IMPORTATION OF VENM & ENM

PROJECT TRAFFIC AND NOISE MANAGEMENT PLAN

PENRITH LAKES

1.0 OVERVIEW

As per the Notices of Modification relating to the following Development Applications as well as relevant clauses:

- DA 2 Mod 5 – Clause 49AA
- DA 3 Mod 4 – Clause 41B
- DA 4 Mod 9 – Clause 43A

The two documents attached address the requirements of construction traffic management and the traffic noise management for the importation of Virgin Excavated Natural Material (VENM) and Excavated Natural Material (ENM).

- Importation of VENM & ENM – Construction Traffic Management Plan (CTMP)
- Importation of Virgin Excavated Natural Material and Excavated Natural Material – Traffic Noise Management Plan (TNMP)

IMPORTATION OF VENM & ENM
CONSTRUCTION TRAFFIC MANAGEMENT PLAN

PENRITH LAKES

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1.0 RATIONALE

This Plan assesses existing traffic conditions and details how traffic is managed for each situation where works interact with traffic. The term 'traffic' considers vehicles, pedestrians and the public.

The objectives of the Traffic Management Plan (TMP) are to address the specific traffic requirements for the import of Virgin Excavated Natural Material (VENM) and Excavated Natural Material (ENM) by:

- providing a safe environment for all road users,
- providing protection to workers, visitors, agents of the Principal and the general public from traffic hazards that may arise as a result of the VENM/ENM import,
- minimising the disruption, congestion and delays to all road users,
- ensuring network performance is maintained at an acceptable level throughout the term of the work,
- eliminating the potential for disruptions and/or inconveniences to the existing project operations at Penrith Lakes.

To achieve the above objectives, the TMP will:

- ensure that appropriate/sufficient warning and information signs are installed and that adequate guidance is provided to delineate the travel paths into and through the work site,
- ensure that, as far as practicably reasonable, the work area is free of hazards and that all road users are adequately protected from excavations and obstructions,
- ensure whenever possible, that a sufficient number of traffic lanes to accommodate vehicle traffic volumes are provided,
- ensure that delays and traffic congestion are kept to a minimum and within acceptable levels,
- make provision to enable all personnel to enter and leave the work area in a safe manner.

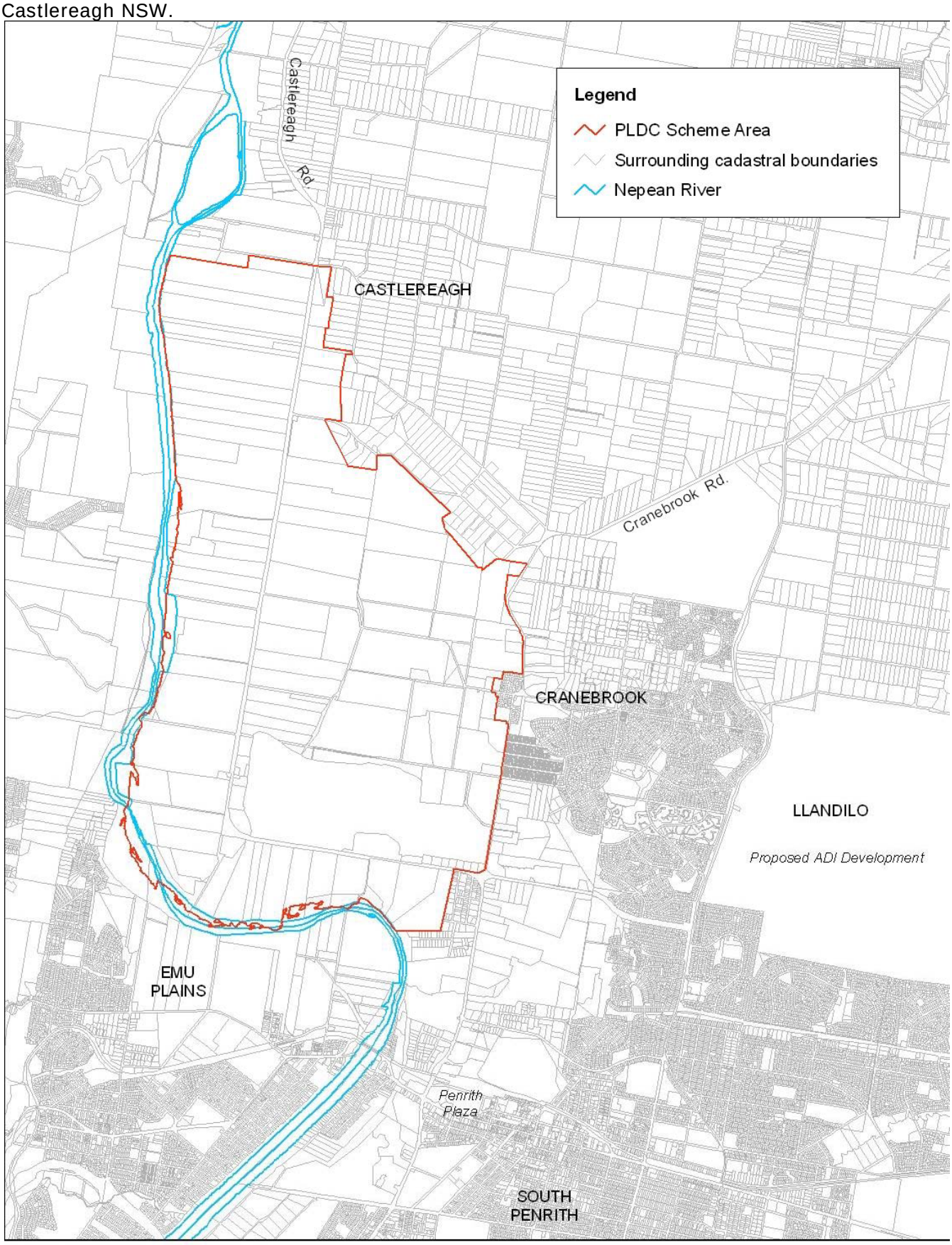
2.0 PROJECT OVERVIEW

Penrith Lakes Development Corporation (PLDC) proposes to import VENM/ENM to use as fill material in areas of shortfall across the site from the quarrying operations. This will enable PLDC to complete the final land formation of parkland and lakes as part of the Penrith Lakes Scheme.

The source of the VENM/ENM will be from various locations within the region. The importation of VENM and ENM will be up to 8 million tonnes at a maximum rate of 3 million tonnes per year.

2.1 LOCATION OF SITE

Penrith Lakes is located approximately 4km North of Penrith at 89-151 Old Castlereagh Rd, Castlereagh NSW.



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2.2 HOURS OF WORKS

Standard hours of work for the VENM/ENM importation are given in Table 1 below:

Table 1 – Hours of works

MONDAY TO FRIDAY	SATURDAYS	SUNDAYS AND PUBLIC HOLIDAYS
7.00 am to 6.00 pm	7.00 am to 1.00 pm	No work

2.3 DURATION OF WORKS

The duration of works will be over a 3 year period commencing in October 2015. The works may be intermittent over this period depending on availability of VENM and ENM from various source locations. It is proposed to notify the Department of Planning & Environment (DP&E) of the major source sites and proposed haulage routes for approved sources of VENM or ENM. The DP&E is requested to nominate a contact representative for all such notifications.

3.0 SITE REPRESENTATIVES

Site contacts for the VENM/ENM importation are given in Table 2 below:

Table 2 – Site contacts

NAME	POSITION	CONTACT
Arthur Ashburn	Project Engineer	0457 541 236
Roger Moona	Project Supervisor	0450 394 482
Will Myles	Project Supervisor	0428 588 337

4.0 VEHICLE MOVEMENTS

The majority of the VENM and ENM import trucks will be through Gate 2 (see Figures 2 and 3), which is accessed from McCarthys Lane off Castlereagh Road.

The number of VENM/ENM haul truck movements along Old Castlereagh Road and through Gate 1 is restricted to only 35 return trips per day due to noise restrictions.

Records of the daily traffic movement numbers of haul trucks will be kept. PLDC will manage the truck movements from all sites importing to Penrith Lakes to ensure that the trucks are spread evenly throughout the day to minimise movements during peak commuter periods. Education and regular communication to all parties involved will also help ensure compliance with maximum allowable daily traffic movements.

PLDC are currently going through the detailed design process for an intersection to upgrade Castlereagh Road adjacent to the proposed Gate 3 entrance (see Figures 2 and 3 for Gate 3 location). This will entail an auxiliary left turn treatment for northbound traffic and right turn treatment for southbound traffic. Consultation as well as the relevant approvals with Penrith City Council and Roads and Maritime Services (RMS) will be sought prior to construction. Construction

of the intersection is currently scheduled for the second half of 2016 pending approvals. The upgraded road would then allow importation of VENM and ENM to commence through Gate 3, the northern most access to the Penrith Lakes site.

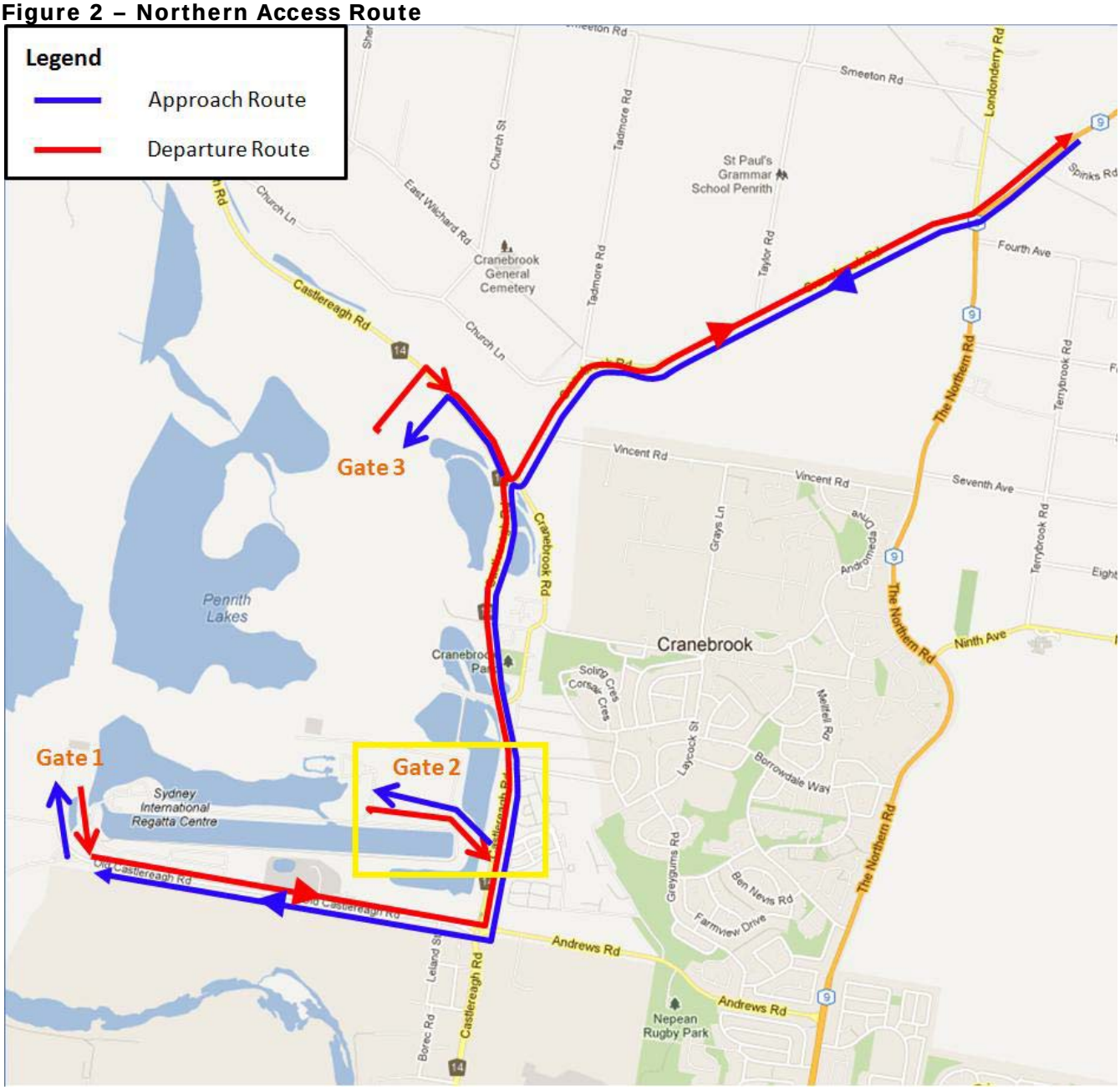
PLDC is providing additional signposting as set out in Appendix A to provide warning to vehicles and pedestrians of the truck activity at the intersection at Gate 2.

4.1 ACCESS TO SITE

Haul trucks and personnel importing VENM and ENM to PLDC shall do so primarily through Gate 2, the designated access gate as shown in Figures 2 and 3 below. All loaded VENM/ENM haul trucks shall be covered and when exiting the site shall be free from debris that may dislodge after exiting. All vehicles shall enter and leave the site in a forward direction. All vehicles shall exit the site via the shaker grid and wheel wash system located on the departure road at Gate 2.

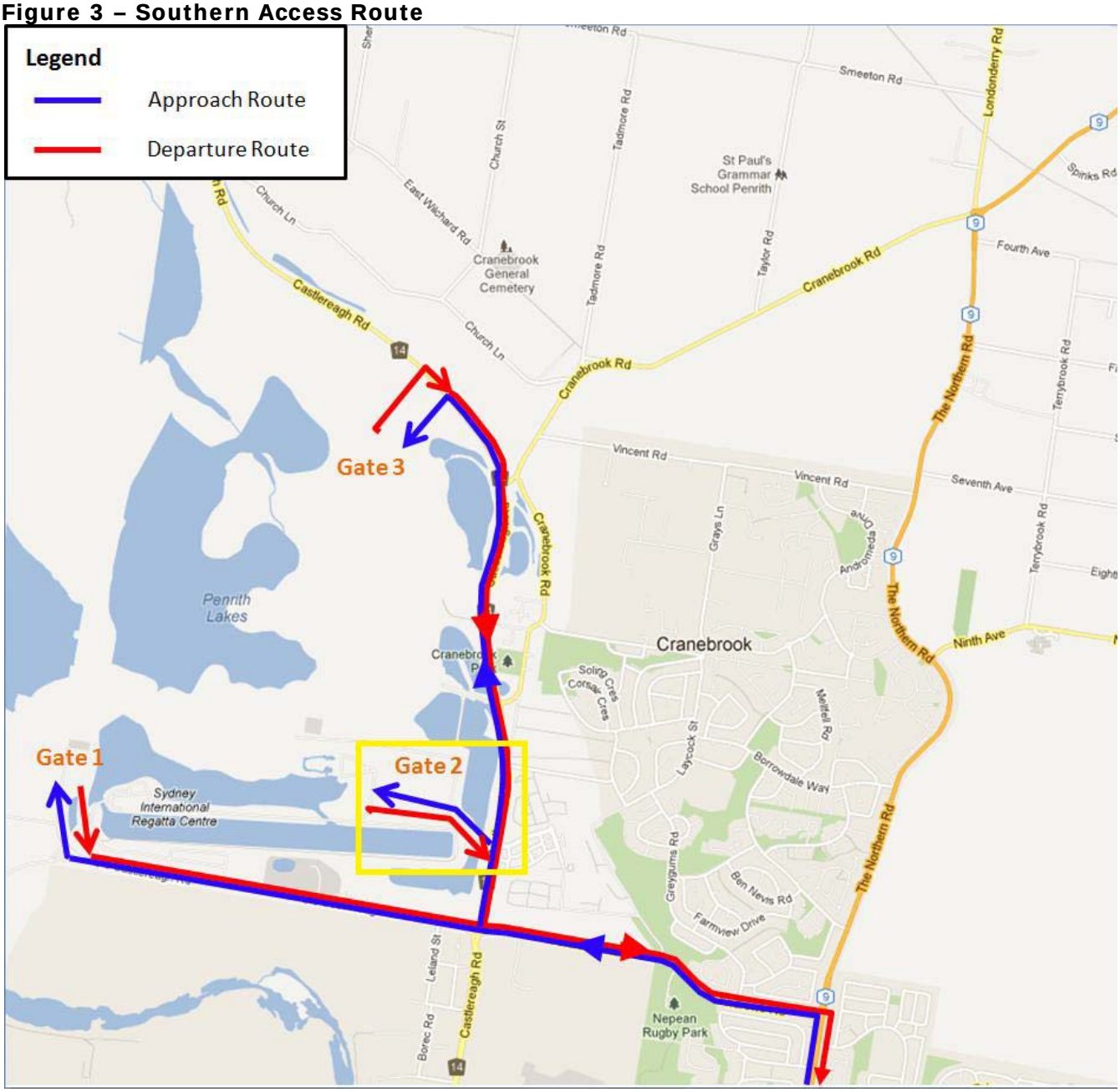
Access routes have been identified for trucks arriving and departing the site from the North and South, dependent upon the source of the VENM/ENM. From the North, trucks will travel via The Northern Road to Cranebrook Road and then to Castlereagh Road. (Refer Figure 2)

Figure 2 – Northern Access Route



Approaching the site from the South, haul trucks will travel via Richmond/Northern Road then left onto Andrews Road and right onto Castlereagh Road before accessing the site via Gate 2.

Figure 3 – Southern Access Route



4.2 EXISTING TRAFFIC CONDITIONS

The haul route that is to be utilised for the VENM and ENM importation has been designed to have minimum interaction with existing projects in progress on the PLDC site.

Quarrying operations at Penrith Lakes were completed on 28 September 2015. Although VENM/ENM truck movements will increase due to the increased volume being imported, the net effect will be a reduction in overall daily truck movements to and from the site due to the cessation of quarry trucks to and from the site.

Gate 2 Access

A gatekeeper shall be at Gate 2 at all times during the importation of VENM and ENM to provide direction to each delivery. Vehicles entering shall not proceed past this point without authorisation and/or acknowledgement from the gatekeeper and/or works supervisor.

All vehicles will travel within the site on designated haul roads only and maintain UHF radio communications as per the Penrith Lakes Safety Management Plan.

All haul trucks leaving the site must be free of debris that may dislodge after exiting, a wheel wash system that all haul trucks must report to prior to leaving the site is located on the Gate 2 Access Road adjacent to the Gate 2 exit. Water trucks and street sweeping equipment routinely cleans the nearby intersection and roadways to ensure all dust and debris is removed from public roads.

Additional signage for the public road network leading into Gate 2 access has been designed by J Wyndham Prince consulting engineers; refer Appendix A for General Arrangement plan. This additional signage will provide notification to users of the public roads that there are trucks turning in and out of Penrith Lakes site and McCarthys Lane onto Castlereagh Rd. Tenders for the signage works have been requested by licensed contractors with the works expected to be complete by the end of November 2015.

5.0 AUDITING

This Traffic Management Plan will be audited as part of the Penrith Lakes management processes to ensure it remains relevant and captures any change relating to traffic management.

6.0 APPENDIX A

Castlereagh Rd & McCarthys Lane Traffic Control Plan

NOTES

1. ALL TRAFFIC CONTROL AND MANAGEMENT WORKS ARE TO BE COMPLETED IN ACCORDANCE WITH RMS SPECIFICATION G10 AND AUSTRALIAN STANDARD 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES' (AS1742.3-2009). ALL WORKS INCL. SIGNAGE, BARRIERS AND MARKINGS ARE TO BE INSTALLED AND MAINTAINED BY APPROPRIATELY QUALIFIED RMS ACCREDITED WORK SITE TRAFFIC CONTROLLERS.

2. THIS PLAN IS PROVIDED AS A GUIDE ONLY BASED ON RMS. "TRAFFIC CONTROL AT WORKSITES'-VER.4/2010 (TCP 195 FOR TRAFFIC CONTROLLER REQUIREMENTS). SETOUT HAS BEEN ADJUSTED TO SUIT LOCAL SITE CONDITIONS.

3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE ALL TRAFFIC CONTROL IS IN ACCORDANCE WITH AS1742.3-2009 AND RMS. - 'TRAFFIC CONTROL AT WORKSITES' GUIDELINES AND THAT ALL RELEVANT RMS APPROVALS ARE OBTAINED PRIOR TO WORKS COMMENCING.

4. ALL SIGNS ARE TO BE 'CLASS 1' RETROFLECTIVE, SIZE 'B'.

5. ALL SIGNAGE IS TO BE MAINTAINED AT ALL TIMES.

6. REGULAR INSPECTIONS OF ALL DEVICES IS TO BE UNDERTAKEN IN ACCORDANCE WITH RMS. REQUIREMENTS.

7. CONTRACTOR TO CONFIRM LOCATION OF ALL SERVICES PRIOR TO INSTALLATION OF SIGNAGE.

8. CURRENT SIGNPOSTED SPEEDS ARE AS FOLLOWS:
   - CASTLEREAGH ROAD - 60 KPH
   - WATERSIDE BOULEVARD - 50 KPH
   - McCARTHYS LANE - 40 KPH

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH RMS PUBLICATION 'TRAFFIC CONTROL AT WORKSITES' - 2010 AND AUSTRALIAN STANDARD-'MANUAL OF UNIFORM CONTROL DEVICES' - A.S.1742.3-2009.

Signed ..... Name ...M SANTORO... Date 08/09/15.....

RMS WORK SITE TRAFFIC CONTROL CERTIFICATE
No. 0022105697

1:2500 (AT A3) 25 0 25 50 75 100 125
METRES

CLIENT: PENRITH LAKES

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS PART OF AN APPROVED CONSTRUCTION CERTIFICATE.

ADVANCE COPY ONLY
NOT FOR CONSTRUCTION

ISSUE	AMENDMENT	DATE	BY
F			
E			
D			
C			
B			
A			

J. WYNDHAM PRINCE CONSULTING CIVIL INFRASTRUCTURE ENGINEERS & PROJECT MANAGERS
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DESIGNED R.A.S.
DRAWN R.A.S.
CHECKED P.S.

DATUM: A.H.D. ORIGIN: M.G.A.
SCALES: 1:2500 @ A3

PENRITH LAKES
TRUCK ROUTE AROUND GATE 9
CASTLEREAGH ROAD & McCARTHYS LANE, PENRITH
TRAFFIC CONTROL PLAN
LOCALITY PLAN

PLAN No. TCP-001 A
FILE No. FILE_NO
SHEET 1 OF 3 SHEETS

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Penrith Lakes Development Corporation

Importation of Virgin Excavated Natural Material and Excavated Natural Material

Traffic Noise Management Plan

223104

Rev A | 18 June 2015

Job number 223104

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ARUP

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Acoustic Glossary

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Complaints Handling Forms

1 Introduction

Penrith Lakes Development Corporation (PLDC) currently has approval via modification of approvals DA2, DA3 and DA 4 for the site to import up to 8 million tonnes of Virgin Excavated Natural Material (VENM) and ENM (Excavated Natural Material) at a maximum rate of 3 million tonnes per year via road haulage.

A condition of consent for the Importation of VENM and ENM granted on 30 April 2015 stated that a Traffic Noise Management Plan (TNMP) was to be prepared and approved before commencement. This document updates the previous TNMP to reflect the changes to DA2, DA3 and DA4 for the importation of VENM and ENM.

Arup conducted an assessment of noise and vibration impacts for the project as part of the planning application, and prepared this TNMP to document work practices that will be implemented to manage noise impacts from the VENM and ENM importation.

1.1 Scope

This TNMP is applicable to all works related to transportation of the VENM and ENM for importation to the Penrith Lakes site, for which PLDC and their nominated contractors and associated sub-contractors are responsible.

It should be noted that this plan only covers the traffic outside the site on public roads.

2 Roles and Responsibilities

2.1 Head Contractor (HC)

PLDC is the Head Contractor for the Importation of the VENM and ENM, and is ultimately responsible for control of noise from the works.

The Head Contractor (HC) is responsible for managing noise during the haulage activities to:

1. Prevent undue disturbance to the nearby community, including residences adjacent to the site.
2. Comply with statutory requirements relating to noise.

The HC is responsible for programming and sequencing the works, and the selection of appropriate plant and methods, to meet the performance requirements for noise.

2.2 Project Manager (PM)

The PM has ultimate responsibility for ensuring that the requirements given in the development consent are met.

PLDC, Phone 02 4729 0044

2.3 Site Superintendant (SI)

The SI will be the on-site day to day project manager. They will be responsible for disseminating information relating to noise to the relevant parties as and when required. Relevant parties include the PM, the primary contractor, acoustic consultant and other persons working on the site.

PLDC, Phone 02 4729 0044

2.4 Acoustic Consultant (AC)

An Acoustic Consultant will be appointed by PLDC and will be responsible for undertaking noise monitoring and advising the SI on technical noise issues. The AC will also undertake noise monitoring as required and produce reports to be provided to the SI.

Arup, Phone 02 9320 9320

2.5 Site Engineers (SE), Contract Foremen (CF), Site Operatives (SO)

The SE's, CF's and SO's will be responsible for using Best Practice and implementing advice given by the AC through the SI and ensuring that information is disseminated to any employees, sub-contractors and work colleagues who may not be aware of the noise and vibration requirements.

3 Noise Sensitive Receivers

Noise sensitive receivers can be classified as any person or site that has the potential to be adversely affected by noise and vibration caused by the activities relating to the haulage of the VENM and ENM, whether they be inside or outside a building and on public or private property.

For the purposes of this plan, the receivers in closest proximity and most likely to be affected by noise and vibration from the haulage of VENM and ENM are as follows:

- **Receiver 1:** 1999 Old Castlereagh Road – Old Castlereagh Road, west of Castlereagh Road roundabout
- **Receiver 2:** 538 Cranebrook Road and The Lakes Church, 540 Cranebrook Road (Receiver 2A) – on Castlereagh Road, north of Andrews Road roundabout.
- **Receiver 3:** Lot 5, Cranebrook Village– Castlereagh Road, north of Cranebrook Road; and Cranebrook Road.
- **Receiver 4:** 74 Church Lane (faces Castlereagh Road).

The locations of these receivers are shown in Figure 1 below:

Figure 1 Overview of Receiver Locations

4 Performance Criteria

4.1 Working Hours

The working hours for the importation of VENM and ENM are given in Table 1 below:

Monday to Friday	Saturdays	Sundays and Public holidays
7.00 am to 6.00 pm	7:00 am to 1:00 pm	No work

Table 1 Hours of operation

- Occasionally it may be required to carry out works outside of these hours. Where this is the case, approval will be sought from the Department of Planning and Environment (DP&E) prior to the work taking place. This may require some further demonstration over and above this plan that noise sensitive receivers will not be adversely affected.
- Work may be required to occur outside normal working hours due to unforeseen circumstances, such as, late delivery of materials or mechanical breakdown etc. In these situations the person who becomes aware of the situation will notify the contract foreman (CF) who will in turn notify the Site Superintendent (SI) who will be responsible for recording the details of the over run of working hours. This information will be given to the acoustic consultant (AC) for review against the unattended measured noise levels at the noise sensitive receivers, and for inclusion in the monthly acoustic reports. DP&E shall also be informed of any work undertaken outside the working hours given in Table 1.

A flow chart of this process is provided below in Figure 2.

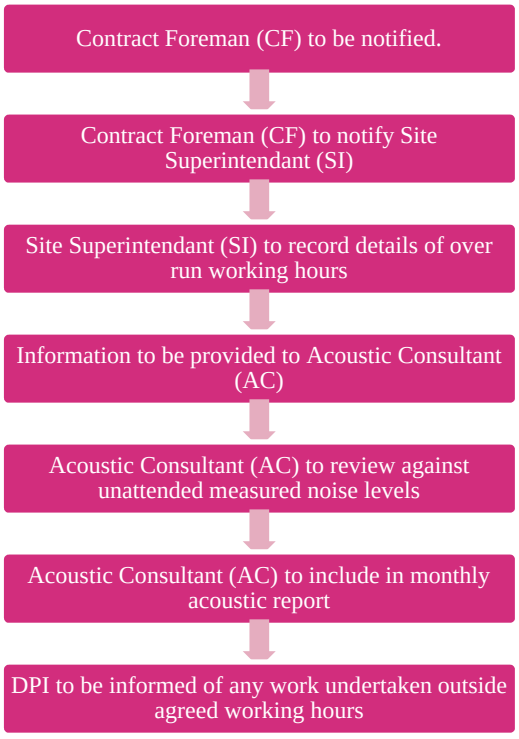

Figure 2: Out of hours work flow chart

4.2 Noise Criteria

4.2.1 Noise Limits at Noise Sensitive Receivers

Based on the updated assessment of Noise and Vibration Impacts[1] for the Importation of VENM and ENM, existing traffic noise levels on Castlereagh Road and Old Castlereagh Road are expected to exceed the criteria given in the Road Noise Policy (RNP) produced by the NSW Office of Environment and Heritage (OEH). Therefore, the applicable criteria for noise from the VENM and ENM haulage is that existing noise levels must not be increased by more than 2 dB(A).

Numerical noise criteria for traffic noise at the monitoring locations will be determined from the results of the initial monitoring period prior to the commencement of VENM and ENM haulage movements. This is discussed further in Section 5.4.

5 Noise Management Measures

5.1 Haulage Routes

To comply with the noise regulations, access routes have been identified for trucks arriving and departing the site from the north (via The Northern Road) and the south (via Richmond/Northern Road). Approaching the site from the north, trucks would travel via The Northern Road to Cranebrook Road to Castlereagh Road. Departing the site they would take the same route.

[1] Section 75W Modification Application, Arup, dated 22/09/2014

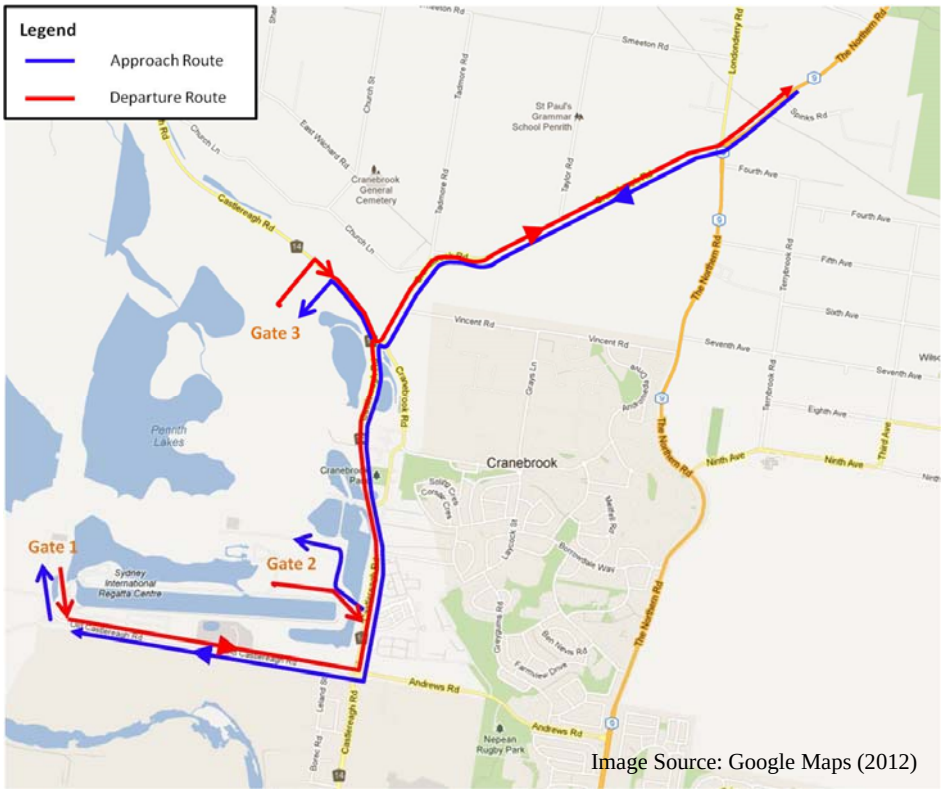

Figure 3 Vehicle Access Routes for Trucks Approaching from the North

Approaching the site from the south, trucks would travel via Richmond/Northern Road and turn left onto Andrews Road and onto either Old Castlereagh Road or Castlereagh Road before accessing the site. Departing the area they would retrace their approach route.

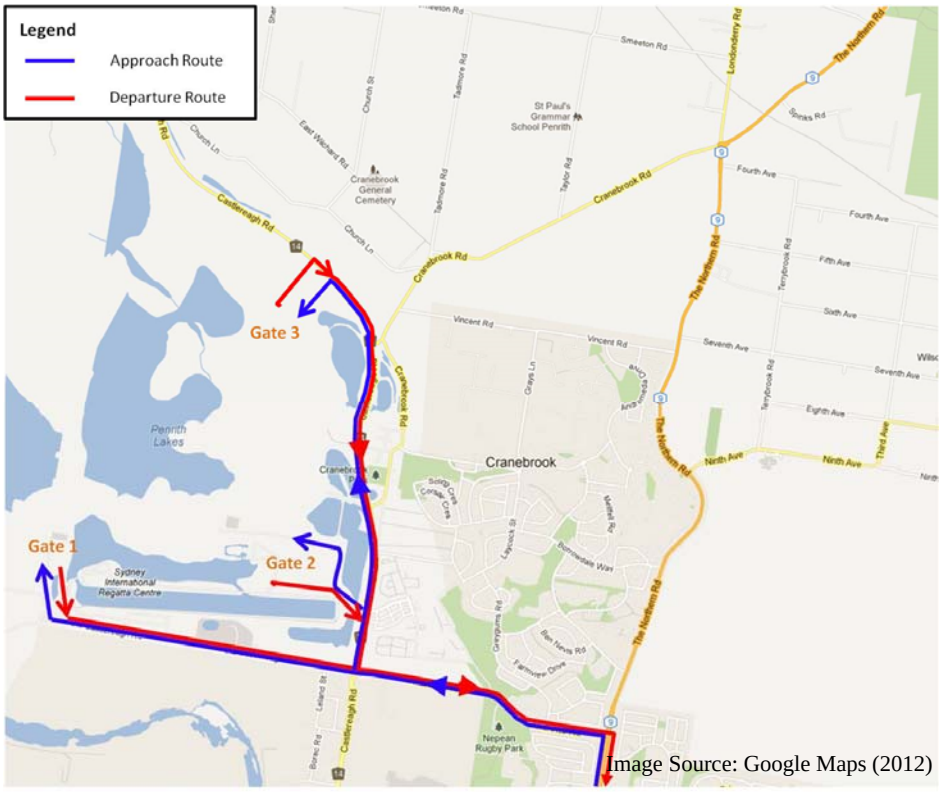

Figure 4 Vehicle Access Routes for Trucks Approaching from the South

5.2 Maximum VENM and ENM Heavy Vehicle Flows

The proposed maximum daily number of truck movements associated with the VENM/ENM haulage is 476 movements per day.

The only road segment where receiving the full number of VENM/ENM trucks ('worst case' scenario) would significantly affect overall noise levels is Old Castlereagh Road.

Receivers along this road are of double-brick façade construction with window shutters as a result of noise mitigation from previous PLDC haulage projects. This construction will likely result in a façade traffic noise reduction of 15 dB(A) or higher.

The façade upgrades to these dwellings provided by previous PLDC projects would result in internal noise levels equivalent to the RNP criteria under the 'worst case' VENM/ENM haulage scenario.

Accordingly, no restrictions on truck movements on Old Castlereagh Road are proposed. It is also pertinent to note that historically, truck numbers along Old Castlereagh Road were significantly higher than the proposed VENM/ENM haulage.

5.3 Control Elements

It is acknowledged that PLDC has been a working quarry operating within strict environmental controls including noise restrictions.

Whilst on public roads the haulage truck noise will be managed by:

- Conducting one period of unattended noise monitoring at the four specified noise sensitive receivers throughout the VENM and ENM haulage. Measurements must be conducted over a period of at least four (4) weeks following commencement of VENM and ENM haulage, and should not take place during times where non-typical traffic patterns are expected. If necessary, subsequent monitoring will be conducted until such time as when an adverse noise impact to the noise sensitive receivers can be confidently discounted.
- Keeping records of the daily traffic movement numbers associated with VENM and ENM haulage, including the use of traffic counters, if necessary and comparing with the allowable traffic movements in Table 2.
- Selected attended monitoring of noise by the acoustic consultant at noise sensitive receivers and other selected locations around the site, as required by the project activities and particularly in the initial phases of the VENM and ENM haulage.
- Maximum daily traffic movement restrictions shall be adopted until noise monitoring has demonstrated that the restrictions can be eased, if possible.
- Limiting the operating noise levels of haul trucks brought on to the site, by considering the noise emission of vehicles when selecting equipment

- Regular maintenance of haul trucks to prevent trucks from becoming noisy due to poor maintenance, such as blowing exhausts and loose and rattling components etc.
- In the event that reasonable complaints are received or if the haulage trucks appear particularly noisy then attended acoustic monitoring shall take place by the acoustic consultant to determine whether the trucks are excessively noisy. This information will be notified to the Project Manager and advice on a course of action such as an inspection of individual truck for maintenance issues will be provided.
- Education of personnel operating haul trucks in low-noise driving strategies, including minimising the use of compression braking.
- Ensuring machinery is turned off when not in use, e.g. no idling trucks.
- Regular communication with the residents of NSRs including notification of any changes to the works and reports on progress and provision of a telephone number that residents can call to express points of view and request information.
- Records of all daily traffic movements will be held on site and will be reviewed by the SI weekly.
- All activities relating to the haulage works will be carried out in line with current best practice.

5.4 Noise Monitoring

One noise logger at each of the four NSR locations will be installed at the start of the VENM and ENM haulage to measure unattended noise levels continuously for a period of at least four (4) weeks, or until such time as an adverse noise impact to the noise sensitive receivers can be confidently discounted.

Attended noise measurements at the NSR's will also be undertaken when required and at least as often as the noise loggers are downloaded, to supplement and verify the unattended noise data. Additional attended noise monitoring will be undertaken at other locations when necessary.

5.5 Reporting

Reports covering the attended and unattended monitoring described in Section 5.4 above will be prepared for each month in which monitoring occurs by the AC for review by the SI. The SI will be responsible for disseminating the reports to the PM and DP&E when appropriate. The reports will summarise and interpret the results of the noise monitoring carried out during the month.

The DP&E shall be notified of any non-compliance of the relevant criteria or working hours as required by *Part 5.7* of the *Protection of the Environment Operations Act 1997*.

5.6 Communication and Complaints

For the duration of the VENM and ENM haulage works, regular communication with the residents of NSRs will include notification of impending noisy activities, any changes to the works, and reports on progress.

This communication should take the following form:

- Letters will be posted to the most potentially affected residents in the vicinity to notify of them of the importation of VENM and ENM and proposed work schedule.
- A complaints telephone number should be established and be clearly stated in the posted letters and prominently located on gates around the Penrith Lakes Scheme.
- The person who answers this number shall have a noise complaint pro-forma specifically developed for the VENM and ENM haulage works (see Appendix A). Specific questions should be asked in order to get all the relevant information that will allow the complaint to be dealt with expediently. This information should then be entered into the PLDC general complaints database.
- When a complaint is received the complainant should be notified that they can expect a follow-up call from a representative of PLDC within three days of their lodging of the complaint. This call will give details of the proposed or actual resolution to the complaint.
- If actions have not been taken to resolve the complaint within three days the complainant shall be notified on completion of the actions in addition to the acknowledgement call after three days to advise the complainant of the progress of their complaint.
- Upon completion of the proposed actions to resolve the complaint the complainant shall be notified and asked whether the complaint has been resolved to their satisfaction and/or whether the complaint now meets the relevant project criteria.
- A copy of the complaints pro-forma will be given to the Site Superintendent (SI).

A flow chart of this process is provided below in Figure 5.

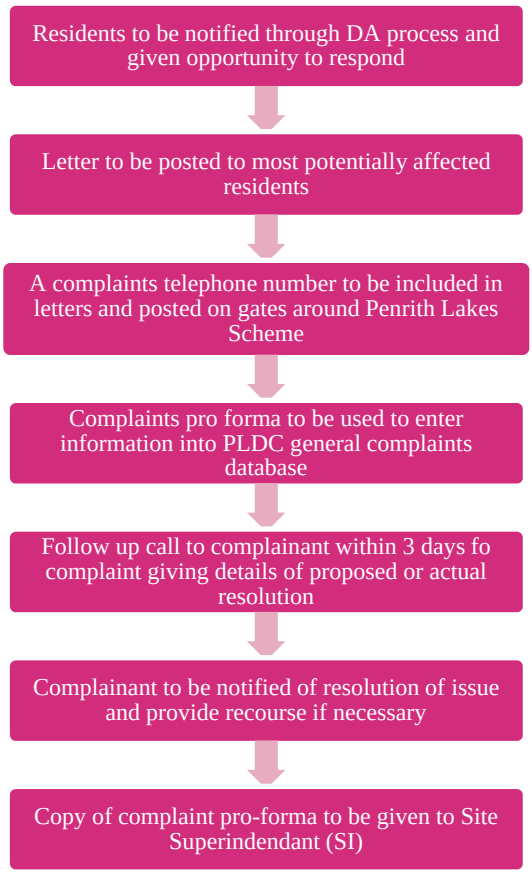

Figure 5: Community liaison flow chart

5.7 Non Compliances

Non compliance reports will be generated when there are failures to meet the requirements of this plan. The SI will issue and keep a record of Non compliance reports and distribute them to the PM, DP&E, OEH, and other relevant parties as required.

A non-compliance pro-forma is provided in Appendix A2

It is a requirement of *Part 5.7* of the *Protection of the Environment Operations Act 1997* that, the OEH shall be notified of any non-compliance of the relevant criteria or working hours.

5.8 Dispute Resolution

Should any complaint not be resolved satisfactorily and results in a dispute, the offending activity of the works shall be stopped and not allowed to continue until at least one of the following conditions has been met:

1. The complaint has been resolved and communicated to the complainant.
2. It has been demonstrated that the relevant noise criteria is met.

5.9 Safety

Personnel involved in operations will be issued with ear plugs or ear defenders which must be used whenever noise levels interfere with normal speech when individuals are standing at a distance of 1 m from each other, or when the eight hour equivalent continuous A-weighted sound pressure level, $L_{Aeq,8H}$ measured with a properly calibrated sound level meter exceeds 85 dB(A).

If possible signs shall be erected and made visible at the entry to all areas where noise levels will exceed 85 dB(A).

6 Vibration Management

Predicted vibration levels, using a conservative prediction method, from haul traffic are expected to have a minimal vibration impact on the receivers on haulage routes. Vibration is unlikely to require monitoring or mitigation due to set back distances and existing road traffic activity and therefore does not form part of this Traffic Noise Management Plan.

Appendix A

Acoustic Glossary

A1 Acoustic Terminology

Decibel

The ratio of sound pressures that can be heard is a ratio of 10^6 (one million: one). For convenience, therefore, a logarithmic measurement scale is used. The resulting parameter is called the 'sound pressure level' (L_p) and the associated measurement unit is the decibel (dB). As the decibel is a logarithmic ratio, the laws of logarithmic addition and subtraction apply.

dB(A)

The unit generally used for measuring environmental, traffic or industrial noise is the A-weighted sound pressure level in decibels, denoted dB(A). An A-weighting network can be built into a sound level measuring instrument such that sound levels in dB(A) can be read directly from a meter. The weighting is based on the frequency response of the human ear and has been found to correlate well with human subjective reactions to various sounds. It is worth noting that an increase or decrease of approximately 10 dB corresponds to a subjective doubling or halving of the loudness of a noise, and a change of 2 to 3 dB is subjectively barely perceptible.

LAeq – Equivalent Continuous Sound Level

Another index for assessment for overall noise exposure is the equivalent continuous sound level, L_{eq}. This is a notional steady level which would, over a given period of time, deliver the same sound energy as the actual time-varying sound over the same period. Hence fluctuating levels can be described in terms of a single figure level. The equivalent continuous sound level can also have the A – weighting applied (see dB(A)) in which case it is denoted L_{Aeq} .

Statistical Noise Levels

$L_{A10(T)}$

Refers to the Sound Pressure Level, measured in dB(A), exceeded for 10 percent of the stated measurement period.

For the purpose of assessment of compliance with this plan the duration interval (T) shall be 15 minutes. L_{A10} is deemed to be equivalent to $L_{A\ AV.\ MAX}$

$L_{A90(T)}$

Refers to the sound pressure level measured in dB(A), exceeded for 90% of the time interval (T) –i.e. measured noise levels were greater than this value for 90% of the time interval. This is also often referred to the background noise level.

For the purpose of assessment of compliance with this plan the duration interval (T) shall be 15 minutes.

Assessment Background Level (ABL)

A single-number figure used to characterise the background noise levels from a single day of a noise survey as defined by the NSW Industrial Noise Policy, 2000. ABL is derived from the measured noise levels for the day, evening or night time period of a single day of background measurements. The ABL is calculated to be the lowest tenth percentile value of the background LA90 noise levels – i.e. the measured background noise is above the ABL for 90% of the time.

Rating Background Level (RBL)

A single-number figure used to characterise the background noise levels from a complete noise survey as defined by the NSW Industrial Noise Policy, 2000. The RBL for a day, evening or night time period for the overall survey is calculated from the individual Assessment Background Levels (ABL) for each day of the measurement period, and is numerically equal to the median (middle value) of the ABL values for the days in the noise survey.

Appendix B

Complaints Handling Forms

B1 Compliance Pro-forma for Noise

A copy of this form should be passed to the Site Superintendant for action following completion

Complaints Pro-forma for Noise

1) Complainant details	
Name:	
Contact Telephone:	
Contact E-mail (optional):	
Street Number and Name:	
Name of person taking complaint details:	
Preferred Contact Method: (please circle)	Telephone / E-mail / Fax

2) Complaint / Event details	
Please describe the noise event:	
Date Complaint Made:	
Date of Event:	
Day (please circle):	Sun / Mon / Tue / Wed / Thur / Fri / Sat
Time:	
Nature of noise (please add details where possible):	
Noise	***Details***
[ ] Engine noise	
[ ] Engine Braking noise (eg compression braking)	

[ ] Beeping noise (eg reversing truck alarm)	
[ ] Vehicle noise (eg trucks moving to/from/within site)	
[ ] Personnel noise (eg raised voices)	
[ ] Other noise (please describe)	

3) Impacts of Noise Event

Please describe how the noise affected you:

[ ] Disrupted sleep	
[ ] Difficult to concentrate on work	
[ ] Difficult to hear television / radio / conduct normal conversation	
[ ] Headache (from noise)	
[ ] Other (please describe)	

4) Action

When will the complainant be contacted with notification?: (maximum of 3 days after complaint)	Date...
Complainant told of date when they can expect a progress or resolution call? (Please circle)	Yes / No

B2 Non Compliance Report Pro-forma

To be completed by General Foreman

Complainant details	
Complainant's Name:	
Contact Telephone:	
Contact E-mail (optional):	
Street Number and Name:	
Complaint Processor Name:	
Preferred Contact Method: (please circle)	telephone / e-mail / fax

Complaint History	
Has the complainant complained before? (please circle)	YES / NO If yes, please give details below
No. of previous complaints: Complaint reference numbers: (if possible) Subject of complaints:	

Description of the Complaint	
Date:	
Day (please circle):	Sun / Mon / Tue / Wed / Thur / Fri / Sat
Time:	
Brief Description of the Complaint or attach complaint form:	

Investigation / Analysis into the complaint	
Noise source (plant / equipment item):	
Was the work conducted outside agreed hours (please circle)? Weekday / Time 7 am to 5 pm Saturday / Time 7 am to 1 pm Sunday or Public Holiday / No work allowed	YES / NO
Has monitoring been performed to assess noise levels? If so: provide details (attach to form if necessary)	YES / NO
Has an exceedance of the criteria stated in Section 4.2 of the NVMP occurred?	YES / NO
Is further monitoring necessary?	YES / NO
Have best practicable means been adhered to?	YES / NO
Is the event/exceedance likely to re-occur?	YES / NO

Corrective Action	
What noise control methods can be considered for these works (provide detail):	
[ ] Stop work immediately and investigate complaint	
[ ] Inspect and repair equipment	
[ ] Move equipment to a less sensitive location	
[ ] Mufflers / local noise reduction at source	
[ ] Conduct these works at another nominated time and day (state time and day):	Day: Time:
[ ] Provide respite periods to receivers	
[ ] Change the method of works	
[ ] Restrict movement of equipment (eg trucks)	
[ ] Other (describe)	

Resolution	
What noise control will be implemented?	
What is the time frame for this action?	

Follow-up	
Has the complainant been contacted and notified of actions taken?	YES / NO
Does the complainant believe that the noise problem been adequately addressed?	YES / NO Details:
Does the noise level now meet the relevant criteria given in the NVMP?	YES / NO Details:
What further action is recommended?	

Signed: _____ Site Superintendant

Date: _____/_____/_____