

RICHMOND VALE ANE PRODUCTION FACILITY

HEAVY VEHICLE ROAD TRANSPORT PROTOCOL - OPERATIONS

JUNE 2020 REVISION E



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Revision History

| Revision | Revision Date | Details | Reviewed By: | |
|----------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | Name | Position |
| A | April 2015 | Document review Road transport route changes | David N Horne | Manufacturing Superintendent |
| | | | Denise Blackadder | Capability Leader |
| | | | Chris Jones | Toll Mining Services (Primary Contractor) |
| B | September 2017 | Document review | David N Horne Denise Blackadder Donna Garth | Senior Manufacturing Supervisor Sustainability and Training Officer Manager DG & Bulk Services South – Mining Toll Global Logistics |
| C | November 2018 | Correction of Errors in Appendix 8,9. | David N Horne | Senior Supervisor Plant |
| D | March 2019 | Incorporation of heavy vehicle parking arrangements and Clarification of process for new routes and material being transported | David N Horne | Senior Supervisor Plant |
| D | May 2019 | Update of document in view of comments by Roads and Maritime Services | David N Horne | Senior Supervisor Plant |
| E | June 2020 | Update of Section 3.1.13 to address: <ul style="list-style-type: none"> • Independent Environmental Audit recommendation • Update Agency name | David N Horne | Senior Supervisor Plant |

1 INTRODUCTION

1.1 CONTEXT

Orica Australia Pty Limited (Orica) operates an Ammonium Nitrate Emulsion (ANE) Production Facility at its Mining Services Technology Centre at Richmond Vale, NSW.

The ANE Production Facility was granted Project Approval 09_0090 (Project Approval) by the Department of Planning on 26 July 2010. Schedule 3 Condition 10 of the Project Approval requires Orica to implement a Road Transport Protocol for heavy vehicles which has been prepared in consultation with RMS and to the satisfaction of the Secretary.

This Operational Road Transport Protocol (ORTP) has been prepared to address the heavy vehicle traffic management requirements associated with the operation of the ANE Production Facility, in accordance with Schedule 3 Condition 10 of the Project Approval.

Raw materials to produce ANE include Ammonium Nitrate Solution (ANS), fuel blend ingredients such as palm olein and diesel oil, thiourea, urea, acetic acid, caustic soda, calcium nitrate, solid ammonium nitrate, and water. All raw materials are delivered to the ANE Production Facility via road transportation.

The main raw material involved in ANE production, is ANS, which is typically sourced from Orica's facility at Kooragang Island. ANE is transported from the ANE Production Facility typically to mining operations in and around the Hunter Valley.

The primary transport risks identified by the Traffic Hazard Analysis (THA) prepared as part of the Environmental Assessment, is the transport of ANS to, and ANE from the ANE Production Facility. The controls and mitigation measures to minimise these transport risks are detailed in Section 1.3.

1.2 SCHEDULE 3 – CONDITIONS 10

This ORTP has been prepared in accordance with Schedule 3 Condition 10 of the Project Approval (09_0090). Requirements for Schedule 3 Condition 10, together with where each has been addressed in this document are presented in Table 1.1.

Table 1.1 Project Approval Conditions for the Road Transport Protocol

| Project Approval Condition | Condition Detail | Section in this Document |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| SCHEDULE 3 <i>Condition 10</i> | Prior to the commencement of construction of the ANE Facility, the Applicant shall prepare and implement a Road Transport Protocol for heavy vehicles, in consultation with the RTA, to the satisfaction of the Director-General. The Protocol shall detail the management of heavy vehicles during both construction and operation of the ANE Facility, and where relevant: | Note that a construction RTP was prepared and approved – this document covers the operational aspects of the ANE facility. |
| <i>Condition 10a</i> | Define the routes to be used for heavy vehicles; the maximum number of road movements and the haulage hours; | Section 2.0 |

| Project Approval Condition | Condition Detail | Section in this Document |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Condition 10b | Include a Traffic Management Plan, which incorporates the requirements of the site’s existing Traffic Management Protocol and addresses: Procedures to ensure that drivers adhere to the designated haulage route as required under this protocol; | Section 2.1 |
| | Measures to achieve a low-frequency, regular trucking schedule during normal business hours rather than a high-frequency, campaign trucking schedule; | Section 2.1 |
| | Contingency plans where, for example the designated transport route is disrupted. This shall also address procedures for notifying relevant agencies and affected communities of the required implementation of any such contingency plans; | Section 2.4 |
| | Details of procedures for receiving and addressing complaints from the community concerning traffic issues associated with haulage from the site; and | Section 2.5 |
| | Measures to ensure that the provisions of the Traffic Management Plan are implemented, e.g. education of drivers and any contractual agreements with operators of heavy vehicles which service the site; | Section 3.0 |
| Condition 10c | Include a Driver Code of Conduct that addresses: Driver licensing and training requirements in relation to the transport of dangerous goods; | Section 3.0 |
| | Travelling speeds; | Section 3.0 |
| | Staggering of truck departures to ensure a regular trucking schedule throughout the day; | Section 3.0 |
| | Instructions to drivers not to overtake each other on the haulage route, as far as practicable, and to maintain appropriate distances between vehicles; | Section 3.0 |
| | Instructions to drivers to restrict the use of exhaust brakes as per the commitments outlined in the Submissions Report; | Section 3.0 |
| | Instructions to drivers to adhere to the designated haulage route; | Section 3.0 |
| | Instructions to drivers to be especially safety conscious and to ensure that traffic regulations are obeyed strictly; | Section 3.0 |
| | Driver training in the Code to ensure that all drivers are made aware and to adhere to the code; and | Section 3.1 |
| | Procedures for ensuring compliance with and enforcement of the Code. | Section 3.2 |

1.3 TECHNICAL NOTE – ANE AND ANS TRANSPORT HAZARD ANALYSIS INPUT TO ENVIRONMENTAL ASSESSMENT

The ‘*Technical Note ANE and ANS Transport Hazard Analysis Input to Environmental Assessment*’ (The Technical Note) (Sherpa, 2009) (see Appendix 12), was prepared as part of the Environmental Assessment Process. The Technical Note considered the transport risks of transporting ANS and ANE associated with the project. The document covered potential transport incident scenarios involving ANE and ANS and identified the safeguards in place. Section 4 of the Technical Note outlines the controls and mitigation measures to minimise the transport risks associated with the product, the driver, haulage truck and those required under the specific Security Sensitive Ammonium Nitrate (SSAN) legislation.

These controls and mitigation measures apply to this ORTP in both the traffic management plan and the Drivers Code of Conduct (Section 3.0) and are summarised below. It is noted that Orica’s general transport

procedures, controls and management measures for Dangerous Goods transport (see Section 3.0) are in addition to those detailed in the Technical Note.

1.3.1 PRODUCT CONTAMINATION CONTROLS

The following are specific to transporting Dangerous Goods (i.e. ANS and ANE) and do not apply to the receipt of general raw materials or other transport. The implementation of the following is to prevent risks associated with the contamination of ANS and ANE with other products:

- quality control processes at the supply facility (e.g. Kooragang Island) and the ANE Production Facility to ensure the product is suitable for transport;
- dedicated ANS and ANE tankers to ensure non-compatible materials are not introduced during transport;
- different configurations, locations and sizing of filling nozzles for ANS and ANE and loading facilities to prevent incorrect loading / unloading; and
- separate, dedicated tanks for the small loads of gasser and companion solution transported with ANE.

1.3.2 TRUCK CONTROLS

The following are implemented for heavy vehicles transporting Dangerous Goods (i.e. ANS and ANE) and are designed to minimise the escalation potential following an event or vehicle fire:

- tanks are constructed in accordance with the requirements of the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code);
- licensing of all vehicles by the relevant regulatory authority. Contractors are to audit compliance with licensing requirements and report to Orica; and
- maintenance and pre-start checks undertaken in accordance with manufacturer requirements and the National Heavy Vehicle Accreditation Scheme requirements.

1.3.3 DRIVER TRAINING, EDUCATION, AND LICENSING

The following controls and mitigation measures apply to all heavy vehicle drivers:

- all drivers must hold a current drivers licence for the heavy vehicle to be operated.

In addition to the above, all heavy vehicle drivers transporting Dangerous Goods (e.g. ANS and / or ANE) must:

- hold a licence/permit to transport the Dangerous Goods in the State(s) and /or Territory in which transport will occur. The licencing/permit aspect is managed by RMS /SafeWork NSW;
- complete specific training which includes information on:
 - Orica's Safety Management Systems;
 - the products being transported; and
 - the controls in place to ensure the safe transport of the product.

1.3.4 ROUTE RISK ANALYSIS

A route risk analysis is to be undertaken by the transport contractor in accordance with AS/NZS 4360:2004 Risk Management Standard and the Australian Code for the Transport of Dangerous Goods by Road and Rail.

The outcome of the route risk analysis is incorporated into the contractor's driver training for the route being travelled.

The process for undertaking a "Route Risk Analysis" can be found in Appendix B of The Technical Note (Appendix 12) and is only applicable to the transport of ANS and ANE.

1.3.5 EMERGENCY PLANS

The following applies to all heavy vehicle drivers:

- undergo emergency response training for events such as vehicle accidents and fires as part of the site induction;
- each heavy vehicle is to carry an Emergency Procedure Guide which summarises the actions to be undertaken in the event of a vehicle fire and also a guide for each type of product being carried.

1.3.6 REVIEW OF PLAN

This ORTP may be reviewed and amended from time to time to reflect changes in road transport requirements and practices.

2 TRAFFIC MANAGEMENT PLAN

The ANE Production Facility began operations in 2012. The ANE Production Facility can produce up to approximately 250,000 tonnes of ANE per annum.

2.1 TRUCK MOVEMENTS AND HAULAGE HOURS

The ANE Production Facility operates 24 hours per day Sunday to Friday and traffic movements are spread throughout this window.

The average total daily heavy vehicle movements (i.e. to and from the site) at maximum production are expected to be approximately 100 (i.e. 50 in/50 out).

Of the 100 heavy vehicle movements, approximately 80 are associated with the delivery of ANS and distribution of ANE (i.e. 40 vehicle movements for each ANS and ANE). The remaining 20 vehicle movements are associated with the delivery of raw materials required to produce ANE (i.e. 10 inbound and 10 outbound).

Recently A-Double tanker configurations have been introduced to ANE transport fleet and are now being utilised by our contractors. Due to load distribution across additional axles this has enabled the payload to be increased, resulting in reduced vehicle movements.

The majority of the product being delivered to and from the site is undertaken by transport logistics contractors, which includes the delivery of ANS (the main raw ingredient used to produce ANE) and the delivery of ANE to Orica - depot sites. The delivery of ANS and ANE will occur as required during the operating times. As such, these vehicle movements are staggered to ensure the safe and efficient movement along the transport route and through the ANE Production Facility. The vehicles delivering ANS and ANE to and from the ANE Production Facility will follow the heavy vehicle routes as detailed in Section 2.2.

Other companies also deliver raw materials including general and Dangerous Goods freight to the ANE Production Facility. These deliveries are carried out at a far lower frequency during operating hours. These raw material delivery vehicles will also follow the heavy vehicle routes as detailed in Section 2.2. NB the controls and mitigation measures as detailed in Sections 1.3 and 3.0, where applicable, also apply to vehicles delivering raw material.

Based on the existing traffic volumes set out in the EA, the additional heavy vehicle movements represent an increase of less than 8 per cent for heavy vehicle volumes on George Booth Drive. It is considered that any potential traffic impacts associated with the operation of the ANE Production Facility are appropriately mitigated as outlined in this Road Transport Protocol.

Operational traffic management measures are provided in Section 2.1 and Section 3.0.

2.2 HEAVY VEHICLE TRANSPORT ROUTES

2.2.1 ROUTE RESTRICTIONS

Heavy vehicle transport route restrictions associated with the ANE Production Facility fall into the following two categories, with further detail provided in Table 2.1 and as shown on the Restricted Access Vehicle (RAV) map (see Appendix 1).

- Kurri Kurri Locality Restrictions derived from the Environmental Assessment titled *Proposed Ammonium Nitrate Emulsion (ANE) Production Facility, and Continued Operation of Orica Mining Services Technology Centre, Richmond Vale, NSW* (Umwelt, 2009) and restricted by this ORTP, and
- Restricted Access Vehicle Routes derived from external regulation.

Table 2.1 Heavy Vehicle Transport Routes

| Route Restriction | Description/ details |
|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Kurri Kurri Locality Restrictions | These restrictions are largely focused on mitigating potential traffic and hazard impacts from the transport of ANS / ANE on local/residential roads around Kurri Kurri. All heavy vehicles movements to and from the ANE Production Facility on Echidna Drive are restricted to George Booth Drive and John Renshaw Drive. (N.B. George Booth drive shall not be accessed from Seahampton or Cardiff Exit from M1 Pacific Motorway) |
| Restricted Access Vehicle Routes beyond the Kurri Kurri Locality | RMS regulates Restricted Access Vehicle routes in accordance with the National Heavy Vehicle Regulator (NHVR). An interactive RAV map provides an active depiction of the location of road network restrictions and approved routes for use by heavy vehicles (e.g. B-Doubles). Restrictions and approved routes are shown by heavy vehicle types. Project related deliveries, both in and out, must abide by current RAV routes. Approved RAV routes which are typically used by the B Doubles and associated with the ANE Production facility truck movements include: <ul style="list-style-type: none"> • George Booth Drive (B68); • John Renshaw Drive; • New England Highway (A43 – National Highway); • Hunter Expressway (M15); • the M1 Pacific Motorway (M1); and • Pacific Highway (A1 – National Highway). |

It is noted that as outlined in Section 2.4 temporary deviations from these project specific and general route restrictions are permissible.

2.2.2 WHAT IS A RESTRICTED ACCESS VEHICLE

The national law and regulations prescribe the mass and dimension requirements for heavy vehicles. The two key types of heavy vehicle are:

- General Access Vehicle: Vehicles that comply with mass and dimension limits and do not require a notice or permit to operate on the road network. These vehicles have general access to the road network unless the road is sign-posted otherwise.
- Restricted Access Vehicle: National law provides for three classes of RAVs, namely Class 1, 2 and 3 and are described below:
 - Class 1: Vehicles that, together with their load, do not comply with prescribed mass or dimension limits. For example,
 - > special purpose vehicles such as mobile crane;

- > vehicles or combinations carrying, or designed for the purpose of carrying, a large indivisible item (e.g. prime mover and low loader combination).
- Class 2: Vehicles that comply with their prescribed mass and dimension limits, including:
 - > B-doubles – consists of a prime mover towing two semitrailers, with the first semitrailer being attached directly to the prime mover by a fifth wheel coupling and the second semitrailer being mounted on the rear of the first semitrailer by a fifth wheel coupling; and
 - > Performance-Based Standards (PBS) vehicles (other than a specified PBS vehicle) – which can operate on road networks that have been classified as suitable for their level of performance.
- Class 3: Vehicles which, together with their load, do not comply with prescribed mass or dimension limits and are not Class 1 vehicles. Examples include:
 - > rigid truck and dog trailer combinations weighing more than 42.5t; and
 - > B-doubles or road trains transporting loads wider than 2.5m.
 - > Notices and permits specify a range of conditions relevant to the use of the vehicle or combination. This can include, but is not limited to:
 1. mass and dimensions;
 2. routes and areas; and
 3. travel, roads and vehicle conditions.

2.2.3 HEAVY VEHICLE TRANSPORT ROUTES

With consideration of the above heavy vehicle route restrictions, Orica has identified both normal and alternative heavy vehicle transport routes as summarised in Table 2.2. These routes are typically associated with the movement of either ANS or ANE. However, the use of these routes to transport ANS/ANE and/or other raw materials as well as being used by other sized heavy vehicles and anything else is permitted as long as the applicable controls and mitigation measures as detailed in this document are implemented.

Given the complexity of the supply and distribution logistics associated with the various raw material suppliers and freight transport companies (i.e. multiple suppliers, material types, truck sizes, subsequent truck destinations and route restrictions), it is not possible or reasonable to identify all possible transport route scenarios and other routes may be used. However, the transport routes to / from the ANE Production Facility which connect to the major arterial roads of the Hunter Expressway (M15), Pacific Highway (M1) and New England Highway (A43) are shown on Figure 2.1 (i.e. Kurri Kurri Locality Restrictions). These transport routes apply to all heavy vehicles unless a prior or subsequent delivery to another locality within Kurri Kurri is undertaken and the applicable controls and management measures (e.g. driver licencing) as detailed in Section 1.3 will be applied to these heavy vehicle movements. Beyond the Kurri Kurri Locality, drivers are not route restricted by the project or this ORTP but must abide with RMS requirements and all applicable legislation.

Figure 3.1 Kurri Kurri Locality Routes (i.e. approved routes)

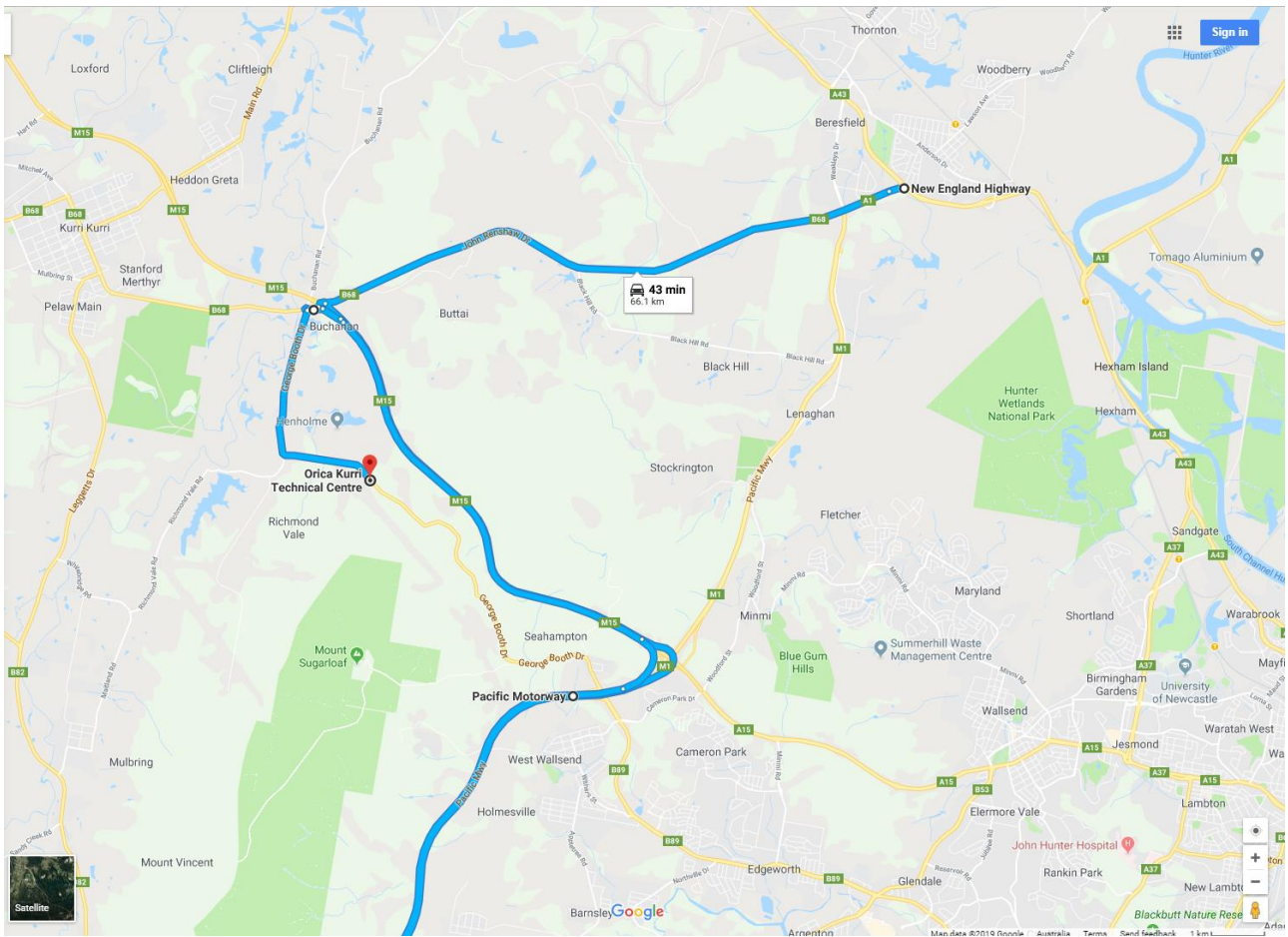


Table 2.2 Heavy Vehicle Transport Routes

| Transport Route | | Main Product(s) Transported on Route | Normal or Alternative Route | Detailed Route Map and Directions |
|---------------------------------------|-------------------------------------------------|--------------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------|
| Departure Location | Destination Location | | | |
| Orica Kooragang Island | ANE Production Facility Richmond Vale | ANS | Normal | See Appendix 2 |
| ANE Production Facility Richmond Vale | Liddell ANE Plant | ANS | Normal | See Appendix 3 |
| ANE Production Facility Richmond Vale | Depot Sites – via M15 | ANE | Normal | See Appendix 4 |
| ANE Production Facility Richmond Vale | Depot Sites – via A43 | ANE | Alternative 1 | See Appendix 5 (This route has restricted usage or private roads) |
| ANE Production Facility Richmond Vale | Depot Sites – via Kurri Kurri | ANE | Alternative 2 | See Appendix 6 (additional conditions and obligations associated with using this route see Appendix 6 for details) |
| Toll Depot (Tomago) | ANE Production Facility Richmond Vale | All | Normal | See Appendix 7 |
| Melbourne | ANE Production Facility Richmond Vale | All | Normal | See Appendix 8 |
| Sydney | ANE Production Facility Richmond Vale | All | Normal | See Appendix 9 |
| Brisbane | ANE Production Facility Richmond Vale – Via A1 | All | Normal | See Appendix 10 |
| Brisbane | ANE Production Facility Richmond Vale – Via A43 | All | Normal | See Appendix 11 |

Note: the above routes are interchangeable for any and all transport products and size of heavy vehicle as long as the applicable controls and mitigation measures as detailed in **Section 1.3** are implemented.

2.3 OPERATIONAL TRAFFIC MANAGEMENT MEASURES

The following management measures have been implemented in order to minimise the potential for traffic impact associated with the operation of the ANE production facility.

| Mitigation Measure | Responsibility | Timing |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------|
| The Safety, Health, Environment and Security (SHES) induction provided to the ANE staff includes operational traffic components including those outlined in this ORTP. | Site Safety/Environment Representative | As required during operation |
| Reinforcement of the community impacts associated with traffic movements during site meetings and inductions such as the restrictions on the use of exhaust brakes along George Booth Drive between John Renshaw Drive and the site. | Site Safety/Environment Representative, Manufacturing Superintendent and Haulage Contractor | As required during operation |
| The heavy vehicle movements associated with ANS and ANE deliveries to and from the site are staggered to minimise noise and traffic impacts on nearby residents. This is achieved via implementation of measures such as staggered shift start times and delivery schedules for all deliveries to and from the site. | Senior Manufacturing Supervisor and Haulage Contractor | During Operation |
| Monitoring of truck movements are undertaken to ensure drivers adhere to the designated haulage route as required by the Driver Code of Conduct and transport route risk assessment. Monitoring will include the use of a GPS system. | Senior Manufacturing Supervisor and Haulage Contractor | During Operation |
| Any oversize loads are transported according to the requirements of the Roads & Maritime Services (RMS) and police, and have the appropriate approvals and escorts as required. | Senior Manufacturing Supervisor and Haulage Contractor | As required during operation |
| Event investigation in response to any concerns raised by the community, regarding traffic associated with the operation of the ANE Production Facility in accordance with Section 2.5 of this document and appropriate action taken if required. | Senior Manufacturing Supervisor and Haulage Contractor | During Operation |
| All heavy vehicle drivers associated with deliveries to and from the site will be instructed to restrict the use of exhaust brakes in both directions on George Booth Drive between John Renshaw Drive and Echidna Drive; as required by the Driver Code of Conduct. | Senior Manufacturing Supervisor and Haulage Contractor | During Operation |
| Monitoring of haulage contractors are undertaken to ensure drivers are complying with the requirements of the Driver Code of Conduct. | Senior Manufacturing Supervisor and Haulage Contractor | During Operation |
| Carry out a Transport Route Risk Assessment for an alternate route identified for the transport of the ANS and ANE and provision of the assessment to the Senior Manufacturing Supervisor. | Haulage Contractor | During Operation |

2.4 CONTINGENCY PLAN

Orica has identified a number of alternative transport routes (See Table 2.2) consistent with route restrictions (as per Section 2.2), should there be disruptions, whether for business, transport or other reasons, which result in a need for changes to the normal haulage routes identified in this ORTP. The use of other routes outside the Kurri Kurri Locality not identified in Table 2.2 is also permitted under this ORTP (see section 2.2.3).

If an alternative transport route is required due to an emergency (e.g. fire, vehicle accident, etc) or unexpected event, vehicles will either voluntarily divert to the alternative transport route or they may be directed to do so by the relevant authorities (RMS, Police, SES or other emergency agency). In these circumstances Orica will not have sufficient time to communicate the use of the alternative transport route and will operate under the direction and control of any agency redirecting the traffic.

When there is sufficient notice of a need to use an alternative transport route within the Kurri Kurri Locality (e.g. upcoming road works / road closure, supply chain issue, etc), Orica will notify the change of route and duration to the following:

- DPIE;
- RMS;
- Cessnock City Council; and
- Local community (via advert run in the local newspaper).

2.4.1 PROCESS FOR ASSESSING NEW TRANSPORT ROUTES

The Transport Hazard Analysis (Sherpa, 2009), which informed the preparation of the Environmental Assessment:

- Considered the transport risks associated with project, specifically ANS and ANE transport to and from the site. Both ANS and ANE are classed as Dangerous Goods (DG) Class 5.1 oxidiser materials. Transport of these goods is regulated under the Australian Dangerous Goods Code (ADGC). As ANE contains over 45% Ammonium Nitrate (AN), it is also classified as Security Sensitive AN (SSAN) and is also regulated under the NSW Explosives Regulations 2005;
- assessed the ANS and ANE transport risks for nominated transport routes and incident scenarios;
- detailed the controls and mitigation measures to be implemented for the transport of ANS and ANE; and
- recognised the supply and distribution logistics complexities (i.e. multiple suppliers, material types, truck sizes, destinations and route restrictions) for the ANE Production Facility and addressed this by defining the Route Risk Analysis process to be implemented for new route(s).

Therefore when a new ANS or ANE transport route is proposed (except in an emergency or unforeseen event), a specific route risk analysis must be carried out by the transport contractor in accordance with AS/NZS 4360:2004 Risk Management Standard and the Australian Code for the Transport of Dangerous Goods by Road and Rail and the route risk analysis process as provided in Appendix B of Appendix 12. The route risk analysis and the notification of DPIE, RMS, Cessnock City Council, and local community is to be completed prior to the use of the new transport route.

As ANE and ANS are both dangerous goods risk code 5.1 – Oxidising Agent (Orica, 2018), they have a similar hazard and risk level. As such, the route risk analysis is appropriate for both ANS and ANE, even if only one product is specified. We note that the firefighting measures and accidental release measures differ slightly due to the different compositions of ANE and ANS. Therefore, the controls for ANE are more stringent

2.5 COMMUNITY ENQUIRIES

All community enquiries and complaints for the ANE Production Facility will be managed in accordance with the Orica's Enablon system (Orica's computer-based SHES reporting system). The safeguards and procedures outlined in Section 3.3 Communication of the Environmental Management Strategy will apply for the implementation of the Operational Road Transport Protocol with the following additional measures:

- all ANS and ANE product trucks are appropriately labelled with the relevant Dangerous Goods Signage. The number listed on these signs directs the caller to Orica Emergency Response Service (ERS) which is staffed 24/7. ERS staff will be briefed on the ORTP and all non-emergency related enquiries directed to the Orica Technical Centre;
- the Orica Technical Centre site sign reflects the relevant contact details for the ORTP, and
- relevant Orica Technical Centre operational staff are briefed on the ORTP and its obligations. All community enquiries relating to the ORTP will be directed to the ANE Production Facility Senior Manufacturing Supervisor.

Orica SHES procedure details the requirements for immediate action, investigation and reporting of events and non-compliances. This includes events which cause, or have the potential to cause injury, illness or damage to personnel offsite, damage to the environment, cause concern to the community, public or are reportable to statutory agencies, including non-compliances with statutory approvals.

Additional requirements for the investigation of SHES issues and management of corrective actions include the following requirements:

- the undertaking of immediate action to minimise the severity of an event or non-compliance;
- reporting of an initial event or non-conformance details where required, any 'quick fixes' undertaken and the longer term actions;
- initial assessment of the severity of an event or non-conformance and notification of key personnel by the ANE Production Facility Senior Manufacturing Supervisor and ERS personnel as required;
- investigation of an event or non-conformance and development of corrective actions where required;
- the review of any significant event by a member of the General Management Team within four weeks of the event;
- details are entered into 'Enablon (Orica's computer-based SHES reporting system) and these records of the event are retained indefinitely;
- enquiries relating to the operation of the ANE Production Facility including traffic movements will be managed via the main Orica Technical Centre enquiry line, phone number is (02) 4939 5200. Any enquiries or complaints received will be documented and transmitted to the ANE Production Facility Senior Manufacturing Supervisor immediately;
- if outside of normal office hours the caller will be directed to the Orica Emergency Response Service. The ERS services is staffed 24/7 with operators trained in Orica Emergency Response Procedures. The complaint will be managed by ERS appropriately according to risk. All complaints will be sent to the ANE Production Facility Senior Manufacturing Supervisor on the next working day. This phone number has been listed with a telephone company and is advertised via signage at the Orica Technical Centre entrance on George Booth Drive; and
- Orica will maintain a register to record details of all enquiries received and actions undertaken in response. Orica will provide Environment Protection Authority (EPA) with a copy of the enquiries register on an annual basis upon request.

2.6 IMPLEMENTATION OF TRAFFIC MANAGEMENT PLAN

The following measures are implemented to ensure the Traffic Management Measures detailed within this ORTP:

- the ORTP is available on the Orica website and hard copies are available on site and on request. A copy is also be kept in each delivery vehicle;
- the ORTP is included in the contract between Orica and the relevant haulage company; and
- the Traffic Management Measures detailed within this ORTP is included in Orica staff inductions and discussed at site meetings.

2.7 COMMUNICATION

The ANS and ANE haulage company/companies shall be requested to nominate a representative to liaise with the ANE Production Facility and Kurri Kurri Technical Centre management to ensure prompt follow up to any issues regarding the implementation of this ORTP.

3 DRIVER CODE OF CONDUCT

3.1 CODE OF CONDUCT

The Driver Code of Conduct is a mitigation measure proposed by Orica to manage potential impacts from heavy vehicle traffic associated with haulage to and from the site. The following Code of Conduct has been prepared in accordance with Condition 10c of Schedule 3 of the project approval and will apply to all relevant Orica employee drivers as well as all contracted drivers. Contractors are responsible for ensuring their drivers meet the requirements of this Code of Conduct.

3.1.1 TECHNICAL NOTE – ANE AND ANS TRANSPORT HAZARD ANALYSIS INPUT TO ENVIRONMENTAL ASSESSMENT

The measures outlined below are in addition to those measures described in Section 4.3 of the Technical Note (Appendix 12) for drivers and apply to all heavy vehicle drivers.

3.1.2 ORICA SHES PROCEDURES

Orica requires the following general measures relevant to Dangerous Goods transport to be adopted:

- driver training and accreditation;
- fatigue management;
- regular drug and alcohol testing;
- carrier accreditation;
- disciplinary procedures;
- carrier maintenance programs;
- Orica site and customer site procedures; and
- reporting and investigation of events.

3.1.3 DRIVER LICENSING AND TRAINING

All drivers are to be appropriately licensed to operate the relevant vehicle. Relevant licences must be able to be produced by the driver at all times. Appropriate training and information will be provided to all drivers on site during the induction process. Drivers will not be permitted to operate to or from the site without undertaking the site induction which includes the relevant measures from this ORTP.

3.1.4 TRAVELLING SPEEDS

Drivers must adhere to the sign posted speed limit at all times. In addition to the speed limits indicated by road signs drivers are to also follow temporary/construction speed limit signs and drive to the conditions at all times.

3.1.5 STAGGERED ARRIVALS AND DEPARTURES

All deliveries to and from the site will be regulated by the delivery schedule and managed on site by the ANE Production Facility Senior Manufacturing Supervisor. Shift start times for delivery drivers for ANS and ANE will also be staggered. Drivers should also endeavour to maintain appropriate separation distance between vehicles resulting from the staggered departure.

3.1.6 OVERTAKING

George Booth Drive has no passing lanes which allow haulage vehicles to overtake. Due to this there will be no overtaking of other moving vehicles unless under the direction of authorised traffic controllers (i.e. road works).

On other sections of the route, heavy vehicles can overtake where there are designated passing lanes. Vehicles should remain in the left lanes when not overtaking, to allow faster vehicles to pass.

3.1.7 VEHICLE SEPARATION

Drivers are to maintain a safe separation distance between all vehicle types at all times. Whilst the staggered arrival and departure of ANS and ANE heavy vehicle at the ANE Production Facility should result in a separation of several kilometres between these delivery vehicles, it is certain that other heavy vehicles will be encountered en-route. Where this does occur a safe separation distance between heavy vehicles is to be maintained. This is applicable to all heavy vehicle movements.

In the event of unavoidable queuing drivers will be required to note these details to assist in identifying trouble spots.

3.1.8 ROAD SHOULDERS AND PASSING OPPORTUNITY LANES

Drivers are generally to avoid straying onto road shoulders and haulage trucks should remain on the main section of the road pavement. Where there is a need to pass a turning vehicle on George Booth Drive between Richmond Vale Rd and John Renshaw Drive vehicles must use the 'passing opportunity' lanes that have been installed opposite driveways except in the case of extreme circumstances.

3.1.9 BRAKING

The use of exhaust brakes should be avoided at all times in both directions on the section of George Booth Drive between John Renshaw Drive and the intersection between Echidna Drive and George Booth Drive.

3.1.10 DESIGNATED HAULAGE ROUTE

All ANS and ANE drivers are required to strictly follow the relevant assessed designated haul route in the vicinity of the site at all times unless instructed otherwise. All other heavy vehicle movements in the vicinity of the site are to follow the appropriate route to site entry on Echidna Drive via John Renshaw Drive and George Booth Drive.

Designated haulage routes are outlined in Section 2.2. Should a new route(s) be proposed, the route risk analysis process as described in Section 2.4.1 is to be implemented.

3.1.11 PARKING

In the event that a heavy vehicle arrives at the ANE Production Facility early or outside the operating hours, the driver is to use RMS designated rest areas which are suitable for heavy vehicle parking.

The RMS website includes an interactive map of these locations (<https://www.rms.nsw.gov.au/roads/using-roads/trip-information/rest-areas/map/>). As at the date of this plan, those heavy vehicles parking areas situated in the vicinity of the ANE Production Facility site are listed in Table 3.1 and displayed in Figure 3.1.

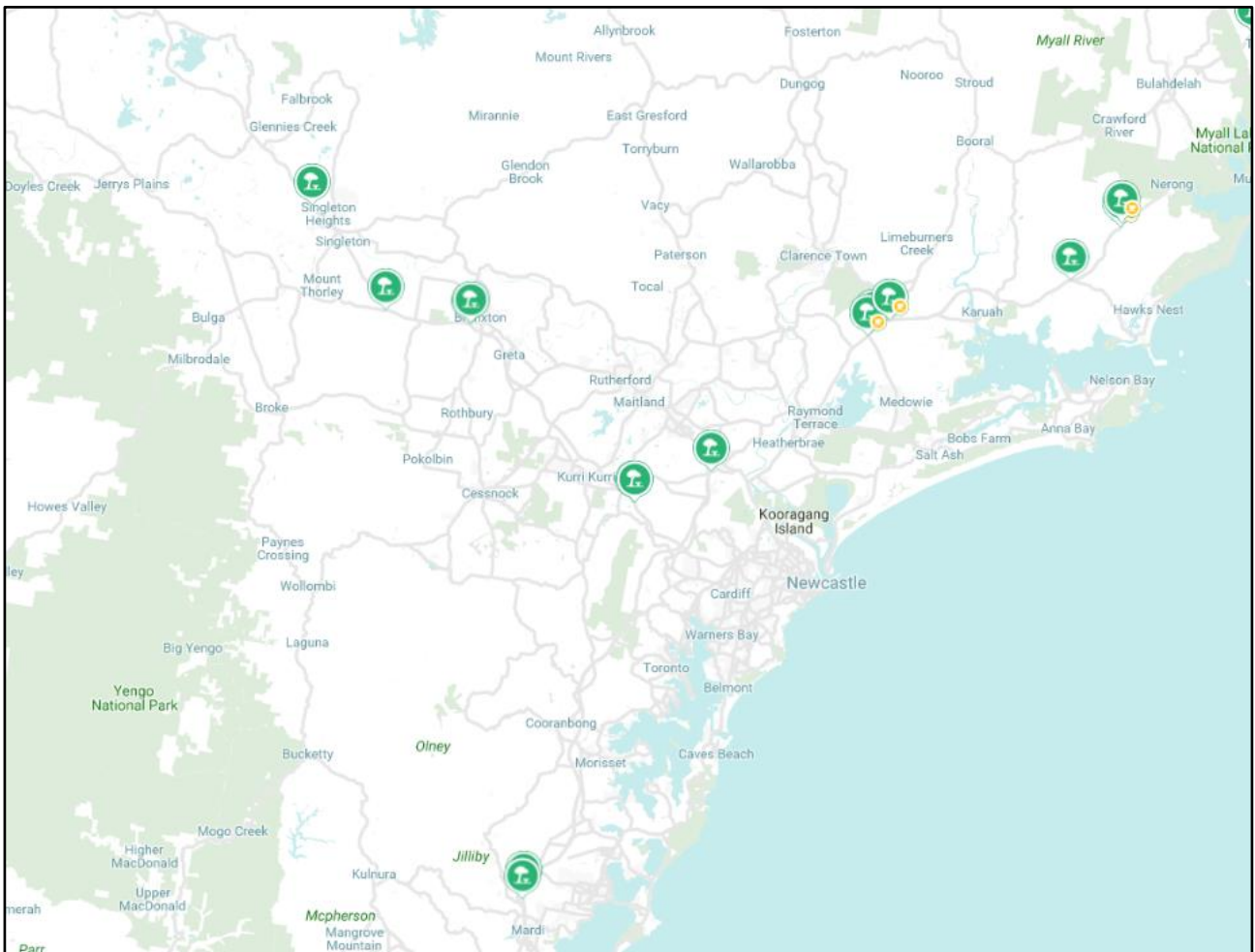
Heavy vehicles in the vicinity of the site must park in RMS designated rest areas. Therefore, parking along roadside on John Renshaw Drive and George Booth Drive is not permitted. When utilising the designated parking facilities, all drivers are to be courteous and park within the defined heavy vehicle parking bays at each location.

Should a truck arrive ahead of the schedule arrival time, there are designated on site truck parking areas which can be used for short term (i.e. <24 hours) truck parking.

Table 3.1 Project Approval Conditions for the Road Transport Protocol

| Rest Area | Location | Accessible to |
|---------------------------|--------------------------------|-----------------------------------------------|
| Wattaka Rest Area | Hunter Expressway, Kurri Kurri | Vehicles travelling eastbound and westbound |
| Beresfield Service Centre | John Renshaw Drive, Beresfield | Vehicles travelling northbound |
| Wyong Service Centre | Pacific Motorway, Wyong | Vehicles travelling northbound and southbound |
| Branxton Truck Rest Area | Hunter Expressway, Branxton | Vehicles travelling westbound |
| Branxton Truck Rest Area | New England Highway, Branxton | Vehicles Travelling eastbound |

Figure 3.2 RMS Approved Truck Parking Areas in Vicinity of Kurri Kurri ANE Plant



3.1.12 SAFETY

Drivers of all heavy vehicles are required to strictly adhere to the general road rules. Professionalism and safe driving skills are required at all times including courtesy to other road users. Drivers should not only be aware of their own safe driving skills but also be aware of other road users who may not adhere to the road rules.

The safety measures described in the Technical Note such as the inclusion of a dangerous goods folder containing emergency information in all Dangerous Goods haulage vehicles must be maintained.

3.1.13 EVENT REPORTING

All drivers are required to report all incidents immediately to the ANE Production Facility Senior Manufacturing Supervisor and their supervisor.

All incidents will be managed in accordance with the Orica's Enablon system (Orica's computer-based SHES reporting system). Orica SHES procedure details the requirements for immediate action, investigation and reporting of events and non-compliances. This includes events which cause, or have the potential to cause injury, illness or damage to personnel offsite, damage to the environment, cause concern to the community, public or are reportable to statutory agencies, including non-compliances with statutory approvals.

Further details regarding the investigation of SHES issues and management of corrective actions is provided in Section 2.5.

External incident notification / reporting will be undertaken in accordance with Schedule 4, Condition 3 of the Project Approval (as modified) and Environment Protection Licence No 4121 - specifically the Pollution Incident Response Management Plan. When considering whether external incident notification and/ or reporting is to be undertaken, Chapter 5, Part 5.7, Section 147 of the *Protection of the Environment Operations Act 1997* which defines material harm to the environment (reproduced below) will be used as the trigger.

- “147 Meaning of material harm to the environment**
- (1) For the purposes of this Part—
- (a) *harm to the environment is material if—*
- (i) *it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or*
- (ii) *it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations), and*
- (b) *loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.*
- (2) For the purposes of this Part, it does not matter that harm to the environment is caused only in the premises where the pollution incident occurs.”

If external notification / reporting of an incident has been triggered, Orica will notify the Director-General of the Department of Planning, Industry and Environment and any other relevant agencies (e.g. NSW EPA and the local council for the area in which the pollution incident occurs; the NSW Ministry of Health; SafeWork NSW; and Fire and Rescue NSW), as soon as practicable after becoming aware of the incident.

Additionally, within 7 days of the date of an incident related to the site's operation, Orica is required to provide the Director-General and any relevant agencies with a detailed report on the incident (see in Schedule 4, Condition 3 of the original project approval). (NB There are “immediate” reporting obligations should an incident at the premises trigger the Pollution Incident Response Management Plan (PIRMP) required by the *Protection of the Environment Operations Act 1997*.)

3.2 COMPLIANCE

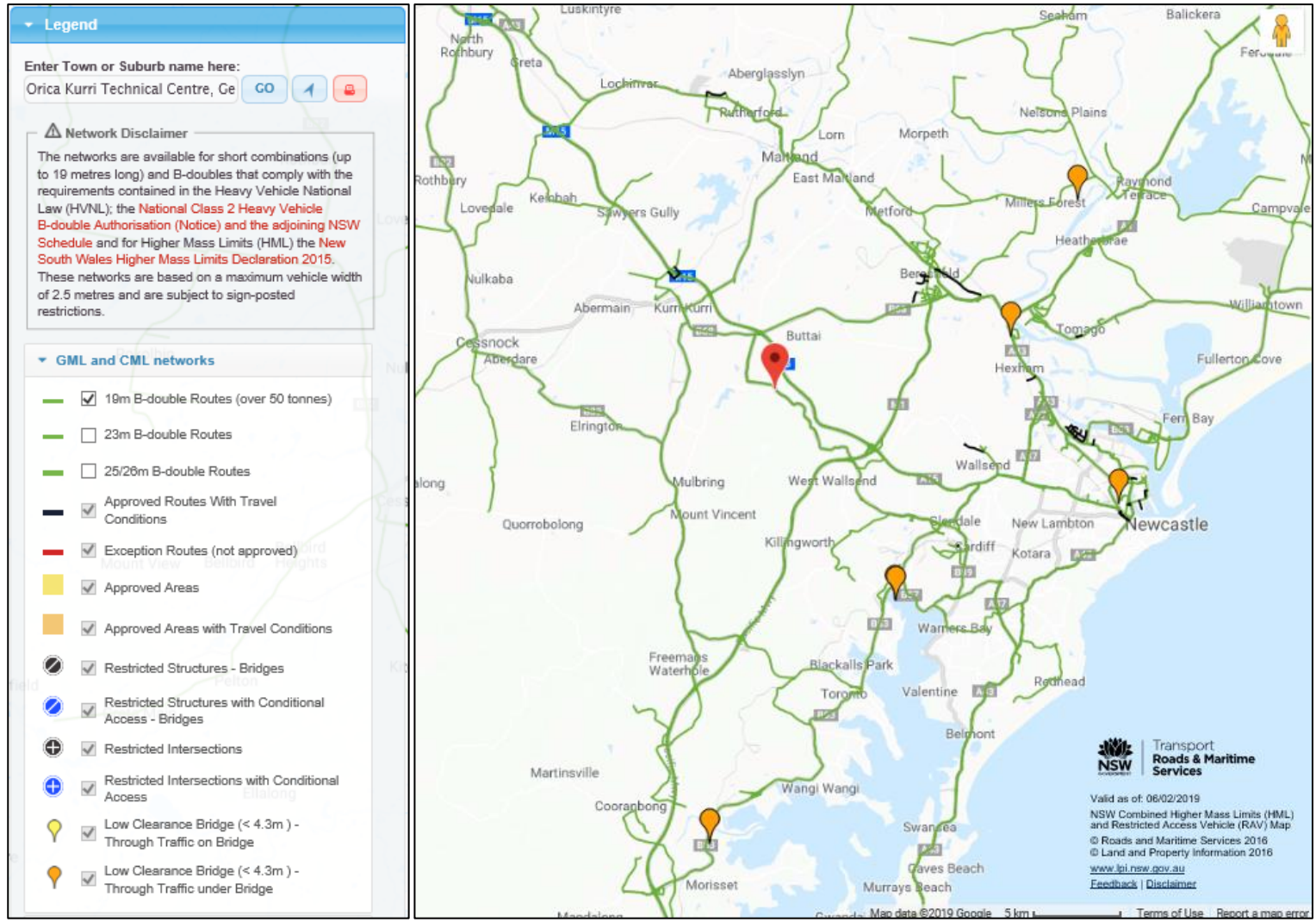
Orica and its contractors are responsible for ensuring that their respective drivers comply with the requirements of this Driver Code of Conduct at all times.

Compliance with the Driver Code of Conduct will be ensured via periodic monitoring of vehicle movements. All ANS and ANE vehicles will be fitted with a GPS system for monitoring of route and speed.

Drivers found to be non-compliant will be subject to their company's disciplinary process.

Serious breaches may result in the contractor or driver being prevented from accessing any Orica facility.

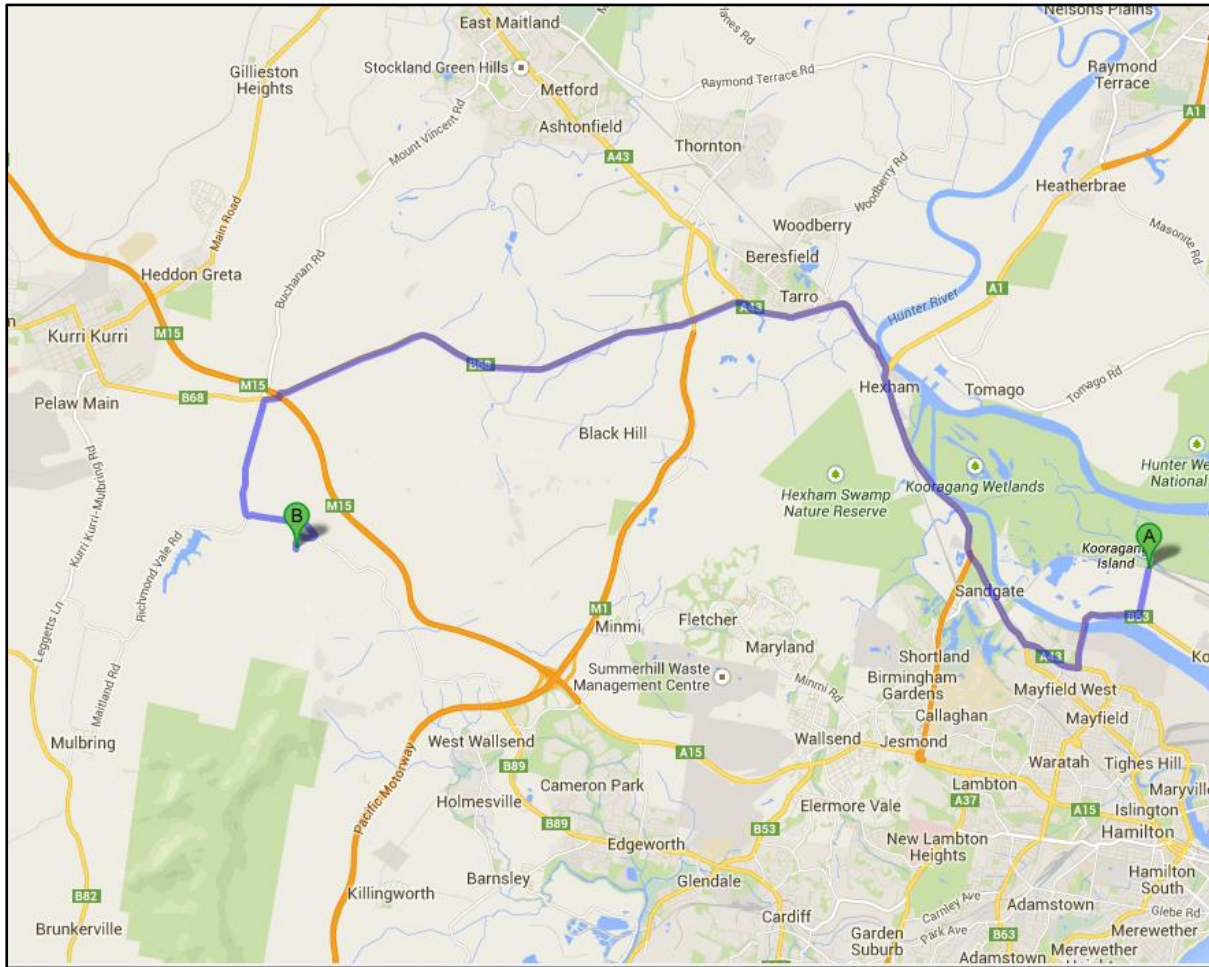
APPENDIX 1 – APPROVED RESTRICTED ACCESS VEHICLE ROUTES



APPENDIX 2 - KOORAGANG ISLAND TO RICHMOND VALE ANE PLANT (ANS NORMAL ROUTE)

From: Orica Kooragang Island – NSW

To: Orica Australia Pty Ltd, Kurri ANE Plant, Echidna Drive, Richmond Vale, NSW 2323

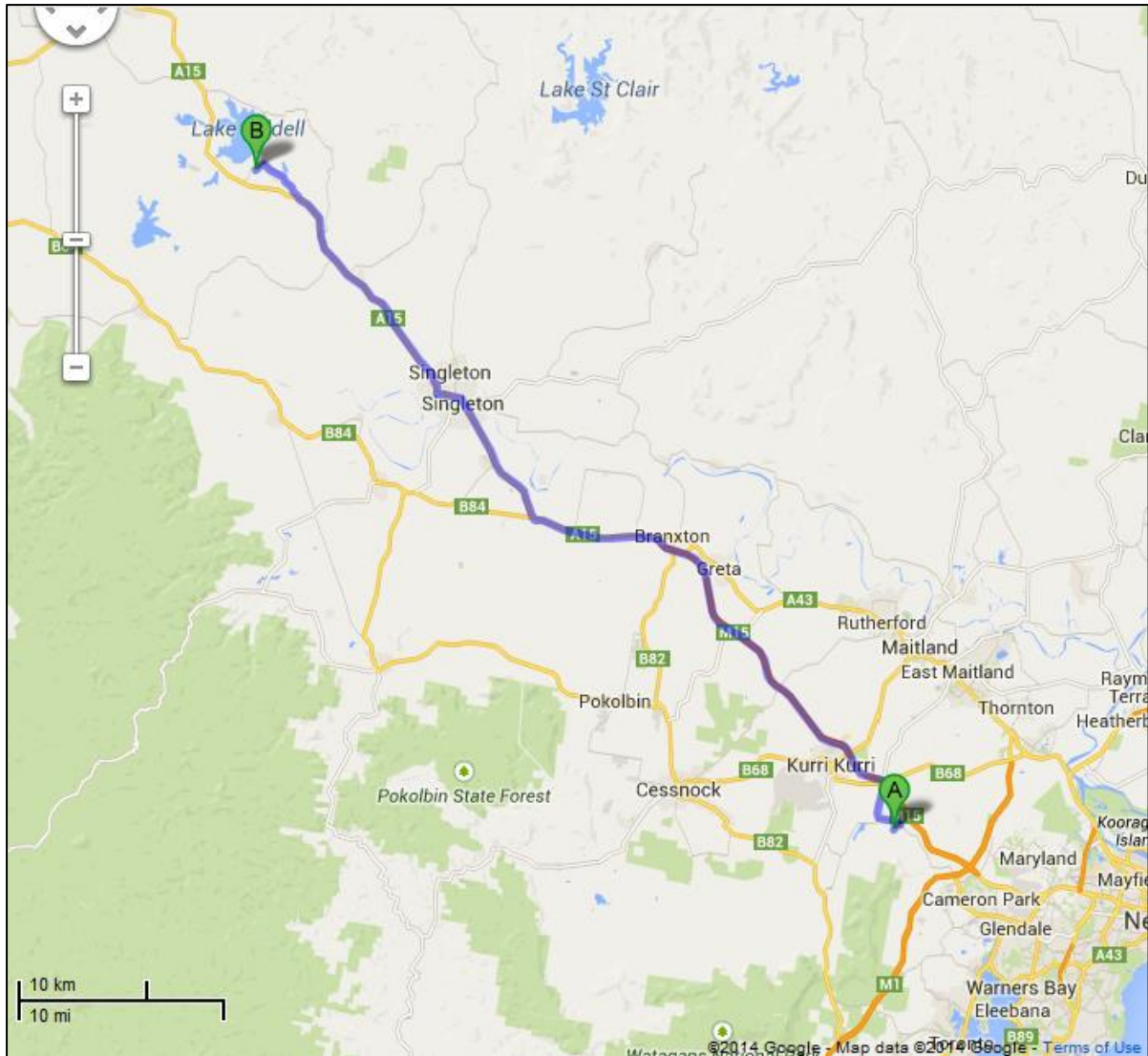


| | |
|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Head south towards S Arm Rd/Cormorant Rd/B63 |
| 2 | Turn right onto S Arm Rd/Cormorant Rd/B63 Continue to follow S Arm Rd/B63 |
| 3 | S Arm Rd/B63 turns right and becomes Industrial Dr/A43 Continue to follow A43 |
| 4 | Slight left onto John Renshaw Dr/A1 (signs for Sydney/John Renshaw Drive/Kurri Kurri/Cessnock/National Route 1/State Route 132) |
| 5 | At the traffic lights continue straight through onto John Renshaw Dr/B68 |
| 6 | At the roundabout, take the 2nd exit and stay on John Renshaw Dr/B68 |
| 7 | At the roundabout, take the 1st exit onto George Booth Dr |
| 8 | Turn right onto Echidna Dr |
| Orica Australia Pty Ltd Kurri ANE Plant, Richmond Vale | |

APPENDIX 3 - RICHMOND VALE ANE PLANT TO LIDDELL ANE PLANT (ANS NORMAL ROUTE)

From: Orica Australia Pty Ltd, Kurri ANE Plant, Echidna Drive, Richmond Vale, NSW 2323

To: Orica Liddell ANE Plant

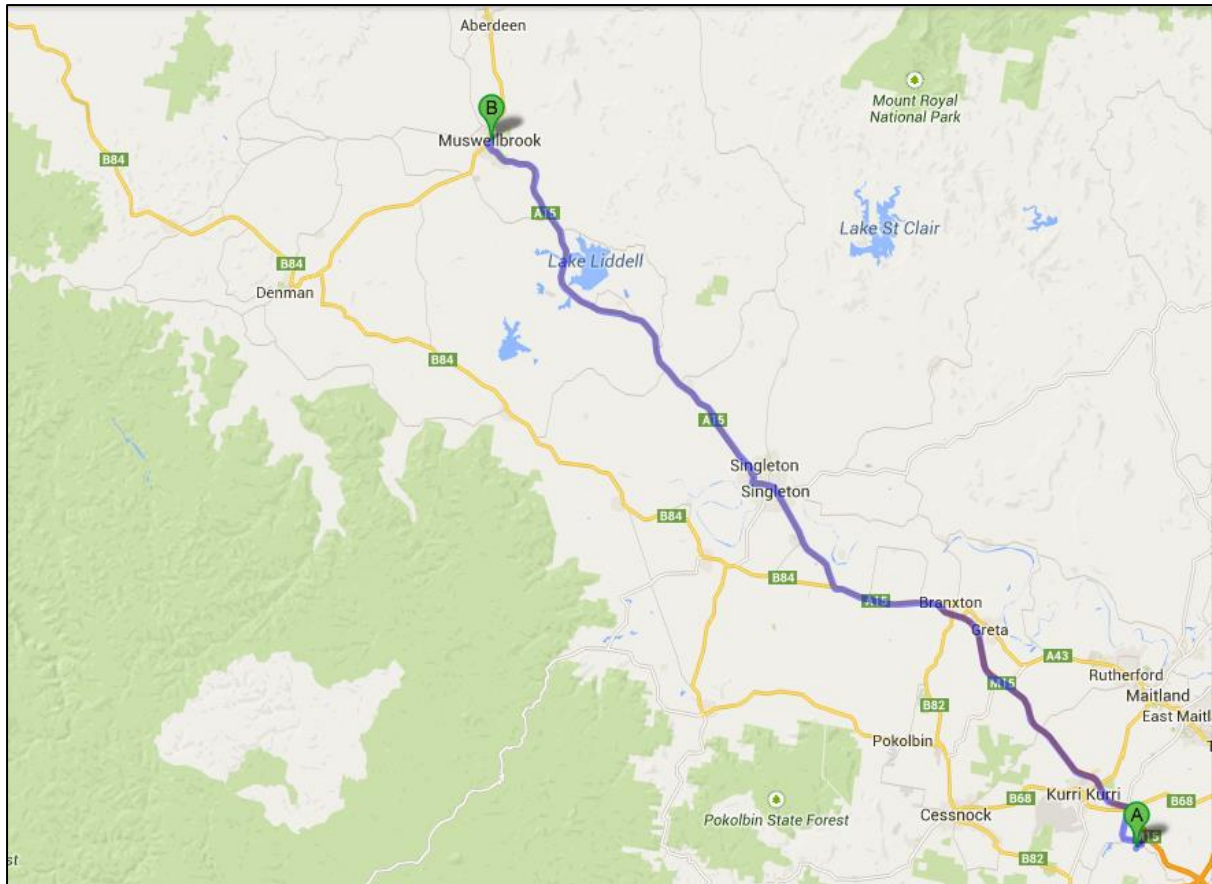


| | |
|---------------------------------------------|----------------------------------------------------------------------------------|
| 1 | Head north on Echidna Dr towards George Booth Dr |
| 2 | Turn left onto George Booth Dr |
| 3 | At the roundabout, take the 3rd exit onto John Renshaw Dr/B68 |
| 4 | At the roundabout, take the 1st exit onto the Hunter Expy/M15 ramp |
| 5 | Merge onto Hunter Expy/M15 |
| 6 | Continue onto New England Hwy/A15 (Singleton) |
| 7 | Pikes Gully Road |
| Orica Australia Pty Ltd Liddell Site | |

APPENDIX 4 - RICHMOND VALE ANE PLANT TO DEPOT SITES VIA M15 (ANE NORMAL ROUTE)

From: Orica Australia Pty Ltd, Kurri ANE Plant, Echidna Drive, Richmond Vale, NSW 2323

To: Depot Sites Muswellbrook



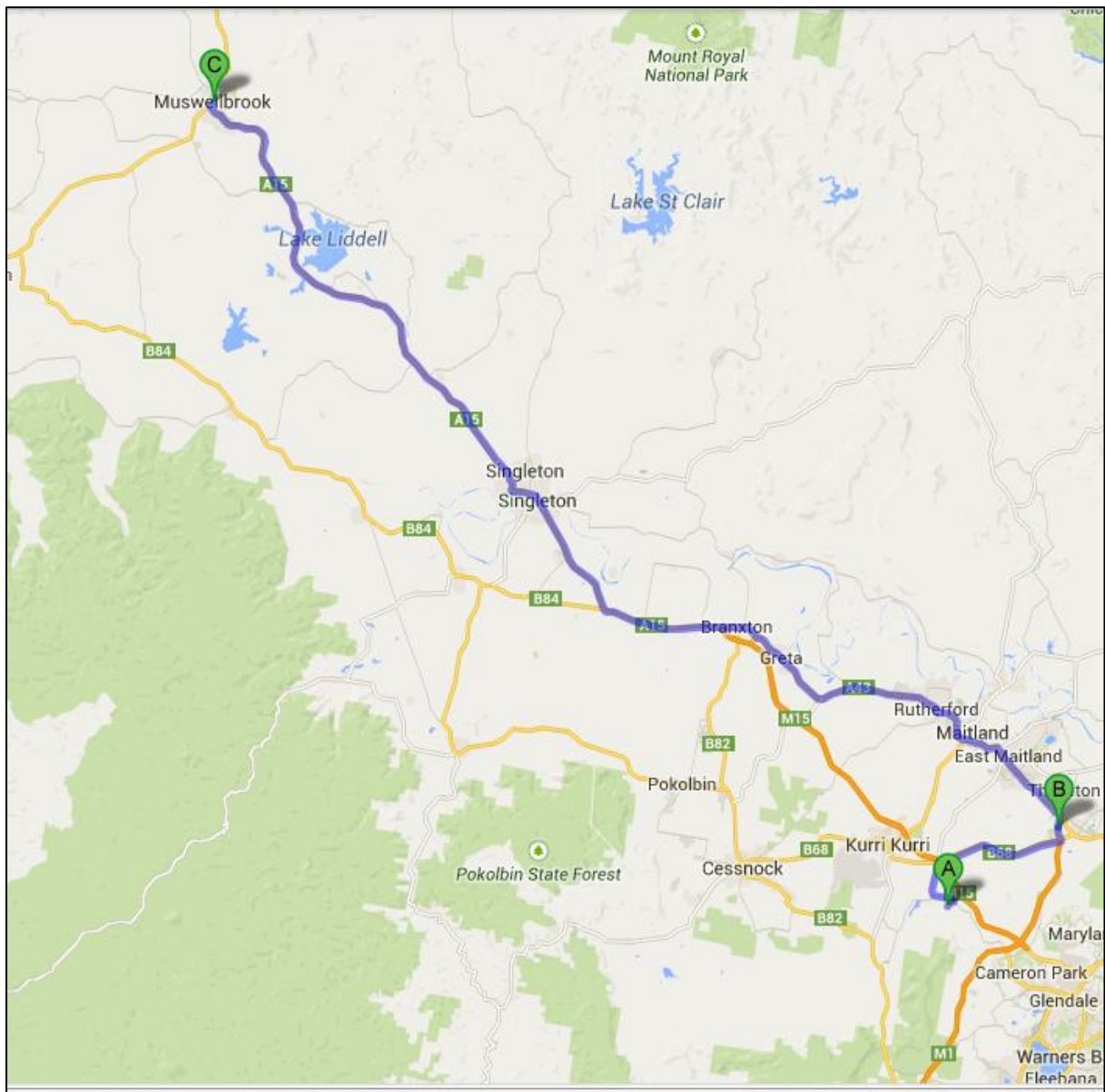
| | |
|-----------------------------------------------------------|----------------------------------------------------------------------------------|
| 1 | Head north on Echidna Dr towards George Booth Dr |
| 2 | Turn left onto George Booth Dr |
| 3 | At the roundabout, take the 3rd exit onto John Renshaw Dr/B68 |
| 4 | At the roundabout, take the 1st exit onto the Hunter Expy/M15 ramp |
| 5 | Merge onto Hunter Expy/M15 |
| 6 | Continue onto New England Hwy/A15 (Singleton) |
| Depot Sites (Hunter Area) | |
| Or if Southbound – Depot Sites (South East Region) | |
| 1 | Take M15 Buchanan Interchange Fwy to southbound M1 |

APPENDIX 5 - RICHMOND VALE ANE PLANT TO DEPOT SITES (ANE ALTERNATIVE ROUTE 1)

ANE **Alternate** Route 1 (This route has restricted usage or private roads) (Note this route was the primary route used to transport ANE to the Hunter Valley prior to the opening of the Hunter Expressway M15. It has since been replaced with the route shown in Appendix 4)

From: Orica Australia Pty Ltd, Richmond Vale ANE Plant, Echidna Drive, Richmond Vale, NSW 2323

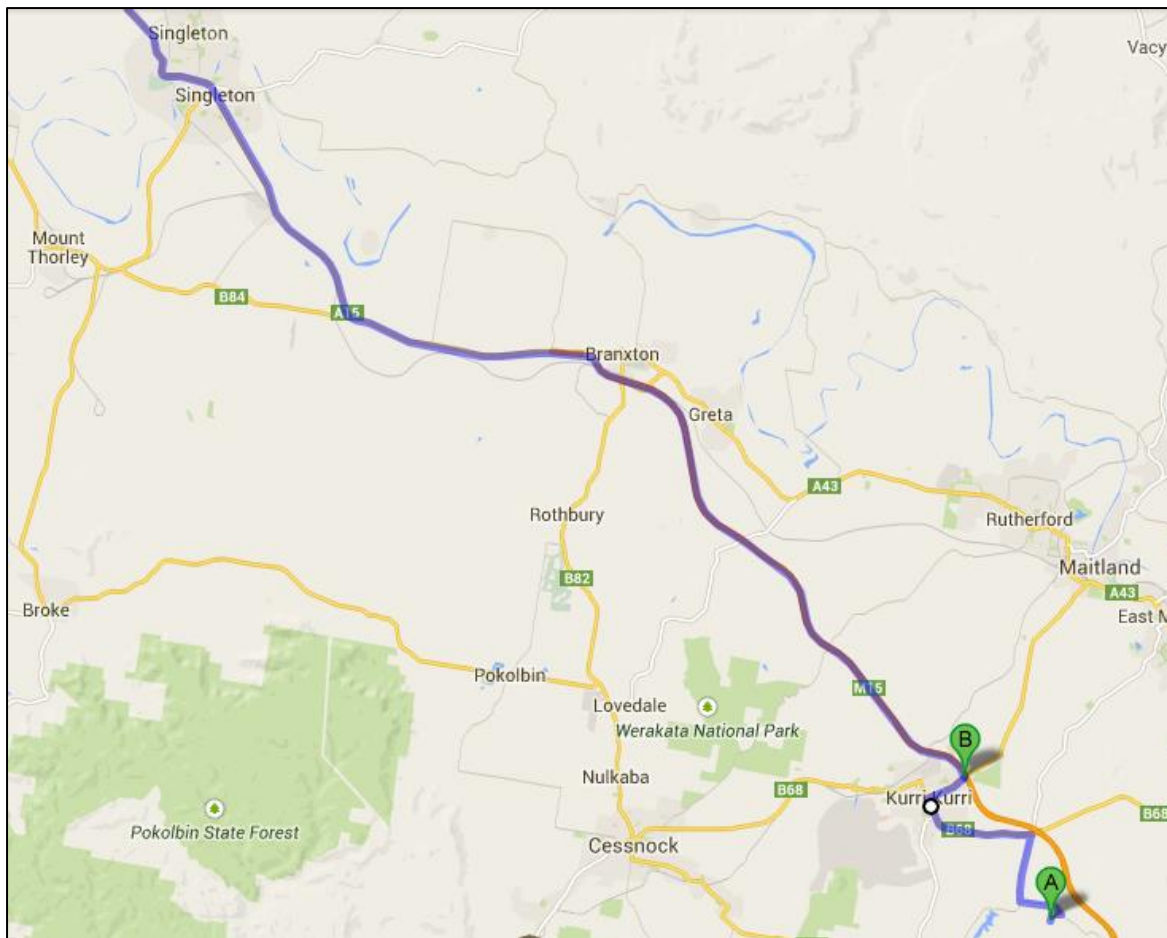
To: Depot Sites Muswellbrook



| | |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| 1 | Head north on Echidna Dr towards George Booth Dr |
| 2 | Turn left onto George Booth Dr |
| 3 | At the roundabout, take the 3rd exit onto John Renshaw Dr/B68 |
| 4 | At the roundabout, take the 2nd exit and stay on John Renshaw Dr/B68 |
| 5 | At the traffic lights turn left onto Weakleys Dr heading to Maitland/Tamworth |
| 6 | Turn left onto the New England Highway ramp to National Highway 15/Maitland |
| 7 | Continue New England Highway through Maitland, Rutherford, Lochinvar |
| 9 | Proceed through Greta |
| 10 | At the roundabout, take the 3rd exit and stay on New England Hwy/A43(Branxton Interchange) |
| 11 | Proceed on New England Hwy/A43 to Muswellbrook |
| Depot Sites (Hunter Area) | |
| Or if Southbound – Depot Sites (South East Region) | |
| 1 | Take M15 Buchanan Interchange Fwy to southbound M1 |

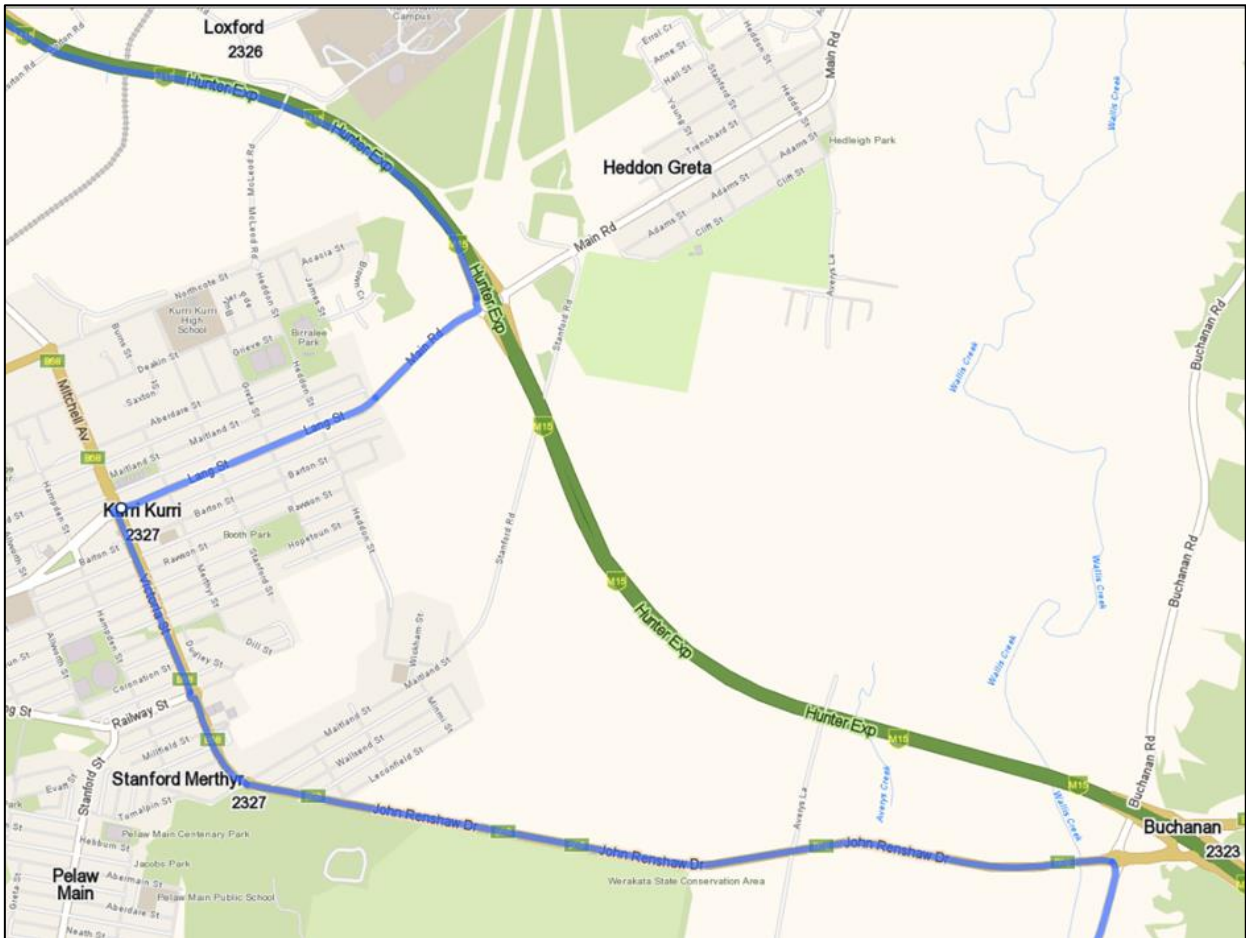
APPENDIX 6 - RICHMOND VALE RICHMOND VALE ANE PLANT TO DEPOT SITES (ANE ALTERNATIVE ROUTE 2)

This route to be taken only if there is a significant disruption to the normal haulage route and the only alternative route is through the Kurri township. If this route is required due to an emergency, vehicles will be directed by the relevant authorities (RMS, Police, SES or other emergency agency). When there is sufficient notice of the requirement to use this alternate route Orica will communicate the change of route, impact and duration to the RMS, Cessnock City Council and local community (via advert in the local newspaper).



| | |
|---|-----------------------------------------------------------------------------------------|
| 1 | Head north on Echidna Dr towards George Booth Dr Partial restricted usage road |
| 2 | Turn left onto George Booth Dr |
| 3 | At the roundabout, take the 1st exit onto John Renshaw Dr/B68 Continue to follow B68 |
| 4 | At the roundabout, take the 3rd exit onto Lang St |
| 5 | Continue on Lang St /Main Rd |
| 6 | At the roundabout, take the 1st exit onto the Hunter Expy/M15 ramp |
| 7 | Merge onto Hunter Expy/M15 |
| 8 | Continue onto New England Hwy/A15 |
| 9 | Depot Sites (Hunter Area) |

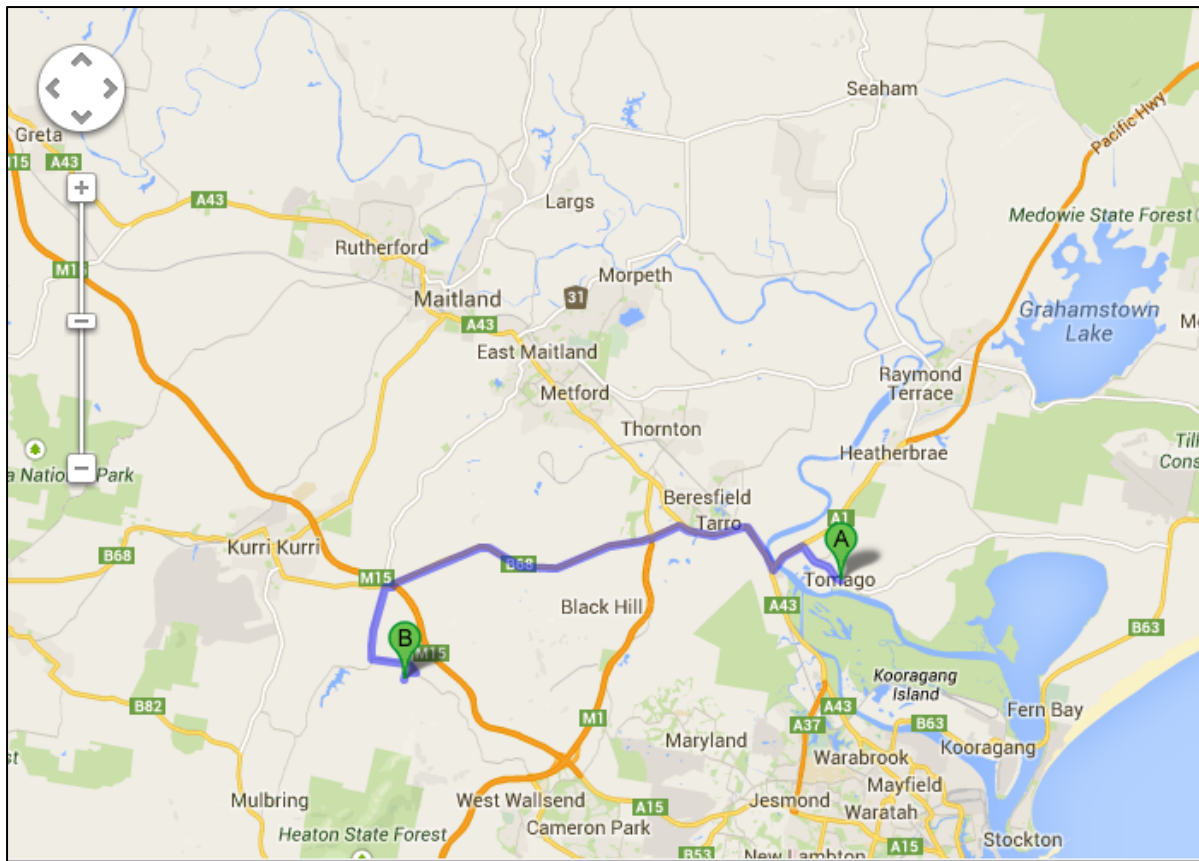
Alternate Route through Kurri Kurri township.



APPENDIX 7 - TOLL DEPOT - TOMAGO TO RICHMOND VALE ANE PLANT

From: Toll Depot - Tomago – NSW

To: Orica Australia Pty Ltd, Kurri ANE Plant, Echidna Drive, Richmond Vale, NSW 2323

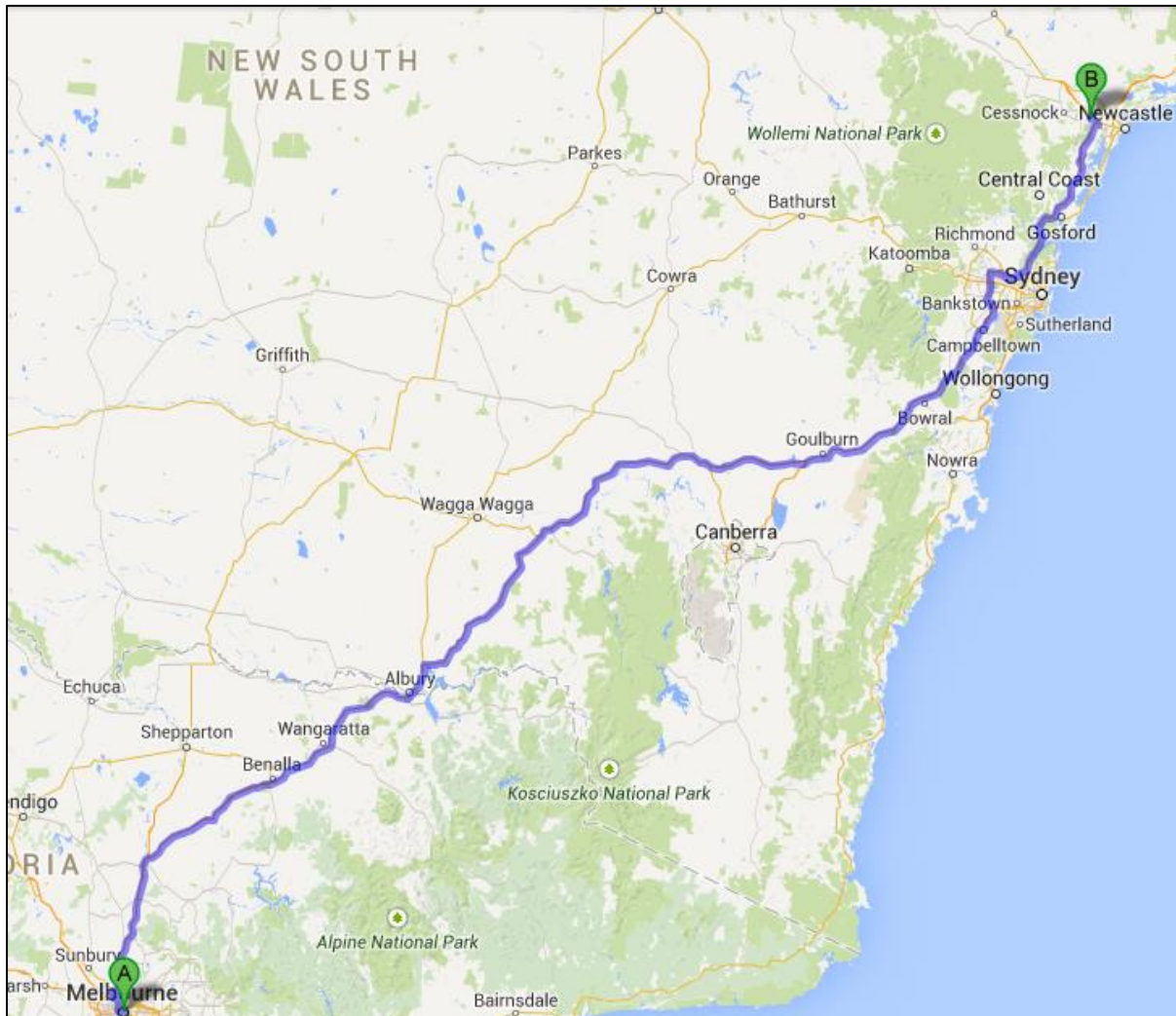


| | |
|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Head north-west on Tomago Rd |
| 2 | At the roundabout, take the 2nd exit and stay on Tomago Rd |
| 3 | Slight left onto Pacific Hwy/A1 Continue to follow A1 |
| 4 | Take the 1st right onto New England Hwy/A1/A43 |
| 5 | Slight left onto John Renshaw Dr/A1 (signs for Sydney/John Renshaw Drive/Kurri Kurri/Cessnock/National Route 1/State Route 132) |
| 6 | At the traffic lights continue straight through onto John Renshaw Dr/B68 |
| 7 | At the roundabout, take the 2nd exit and stay on John Renshaw Dr/B68 |
| 8 | At the roundabout, take the 1st exit onto George Booth Dr |
| 9 | Turn right onto Echidna Dr |
| Orica Australia Pty Ltd Kurri ANE Plant, Richmond Vale | |

APPENDIX 8 - MELBOURNE TO RICHMOND VALE ANE PLANT

From: Melbourne

To: Orica Australia Pty Ltd, Kurri ANE Plant, Echidna Drive, Richmond Vale, NSW 2323

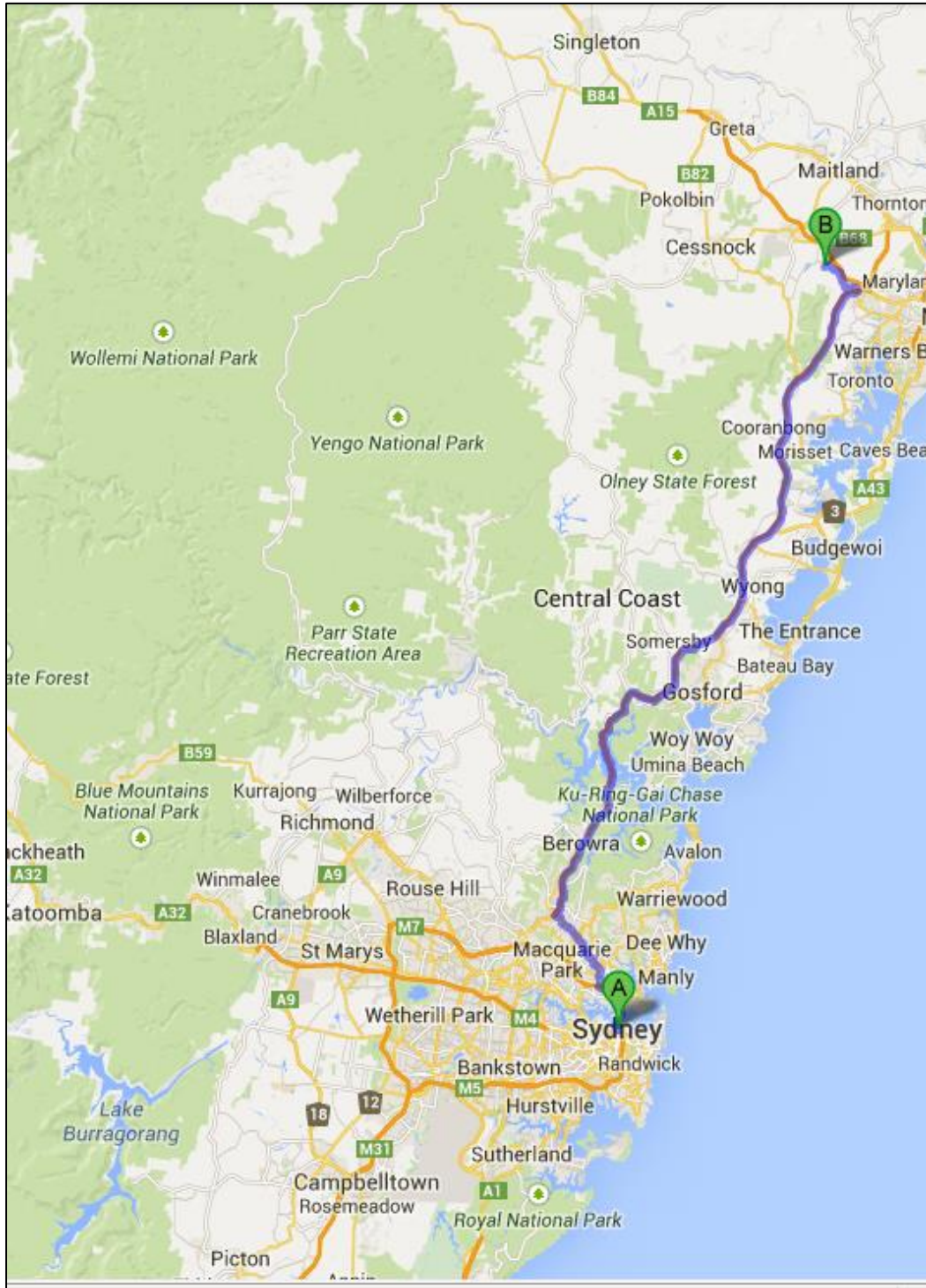


| | |
|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Head south on Bourke St towards Bourke St |
| 2 | Turn right onto King St/State Rte 60 |
| 3 | Turn left onto Hawke St |
| 4 | Turn right onto Spencer St/State Route 50 Continue to follow State Route 50 |
| 5 | Take the Route 43 ramp to Citylink Tollway/Bendigo/HUME HIGHWAY/Airport Toll road |
| 6 | Merge onto M2 Partial toll road |
| 7 | Keep right at the fork to stay on M2 , follow signs for Route 43/National Highway M31/Tullamarine Freeway/Melbourne Airport/Hume Freeway |
| 8 | Take exit Western Ring Rd for National Highway M80 towards National Highway M31/Hume Freeway |
| 9 | Keep right, follow signs for M80/M31/Hume Fwy/Greensborough and merge onto M80 |
| 10 | Take the Hume Freeway exit towards M31/Seymour/Sydney |
| 11 | Continue onto M31 Entering New South Wales |
| 12 | Take the M7 exit towards Blacktown/Newcastle Toll road |
| 13 | Continue onto M7 Toll road |
| 14 | Continue onto M2 Toll road |
| 15 | Take exit Pennant Hills Road for Metroad 7 towards Hornsby/Newcastle Toll road |
| 16 | Merge onto Cumberland Hwy/Pennant Hills Rd/A28 |
| 17 | Turn right onto the ramp to Pacific Motorway |
| 18 | Continue onto Pacific Motorway (signs for F3 Freeway/Newcastle/National Highway 1) |
| 19 | Veer left exit onto Hunter Expressway M15 , take next left exit also to M15 |
| 20 | Take exit onto John Renshaw drive B68 (East Maitland) |
| 21 | Take 1 st exit onto John Renshaw Drive |
| 22 | At the roundabout, take the 1 st exit onto George Booth Dr |
| 23 | Turn right into Echidna Drive, enter through Boom Gates Partial restricted usage road |
| Orica Australia Pty Ltd Kurri ANE Plant, Richmond Vale | |

APPENDIX 9 - SYDNEY TO RICHMOND VALE ANE PLANT

From: Sydney

To: Orica Australia Pty Ltd, Kurri ANE Plant, Echidna Drive, Richmond Vale, NSW 2323

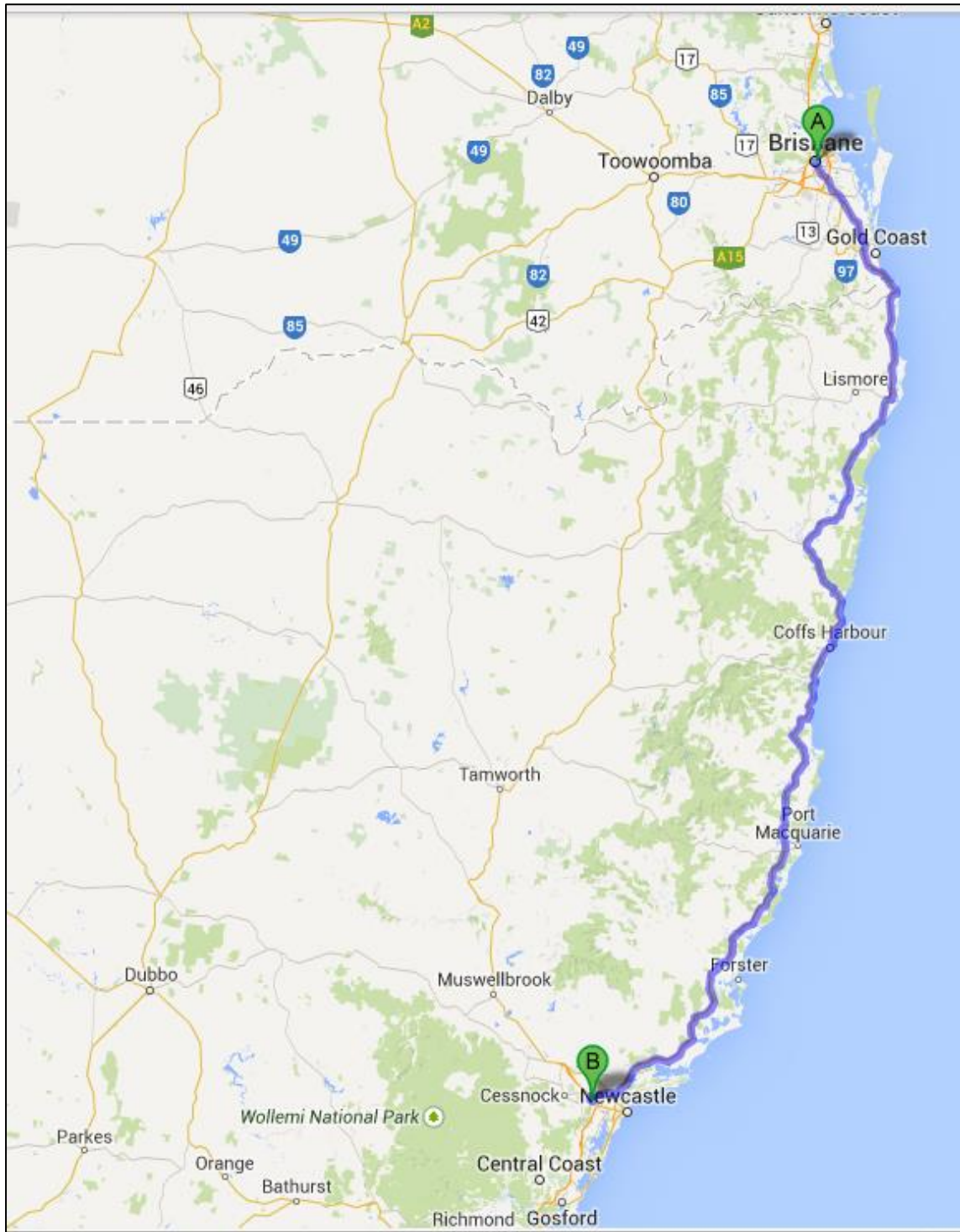


| | |
|---------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 1 | Head north on George St towards Angel Pl |
| 2 | Turn left onto Grosvenor St |
| 3 | Merge onto Bradfield Hwy |
| 4 | Keep right at the fork to stay on Bradfield Hwy , follow signs for Metroad 1 |
| 5 | Continue onto M1 |
| 6 | Take the PACIFIC HIGHWAY exit towards Chatswood/Newcastle |
| 7 | Continue onto Pacific Hwy/A1 |
| 8 | Turn right onto the ramp to F3 Freeway/National Highway 1/Newcastle |
| 9 | Merge onto Pacific Motorway M1 continue North |
| 10 | Veer left exit onto Hunter Expressway M15 , take next left exit also to M15 |
| | Take exit onto John Renshaw drive B68 (East Maitland) |
| 11 | Take 1 st exit onto John Renshaw Drive |
| 12 | At the roundabout, take the 1st exit onto George Booth Dr |
| 13 | Turn right into Echidna Drive, enter through Boom Gates Partial restricted usage road |
| Orica Australia Pty Ltd Kurri ANE Plant, Richmond Vale | |

APPENDIX 10 - BRISBANE VIA PACIFIC HIGHWAY TO RICHMOND VALE ANE PLANT

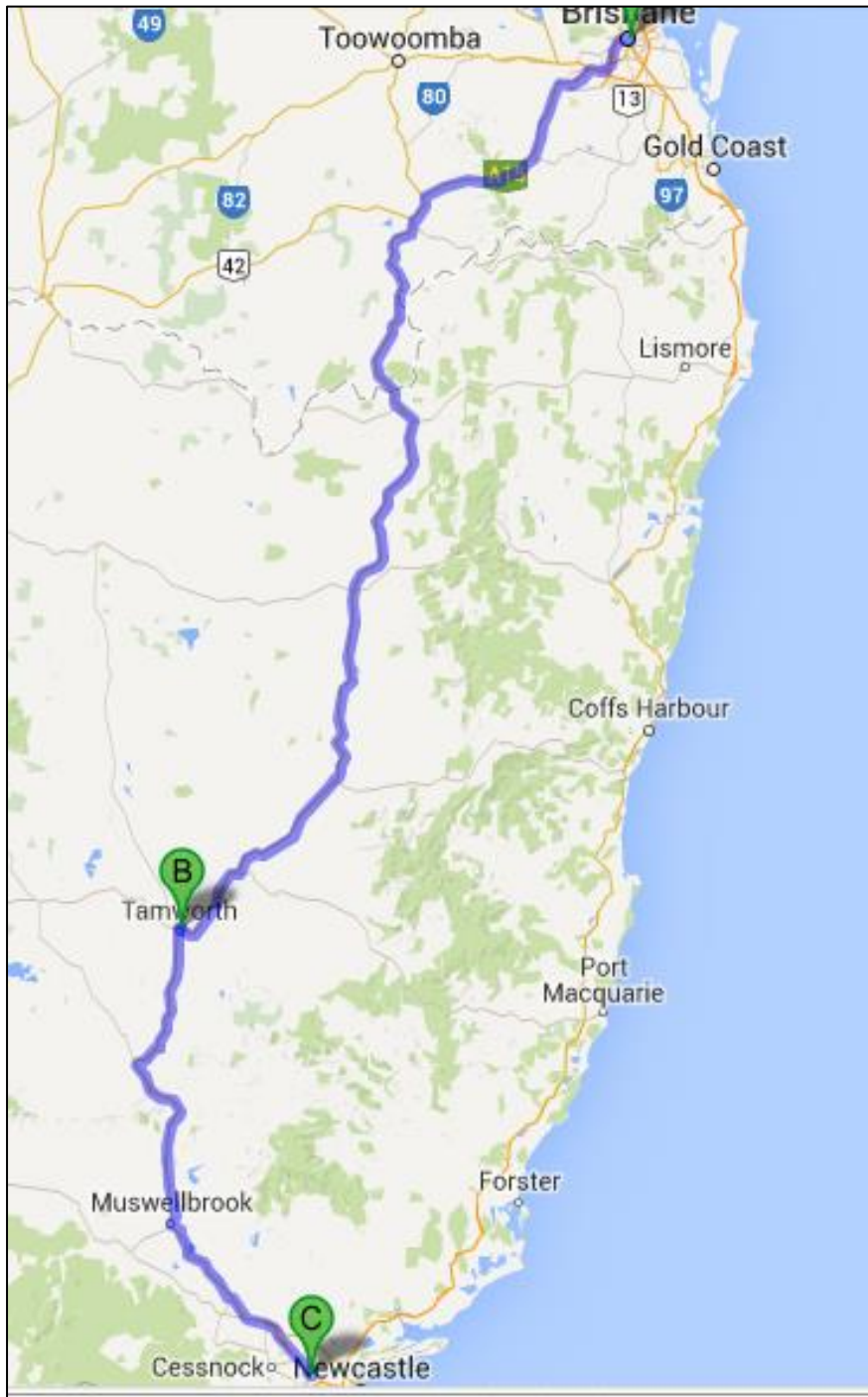
From: Brisbane via Pacific Highway

To: Orica Australia Pty Ltd, Kurri ANE Plant, Echidna Drive, Richmond Vale, NSW 2323



| | |
|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Head north-west on George St towards Burnett Ln |
| 2 | Turn left onto Ann St |
| 3 | Slight right to stay on Ann St |
| 4 | Continue onto Pacific Motorway |
| 5 | Merge onto Pacific Motorway Entering New South Wales |
| 6 | Continue onto Pacific Hwy |
| 7 | Turn left onto Centenary Dr (signs for Centenary Drive/Clarenza/Bom Bom) |
| 8 | Turn left onto Pacific Hwy |
| 9 | At the roundabout, take the 2nd exit and stay on Pacific Hwy heading to Pacific Highway/Kempsey |
| 10 | At the roundabout, take the 1st exit and stay on Pacific Hwy |
| 11 | At the roundabout, take the 2nd exit onto Pacific Hwy/A1 Continue to follow A1 |
| 12 | Turn right onto New England Hwy/A1/A43 |
| 13 | Slight left onto John Renshaw Dr/A1 (signs for Sydney/John Renshaw Drive/Kurri Kurri/Cessnock/National Route 1/State Route 132) |
| 14 | At the traffic lights continue straight through onto John Renshaw Dr/B68 |
| 15 | At the roundabout, take the 2nd exit onto John Renshaw Dr/B68 |
| 16 | At the roundabout, take the 1st exit onto George Booth Dr |
| 17 | Turn right onto Echidna Dr |
| Orica Australia Pty Ltd Kurri ANE Plant, Richmond Vale | |

APPENDIX 11 - BRISBANE VIA NEW ENGLAND HIGHWAY/A15 TO RICHMOND VALE ANE PLANT



| | |
|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Head north-west on George St towards Burnett Ln |
| 2 | Turn left onto Ann St |
| 3 | Merge onto Pacific Motorway/M3 via the ramp to Coronation Drive/Toowong Continue to follow M3 |
| 4 | Take the ramp on the right to Sunshine Coast |
| 5 | Keep left, follow signs for Milton Rd and merge onto Milton Rd/State Route 32 |
| 6 | At the roundabout, take the 2nd exit onto Mount Coot-Tha Rd/Metroad 5 heading to M5/Western Freeway/Ipswich/Toowoomba/Mount Coot-Tha |
| 7 | Slight left onto Metroad 5 |
| 8 | Continue onto M5 |
| 9 | Take exit Ipswich Motorway on the right to merge onto M7 towards Ipswich/Toowoomba |
| 10 | Continue onto M2 |
| 11 | Keep right at the fork to continue on M15 , follow signs for Warwick/National Highway 15 |
| 12 | Continue onto National Highway A15 |
| 13 | Continue straight to stay on National Highway A15 |
| 14 | Keep left to stay on National Highway A15 |
| 15 | Turn right to stay on National Highway A15 |
| 16 | Turn left onto New England Hwy/Wallace St/A15 Continue to follow New England Hwy/A15, Entering New South Wales |
| 17 | At the roundabout, take the 2nd exit and stay on New England Hwy/A15 |
| 18 | At the roundabout, take the 2nd exit and stay on New England Hwy/A15 |
| 19 | At the roundabout, take the 2nd exit onto Armidale Rd/Marius St/New England Hwy/Oxley Hwy/B56 |
| 20 | At the roundabout, take the 1st exit onto White St |
| 21 | At the roundabout, take the 3rd exit onto Peel St |
| 22 | Head north-west on Peel St towards Brisbane St/Oxley Hwy/B56 |
| 23 | Take the 1st left onto Brisbane St/Oxley Hwy/B56 Continue to follow Oxley Hwy/B56 |
| 24 | Turn left onto Ebsworth St/New England Hwy (signs for Muswellbrook/Sydney) Continue to follow New England Hwy |
| 25 | Turn left onto Maitland St/New England Hwy/A15 (signs for Singleton/New England Highway/National Highway 15) Continue to follow New England Hwy/A15 |
| 26 | Continue straight onto Hunter Expy/M15 |
| 27 | Take the exit towards John Renshaw Dr/B68 |
| 28 | At the roundabout, take the 3rd exit onto John Renshaw Dr/B68 |
| 29 | At the roundabout, take the 1st exit onto George Booth Dr |
| 30 | Turn right onto Echidna Dr |
| Orica Australia Pty Ltd Kurri ANE Plant, Richmond Vale | |

APPENDIX 12 - ANE AND ANS TRANSPORT HAZARD ANALYSIS – TECHNICAL NOTE

TECHNICAL NOTE ANE and ANS Transport Hazard Analysis Input to Environmental Assessment

Prepared for: Richard Sheehan, Orica
Prepared by: Jenny Polich, Sherpa Consulting

| Rev | Date | Description | Prepared By | Checked By |
|-----|------------|----------------------------------|--------------|--------------|
| A | 8 Jan 2009 | Draft for client comment | Jenny Polich | - |
| B | 2 Oct 2009 | Updated draft for client comment | Jenny Polich | Phil Johnson |
| 0 | 8 Oct 2009 | Final Issue for inclusion in EA | Jenny Polich | Phil Johnson |

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TECHNICAL NOTE

ANE and ANS Transport Hazard Analysis Input to Environmental Assessment

Prepared for: Richard Sheehan, Orica

Prepared by: Jenny Polich, Sherpa Consulting

| Rev | Date | Description | Prepared By | Checked By |
|-----|------------|----------------------------------|--------------|--------------|
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1 BACKGROUND

1.1 Project Description

Orica Australia (Orica) proposes to build a new Ammonium Nitrate Emulsion (ANE) Production Facility at their Kurri Kurri Technical Centre located off George Booth Drive, Richmond Vale NSW. The new plant will meet the projected Ammonium Nitrate Emulsion demand in the South East Region to 2020 and beyond. The plant is expected to manufacture up to 250,000 tonnes per annum of ANE at maximum production, using Ammonium Nitrate Solution (ANS) from Orica's Kooragang Island manufacturing facility as the main feed.

Umwelt Australia Pty Ltd is preparing an Environmental Assessment for the Project, on behalf of Orica which will be submitted to the approval authority, the NSW Department of Planning (DoP), under Part 3A of the Environmental Planning & Assessment Act. Sherpa Consulting Pty Ltd (Sherpa) has been retained to assist in

completing the risk assessment activities associated with the transport of the product and the raw materials for the project.

1.2 Scope and Objectives

Orica has determined that the Environmental Assessment (EA) should include some consideration of transport risks associated with project, specifically ANE and ANS transport to and from the site. Both ANE and ANS are classed as Dangerous Goods (DG) Class 5.1 oxidiser materials. Transport of these goods is regulated under the Australian Dangerous Goods Code (ADGC). As ANE contains over 45% Ammonium Nitrate (AN), it is also classified as Security Sensitive AN (SSAN) and is also regulated under the NSW Explosives Regulations 2005.

A brief technical note has been prepared summarising the potential transport incident scenarios involving ANE or ANS and identifying the safeguards in place. This technical note will be included as an appendix in the Project EA.

1.3 Limitations

Various other chemicals including DG Class 8 corrosives (such as acetic acid and caustic soda) and combustible liquids (e.g. diesel, canola) will be used in the facility, but are not covered by this technical note. It should be noted that large quantities of these types of materials are routinely transported in most areas of Australia including the Newcastle region.

Review of any changes in heavy vehicle numbers and implications for the existing roads is addressed in the Traffic Impact section of the Environmental Assessment. However it is noted that the traffic impact assessment concludes that the overall increase in heavy vehicle numbers can be easily accommodated within the existing road network.

2 TRANSPORT OF HAZARDOUS MATERIALS

ANS and ANE transport quantities anticipated for the Project are summarised in Table 2.1. Note that these reflect the final capacity of the facility at maximum capacity. Initially, ANE plant operations are expected to be at lower capacity, hence require a smaller number of vehicles.

The roads on the routes to and from the Technology Centre site at Richmond Vale are well maintained, and are currently used for transport of Dangerous Goods, including Class 5.1 materials. ANE is currently transported from Orica's Liddell site to the Kurri Kurri site in small quantities (averaging one single tanker per week for the existing Quarry Services business at Kurri Kurri). The route is confirmed B-double capable by the NSW RTA.

TABLE 2.1 ANS AND ANE HEAVY VEHICLE TRANSPORT SUMMARY

| Route | Material | Load size (tonnes) | No of vehicles per day | Comments |
|------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------|------------------------|---------------------------------------------------------------------------|
| Orica Kooragang Island to Orica Technology Centre site | ANS (88% at 110°C) | B-Double - 38 ISO/ Single - 23 | 16 | Based on 250,000tpa max capacity and average load size for tankers/ISO's. |
| Orica Technology Centre site to various existing Depot sites in Hunter region and South Eastern Australia. | ANE | B-Double - 38 ISO/ Single - 23 | 22 | Based on 250,000tpa max capacity and average load size for tankers/ISO's. |

2.1 Routes

ANS:

Currently hot ammonium nitrate solution (88% ANS at 110°C) is transported via dedicated tankers from Kooragang Island (KI) via Maitland and Singleton to the Orica Liddell manufacturing site in both single tankers and B-Doubles. The majority of the route is along the New England Highway.

The latter part of the route will change as shown in Table 2.2 when ANS is transported to the proposed ANE Production Facility at the Technology Centre. The tankers will turn off the New England Highway at the John Renshaw Drive junction, travelling along John Renshaw Dr until the intersection with George Booth Dr, where they will turn onto George Booth Drive continuing to the site approximately 5 km to the east at Richmond Vale. The vehicles will enter the Orica Technical Centre using an existing entrance on George Booth Drive and travel to the proposed ANE Production Facility using a new internal access road.

TABLE 2.2 ANS ROUTE

| ANS Current Route (KI to Liddell) | ANS Modified B-Double route (KI to Kurri Kurri Site) |
|--------------------------------------------------|------------------------------------------------------|
| Cormorant Rd | Cormorant Rd |
| Tourle St | Tourle St |
| Industrial Dr | Industrial Dr |
| Maitland Rd | Maitland Rd |
| Pacific Highway | Pacific Highway |
| New England Highway (via Maitland and Singleton) | New England Highway |
| Pikes Gully Rd | John Renshaw Dr |
| Liddell site. | George Booth Dr |
| | Technical Centre site |

ANE:

ANE will be manufactured at the Kurri Kurri site and transported via tanker to various existing Orica Depot Sites in the Hunter Valley and South East Australia region. From the depot sites Mobile Manufacturing Units (MMUs) operate to transport the ANE to the mine site where it is sensitised prior to use. The Project will have no effect on the MMU transport activities from the depot sites.

The ANE route from Technology Centre site to the Depot sites is summarised in Table 2.3. The likely variation to the route following the planned construction of the F3 Freeway extension is also detailed.

The ANE tankers are dedicated and do not carry any other materials. Various tanker configurations which are able to carry either 20, 22 or 38 tonne of ANE are used. Small quantities (250L each) of gasser solution (dilute sodium nitrite / water solution) and companion solution (low concentration ANS) may also be carried on the ANE tankers in separate tanks on the vehicles.

TABLE 2.3 ANE ROUTE

| ANE Route (Kurri to Depot sites) | ANE Route (Kurri to Depot sites after F3 Freeway extension) |
|-------------------------------------|-------------------------------------------------------------|
| George Booth Dr | George Booth Dr |
| John Renshaw Dr | John Renshaw Dr Hunter Expressway on-ramp |
| Mulbring St, Kurri Kurri | Hunter Expressway (F3 Freeway extension) |
| Tarro St, Kurri Kurri | New England Hwy at Branxton |
| Lang St, Kurri Kurri | New England Hwy (Singleton) |
| Main Rd | Depot Sites (South East Region) |
| Cessnock Rd | Or |
| New England Hwy at Maitland | F3 Freeway Northbound or Southbound |
| New England Hwy (Singleton) | Depot Sites (South East Region) |
| Depot Sites (Hunter area) | |
| Or | |
| As above to John Renshaw Dr | |
| F3 Freeway Northbound or Southbound | |

2.2 Legislation, Codes and Standards

Transport of Dangerous Goods such as ANE and ANS is regulated under the ADG7 (Australian Dangerous Goods Code, version 7) managed by WorkCover NSW and for substances classified as SSAN under the NSW Explosives Regulations 2005. In summary for ANE and ANS, the regulations require that

- A road vehicle transporting dangerous goods should wherever practicable avoid heavily populated or environmentally sensitive areas, congested crossings, tunnels, narrow streets, alleys, or sites where there is, or may be, a concentration of people.
- Routes should be pre-planned wherever possible.
- Routes should be selected to minimise the risk of personal injury, of harm to the environment or property during the journey.
- A risk assessment in accordance with *AS4360 Risk Management* be prepared. (This is undertaken on a route specific basis by the transport company).
- Both drivers and vehicles are Dangerous Goods licensed.
- Vehicles carrying Dangerous Goods adhere to design standards.
- For SSAN materials, the appropriate security clearance for the drivers has been obtained.

2.3 Internal Orica standards, policies, procedures

Orica have corporate standards applicable to transport generally and ANE specifically. The Orica Model Procedures (specifically MP-SF-014: Selection and Management of Transport & Storage Contractors and MP-SF-016: Transport of Dangerous and Non-Dangerous Goods) require the following general measures relevant to DG transport be adopted:

- Driver training and accreditation
- Carrier accreditation
- Disciplinary procedures
- Carrier maintenance programs
- Orica site and customer site procedures
- Reporting and investigation of incidents

Internal engineering guidelines specifically applicable to ANE and ANS transport and design of road tankers include Bulk Distribution Tankers For Emulsion Phase And Oxidiser Liquors, Orica (23/9/98)

This outlines Orica's commitments under the legislation listed below to ensure safe and effective operation of ANE and ANS delivery units, ensuring that they are constructed to applicable regulatory and engineering design requirements.

- Australian Code for the Transport of Dangerous Goods by Road and Rail (Australian Dangerous Goods Code). Specifically:
 - Section 3.4 Marking of Road Vehicles
 - Section 3.7 Requirements for Emergency Information Panels
 - Section 6.3 Application for approval and notification requirements
 - Section 6.5 Road Standards
 - Section 6.8 Approval
 - Section 6.9 Alternative Design Criteria
 - Section 6.10 Maintenance
- Australian Design Rules for Motor Vehicles and Trailers (ADR's).
- AS1210 Pressure Vessels.
- AS1554.1 Structural Steel Welding - Welding of Steel Structures.
- AS1841.5 Portable Fire Extinguishers - Specific Requirements for Dry Powder Type Extinguishers
- AS2809.1 Road Tank Vehicles for Dangerous Goods - General Requirements.

- AS2809.2 Road Tank Vehicles for Dangerous Goods
- AS2809.4 Road Tank Vehicles for Dangerous Goods - Tankers for Toxic and Corrosive Cargoes.
- AS4326 The Storage and Handling of Oxidising Agents

As per the guideline ANS and ANE tankers are designed with emergency venting capacity based on experimentally measured vapour generation in a decomposition event.

3 HAZARD IDENTIFICATION

Both ANS and ANE are classified as Dangerous Goods and an assessment of the potential hazards associated with the transport of these products has been undertaken to ensure that appropriate safeguards are in place.

3.1 ANS Properties

Hot ammonium nitrate solution (88% ANS at 110°C) will be transported from Orica's Kooragang Island site to the Technology Centre site via tanker as discussed in Section 0.

ANS is a class 5.1 PGII oxidiser, UN number 2426. The main hazard associated with handling AN solutions is decomposition due to excessive heating and/or contamination, and eventually explosion if the decomposition gases are sufficiently confined (e.g. in an inadequately vented storage tank). Contaminants such as acids, chlorides, organics, alkali metals, and nitrites increase the risk of decomposition.

Most of the gaseous decomposition products from a decomposition event are toxic. These gases can include ammonia (NH₃), nitrous oxide (N₂O), nitric oxide (NO), nitrogen dioxide (NO₂), and nitric acid vapour (HNO₃). NO₂ is the most toxic of these.

Assuming ANS is uncontaminated, it is highly insensitive to friction and impact and essentially insensitive to sparks (i.e. low explosion risk). ANS does not burn, but as an oxidising agent, will support fire, even in the absence of an external source of oxygen.

ANS also poses an environmental hazard if it reaches a waterway due to its high nitrogen content. High concentrations of nitrogen can be toxic to aquatic life and grazing animals if ingested.

3.2 ANE Properties

ANE is a mixture of around 70% ammonium nitrate (AN), 15% water and the balance hydrocarbon based materials. All bulk emulsions manufactured at the proposed ANE plant will fall within the UN definition of Ammonium Nitrate Emulsion (ANE) Intermediate for Blasting Explosives, Class 5.1 PGII, UN number 3375.

Bulk emulsions produced at the Technology Centre site will not contain any self explosive ingredients. However once ANE has been produced, the main hazard is decomposition due to excessive heating and/or contamination which can cause accelerating decomposition to the point where explosion or detonation can occur.

Sensitivity to accidental decomposition/detonation is increased by the presence of energetic sensitising materials such as fuel oil or chemical contaminants.

ANE's are insensitive to friction and impact and also insensitive to sparks.

While ANE's are liquids, they are extremely viscous, and solidify quickly when cooled, hence do not pose a significant environmental hazard in the event of a spill.

3.3 Hazardous Incidents

The event of most concern during transport of ANE or ANS is explosion. Potential causes of an explosion for either ANS or ANE are:

Decomposition of contaminated load and confinement of gases, resulting in explosion en-route.

Vehicle fire engulfs load resulting in decomposition, confinement of gases and explosion. A fire could be initiated by various causes including electrical or mechanical faults, a tyre fire or a vehicle accident or collision.

Note that impact alone is not a credible cause of ANE or ANS explosion in a vehicle accident as:

- ANS and ANE is insensitive to impact (i.e. does not explode on impact / shock).
- Impact in a vehicle accident is not of sufficiently high energy to cause explosion of ANE. A high energy explosive charge (such as a detonator) is required to initiate an explosion.

A review of transport incidents within Orica and within the industry indicates that vehicle fires and accidents involving ANE and ANS transport vehicles do occur. However escalation to involve the ANE or ANS load is extremely uncommon and takes a period of time to escalate to conditions which could potentially result in an explosion, providing time to isolate the accident area.

There is only one incident in Orica's records (globally) where escalation to an ANE load and explosion occurred involving an MMU unit carrying class 1 explosive ANFO material. The ANS and ANE vehicles from the Kurri site will not be carrying any class 1 dangerous goods (explosive) materials.

4 CONTROLS AND MITIGATION

Orica has implemented a number of measures to ensure that the risk associated with the transport of ANS and ANE is minimised, with a summary of these controls detailed in the sections below. These controls are audited at least annually in accordance with Orica model procedures.

In addition, in the event of a transport related incident there are procedures in place to prevent escalation of the event and minimise the risk to the community and the environment.

These are described in the following sections and also summarised in the Hazard Identification Word Diagram in APPENDIX A.

4.1 Product Contamination Controls

To prevent risks associated with the contamination of ANS and ANE with other products the following controls have been implemented.

- Quality control processes at Kooragang Island to ensure that the ANS is suitable for transport from the site;
- Quality control processes at the Technology Centre Kurri site to ensure that the ANE product is suitable for transport;
- Dedicated ANS and ANE Tankers for the transport of each product, ensuring that non compatible materials are not introduced during transport;
- Filling nozzles and loading facilities for the ANS, ANE and other chemicals are of different configurations and sizing to prevent incorrect loading; and
- Separate, dedicated tanks for the small loads of gasser and companion solution transported with the ANE.

4.2 Truck Controls

To minimise the potential for escalation of an incident as a result of an accident or vehicle fire the following controls are incorporated into transport arrangements for ANE and ANS:

- As required by state legislation, all vehicles carrying ANE and ANS are licensed by the relevant body, which in NSW is the Environment Protection Authority (EPA). The licensing process requires that the tank component of the vehicle be constructed in accordance with an approved design and that the tank comply with the requirements of the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code).
- Activities such as maintenance and pre-start checks are undertaken in accordance with manufacturer requirements and the National Heavy Vehicle Accreditation Scheme requirements.

4.3 Driver Training, Education, and Licensing

All drivers who carry Dangerous Goods are required to be licensed by state regulatory agencies, in NSW the EPA is the responsible agency. To obtain a licence, drivers must complete an accredited training course, complete a medical and meet the driving history requirements.

In addition, Orica requires that drivers complete specific training including information on Orica’s Safety Management Systems, information on the products being transported and the controls in place to ensure safe transport of the product.

4.4 Route Risk Analysis

Route risk analysis is undertaken by the transport contractor in accordance with the following documents;

- AS/NZS 4360:2004 Risk Management Standard
- Australian Code for the Transport of Dangerous Goods by Road and Rail

Issues considered in the transport route risk analysis include the physical conditions experienced along the route, the impact of changing conditions and other factors such as speed and fatigue (Table 4.1).

Table 4.1 Route Risk Analysis

| Physical Conditions | Changing Conditions | Other Issues |
|---------------------------------------------------------------------------|----------------------------------------|--------------------------------------------------------------------------------------|
| Restricted View – especially at intersections and ‘blind corners’ | Oncoming traffic – known passing areas | Speed – yours and other traffic on the road |
| Roundabouts – size, location, condition, alternative route to avoid these | Other heavy vehicle movement | Fatigue Management |
| Pedestrian Crossings and islands | School and public bus route | First time travel on the route |
| Intersections and concealed roadways | Congestion | Emergency Response Procedure in place |
| Bridges – esp. if small or one way | Road works – scheduled and unscheduled | Safety Management Plan in place |
| Roadway shoulders / known pull over areas | Detours – scheduled and unscheduled | Media reports – cultural events, sporting events, protest action, political activity |
| Concealed crest, sharp curves, poor camber | Weather – rain, high wind areas | Maintain communication with base |
| Over / Underpass clearance | Known flood areas | |
| Rail crossings | Livestock / farm areas | |
| Floodways, culverts, water courses | Bush fires – usually seasonal | |
| Overtaking lanes | Transport Vehicle fire | |

| Physical Conditions | Changing Conditions | Other Issues |
|------------------------------------------------|---------------------|--------------|
| Designated rest areas and Road house locations | | |
| Recreational areas and Industrial areas | | |
| Locations of Protected Works A & B type areas | | |

The outcome of the transport risk analysis is incorporated into the driver training for the route being travelled.

An example risk assessment prepared by the transporter (Toll Mining Services) is contained in APPENDIX B.

4.5 Emergency Plans

All drivers undergo emergency response training for incidents such as vehicle accidents or vehicle fires. The training includes:

Mitigation measures in the event of a vehicle fire, such as battery isolation and extinguishing of fires;

Measures to ensure the safety of the public, including, in the event of a large fire the implementation of an exclusion zone around the vehicle.

Activation of the Orica Emergency Response Systems to assist in the management of the incident. The general public are also able to activate the Orica Emergency Response System, with the contact details for the co-ordinating group detailed on the vehicle Dangerous Goods placarding.

Each vehicle carries an Emergency Procedure Guide which summarises the actions to be undertaken in the event of a vehicle fire and also a guide for each type of product being carried (i.e. ANS or ANE).

5 CONCLUSIONS AND RECOMMENDATIONS

Given the existing regulatory requirements, Orica's internal requirements, the nature of the roads to be used, and the engineering controls in place in relation to tanker design, no additional recommendations have been identified in relation to managing the hazards of ANE or ANS during transport to or from the Technology Centre site.

APPENDIX A: HAZARD IDENTIFICATION WORD DIAGRAM

| Event | Cause/Comments | Prevention Controls | Possible Consequences | Mitigation Controls |
|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Decomposition of contaminated load resulting in explosion en-route | 1. Contamination occurs during manufacture of ANE or ANS | Manufacturing process quality control | Decomposition and explosion en-route. Potential fatality for driver and other road users | With warning event. 1. Driver training 2. Emergency response procedures define evacuation distance |
| | 2. Tanker is contaminated | 1. Dedicated tankers 2. Tanker maintenance programme | | |
| Vehicle fire engulfs load resulting in decomposition, confinement of gases and explosion | 1. Tyre fire, ignited by binding brakes, faulty bearings, deflated tyres | 1. Vehicle maintenance programme 2. Pre-use vehicle checks 3. Driver competence | Fire engulfs load. Decomposition and explosion. Potential fatality for driver and other road users | With warning event 1. Purpose built ANS and ANE tankers designed with emergency venting capacity based on experimentally measured vapour generation in a decomp event (Ref: Orica document BULK DISTRIBUTION TANKERS FOR EMULSION PHASE AND OXIDISER LIQUORS 9/98) 2. No combustible / flammables in load area. Diesel with prime mover only. 3. Driver training 4. Emergency response procedures define evacuation distance |
| | 2. Electrical / mechanical fault / driver smoking etc resulting in cabin or engine fire | 1. Vehicle maintenance programme 2. Pre-use vehicle checks 3. Driver competence | | |
| | 3. Vehicle accident / collision | 1. Vehicle maintenance programme 2. Pre-use vehicle checks 3. Driver competence 4. Route risk assessment as per ADG7 conducted by transporter 5. Well signed road, approved B double route 6. Daylight transport operation as far as practicable | | |

APPENDIX B: EXAMPLE ROUTE RISK ASSESSMENT BY TRANSPORTER

Risk Assessment Report

| | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------------------|------------------------------------------------------------|
| What was assessed: | | | |
| Transport of Ammonium Nitrate Solution (ANS) from Orica Manufacturing facility Kooragang Island to Orica Technology Centre Ammonium Nitrate Emulsion (ANE) Facility site via road. Product is carried in B-double and single semi trailers. | | | |
| Area in which assessment was conducted: | | | |
| Distribution Operations by Toll Resources | | | |
| Date of assessment: | 28/05/09 | Date to be reviewed: | 28/05/10 |
| | Assessment Team | | Position |
| Lead Assessor | Michael Bonadio | | Compliance Manager – Supply Chain, OMS |
| Assessor | Paul McGrath | | SSDS Security and Compliance Manager Toll Resources NSW |
| Assessor | Paul Nicou | | Compliance Officer |
| Special notes | | | |
| • | | | |

| Areas Assessed: |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> 1. Egress from OMS facility at Kooragang Island 2. Route via New England Highway, John Renshaw Drive and George Booth Drive to Orica Technology Centre, Richmond Vale. 3. Right hand turn into Echidna Drive, Orica's Technology Centre entrance 4. Alert security for access |

Job Safety Environment Risk Assessment

1 PURPOSE

Risk assessment aids in the control of safety associated with the transportation of product by road to customer sites located throughout Australia. The performance of a risk assessment is mandatory in order to protect:

- Our customers
- Our employees and contracted carriers
- Our shareholders
- The community
- The environment

The purpose of this procedure is to document the OMS processes for performing a risk assessment and implementing controls for the road transport of OMS product from manufacturing and storage facilities within Australia.

2 SCOPE

The risk assessment process forms part of our structured approach to managing risk. It includes the identification, analysis and evaluation of risks, and also incorporates the first stage of controls on how to mitigate the risks.

Formal risk assessments will be performed for:

- Transportation of product within Australian

3 REFERENCES

- AS/NZS 4360:2004 Risk management standard
- AS/NZS 2187.1 Explosives – Storage, Transport & Use
- Australian Code for the Transport of Dangerous Goods by Road & Rail - 7th Edition

4 RESPONSIBILITY

| | |
|----------------------|----------------------------------------------------------------------------------------------------|
| Logistics Manager | <ul style="list-style-type: none"> • Overall responsibility |
| Compliance Manager | <ul style="list-style-type: none"> • Setting Master assessments |
| Distribution Officer | <ul style="list-style-type: none"> • Performing assessments when delegated to do so |

5 ACTION / METHOD

Making assessment

A new **Risk Assessment** form will be created for each transport route.

Communication

Risk assessment results will be communicated to the carrier/s involved with the physical transportation of product, the applicable Account Manager associated with the customer and the business management team.

Matrix values

In order to assess severity, consequence or risk level, a clear understanding of the accepted meanings is needed. The following tables are provided for guidance:

- **Risk Assessment Matrix**

MP-SG-030B - SH&E RISK MANAGEMENT - APPENDIX C: QUALITATIVE RISK TABLES

- **RISK APPLICATION:**

Job Safety & Environment Risk Analysis (JSERA) applications refer to the following risk matrix and probability of occurrence descriptors.

- **Job Safety & Environment Risk Analysis:**

The following simplification of the Orica Risk Matrix is intended to facilitate the application of risk assessment in Job Safety & Environment Risk Analysis (JSERA) applications. It is consistent with MP-SG-033⁽²⁾.

Table 1: SH&E Category Issues for Job Safety & Environment Risk Analysis

| Consequence Categories | Notable Event Cat 1 | Significant Event Cat 2 | Highly Significant Cat 3.1 | Serious Event MHF Cat 3.2 | Extremely Serious MHF Cat 4.1 | Catastrophic Event MHF Cat 4.2 |
|----------------------------|---------------------------|----------------------------|---------------------------------|------------------------------------|----------------------------------|-----------------------------------|
| SAFETY & HEALTH | 1 Minor Injury, First Aid | Single MTI | Single LWC or Multiple MTI | Permanent Disability; Multiple LWC | Single Fatality | Multiple Fatalities |
| ENVIRONMENT | Very minor pollution | Minor local pollution | Evident pollution local concern | Significant local pollution | Major local pollution | Extremely severe pollution |

Table 2: Job Safety & Environment Risk Analysis Risk Matrix

| Likelihood of Occurrence | Notable Event Cat 1 | Significant Event Cat 2 | Highly Significant Cat 3.1 | Serious Event MHF Cat 3.2 | Extremely Serious MHF Cat 4.1 | Catastrophic Event MHF Cat 4.2 |
|--------------------------|------------------------|----------------------------|-------------------------------|------------------------------|----------------------------------|-----------------------------------|
| [A] Almost Certain | Level II | Level II | Level I | Level I | Level I | Level I |
| [B] Very Likely | Level III | Level II | Level II | Level I | Level I | Level I |
| [C] Possible (Likely) | Level III | Level III | Level II | Level II | Level I | Level I |
| [D] Unlikely | Level IV | Level IV | Level III | Level III | Level II | Level I |
| [E] Very Unlikely | Level IV | Level IV | Level IV | Level IV | Level III | Level II |
| [F] Extremely Unlikely | Level IV | Level IV | Level IV | Level IV | Level IV | Level III |

Table 3: Event Likelihood of Occurrence Descriptors for Job Safety & Environment Risk Analysis

| For Use in JSERA | Example or detailed description |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Descriptor | Description |
| A. Almost Certain | It is expected to occur in most circumstances |
| B. Very Likely | Has occurred in some circumstances (known to have happened) |
| C. Possible (Likely) | Might have occurred at some time but details not known |
| D. Unlikely | Could occur here at some time but has not as yet happened |
| E. Very Unlikely | Has occurred somewhere (heard of it happening) |
| F. Extremely Unlikely | Could theoretically occur but not aware of any instances |
| | <ul style="list-style-type: none"> • NOTE: Range of descriptors used should reflect the needs of the activity under review. • Almost certain would mean at least once per year i.e. a common event. • Extremely Unlikely would be used where the event is virtually impossible. |

Table 4: Risk Level Descriptors for Job Safety & Environment Risk Analysis

| For Use in JSERA | Interpretation and detailed description of Risk Level |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Risk Level 1 | Unacceptable risk. Job should not proceed without resolving this risk issue, for example by adding more risk controls or substituting existing controls with more effective ones. |
| Risk Level II | Risk may tolerable where further risk reduction is not practicable. Take action to reduce risk where possible. |
| Risk Level III | Acceptable level of risk where further risk reduction is not practicable. Review risk on subsequent jobs to determine whether further action is appropriate. |
| Risk Level IV | Generally considered to be a trivial risk. Further risk reduction should always be considered but may not be practicable. |

Table 5: Suggested issues to consider / address in the Risk Assessment

| o Physical Conditions | o Changing Conditions | o Other Issues |
|---------------------------------------------------------------------------|----------------------------------------|--------------------------------------------------------------------------------------|
| Restricted View – especially at intersections and ‘blind corners’ | Oncoming traffic – known passing areas | Speed – yours and other traffic on the road |
| Roundabouts – size, location, condition, alternative route to avoid these | Other heavy vehicle movement | Fatigue Management |
| Cross Walks and Pedestrian islands | School and public bus route | First time travel on the route |
| Intersections and concealed roadways | Congestion | Emergency Response Procedure in place |
| Bridges – esp. if small or one way | Road works – scheduled and unscheduled | Safety Management Plan in place |
| Roadway shoulders / known pull over areas | Detours – scheduled and unscheduled | Media reports – cultural events, sporting events, protest action, political activity |
| Concealed crest, sharp curves, poor camber | Weather – rain, high wind areas | Maintain communication with base |
| Over / Underpass clearance | Known flood areas | |
| Rail crossings | Livestock / farm areas | |
| Floodways, culverts, water courses | Bush fires – usually seasonal | |
| Overtaking lanes | Transport Vehicle fire | |
| Designated rest areas & Road house locations | | |
| Recreational areas & Industrial areas | | |
| Locations of Protected Works A & B type areas | | |

| | | |
|--|--|--|
| | | |
| | | |

Table 6: JSERA

| o Risk Action Plan | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Task Steps | Hazard & Effect | Controls | Additional Controls / Comments |
| <p>1. Egress from Kooragang Island</p> <p>Left turn out of KI onto Greenleaf Road</p> <p>Vehicle travels along Cormorant Drive, which become Tourle Street and across the Tourle St bridge.</p> <p>Right turn onto Industrial Drive then onto the Maitland Road (Pacific Highway)</p> <p>Follow onto the New England Highway at Hexham</p> | <p>Vehicle not to standard may result in vehicle accident and personal injury</p> <p>Poor vehicle selection / maintenance could result in LOC and / or personal injury</p> <p>Poor roadway conditions may contribute to an accident resulting in personal injury</p> <p>Interaction with other traffic causing property damage or personal injury</p> | <p>Conduct daily Spot Checks at KI weighbridge</p> <p>Vehicles and equipment purpose built for task and approved load restraints used</p> <p>Contracted carrier / sub-contractor management program in place</p> <p>Visibility is good coming out of weighbridge gate, deliveries occur during day time hours</p> <p>Driver behaviour, training and experience continually assessed</p> <p>All drivers are DG safety awareness trained</p> <p>Driving to conditions on known heavy vehicle route</p> <p>Movement effected in daylight hours where at all possible</p> <p>Vehicles fitted with GPS tracking system and duress button</p> | <p>Contractor Safety Management Plan in place</p> <p>Communication with drivers maintained at all times</p> <p>Drivers stay with their vehicles at all times</p> <p>Carrier audited at regular intervals</p> <p>Well signed road, well maintained road</p> |

| | | Scheduled travel times to minimise road user interaction | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Movement along the Route | | | |
| Task Steps | Hazard & Effect | Controls | Additional Controls / Comments |
| <p>2. Route via New England Highway, John Renshaw Drive and George Booth Drive to Echidna Dr at Orica Technology Centre site</p> <p>Merge left at John Renshaw Dr interchange continuing onto John Renshaw Drive to F3 round about.</p> <p>Cross the roundabout continuing along John Renshaw Drive toward Kurri Kurri for approximately 9KM.</p> <p>Left turn onto George Booth Drive. (100 meters after the Buchanan Rd intersection on right hand side.)</p> <p>Intersection is moderately sharp and although a turning lane exists long vehicles will require the use of the left lane.</p> | <p>Heavy traffic congestion at F3 round about during various and unpredictable times.</p> <p>F3 round about at the bottom of a moderately steep hill requiring additional breaking effort.</p> <p>Poor road conditions could result in damage to property and personal injury</p> <p>Delays or diversions due to road works possibly through built up or congested areas increased risk of incident or accident in unfamiliar area</p> <p>Interaction with other traffic causing property damage or personal injury</p> <p>Light vehicle passing on left using turning lane.</p> <p>Risk of vehicle rollover if speed is not sufficiently reduced.</p> | <p>Driving to conditions</p> <p>Well signed road, Well maintained road</p> <p>Known heavy vehicle route</p> <p>Movement effected in daylight hours where at all possible</p> <p>Diversion from designated route only permitted under instruction from Police, Emergency services or DG supervisor</p> <p>Communication maintained with other vehicles</p> <p>Vehicles fitted with GPS tracking system and duress button</p> <p>Carrier maintenance regimes</p> <p>New England Highway, John Renshaw Dr and George Booth Dr</p> | <p>Maintain auditing programs</p> <p>Contracted carrier / sub-contractor management program in place</p> <p>Safety Management Plan in Place</p> <p>Toll has a dedicated VHF channel for communication to the transport vehicles</p> <p>Transport vehicles do not make fuel stops during this route</p> <p>Alternative route must be communicated to DG supervisor and any concern addressed before proceeding</p> <p>Scheduled travel times to minimise road user interaction</p> <p>Emergency information and procedures folder carried in all vehicles</p> |

| | <p>Vehicle suffers mechanical failure resulting in vehicle being stopped along the roadway</p> <p>Emergency situation resulting in Exposure to Protected Works A or Protected Works B which might pose a threat to the public or public property</p> | <p>are well maintained roadways and well known to drivers</p> <p>Emergency Response Plan in place and well understood by the driver</p> | |
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| Movement along the Route (ctd.) | | | |
| Task Steps | Hazard & Effect | Controls | Additional Controls / Comments |
| <p>3. Approach Orica Technology Centre entrance on Echidna Dr. approximately 5Km from George Booth Drive.</p> <p>Right hand turn into Orica Kurri Kurri entrance, approach gate and alert reception/security of your arrival. (Follow directions given by Orica personnel or security personnel at all times.)</p> | <p>Interaction with other traffic causing property damage or personal injury</p> <p>Intersection is soon after slight RH bend and requires turning across oncoming traffic.</p> <p>Poor road conditions could result in damage to property and personal injury</p> <p>Emergency situation resulting in Exposure to Protected Works A or Protected Works B which might pose a threat to the public or public property</p> <p>Vehicle suffers mechanical failure resulting in vehicle being stopped along the roadway</p> | <p>Movement effected in daylight hours where at all possible</p> <p>Scheduled travel times to minimise road user interaction</p> <p>Driving to conditions reduced speed through industrial area, poor road conditions and moderate traffic flow through Racecourse Rd</p> <p>UHF radio's fitted to all trucks for communication with trucks in close proximity</p> <p>Well signed road, Well maintained road</p> <p>Known heavy vehicle route</p> | <p>Maintain auditing programs</p> <p>Contracted carrier / sub-contractor management program in place</p> <p>Safety Management Plan in Place</p> <p>Dedicated VHF channel for communication to the transport vehicles</p> <p>Carrier audited at regular intervals</p> <p>Vehicle fitted with security seals preventing load tampering or theft.</p> |

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| | Theft – loss of product | <p>Emergency Response Plan in place and well understood by the driver</p> <p>Safety Management plan in place</p> <p>Vehicles fitted with GPS tracking system and duress button</p> <p>No need for driver to leave truck unattended during trip, loaded and unloaded in secure areas</p> | |
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| Security on the Public Roadway | | | |
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| Task Steps | Hazard & Effect | Controls | Additional Controls / Comments |
| 4. Security | Theft – loss of product | <p>Well signed road</p> <p>Good, well maintained road</p> <p>Speed signs provided</p> <p>Carrier maintenance regimes</p> <p>Container approved for use on road and rail by Competent Authority</p> <p>Driving to conditions</p> <p>Known heavy vehicle route</p> <p>Solid product only carried</p> | <p>Maintain auditing programs</p> <p>Contracted carrier sub-contractor management program</p> <p>Driver behaviour training and follow up</p> <p>Vehicles fitted with GPS tracking system and duress button</p> <p>Scheduled travel times to minimise road user interaction</p> <p>Movement effected in daylight hours where at all possible</p> |

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| | | <p>Driver stays with vehicle at all times</p> <p>Vehicles fitted with GPS tracking system and duress button</p> <p><i>Emergency Response Plan in place and known to drivers</i></p> | <p>Safety Management plan in place</p> <p>Dedicated VHF channel for communication to the transport vehicles</p> |
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| <p>REPORT SUMMARY:</p> |
| <p>The route is a well-travelled roadway and is well known to the transport vehicle drivers. The distance allows the vehicle to complete the return journey without the need for a fuel stop. All vehicles are fitted with GPS equipment and a contractor dedicated VHF channel to maintain communication and control over vehicle movement.</p> <p>There are a number of small schools, residential areas, small businesses and small to medium sized industrial operations that must be manoeuvred around during travel to complete the route safely. The condition of the roadway, traffic controls in place and the controls on the vehicles allow for the route to be travelled safely.</p> <p>It is considered that the existing controls are appropriate and adequate to ensure the risks are managed in a safe and professional manner.</p> |

Sign off Record

| Record of participants in the original JSERA | | | | | |
|----------------------------------------------|-----------|------|------|-----------|------|
| Participants: | | | | | |
| Name | Signature | Date | Name | Signature | Date |
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| Record of others who have read the JSERA | | | | | |
|------------------------------------------|-----------|------|------|-----------|------|
| Communications Log: | | | | | |
| Name | Signature | Date | Name | Signature | Date |
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