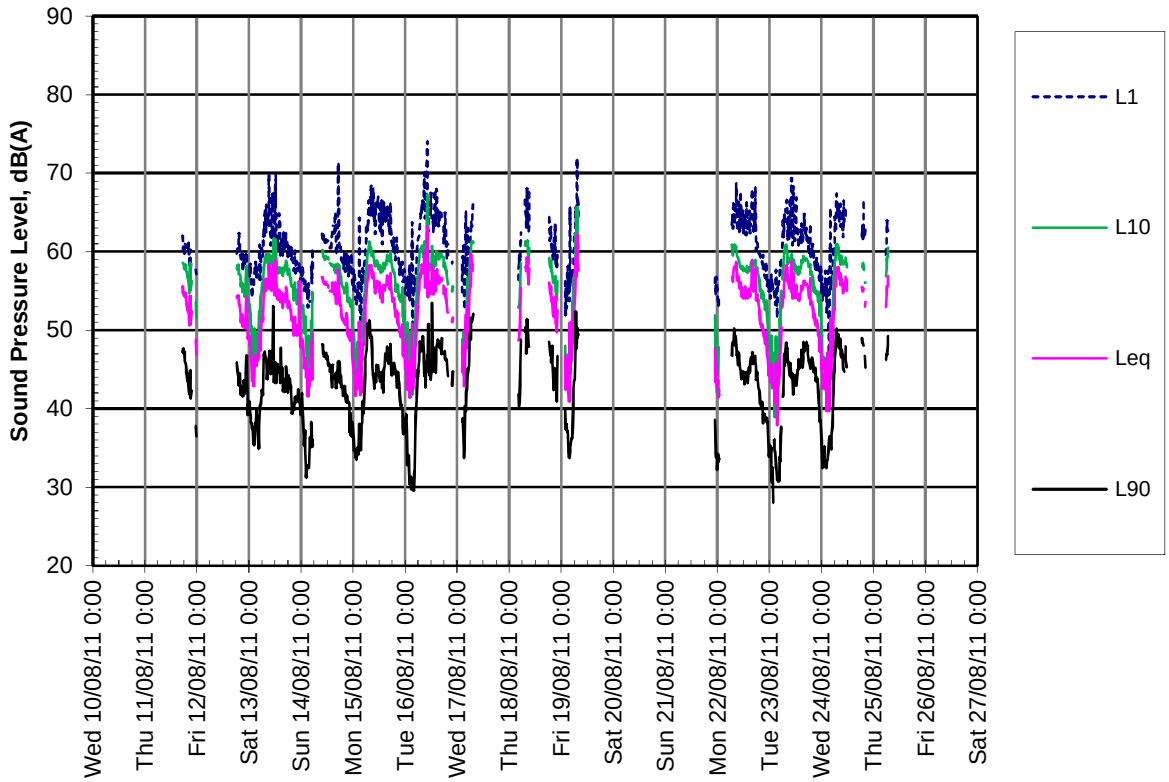


Figure 19: Location 4B: 6 Ivor Street, Bellambi

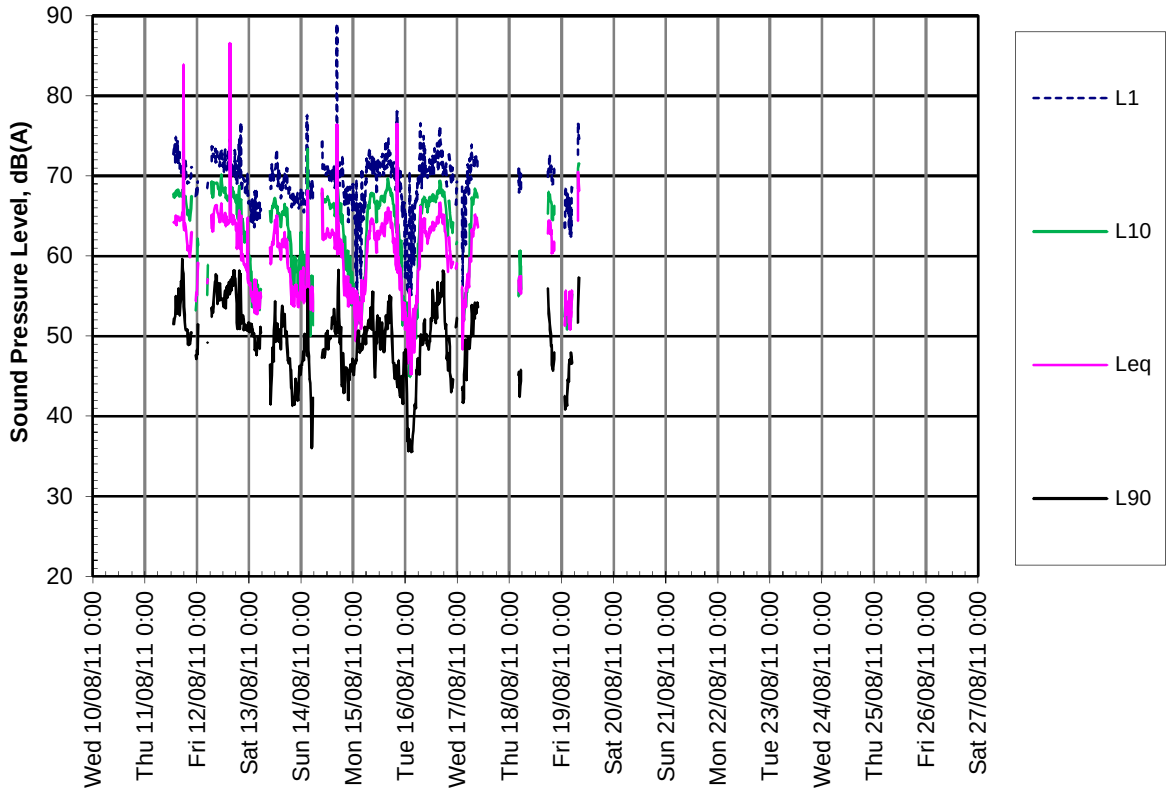


Figure 20: Location 5: 392 Keira Street, Wollongong

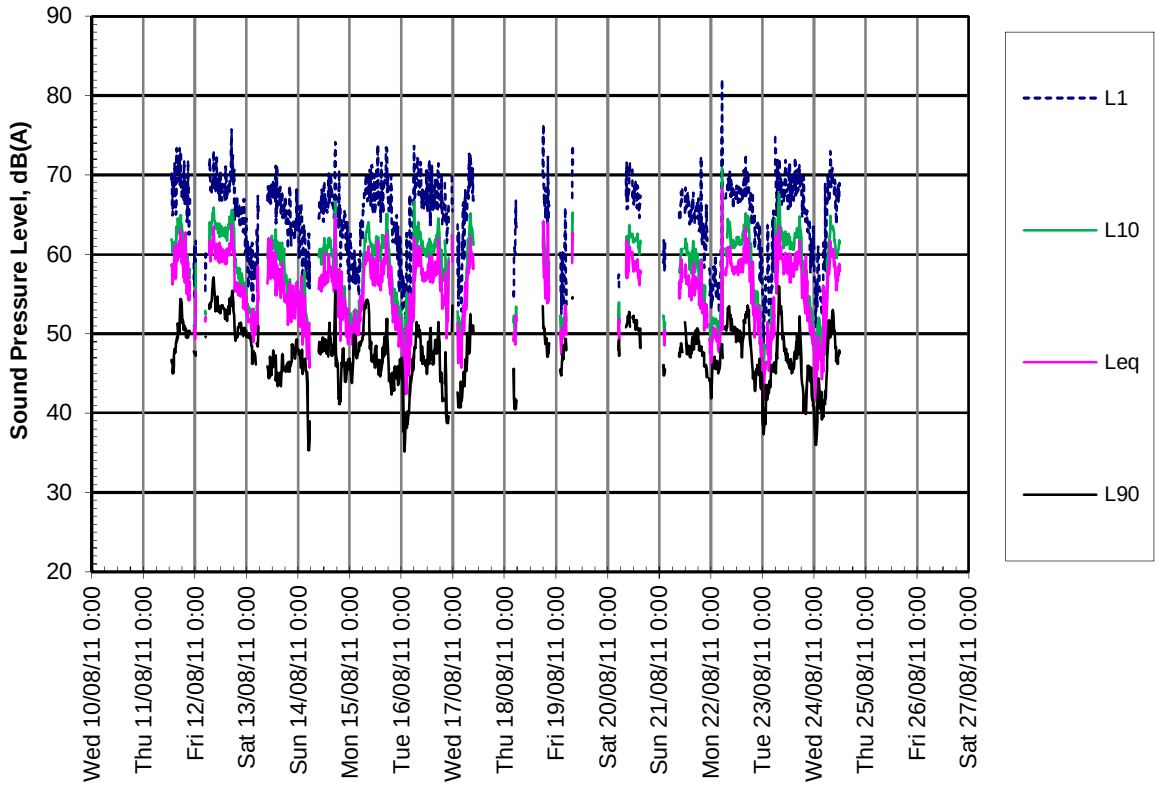


Figure 21: Location 6: 163 Kembla Street, Wollongong

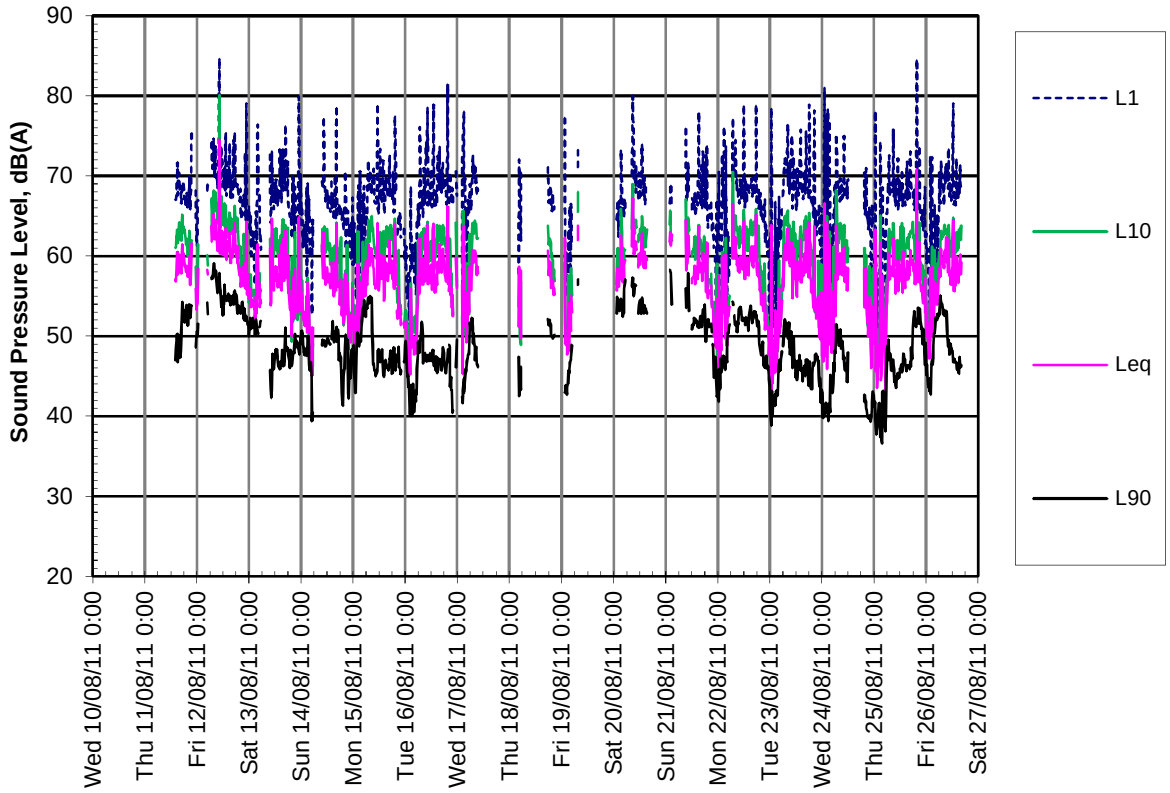


Figure 22: Location 7: 260 Gladstone St, Mount St Thomas

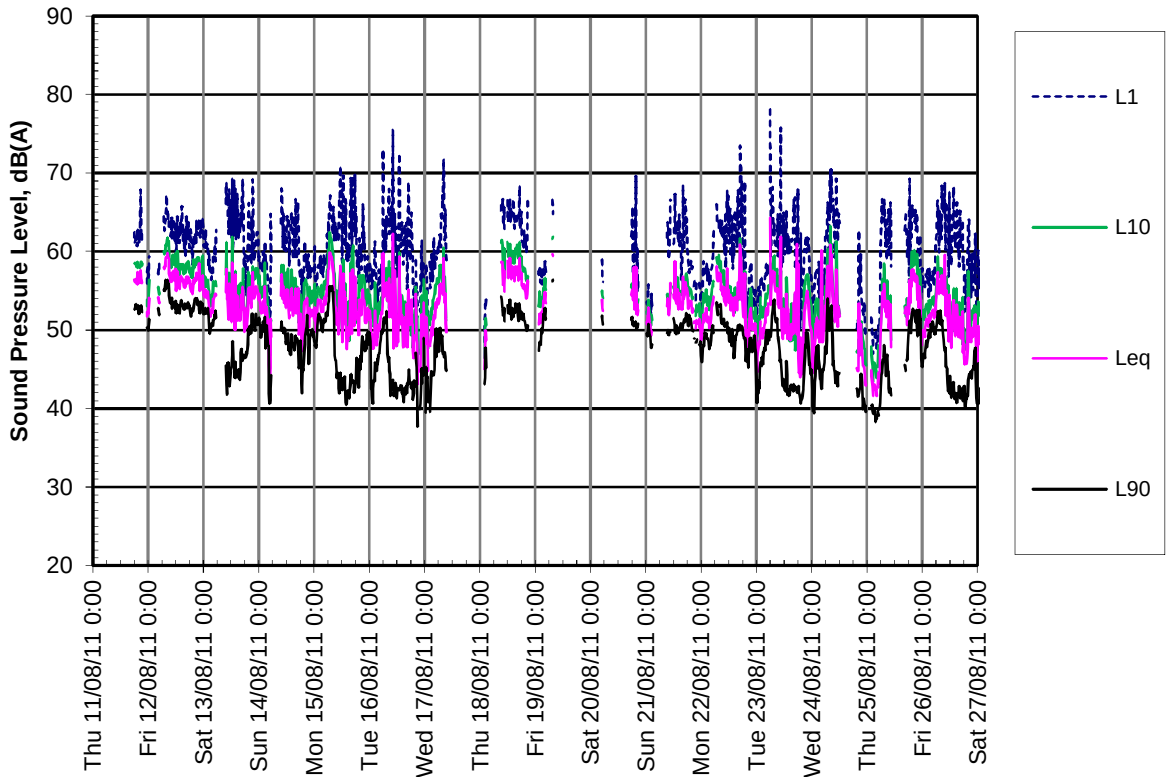


Figure 23: Location 8: 10 Swan St, Wollongong

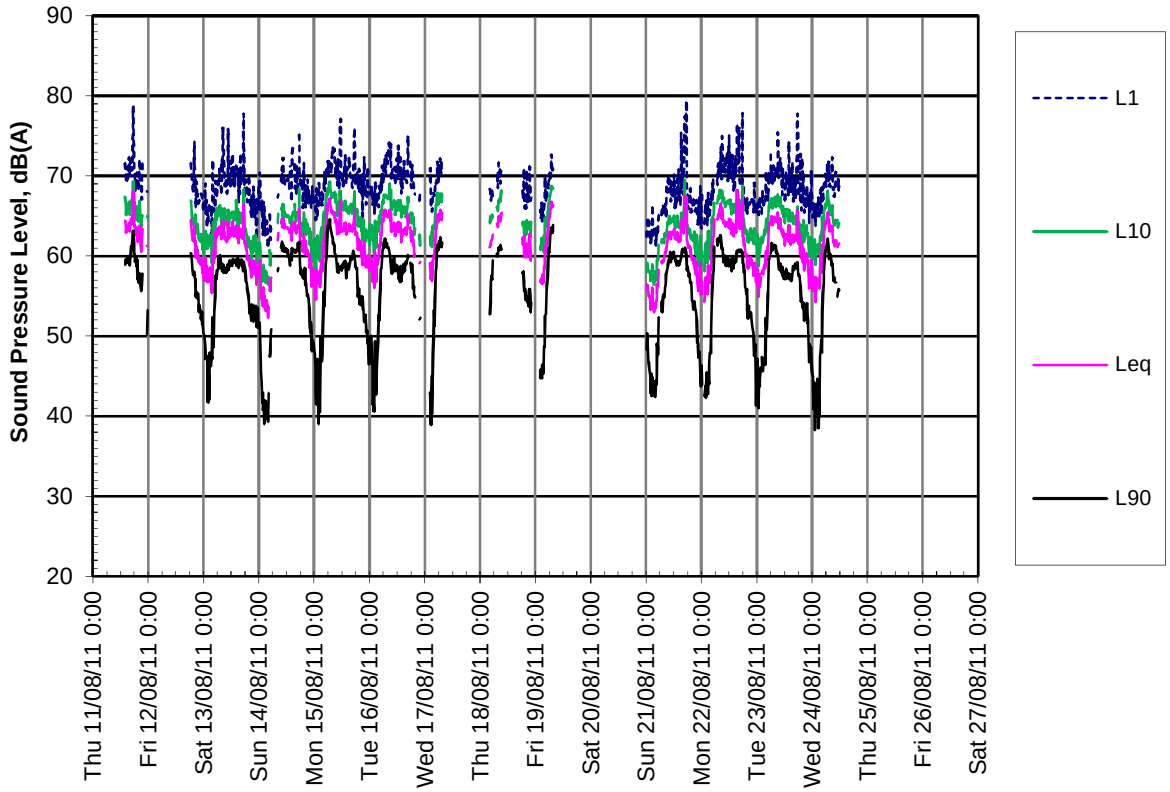


Figure 24: Location 9: 96 Dumphries Avenue, Mt Ousley

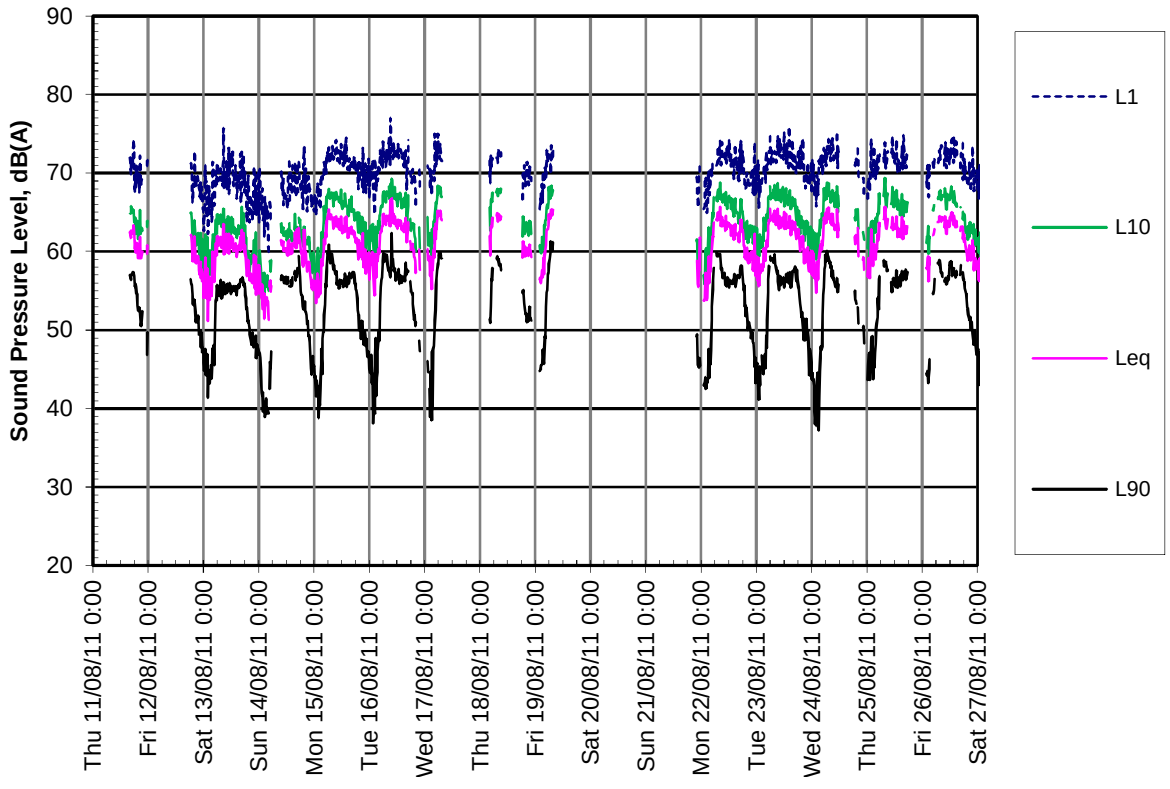


Figure 25: Location 10B: 4 Binda St, Keiraville

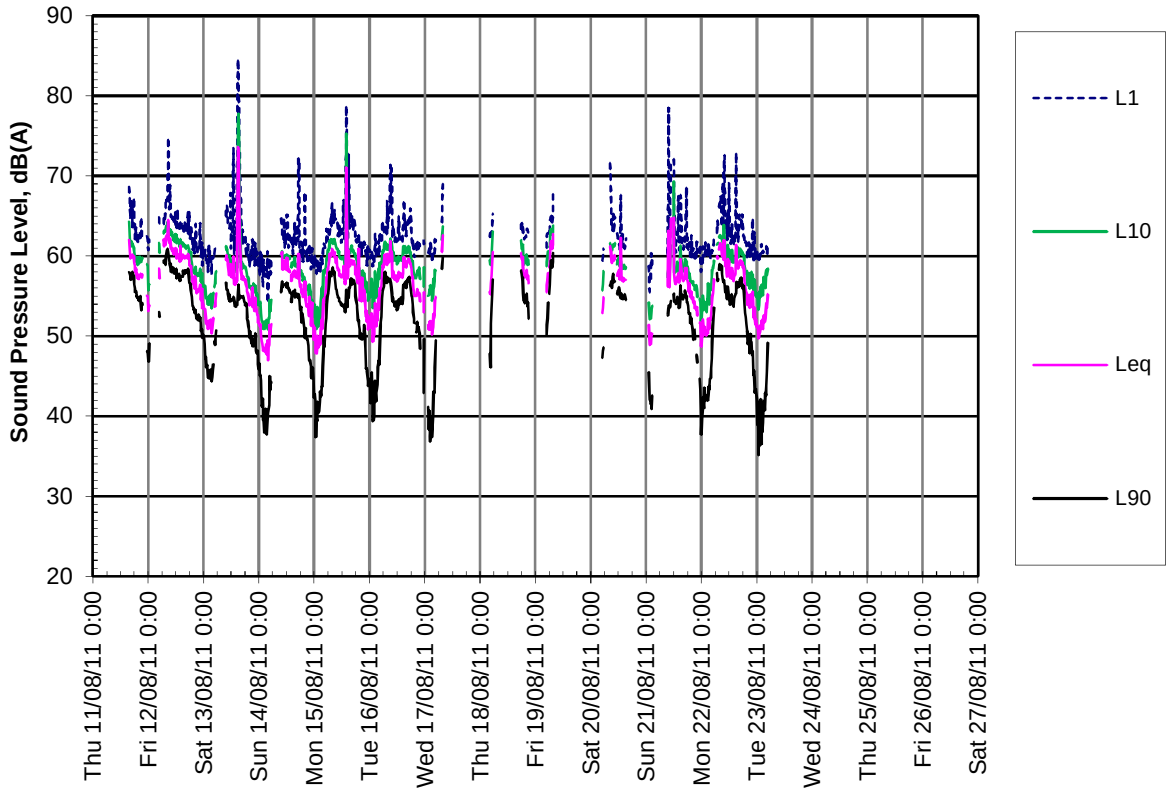


Figure 26: Location 11: 13 Phillips St, Mangerton

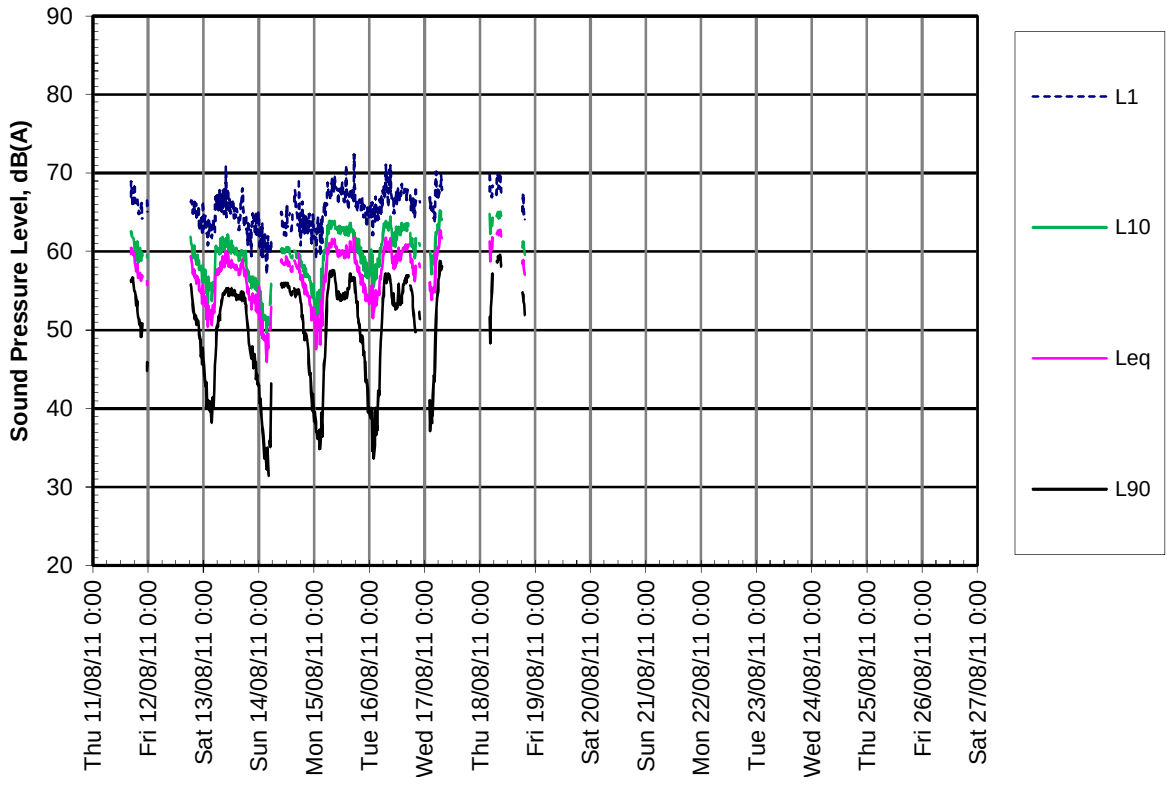


Figure 27: Location 12B: 30 Acacia Avenue, Gwynneville

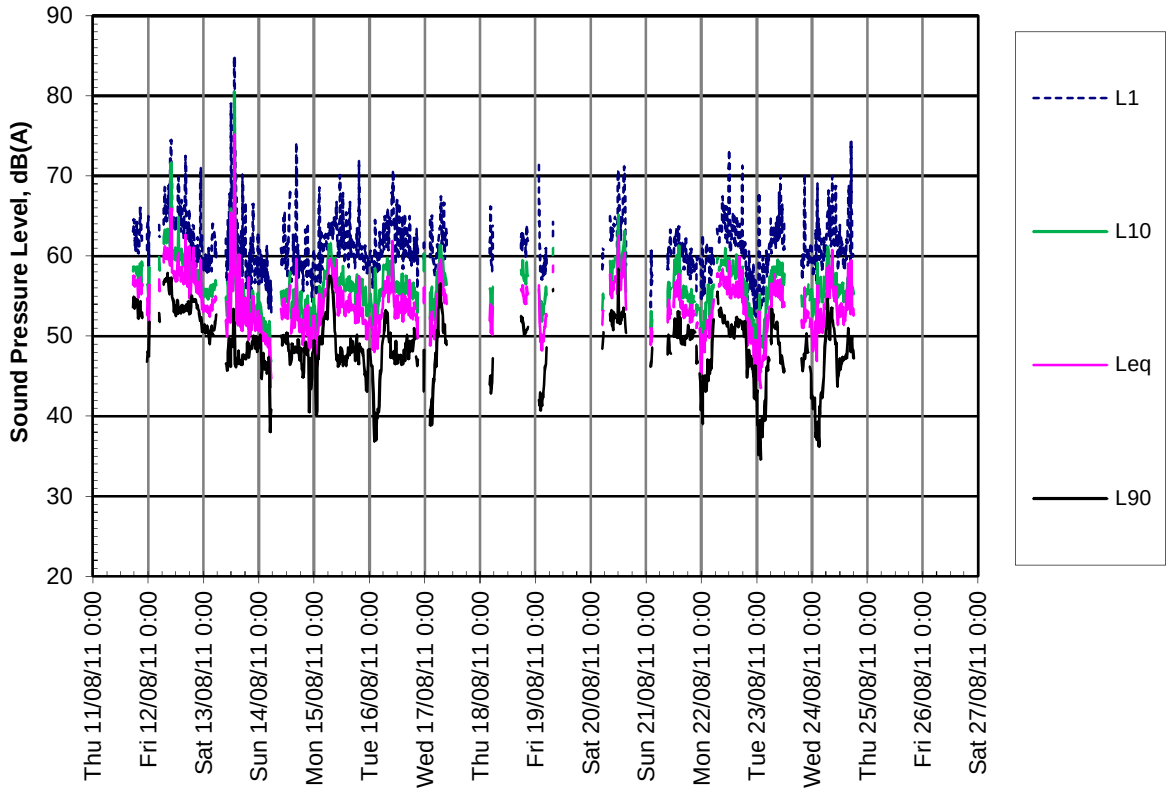


Figure 28: Location 13: 84 Taronga Avenue, Mount St Thomas

Annex E

E. Example Notification Letter to Residents

Our Ref: 111019-01/Letter 001

Contact: Alex Larance

4 August 2011

Cardno (NSWACT) Pty Ltd
ABN 95 001 145 035

Level 1
47 Burelli Street
Wollongong NSW 2500
Australia

PO Box 1285
Wollongong NSW 2500
Australia

Phone: 61 2 4228 4133
Fax: 61 2 4228 6811

www.cardno.com.au

The Resident
77 Bellambi Lane
BELLAMBI NSW 2518

RE: NOTIFICATION AND REQUEST FOR PERMISSION TO UNDERTAKE ACOUSTIC MONITORING OF ROAD CONDITIONS FROM YOUR PROPERTY

Dear Resident,

Cardno ITC (Acoustic Engineering) has been commissioned by the Port Kembla Coal Terminal (PKCT) to undertake a study of traffic noise in your area. This 2011 study will need to revisit residential locations previously assessed in a 2008 study to compare current conditions.

To assist in the study, we are proposing to undertake monitoring of traffic noise by installing an environmental noise logger on your property for a period of 2.5 to 3 weeks.

The following is a description of the noise logger:

- The noise logger consists of a small black case, with a 12V battery power supply, and a 1.5m microphone pole and 'ball' type wind shield.
- The noise logger is a non-recording device which only measures noise levels (in decibels) over time.
- The noise logger is chained to a secure location (eg pole or similar) and will be collected by our engineers at the end of the study.

During the study period, we are anticipating one of our engineers may be required to attend site change the 12 Volt batteries on the noise logger.

We are proposing to install our noise logger equipment on either Thursday 11th August 2011 or Friday 12th August 2011, but we will notify you in advance to arrange a suitable time. However with your approval, there is no specific requirement for you to be in attendance during installation or removal of the noise logger, provided there is suitable access available.

We kindly request your assistance and therefore seek your permission to allow the equipment installation in advance of the proposed study. Should you have any queries you can contact Alex Larance on (02) 4228 4133.

Yours faithfully

Alex Larance
Environmental Engineer
For **Cardno (NSW/ACT) Pty Ltd**

Annex F

F. Letter of Commitments from Brindles

BRINDLES PTY.LTD.

ACN: 065 293 067
ABN: 88 065 293 067

DEPOT ADDRESS: 10-12 INVESTIGATOR DRIVE UNANDERRA 2526
POSTAL ADDRESS: PO BOX 278 CORRIMAL NSW 2518
EMAIL: brindlestransport@bigpond.com

21-02-12

Re: Truck Noise along Bellambi Lane and Memorial Drive

Here at Brindles we are very conscience of noise issues affecting the local community in and around NRE No. 1 Colliery at Russel Vale. Since August 2011 we have implemented many improvements to reduce truck noise and its impact on the community, below is a list of these improvements;

- We have bought 7 new Mack prime movers into our fleet in the last 6 months. The decision to move to Mack trucks was based on their vehicles being built to European standards with a Euro 5 Emissions rating. This means the noise and effect on the environment produced by these trucks is much lower. Previously we have operated trucks designed in Australia and America – these trucks produce more noise than European designed prime movers as European Regulations are much stricter then the ADR Regulations in Australia.
- In addition to our new vehicles our entire fleet is only 4-5 years old. Meaning all of our prime movers are in accordance with current ADR regulations.
- We have also recently purchased 6 new trailers and upgraded our existing trailers with the latest suspension geometry and air bag suspension. These trailers are much quieter and more efficient to run.
- All of our trailers have also been fitted with double air boosters on tailgates to prevent tailgates popping and have been lined with rubber seals to reduce road noise caused by vibrations whilst empty.
- To help reduce noise and community impact Brindles implemented a 50 kmh self imposed speed limit along Bellambi Lane which is monitored daily by our company satellite tracking system to ensure that the trucks don't exceed the speed limit set by Brindles.
- After trialling an extensive amount of different brake linings we have now established which brands emit the least amount of brake noise and have upgraded these accordingly.
- We are now also running trucks with 19 metre B Doubles from the Russel Vale site. As these trailers are equipped to cart more coal than the single trailers, it reduces the amount of trips needed to and from the site. This in turn reduces the impact of vehicle noise in the community.
- Recent road work completed by the RTA on Bellambi Lane where the road was resurfaced has considerably reduced the noise of trucks along Bellambi Lane. The road is now completely resurfaced and all pot holes and patches have been repaired with the resurfacing.

Regards,

Scott Jones
Director
Brindles Pty Ltd

Annex G

G. Letter of Commitments from Bulktrans

Bulktrans
safety ▸ performance ▸ peace of mind

6th March 2012

Peter Green
General Manager
Port Kembla Coal Terminal

Dear Sir,

I am writing to you in support of the application for the increase of road haulage through put from 7.5Mtpa to 10Mtpa that Port Kembla Coal Terminal is seeking. Bulktrans are contracted by BHPBilliton Illawarra Coal to haul all of its export coal to the Port. Bulktrans have been the partner of BHPBIC for many years and we have continued to utilize new technology and advancement in the relation to types of vehicles and trailing equipment available to the road transport industry.

Apart from the advancements made by the manufacturers in constantly supplying a superior product year on year Bulktrans has implemented there own initiatives. Some of these initiatives are as follows:

- Our company owned prime mover fleet is replaced every 2 years to ensure that we are able to provide our customer and the community we operate in, the most up to date equipment available.
- All of our vehicles operate on air bag suspension which minimizes noise out put when traveling especially through built up areas, along with being friendlier to the road pavement,
- The majority of our fleet is comprised of B-double configured vehicles operating under higher mass limits (HML). By using this configuration we are able to use fewer vehicles to move the same task meaning there is less congestion on our road systems.
- The use of the engine brake system on the vehicle is limited throughout the route to certain areas, even though these systems due to technology advancement are quieter than they use to be in years gone by.
- We currently have a new Volvo F16 on trial, this vehicle is fitted with several safety systems which include lane change warning, this system notifies the operator if there is any vehicle on the left hand side of the prime mover once the indicator has been used. It also has a system that doesn't allow the vehicle to become to close to the vehicle in front, once it is set at a distance the vehicle will de-accelerate to maintain the distance.

To continue with our strategic plan to embrace advancement in the industry Bulktrans. applied for and have been successful in gaining a permit to operate an A-double on certain routes throughout the Illawarra. This particular type of vehicle brings a 15% increase in payload which will mean that there will be a reduction in truck numbers to move the same freight task. The vehicle is fitted with an EBS breaking system which ensures the stability of

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ABN 015 085 304 114
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the vehicle while traveling down the road. Anther item to be trialed on this vehicle is a seeing eye machine. This system is able to measure an operators fatigue by the length of blink in the eyes. If it falls outside certain parameters then an audible alarm is sounded and an email can be sent to the supervisor warning them of a potential issue.

Bulktrans want to ensure that all vehicles operating for our company are compliant in relation to road safety. We have been carrying out random checks on not only our company fleet but also our subcontractors on what we call a registration check. This was carried out as a visual check. We are now in the process of purchasing a mobile truckalyser which will enable us to carry out a very thorough inspection which will include break testing, and also check to see if there is any movement in the steering/ suspension area of the prime mover/ trailer. This will provide a print out of the check and also allow a data base to be established on each vehicle.

Bulktrans has built up a lot of creditability with its clients due to the fact that we continually look to trial new initiatives that are available within the transport sector. Not only do they benefit our clients they also benefit the communities that our vehicles operate in. If you require any further information or have any questions please don't hesitate to call.

Regards

Robert Coulthard
Divisional Manager - Bulktrans

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Annex H

H. Map of Sensitive Receivers

ID	Truck Route	Measurement Location	Type	Year Surveyed
1	*Bellambi Lane*	77 Bellambi Lane, Bellambi (front yard)	Road Haulage	2008 and 2011
2A	*Bellambi Lane*	91 Keerong Avenue, Russell Vale (rear yard)	Road Haulage	2008
2B	*Bellambi Lane*	87 Keerong Avenue, Russell Vale	Road Haulage	2011
3	*Northern Distributor*	13 Eagar Street, Corrimal (rear yard)	Road Haulage	2008 and 2011
4A	*Northern Distributor*	7 Albert Street, Corrimal (rear yard)	Road Haulage	2008
4B	*Northern Distributor*	6 Ivor Street, Bellambi	Road Haulage	2011
5	*Spring Hill Road*	392 Keira Street, Wollongong (front yard)	On-Site Activity/Road Haulage	2008 and 2011
6	*Spring Hill Road*	163 Kembla Street, Wollongong (front yard - Swan Street)	On-Site Activity/Road Haulage	2008 and 2011
7	*Spring Hill Road*	260 Gladstone Street, Mount St Thomas	Road Haulage	2008 and 2011
8	*Spring Hill Road*	10 Swan St, Wollongong	On-Site Activity/Road Haulage	2008 and 2011
9	*Mount Ousley Road*	96 Dumfries Avenue, Mt Ousley	Road Haulage	2008 and 2011
10A	*Mount Ousley Road*	6 Binda Street, Keiraville	Road Haulage	2008
10B	*Mount Ousley Road*	4 Binda Street, Keiraville	Road Haulage	2011
11	*F6*	13 Phillips Crescent, Mangerton	Road Haulage	2008 and 2011
12A	*F6*	36 Acacia Avenue, Gwynneville	Road Haulage	2008
12B	*F6*	30 Acacia Avenue, Gwynneville	Road Haulage	2011
13	*F6*	84 Taronga Avenue, Mount St Thomas	Road Haulage	2008 and 2011

RUSSELL VALE
CORRIMAL
EAST CORRIMA
TOWRADGI
FERNHILL
NORTHERN DISTRIBUTOR
FAIRY MEADOW
CORDEAUX
MOUNT OUSLEY
MOUNT OUSLEY ROAD
MOUNT KEIRA
KEIRAVILLE
SOUTHERN FREEWAY
NORTH WOLLONGONG
GWYNNEVILLE
WEST WOLLONGONG
WOLLONGONG
PRINCES HIGHWAY
MANGERTON
CONISTON
MOUNT SAINT THOMAS
MASTERS ROAD
SPRINGHILL ROAD
SPRING HILL
PORT KEMBLA
CORRIMAL STREET

Legend

- Major Roads (LPI)
- Distributor Road (LPI)
- Local Road (LPI)
- Route from Mine
- Built Up Areas (LPI)
- Buffer (500m Radius)
- Parkland (ABS)

Noise Monitoring Locations

- On-Site Truck Activity (Ongoing Compliance)
- Road Haulage (10 Mtpa Trial)

Facilities (UBD)

- Ambulance Station
- Boat Ramps
- Bowling Club
- Caravan Park
- Cemetery
- Place of Worship
- Cinemas
- Fire Station
- Golf Club
- Hospital
- Hotel
- Library
- Lookout
- Police Station
- Private School
- Public School
- Retirement Home
- Sporting Complex
- Swimming Pools

Sensitive Receivers

10 MTPA TRIAL STUDY

PKCT
PORT KEMBLA COAL TERMINAL

1:30,000 Scale at A3

Metres
0 500 1000 1500 2000

N W E S

Cardno

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2012-09-06
Coordinate System: GDA 1994 MGA Zone 56
Project: 111019-01
Map: G1005_SensitiveReceivers.mxd 01

Annex I

I. Supplementary Review of Traffic Studies (2013)

Review of Traffic Volumes

Port Kembla Coal Terminal 10 Mtpa

FR111019

Prepared for
Port Kembla Coal Terminal

April 2013

Cardno
Shaping the Future

Document Information

Prepared for	Port Kembla Coal Terminal
Project Name	Port Kembla Coal Terminal 10 Mtpa
Job Reference	FR111019
Date	April 2013

Document Control

Version	Date	Author	Author Initials	Reviewer	Reviewer Initials
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Table of Contents

Appendices

Tables

1 Introduction

A number of traffic studies were prepared between 2008 and 2011 to support a series of approvals relating to the increase of coal inputs and deliveries by public road to Port Kembla Coal Terminal (PKCT). Of particular significance are the following:

> Traffic Study to support the Environmental Assessment for the PKCT 10Mtpa (June 2008). This developed a forecast of additional traffic required for PKCT to process up to 10Mt of coal per annum (10Mtpa).

> Gujarat NRE Traffic Impact Assessment (TIA) and Addendum (2010). This reviewed the impact of increased production at this mine from 1Mtpa to 3Mtpa over a period of 10 years.

> PKCT Monitoring Trial Assessment (Dec 2011). This was undertaken to determine the actual number of trucks and traffic required to process 6.9Mtpa through PKCT.

Since the Monitoring Trial Assessment was undertaken in 2011, additional traffic forecasts have been developed to predict 'typical' scenarios for delivering 6.9Mtpa, 7.5Mtpa and 10Mtpa of coal by public road to PKCT.

This review identifies the traffic volumes and assumptions used for each of these studies, along with forecasts for production at NRE Gujarat to 3Mtpa, and for delivery by public road to PKCT of 10Mtpa. Additional traffic forecasts have been provided to determine the estimated coal trucks and total traffic volumes to deliver 6.9Mpta, 7.5Mtpa and 10Mtpa of coal to PKCT.

The review includes a comparison of these traffic volumes, and provides some explanation for why the volumes are different between the studies.

2 10 Mtpa Estimates for the EA in 2008 (EA2008)

This study formed part of the EA to assess proposed changes to operations to a 24 hour 7 day per week (24/7) delivery of coal via public road and increased delivery of coal to a maximum of 10Mtpa over a ten year period. The traffic report included an overview of the existing situation, a review of the trial of 24/7 operations, and an assessment of increased road receivals and change of operating hours.

2.1 Assumptions

Background traffic flow was predicted for the years 2009, 2013, and 2018, and was based on the following assumptions developed from historical traffic growth and data available at the time:

> Annual average growth rates for Mount Ousley Road and the Southern Freeway were assumed to be 2.0% per annum for light vehicle traffic and 2.7% per annum for heavy vehicle traffic.

> Annual average growth rate for Northern Distributor was assumed to be 5.0% per annum for all traffic. It should be noted that this is based on modelling data provided by Wilkinson Murray which showed significant anomalies in the directional split of traffic both on Bellambi Lane and the Northern Distributor south of Bellambi Lane.

> Annual average growth rate for Bellambi Lane was assumed to be 1% per annum for all traffic (as advised by the RTA), with a one-off reduction in volumes assumed between 2008-2009 as a result of the opening of the Northern Distributor extension.

> Annual average growth rate for Appin Road for light vehicles was assumed to be 2.1% per annum.

> Annual average growth rates for Masters Road and Springhill Road for light vehicles were assumed to be 0.0% per annum.

> Additional traffic generated from the proposed General Cargo Handling Facility.

A trial of 24/7 delivery of coal by public road to PKCT was undertaken over a 6 week period in March and April 2008.

2.2 Traffic Volumes

The traffic volumes used in this assessment were based on background traffic volumes (between 2000-2008) at the following locations:

> Appin Road, North of Princes Highway

> Mount Ousley Road, Mount Ousley between Princes Highway and New Mount Pleasant Road, north of F6 freeway

> Southern Freeway F6, West Wollongong north of Princes Hwy interchange (N) and under Reserve Rd bridge (S)

> Southern Freeway F6, West Wollongong south of Princess Hwy near footbridge

> Masters Road, Mt St. Thomas between The Avenue and Springhill Rd

> Springhill Road, Coniston between Masters Rd and Corrimal St

> Bellambi Lane, Bellambi between Princes Highway and Gladstone Street

> Northern Distributor, Wollongong between Railway Street and Bellambi Lane

2.3 Delivery Scenarios

This report predicted the number of trucks for future road receivals, based on the receival outputs of 4Mpta, 5Mtpa, and 10Mtpa. These outputs were considered with different hours of delivery operation, and resulted in 11 different options for future coal truck deliveries. These options were then applied to future years (2008,

2009, 2013 and 2018) to determine a number of scenarios. A total of 25 scenarios were identified and evaluated.

*For the purposes of this comparative assessment, scenario #18 has been selected from the EA2008 study (10Mtpa @ 24/7 by 2013) to make comparisons for traffic volumes required for a delivery of 10Mtpa over the 24/7 operating period***.**

These traffic flows are indicated in Table 2-1.

Table 2-1 2008EA traffic flows predicted to deliver 10Mtpa in 2013

EA2008 predicted ADT at 10 Mtpa for year 2013					
Road	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs
Bellambi Lane	6,622	1,157	764	12%	66%
Northern Distributor	30,219	2,780	764	3%	27%
Mount Ousley	55,167	7,545	781	1%	10%
F6 (Gwynneville)	91,879	10,316	1,544	2%	15%
F6 (Mangerton)	92,241	10,196	1,544	2%	15%
Masters Road	28,478	5,010	1,549	5%	31%
Springhill Road	18,188	2,269	1,549	9%	68%

3 Gujarat NRE Traffic Impact Assessment (2010)

This Traffic Impact Assessment (TIA) was undertaken to assess proposed changes to existing operations at Gujarat NRE (GNRE) No. 1 Colliery to include the following:

> Changing truck delivery hours from 11 hours on Monday-Saturday (11/6) to 15 hours on Monday to Friday, and ten hours on Saturday and Sunday (15/5-10/2). This will allow deliveries between 6pm and 10pm on weekday evenings and to allow deliveries on Sundays & Public Holidays between 8am and 6pm.

> Increasing annual NRE No. 1 Mine output from 1Mtpa to 3Mtpa.

The NRE No. 1 Mine output options considered in this study include 0, 1 and 3Mtpa of coal delivered by road to PKCT, and the 3Mtpa option was considered with an average weekly output of 60,000 tonnes per week, and a 'peak' weekly output of 80,000 tonnes per week.

3.1 Traffic Volumes

Traffic counts were undertaken in 2007 and 2008 and forecasts prepared for 2009 and 2019. The future coal truck traffic on public roads at the following count locations was estimated for each option:

> Bellambi Lane, Bellambi between Princes Highway and Gladstone Street.

> Northern Distributor, Wollongong between Railway Street and Bellambi Lane.

> Southern Freeway F6, West Wollongong north of Princes Hwy interchange (N) and under Reserve Rd bridge (S).

> Southern Freeway F6, West Wollongong south of Princes Hwy near footbridge.

> Masters Road, Mt St. Thomas between The Avenue and Springhill Rd.

> Springhill Road, Coniston between Masters Rd and Corrimal St.

3.2 Delivery Scenarios

The future scenarios developed to determine truck movements included the following:

> Four (4) NRE output options:
  - '0Mtpa' - Background traffic only.
  - '1Mtpa' - Current deliveries in 2009.
  - '3Mtpa' - Estimated maximum annual deliveries with average weekly deliveries.
  - '3Mtpa' - Estimated maximum annual deliveries with peak weekly deliveries.

> Two (2) options for truck delivery hours:
  - The current situation - NRE delivers during 11 hours a day from Monday-Saturday (11/6)
  - The proposal - NRE delivers for an additional 4 hours per day on Monday-Friday (15/5) and 10 hours per day on Saturday and Sunday (10/2).

> Two (2) different years of background traffic:
  - 2009 - base year to consider opening of the Northern Distributor Extension (NDE).
  - 2019 - 10 year forecast.

For the purposes of this review, the traffic volumes considered include the '3Mtpa' output with average weekly deliveries, over the extended hours of operation, forecast for 2019.

These forecast volumes are included in Table 3-1.

Table 3-1 Traffic volumes forecast for 2019 from 2010 NRE Gujarat TIA

2010 Gujarat NRE TIA (ADT) for 2019					
Road	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs
Bellambi Lane	6,207	854	460	7%	54%
Northern Distributor	34,384	2,762	460	1%	17%
F6 (Gwynneville)	91,860	9,633	1,119	1%	12%
F6 (Mangerton)	96,193	9,813	1,119	1%	11%
Masters Road	25,500	4,068	1,118	4%	27%
Springhill Road	16,941	2,156	1,457	9%	68%

Changing the truck delivery hours alone would not change the annual or weekly amount of coal delivered, but it will distribute the increase in truck movement over a longer period of time.

In addition to the traffic volumes assessment, other findings of this study indicated the following for 2019:

> Mid-Block Carriageway Performance - all sections of the haulage routes were shown to perform well during the AM and PM peak periods with the exception of sections of the Southern Freeway which are approaching or at capacity (particularly between the Princes Highway and Masters Road). However, in those areas where capacity is of most concern, the coal trucks represent only a small proportion of the peak hour directional traffic volumes.

> Intersection Performance - key intersections along Bellambi Land and Springhill Road were evaluated and all intersections were shown to operate satisfactorily under the current configuration.

> Crash Review - a review of the 2002 to 2007 RTA road crash data history for the road haulage routes was undertaken. There were 430 recorded crashes, with 4.9% of all crashes involving articulated vehicles. None of the crashes involving rigid or articulated vehicles resulted in a fatality.

> Route safety review - Road safety audits of the existing haulage routes were undertaken to identify any safety concerns, particularly those affecting coal haulage vehicles. There were no unsafe conditions identified along Bellambi Lane, Northern Distributor, Southern Freeway, Masters Road, Springhill Road and Port Kembla Road.

Outcomes of this road traffic analysis did not identify any significant issues from a road traffic performance perspective. Although some capacity issues in the system are expected, these are not exacerbated by the increase in coal trucks. The proposed level of heavy vehicle increases is not anticipated to have an impact on the safety of the road network.

3.3 Opening of the Northern Distributor

The Northern Distributor opened in December 2009, and additional traffic counts were undertaken at Bellambi Lane and the Northern Distributor in September 2010 to more accurately forecast future volumes based on actual traffic operation.

The comparison between the original assessment and the observed performance indicated that the forecasts for the 2019 design years were generally consistent. The forecasts were updated to 2010 based on the same growth rates used previously to enable comparison with the actual traffic counts. While the volumes were similar, the traffic counts on the Northern Distributor were slightly higher than the forecasts, and the volumes on Bellambi Lane were slightly lower than forecasts. This indicated that more traffic was displaced from Bellambi Lane onto the Northern Distributor than was initially forecast prior to the opening of the Northern Distributor extension.

The revised TIA considered the mid-block carriageway performance, and intersection performance of Bellambi Lane/ Princes Highway and Bellambi Lane/ Northern Distributor. The mid-block performance and both intersections were shown to operate satisfactorily under the new configuration.

4 10 Mtpa Monitoring Trial in 2011

A trial was undertaken to determine the actual traffic movements required to deliver 6.9Mtpa of coal to PKCT, to compare these volumes to the estimates used for the EA submission. While PKCT has approval to receive 7.5Mtpa by road, no traffic assessment was undertaken during this trial for a 7.5Mtpa or 10Mtpa receival scenario.

Between the EA2008 and this trial, changes to the road network included:

> The Northern Distributor extension opened north of Bellambi Lane in December 2009, which significantly reduced the number of vehicles on Bellambi Lane.

> Between 2008 and 2011, PKCT received approval for coal trucks to use Springhill Road between Masters Road and Tom Thumb Road for deliveries 24 hours a day, 7 days a week, up to a limit of 7.5 Mtpa.

4.1 Traffic Counts for 6.9Mtpa Trial

The trial recorded traffic movements in one hour increments over a two week period from 15-29 August 2011, and were collected at the following locations:

> Appin Road, north of Southern Freeway.

> Mount Ousley Road, 1km south of New Mount Pleasant Road.

> Southern Freeway, between Mount Keira Road and Gipps Road.

> Southern Freeway, 400 metres north of The Avenue.

> Masters Road, 100 meters west of Springhill Road.

> Springhill Road, 100 metres west of Bridge Street.

> Bellambi Lane, 200 metres west of Northern Distributor.

> Northern Distributor, between Flinders Street Ramps and Southern Freeway Ramps.

4.1.1 Coal Truck Volumes and Tonnage

In addition to these traffic counts, the number of coal truck movements during the trial was calculated by considering the total tonnages of coal delivered by each mine, based on the weighbridge receipts, and then dividing these tonnages by the average truck capacities used by each mining company.

The coal truck volumes from the trial period have been updated since the trial was undertaken as the average tonnage of coal trucks used during the trial was only provided after the submission of the *2011 PKCT Monitoring Trial Assessment Traffic Report*. At the time of the trial, the average truck capacity was assumed to be 36.5 tonnes per truck for the BHP collieries, and 32.2 tonnes per truck for the NRE Gujarat colliery. Since the trial traffic report was submitted, PKCT advised that the actual average truck sizes used for the trial period were 39 tonnes per truck from the BHP collieries, and 32.2 tonnes per truck from the NRE Gujarat colliery.

The traffic volumes for the trial period have been revised to reflect this and are indicated in Table 4-1.

Table 4-1 2011 Trial traffic volumes

2011 measured at 6.9 Mtpa *14 day avg of ADT					
Road	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs
Bellambi Lane	5,221	377	154	3%	41%
Northern Distributor	50,294	2,881	154	0%	5%
Mount Ousley	44,656	3,875	852	2%	22%
F6 (Gwynneville)	71,194	7,106	1,006	1%	14%
F6 (Mangerton)	73,068	6,493	1,006	1%	15%
Masters Road	26,135	3,019	1,006	4%	33%
Springhill Road	32,482	2,438	1,006	3%	41%

Along with traffic volumes, the performance of three intersections along Springhill Road was assessed (Springhill Road/ Masters Road, Springhill Road/ Tom Thumb Road, and Springhill Road/ Port Kembla Road). These intersections were all shown to operate satisfactorily during the trial with the increased coal truck numbers.

4.2 Trial 2011 Volumes v 'Typical' 2011 Volumes

Following the trial, the traffic volumes for the trial were used to develop 'typical' traffic volumes that could be expected to deliver 6.9Mtpa to the PKCT. This was undertaken for the following reasons:

> The traffic count on the Northern Distributor during the trial was undertaken south of the Princes Highway, between Flinders Street Ramps and Southern Freeway Ramps. This is 6kms south of the previous locations for traffic counts on the Northern Distributor in the vicinity of Bellambi Lane. It is recognised that the traffic conditions are different in these two locations and difficult to compare between the different traffic studies. The most recent traffic counts on the Northern Distributor in the vicinity of Bellambi Lane were taken in 2010 following the opening of the Northern Distributor as part of the Gujarat NRE. These volumes are considered more representative of the traffic volumes in this location and have been used for the 'typical' scenarios.

Table 4-2 Northern Distributor Traffic volumes

Northern Distributor traffic volumes 2011				
Traffic study	Date of counts	Location of counts	Total traffic	Heavy vehicles
Monitoring trial	Aug 2011	Between Flinders Street Ramps and Southern Freeway Ramps	50,294	2,881
GNRE TIA addendum	Sep 2010	Wollongong between Railway Street and Bellambi Lane	26,213	1,863

> During the trial, it was noted that the percentage split of coal deliveries from the BHPB (BHP Billiton) and GNRE (Gujarat NRE) collieries varied from the typical delivery of 6.9Mtpa due to the available coal supply from GNRE. As a result, the proportion was more heavily weighted to BHPB and the percentage split was approximately 85% by BHPB and 15% GNRE. PKCT advised that for a typical delivery of 6.9Mtpa the percentage split is not as heavily weighted towards BHPB and is approximately 70% by BHPB and 30% by GNRE.

> The different collieries use different road transport contractors to deliver coal to PKCT, these being Brindles (on behalf of GNRE) and Bulktrans (on behalf of BHPB). The two contractors use different trucks with different vehicle types and capacities. The Bulktrans trucks typically carry 39 tonnes of coal on average to deliver 6.9, 7.5, and 10Mtpa, while the Brindles trucks typically carry 32 tonnes/truck on

average for 6.9 Mtpa, 33 tonnes/truck on average for 7.5 Mtpa and 35 tonnes/truck on average for 10Mtpa.

The traffic report for the trial study didn't project volumes for 7.5Mtpa or 10Mtpa, but following the development of the 'typical' 2011 volumes, the 7.5Mtpa and 10Mtpa volumes were calculated based on growth rate assumptions from the EA2008. The typical volumes were projected for 6.9 in 2011, 7.5Mpta in 2012 and 10Mtpa in 2013. These 'typical' volumes are indicated in Table 4-3.

Table 4-3 Typical 2011 traffic volumes for 6.9 7.5 and 10Mtpa

2011 'Typical' at 6.9 Mtpa ADT for 2011					
Road	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs
Bellambi Lane	5,459	615	406	7%	66%
Northern Distributor	26,451	2,101	406	2%	19%
Mount Ousley	44,485	3,704	678	2%	18%
F6 (Gwynneville)	71,260	7,172	1,084	2%	15%
F6 (Mangerton)	73,134	6,559	1,084	1%	17%
Masters Road	26,201	3,085	1,084	4%	35%
Springhill Road	32,548	2,504	1,084	3%	43%
2011 'Typical' at 7.5 Mtpa ADT for 2012					
Road	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs
Bellambi Lane	5,479	634	425	8%	67%
Northern Distributor	27,772	2,206	425	2%	19%
Mount Ousley	45,440	3,843	736	2%	19%
F6 (Gwynneville)	72,783	7,414	1,161	2%	16%
F6 (Mangerton)	74,690	6,784	1,161	2%	17%
Masters Road	26,278	3,163	1,161	4%	37%
Springhill Road	32,625	2,581	1,161	4%	45%
2011 'Typical' at 10 Mtpa ADT for 2013					
Road	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs
Bellambi Lane	5,595	751	541	10%	72%
Northern Distributor	29,255	2,411	541	2%	22%
Mount Ousley	46,594	4,165	974	2%	23%
F6 (Gwynneville)	74,614	7,937	1,515	2%	19%
F6 (Mangerton)	76,555	7,291	1,515	2%	21%
Masters Road	26,633	3,517	1,515	6%	43%
Springhill Road	32,979	2,936	1,515	5%	52%

4.3 Projected 2011 Volumes for 6.9Mtpa from EA2008

The EA2008 report didn't project traffic volumes for 2011, so assumptions from the EA2008 report were used to achieve 2011 projected volumes, to compare with the actual 2011 trial traffic counts. Similarly, the EA2008 report didn't project coal truck road deliveries of 6.9Mtpa, so the number of trucks required was estimated based on the assumptions used in the EA2008 report.

The EA2008 assumptions included:

> An estimated 48% of coal being delivered by public road to PKCT, is being supplied from the NRE Gujarat colliery

> Average coal truck tonnage is 31.8 tonnes from NRE Gujarat, and 36.5 tonnes from BHPB collieries

> Background traffic counts and growth rates from the EA2008 study were applied

> Coal trucks from the Dendrobium Coal Preparation Plan to PKCT have been included on Springhill Road

Table 4-4 Traffic volumes predicted for 6.9Mtpa in 2011 based on 2008 assumptions

EA2008 Predicted ADT at 6.9 Mtpa for year 2011					
Road	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs
Bellambi Lane	5,818	899	542	9%	60%
Northern Distributor	24,767	2,212	542	2%	25%
Mount Ousley	46,435	5,881	619	1%	11%
F6 (Gwynneville)	78,902	8,228	1,161	1%	14%
F6 (Mangerton)	77,913	7,896	1,161	1%	15%
Masters Road	25,075	4,005	1,161	5%	29%
Springhill Road	16,555	2,148	1,496	9%	70%

5 Comparison of Findings

5.1 Study Assumptions

The traffic studies were developed at different times, with different inputs and some differences in available data and assumptions, which explains why there may be differences in traffic volumes between these studies.

5.1.1 Traffic counts and forecasts

The three studies were undertaken at different years, with different traffic counts used as baseline values, different forecast years, different operating hours, and different forecast volumes of coal being delivered to PKCT, as summarised in Table 5-1.

Table 5-1 Traffic data and forecasts for the three studies

Study	Traffic counts undertaken	Forecast years	Forecast volumes of coal
EA2008	2007, 2008	2009, 2013, 2018	4, 5 and 10Mtpa
10Mtpa Monitoring Trial 2011 *(Typical)*	2011 *(2010,2011)*	2011 *(2012, 2013)*	6.9Mtpa *(6.9, 7.5 and 10Mtpa)*
NRE Gujarat TIA 2010	2007, 2008, 2010	2009, 2019	0, 1 and 3 Mtpa

Note: The 2011 'Typical' results are indicated in italics, as they were developed following the 2011 Trial

5.1.2 Road Network

Following the completion of the EA2008 study, the Northern Distributor extension opened, and coal truck deliveries were permitted to use Springhill Road between Masters Road and Tom Thumb Road. These changes to the road network, and the cumulative growth in the road network surrounding the Port Kembla area, resulted in higher traffic volumes on some roads (particularly the Northern Distributor and Springhill Road) in subsequent studies and traffic counts, than predicted in 2008.

5.1.3 Truck Tonnage and Proportion of Output from Each Mine

The proportion of coal being delivered by road from each colliery to PKCT, and the capacity of these trucks determines the estimated number of coal trucks on each road. The EA2008 predicted that 48% of the deliveries will be via Gujarat, however, during the 2011 trial period, coal deliveries from Gujarat accounted for only 15% of the total truck movements to meet the road receivals rate of 6.9mtpa. In the 'typical' scenario in 2011 it is expected that 30% of the coal deliveries to PKCT will come from NRE Gujarat.

The tonnage of the trucks also varies between the studies. The data used for the EA2008 study indicated that at the time, the average truck capacity delivering from NRE Gujarat was 31.8 tonnes, and from BHPB collieries, the average truck capacity was 36.5 tonnes. Following the 2011 Trial, in the development of the 'Typical' truck movements, the average truck capacity was estimated as 32 tonnes from NRE Gujarat, and 39 tonnes from BHPB collieries. It was estimated that for an output of 10Mtpa, the trucks from Gujarat would increase in capacity to an average of 35 tonnes/ truck.

The EA2008 and the 2011 Trial and 'Typical' coal truck calculations assume that the total number of coal trucks on Springhill Road consist of trucks from the NRE Gujarat and BHPB Appin and West Cliff collieries only. In the Gujarat TIA and the '2011 estimate for 6.9Mtpa based on 2008 growth rates', coal truck volumes on Springhill Road include an allowance for trucks from the Dendrobium Coal Preparation Plant (which typically arrive via private road).

5.2 Comparison of EA2008 and PKCT 2011 'Typical'

In comparison to the 6.9Mtpa and 10Mtpa forecasts from the 2008 Study, the results of the 2011 'Typical' study are shown in Appendix A and indicate the following:

> On Springhill Road, the predicted EA2008 total traffic volumes were significantly lower than the 2011 volumes. For Springhill Road, a 0% growth rate was assumed in the EA2008 report due to negative growth rates in recent years and there has subsequently been cumulative growth in the road network surrounding the Port Kembla area, which has led to greater traffic volumes than anticipated in 2008.

> The volume of coal trucks is higher in the EA2008 predictions on all the roads except Mount Ousley in both the 6.9Mtpa and 10Mtpa delivery scenario. The EA2008 predicted that 48% of the deliveries will be from Gujarat however, during the trial, PKCT noted that coal deliveries from Gujarat are expected to account for 30% of the total coal truck movements to meet road receivals of 6.9Mtpa and 10Mtpa at PKCT. This accounts for fewer coal trucks on Bellambi Lane and the Northern Distributor in the 2011 'Typical' scenario than in the predicted 2008 truck volumes.

> The total coal truck volumes are lower in the 2011 6.9Mtpa and 10Mtpa scenarios due to the larger average truck sizes assumed in the 2011 study. The average capacity of the coal trucks was lower in the EA2008 study than in the 2011 'Typical' study, which accounts for more trucks required to carry the same volume of coal.

> Additional coal trucks from Dendrobium Coal Preparation Plant were expected to use Springhill Road in the 2011 forecast for 6.9Mtpa from the EA2008, and form a higher proportion of total traffic on Springhill Road in this study than in the PKCT 2011 'Typical' study.

5.3 Comparison of PKCT 2011 Typical and NRE Gujarat TIA

In comparison to the 2010 Gujarat TIA, the results of the 2011 PKCT 'Typical' traffic volumes are shown in Table 5-2.

Table 5-2 Comparison of 2010 Gujarat NRE 3Mtpa and 2011 PKCT 10Mtpa

	Study	Bellambi Lane	Northern Distributor	Mount Ousley	F6 (Gwynneville)	F6 (Mangerton)	Masters Road	Springhill Road
Total Traffic	GNRE	6,207	34,384	-	91,860	96,193	25,500	16,941
	PKCT	5,595	29,255	46,594	74,614	76,555	26,633	32,979
Heavy Vehicles	GNRE	854	2,762	-	9,633	9,813	4,068	2,156
	PKCT	751	2,411	4,165	7,973	7,291	3,517	2,936
Coal Trucks	GNRE	460	460	-	1,119	1,119	1,118	1,457
	PKCT	541	541	974	1,515	1,515	1,515	1,515
Coal Trucks as % of Total Traffic	GNRE	7%	1%	-	1%	1%	4%	9%
	PKCT	10%	2%	2%	2%	2%	6%	5%
Coal Trucks as % of Heavy Vehicles	GNRE	54%	17%	-	12%	11%	27%	68%
	PKCT	72%	22%	23%	19%	21%	43%	52%

The comparison of results indicates the following:

> Mount Ousley counts were not included as part of the Gujarat study as the route from the Gujarat colliery to PKCT does not use Mount Ousley.

> The total traffic and heavy vehicle volumes are higher in the Gujarat study for all roads except Springhill Road. The background traffic growth for the Gujarat TIA forecasts traffic to 2019, while the forecast traffic volumes for the PKCT 'Typical' study are to 2011. This indicates an additional 8 years of background growth in the Gujarat TIA traffic volumes.

> The Gujarat TIA used the same background traffic volumes from 2007 and 2008 that were used in the EA2008, and the same growth rates for background traffic were assumed as for the EA2008 study, with a

forecast to 2019. Since then, the background traffic on Springhill Road has increased more than anticipated, which has been captured in the traffic counts of the 2011 trial period used in the PKCT study.

> All coal truck volumes in the PKCT study are higher than the Gujarat study. The average capacity of coal trucks delivering 3Mtpa from the NRE Gujarat colliery is 38 tonnes/ truck in the Gujarat TIA, and 35 tonnes/ truck in the PKCT 2011 'Typical' study to deliver 10Mtpa. This would account for more trucks required in the PKCT 2011 'Typical' study to carry the same volume of coal.

> Coal trucks from Dendrobium Coal Preparation Plan to PKCT have been included in the Gujarat TIA. As these trucks are expected to use Springhill Road in this assessment they form a higher proportion of total traffic than in the PKCT 2011 'Typical' study.

APPENDIX A COMPARISON OF TRAFFIC VOLUMES BETWEEN 2008 AND 2011

TRAFFIC COMPARISON TABLES

	2008 Predicted at 6.9 Mtpa for year 2011					2011 measured at 6.9 Mtpa *14 day avg of ADT				
	Total traffic [1]	Heavy vehicles [1]	Coal trucks [2]	Coal trucks as % of total traffic	Coal trucks as % of total HVs	Total traffic [1]	Heavy vehicles [1]	Coal trucks [3]	Coal trucks as % of total traffic	Coal trucks as % of total HVs
Bellambi Lane	5,818	899	542	9%	60%	5,221	377	154	3%	41%
Northern Distributor	24,767	2,212	542	2%	25%	50,294	2,881	154	0%	5%
Mount Ousley	46,435	5,881	619	1%	11%	44,656	3,875	852	2%	22%
F6 (Gwynneville)	78,902	8,228	1,161	1%	14%	71,194	7,106	1,006	1%	14%
F6 (Mangerton)	77,913	7,896	1,161	1%	15%	73,068	6,493	1,006	1%	15%
Masters Road	25,075	4,005	1,161	5%	29%	26,135	3,019	1,006	4%	33%
Springhill Road	16,555	2,148	1,496	9%	70%	32,482	2,438	1,006	3%	41%

	2011 typical at 6.9 Mtpa *ADT for 2011				
	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs
Bellambi Lane	5,459	615	406	7%	66%
Northern Distributor	26,451	2,101	406	2%	19%
Mount Ousley	44,485	3,704	678	2%	18%
F6 (Gwynneville)	71,260	7,172	1,084	2%	15%
F6 (Mangerton)	73,134	6,559	1,084	1%	17%
Masters Road	26,201	3,085	1,084	4%	35%
Springhill Road	32,548	2,504	1,084	3%	43%

	2008 predicted at 7.5 Mtpa					2011 projected 7.5 Mtpa from measured data				
	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs
Bellambi Lane										
Northern Distributor										
Mount Ousley										
F6 (Gwynneville)										
F6 (Mangerton)										
Masters Road										
Springhill Road										

	2011 projected 7.5 Mtpa from typical data for 2012				
	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs
Bellambi Lane	5,479	634	425	8%	67%
Northern Distributor	27,772	2,206	425	2%	19%
Mount Ousley	45,440	3,843	736	2%	19%
F6 (Gwynneville)	72,783	7,414	1,161	2%	16%
F6 (Mangerton)	74,690	6,784	1,161	2%	17%
Masters Road	26,278	3,163	1,161	4%	37%
Springhill Road	32,625	2,581	1,161	4%	45%

	2008 predicted at 10 Mtpa for year 2013					2011 projected 10 Mtpa from measured data				
	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs
Bellambi Lane	6,622	1,157	764	12%	66%					
Northern Distributor	30,219	2,780	764	3%	27%					
Mount Ousley	55,167	7,545	781	1%	10%					
F6 (Gwynneville)	91,879	10,316	1,544	2%	15%					
F6 (Mangerton)	92,241	10,196	1,544	2%	15%					
Masters Road	28,478	5,010	1,549	5%	31%					
Springhill Road	18,188	2,269	1,549	9%	68%					

	2011 projected 10 Mtpa from typical data for 2013				
	Total traffic	Heavy vehicles	Coal trucks	Coal trucks as % of total traffic	Coal trucks as % of total HVs
Bellambi Lane	5,595	751	541	10%	72%
Northern Distributor	29,255	2,411	541	2%	22%
Mount Ousley	46,594	4,165	974	2%	23%
F6 (Gwynneville)	74,614	7,967	1,515	2%	19%
F6 (Mangerton)	76,555	7,291	1,515	2%	21%
Masters Road	26,633	3,517	1,515	6%	43%
Springhill Road	32,979	2,936	1,515	5%	52%

Source:

Table 7.9 and 7.10 from 2008 EA report (ADT by 2013 for 10Mtpa @24/7 operation

2011 Trial Study predicted volumes using 2008 background growth assumptions

2011 Trial actual volumes measured with coal trucks calculated (14 day ADT)

Estimated Volumes developed for "typical" scenarios

No data available

1 FR111019 - 01 Traffic Profile v5

2 FR111019 *PKCT Monitoring Trial Final report* Table 5.1 and Traffic Profile v5

3 Measured from weighbridge receipts during the trial based on 32T and 39 T/ truck average capacity