AUSTRALIAN STRATEGIC MATERIALS LTD

(A wholly owned subsidiary of Alkane Resources Ltd)

ABN 51 091 489 511

Dubbo Project

Transport Management Plan

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TABLE OF REVISIONS

Revision Number	Revision Date	Prepared By	Approved by	Comments
1.0	9/11/2016	A. Irwin (RWC)	M. Sutherland	For consultation
2.0	16/02/2017	A. Irwin (RWC)	M. Sutherland	Following Consultation
2.1	24/01/2018	A. Irwin (RWC)	M. Sutherland	Updates to Fatigue Management
2.2	31/05/2018	A. Irwin (RWC)	M. Sutherland	
2.3	10/09/2018	A. Irwin (RWC)	C. Preshaw (DPE) (7/9/2018)	

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FOREWORD

This Transport Management Plan ("the Plan") for the Dubbo Project has been prepared by R.W. Corkery & Co. Pty. Limited (RWC) on behalf of Australian Strategic Materials Limited[1] (ASML), a subsidiary of Alkane Resources Ltd (Alkane). The Dubbo Project, approved as SSD-5251 by the NSW Planning Assessment Commission (PAC) on 28 May 2015, comprises a small scale open cut mine supplying ore containing rare metals (zirconium, niobium, hafnium and tantalum) and rare earth elements (REEs) to a processing plant near the village of Toongi, approximately 25km south of Dubbo. Waste residues produced by the processing operations will be managed in residue storage facilities, designed to contain and encapsulate these residues.

The Dubbo Project also includes the construction of a water pipeline between the processing plant and the Macquarie River, a pipeline to carry natural gas between Dubbo and the Dubbo Project Site, and the upgrades of the following linear infrastructure;

- *Toongi Road;*
- *Obley Road; and*
- *the Toongi-Dubbo section of the currently disused Dubbo-Molong Rail Line.*

Collectively, these are referred to as the Dubbo Project linear infrastructure.

Transport operations over the life of the Dubbo Project will be subject to the outcomes of a Transport Options Review which considers the feasibility of rail transport to the Dubbo Project Site (through the upgrade of the Toongi-Dubbo section of the Dubbo-Molong Rail Line). This Plan will be regularly reviewed and updated to reflect any changes to transport operations.

In accordance with Condition 14 of Schedule 2 of SSD-5251, the Plan is prepared in a staged fashion.

- *Stage 1: provides for traffic management of construction activities on the Dubbo Project Site and linear infrastructure.*
- *Stage 2: provides for traffic management following the commencement of mining operations (as defined by SSD-5251 as "the removal and emplacement of overburden and extraction, processing, handling, storage and transport of mineral ore / ore concentrate / refined ore products").*

This document represents Stage 1 of the Plan.

[1] Formerly Australian Zirconia Limited (ASML)

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1. SCOPE

1.1 PURPOSE

The Dubbo Project Traffic Management Plan ("the Plan") has been prepared as a tool to give consideration to and to manage noise related issues during the construction and operation of the Dubbo Project. It will be used by Australian Strategic Materials Limited (ASML) personnel as the first point of reference for traffic related issues.

This plan synthesises the recommendations made during the preparation of an Environmental Impact Statement (EIS) for the Dubbo Project, and subsequent assessment and approval of SSD-5251. It is a practical guide for management of issues associated with construction traffic, transport of materials to, and products from the Dubbo Project Site, and internal management of traffic.

1.2 PROJECT OVERVIEW

1.2.1 Project Activities – Stage 1

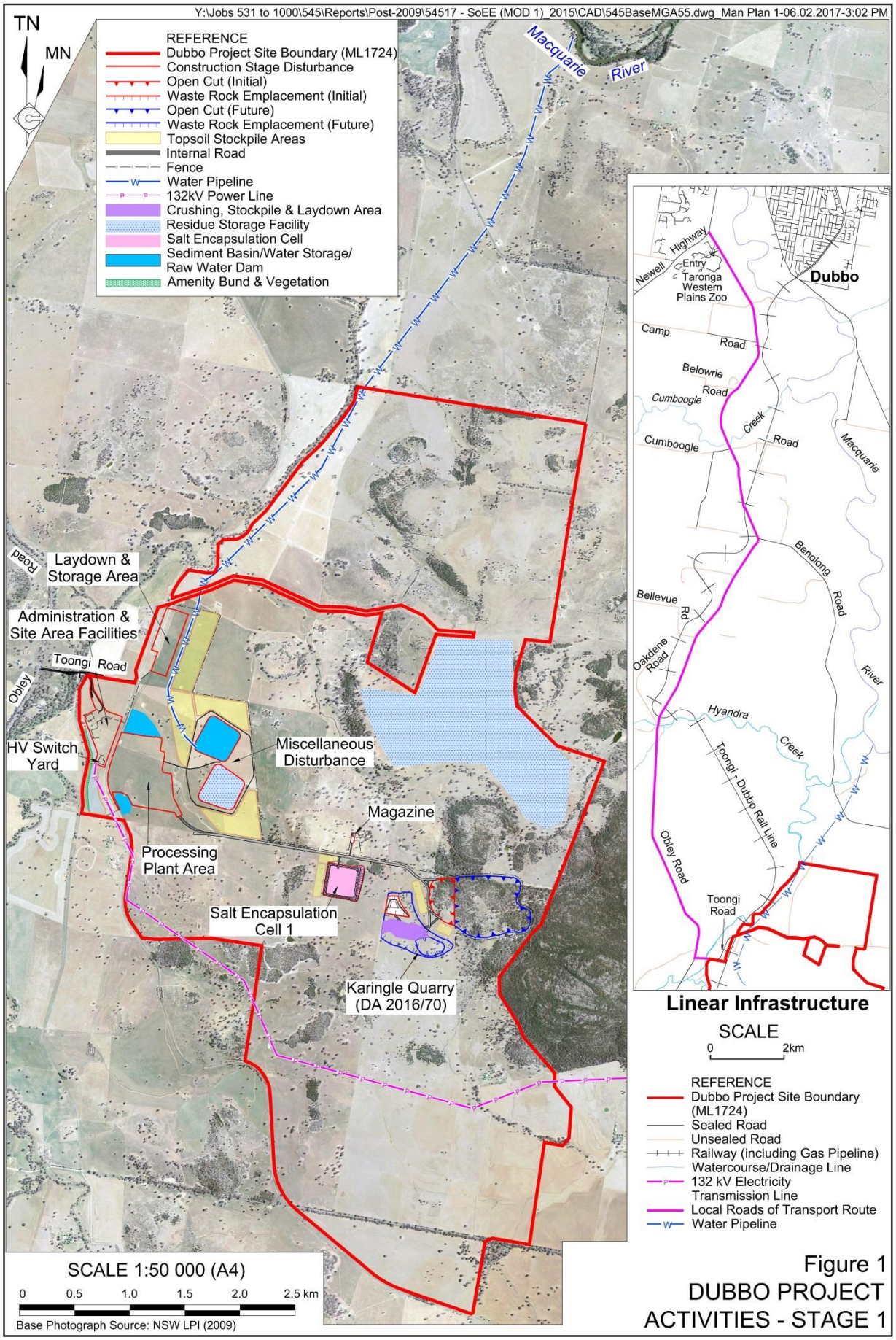
As noted in the **Foreword**, the Plan will be prepared in stages to reflect the initial construction activities on the Dubbo Project Site and linear infrastructure (Stage 1), and ongoing construction and operations following commencement of mining operations (Stage 2). This document represents Stage 1 of the Plan (Construction Operations) and includes the following activities (see **Figure 1**).

Site Construction

- Site Entrance and Access Road.
- Site Administration, Laydown and Storage Areas.
- Processing Plant.
- Internal haul roads.
- Residue Storage Facilities (RSF) and Salt Encapsulation Cells.
- Initial open cut development.
- Initial Waste Rock Emplacement (WRE) construction.
- Extraction of basalt from a small quarry (developed under separate development consent within the impact footprint of the WRE).

Linear Infrastructure Construction

- Macquarie River Water Pipeline, pump station and 22kV powerline.
- Natural Gas Pipeline.
- Toongi and Obley Road Upgrades (including reek crossings).
- 132kV Power Line (from Geurie).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TN
MN
REFERENCE
Dubbo Project Site Boundary (ML1724)
Construction Stage Disturbance
Open Cut (Initial)
Waste Rock Emplacement (Initial)
Open Cut (Future)
Waste Rock Emplacement (Future)
Topsoil Stockpile Areas
Internal Road
Fence
Water Pipeline
132kV Power Line
Crushing, Stockpile & Laydown Area
Residue Storage Facility
Salt Encapsulation Cell
Sediment Basin/Water Storage/ Raw Water Dam
Amenity Bund & Vegetation
Macquarie River
Laydown & Storage Area
Administration & Site Area Facilities
Toongi Road
Obley Road
HV Switch Yard
Miscellaneous Disturbance
Magazine
Processing Plant Area
Salt Encapsulation Cell 1
Karingle Quarry (DA 2016/70)
Newell Highway
Entry Taronga Western Plains Zoo
Dubbo
Camp Road
Belowrie Road
Cumboogle Road
Cumboogle Creek
Macquarie
Benolong Road
Bellevue Rd
Oakdene Road
Hyandra Creek
Toongi - Dubbo Rail Line
Obley Road
Toongi Road
Linear Infrastructure
SCALE
0 2km
REFERENCE
Dubbo Project Site Boundary (ML1724)
Sealed Road
Unsealed Road
Railway (including Gas Pipeline)
Watercourse/Drainage Line
132 kV Electricity Transmission Line
Local Roads of Transport Route
Water Pipeline
SCALE 1:50 000 (A4)
0 0.5 1.0 1.5 2.0 2.5 km
Base Photograph Source: NSW LPI (2009)
Figure 1
DUBBO PROJECT
ACTIVITIES - STAGE 1

1.2.2 Transport Operations

In accordance with *Condition 3(42)*, ASML will continue to investigate the potential incorporation of rail transport from the Dubbo Project Site, and upgrade of the Dubbo-Toongi section of the currently disused Dubbo-Molong Rail Line.

Prior to the completion of investigations and possible incorporation of rail transport from the Dubbo Project Site into the transport task, transport operations for the Dubbo Project are to be as follows.

- Construction Stage: By road (Newell Highway, Obley Road and Toongi Road).
- Operations: Two transport options are to be incorporated as follows.
  - Rail (to Dubbo) / Road (to Toongi). Bulk reagents will be transported to a rail terminal operated by Fletcher International Exports Pty Ltd (FIE Terminal) on the Merrygoen Rail Line north of Dubbo. At the FIE Terminal the reagents are to be transferred to trucks for delivery to the Dubbo Project Site by road utilising an approved Restricted Access Vehicle (RAV) route via Yarrandale Road (north) and Boothenba Road.

    Transport of non-bulk reagents and general deliveries would be by road (see below)
  - Road. From the Newell Highway, vehicles travel to the Dubbo Project Site via Obley Road and Toongi Road, upgraded as required by SSD-5251 and the road authority.

Figure 2 identifies the various transport routes (including future rail transport to the Dubbo Project Site).

The volume of traffic to be generated by the Dubbo Project during the construction phase (Stage 1) and operations phase (Stage 2) will continue to be optimised by ASML, with anticipated number of vehicle movements as follows.

- Construction (Stage 1).
  - Heavy vehicles (including Oversize Overmass vehicles): 5 to 60 per day
  - Light vehicles: 300 to 400 per day.
- Operations (Stage 2) (excluding rail to Dubbo Project Site option).
  - Heavy vehicles (including Oversize Overmass vehicles): 125 per day
  - Light vehicles: up to 320 per day.

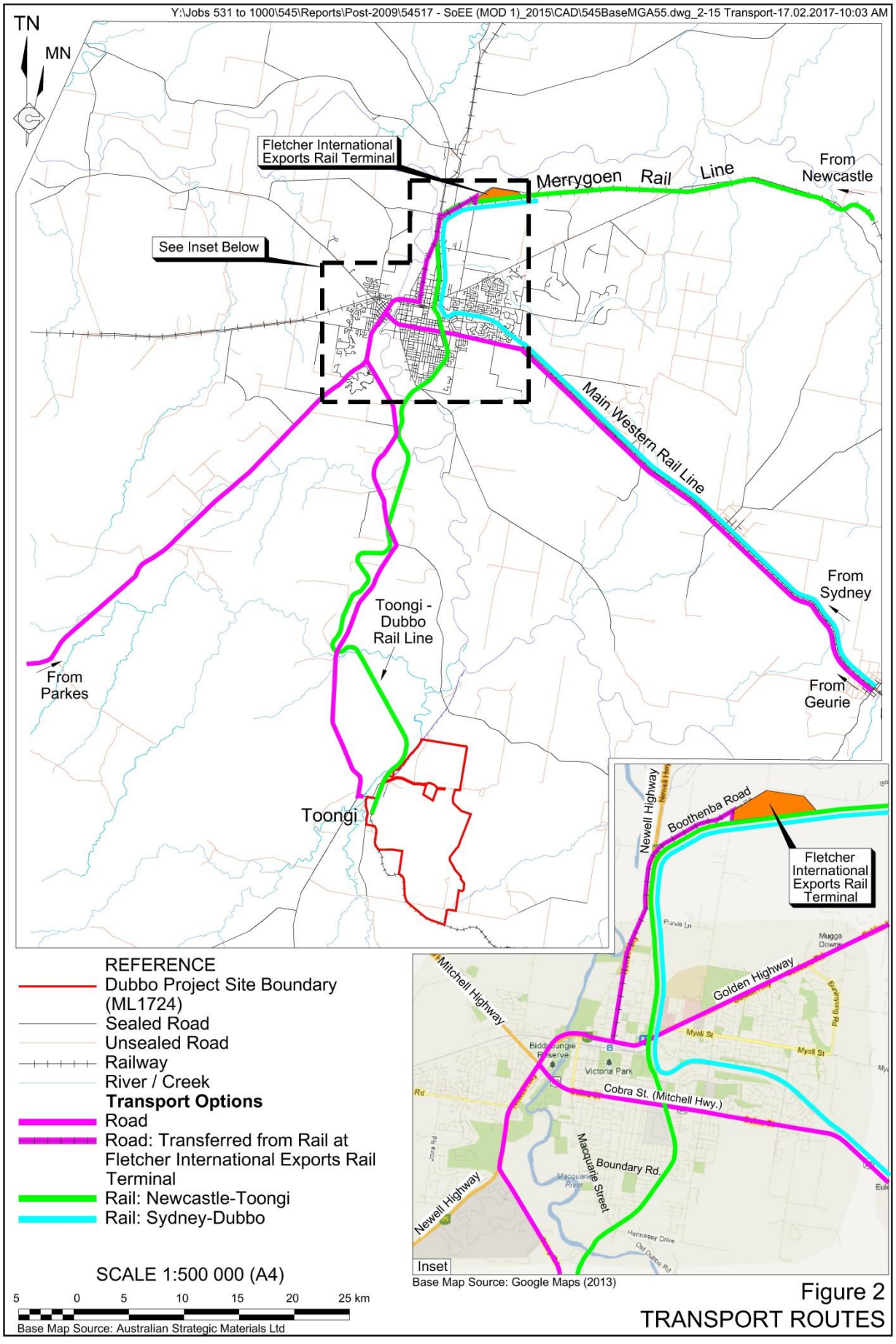

Figure 2
TRANSPORT ROUTES

1.3 LEGAL AND OTHER REGULATORY REQUIREMENTS

1.3.1 Development Consent SSD-5251

The Dubbo Project is State Significant Development and an Environmental Impact Statement (RWC, 2013) was completed in accordance with Schedule 2, Part 3 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to assess the environmental impacts (including noise) of the Dubbo Project. Development Consent SSD-5251 was granted by the NSW Planning Assessment Commission (PAC) on 28 May 2015, with *Condition 44* (of Schedule 3) requiring the preparation of a Transport Management Plan.

Table 1 identifies the requirements of *Condition 3(44)*, as well as the more general requirements with respect to management plans of *Condition 5(3)*, and identifies where in this Plan the individual requirements have been addressed.

Table 1
Conditional Requirements of SSD-5251 for a Noise Management Plan

Page 1 of 2

Condition	Section
Schedule 3	
44. The Applicant shall prepare and implement a Transport Management Plan for the development to the satisfaction of the Secretary. This plan must:	**Appendix 1**
(a) be prepared in consultation with RMS, Council and the Zoo and be submitted to the Secretary for approval prior to any development under this consent, unless the Secretary agrees otherwise;	2
(b) include a Construction Transport Management Plan which incorporates;	
• the final detailed designs of the Toongi Road and Obley Road upgrades;	4.1 - 4.3
• measures to ensure that oversized vehicles can safely navigate the road network and the delivery of goods to the site or off-site construction locations; and,	4.5
• a management strategy and measures to minimise disruption to other road users during the construction of the development, detailing procedures and timing for the temporary, partial or whole road closures required for the development, in particular during public and school holidays.	4.4 / 4.6
(c) include an Operational Transport Management Plan, to be submitted to the Secretary for approval prior to commencing mining operations, which includes:	
• details of measures to minimise truck movements at night;	
• a description of the designated haulage routes to be used within the Dubbo local government area;	
• measures to maximise the use of a low frequency (regular) trucking schedule rather than an intermittently-high frequency (campaign) trucking schedule, especially during the peak hours;	**STAGE 2 OF PLAN**
• measures to reduce the noise generated by road transport vehicles along Obley Road;	
• contingency plans to apply during disruptions of the designated haulage routes within the Dubbo local government area, including procedures for notifying relevant agencies and affected communities of the need to implement such contingency plans;	
• procedures to ensure that all haulage trucks associated with the development have relevant contact details displayed;	
• procedures for receiving and addressing complaints from the community concerning traffic issues associated with truck movements to and from the site;	
• measures to ensure that the provisions of this plan are implemented (e.g. driver training in the Driver Code of Conduct and contractual agreements with heavy vehicle operators appropriate penalties for infringements of the Code); and	

Table 1 (Cont'd)
Conditional Requirements of SSD-5251 for a Noise Management Plan

Condition	Section
Schedule 3 (Cont'd)	
(d) include a Road Transport Protocol for all drivers transporting process reagents or refined ore products to and from the site, which includes measures to: • ensure drivers adhere to the designated haulage routes within the Dubbo local government area; • verify that these heavy vehicles are completely covered whilst in transit; • co-ordinate the staggering of heavy vehicle departures to minimise the impacts on the road network where practicable; • minimise disruption to school bus timetables; • manage worker fatigue during trips to and from the site; • manage appropriate driver behaviour including adherence to speed limits, safe overtaking and maintaining appropriate distances between vehicles (i.e. a Driver Code of Conduct); • inform drivers of relevant drug and alcohol policies; • regularly inspect vehicle maintenance and safety records; • implement contingency procedures when the haulage route is disrupted; • respond to emergencies; • transport processing reagents safely; and • ensure compliance with and enforcement of the protocol.	**STAGE 2 OF PLAN**
Schedule 5	
3. The Applicant shall ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:	
(a) detailed baseline data;	3
(b) a description of:	
• the relevant statutory requirements (including any relevant approval, licence or lease conditions);	1.3
• any relevant limits or performance measures/criteria;	8.1
• the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	8.1
(c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	4 - 6
(d) a program to monitor and report on the:	
• impacts and environmental performance of the development;	8.2
• effectiveness of any management measures (see c above);	8.1
(e) a contingency plan to manage any unpredicted impacts and their consequences;	8.7
(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	8.7
(g) a protocol for managing and reporting any:	
• incidents	8.3
• complaints;	8.4
• non-compliances with statutory requirements; and	8.3
• exceedances of the impact assessment criteria and/or performance criteria;	N/A
(h) a protocol for the periodic review of the plan.	8.7

1.3.2 Environment Protection License (POEO) Act

The Environment Protection Authority (EPA) issued the Environment Protection Licence (EPL) 20702 under the *Protection of the Environment Operations Act 1997* (POEO Act). EPL 20702 contains criteria relevant to the scheduled development activities required to complete Stage 1 of the Project. Currently EPL 20702 contains no condition relating to transport management with the exception of *Conditions 4.1 and 4.2*, detailed below.

Telephone Complaints Line

> *M4.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in this license.*
>
> *M4.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.*

1.4 FORMAT

As this version of the Plan only considers the construction activities of Stage 1, and as identified in **Table 1**, some sections of the Plan remain to be completed and include the reference:

To be included in Stage 2 of the Plan prior to commencement of mining operations

A final version of the Plan, including an Operational Transport Management Plan (as required by *Condition 3(44)(c)*) and Road Transport Protocol (as required by *Condition 3(44)(d)*) will be submitted prior to the commencement of mining, as defined by SSD-5251 as:

> *"the removal and emplacement of overburden and extraction, processing, handling, storage and transport of mineral ore / ore concentrate / refined ore products".*

1.5 OBJECTIVES AND OUTCOMES

Table 2 details the objectives and outcomes with respect to transport management of the Dubbo Project.

Table 2
Objectives and Outcomes

Objectives	Outcomes
(a) To ensure compliance with the criteria of SSD--5251, EPL 20702 and reasonable community expectations.	(i) Compliance with all relevant criteria as nominated in SSD-5251 and EPL 20702 and reasonable community expectations.
(b) To implement appropriate transport management measures during all stages of the Dubbo Project.	(ii) All identified transport management measures implemented.
(c) To implement an appropriate monitoring program to establish compliance or otherwise with relevant criteria during all stages of the Project	(iii) All identified monitoring undertaken in accordance with the Plan.
(d) To implement an appropriate complaints handling and response protocol.	(iv) Complaints (if any) handled and responded to in an appropriate manner. (v) All complaints recorded and reported in accordance with annual reporting requirements.
(e) To implement appropriate corrective and preventative actions, if required.	(vi) Corrective and preventative actions implemented, if required.
(f) To implement an appropriate incident reporting program, if required.	(vii) Incidents (if any) reported in an appropriate manner.
(g) To implement appropriate program for continual improvement of strategies.	(viii) Periodic review of the Plan to ensure that the outcomes of the Plan are achieved.

1.6 ROLES AND RESPONSIBILITIES

Table 3 outlines the roles and responsibilities of personnel with reference to traffic management.

Table 3
Roles and Responsibilities

Page 1 of 2

Role	Responsibilities
Chief Operations Officer	Ensure adequate resources are available to enable implementation of the Plan.
General Manager NSW	Ensure community notifications and negotiations are undertaken as nominated in the Plan and in a timely manner.
The Manager (Construction or Mining Operations)	Ensure reviews of task specific plans for traffic management are completed prior to the commencement of construction activities with the potential to disrupt other road users. Initiate investigations of traffic complaints as received from public or regulator. Inform the Environment and Community Manager of identified causes of traffic complaints.
Environment and Community Manager	Ensure the implementation of this Plan. Ensure traffic monitoring is undertaken. Review traffic monitoring results, as generated following traffic monitoring program and enter into environmental database. Assist the Manager in investigations of a recorded incident or complaint. Prepare a response to the complainant following a recorded complaint. Ensure employees are competent through training and awareness programs.

Table 3 (Cont'd)
Roles and Responsibilities

Role	Responsibilities
Mobile Equipment / Transport Operators	Are licensed, competent, trained and authorised to operate the equipment. Operate equipment in accordance with design and operational specifications and with consideration of other road users. Conduct pre-start inspections to ensure vehicle is fit for purpose and safe to operate. Conduct themselves in a manner that is courteous and considerate of other road users. Report any transport related incidents or unaccounted for events to the Manager, or Environment and Community Manager.
All Personnel	Follow any instructions provided by the Environment and Community Manager or Manager. Travel to and from the Dubbo Project Site in a courteous manner.

2. CONSULTATION

Condition 44(a) of Schedule 3 of SSD-5251 requires the NSW Roads and Maritime Services (RMS), Dubbo City Council[2] (the "Council") and Taronga Western Plains Zoo (the "Zoo") be consulted in the preparation of the Plan.

2.1 GOVERNMENT CONSULTATION

Roads and Maritime Services (Transport for NSW)

Following submission and public exhibition of EIS for the Dubbo Project, significant correspondence was undertaken with Transport for NSW (TfNSW), which also represented RMS, to address various transport related issues raised by TfNSW. As noted in the record of written correspondence between AZL and TfNSW (see **Appendix 2**), satisfaction with the proposed approach to transport was acknowledged on 14 April 2014.

The management measures presented in the Plan do not include any variation to the approach to, or commitments made in respect to transport accepted by TfNSW. This notwithstanding, the RMS was provided with a draft copy of the Plan for review and comment. On 2 December 2016, the RMS provided feedback requesting clarification of the following matters.

- The timing of works on the local roads and management of construction traffic to and from the Dubbo Project Site whilst these road works are ongoing.

  Section 4.4.2 provides information related to the management of construction traffic travelling to and from the Dubbo Project Site.

- How driver fatigue will be managed during both construction and operational phases of the Dubbo Project.

[2] Now identified as Dubbo Regional Council following merger with the neighbouring Wellington Shire Council.

Section 4.4.8 provides ASMLs commitments with respect to fatigue management which revolve around the requirement for contract transport companies to possess and implement fatigue management plans and the implementation of a fatigue management plan for ASML personnel and contract staff.

The feedback of the RMS is included in **Appendix 2**.

Dubbo Regional Council (formerly Dubbo City Council)

On 7 July 2015, Mr Mike Sutherland (General Manager NSW) and Mr Nic Earner (Chief Operations Officer) of ASML met with representatives of Council to discuss progress and likely scheduling of tasks associated with the Dubbo Project. At this meeting, ASML sought feedback from Council with respect to the management of the linear infrastructure construction works to be undertaken on Council infrastructure, with the objective of ensuring that management effectively addressed issues.

Council requested that the Front End Engineering Design (FEED) drawings of road upgrades and infrastructure prepared by Hatch be forwarded to Steve Clayton at Council for consideration and comment. The construction or installation of a noise barrier between the Taronga Western Plains Zoo and Obley Road was also discussed, with Council requesting they be kept informed of plans for these works (see Section 2.2).

A draft version of the Plan was provided to Council on 11 November 2016 requesting review and advice on aspects relevant to the local road authority. On 27 January 2017, a response was received from Council (see **Appendix 3**) which:

- identified inaccuracies in some local road descriptions; and
- requested amendments to the design of the Obley Road upgrade.

Most critically, the requested amendments to road design referenced 110km/hr (sign-posted speed + 10km/hr) as the design road speed for these works. If adopted, this will have significant effect on the vertical and horizontal alignments of the road upgrade facilitating additional land clearing and potentially acquisition. A meeting between representatives of Council, ASML, RWC and Constructive Solutions Pty Limited (CSPL) (author of the *Traffic Impact Assessment* which accompanied the 2013 EIS for the Dubbo Project) was convened on 14 February 2017 to discuss the issues raised in Council's submission.

On review and discussion of Council's submission, the following actions and amendments have been made to the Plan.

- The identified inaccuracies and typographical errors have been corrected.
- The requests for modifications to final road design, to address specific issues raised in relation to intersections, property access, horizontal and vertical alignment, clear zones, and stormwater works, will be considered as part of final road design.

It was agreed that critical to the preparation of final road design is the determination of the operating speed of Obley Road[3]. As is discussed in Section 4.3, operating speed will be determined through analysis of data from classified traffic counters to be placed on Obley Road (at locations to be confirmed in consultation with Council). Vertical and horizontal alignments, as well as clear zone requirements, will be determined based on the operating speed and final road design prepared on this basis. Road Safety Audits (RSAs)of road design will be completed to assess compliance against the standards recommended by the Austroads *Guide to Road Design* and other traffic safety guidelines and/or level of residual risk.

- The length of road under construction in any one section will be restricted to 1km or less, unless otherwise agreed by Council (refer to Section 4.2).
- ASML agrees to provide at least 4 months notice to Council prior to submission of road design plans to allow sufficient time for appropriate resourcing within Council.

As is discussed in Section 4, Council will continue to be consulted (as the local road authority) on matters related to road and intersection design, traffic control plans during road construction and the movement of Oversize Overmass (OSOM) vehicles for the delivery of larger mobile and fixed equipment.

2.2 TARONGA CONSERVATION SOCIETY AUSTRALIA

Following exhibition of the EIS, ASML and RWC met with representatives of Taronga Conservation Society Australia (TCSA) to discuss possible impacts on Zoo operations and methods of minimising and mitigating these impacts. At this meeting and subsequently, the issue of traffic noise and the impacts this might have both on amenity for visitors to the Zoo and the breeding programs undertaken at the Zoo was raised.

As a consequence of these discussions, and subsequent correspondence between TCSA, ASML, RWC and the Department of Planning and Environment (DPE), conditions requiring specific treatments of the road surface adjacent to the Zoo (*Condition 40(c)* of Schedule 3) and the construction of a 3m high 1km long road noise barrier on land owned by the Zoo (*Condition 3* of Schedule 3) have been included in SSD-5251.

On 13 July 2015, Mr Mike Sutherland (ASML) and Mr Oliver Muller (Muller Acoustic Consultants [MAC]) met with Kathleen Oke (Manager, Facilities and Asset Operations) and Paul Metcalfe (Manager Life Sciences) to discuss the design specifications of the road noise barrier. A Noise Impact Assessment was subsequently prepared by MAC which identified the noise barrier arrangement which maximises the attenuation of road traffic noise at the breeding pens of Zoo. On review of the two options providing equivalent noise attenuation, considering factors such as practicality, security and visual impact management, the Zoo was provided with an assessment of the options for construction of the noise barrier on 14 August 2015. At the request of TCSA, ASML has agreed to the construction of a 1km long 3m high, hebel (or

[3] Operating Speed is identified as the 85th percentile speed by the Austroads *Guide to Road Design*.

similar material) noise barrier, constructed just inside the Taronga Western Plains Zoo chain-mesh perimeter fence east of the Rhinoceros and Cape Hunting Dog breeding pens (see **Figure 3**).

A draft version of the Plan was provided to TCSA on 11 November 2016 requesting review and advice as to any aspects requiring review and/or modification. On 31 January 2017, a meeting between representatives of TSCA and ASML was held to discuss matters of significance to the operation of Taronga Western Plains Zoo. The matters raised and modifications (if relevant) made to the Plan are as follows.

- TCSA requested assistance (via support for TCSA in consultation with road authorities) to reduce the speed zone on Obley Road between the Newell Highway and Camp Road to 80km/hr.
- TCSA requested consideration be given to providing a right turn lane for access to the Zoofari Lodge.

  ASML will consider as part of final road design.
- TCSA would like the sound proof barrier installed first.

  ASML is happy to accommodate this request.
- TCSA noted the preferred period for road construction works as November-December or February-March. TSCA also requested construction adjoining the Taronga Western Plains Zoo avoid September-October and April.

  ASML is happy to accommodate this request and suggests May to August may be the most appropriate period for road construction works.

2.3 COMMUNITY CONSULTATION

A Community Consultative Community (CCC) was established in November 2015 and provides a forum for open discussion between ASML, the community, Council and other stakeholders on issues directly relating to the mine's operations, environmental performance and community relations, and to keep the community informed on these matters.

The representatives of the CCC comprise an independent chair, ASML representative(s), community, Council and Aboriginal community representatives. The contact details of the CCC representatives are published (with the permission of each) on Alkane's website such that each may be contacted to present concerns of others in the community. The CCC meets quarterly (the first meeting being 14 November 2015) and provides an opportunity for issues of concern related to management of air quality to be raised and solutions identified and discussed.

ASML will continue to publish a community newsletter that will inform the local community of relevant developments which may impact on the local air quality environment. ASML has and will continue to operate an open door policy to those wishing to raise and discuss issues of concern.

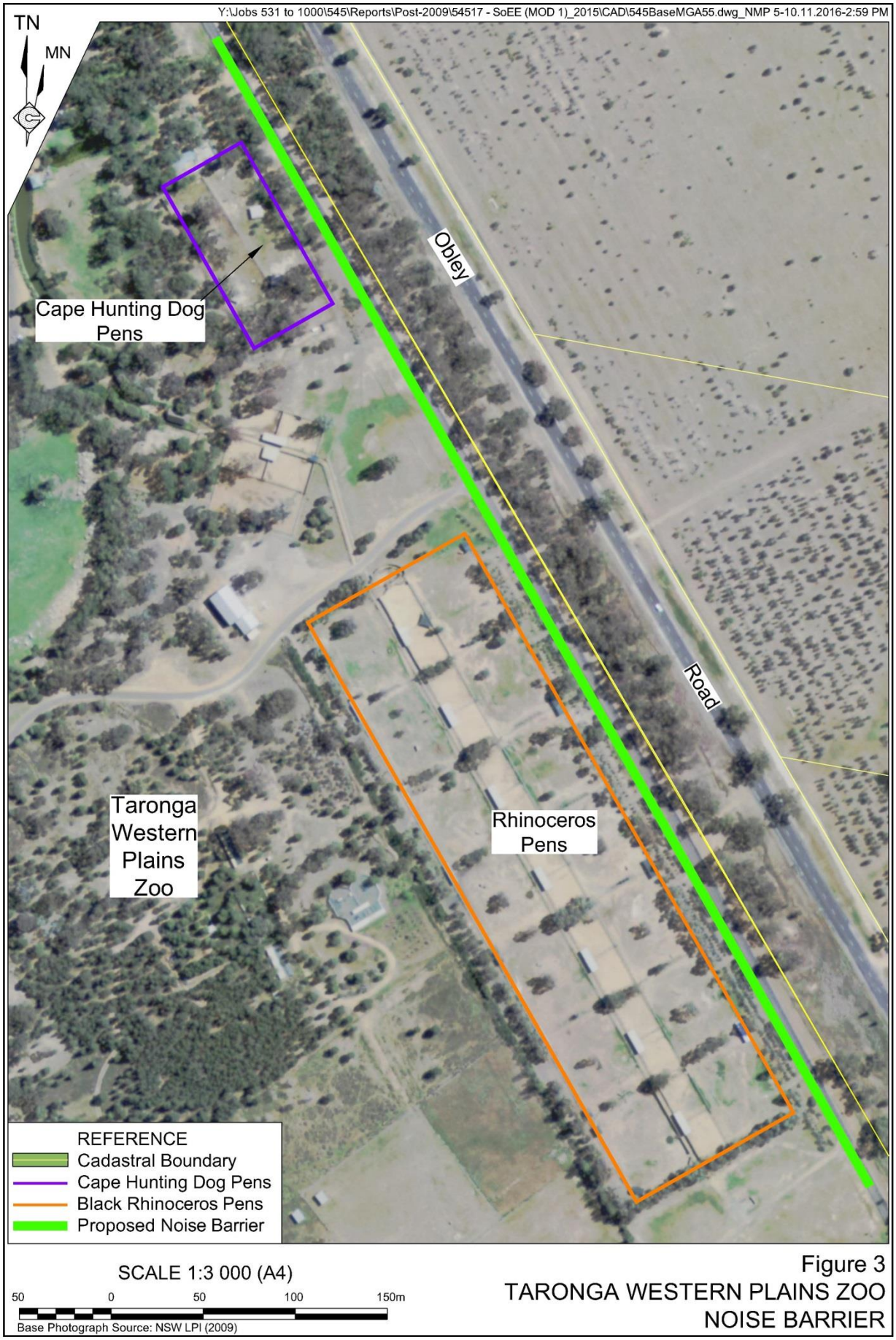

Figure 3
TARONGA WESTERN PLAINS ZOO
NOISE BARRIER

3. LOCAL SETTING

The following provides an overview of local road conditions, intersections, railway level crossings, traffic volumes and crash data of the roads to be used by construction traffic and initial operations traffic (see **Figure 4**).

3.1 LOCAL ROADS

The transport route for access to the Dubbo Project incorporates the existing road network with all inbound heavy vehicles travelling along the Newell Highway, Obley Road and Toongi Road (refer **Figure 4**). Future transport operations may incorporate transport operations between the Fletcher International Exports Rail Terminal using Yarrandale Road and Boothenba Road (refer to Section 1.2) and information on these roads is also included.

The information presented is based on the inspections undertaken by Mr Doug Seymour and Mr Ben Rossiter of Constructive Solutions in February 2012 (Obley Road and Toongi Road) and March 2013 (Yarrandale Road and Boothenba Road). Additional information on the pavement condition of Obley Road is based on Falling Weight Deflectometer (FWD) testing completed along Obley Road in 2012 by GR Webb Consulting Pty Ltd.

Toongi Road

Toongi Road is a two-lane, two-way road with a central 4.5m sealed carriageway at the intersection with Obley Road (see **Plate 1**), narrowing to 3.0m to 3.5m after The Springs Road intersection (see **Plate 2**). Toongi Road is a no-through road which services several rural properties along its length and ends after crossing the Dubbo-Molong Rail Line approximately 1.6km from Obley Road. The alignment is good with the exception of two right angle bends which have no warning or speed advisory signage.

Toongi Road crosses Wambangalang Creek on a causeway with six 1 050mm reinforced concrete low flow pipes (see **Plate 3**) approximately 260m from the intersection of Obley Road. Toongi Road forms a T-intersection with The Springs Road a further 85m from Wambangalang Creek and forms the first of two right angle bends approximately 280m beyond The Springs Road.

Obley Road

Obley Road is a two-lane, two-way road with a central sealed carriageway varying in width (see **Plate 4**). Obley Road primarily services the existing properties along its length, however, it is also used as an alternative route to Dubbo from the south for vehicles choosing to avoid the Mitchell Highway.

There are three major creek crossings on Obley Road.

- Hyandra Creek: a 12m span, steel and concrete structure providing a low flow crossing.
- Cumboogle Creek: a concrete bridge structure with 7m pavement (corresponding to the width of the bridge) elevated above the local floodplain. The bridge deck is well above the channel below.
- Twelve Mile Creek: a single 450mm reinforced concrete pipe low flow causeway.

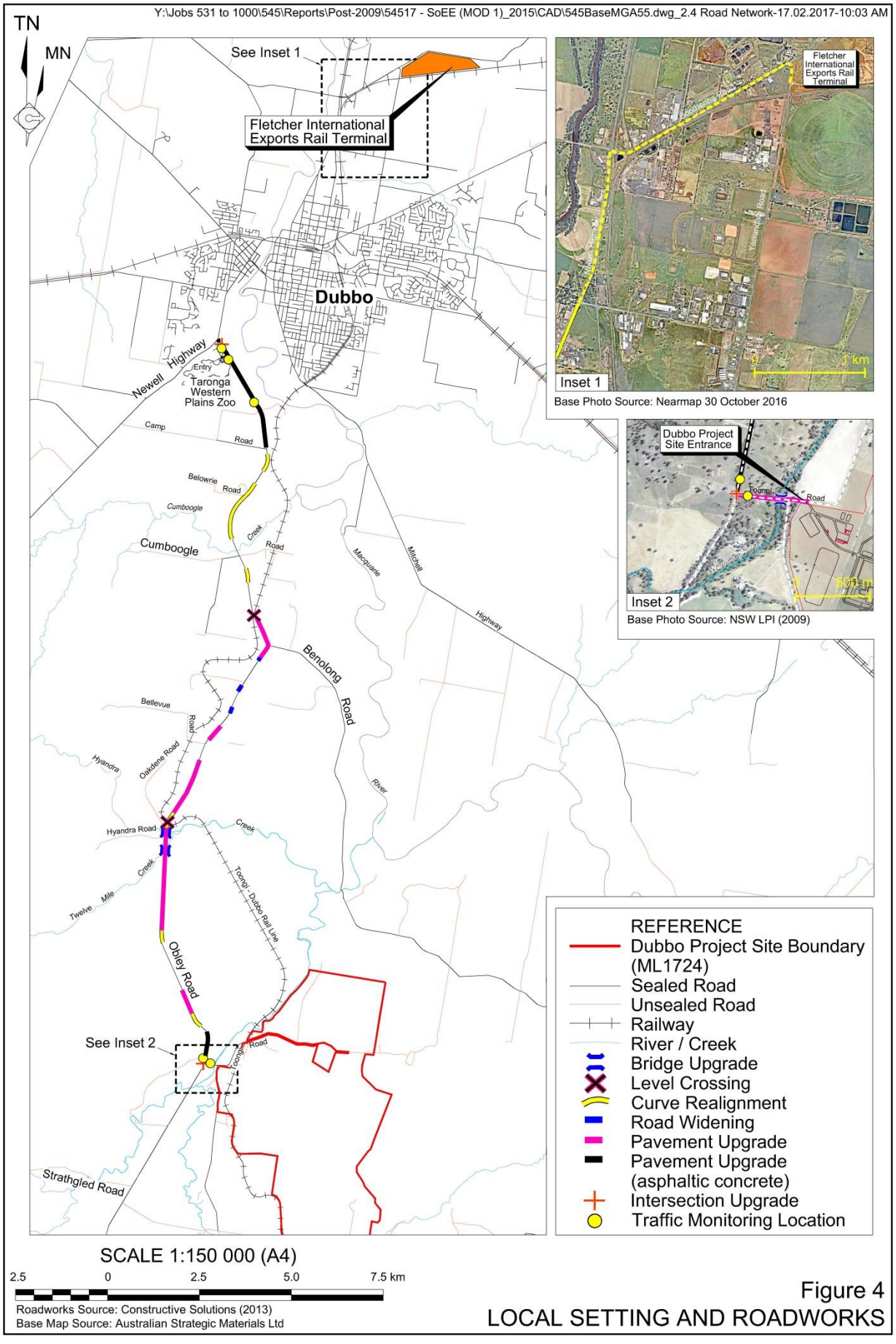

Figure 4
LOCAL SETTING AND ROADWORKS

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Plate 1: Toongi Road from the Obley Road Intersection
(Ref: Constructive Solutions 2013 - Plate 27)

Plate 2: Toongi Road Alignment and Condition (beyond The Springs Road Intersection)
(Ref: Constructive Solutions 2013 - Plate 4)

Plate 3: Causeway crossing of Wambangalang Creek
(Ref: Constructive Solutions 2013 - Plate 5)

Plate 4: Obley Road Typical Alignment and Condition
(Ref: Constructive Solutions 2013 - Plate 1)

There are several existing intersections, and one proposed new intersection (to Taronga Western Plains Zoo opposite the Dundullimal Homestead), between the Newell Highway and the Dubbo Project Site, namely:

- Taronga Western Plains Zoo (main entrance);
- Taronga Western Plains Zoo (Zoofari Lodge entrance)
- Hyandra Road;
- Oakdene Road;
- Bellevue Road;
- Benolong Road;
- Cumboogle Road;
- Belowrie Road;
- Camp Road; and
- Toongi Road.

The first 9.5km of Obley Road from the Newell Highway towards Toongi Road is relatively flat with good horizontal and vertical alignment. The seal width is approximately 6.5m to 7.0m and is in good condition although general pavement deformation was evident at the time of inspection. From 9.5km to 19.9km, no centre lines are marked and the seal narrows with pavement in average condition. From 19.9km to Toongi Road, line marking returns and the seal widens again.

The age, quality and depth of the existing pavement were found to vary significantly and **Table 4** summarises the existing pavement conditions.

Table 4
Existing Pavement – Obley Road

Characteristic	Maximum	Minimum
Pavement Thickness (mm)	440	110
Subgrade CBR* (%)	43.6	3.7
Source: Modified after Constructive Solutions (2013) – Table 4 *CBR = California Bearing Ratio (a measure of mechanical strength)		

A review of FWD results was also completed to assist in determining the suitability of the existing pavement with deflections up to 2.3mm evident.

Obley Road forms part of the Western Plains Tourist Circuit, is currently used by cyclists (including for annual events) and there is a shared pedestrian / cycle way from the Newell Highway to Taronga Western Plains Zoo. There are known school bus stops adjacent to the intersections with Camp Road, Belmont Road (Cumboogle Road), Oakdene Road and at least two at properties between Camp Road and Oakdene Road. At least another two stops are located between Oakdene Road and Strathgled Road (approximately 3.8km south of Toongi Road). School bus stop locations are likely to change over time as younger children begin school and older children finish.

Obley Road is currently designated as a Restricted Access Vehicle (RAV) route (up to 26m B-Double) from the Newell Highway to Benolong Road (a distance of 9.3km).

Boothenba Road

Boothenba Road is a two-way, two-lane undivided sealed local road on the northern periphery of the Dubbo urban area that links the Newell Highway to Yarrandale Road. It has line-marking for only a short distance east of the Newell Highway. The alignment is generally straight and flat. The road has wide unsealed shoulders suitable for heavy vehicles to pull off.

The intersection between Boothenba Road and the Newell Highway was significantly upgraded in 2015 (since the EIS was completed) to enable Type 1 Road Train access from the Newell Highway to the Dubbo Regional Livestock Markets more conveniently than via Purvis Lane. This upgrade required the relocation of the railway line further east to allow long vehicles to turn off the Newell Highway into Boothenba Road.

One school bus service is known to operate in the morning westbound along Boothenba Road to Yarrandale Road (and therefore not on the subject length of road). In the afternoon, it only uses Boothenba Road to return empty to the depot.

Yarrandale Road

Yarrandale Road is a two-way, two-lane undivided sealed local road on the northern periphery of the Dubbo urban area. It terminates at Boothenba Road at the north and links it to the access to the Fletcher International Exports rail terminal. It is consistently line marked along the section to be incorporated into the proposed transport route and has 1m wide sealed shoulders south of the railway crossing which is located approximately 150m south of Boothenba Road.

One school bus service is known to operate in the morning southbound along Yarrandale Road from Boothenba Road to Purvis Lane, however, there are no known school bus stops along Yarrandale Road.

3.2 INTERSECTIONS

3.2.1 Newell Highway to the Dubbo Project Site

Newell Highway and Obley Road

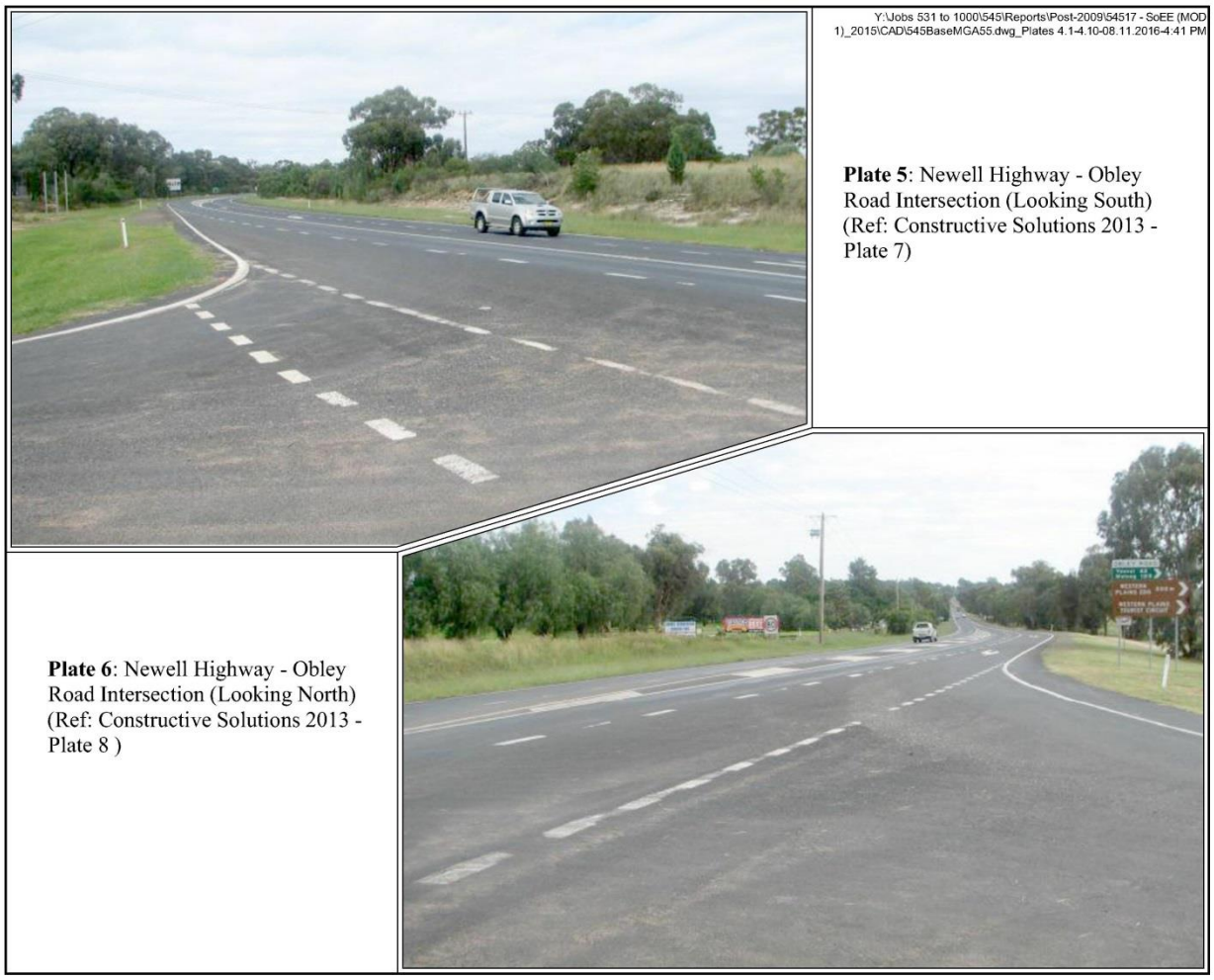
Obley Road approaches the Newell Highway at an angle, of between 70° and 80° at the point of intersection, but is dimensionally adequate for 26m B-Doubles. The Newell Highway includes a channelised right turn (CHR) and an auxiliary left turn treatment (AUL) for movements into Obley Road. Give way controls include a give way sign and a hold line on Obley Road. There is no street lighting, however, a sight screen is located opposite the T-junction. Both the Newell Highway and Obley Road are signposted at 80km/hr at the intersection.

Sight distance exceeds 500m to the north and 300m to the southwest (see **Plates 5** and **6**). These are greater than the minimum desirable sight distance of 126m at 80km/hr calculated in accordance with the Austroads Safe Intersection Sight Distance (SISD).

No road works, other than those associated with the Obley Road upgrade, will be undertaken at this intersection during the construction phase of the Dubbo Project. Future roadworks completed in response to road safety audits which will be undertaken and scheduled as described in Section 4.7.

Obley Road and the Entrance to Taronga Western Plains Zoo

The main entrance to Taronga Western Plains Zoo forms a T-junction with Obley Road. Obley Road has been widened at this intersection to include a Channelised Right Turn (CHR). Give way controls consist of a give way sign and a holding line on the Zoo access road. Obley Road is signposted at 80km/hr at this location. There is no street lighting at the intersection.



Sight distance exceeds 500m in both directions which exceeds the minimum desirable sight distance of 126m at 80km/hr.

This intersection will be the focus of specific intersection and road upgrades during the construction phase of the Dubbo Project.

Obley Road and Zoofari Lodge Entrance to Taronga Western Plains Zoo

Opposite the Dundullimal Homestead access road, this intersection comprises a Basic Right Turn (BAR) and Auxiliary Left Turn (AUL) and includes modifications to the Obley Road alignment to improve the available sight distance.

Obley Road and Dundullimal Homestead

The intersection is sealed a short distance from Obley Road. There are no give way controls and no sight screen opposite the T-Junction. There is no street lighting at the intersection. Obley Road is signposted at 100km/hr at this location. Sight distance is acceptable in both directions.

Obley Road and Camp Road

Camp Road is a through road which links Obley Road and the Newell Hwy and also forms part of the 'Western Plains Tourist Circuit'. A T-junction joins Camp Road with Obley Road and is basic in configuration. Give way controls consist of a hold line but no give way sign. A

sightscreen is located opposite the intersection. Obley Road is signposted at 100km/hr at this location.

Sight distance is approximately 500m to the north and 290m to the south, exceeding the minimum desirable sight distance of 179m at 100km/hr.

Obley Road and Belowrie Road

Belowrie Road forms a T-junction with Obley Road, providing access to the Morris Park Raceway, and is basic in configuration. There are no give way controls. A small sightscreen is located opposite the intersection. Obley Road is signposted at 100km/hr at this location.

Sight distance is 500m to the north but only 140m to the south, below the minimum desirable sight distance of 179m at 100km/hr.

Obley Road, Cumboogle Road and Belmont Road

Cumboogle and Belmont Roads form a cross intersection with Obley Road. Both Cumboogle and Belmont Roads are no-through roads that provide access to various rural properties along their length. Give way controls consist of give way signs on both minor roads but no holding lines are present. Obley Road is signposted at 100km/hr at this location.

Sight distance is 500m to the north and south exceeding the minimum desirable sight distance of 179m at 100km/hr. A school bus stop and shelter is located immediately south of the intersection on the western side of Obley Road.

Obley Road and Benolong Road

Benolong Road forms a T-junction with Obley Road on the outside of a curve. Benolong Road is a through road that provides access to various rural properties along its length. An Auxiliary Right Turn (AUR) and an AUL have been constructed on Obley Road at the intersection. Give way controls consist of a give way sign and hold line. A sightscreen is located opposite the intersection. Obley Road is signposted at 100km/hr at this location.

Sight distance is 190m to the south and 280m to the north, exceeding the minimum desirable sight distance of 179m at 100km/hr.

Obley Road and Bellevue Road

Bellevue Road forms a T-junction with Obley Road and is basic in configuration. The road provides access to a rural property. There are no give way controls, no sight screen, and the mouth of the intersection is unsealed. Obley Road is signposted at 100km/hr at this location.

Sight distance is 240m to the south and 300m to the north, exceeding the minimum desirable sight distance of 179m at 100km/hr.

Obley Road and Oakdene Road

Oakdene Road forms a T-junction with Obley Road and is basic in configuration. It is a no-through road that provides access to various rural properties. There are no give way controls and no sight screen at the intersection. Obley Road is signposted at 100km/hr at this location.

Sight distance is 500m to the south but 110m to the north, below the desirable sight distance of 179m at 100km/hr.

Obley Road and Hyandra Road

Hyandra Road forms a T-junction with Obley Road and is basic in configuration. Hyandra Road provides access to a rural property. There are no give way controls, no sight screen, and the mouth of the intersection is unsealed. Obley Road is signposted at 100km/hr at this location.

Sight distance is 500m to the south and 300m to the north, exceeding the minimum desirable sight distance of 179m at 100km/hr.

Obley Road and Toongi Road

Toongi Road forms a T-junction with Obley Road and is basic in configuration. The shoulders on Obley Road have been widened to form a basic right turn (BAR) and a basic left turn (BAL). Give way controls consist of a hold line but no give way sign. A sightscreen is located opposite Toongi Road. Obley Road is signposted at 100km/hr at this location. The geometry of the intersection is adequate for B-Double movements, and the pavement is in good condition.

Sight distance is 240m to the north and 220m to the south, exceeding the minimum desirable sight distance of 179m at 100km/hr (see **Plates 7** and **8**).

This intersection will be the focus of specific intersection and road upgrades during the construction phase of the Dubbo Project.

Toongi Road and The Springs Road

The Springs Road forms a T-junction with Toongi Road approximately 70m east of the Wambangalang Creek causeway and is basic in configuration. There are no give way controls. A small sight screen is positioned opposite The Springs Road approach.

3.2.2 Fletcher International Exports Rail Terminal to the Newell Highway

Fletcher International Exports and Yarrandale Road

The access to the Fletcher International Exports rail terminal meets Yarrandale Road approximately 190m south of Boothenba Road. It is approximately 110m north of the railway level crossing on Yarrandale Road.

A concrete median is located in the access roadway where it meets Yarrandale Road but without give way controls (see **Plate 9**).

Boothenba Road and Yarrandale Road

Yarrandale Road forms a T-intersection with Boothenba Road approximately 1.9km east of the Newell Highway (see **Plate 10**). Traffic controls consist of a give way sign and holding line on Yarrandale Road. There are no turning lanes for traffic either entering or exiting Yarrandale Road. The geometry of the intersection is adequate for B-Doubles to turn left or right in to or out of Yarrandale Road.

Street lighting is provided at this intersection with sight distance 340m to the west and 300m to the east, exceeding the minimum desirable sight distance of 126m at 80km/hr.

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Plate 7: Obley Road - Toongi Road Intersection (Looking South)
(Ref: Constructive Solutions 2013 - Plate 25)

Plate 8: Obley Road - Toongi Road Intersection (Looking North)
(Ref: Constructive Solutions 2013 - Plate 26)

Plate 9: Fletcher International Rail Terminal Access - Yarrandale Road Intersection
(Ref: Constructive Solutions 2013 - Plate 28)

Plate 10: Looking South along Yarrandale Road from the Intersection with Boothenba Road
(Ref: Constructive Solutions 2013 - Plate 29)

Newell Highway and Boothenba Road

Boothenba Road is the eastern leg of a cross-intersection with the Newell Highway, with the western leg opposite Boothenba Road known as Troy Bridge Road. The intersection includes a channelised right turn (CHR) and an auxiliary left turn treatment (AUL) for movements into Boothenba Road. Give way controls include a give way sign and holding line on Boothenba Road. Lighting is provided along the Newell Highway on both approaches.

Recent construction works relocated the railway level crossing on Boothenba Road to approximately 150m east of the give way holding line at the Newell Highway. This has increased the total queue length to approximately 150m from the Newell Highway to the relocated level crossing. This provides for up to three B-Triple (road train) heavy vehicles to queue westbound on Boothenba Road without any encroachment onto the Newell Highway.

3.3 TRAFFIC LEVELS

Existing traffic levels were originally compiled as part of Traffic Impact Assessment for the Dubbo Project (Constructive Solutions, 2013) and established through analysis of the following.

- Historic traffic count data published by the RTA (now RMS).
- Data collected from four specifically placed traffic counters on Obley Road and one on Toongi Road at the locations identified on **Figure 4**.
- Manual intersection traffic counts.

Table 5 summarises the traffic data available for the Newell Highway and estimates traffic volumes for 2016 and 2036 assuming a growth factor of 1.5% per annum as recommended by Dubbo City Council.

Table 5
Traffic Volumes (Newell Highway)

Station No.	Road (Location)	1992 AADT	1996 AADT	1999 AADT	2002 AADT	2005 AADT	2016 AADT (est.)	2036 AADT (est.)
93.046	Newell Hwy, SH17 - 1.5km south of Victoria St (Mitchell Hwy, SH7), Dubbo	5 928	6 443	6 774	6 863	5 153	6 070	8 175
93.61	Whylandra St, (Newell Hwy, SH17) - south of Victoria St (Mitchell Hwy, SH7), Dubbo		16 257	17 550	18 448	18 363	21 631	29 133
93.861	Newell Hwy SH17 - 13 Mile Creek, Narromine/Dubbo Boundary	3 103	3 715	4 044	4 314	4 304	5 070	6 828

Source: RMS, 2005 (modified after Constructive Solutions 2013 – Table 6)
AADT = Annual Average Daily Traffic

Table 6 summarises the traffic data obtained from the placement of traffic counters on Obley Road and Toongi Road, and made available by Dubbo Regional Council for Boothenba Road and Yarrandale Road, along with estimates of 2036 traffic volumes (assuming a growth factor of 1.5% per annum).

3.4 ACCIDENT STATISTICS

Detailed crash reports were obtained from NSW Transport Centre for Road Safety. The data obtained summarised crashes on the subject roads between 1 January 2007 and 30 October 2016. A summary of the data is provided in **Table 7**.

Obley Road

Seventeen crashes have been recorded on Obley Road between the Newell Highway and Toongi Road. Fourteen were single-vehicle accidents and three were collisions between two vehicles. Thirteen were cars, three were light trucks and one a single motorcycle. No heavy vehicles over 4.5t GVM featured in the crash profile.

Table 6
Current and Forecast Traffic Volumes: Obley Road, Toongi Road, Boothenba Road and Yarrandale Road

Site	Year	AADT	Heavy Vehicles %	Max peak/hr vehicles	AADT 2036 (est.)	AADT 2036 HV (est.)
Obley Road (between Newell Hwy & Zoo entry)	2012	2 330	10.9	332	3 331	363
Obley Road, 100m East of Zoo entry	2012	1 257	11.2	166	1 797	201
Obley Road (250m north of Dundullimal Homestead)	2012	1 201	18.0	178	1 717	309
Obley Road (100m north of Toongi Road)	2011	390	21.0	47	566	119
	2012	388	38.0	51	555	211
Toongi Road (Immediately east of Obley Road)	2011	105	23.0	18	152	35
	2012	91	17.0	16	130	22
Boothenba Road (East of Yarrandale Road)	2001	750	24.1	NA	-	-
	2016 equivalent	938	24.1	NA	1 263	304
Boothenba Road (50m west of Saleyards entry)	2002	1 436	20.7	NA	-	-
	2016 equivalent	1 768	20.7	NA	2 382	493
Yarrandale Road (200m north of Purvis Lane)	2010	2 701	39.3	NA	-	-
	2016 equivalent	2 953	39.3	NA	3 978	1 563

Source: Modified after Constructive Solutions 2013 – Tables 7 and 8
AADT = Annual Average Daily Traffic

Table 7
Crash Data 2007 - 2011

Road	Extent		Fatal	Injury	Non Casualty
Obley Road	Newell Highway	Toongi Road	0	8	9
Toongi Road	Toongi Road	The Springs Road	0	0	0
Boothenba Road	Newell Highway	Yarrandale Road	1	6	7
Yarrandale Road	Boothenba Road	Purvis Lane	0	1	0

Sources: Constructive Solutions (2013)
Centre for Road Safety - http://roadsafety.transport.nsw.gov.au/statistics/interactivecrashstats

Non-road environment factors contributed significantly to Obley Road crashes, with five featuring speeding, four fatigue and two alcohol. Avoiding an animal contributed to two crashes, one struck an animal, whilst a driver disobeying a traffic control contributed to another crash. Loose gravel on road shoulders contributed to three crashes.

No clusters of multiple crashes at one location were identified, other than two separated by 50m just north of Oakdene Road. This is coincidental rather than related to the road environment of the location. With one crash involving a motorcyclist leaving the carriageway to the left of a right-hand curve, with loose gravel identified as a hazardous factor, whilst the other involved a car leaving a straight length of road.

Obley Road – Newell Highway Intersection

One crash occurred when a northbound vehicle turning right into Obley Road colliding with a southbound vehicle on the Newell Highway. Alcohol was identified as a contributing factor.

Boothenba Road

Thirteen crashes have been recorded on Boothenba Road. Four were single-vehicle accidents and seven were collisions between two vehicles. Eleven vehicles were cars, six were light trucks and one was a heavy vehicle over 4.5t GVM (semi-trailer). Two crashes on Boothenba Road involved fatigue, one speeding and one alcohol. Another involved a driver disobeying a traffic control.

Two clusters of multiple crashes were identified on Boothenba Road, namely the intersections with the Newell Highway and Yarrandale Road.

Boothenba Road – Newell Highway Intersection

All four crashes at this cross-intersection were cross traffic, right-angle two-vehicle collisions. There were two injury crashes resulting in three injuries and one non-injury crash. Four of the vehicles involved were cars, the other two were light trucks. No speeding, fatigue or alcohol contributed to any of the collisions although two had a contributing factor of the driver disobeying the Give Way traffic control.

Boothenba Road – Yarrandale Road Intersection

Two crashes at this T-intersection featured single northbound vehicles running off the end of Yarrandale Road where it terminates at Boothenba Road. One of these accidents involved driver fatigue. Both resulted in no injuries. A third crash at this location involved a semi-trailer eastbound on Boothenba Road turning right into Yarrandale Road, colliding with a car, resulting in seven injuries.

Yarrandale Road

A two car accident is recorded on Yarrandale Road between a car emerging from a driveway and through traffic.

4. CONSTRUCTION TRANSPORT MANAGEMENT PLAN

4.1 PLANNED ROAD WORKS

Obley Road

On the basis of this analysis of current conditions, and with reference to the proposed traffic to be generated by the Proposal over the life of the Dubbo Project and flood modelling provided by SEEC (2013) (refer to Section 4.5.2.2), the Applicant proposes to upgrade the road as follows.

- The pavement seal will be increased to 10m (two 3.5m lanes each with 1.5m shoulder) over a 12m formation for the entire length of the road (except where bridge crossings prevent this).
- The horizontal and vertical alignment of the road will be modified to meet, as far as practically possible, the standards provided by the *Guide to Road Design* for the existing operating speed[4] of Obley Road. Section 4.3 discusses the approach to assessment as to the suitability of any deviations fro recommendations of the *Guide to Road Design*.

  The operating speed of Obley Road will be determined, in consultation with Dubbo Regional Council, through the analysis of data produced by classified traffic counts to be placed at representative (of alignment and condition) locations on Obley Road.
- The pavement formation and sub-formation will be increased where sampling and analysis have identified it as not adequate for the proposed volume of traffic for the 20 year life of the Proposal.
- An additional asphaltic concrete ('hot seal') will be applied between the Newell Highway and Camp Road, as well as a distance of approximately 950m (north) from the intersection with Toongi Road.
- All line markings and guide posts will be installed to meet current standards.
- Each of the nominated intersections would be upgraded to meet the relevant *Guide to Road Design* standard. The specifics of each intersection are provided by Constructive Solutions (2013).

The locations of key road works are identified on **Figure 4**. Detailed design of road realignment, pavement widening, formation improvement, road markings and road furniture is to be completed and supplied to the road authority prior to commencement of works (refer to Section 4.3).

[4] *Section 3.2.1* of the *Guide to Road Design* identifies the operating speed to be the 85th percentile speed of a road.

Toongi Road

Toongi Road is to be widened between Obley Road and the Dubbo Project Site Entrance to provide for two sealed lanes of at least 3.5m wide. In addition:

- the road will be marked with a broken central separation line; and
- guide posts for improved delineation of the road will be installed.

Detailed design of road realignment, pavement widening, formation improvement, road markings and road furniture is to be completed and supplied to the road authority prior to commencement of works.

Creek Crossings

The crossings of Wambangalang Creek, Hyandra Creek and Twelve Mile Creek (see **Figure 4**) will be upgraded to provide the following.

- A 30m span bridge would be constructed over Wambangalang Creek at an elevation slightly greater than the 1 in 20 ARI flood level. Minor earthworks would be required to raise the elevation of the approach either side of the 30m bridge span.
- A 20m span bridge would be constructed over Hyandra Creek at an elevation slightly greater than the 1 in 20 ARI flood level. Earthworks or additional spans would be required up to 50m on either approach to provide for an appropriate approach gradient of 2.4%.
- Five 2400mm x 1500mm box culverts would replace the 450mm reinforced concrete pipe at the Twelve Mile Creek crossing. Although the culverts would improve the flood immunity, the crossing would remain below local flood levels.

Concept designs for the three crossings are presented in **Appendix 4** with management of erosion and sediment control provided by the Stage 1 Water Management Plan (refer to **Appendix 5**). Detailed designs are to be completed and supplied to the road authority prior to commencement of works.

4.2 CONSTRUCTION DETAILS

4.2.1 Construction Programs

The construction stage of the Dubbo Project is anticipated to take between 100 and 120 weeks. As is identified on **Figure 1**, three construction zones have been identified as follows:

- Roadworks: incorporating the upgrade of Obley Road, Toongi Road and creek crossings.

  The scheduling of roadworks, which is anticipated to be completed within 40 to 44 weeks of the commencement of construction activities, is further described in Section 4.4.2.

- Dubbo Project Site: incorporating the Processing Plant and associated infrastructure, administration buildings and car parking, internal roads, and various structures for management of processing residues.

  Land preparation (vegetation clearing and soil stripping) and bulk earthworks will commence concurrently within initial roadworks. Delivery of larger pieces of fixed plant and specialised construction equipment, requiring the use of Oversize Overmass (OSOM) vehicles, will only commence on completion of creek crossing upgrades and Toongi Road upgrade. Delivery of materials, plant or equipment by OSOM requires the issue of a special permit for this class of Restricted Access Vehicle (RAV) (refer to Section 4.5).

  Processing plant and associated infrastructure construction is anticipated to take between 50 and 70 weeks to complete.

- Other linear infrastructure: including the Macquarie River Water Pipeline, gas pipeline and 132kv power line.

  These construction works only require the use of General Access Vehicles (GAV) and therefore only the general traffic controls nominated in Section 4.4 are required. These construction works will be undertaken over various periods over the construction phase with the water pipeline anticipated to take 18 weeks, gas pipeline 24 weeks and 132kv power line 24 weeks. The exact timing of these works will be determined in consultation with the relevant regulatory authority and other stakeholders, e.g. owners of affected or neighbouring land.

4.2.2 Construction Deliveries

Deliveries will vary over the life of the Dubbo Project and consist of the following

- Large items of fixed processing plant.
- Specialised construction equipment such as cranes.
- Demountable structures and materials for construction of buildings.
- Steel, concrete and precast concrete products.
- Mobile equipment for land preparation and bulk earthworks.
- Gravel, sand and road base materials.
- Poles, conductors and associated material for the HV and 330kV line relocation.
- HDPE pipe and pumps and associated material for the water management system.

Until the transport route is designated as a RAV Route (refer to Section 4.5.2), or unless undertaken in accordance with a Special Permit for OSOM vehicles issued by RMS or the national Heavy Vehicle Regulator, deliveries will be undertaken by GAV.

On designation of Obley Road and Toongi Road as a Restricted Access Route for B-Double vehicles, delivery of materials, plant and equipment will be RAV (to reduce the overall number of vehicle movements). Higher Mass Limit (HML) vehicles will be utilised in preference General Mass Limit (GML) vehicles (in accordance with the Intelligent Access Program) (refer to Section 4.5.1) to further reduce vehicle movements.

4.3 DETAILED ROAD DESIGN

The detailed design of road works and creek crossings will be completed by the successful tenderer for these works.

Prior to finalisation for assessment by the local road authority (Dubbo Regional Council), a Road Safety Audit (RSA) will be completed by a qualified and independent assessor to confirm that the design complies with the recommendations of the *Guide to Road Design* for the design speed for that section of road, or that the level of risk associated with an deviation from the recommended standards is acceptably low. Modification to the final road design may be made based on the outcomes of the RSA, with a second RSA completed (if necessary) to consider any significant changes to design.

The final designs will be submitted to the local road authority for approval prior to commencement. Once approved, the designs will be appended to the Plan. The amended Plan is to be provided to the Secretary of the DPE to ensure compliance auditing may be undertaken by ASML, the DPE or other independent auditor.

4.4 TRAFFIC MANAGEMENT CONTROLS

4.4.1 Introduction

All Stage 1 road upgrade activities will require a task specific plan to manage and minimise disruption to other road users. Each task specific plan will be governed by the following general principles:

1. Individuals and businesses, directly impacted by road upgrade works (i.e. primary access to property is situated on road of interest and within 1km of proposed works), will be notified of the extent, expected duration and mitigation measures in place to manage impacts.
2. Works will be conducted in a manner that avoids disruption to peak hour traffic flow and school bus timetables.
3. Works will be staged in a manner so as to avoid extended delays (>5 minutes) on any section of road.
4. Traffic control plans are developed and reviewed prior to works commencing.
5. All traffic controllers at road upgrade sites are competent, licensed and authorised to conduct traffic control activities.

All task specific plans will be reviewed for adequacy and approval prior to commencement of works, refer **Table 3** (of Section 1.6) for the responsibilities and accountabilities of specific roles.

4.4.2 Programming of Roadworks

ASML proposes to undertake roadworks on Obley and Toongi Roads over a period of 40 to 44 weeks from the commencement of the Dubbo Project. The roadworks are identified as Stages 1 to 3.

Stage 1 – Creek Crossings

Roadworks will commence with the upgrade of the Wambangalang Creek Crossing on Toongi Road, and Hyandra and Twelve Mile Creek crossings on Obley Road.

Works on the Wambangalang Creek crossing may be concurrent with works on one of the Obley Road creek crossings, however, to reduce disruption to local traffic, work on the Obley Road creek crossings will not be concurrent (unless requested by Dubbo Regional Council).

These works are anticipated to take 15 weeks for completion. As noted in Section 4.2.1, completion of Stage 1 Roadworks is to be completed prior to the commencement of processing plant construction and delivery of larger fixed plant and specialised equipment.

Stage 2 – General Roadworks

As the creek crossing upgrades are completed (sufficient to allow safe two-way access), road widening, pavement strengthening and curve realignment road works will be undertaken on Obley and Toongi Roads.

These works are anticipated to take a further 25 to 30 weeks to complete. Over this period, ASML will aim to schedule roadwork campaigns to minimise disruption to local traffic and the landowners and commercial operations located along Obley and Toongi Roads. As far as practicable, road works will be restricted over a length not exceeding 1km in any one section and scheduled to avoid peak visitation periods to the Taronga Western Plains Zoo[5] and local events which use these roads such as fun runs (Dubbo Stampede in late August or early September) and cycling events. It is noted that roadworks may be ongoing at more than one location on Obley Road and/or Toongi Road at any one time. The final schedule and integration of roadworks and creek crossings will be determined in consultation with Dubbo Regional Council.

Stage 3 – Specialised Roadworks

In addition to the road widening and pavement upgrades proposed for the entire length of Obley Road between the Newell Highway and Toongi Road, the following specialised roadworks will also be undertaken.

- The intersection of Obley Road with the Taronga Western Plains Zoo main visitor entrance will be upgraded to provide a Channelised Right (CHR) turn into the zoo. The treatment provides for a right turn storage bay of approximately 350m in length (with taper) to provide maximum storage during busy periods.
- An asphaltic concrete seal (‘hot seal’) between the Newell Highway and approximately 200m beyond the Zoofari Lodge entrance (a distance of 2.4km) will be provide in addition to the standard bitumen pavement upgrade.
- An asphaltic concrete seal will also be provided for the 950m uphill section of Obley Road from the Toongi Road intersection.

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[5] Taronga Conservation Society Australia advises a preference for roadworks adjoining the Taronga Western Plains Zoo to avoid the following periods:
- September-October; and
- April.

As noted in Section 2.2, these works Advice from Dubbo Regional Council and management of the Taronga Western Plains Zoo will be sought with respect to the scheduling of these roadworks. It is ASML's objective to integrate these works with other roadworks so as to minimise disruption on other road users and the Taronga Western Plains Zoo. Unless advised otherwise, ASML will avoid roadworks on Obley Road between the Newell Highway and main visitor entrance to Taronga Western Plains Zoo between September and March in order to avoid the peak period of visitation to the zoo. Furthermore, roadworks in this section will also be avoided, unless for safety reasons, on Saturdays and Sundays.

On-site Construction Traffic Management

Coincident with the general roadworks stage (Stage 2), construction works on the Dubbo Project Site would commence with the following traffic generated.

- Light vehicles and other General Access Vehicles (GAV) for commuting Dubbo Project personnel and deliveries. Based on an initial construction workforce of 60 for the on-site works to be undertaken concurrently with general roadworks, it is anticipated that between 80 and 100 additional traffic movements would occur along Obley and Toongi Roads.

  These vehicles would be managed in accordance with Traffic Control Plans developed and implemented for the respective road upgrades (refer to Section 4.6).

  As a further control, and in order to minimise disruption to other traffic, shift times will be scheduled such that site based construction personnel arrive and leave prior to the morning and afternoon peak traffic periods.

- Restricted Access Vehicles (RAV) in the form of long wide loads (low loaders or equivalent) delivering mobile equipment for on-site earthworks. Whilst exact numbers remain to be determined, between 12 and 15 movements are anticipated.

  Section 4.5.2 describes the process to be followed to ensure that any RAV movement is completed safely and in accordance with relevant regulations.

- Oversize Overmass (OSOM) vehicles delivering larger modularised plant components. The exact size and number of modularised components remains to be determined.

  Section 4.5.3 describes the process to be followed to ensure that any OSOM movement is completed safely and in accordance with relevant regulations.

To avoid additional disruption to traffic on Obley Road, the movement of RAV and OSOM vehicles would be scheduled to avoid peak traffic periods, as well as peak visitation periods at Taronga Western Plains Zoo.

4.4.3 Hours of Operation / Deliveries

No deliveries of limestone will be permitted outside the hours of 6:00am to 10:00pm Monday to Friday, and 8:00am to 5:00pm Saturdays. Deliveries of other reagents and construction materials will be scheduled such that night time traffic movements are minimised.

4.4.4 Traffic Levels

Transport scheduling will be completed in advance to ensure that the total number of heavy vehicle movements (excluding vehicle movements associated with general maintenance or waste management) does not exceed 75 per day or 16 per hour.

Further detail on transport scheduling during the operational phase of the Dubbo Project is provided in Sections 5 and 6.

4.4.5 Speed Limits

The Dubbo Project induction for ASML personnel and the contract construction workforce will identify the nominated speed limits of Obley Road and Toongi Road and require staff to adhere to this.

The induction will also identify the likely changes to speed limits for Traffic Control Plans (TCPs) (refer to Section 4.6) for roadwork construction sites which will be approved by the local road authority.

Adherence to nominated speed limits will form a component of the Driver Code of Conduct issued to all personnel and contract staff (refer to Section 7).

4.4.6 Signage

Signage will be used to inform the public of changes to the road conditions.

TCPs shall include drawings showing the exact location of all signs. Signage shall comply with AS1742.3 and to RMS specifications and specifically the RMS *Guide to Traffic Control at Worksites*.

Signs not in use will be covered or removed.

4.4.7 Delivery Scheduling, Coordination and Communications

Construction traffic scheduling will be completed in advance and coordinated to avoid deliveries during periods of peak traffic flows (such as peak hours in the morning and afternoon, special events) where practicable.

ASML will also manage the scheduling of deliveries, in particular OSOM vehicle movements, to avoid school bus pick-up and drop-off times along Obey Road. To assist in managing these vehicle movements, a record of school bus pick-up / drop-off points along Obley Road will be maintained and updated each school term. This inventory of pick-up drop-off points will be provided to haulage contractors and drivers along with instruction (as part of Driver Code of Conduct – refer to Section 7) to be aware of potential for school children beside (or on) the road.

All heavy vehicles contracted to deliver to the Dubbo Project Site would be fitted with a common GPS which will enable real time measurement of average and actual speed, braking events, stopping events, accident recording, position on Obley Road, etc. Transport service providers would be contractually obliged to conform to the scheduling procedure and the GPS system would enable compliance to be confirmed and/or audited.

Prior to delivery of larger fixed plant, or other equipment or materials requiring OSOM vehicle, the haulage contractor will be required to confirm delivery time. ASML will advise if there are any issues with this time, e.g. conflict with local traffic event, road construction works, other OSOM vehicle delivery, and reschedule as necessary.

Once on route, and prior to final truck/rest stops before Obley Road, the drivers of OSOM vehicle deliveries will be required to confirm arrival time at Obley Road and the Dubbo Project Site. ASML management will advise of any conflicts and require park-up for a period until such time as the conflict can be resolved.

4.4.8 Fatigue Management

ASML identifies driver fatigue as a noted safety hazard for the road transport industry and within the western region of NSW more generally.

ASML will develop and implement a *Fatigue Management Plan* for all employees and contract personnel as part of the *Safety Management System* of the Dubbo Project. Specific procedures relevant to the management of worker fatigue during trips to and from the Project Site and linear infrastructure construction sites will be documented in the *Fatigue Management Plan* (and other relevant documents, e.g. a *Road Transport Protocol* as required by *Condition 3(43)(d)*)) to address key fatigue management standards.

The following provides these fatigue management standards and overall strategies to be implemented by ASML considering haulage operations, as well as the Project workforce more generally.

Heavy Vehicle Transport (Haulage) Operations

National heavy vehicle driver fatigue reforms were introduced in 2008 and the laws apply to fatigue-regulated vehicles. Drivers operating heavy vehicles over 4.5t are required to comply with the Heavy Vehicle National Law (HVNL).

Prior to engagement, companies contracted for the construction projects and delivery of materials and products will be required to demonstrate a formal fatigue management plan is in place and enforced. Under the law, industry has the choice of operating under three fatigue management schemes:

i) Standard Hours of Operation

ii) Basic Fatigue Management (BFM)

iii) Advanced Fatigue Management (AFM)

All heavy vehicle drivers are required to be aware of their adopted fatigue management scheme and operate within its requirements.

ASML will encourage and preferentially favour transport operators who can demonstrate Basic Fatigue Management Accreditation from the NHVR (in accordance with the *Basic Fatigue Management Accreditation Guide, February 2014* (NHVR, 2014).

Project Workforce

While the Dubbo Project is only a 20 minute drive from the primary location of residence (Dubbo), ASML recognises that factors associated with the following may impact on worker fatigue and the potential for fatigue-related incidents or accidents.

- work hours and shift rostering;
- travel times and driving habits;
- workforce education, training and awareness of fatigue;
- lifestyle factors; and
- responsibilities of employees and management.

These fatigue management standards and overall strategies associated with these factors are as follows.

Standard 1: Scheduling and Rostering

ASML will ensure that workforce scheduling and rostering of drivers will be in accordance with limits prescribed in legislation.

ASML will implement scheduling and rostering practices to ensure all work schedules and driver rosters are planned and assigned to take into account the travel time associated with a transport task, or the travel time to and from the Project Site or linear infrastructure construction site. The following will be implemented as part of ASML workforce rostering and transport scheduling.

i) All schedules and rosters will be documented.

ii) Schedules and rosters will be monitored and regularly reviewed. Project personnel will be allowed input into schedules where practicable.

iii) Where changes to Project personnel rosters or driver schedules are required, sufficient advance notice will be provided to enable the individual affected to prepare accordingly.

iv) Fatigue issues associated with specific tasks will be identified and action taken to minimise fatigue risks through appropriate alteration or alternation of schedules and rosters.

v) Access to relief or casual workforce will be available as required.

vi) The increased fatigue risk for personnel returning from leave will be considered in scheduling and rostering of the driver.

Standard 2: Fitness for Work

Drivers will be required to be in a fit state to safely perform required duties and meet specified medical requirements.

ASML will implement a system to ensure that drivers are in a fit state for work and can perform work duties safely. This will incorporate the following.

i) Medical conditions of project workforce will be identified and effects on fatigue management assessed.

ii) Medical advice will be taken into account when assigning duties.

iii) ASML will encourage self-management of the fitness for work programme by all personnel. Key elements are to

- limit alcohol intake;
- get a good night's rest;
- manage fatigue levels;
- seek advice if you are not coping; and
- report unacceptable behaviour to a supervisor or ASML management.

iv) ASML will implement a strict alcohol and drugs policy and conduct regular checks of the workforce to ensure they are in a fit state to complete their duties. Where unfit for work, personnel will be stood down and only sent home when fit to do so or accompanied by another person.

Standard 3: Fatigue Knowledge and Awareness

All personnel will be required to demonstrate competency in fatigue knowledge relevant to the causes, effects and management of fatigue and ASML's *Fatigue Management Plan*.

The following strategies will be implemented by ASML.

i) Fatigue management education will be presented through regular pre-start and Toolbox meetings. Some examples of discussion topics will include the following.

- Identifying the signs of fatigue which may include:
  - feeling sleepy;
  - feeling physically or mentally tired, weary or drowsy;
  - feeling exhausted of lacking energy; and/or
  - behaving in a way consistent with any of the above
- Managing down time between shifts to ensure sufficient rest time has been achieved including minimising alcohol intake;
- The effects of external factors on fatigue levels such as:
  - a second job;
  - other driving;
  - recreational and sporting activities
  - stressful situations
  - the consumption of alcohol, other drugs or medication.

- Driving to the conditions including travelling during dawn and dusk, monitoring for wildlife, monitoring weather conditions, etc;
- Working in the heat, including use of air-conditioned amenities, managing fluid intake and additional rest break;
- Advantages of carpooling; and
- Monitoring of wildlife black spots and response to wildlife strikes.

ii) All persons who hold a position of responsibility under ASML's Fatigue Management Plan will be:

- identified;
- inducted and regularly updated on fatigue management policies and procedures;
- be able to demonstrate competence in managing driver fatigue, including understanding the causes, effects and symptoms of fatigue, and being able to apply strategies to better manage fatigue; and
- if the person schedules or drives a heavy vehicle, demonstrate understanding with adopted fatigue management scheme under the Heavy Vehicle National Law (HVNL).

iii) A procedure will be implemented to ensure the currency of knowledge in fatigue management for all people who hold a position of responsibility.

iv) Records of workforce training and qualifications with respect to fatigue management will be maintained. These records will be regularly reviewed by ASML management and training / education gaps identified and filled.

Standard 4: Hazard Identification

ASML recognises that as personnel are exposed to the hazards associated with fatigue, their input is crucial to identify hazards that arise from their work.

An incident reporting system is implemented by ASML. Personnel will be encouraged to report fatigue-related incidents or near-misses which could include the following.

- Personnel failed to obtain sufficient sleep.
- Personnel experienced a level of fatigue they believe is incompatible with operating in a safe and reasonable manner.
- Personnel believed fatigue may have played a contributing role in an actual or near miss incident.

Standard 5: Internal Review

An internal review of fatigue management systems will be implemented to verify compliance with fatigue management Standards 1 to 4 and identify where improvements are required. Thjs will incorporate the following.

i) Reviews will occur at least every 12 months.

ii) The reviews will be undertaken, where practicable, by external personnel or internal personnel not directly responsible for the activity being review.

The Road Transport Protocol which will include specific procedures to manage worker fatigue will be issued to all drivers transporting materials to and from the site. All ASML personnel and contractors will be provided with the instruction on content of the *Fatigue Management Plan*. The Fatigue Management Plan will be regularly reviewed and updated (refer to Section 8.7) with the workforce provided with relevant instruction or training on any changes.

4.4.9 Emergency Management

All accidents on the pubic road network shall be handled by external services, i.e. police, ambulance, fire brigade. Where there is traffic control in place, i.e. an active TCP, right of way will be provided for emergency vehicle access. Assistance to emergency services will be provided by appropriately trained personnel as requested and required.

All construction areas and work activities will have area specific emergency plans developed in accordance with the Dubbo Project *Emergency Response Plan*. Initial first aid response may be provided by Project representatives if requested.

For all construction sites on the Dubbo Project, an emergency egress route will be designated (using existing property roads or access tracks) and identified to construction personnel. In the event of an emergency, site personnel will meet the necessary emergency vehicles at the gates and escort them through the site to the emergency thus ensuring the safety of the emergency vehicle through the site.

4.5 HEAVY VEHICLE ACCESS MANAGEMENT

4.5.1 Introduction

During the construction stage of the Dubbo Project, ASML will use the following classification of heavy vehicles for the delivery of materials and equipment to the Dubbo Project Site in construction sites of the linear infrastructure.

- General Access Vehicles (GAV).

  These are vehicles with unrestricted access to the road system, except where a road or bridge is sign posted otherwise. No specific access restrictions apply and no additional permits are required subject to current registration and arrangement within the prescribed dimension limits as follows.

  – Length:
    - Truck: 12.5m.
    - Bus: 12.5m.
    - Truck and trailer: 19.0m.
    - Articulated vehicle: 19.0m.
  – Height: 4.3m.

– Width: 2.5m.

No additional management of these vehicles is required other than the measures described in Section 4.4.

- Restricted Access Vehicles (RAV).

  Any single vehicle or combination which alone, or together with its load, exceeds the general access overall dimensions as defined in the Heavy Vehicle (Mass, Dimension and Loading) National Regulation (HVNR) is considered to be a Restricted Access Vehicle (RAV).

  General Mass Limits (GML) apply to all heavy vehicles. The GML state the allowable mass for all types of heavy vehicle axle groups unless the vehicle is operating under an accreditation or an exemption under the Heavy Vehicle National Law.

  RAVs also include heavy vehicle combinations that do not exceed the prescribed length limits prescribed by the HVNR, but operate at Higher Mass Limits (HML) under the Intelligent Access Program (IAP) in accordance with the New South Wales Higher Mass Limits Declaration[6] overall length of combinations defined in the Regulation.

  Section 4.5.2 provides the detail of additional management requirements for Restricted Access Heavy Vehicles.

- Oversize Overmass Vehicles.

  An OSOM vehicle is a heavy vehicle or combination which alone, or together with its load:

  – exceeds prescribed mass or dimension requirements; and

  – is a heavy vehicle carrying, or designed for the purpose of carrying, a large indivisible item.

  Section 4.5.3 provides the detail of additional management requirements for OSOM Vehicles.

4.5.2 Restricted Access Heavy Vehicles

B-doubles up to 25m in length are likely to be used during the construction stage for the delivery of construction materials such as sand and road base materials.

Operation of restricted access heavy vehicles (RAV) is restricted to defined roads and routes approved by the National Heavy Vehicle Regulator (NHVR). The Newell Highway and Obley Road (between the Newell Highway and Benolong Road) is currently a defined access route for B-Doubles up to 26m in length at GML (see **Figure 5**). The Newell Highway is a defined HML access route.

[6] Authorises the use of certain categories of heavy vehicles under higher mass limits on stated areas and routes and states the intelligent access conditions under which these heavy vehicles may be used.

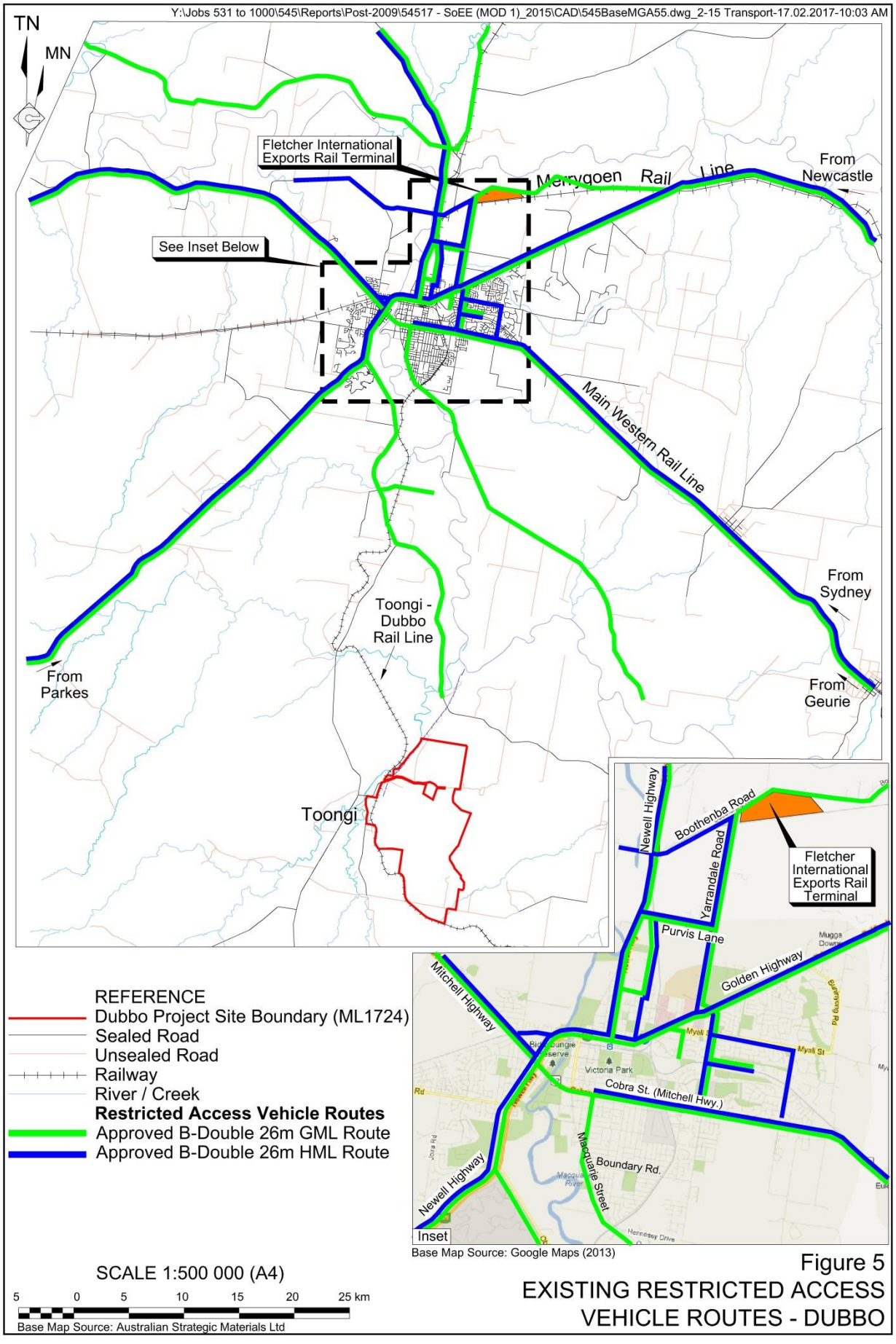


Figure 5
EXISTING RESTRICTED ACCESS VEHICLE ROUTES - DUBBO

Prior to use of the remaining section of Obley Road (to Toongi Road) and Toongi Road by RAVs (at GML), or the entirety of the Obley Road / Toongi Road route at HML, application will be made in accordance with the *NSW Route Assessment Guide for Restricted Access Vehicles* (RMS, 2012) to the NHVR. Noting the use of RAVs up to 26m in length has been proposed, assessed and approved by SSD-5251, which included assessment by Transport for NSW (TfNSW), approval of this section of the transport route as an RAV route is anticipated (potentially subject to completion of the nominated road and bridge upgrade works nominated in Section 4.1). **Figure 6** provides the RAV Route assessment procedure, with reference to the specific sections of RMS (2012) where the process is explained in further detail.

Application would be submitted to the RMS coordinator for the western region. Application for use of HML vehicles (on Obley and Toongi Roads) requires enrolment into the IAP and as such, the application for RAV route would include the completion and submission of an Intelligent Access Permit Confirmation Form to the IAP Compliance Coordinator.

4.5.3 Oversize and Overmass Vehicles

OSOM Vehicle arrangements likely to be used during the construction stage of the Dubbo Project include a prime mover and extendable trailer (for haulage of larger fixed plant components) or a prime mover and low loader combination (for haulage of mobile plant). OSOM vehicles do not include road trains, B-doubles, or vehicles carrying a freight container designed for multi-modal transport. **Appendix 6** provides an information sheet produced by the National Heavy Vehicle Regulator (NHVR) which provides further information on the classification of OSOM vehicles.

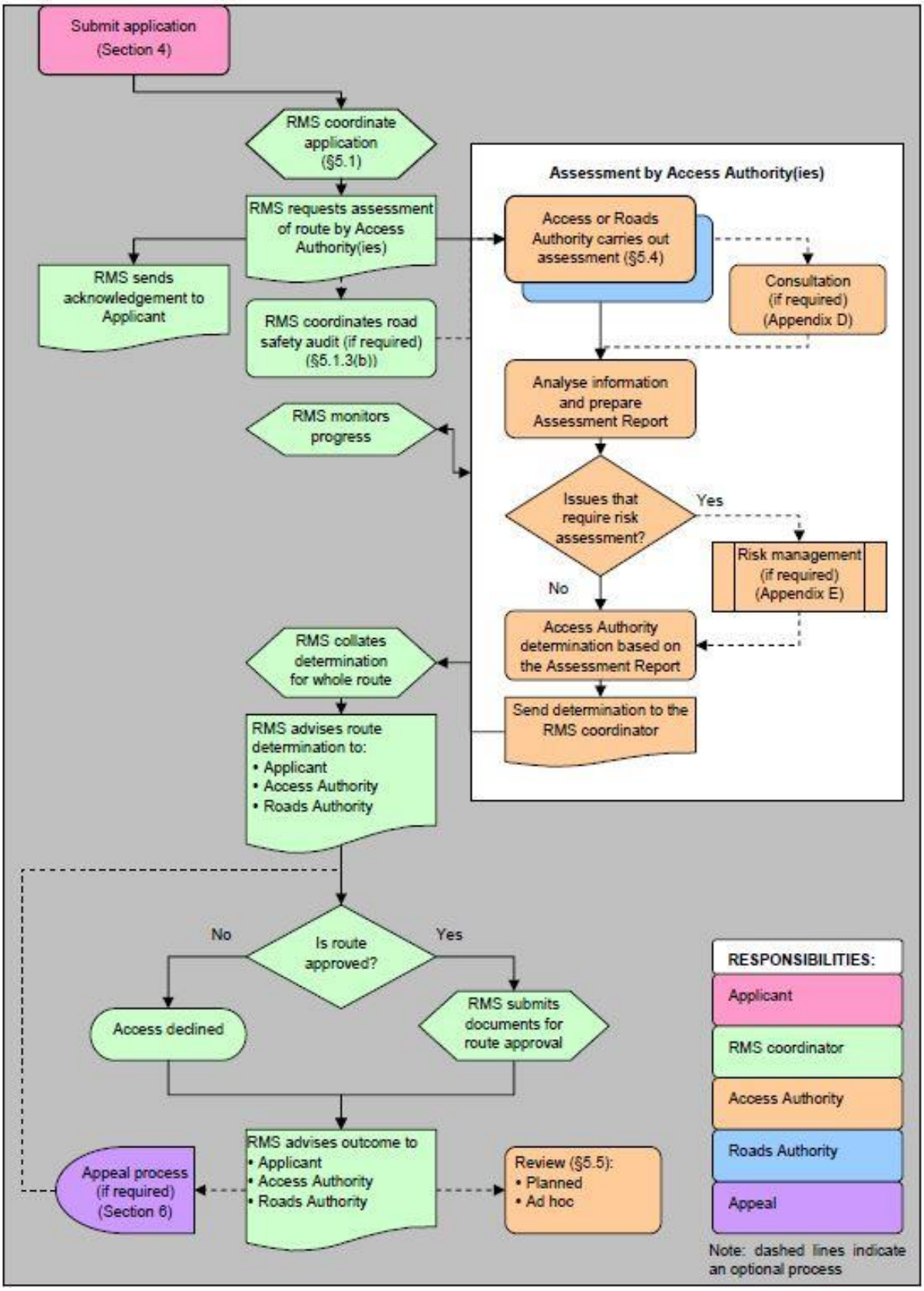
All vehicles carrying oversize loads within NSW shall comply with RMS permitting requirements for OSOM vehicles and loads. It will be a contractual requirement of the haulage contractor to obtain the appropriate Permit for OSOM vehicles and provide a copy to ASML prior to haulage commencing. For haulage within NSW the RMS is the permitting authority[7], with approval also required of Dubbo Regional Council for travel on Obley and Toongi Roads. Should interstate movements be required, the haulage contractor will be required to obtain the appropriate permit from the NHVR.

For OSOM vehicles classified as high risk by the RMS, an OSOM Transport Management Plan (TMP) will be required prior to application for an OSOM Permit. On approval of the OSOM TMP, application for OSOM Permit may be made, with the implementation of the OSOM TMP a condition of the OSOM Permit on issue. The OSOM TMP will be prepared in accordance with the requirements provided by *Transport Management Plans for Oversize and/or Overmass Movement in NSW* (RMS, 2013) (see also **Appendix 7**). As noted in RMS (2013) high risk criteria for OSOM movements are as presented in **Table 8**.

OSOM movements that involve "Critical/Sensitive" loads (see **Table 9**) also require an OSOM TMP prior to the issue of a permit.

As the Obley Road includes two level crossings, approval of the Rail Infrastructure Manager will also be required.

[7] Alternatively, application may be made to the NHVR.



Source: RMS (2012) – Figure 3-2

Figure 6
RAV ROUTE ASSESSMENT PROCEDURE

Table 8
High Risk Criteria[1] for OSOM Movements

Parameter	Criteria
Length	>40m
Height[2]	>5.2m
Rear Overhang[3]	>7.5m
Forward Projection[4]	>5.5m
Width	>6.0m
Total (Gross) Weight	>150t
Route	Refer to "High Risk" Routes at http://www.rms.nsw.gov.au/heavyvehicles/osom/tmp.html
Note 1: In assessing whether a particular OSOM movement is classified as "High Risk", RMS will also consider the following but not limited to; time and date of movement, traffic volumes along the proposed route, speed zones along the proposed route, location, grade, terrain and road geometry, frequency of movements and type of load.	
Note 2: If within 200mm of overhead structure(s) along the proposed route, supply of route survey identifying overhead structure(s) and the traffic management arrangements for travelling under these structure(s) is required.	
Note 3: The rear overhang criteria for "High Risk" agricultural combinations travelling in the Western Zone is >10m.	
Note 4: High risk mobile cranes are exempt from the forward projection "High Risk" criteria as they must be enrolled in the IAP.	
Source: Modified after RMS (2013) – Table 1	

Table 9
Definition of "Critical/Sensitive" Loadfor OSOM Movements

Parameter	Criteria
Health Risk	Movements that have the potential to affect the immediate health and welfare of the operator, driver and public i.e. loads with radiation, chemicals, magnets, asbestos etc.
Hazardous / Environmental	Movements that pose a substantial or potential threat to public health or the environment, whether that be in either gas, liquid or solid form and what type of material it is – corrosive, toxic, radiation.
Source: Modified after RMS (2013) – Table 2	

The OSOM Permit, once issued, may also include additional conditions such as time of day, traffic management requirements and contact requirements in order to minimise any impact the movement may have on other road users and the road environment. A condition of contractual arrangement between the relevant haulage contractor and ASML will be compliance with the OSOM TMP and Permit. Failure to adhere to either will potentially lead to termination of the haulage contract.

4.6 TRAFFIC CONTROL PLANS

4.6.1 Preparation

Traffic Control Plans (TCPs) will be developed for each individual construction site on Obley and Toongi Roads. The TCPs will be developed by the relevant contractor, approved by the road authority (Dubbo Regional Council) and implemented prior to any work involving traffic.

As required by *Section 2.4* of the RMS *Traffic Control at Worksites Manual – Issue I: 2010*, all TCP's will be prepared and implemented by suitably qualified and accredited personnel and comply with relevant standards and industry practices.

The objective of the TCP's is to support the Plan and ensure that:

- all traffic movements have been planned for safety and efficiency;
- construction traffic causes as little disruption to the public as possible where practicable;
- hazards are identified and suitable mitigation measures are in place prior to the work commencement; and
- all traffic movements comply with the Plan and all relevant Authorities, regulations, specifications procedures and standards

When TCPs relating to activities on the public road are no longer to be enforced, i.e. on completion of construction activities, the road authority (Dubbo Regional Council) will be notified.

4.6.2 Submission and Approval

Each TCP will be developed, submitted and implemented allowing sufficient time for risk assessments, reviews, approvals and advertising as required.

Any design calculations (that were used in the development of the TCP) shall form part of the submission to the road authority. The flow chart for TCPs is detailed below in **Figure 7**.

4.6.3 Communication

Details of any new or amended TCPs will be communicated to the road authority, if for construction on the public road network, or Construction Manager, for other construction works, prior to implementation.

On approval of new or amended TCPs, these will be disseminated to relevant stakeholders prior to implementation. Relevant stakeholders will vary depending on location and scale of construction but may include:

- construction personnel;
- local emergency services;
- neighbouring land owners;
- school bus operators.

4.7 ROAD SAFETY AUDITS

4.7.1 Road Design

Prior to the finalisation of road design engineering plans, ASML will commission a qualified and independent assessor to complete a Road Safety Audit(s) of these. The RSA(s) will reference the established operating speed(s) of the roads, the recommended guidelines of the Austroads *Guide to Road Design* and any other relevant traffic safety guidelines.

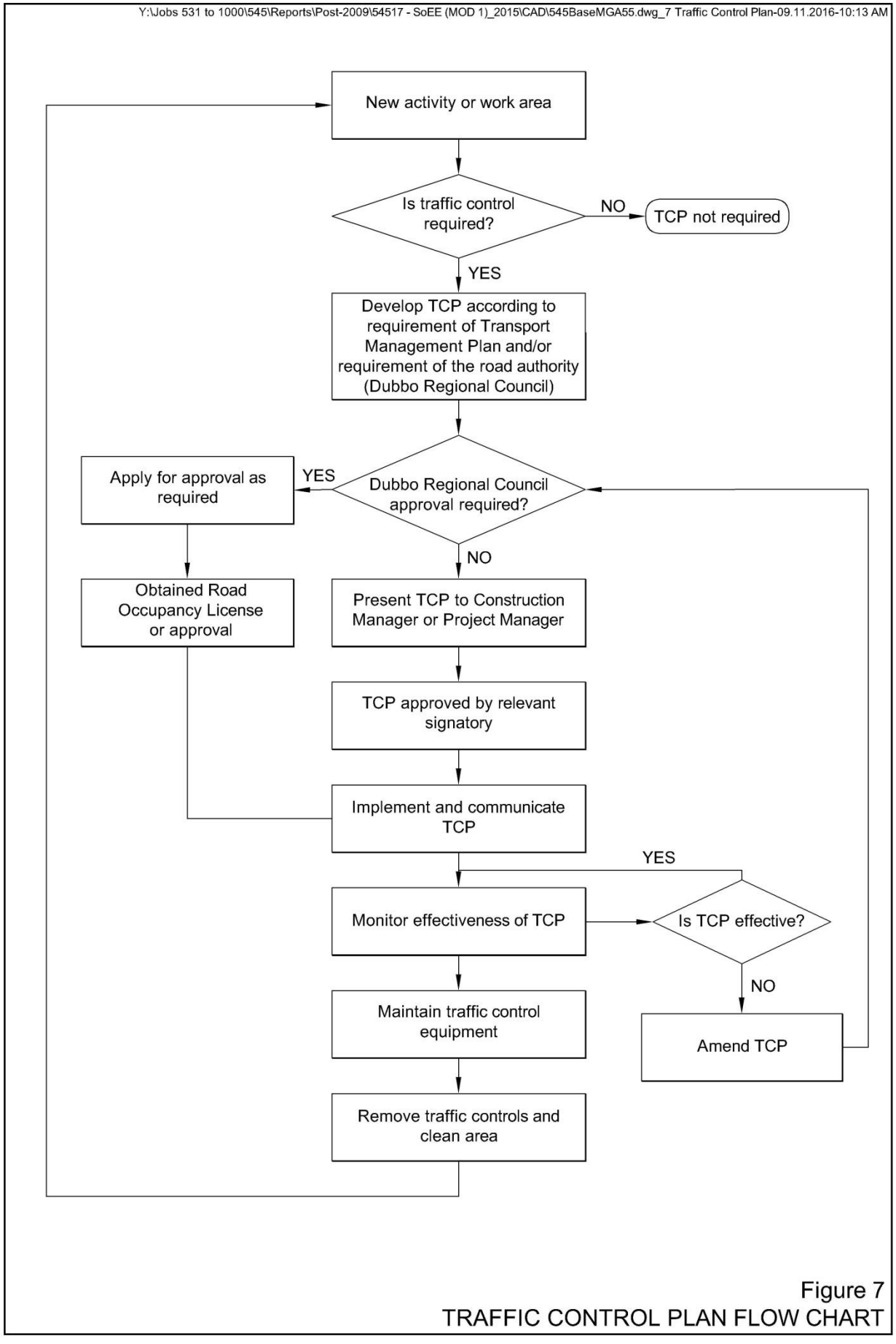


Figure 7
TRAFFIC CONTROL PLAN FLOW CHART

Based on the results of the RSA(s), the road design engineering plans will either be:

iii) reviewed and revised to address any road safety deficiencies; or

iv) finalised and submitted to Council for review and approval.

In the case of (i), a supplementary RSA would be completed prior to progression to (ii).

4.7.2 Pre-Operations

Prior to the commencement of operations, and every three years thereafter, ASML will commission a qualified and independent person to complete an RSA of the transport route between the Newell Highway and the Dubbo Project Site (including the intersection of Obley Road and the Newell Highway) in accordance with *Condition 3(41)* of SSD-5251.

If materials are to be transported from the Fletcher International Exports Rail Terminal, an RSA will also be completed for the intersection of Boothenba Road with the Newell Highway[8]. road safety audit program for the Newell Highway – Obley Road, Newell Highway – Boothenba Road and Newell Highway – Purvis Lane intersections will be implemented as part of the Operational Transport Management Plan.

5. OPERATIONAL TRANSPORT MANAGEMENT PLAN

To be included in Stage 2 of the Plan prior to commencement of mining operations

6. ROAD TRANSPORT PROTOCOL

To be included in Stage 2 of the Plan prior to commencement of mining operations

[8] As the Newell Highway – Boothenba Road intersection is now approved fro RAVs, consideration of Purvis Lane – Newell Highway intersection is no longer required.

7. DRIVER CODE OF CONDUCT

ASML is committed to ensuring all employees and contract staff are aware of potential impact of traffic movements associated with the Dubbo Project. All employees are required to adopt road safety behaviour aimed at ensuring safe driving conditions for all road users.

All employees and contractors are required to comply with all the relevant legal requirements and accepted community standards whilst travelling to and from work or on company business.

ASML has developed a Driver Code of Conduct which is to be complied with by all employees and any other company and their staff contracted to ASML (including haulage contractors). The Driver Code of Conduct is provided as **Appendix 8**.

8. PERFORMANCE MANAGEMENT

8.1 PERFORMANCE CRITERIA / MEASUREMENT

The primary performance criteria and method of measurement with respect to traffic management are identified in **Table 10**.

Table 10
Performance Criteria and Measurement

Criteria	Measurement
Compliance with the conditional requirements associated with traffic and transport contained within SSD-5251	Internal audits undertaken in accordance with *Tables 8 and 9* of the Dubbo Project *Environmental Management Strategy*
Adherence to requirements of the Plan	Independent Environmental Audit completed in accordance with *Section 8.9.2* of the Dubbo Project *Environmental Management Strategy*
Road upgrades completed to the satisfaction of the road authority and other regulatory authorities	As constructed engineering certificates (or equivalent) completed to demonstrate works completed in accordance with approved design Confirmation obtained from DPI-Water as to satisfactory completion of creek crossing upgrades Monthly inspections of construction sites by environmental officer confirms activities in accordance with approved plans (including Erosion and Sediment Control Plan)
Eliminate or minimise convoying of heavy vehicle traffic	Review of arrival and despatch records to confirm sufficient separation between trucks
Eliminate or minimise traffic-related incidents resultant from performance of Dubbo Project-related traffic	Monthly compilation of environmental data by environmental officer
Eliminate or minimise traffic-related complaints resultant from performance of Dubbo Project-related traffic	

8.2 MONITORING

In accordance with *Condition 3(39)*, ASML will:

- Keep accurate records of:
  - the number of trucks received at and despatched from the Dubbo Project Site carrying processing reagents and products; and
  - the date and time of all truck movements from the Dubbo Project Site.

ASML will also maintain records of:

- any incidents involving Dubbo Project-related vehicles; and
- any complaints lodged in relation to transport operations or the performance / behaviour of drivers of Dubbo Project-related traffic.

These records will be summarised and published on ASML's website at least quarterly.

Further detail on monitoring is to be included in Stage 2 of the Plan prior to commencement of mining operations

8.3 INCIDENT MANAGEMENT

Incidents with the potential to result in pollution, or non-compliance with conditions of SSD-5251, will be identified, recorded, notified and actioned in accordance with *Section 9* of the Dubbo Project *Environmental Management Strategy*.

Any traffic incident involving Dubbo Project-traffic, or observed by drivers of Dubbo Project-related traffic, will be immediately reported to the appropriate emergency services. Where safe to do so, assistance will be provided by Dubbo Project personnel.

Any safety related incident involving Dubbo Project-traffic or transport operations will be reported to WorkCover at the first available opportunity.

8.4 COMPLAINTS HANDLING AND RESPONSE

Complaints may be received either via one of the following methods.

- Directly via an email or a telephone call
- Directly via the Project web site.
- Indirectly via the relevant government agencies.

A Complaints and Dispute Resolution Strategy is provided in *Section 10* of the *Environmental Management Strategy*. Following receipt of a complaint appropriate action will be taken within two working days to determine the cause of the complaint and identify appropriate actions to remediate the complaint source. The following details will be recorded following receipt of any air quality-related complaint.

1. The date and time of the complaint.
2. The method by which the complaint was made.
3. Any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect.
4. The nature of the complaint.
5. The action taken in relation to the complaint, including any follow-up contact with the complainant.
6. If no action was taken, the reasons why no action was taken.

All complaints will be investigated and an appropriate response provided to the complainant.

8.5 PUBLICATION OF MONITORING INFORMATION AND REPORTING

As noted in Section 8.2, ASML will upload summaries of all operational traffic data to the ASML website on a quarterly basis.

Any road safety audits, traffic monitoring reports or other reporting of traffic and transport-related operations will be included as appendices to the Annual Environmental Management Report. That document, once approved by the relevant government agencies, will be published on ASML's website.

8.6 COMPETENCE TRAINING AND AWARENESS

All personnel working on Dubbo Project undergo a project induction. This induction includes information on the management of noise while working on site.

After completing the induction workers will sign a statement of attendance and records of this are kept in the site office.

8.7 REVIEW (AND CONTINUAL IMPROVEMENT PROTOCOL)

The Plan will be reviewed annually from the commencement of construction activities. This will ensure the adequacy of the Plan and allow for opportunities of adaptive management and continual improvement. This will include a review of monitored traffic, actions taken to address complaints and updating trigger levels as necessary as the Project progresses.

9. REFERENCES

Constructive Solutions Pty Limited (2013). *Traffic Impact Assessment for the Dubbo Zirconia Project.* Volume 3, Part 11 of the Specialist Consultant Studies Compendium.

Roads and Maritime Services (RMS) (2012). *NSW Route Assessment Guide for Restricted Access Vehicles, 30 October 2012 (Publication number: RMS12.450).*

Roads and Maritime Services (RMS) (2013). *Transport Management Plans for Oversize and/or Overmass Movement in NSW Fact Sheet, October.13 (RMS. 13.341).*

R.W. Corkery & Co. Pty Limited (RWC) (2013). *Environmental Impact Statement for the Dubbo Zirconia Project, September 2013*. Prepared on behalf of Australian Zirconia Limited.

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Appendices

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Appendix 1

Approval of the Transport Management Plan

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NSW GOVERNMENT | Planning & Environment

Resource Assessments
Contact: Stephen Shoesmith
Phone: (02) 9274 6164
Email: stephen.shoesmith@planning.nsw.gov.au

Mr Alex Irwin
Senior Environmental Consultant
Dubbo Zirconia

Via Email to: alex@rwcorkery.com

Dear Mr Alex Irwin

Dubbo Zirconia Project (SSD_5251)
Approval – Traffic Management Plan

I refer to your submission seeking the Secretary's review and approval of the Construction Traffic Management Plan (TMP) for Dubbo Zirconia Project (SSD_5251).

The Department has reviewed the revised version of the TMP (Revision 2.2), and is satisfied that it addresses the requirements of Condition 44, in Schedule 3 of Development Consent SSD_5251.

Accordingly, the Secretary approves the revised Construction Traffic Management Plan. Please ensure that a copy of the approved plan is placed on your website as soon as possible.

It is noted that the NSW Roads and Maritime Services (RMS) made several rounds of detailed comments related to road safety and fatigue management. The Department recommends Dubbo Zirconia Project consider RMS comments in implementing the mine safety management system.

Please ensure RMS, Council and the Dubbo Zoo are consulted with, for the Operations Traffic Management Plan.

If you require further information, please contact Stephen Shoesmith on (02) 9274 6164 or by email to stephen.shoesmith@planning.nsw.gov.au.

Yours sincerely

Preshaw 7/9/18

Clay Preshaw
Director
Resource and Energy Assessments
as nominee of the Secretary

Department of Planning & Environment
Level 22, 320 Pitt Street Sydney NSW 2000 | GPO Box 39 Sydney NSW 2001 | **www.planning.nsw.gov.au**

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Appendix 2

Correspondence between Transport for NSW and Australian Zirconia Limited

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Transport for NSW

Carl Dumpleton
Senior Planner
Planning and Infrastructure
GPO Box 39
Sydney NSW 2001

Dear Mr Dumpleton

Dubbo Zirconia Project - Response to Submissions

Thank you for the opportunity to provide comments on the above. Please accept our letter as a joint Transport for NSW (TfNSW) and Roads and Maritime Services (RMS) response.

Transport for NSW acknowledges the significance of major projects such as this in regional NSW.

TfNSW acknowledges that the proponent has addressed many of the issues raised in our response dated 2/12/13 to the environmental assessment. There are however a number of key issues that need further clarification and TfNSW requests that these issues be addressed prior to determination.

The following comments are primarily in relation to the three options presented by the proponent for the transporting of labour, plant and materials to and from the site.

It is the opinion of TfNSW that Option A does not have enough detail to be assessed as part of the development application and should not form part of the merits assessment process by Planning and Infrastructure until the issues raised herein are adequately addressed. TfNSW have provided a list of strategic issues in **Annexure A** for this option that the proponent is encouraged to address.

TfNSW also considers that while Options B & C are more advanced than Option A further detail is required to enable these options to be robustly assessed. These issues are detailed in **Annexure B**. TfNSW suggest that the proponent's response to these issues be included in a revised traffic impact assessment and should also include a commitment towards regular reviews of intersection performance and a commitment to mitigation works arising from any impact to the performance of the State Road Network during the life of the mine.

I trust this information is of assistance. If you require further information please contact Tim Dewey, Senior Transport Planner on 8202 2188.

Yours sincerely

11/3/14

Mark Ozinga
Manager, Land Use Planning and Development
Planning & Programs

CD14/04108

18 Lee Street Chippendale NSW 2008
PO Box K659 Haymarket NSW 1240
T 8202 2200 F 8202 2209
www.transport.nsw.gov.au
ABN 18 804 239 602

The proponent's commitment to consult and liaise with TfNSW and RMS regarding the level crossings does not fully acknowledge that these assets are owned by the agencies. TfNSW/RMS requests that the proponent be required to gain approval from TfNSW and RMS to the proposed level crossing design, including grade separation options.

The proponent's commitment to the timing of potential train movements should not be an obligation placed on rail network owners. The timing of trains across the broader rail network is a complex process and any constraints on a particular network segment can have ramifications on other lines. The commitment should only relate to the aspects of the rail operation that are under the control of the proponent.

TfNSW requests that an economic evaluation of reinstating the rail line to Toongi be undertaken based on the maximum probable mine life, with an assumption that the mine will continue to operate and use rail beyond its initial consent period.

TfNSW/RMS requests that a Code of Conduct for mine related motorists shall be developed. The Code of Conduct shall address driver safety including, but not limited to, safe driving practices, scheduling, and measures to minimise disruption to the wider public road network.

Annexure B Detailed Comments on Options B and C (Combined)

Discussion

In its response of 2 December 2013 Transport for NSW put forward the view that the Traffic Impact Assessment provided by the applicant was inadequate. In subsequent discussions with the applicants representatives TfNSW has been asked to be specific as to where exactly the traffic report is deficient and to advise on what matters require clarification. The following advice is provided.

On page 11-63 and 11-64 of the Traffic Impact Assessment the applicant states that shift changes would be timed to avoid the 'peak period'. Clarification is sought as to what are the nominated times (AM and PM) the applicant's investigation is leading it to nominate as the peak periods for Dubbo City. The SIDRA analysis does not include the times of the day being modelled. It appears that the traffic consultant has erroneously used the argument to remove the number of vehicles being driven by employees from the subsequent SIDRA analysis. These vehicle movements are estimated at 300 movements per day on page 11-59 of the Traffic Impact Assessment. The staff vehicle movements should be included unless the applicant is prepared to be conditioned to shift change over times well outside the investigated and nominated peak traffic periods for Dubbo City.

The submissions report at page 11-54 provides the following summary of traffic conditions on surrounding roads with and without the mine generated traffic flows:

Table 16 - Modelled Future Traffic Conditions – Peak Operation

Intersection	*Scenarios*	*Peak Flow*	*DoS*	*Delays (Sec)*	*LoS (worst)*	*Queue (m)*
Newell Highway and Obley Road	*Background Traffic (2036)*	*905*	*0.312*	*15.0*	*B*	*10.3*
	Background Traffic (2036) + DZP Traffic	*939*	*0.339*	*15.1*	*B*	*11.8*
Newell Highway and Boothenba Road	*Background Traffic (2036)*	*1,217*	*0.500*	*32.4*	*C*	*20.6*
	Background Traffic (2036) + DZP Traffic	*1,238*	*0.508*	*33.8*	*C*	*20.8*

The traffic analysis should be updated to include evidence on how the projected traffic flows have been estimated including heavy vehicle counts.

On page 11-64 of the Traffic Impact Assessment states that the speed limit on the Newell Highway approaching Obley Road from the south could be reduced to improve intersection performance and safety. This issue is best addressed through a safety audit.

The TIA suggestion of an acceleration lane for vehicles turning right out of Obley Road (on the Newell Highway) appears to have merit. TfNSW requests the applicant provide SIDRA modelling that shows intersection performance with and without the acceleration lane in hard copy and electronic formal for RMS review for years 2014, 2024 and 2034. This should be clear on the growth rate used to factor up for future years. Pending the outcomes of the review of the SIDRA modelling and advice, it is the view of TfNSW/RMS, that these works be conditioned upon determination of the project application.

Recommended Response for both Option B & Option

TfNSW / RMS request that the following information be provided by the applicant in an updated traffic impact assessment study:

- The hours of the day (AM and PM) the applicant is nominating as the peak periods for general traffic movements in Dubbo City and the supporting evidence.
- The hours of the day the applicant is nominating as the 1hour periods after shift changeover for mine operation purposes that will avoid these peak periods. The applicant should then indicated their preparedness to be conditioned to adopt these shift changeover times or otherwise indicate they will include the traffic generation from staff movements in the SIDRA intersection modelling.
- Provision of the raw traffic data counts including the percentage of heavy vehicles and analysis used to determine the performance on the roadnetwork.
- SIDRA modelling that clearly shows the intersection performance with and without the proposed acceleration lane at the intersection of the Newell Highway and Obley Road for years 2014, 2024 and 2034. The Passenger Car Units (PCU) in the SIDRA model should be modified to properly adjust for a higher percentage of B-Double vehicles.
- Electronic and hard copies of the updated SIDRA analysis for TfNSW/RMS review.
- Sketch plans showing the right turn acceleration lane on the intersection of the Newell Highway and Obley Road developed in consultation with the RMS. It should be noted that these works would be required at no cost to TfNSW / RMS.
- Undertake a Road Safety Audit (by an RMS approved independent auditor) to assess the safety issues at the Obley Road and Boothenba Road intersections with Newell Highway and address any issues that will be exacerbated by the proposal. This report should be supplied in its entirety to TfNSW/RMS for review. TfNSW/RMS will advise on any further commitments the applicant should be conditioned on. The auditor should be provided with a copy of this letter and advised of the right turn acceleration lane for comment on the merits of this proposal.

Option B Only

Discussion

In the opinion of RMS, Purvis Lane is not suitable for heavy vehicle movements generated by the proposal. It is recommended that the applicant be conditioned not to use it.

The intersection of Boothenba Road and Newell Highway is North of Dubbo. The intersection of Obley Road and Newell Highway is south of Dubbo. There are a number of key intersections located in between these intersections that are potentially impacted by additional vehicle movements generated by the proposal. No analysis of these potential impacts has been presented in the TIA.

Recommended additional response for Option B

- TfNSW requests that the proponent be conditioned to access the Newell Highway via Boothenba Road, rather than Purvis Lane.

- In consultation with RMS the proponent should identify the key intersections between Boothenba and Obley Road on the Newell Highway and identify any adverse traffic and safety impacts and potential mitigation measures that may be required on these intersections.

Option C (Road only)

Discussion

Haulage route details have not been provided. Should the destination of products not be known at this time, the traffic study should document details of a number of possible haulage routes (worst case scenario).

TfNSW/RMS requests that an assessment of mine related traffic on the public road network be undertaken for both the normal weekday peak period and during the mine peak operation based on identified haulage routes. This assessment will need to model the impacts of mine related traffic at key intersections in consultation with RMS.

Recommended additional response for Option C

- The applicant should provide worst case scenario details for all haulage routes under Option C including traffic generation from staff movements.

- Any adverse impact on the surrounding road network will need to mitigated at no cost to Government.

R.W. CORKERY & CO. PTY. LIMITED
Geological and Environmental Consultants
ABN: 31 002 033 712

Brooklyn Office:
1st Floor, 12 Dangar Road
BROOKLYN NSW 2083

Phone: (02) 9985 8511
Fax: (02) 9985 8208
Email: brooklyn@rwcorkery.com

Orange Office:
62 Hill Street
ORANGE NSW 2800

Phone: (02) 6362 5411
Fax: (02) 6361 3622
Email: orange@rwcorkery.com

Brisbane Office:
Suite 5, Building 3, Rivers Office Park
205 Leitchs Road
BRENDALE QLD 4500

Phone : (07) 3205 5400
Email: brisbane@rwcorkery.com

EMAIL TRANSMISSION

TO:	Mark Ozinga	EMAIL:	mark.ozinga@transport.nsw.gov.au
ORGANISATION:	Transport for NSW	DATE:	17 March 2014
REFERENCE:	545	COPY:	Tim Dewey AZL Department of Planning and Infrastructure

NO. OF PAGES (including attachments): 6

SUBJECT: Dubbo Zirconia Project – response to feedback from Transport for NSW

☐ *Confidential* ☐ *Please Reply* ■ *For Follow-up* ☐ *Urgent* ■ *For your information*

MESSAGE:

Dear Mark

The Department of Planning and Infrastructure has provided feedback dated 11 March 2014 from Transport for NSW (TfNSW) in relation to the Dubbo Zirconia Project (DZP). The Applicant, AZL, has been requested by the Department to respond directly to TfNSW in relation to the matters raised and, once a common position has been reached, for both parties to respond to the Department.

We have reviewed the **TfNSW's feedback** and this email transmission provides a response to the issues raised. We note, however, that this information has been provided by TfNSW very late in the assessment phase of the DZP. We note that the Planning Focus Meeting for the DZP was held on 28 March 2012 and was attended by representatives of RMS, Department of Premier and Cabinet, ARTC, John Holland Rail and Country Rail Infrastructure. It is the intent of the Planning Focus Meeting and subsequent Director-**General's Requirements process** that key issues such as those raised in the TfNSW's **feedback are raised early in the assessment** process.

To assist TfNSW in reviewing this response, I have provided the relevant text from the feedback in *italics*, **with the Applicant's response in non**-italicised text below.

Transport Option A

It is the opinion of TfNSW that Option A does not have enough detail to be assessed as part of the development application and should not form part of the merits assessment process by Planning and Infrastructure until the issues raised herein are adequately addressed.

The Applicant notes that this option has been the subject of numerous, high level discussions with Minister Gay and senior TfNSW officers over a number of years. **The Applicant's investigations**

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and impact assessments have been based on the guidance received from those meetings and discussions. The Applicant proposes that TfNSW comments are more appropriately addressed face-to-face with TfNSW and will ensure that meeting is convened as soon as practicable.

The Applicant notes that if after face-to-face discussion TfNSW does not support Option A (rail only) as it stands, even for a conditional approval, then this aspect of the approval may be rejected as part of progressing the Application overall in a timely manner.

Transport Options B and C

TfNSW/RMS request that the following information be provided by the applicant in an updated traffic impact assessment study:

- *The hours of the day (AM and PM) the applicant is nominating as the peak periods for general traffic movements in Dubbo City and the supporting evidence.*

Section 3.2, paragraph 2 of Constructive Solutions (2013) identifies that the peak morning and afternoon traffic periods were identified based on manual traffic counts at the intersections of the Newell Highway and Obley Road and Boothenba/Troy Bridge Roads. The peak morning and afternoon traffic periods were identified as being between 8:00am and 9:00am and 3:00pm and 4:00pm respectively.

- *The hours of the day the applicant is nominating as the 1 hour periods after shift changeover for mine operation purposes that will avoid these peak periods. The applicant should then indicated their preparedness to be conditioned to adopt these shift changeover times or otherwise indicate they will include the traffic generation from staff movements in the SIDRA intersection modelling.*

The Applicant contends that it has already indicated its preparedness to be so conditioned through **inclusion of Commitment 14.7 which states** "schedule shift changes to avoid peak traffic periods by at **least 1 hour.**" In light of the apparent confusion in relation to this matter, the Applicant proposes to amend Commitment 14.7 as follows.

> "Commitment 14.7 - Ensure that shift changes for continuous shift operations personnel occur **outside the hours of 7:00am to 10:00am and 2:00pm to 4:00pm"**

- *Provision of the raw traffic data counts including the percentage of heavy vehicles and analysis used to determine the performance on the road network.*

Section 2.5 of Constructive Solutions (2013) presents current and future the traffic volumes of the roads along the proposed transportation route. In summary that data was obtained from the following sources.

1. Roads and Maritime Service published 2005 Western Region Traffic Volume.
2. Dubbo City Council
3. Automated traffic counts at six locations.
4. Manual traffic counts at the intersections of the Newell Highwat with Obley Road and Boothenba/Troy Bridge Road on 28 March 2013.

The traffic count data for 2. to 4. have been provided separately.

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R.W. CORKERY & CO. PTY. LIMITED

17 March 2014 Page 3

- *SIDRA modelling that clearly shows the intersection performance with and without the proposed acceleration lane at the intersection of the Newell Highway and Obley Road for years 2014, 2024 and 2034. The Passenger Car Units (PCU) in the SIDRA model should be modified to properly adjust for a higher percentage of B-Double vehicles.*
- *Electronic and hard copies of the updated SIDRA analysis for TfNSW/RMS review.*

Constructive Solutions note that the traffic count data at intersection of Obley Road and the Newell Highway demonstrates that the DZP would have a negligible impact on the performance of that intersection and that further SIDRA analysis would not change that interpretation and would impose unnecessary delays and costs on the Proposal.

- *Sketch plans showing the right turn acceleration lane on the intersection of the Newell Highway and Obley Road developed in consultation with the RMS. It should be noted that these works would be required at no cost to TfNSW/RMS.*

A sketch plan of the conceptual acceleration lane for traffic turning right out of Obley Road onto the Newell Highway will be provided to TfNSW by 21 March 2014.

The Applicant anticipates that all road infrastructure works associated with the commencement of the DZP would be constructed at its own cost, including the acceleration lane for traffic turing right out of Obley Road onto the Newell Highway, should it prove warranted. The Applicant anticipates that if the installation of the acceleration lane increases the road width in this area that it would receive necessary approvals to undertake works within the road reserve.

- *Undertake a Road Safety Audit (by an RMS approved independent auditor) to assess the safety issues at the Obley Road and Boothenba Road intersections with Newell Highway and address any issues that will be exacerbated by the proposal. This report should be supplied in its entirety to TfNSW/RMS for review. TfNSW/RMS will advise on any further commitments the applicant should be conditioned on. The auditor should be provided with a copy of this letter and advised of the right turn acceleration lane for comment on the merits of this proposal.*

Constructive Solutions notes that a Road Safety Audit may assist in identifying road safety issues associated with the respective intersections based on the observations of the auditors on the day of the audit. The auditors may be able to surmise what types of issues would occur with the nominated increases in both background traffic and DZP-related traffic. They will not, however, be able to assess the capacity of the respective intersections and would be limited in advising on the effectiveness or otherwise of the incorporation of a right turn acceleration lane unless they had some reasonably detailed plans.

The Auditors would be able to observe the vehicle approach speed from the south and comment on the available sight distance. They may again surmise whether a reduction in the speed limit would assist in addressing the issues they identify.

Although the auditors may draw conclusive findings in relation to the speed zone recommendation in Constructive Solutions (2013), Constructive Solutions states that it is doubtful whether the audit would assist in determining whether the right turn acceleration lane is justified or otherwise.

Given the anticipated cost of the audit (approximately $13 000), the delays in determination of the Project that would result (several weeks), the likely inconclusive results and the fact that TfNSW has

not previously requested such an audit despite extensive consultation, the Applicant contends that it would be unreasonable to require such an audit now.

The Applicant expects that it will need to continue to work with TfNSW through the early stages of development of the project to determine if a right turn acceleration lane from Obley Road onto the Newell Highway is justified. The Applicant has previously noted that the final transport task for the project is yet to be **determined and that the "worst case" numbers have been used for assessment.** If final movement numbers, and safety assessment based on those, determine that an upgrade is required the Applicant has already stated its commitment to do so.

Transport Option B only

- *TfNSW requests that the proponent be conditioned to access the Newell Highway via Boothenba Road, rather than Purvis Lane.*

The Applicant notes that Purvis Lane is an RMS designated B-Double and Road Train Route that that this route provides access to the following premises, each of which generate significant B-Double and Road Train vehicle movements.

- Robinson Grain - 8R Gilgandra Rd – grain store and handling facility.
- Fletchers International Exports - Lot 11 Yarrandale Rd – major rail depot and freight handling facility.
- Dubbo Sale Yards - Boothenba Road Dubbo – major regional livestock sale yards.

In addition, the Applicant notes that the westernmost section of Boothenba Road in NOT classified as either a B-Double or Road Train Route. The Applicant understands that this is because the intersection of the Newell Highway and Boothenba Road requires upgrading to a standard suitable for these vehicles.

As a result, the Applicant contends that access to the Newell Highway via Boothenba Road would not be appropriate and that the proposed access via Purvis Lane is not only a designated B-Double and Road Train Route, but is the current access for major traffic-generating developments in the area. However, in the event that this intersection of the Newell Highway via Boothenba Road is upgraded as part of RMS's progressive works program and the designated B-Double and Road Train Routes are adjusted to include this intersection, the Applicant would consent to be conditioned as suggested. The Applicant suggests that the following additional commitment be included in the Statement of Commitments appended to any approval granted, should it be granted.

> "Commitment 14.21 – Ensure that the approved heavy vehicle transportation route is amended to include the use of the intersection of the Newell Highway and Boothenba Road in preference to the intersection of Newell Highway and Pervis Lane should the former intersection be upgraded by Roads and Maritime Service to a standard suitable for B-Double trucks and the intersection is designated as a B-Double route."

- *In consultation with RMS the proponent should identify the key intersections between Boothenba and Obley Road on the Newell Highway and identify any adverse traffic and safety impacts and potential mitigation measures that may be required on these intersections*

The Applicant notes that the transport route between the intersections of the Newell Highway and Boothenba and Obley Roads would follow the Newell Highway. The Highway is the main north-south heavy vehicle route in central NSW and traffic data presented in RMS (2005) indicate that in

2005 the AADT traffic volumes on this road exceeded 15 000. Adjusting these figures to estimated 2016 values indicates that AADT traffic volumes are currently between 18 000 and 21 000.

The Applicant contends that it is consistent with current practice to assume that identified State-significant heavy vehicle routes are suitable for heavy vehicle use and that no further assessment is required unless traffic volumes would be significantly increased.

In the present case, a worst-case increase contribution of 158 heavy vehicle movements per day would contribute an insignificant increase in total daily heavy vehicle movements on the Newell Highway. Indeed, **the Applicant notes that Mr Chris O'Brien of TfNSW noted during previous consultation with the agency that the additional heavy vehicle movements would be "minimal" and that "no additional assessment [of the Highway] should be necessary."**

As a result, the Applicant contends that the requested assessment is not required.

Transport Option C only

- *The applicant should provide worst case scenario details for all haulage routes under Option C including traffic generation from staff movements.*

As indicated in Section 2.12.1 of RWC (2013), Option C would be utilised in the event that rail **transportation to Fletchers International Export's facility in Dubbo is not feasible, either temporarily** or on a permanent basis. As indicated in Table 2.16 of RWC (2013), the total heavy vehicle movements would be lower under Option C (138 movements per day) than Option B (158 movements per day) because of greater use of B-Double trucks.

In addition, the Applicant notes that the source(s) of products to be transported to the DZP Site are a commercial matter and have yet to be determined. However, it would be reasonable to assume that the suppliers of such products would have approval to transport those products to the State-road network. As a result, no assessment of the transport routes from source to the State road network is required.

All products would be then transported via the State road network, including, where required, via identified B-Double and Road Train routes, to the intersection of the Newell Highway and Obley Road. As noted previously, the Applicant contends that any additional DZP-related heavy vehicle movements on the State road network would not significantly impact on the network.

Finally, the Applicant notes that Constructive Solutions (2013) assessed the anticipated maximum number of vehicle movements under Option B and that should Option C be implemented, traffic-related impacts would actually be lower.

As a result, the Applicant contends that no further assessment of traffic related impacts associated with Option C is required.

- *Any adverse impact on the surrounding road network will need to mitigated at no cost to Government.*

As indicated previously, the Applicant anticipates that all road infrastructure works associated with the DZP would be constructed at its own cost. However, the Applicant notes that the State road network is presumed to be fit for purpose and that considering the insignificant impact that the DZP would have on the volume of heavy vehicle traffic that upgrades to the State road network is a matter for TfNSW rather than the Applicant.

R.W. CORKERY & CO. PTY. LIMITED

17 March 2014 Page 6

I trust that this provides you with the information that you require at this stage. In order to be able to prepare a response to the Department of Planning and Infrastructure, I recommend a teleconference in the coming days to discuss the above. To that end, I would be grateful if you could please indicate your availability this week by return email. Alternatively, or in addition, **AZL's Chief** Operations Officer Nic Earner will be in Sydney on the morning of Friday 28 March and would be available to attend a face to face meeting.

Please do not hesitate to contact myself in our Orange office or Mike Sutherland of AZL on 02 6882 2866 or by email on msutherland@alkane.com.au.

Regards

Mitchell Bland
Principal Environmental Consultant

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Alex Irwin

From: Dewey, Tim <Tim.Dewey@transport.nsw.gov.au>
Sent: Wednesday, March 26, 2014 2:37 PM
To: Alex Irwin
Cc: MCINTYRE Andrew R; OZINGA Mark; Sangar, Para; Carl Dumpleton
Subject: Dubbo Zirconia Project
Attachments: Proponent Table 26032014.pdf

Alex,

Please find the response to your further information in respect of the DZP project. I think this narrows the number of issues outstanding.

Please note row 9 is slightly different to what I indicatively briefed you on at the suggestion of the Western Region RMS office.

Can you advise if a meeting room should be booked for Friday?

Regards

Tim Dewey

Dubbo Zirconia – Response to R.W.Corkery

No.	Issue	Ref	TfNSW Response	Proponent View
Key TfNSW Issue				
1		TfNSW requests that the applicants provide electronic copies of SIDRA models for TfNSW/RMS review inclusive of any changes resulting from the issues raised in the table below. **Outstanding**		
Transport Option A				
2	Transport Option A	Pg 1	TfNSW accepts the applicant's approach of a meeting before a final determination regarding Option A. **Agreed**	
Transport Options B & C				
3	Transport Option B & C Definition Peak Period	Pg 2	**Acknowledged**	
4	Amended condition 14.7	Pg 2	**Agreed** "Commitment 14.7 - Ensure that shift changes for continuous shift operations personnel occur outside the hours of 7:00am to 10:00am and 2:00pm to 4:00pm"	

5	Raw traffic data	Pg 2	Data receipt acknowledged. Advise as follows: • The percentage of heavy vehicles in the SIDRA models for the Newell Highway/Obley Road intersection is low at 5%. TfNSW acknowledges 5% is the RMS default for urban roads however in this instance for rural roads, when compared to the actual traffic counts along the Newell Highway, the percentage used in the SIDRA model is low for at least the peak periods. • For example, the intersection counts record 12% northbound traffic and 22% southbound traffic for the morning peak period (8-9am). Another example is 29% northbound and 12% southbound (3-4pm) for the afternoon peak period. • The applicant should re-submit the SIDRA modelling (see issue one above) with heavy vehicle percentages reflective of the traffic counts and agreed prior with RMS/TfNSW. See key issue 1 above. **Outstanding**	
6	SIDRA modelling with and without acceleration lane	Pg 2	TfNSW notes the applicant does not wish to model the right turn acceleration lane but is conditionally committing to constructing the acceleration lane if deemed necessary on safety or conditional capacity grounds. On this basis TfNSW is accepting of the applicants response. TfNSW continues to suggest the applicant provide its full SIDRA modelling electronic files to TfNSW/RMS for review. Prior to transfer to TfNSW the applicant should make the minor input change necessary to reflect the observed percentage of heavy vehicles on the Newell Highway and Obley Road Intersection. The percentage of heavy vehicles adopted should be based on the observed counts and agreed with TfNSW in advance. TfNSW See key condition 1 above. **Issue is agreed subject to receipt of the SIDRA model.**	

7	Sketch plan of acceleration lane by 21 March	Pg 2	**Agreed**	
8	Audit (cost approx $13,000 may be inconclusive in determining need for right turn lane)	P3 –P4	The Obley Road currently carries as low as 2 B-double truck movements per day based on the classification surveys undertaken on Obley Road. The proposed development is expected to generate up to 158 truck movements per day along Obley Road in option B which includes a significant number of B-doubles truck movements. The increase in heavy vehicles at the intersections have the potential to increase incidents between slow moving vehicles turning at these intersections and vehicles travelling along Newell Highway at higher speed (within posted speed limit). Accordingly, TfNSW stands by the need for an audit but is prepared for it to be undertaken at a time before the commencement of operational transportation from the site. **For applicant response – See also condition 9**	

9	Applicant prepared to work with TfNSW to determine need for right turn lane at intersection of Obley Road and Newell Highway	Top Pg 4	Transport for NSW would accept conditions to the effect that the mine operator must undertake a Traffic Impact Assessment and a road safety audit by a TfNSW/RMS approved independent auditor for the intersections of Newell and Boothenba and Newell and Obley Road, conducted every three years (after the initial review above) as part of the applicants environmental audit process. The engaged auditor needs to undertake a risk assessment for each of the identified issues based on the relevant AUSTROADS guidelines. The auditor may request data from the Western Region RMS Office to undertake the risk assessment. This data request may include accident statistics, accident location, near miss incidents/complaints lodged and negative press received that Western Region RMS may have kept on file. Based on the results of the risk assessment, TfNSW/RMS will form its opinion and may require the mine operator to engage an independent technical specialist to review the audit, in relation to implementation of safety measures including acceleration lane on the Newell Highway at the intersection of Obley Road and the Newell Highway. The proponent should indicate a preparedness to construct the acceleration lane on the Newell Highway at the intersection of Obley Road and the Newell Highway if the independent technical specialist is engaged and determines: • It was reasonably required on safety grounds unfettered by capacity considerations. • It was required on capacity grounds and the DZP project could be shown to be a significant contributor to the intersection volume. RMS can supply standard conditions relating to Works Authorisation Deed for applicant consideration if required. **For applicant response**	

Transport Option B Only				
10	Purvis Lane Access	Pg 4 first bullet point	**Applicants commitment 14.21 is acknowledged and accepted.** "Commitment 14.21 – Ensure that the approved heavy vehicle transportation route is amended to include the use of the intersection of the Newell Highway and Boothenba Road in preference to the intersection of Newell Highway and Pervis Lane should the former intersection be upgraded by Roads and Maritime Service to a standard suitable for B-Double trucks and the intersection is designated as a B-Double route." Should be Purvis Lane not Pervis Lane. Request deletion of the words "by Roads and Maritime Service" as these works are likely to be carried out by Dubbo City Council.	
11	Identification of adverse impacts between Boothenba and Obley Roads on the Newell Highway	Pg 4 bottom	**Agreed** With the exception of the Newell/Boothenba Intersection and the Newell/Obley Road intersection and the Newell/Purvis Lane intersection.	

Option C only	12	Details of all haulage routes	Page 5	First point. **Acknowledged**. Second point **Accepted** with the noted exception above of the acceleration lane on Newell Highway and Obley Road.

R.W. CORKERY & CO. PTY. LIMITED
Geological and Environmental Consultants
ABN: 31 002 033 712

Brooklyn Office:
1st Floor, 12 Dangar Road
BROOKLYN NSW 2083

Phone: (02) 9985 8511
Fax: (02) 9985 8208
Email: brooklyn@rwcorkery.com

Orange Office:
62 Hill Street
ORANGE NSW 2800

Phone: (02) 6362 5411
Fax: (02) 6361 3622
Email: orange@rwcorkery.com

Brisbane Office:
Suite 5, Building 3, Rivers Office Park
205 Leitchs Road
BRENDALE QLD 4500

Phone : (07) 3205 5400
Email: brisbane@rwcorkery.com

EMAIL TRANSMISSION

TO:	Tim Dewey	EMAIL:	tim.dewey@transport.nsw.gov.au
ORGANISATION:	Transport for NSW	DATE:	27 March 2014
REFERENCE:	545	COPY:	Mark Ozinga AZL Department of Planning and Infrastructure

NO. OF PAGES (including attachments): 3

SUBJECT: Dubbo Zirconia Project – Review and Response to TfNSW comments on DZP transport

☐ *Confidential* ☐ *Please Reply* ■ *For Follow-up* ☐ *Urgent* ■ *For your information*

MESSAGE:

Dear Mark

Thank you for providing the tabulated responses to our email of 17 March 2014 (which responded to the requests for clarification or additional information on the transport assessment of the Dubbo Zirconia Project).

I note a column entitled 'Proponent View' has been left in the table and the following will allow TfNSW to update this. I have number the issues as presented in the table to assist you.

1. **SIDRA Data**

   There was an initial misinterpretation of TfNSW's request for SIDRA data, however, we now understand the nature of the request and plan to supply the requested data (in accordance with that agreed in our teleconference this morning [involving Para Sangar & Ben Rossiter) to you by close of business 28 March 2014.

2. **Transport Option A**

   A meeting for Friday morning, 28 March 2014 has been scheduled. The Proponent's aim will be to clearly identify the specific requirements of TfNW with respect to further assessment of Option A (Rail to Toongi) that will enable TfNSW to support conditional approval of this option. On the basis of these requirements, the Proponent can make decisions as to whether to undertake the additional assessment concurrently with the Planning Assessment Commission (PAC) review and determination process or exclude from the current application and undertake as part of a future modification.

3. **Definition of Peak Period**

   No further Proponent comment required.

R.W. CORKERY & CO. PTY. LIMITED

4. **Commitment 14.17**

   In light of the Proponent agreeing to the recommendations with respect to Road Safety Audit of various critical intersections, and the original comments of TfNSW (dated 11 March 2014), the Proponent proposes a minor modification to this commitment (see red text below).

   > Commitment 14.17 - Ensure that shift changes for continuous shift operations personnel occur outside the hours of 7:00am to 10:00am and 2:00pm to 4:00pm or complete further SIDRA modelling, to the satisfaction of the Roads and Maritime Services, to confirm acceptable operation of the roads and intersection during peak traffic periods.

5. **Raw Traffic Data / SIDRA**

   It is planned to supply the requested data to TfNSW by close of business 27 March 2014.

6. **SIDRA Modelling of possible Acceleration Lane**

   The Proponent has undertaken the requested SIDRA modelling to include the right turn acceleration lane onto Newell Highway from Obley Road. It is planned to supply the requested data to TfNSW by close of business 27 March 2014.

7. **Intersection Treatment**

   An initial treatment has been completed and is attached

8. **Road Safety Audit**

   The Proponent agrees to the proposed requirement to complete a Road Safety Audit of the key intersections prior to commencement of operational traffic and at 3 yearly intervals subsequently.

   Additional Commitments 14.22 and 14.23 are proposed and will be provided to the Department of Planning & Infrastructure for annexure to the development consent.

   > Commitment 14.22 – Commission and complete a Road Safety Audit (RSA) of the following critical intersections:
   >
   > - Obley Road – Newell Highway;
   > - Boothenba Road – Newell Highway; and
   > - Purvis lane – Newell Highway.
   >
   > Timing: Prior to the commencement of operational traffic and then at three yearly intervals.
   >
   > Commitment 14.23 – Engage an independent technical specialist to review the RSA and advise on the implementation of any recommended safety measures.
   >
   > Timing: As instructed by TfNSW or RMS following RSA.

   See also response to 9. below.

9. **Right Turn Acceleration Lane / Road Safety Audits**

   In principle, the Proponent agrees to the recommendations proposed. The Proponent requests some modification to the wording around the Proponents obligation to construction of the acceleration lane (or other upgrades). The requested modifications are incorporated into the proposed additional Commitment 14.24 which will be provided to the Department of Planning & Infrastructure for annexure to the development consent.

R.W. CORKERY & CO. PTY. LIMITED

27 March 2014 Page 3

Commitment 14.24 – Contribute to the construction of a right turn acceleration lane on the Newell Highway (from Obley Road), if recommended by the independent technical specialist engaged to review the RSA on the basis of:

- reasonable safety grounds unfettered by capacity considerations; or
- capacity grounds where the DZP is shown to be a significant contributor to the intersection volume.

Note: Contribution to the upgrade works would be negotiated with the road authority. AZL is committed to providing a reasonable contribution based on the proportional contribution of the DZP to the safety or capacity impact(s).

Timing: To be negotiated with the road authority(ies) following the completion of the independent technical specialist's report.

10. Commitment 14.21

The Proponent accepts the minor modifications to the commitment

Commitment 14.21 – Ensure that the approved heavy vehicle transportation route is amended to include the use of the intersection of the Newell Highway and Boothenba Road in preference to the intersection of Newell Highway and Purvis Lane should the former intersection be upgraded to a standard suitable for B-Double trucks and the intersection is designated as a B-Double route.

11. Newell Highway Transport Route

Agreement is acknowledged. Please refer to 8. and 9. above for specific commitments.

12. Details of Haulage Routes

Agreement is acknowledged. Please refer to 8. and 9. above for specific commitments.

On the basis of the above, it appears in principle agreement has been reached on the majority of the issues raised by TfNSW in the 11 March submission to the Department of Planning & Infrastructure. I trust that with the supply of SIDRA data and the proposed meeting for Friday 28 March 2014, all outstanding issues will have been identified and addressed.

Please do not hesitate to contact me at any stage should you wish to discuss further.

Regards

Alex Irwin
Senior Environmental Consultant

Transport for NSW

Carl Dumpleton
Senior Planner
Planning and Infrastructure
GPO Box 39
Sydney NSW 2001

Dubbo Zirconia Project
Response to Submissions

Dear Mr Dumpleton

I refer to my previous correspondence on the Dubbo Zirconia Project Response to Submissions dated 11 March 2014 (**Tab A**).

As you are aware the proponent has been in discussions with TfNSW since receipt of that letter. Accordingly, I can now advise:

1. Following discussions with the applicant TfNSW is now prepared to conditionally recommend Option A being the reinstatement of the Dubbo to Toongi Railway Line going forward to form part of the merit assessment process for this development.

2. Traffic issues have been progressed in a manner acceptable to TfNSW. Some amended statements of commitment have been mutually agreed and are attached.

These issues are detailed on the attached **Tab B**.

I trust this information is of assistance. If you require further information please contact Tim Dewey, Senior Transport Planner on 8202 2188.

Yours sincerely

A/4/14

Mark Ozinga
Manager, Land Use Planning and Development
Planning and Programs

CD14/04108

Option A

Following further discussion with Dubbo Zirconia Project representatives TfNSW is prepared to conditionally recommend **Option A** be included as one of the options recommended for Assessment by Planning and Infrastructure:

This should be subject to the following commitments from the proponent:

Lead time for progressing Option A

Transport for NSW now understands the ore body may yield a longer mine life than the 22 years that planning permission is sought for. On this basis TfNSW would be satisfied with the proponent being granted up to 2 years to progress rail option A.

Accordingly TfNSW requests that an economic evaluation of reinstatement of the Dubbo – Toongi Line be undertaken based on a maximum probable mine life, with an assumption the mine will continue to operate beyond its initial consent period.

Confirmation of relevant rail authorities

The relevant rail authorities should be fully engaged in planning for the potential resumption of rail services and their advice sought on the required upgrades to facilitate this usage to modern standards.

TfNSW requests the proponent be able to demonstrate this engagement with the infrastructure owners and commitment to forming interface agreements for each railway crossing with network owners and appropriate road authorities.

Comprehensive and robust area wide traffic and train crossing model

Reinstatement of railway crossings would have the potential to cause delays to vehicular movements and has the potential for serious crashes at the proposed level crossings. TfNSW requests that a comprehensive and robust network wide analysis assessing the impacts of the project use of the Toongi Rail Line on traffic on the Mitchell Highway and the local road network needs to be undertaken in consultation with RMS. RMS and or TfNSW will specify the expected study requirements when the applicant is ready to commence work. An area wide traffic model needs to be used to assess traffic impacts based on peak hour traffic volumes (background and mine related) scenarios for level and grade separated options. A safety assessment needs to weigh up the benefits/risks of both the road and rail options including the risks on the road and rail network away from the immediate area of the level crossing and be an integral part of the report.

Level Crossing Safety

Further to the safety assessment above, a detailed safety risk assessment needs to be undertaken for all proposed rail crossings in accordance with the Rail Safety Act and the rail network owner's accreditation. It should be undertaken in consultation with the relevant road authority. Following the detailed safety risk assessment, TfNSW requests the proponent demonstrate the safe operation of proposed level crossings to be reopened.

Final approval by TfNSW

Re-instatement of services on the Dubbo-Toongi line would be subject to agreement with TfNSW's Country Rail Contracts, the network owner.

Traffic Issues

SIDRA Files

TfNSW and RMS have examined the SIDRA files provided by the applicant and are now satisfied with the parameters used. The SIDRA printouts are printed and attached as an annexure to this letter. The parameters used in the printout should form the basis for any future examination of intersection performance unless field observations or substantiated expert opinion is obtained to indicate another value should be used.

Avoidance of peak times

TfNSW has discussed and would be satisfied with the following proponent proposed position in regard to work shift changeovers:

Desired Outcome	Action	Timing
Achieve safe and efficient transport operations.	14.17 Ensure that shift changes for continuous shift operations personnel occur outside the hours of 7:00am to 10:00am and 2:00pm to 4:00pm or complete further SIDRA modelling, to the satisfaction of Roads and Maritime Services, to confirm acceptable operation of the roads and intersection during peak traffic periods.	Ongoing.

Heavy Vehicle Composition on Newell Highway and Obley Road and Newell Highway and Boothenba Road

TfNSW is satisfied the composition of heavy vehicles turning in the SIDRA models now reflects the observed counts. The mix of heavy vehicles should be used as the basis of any future assessment of intersection performance unless field observations or substantiated expert opinion is obtained to indicate another value should be used.

Heavy Vehicle Transportation Route

TfNSW is satisfied with the modification to the commitment as follows:

Manage future and changing traffic environment to maintain safe and efficient transport operations	14.21 Ensure that the approved heavy vehicle transportation route is amended to include the use of the intersection of the Newell Highway and Boothenba Road in preference to the intersection of Newell Highway and Purvis Lane should the former intersection be upgraded to a standard suitable for B-Double trucks and the intersection is designated as a B-Double route.	As necessary.

Road Safety Audit

TfNSW is satisfied with the modification to the commitment as follows:

Desired Outcome	Action	Timing
Manage future and changing traffic environment to maintain safe and efficient transport operations	14.22 Commission and complete a Road Safety Audit of the following critical intersections: • Obley Road – Newell Highway; • Boothenba Road – Newell Highway; and • Purvis lane – Newell Highway.	Prior to the commencement of operational traffic and then at three yearly intervals (to coincide with a whole of mine audit of the development consent).
Manage future and changing traffic environment to maintain safe and efficient transport operations	14.23 Engage an independent technical specialist to review the RSA undertaken by TfNSW/RMS approved independent road safety auditors and advise on the implementation of any recommended safety measures	If instructed by TfNSW or RMS following RSA (see commitment 14.22).

Right Turn Acceleration Lane and Safety Audits of Newell Highway

TfNSW is satisfied with the proponents proposed approach to the related issues of the right turn acceleration lane on Obley Road and the Newell Highway and the second issue of road safety audits (RSA) at:

- Newell Highway and Obley Road;
- Newell Highway and Boothenba Road; and
- Newell Highway and Purvis Lane

as follows:

Desired Outcome	Action	Timing
Manage future and changing traffic environment to maintain safe and efficient transport operations	14.24 Contribute to the construction of a right turn acceleration lane on the Newell Highway (from Obley Road), if recommended by the independent technical specialist engaged to review the RSA on the basis of: • reasonable safety grounds unfettered by capacity considerations; or • capacity grounds where the DZP is shown to be a significant contributor to the intersection delays. Note: Contribution to the upgrade works would be negotiated with the road authority. AZL is committed to providing a proportion commensurate with the contribution of the DZP to the safety or capacity impact(s).	If instructed by TfNSW or RMS following RSA (see commitment 14.22).

List of SIDRA Printouts

1. Obley/Newell 2013 No Development 8am - 9am
2. Obley/Newell 2033 With Development 8am-9am
3. Obley/Newell 2013 No Development 3pm - 4pm
4. Obley/Newell 2033 With Development 3pm - 4pm

Appendix 3

Results of Consultation

(Total No. of pages including blank pages = 6)

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Alex Irwin

From: MCINTYRE Andrew R <Andrew.MCINTYRE@rms.nsw.gov.au> on behalf of Development Western <development.western@rms.nsw.gov.au>
Sent: 2 December 2016 1:08 PM
To: Alex Irwin
Cc: Mike Sutherland_545_616; Development Western
Subject: RE: 545 - DZP - Transport Management Plan for Comment / Consultation

Dear Alex

Thanks for your email forwarding the draft Construction Traffic Management Plan (CTMP) to RMS for comment.

I've reviewed the draft and generally its contents are good. To assist you in finalising the CTMP, the following comments are made:

- Its clear that the works over Wambangalang Creek will be completed prior to the commencement of major construction activities on site. What is isn't clear is the timing of other works on the local roads that form part of the access route to the mine site. Will these works be done prior to construction activities on-site also? If not, how will construction traffic be managed in the interim, in particular, at locations where the design of the road is not of an adequate alignment and/or formation for the speed zone and projected traffic volumes?
- Fatigue Management needs more work. The TMP for both construction and operational will need to address methods, strategies, enforcement and penalties associated with driver fatigue, driver behaviour and driver management generally. 10% of road fatalities in western region are mine commuter related. Given the semi-isolated location of the mine and the travel distances required to access the site, driver fatigue needs to be carefully managed. RMS is happy to assist you and the proponent in developing strategies and controls to manage this component of the mine's operations.

Regards,

Andrew McIntyre
Manager Land Use Assessment
Network & Safety Management
Western Region
T (02) 6861 1453 **F** (02) 6861 1414
www.rms.nsw.gov.au

Roads and Maritime Services
51-55 Currajong Street Parkes NSW 2870
PO Box 334 Parkes NSW 2870

From: Alex Irwin [mailto:alex@rwcorkery.com]
Sent: Friday, 11 November 2016 5:07 PM
To: MCINTYRE Andrew R
Cc: Mike Sutherland_545_616
Subject: 545 - DZP - Transport Management Plan for Comment / Consultation

Andrew,

As discussed this afternoon, Condition 3(44) of SSD-5251 requires Australian Zirconia Limited to prepare a Transport Management Plan (TMP) for the Dubbo Zirconia Project (DZP) in consultation with RMS, Council and the Taronga Western Plains Zoo.

FILE12/1010
SC:SB
ED17/10734

27 January 2017

DUBBO REGIONAL COUNCIL

Mr Alex Irwin,
RW Corkery & Co Pty Limited
62 Hill Street
ORANGE NSW 2800

Dear Sir

DUBBO ZIRCONIA PROJECT - TRANSPORT MANAGEMENT PLAN

I refer to your email dated 14 November 2016 seeking comments on the draft Transport Management Plan for the Dubbo Zirconia Project. This plan represents the "Construction" component of the Transport Management Plan (TMP) and in particular the upgrading of Obley Road from the Newell Highway to and including Toongi Road.

Council would like to make the following comments on the TMP content, some of which include correction of inaccuracies and typographical corrections.

Page 3, Section 1.2.2 – The transport operations description to and from Fletcher Inter-Modal Centre has been written disregarding that Restricted Vehicle Access is now permitted via Boothenba Road to the Newell Highway intersection. The Purvis Lane and Yarrandale Road detour route for the Boothenba Road level crossing is no longer required as the level crossing has been open to Restricted Access Vehicles since November 2015.

Page 15, Section 3.1, Obley Road description – Hyandra Creek Bridge is a steel and concrete structure, not timber.

Fourth paragraph, the seal width of the first 9.5km of Obley Road is more correctly 6.5m in width, not 9m.

Page 16, first paragraph, a prominent school bus stop located at the intersection with Cumboogle Rd and Belmont Road has been omitted.

Fourth paragraph, the intersection of Boothenba Road and Newell Highway has been upgraded to enable Type 1 Road Train access which are longer vehicles than B Doubles.

All communications to: **THE INTERIM GENERAL MANAGER**
ABN 53 539 070 928
PO Box 81 Dubbo NSW 2830
T (02) 6801 4000 **F** (02) 6801 4259 **E** council@dubbo.nsw.gov.au
Civic Administration Building Church St Dubbo NSW 2830
W dubbo.nsw.gov.au

evocities
REGIONAL CITY LIVING

Page 17, Section 3.2.1 makes comment that the intersection of Obley Road and the Newell Highway requires "limited" road works. The proposed upgrading should not overlook the opportunity to improve the intersection angle from 70 degrees to 90 degrees to improve visibility for trucks entering the highway and sighting for north bound highway traffic.

Pages 18 & 19 – The assessment of sight distance available at intersections refers to 100kmph speed environment. Austroads design criteria stipulates that sight distance design should incorporate a 10% increase allowance for traffic speed ie: design to a 110 kmph speed environment.

Page 21, Section 3.2.2 - The Fletcher Inter-Modal Centre access is more correctly 190m south of Boothenba Road and the access is 110m north of the Yarrandale Road Level Crossing.

Page 22 – References to Dubbo City Council should be updated to Dubbo Regional Council throughout the report.

Page 24 Section 4.1 – Design speed for road alignments on a 100kmph speed restricted road will be 110kmph, as per Austroads standard.

Page 25 Section 4.1, Toongi Road – A 3m lane width would be too narrow for heavy vehicle movements and should be increased to 3.5m.

Creek Crossing at Twelve Mile Creek, the existing pipe culvert is concrete, not copper.

Page 28 Section 4.4.2 – General Roadworks, Planning for the road construction upgrading should assume that the maximum length of Obley Road that could be under construction at any given time is 1 km.

Page 32 Section 4.5.2 – Restricted Access Vehicles – Approval to operate B Doubles on Obley Road should be made through the National Heavy Vehicle Regulator (NHVR). It should be noted that Obley Road is currently approved for B Doubles at General Mass Limits between the Newell Highway and Benolong Road. It should also be noted that General Access Vehicles require approval to be operated at Higher Mass Limits with such approval being made through the NHVR.

Appendix 3 - Obley Road Upgrade Design & Bridge Deck Levels

Council will be giving special attention to, (but not limited to) the following matters in the review of the submitted detailed engineering design plans for the road upgrade and bridge designs.

Sheet 3 – Consideration in consultation with the Roads and Maritime Services should be given to squaring up the intersection of Obley Road with the Newell Highway to improve sighting of north bound traffic on the highway.

Attention should be given to compliance with Austroads standards for sight distance at the sag in the vicinity of Chainage 1700.

The proximity of the fence line on the northern side of Obley road from Chainage 2500 to 3500 and the proposed widening of the formation will require road widening/property acquisition to achieve the design clear zone.

Sheet 5 – Access to the bulk water filling station at the corner of Belowrie Road and Obley Road will be affected by the straightening of the curve possibly necessitating the relocation of the filling station and special consideration of safe access to the new site.

The width of the Cumboogle Bridge at Chainage 6500 should be checked for compatibility with respect to the proposed upgraded formation width.

The small crest at Chainage 7100 should be flattened/lowered to improve sight distance.

Sheet 6 – At Chainage 4850, intersection with Belowrie Road, consideration should be given to squaring up this intersection to improve visibility.

Sheet 7 – The section of Obley Road between the Benolong Road intersection and Chainage 10000 has inherent stormwater drainage deficiencies in terms of culvert waterway areas and Table drain capacity. This includes the flow capacity of property access culverts and these will need to be upgraded in conjunction with the roadway. Council has recent information on the nature of the stormwater issues requiring attention which is available to your road designers.

Sheet 8 – The curve design at Chainages 10800 and 11500 will require special attention with respect the vertical alignment and the safe sight distances required.

As a general comment on the curve design, it is noted that a 460m radius has generally been adopted as the minimum standard upgrade of the existing alignment. This radius would not be in compliance with the Austroads design criteria given that a 110kmh speed should be adopted. This would necessitate a minimum curve radius of 560m for this design speed, or more desirably, a 600m minimum should be adopted.

The sag in the vicinity of Chainage 14500 and 14600 should consider the need for causeway construction.

Sheet 12 – The existing Toongi Waste Transfer Station will require relocation and sufficient lead time should be allowed for the planning approval process for the new site of this facility given the environmentally sensitive location.

As a general note, Council will require sufficient notice to engage resources to oversee the supervision of the road and bridge upgrading as there has been no commencement date stated at this time. Council therefore wishes to advise it will require a minimum of 4 months notice prior to the time when engineering design plans will be submitted for approval so that Council will have resources in place for these plans to be reviewed without unnecessary delay.

Please contact the undersigned for further information in relation to the comments provided in this letter.

Yours faithfully

Stephen Clayton
Manager Civil Infrastructure and Solid Waste

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Appendix 4

Obley Road Bridge Deck Levels

(Total No. of pages including blank pages = 4)

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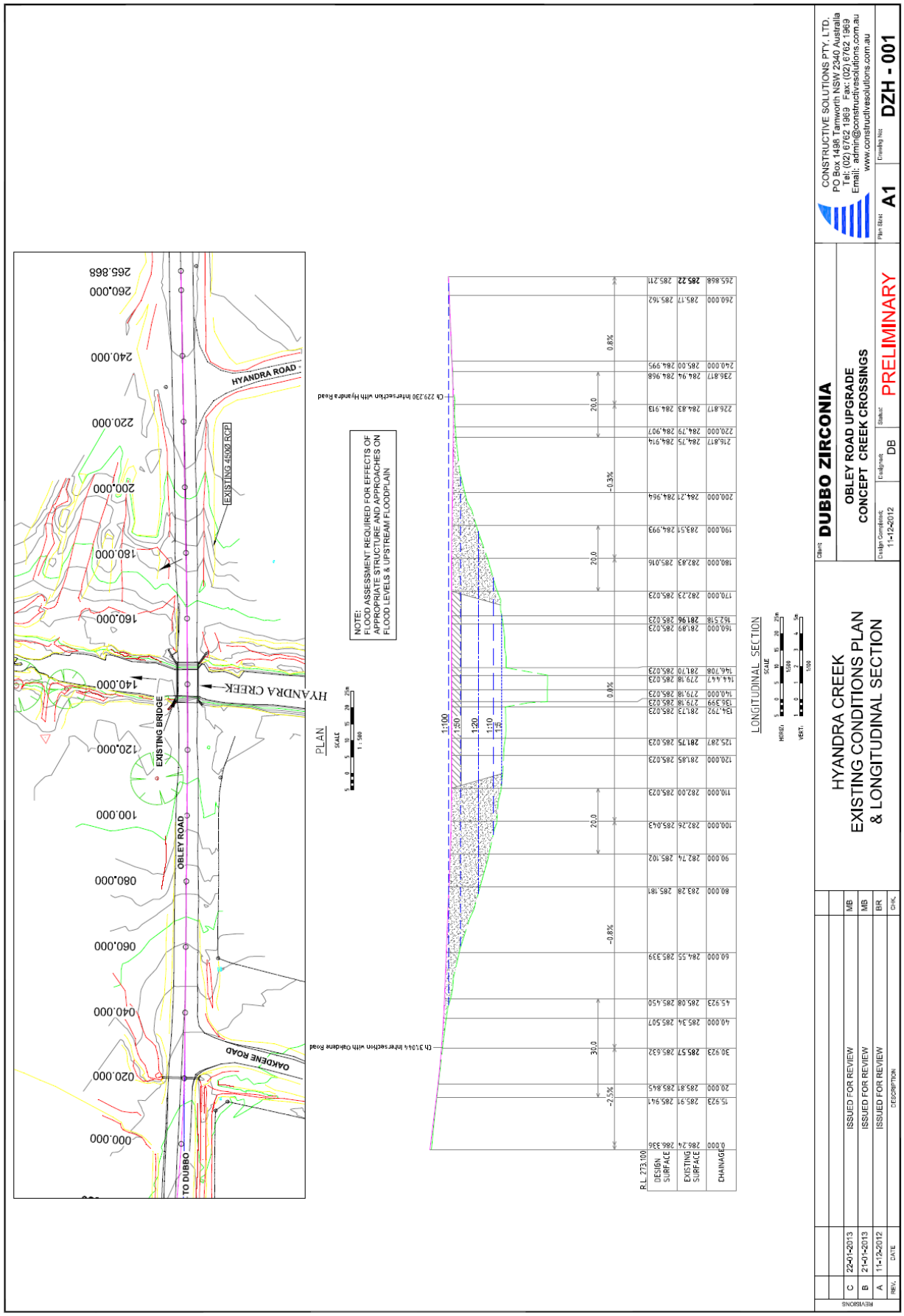
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HYANDRA CREEK
EXISTING BRIDGE
OBLEY ROAD
OAKDENE ROAD
TO DUBBO
PLAN
SCALE
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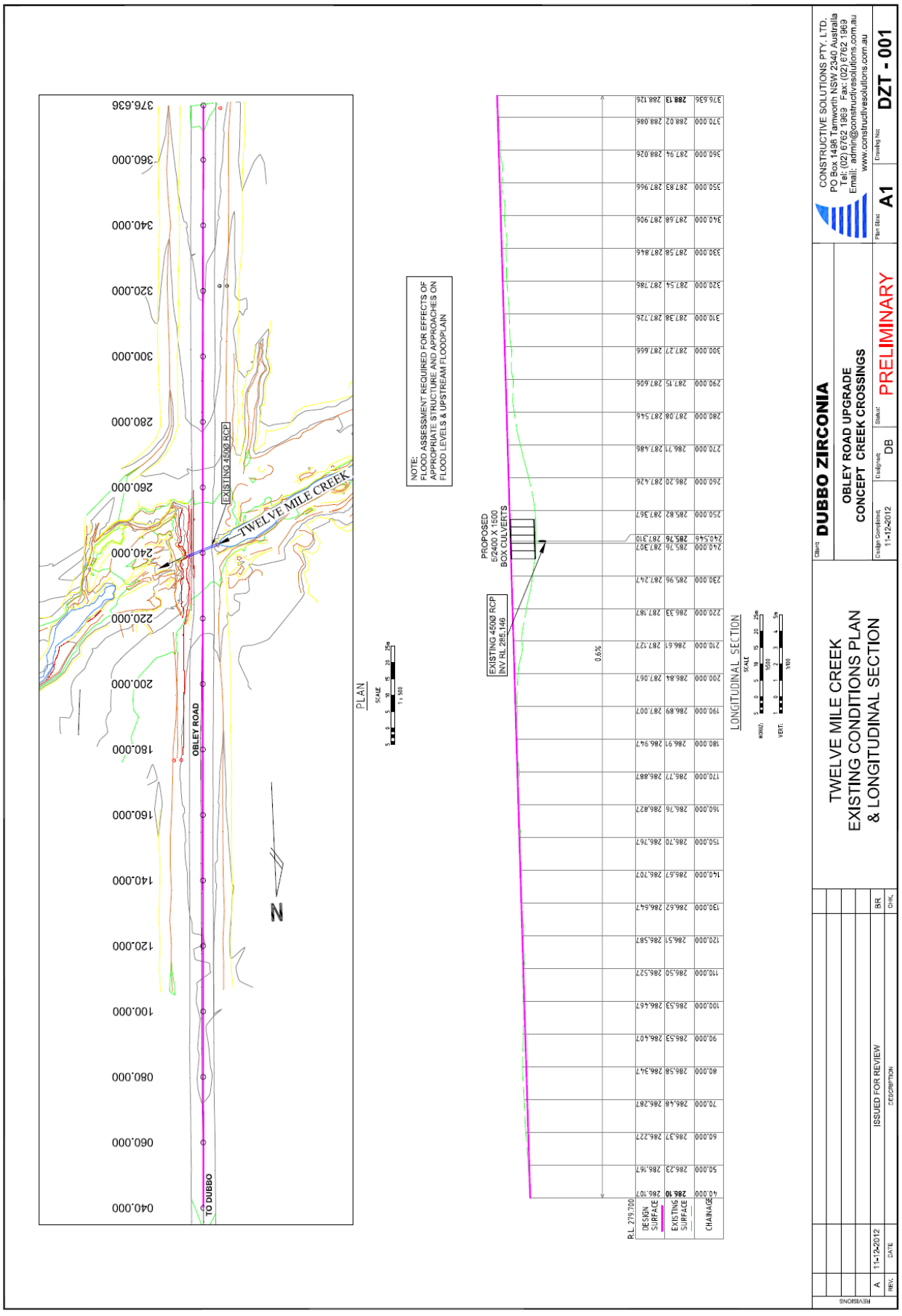
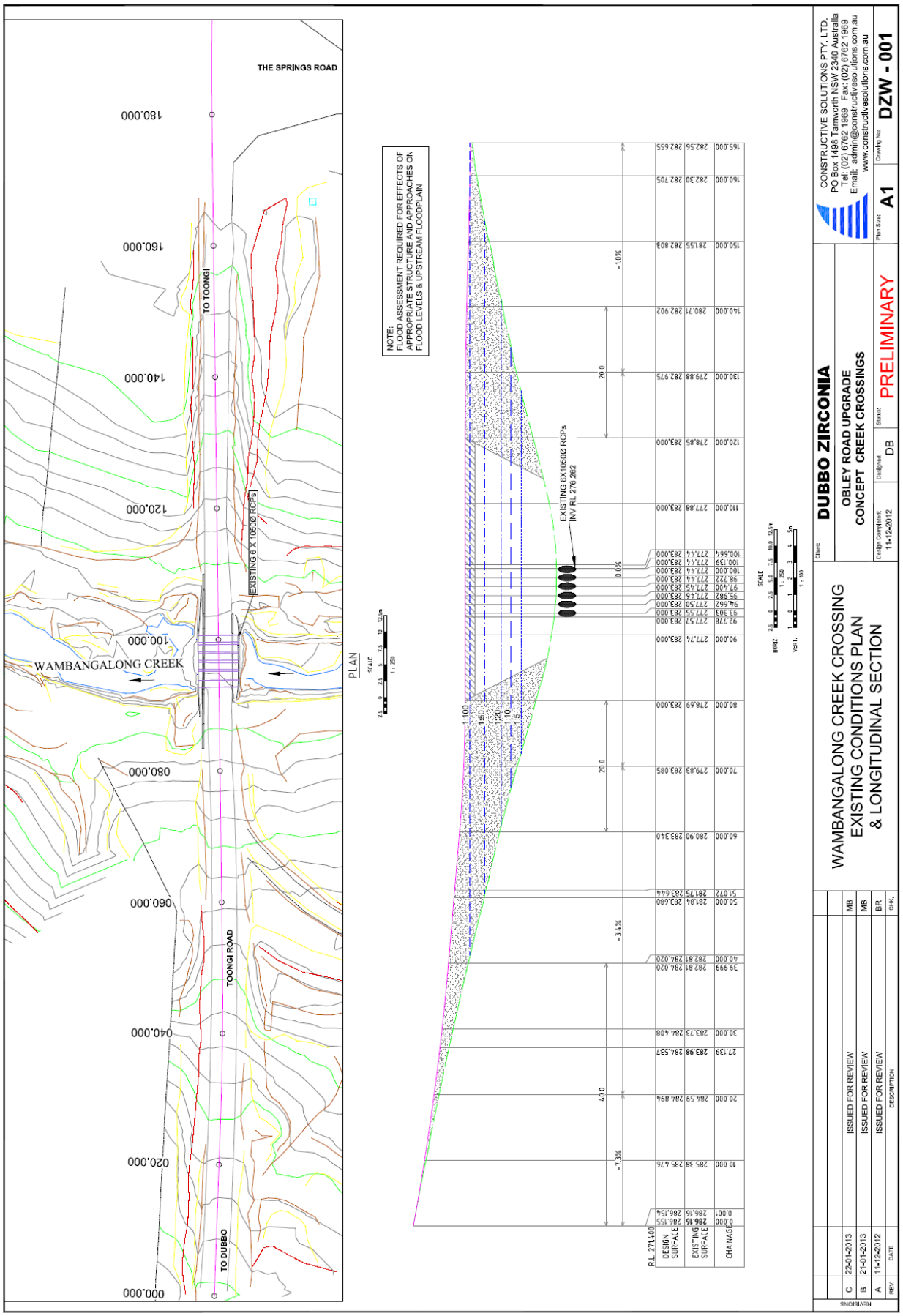
NOTE:
FLOOD ASSESSMENT REQUIRED FOR EFFECTS OF APPROPRIATE STRUCTURE AND APPROACHES ON FLOOD LEVELS & UPSTREAM FLOODPLAIN
Ch 229.230 Intersection with Hyandra Road
Ch 3104.4 Intersection with Oakdene Road
LONGITUDINAL SECTION
SCALE
HORIZ:
VERT:
1:100
1:50
1:20
1:10
1:5
DESIGN SURFACE
EXISTING SURFACE
CHAINAGE
Client: DUBBO ZIRCONIA
OBLEY ROAD UPGRADE
CONCEPT CREEK CROSSINGS
Design Completed: 11-12-2012
Drafting: DB
Status: PRELIMINARY
Plan Size: A1
Drawing No: DZH - 001
CONSTRUCTIVE SOLUTIONS PTY. LTD.
PO Box 1496 Tamworth NSW 2340 Australia
Tel: (02) 6762 1969 Fax: (02) 6762 1969
Email: admin@constructivesolutions.com.au
www.constructivesolutions.com.au
HYANDRA CREEK
EXISTING CONDITIONS PLAN
& LONGITUDINAL SECTION
REVISIONS
REV. DATE DESCRIPTION CHK.
A 11-12-2012 ISSUED FOR REVIEW BR
B 21-01-2013 ISSUED FOR REVIEW MB
C 22-01-2013 ISSUED FOR REVIEW MB


TWELVE MILE CREEK
EXISTING 4500 RCP
OBLEY ROAD
TO DUBBO
N
PLAN
SCALE
1 : 500
NOTE:
FLOOD ASSESSMENT REQUIRED FOR EFFECTS OF APPROPRIATE STRUCTURE AND APPROACHES ON FLOOD LEVELS & UPSTREAM FLOODPLAIN
PROPOSED
5/2400 X 1500
BOX CULVERTS
EXISTING 4500 RCP
INV RL 285.146
0.6%
LONGITUDINAL SECTION
SCALE
HORIZ.
VERT.
R.L. 279.700
DESIGN SURFACE
EXISTING SURFACE
CHAINAGE
CONSTRUCTIVE SOLUTIONS PTY. LTD.
PO Box 1498 Tamworth NSW 2340 Australia
Tel: (02) 6762 1963 Fax: (02) 6762 1969
Email: admin@constructivesolutions.com.au
www.constructivesolutions.com.au
Client: DUBBO ZIRCONIA
OBLEY ROAD UPGRADE
CONCEPT CREEK CROSSINGS
Design Completed: 11-12-2012
Designed: DB
Status: PRELIMINARY
Plan Size: A1
Drawing No: DZT - 001
TWELVE MILE CREEK
EXISTING CONDITIONS PLAN
& LONGITUDINAL SECTION
REVISIONS
REV. A
DATE 11-12-2012
DESCRIPTION ISSUED FOR REVIEW
BR
CHK.


THE SPRINGS ROAD
TO TOONGI
EXISTING 6 X 1050Ø RCPs
WAMBANGALONG CREEK
TOONGI ROAD
TO DUBBO
PLAN
NOTE:
FLOOD ASSESSMENT REQUIRED FOR EFFECTS OF APPROPRIATE STRUCTURE AND APPROACHES ON FLOOD LEVELS & UPSTREAM FLOODPLAIN
EXISTING 6X1050Ø RCPs
INV RL 276.262
DESIGN SURFACE
EXISTING SURFACE
CHAINAGE
CONSTRUCTIVE SOLUTIONS PTY. LTD.
PO Box 1498, Tamworth NSW 2340 Australia
Tel: (02) 6762 1993 Fax: (02) 6762 9693
Email: admin@constructivesolutions.com.au
www.constructivesolutions.com.au
Clients
DUBBO ZIRCONIA
OBLEY ROAD UPGRADE
CONCEPT CREEK CROSSINGS
Design Completed: 11-12-2012
Designed: DB
Status: PRELIMINARY
Plan Size: A1
Drawing No: DZW - 001
WAMBANGALONG CREEK CROSSING
EXISTING CONDITIONS PLAN
& LONGITUDINAL SECTION
REVISIONS
C 22-01-2013 ISSUED FOR REVIEW MB
B 21-01-2013 ISSUED FOR REVIEW MB
A 11-12-2012 ISSUED FOR REVIEW BR
REV. DATE DESCRIPTION CHK.

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Appendix 5

Erosion and Sediment Control for Obley Road Creek Crossings

(Refer also to Appendix 3 of the Water Management Plan)

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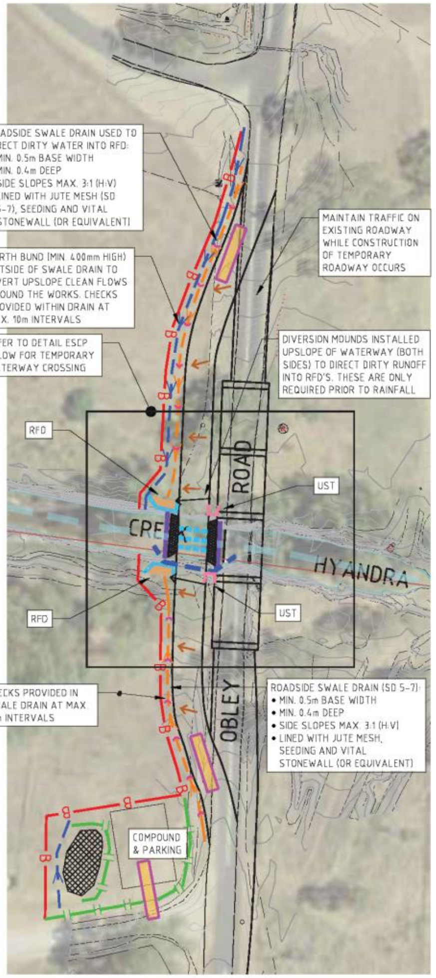


STAGE 1 ESCP – TEMPORARY ROAD CROSSING

SCALE – 1:1000

HYANDRA CREEK CROSSING STAGING

STAGE 1 – TEMPORARY ROAD CROSSING (REFER TO THIS PLAN)
STAGE 2 – BRIDGE CONSTRUCTION (REFER TO DRAWING ESCP202)
STAGE 3 – REMOVAL OF TEMPORARY ROADWAY CROSSING (REFER TO DRAWING ESCP202)

GENERAL

- REFER TO DRAWINGS 15000196_P01_001-006 FOR ALL STANDARD NOTES, REQUIREMENTS, TABLES AND STANDARD DETAILS.
- WHERE FEASIBLE WORKS ARE TO BE SCHEDULED FOR THE MONTHS FROM APRIL TO SEPTEMBER INCLUSIVE (THE LOWEST RAINFALL EROSIVITY BASED ON DATA SOURCED FROM THE BLUE BOOK (2004) RAINFALL DISTRIBUTION ZONE 9).
- PRIOR TO UNDERTAKING ANY WORKS ENSURE TEMPORARY GROUNDCOVER MATERIALS (E.G. GEOTEXTILE, BLACK PLASTIC OR SIMILAR) ARE LOCATED ONSITE FOR TEMPORARY STABILISATION OF EXPOSED SURFACES.
- AT ALL TIMES DURING THE WORKS NATURAL CREEK FLOWS MUST BE DIRECTED AROUND OR THROUGH THE WORK SITE WITHOUT COMING INTO CONTACT WITH EXPOSED SOILS. THIS CAN BE ACHIEVED VIA LINED DIVERSIONS, TEMPORARY PIPES, PUMPS OR THROUGH THE PIPE/CULVERT STORMWATER SYSTEM (REFER TO THE RELEVANT PLAN FOR DETAILS).
- ALL EXPOSED SURFACES WITHIN THE WATERWAY EXTENT MUST BE COVERED PRIOR TO RAINFALL OR HIGH FLOW EVENTS. THIS APPLIES AT ALL TIMES DURING THE WORKS EVEN IF WATERWAY FLOWS ARE DIVERTED AROUND THE WORKS VIA TEMPORARY PIPES/PUMPS OR DIVERSION CHANNELS AS THESE DIVERSIONS WILL NOT BE ABLE TO TAKE HIGH FLOW EVENTS.
- FINAL STABILISATION OF SURFACES IS TO OCCUR PROGRESSIVELY AS EACH SECTION OF WORKS IS COMPLETED.
- DIRTY WATER ACCUMULATING WITHIN THE WORK AREA IS TO BE TREATED AND TESTED TO COMPLY WITH THE WATER QUALITY DISCHARGE LIMITS PRIOR TO DISCHARGING INTO THE CREEK OR OFFSITE. REFER TO THE 'DIRTY WATER TREATMENT AND DISCHARGE REQUIREMENTS' NOTES.
- MONITORING, MAINTENANCE AND INSPECTIONS ARE TO BE CARRIED OUT REGULARLY AS REQUIRED, IN ACCORDANCE WITH THE 'SITE INSPECTION AND MONITORING' NOTES.

STAGE 1 – TEMPORARY ROAD CROSSING STAGING AND REQUIREMENTS

WORKS ARE TO BE STAGED IN THE FOLLOWING ORDER WITH THE RELEVANT EROSION AND SEDIMENT CONTROLS IMPLEMENTED PRIOR TO AND DURING EACH SECTION OF WORKS AS SPECIFIED.

BEFORE COMMENCEMENT OF CLEARING, TOPSOIL STRIPPING, EARTHWORKS OR ANY WORKS IN THE WATERWAY THE SITE IS TO BE SECURED AND THE FOLLOWING EROSION AND SEDIMENT CONTROL MEASURES INSTALLED IN ORDER (EXCEPT FOR ITEMS 15 TO 17 WHICH ARE TO BE UNDERTAKEN PROGRESSIVELY AS REQUIRED THROUGHOUT THE WORKS). STRIPPING AND EARTHWORKS NECESSARY TO INSTALL THE EROSION AND SEDIMENT CONTROLS ARE PERMITTED BUT MUST BE KEPT TO A MINIMUM:

SET-UP

1. BARRIER FENCING (OR ALTERNATIVE MEASURES) MUST BE IN PLACE AROUND THE EDGE OF THE CONSTRUCTION BOUNDARY TO RESTRICT ACCESS AND IN ANY ADDITIONAL LOCATIONS AS REQUIRED TO MINIMISE UNNECESSARY DISTURBANCE – REFER TO THE 'ACCESS CONTROL' NOTES.
2. ESTABLISH STABILISED SITE ENTRY/EXIT POINTS (STANDARD DRAWING SD 6-14) IN THE LOCATIONS SHOWN AND ANYWHERE WHERE CONSTRUCTION VEHICLES EXIT A WORK AREA ONTO A SEALED PUBLIC ROAD – REFER TO THE 'SITE ENTRY AND EXIT POINTS' NOTES.
3. ESTABLISH A TEMPORARY COMPOUND AND PARKING AREA (LOCATION SHOWN IS INDICATIVE ONLY.
4. STOCKPILE AREAS ARE TO BE ESTABLISHED IN LOCATIONS AS SHOWN OR AS SPECIFIED BY THE SITE MANAGER (INCLUDING UPSLOPE DIVERSIONS) AND IN ACCORDANCE WITH THE 'SOIL STRIPPING AND STOCKPILING' NOTES.
5. INSTALL CLEAN WATER DIVERSIONS INCLUDING LINING/STABILISATION.
6. INSTALL SEDIMENT FENCING AND ROCK FILTER DAMS (RFD'S) IN THE LOCATIONS AND SPECIFICATIONS SHOWN ON THIS PLAN AND FOLLOWING STANDARD DRAWING SD 6-8 AND IECA SD RFD-01. REFER TO THE 'SEDIMENT FENCING' AND 'ROCK FILTER DAM' NOTES.

TEMPORARY WATERWAY CROSSING WORKS (REFER TO DETAIL ESCP)

(THESE WORKS SHOULD OCCUR AS QUICKLY AS POSSIBLE, AND WHERE FEASIBLE IN LESS THAN 5 DAYS)

7. SCHEDULE WORKS FOR A SUFFICIENT DRY PERIOD, LONG ENOUGH TO ENABLE THE COMPLETION OF THE TEMPORARY CROSSING INSTALLATION. AIM TO COMPLETE AS QUICKLY AS POSSIBLE.
8. AT ALL TIMES DURING THE WORKS IF RAINFALL IS IMMINENT ALL EXPOSED SURFACES WITHIN THE WATERWAY EXTENT MUST BE COVERED.
9. FORM TEMPORARY UP AND DOWNSTREAM IMPERMEABLE BUNDS WITHIN THE WATERWAY AND INSTALL A PUMP/PIPE SYSTEM TO TAKE CREEK FLOWS AROUND THE WORKS. PUMP/PIPE DIVERSION TO BE OF SUFFICIENT CAPACITY TO CARRY CREEK BASE FLOWS.
10. ONCE CREEK FLOWS ARE DIVERTED, THE TEMPORARY CROSSING (PIPES AND ROAD DECK) IS TO BE INSTALLED ACROSS THE WATERWAY. USE CLEAN ROCK (TO ENGINEERING DETAIL).
11. SCOUR PROTECTION (TO ENGINEERING DETAIL) IS TO BE PROVIDED UP AND DOWNSTREAM OF THE TEMPORARY CROSSING AT THE INLETS AND OUTLETS AND AROUND THE HEADWALL AND ABUTMENTS.
12. ONCE THE TEMPORARY CROSSING WORKS ARE COMPLETE REMOVE THE PUMP/PIPE DIVERSION SYSTEM AND REMOVE UP AND DOWNSTREAM IMPERMEABLE BUNDS FROM THE WATERWAY TO DIRECT CREEK FLOWS INTO THE TEMPORARY CROSSING.

TEMPORARY ROADWAY WORKS

13. CONSTRUCTION WORKS ON THE TEMPORARY ROADWAY CAN COMMENCE IN ACCORDANCE WITH THE ENGINEERING PLANS.
14. ROADSIDE SWALE DRAINS ARE TO BE INSTALLED PRIOR TO BULK STRIPPING AND EARTHWORKS AND USED TO DIRECT DIRTY WATER INTO THE ROCK FILTER DAMS. CHECKS ARE TO BE INSTALLED WITHIN THE DRAINS AS PER THE PLAN.
15. TOPSOIL STRIPPING IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE 'SOIL STRIPPING AND STOCKPILING' NOTES.
16. SLOPE LENGTHS ACROSS DISTURBED LANDS ARE TO BE MAINTAINED AT THE REQUIRED INTERVALS DURING ALL RAINFALL EVENTS – REFER TO THE 'SLOPE LENGTHS' NOTES.
17. DUST SUPPRESSION IS TO BE CARRIED OUT WHEN REQUIRED – REFER TO THE 'DUST SUPPRESSION' NOTES.
18. UNDERTAKE PROGRESSIVE STABILISATION OF LANDS AS FINAL EARTHWORKS ARE COMPLETE IN EACH AREA (RATHER THAN WAITING UNTIL THE COMPLETION OF WORKS). FINAL STABILISATION IS TO BE COMPLETED IN ACCORDANCE WITH THE 'STABILISATION' NOTES AND TABLE 1.

LEGEND

- BARRIER FENCE
- SEDIMENT FENCE (SD 6-8)
- ROCK FILTER DAM (IECA SD RFD-01 & SPECIFICATIONS BELOW)
- STABILISED SITE ACCESS (SD 6-14)
- DIVERSION MOUND TO DIRECT FLOWS (SANDBAG/EARTH BUND OR SIMILAR)
- STOCKPILE AREA (SD 4-1)
- ROCK ENERGY DISSIPATER (TO FINAL ENGINEERING DETAIL)
- STABILISED CLEAN WATER DIVERSION (SD 5-5 U.S.O.)
- STORMWATER PIPE (TO FINAL ENGINEERING DETAIL)
- STABILISED PLATFORM
- CLEAN FLOW DIRECTION
- DIRTY FLOW DIRECTION
- CHECK DAM (SD 5-4)
- DIRTY WATER DIVERSION
- IMPERMEABLE BUND
- TEMPORARY PUMP/PIPE LINE
- NATURAL WATERWAY
- UST – U-SHAPED SEDIMENT TRAP (IECA SD UST-01)

STANDARD DRAWINGS AND TYPICAL NOTES ARE PROVIDED ON DRAWINGS 15000196_P01_ESCP000-006

RFD SPECIFICATIONS

SPECIFICATION:

- REFER TO SD RFD1 AND SD RFD2
- H: DEPTH TO WEIR = 0.4 M
- FREEBOARD = 0.45 M
- WIDTH OF GRAVEL FILTER (ACROSS FLOW) = 1.0 M
- SETTLING AREA BEHIND WALL = 7 M2
- THICKNESS OF 15-25 MM GRAVEL FILTER = 0.2 M
- BULK OF ROCK WALL TO BE GRADED 75 MM – 225 MM HARD ROCK
- CREST AND SPILLWAY ROCK = D50 = 225 MM, EXTEND SCOUR APRON ONTO NEAR LEVEL AND STABLE GROUND FOR MINIMUM 1.5 M OR TO WATERWAY
- PERIODICALLY REMOVE AND REPLACE THE FILTER LAYER IF IT BECOMES CLOGGED.

DETAIL ESCP – TEMPORARY WATERWAY CROSSING

SCALE – 1:500

REV	DATE	DES.	DRN.	APP.	REVISION DETAILS
00	21/07/16	A.J.B.	A.J.B.	M.P.	ISSUE FOR APPROVAL
A	19/10/15	AB/MP	A.J.B.	A.M.	DRAFT ISSUE – FOR CONSULTATION

DRAWING STATUS: DESIGN BY A.J.B. / M.P.; DRAWN BY A.J.B.; FINAL APPROVAL M.P.; SCALE: (on A3 Original) AS SHOWN

FOR APPROVAL

CLIENT: AUSTRALIAN ZIRCONIA LTD

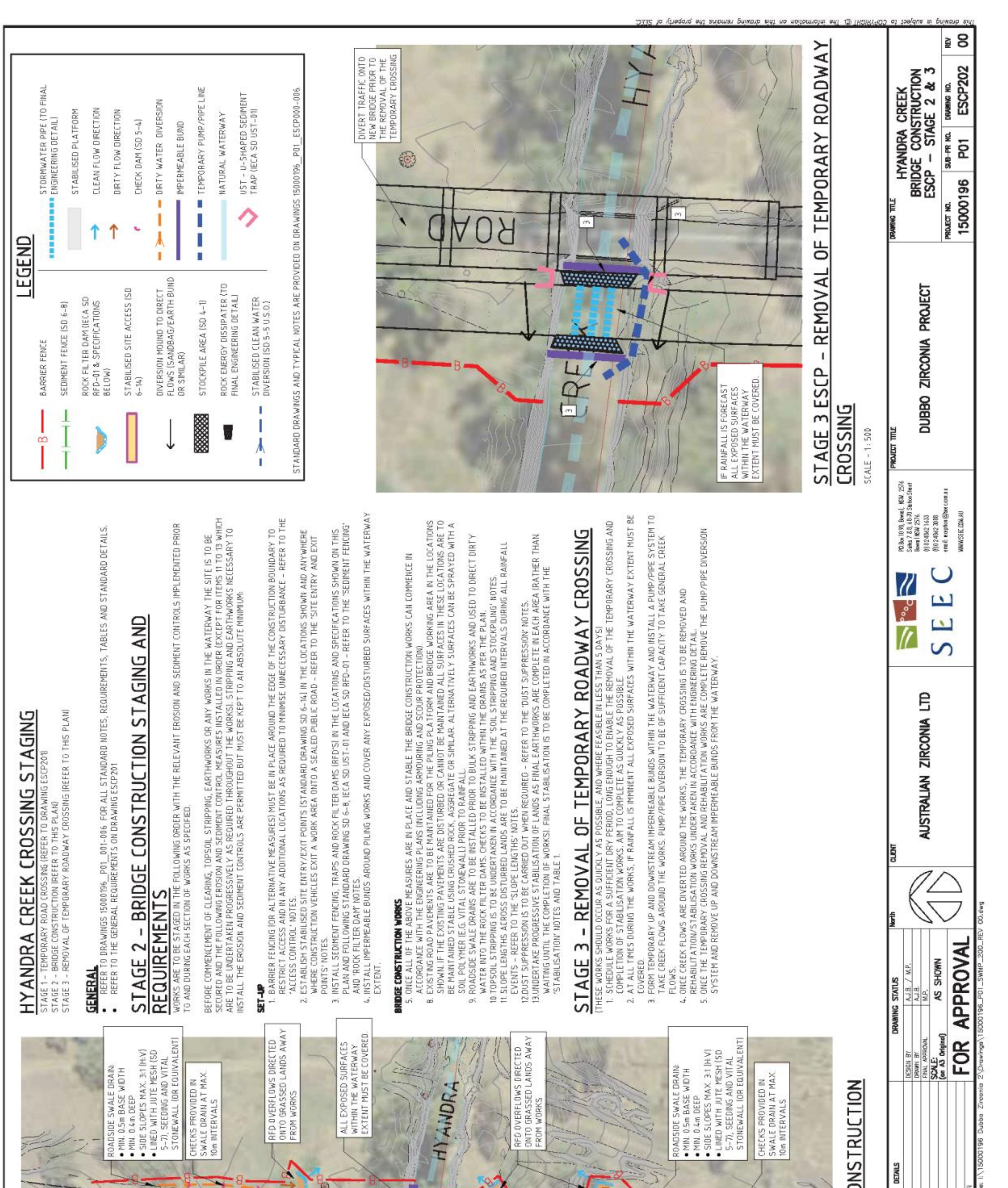
SEEC — PO Box 1098, Bowral, NSW 2576; Suites 7 & 8, 68-70 Station Street, Bowral NSW 2576; (t) 02 4862 1633; (f) 02 4862 3088; email: reception@seec.com.au; WWW.SEEC.COM.AU

PROJECT TITLE: DUBBO ZIRCONIA PROJECT

DRAWING TITLE: HYANDRA CREEK TEMPORARY ROAD CROSSING ESCP – STAGE 1

PROJECT NO.	SUB-PR NO.	DRAWING NO.	REV
15000196	P01	ESCP201	00

Plot Date: Thursday, 21 July 2016 9:09:31 AM   CAD File Name: I:\15000196 Dubbo Zirconia 2\Drawings\15000196_P01_SWMP_200_REV 00.dwg


HYANDRA CREEK CROSSING STAGING
STAGE 1 - TEMPORARY ROAD CROSSING (REFER TO DRAWING ESCP201)
STAGE 2 - BRIDGE CONSTRUCTION (REFER TO THIS PLAN)
STAGE 3 - REMOVAL OF TEMPORARY ROADWAY CROSSING (REFER TO THIS PLAN)
GENERAL
• REFER TO DRAWINGS 15000196_P01_001-006 FOR ALL STANDARD NOTES, REQUIREMENTS, TABLES AND STANDARD DETAILS.
• REFER TO THE GENERAL REQUIREMENTS ON DRAWING ESCP201
STAGE 2 - BRIDGE CONSTRUCTION STAGING AND REQUIREMENTS
WORKS ARE TO BE STAGED IN THE FOLLOWING ORDER WITH THE RELEVANT EROSION AND SEDIMENT CONTROLS IMPLEMENTED PRIOR TO AND DURING EACH SECTION OF WORKS AS SPECIFIED.
BEFORE COMMENCEMENT OF CLEARING, TOPSOIL STRIPPING, EARTHWORKS OR ANY WORKS IN THE WATERWAY THE SITE IS TO BE SECURED AND THE FOLLOWING EROSION AND SEDIMENT CONTROL MEASURES INSTALLED IN ORDER (EXCEPT FOR ITEMS 11 TO 13 WHICH ARE TO BE UNDERTAKEN PROGRESSIVELY AS REQUIRED THROUGHOUT THE WORKS). STRIPPING AND EARTHWORKS NECESSARY TO INSTALL THE EROSION AND SEDIMENT CONTROLS ARE PERMITTED BUT MUST BE KEPT TO AN ABSOLUTE MINIMUM:
SET-UP
1. BARRIER FENCING (OR ALTERNATIVE MEASURES) MUST BE IN PLACE AROUND THE EDGE OF THE CONSTRUCTION BOUNDARY TO RESTRICT ACCESS AND IN ANY ADDITIONAL LOCATIONS AS REQUIRED TO MINIMISE UNNECESSARY DISTURBANCE - REFER TO THE 'ACCESS CONTROL' NOTES.
2. ESTABLISH STABILISED SITE ENTRY/EXIT POINTS (STANDARD DRAWING SD 6-14) IN THE LOCATIONS SHOWN AND ANYWHERE WHERE CONSTRUCTION VEHICLES EXIT A WORK AREA ONTO A SEALED PUBLIC ROAD - REFER TO THE 'SITE ENTRY AND EXIT POINTS' NOTES.
3. INSTALL SEDIMENT FENCING, TRAPS AND ROCK FILTER DAMS (RFD'S) IN THE LOCATIONS AND SPECIFICATIONS SHOWN ON THIS PLAN AND FOLLOWING STANDARD DRAWING SD 6-8, IECA SD UST-01 AND IECA SD RFD-01 - REFER TO THE 'SEDIMENT FENCING' AND 'ROCK FILTER DAM' NOTES.
4. INSTALL IMPERMEABLE BUNDS AROUND PILING WORKS AND COVER ANY EXPOSED/DISTURBED SURFACES WITHIN THE WATERWAY EXTENT.
BRIDGE CONSTRUCTION WORKS
5. ONCE ALL OF THE ABOVE MEASURES ARE IN PLACE AND STABLE THE BRIDGE CONSTRUCTION WORKS CAN COMMENCE IN ACCORDANCE WITH THE ENGINEERING PLANS (INCLUDING ARMOURING AND SCOUR PROTECTION).
8. EXISTING ROAD PAVEMENTS ARE TO BE MAINTAINED FOR THE PILING PLATFORM AND BRIDGE WORKING AREA IN THE LOCATIONS SHOWN. IF THE EXISTING PAVEMENTS ARE DISTURBED OR CANNOT BE MAINTAINED ALL SURFACES IN THESE LOCATIONS ARE TO BE MAINTAINED STABLE USING CRUSHED ROCK, AGGREGATE OR SIMILAR. ALTERNATIVELY SURFACES CAN BE SPRAYED WITH A SOIL POLYMER (E.G. VITAL STONEWALL) PRIOR TO RAINFALL.
9. ROADSIDE SWALE DRAINS ARE TO BE INSTALLED PRIOR TO BULK STRIPPING AND EARTHWORKS AND USED TO DIRECT DIRTY WATER INTO THE ROCK FILTER DAMS. CHECKS TO BE INSTALLED WITHIN THE DRAINS AS PER THE PLAN.
10. TOPSOIL STRIPPING IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE 'SOIL STRIPPING AND STOCKPILING' NOTES.
11. SLOPE LENGTHS ACROSS DISTURBED LANDS ARE TO BE MAINTAINED AT THE REQUIRED INTERVALS DURING ALL RAINFALL EVENTS - REFER TO THE 'SLOPE LENGTHS' NOTES.
12. DUST SUPPRESSION IS TO BE CARRIED OUT WHEN REQUIRED - REFER TO THE 'DUST SUPPRESSION' NOTES.
13. UNDERTAKE PROGRESSIVE STABILISATION OF LANDS AS FINAL EARTHWORKS ARE COMPLETE IN EACH AREA (RATHER THAN WAITING UNTIL THE COMPLETION OF WORKS). FINAL STABILISATION IS TO BE COMPLETED IN ACCORDANCE WITH THE 'STABILISATION' NOTES AND TABLE 1.
STAGE 3 - REMOVAL OF TEMPORARY ROADWAY CROSSING
(THESE WORKS SHOULD OCCUR AS QUICKLY AS POSSIBLE, AND WHERE FEASIBLE IN LESS THAN 5 DAYS)
1. SCHEDULE WORKS FOR A SUFFICIENT DRY PERIOD, LONG ENOUGH TO ENABLE THE REMOVAL OF THE TEMPORARY CROSSING AND COMPLETION OF STABILISATION WORKS. AIM TO COMPLETE AS QUICKLY AS POSSIBLE.
2. AT ALL TIMES DURING THE WORKS, IF RAINFALL IS IMMINENT ALL EXPOSED SURFACES WITHIN THE WATERWAY EXTENT MUST BE COVERED.
3. FORM TEMPORARY UP AND DOWNSTREAM IMPERMEABLE BUNDS WITHIN THE WATERWAY AND INSTALL A PUMP/PIPE SYSTEM TO TAKE CREEK FLOWS AROUND THE WORKS. PUMP/PIPE DIVERSION TO BE OF SUFFICIENT CAPACITY TO TAKE GENERAL CREEK FLOWS.
4. ONCE CREEK FLOWS ARE DIVERTED AROUND THE WORKS, THE TEMPORARY CROSSING IS TO BE REMOVED AND REHABILITATION/STABILISATION WORKS UNDERTAKEN IN ACCORDANCE WITH ENGINEERING DETAIL.
5. ONCE THE TEMPORARY CROSSING REMOVAL AND REHABILITATION WORKS ARE COMPLETE REMOVE THE PUMP/PIPE DIVERSION SYSTEM AND REMOVE UP AND DOWNSTREAM IMPERMEABLE BUNDS FROM THE WATERWAY.
LEGEND
BARRIER FENCE
SEDIMENT FENCE (SD 6-8)
ROCK FILTER DAM (IECA SD RFD-01 & SPECIFICATIONS BELOW)
STABILISED SITE ACCESS (SD 6-14)
DIVERSION MOUND TO DIRECT FLOWS (SANDBAG/EARTH BUND OR SIMILAR)
STOCKPILE AREA (SD 4-1)
ROCK ENERGY DISSIPATER (TO FINAL ENGINEERING DETAIL)
STABILISED CLEAN WATER DIVERSION (SD 5-5 U.S.D.)
STORMWATER PIPE (TO FINAL ENGINEERING DETAIL)
STABILISED PLATFORM
CLEAN FLOW DIRECTION
DIRTY FLOW DIRECTION
CHECK DAM (SD 5-4)
DIRTY WATER DIVERSION
IMPERMEABLE BUND
TEMPORARY PUMP/PIPE LINE
NATURAL WATERWAY
UST - U-SHAPED SEDIMENT TRAP (IECA SD UST-01)
STANDARD DRAWINGS AND TYPICAL NOTES ARE PROVIDED ON DRAWINGS 15000196_P01_ESCP000-006.
ROADSIDE SWALE DRAIN: • MIN. 0.5m BASE WIDTH • MIN. 0.4m DEEP • SIDE SLOPES MAX. 3:1 (H:V) • LINED WITH JUTE MESH (SD 5-7), SEEDING AND VITAL STONEWALL (OR EQUIVALENT)
CHECKS PROVIDED IN SWALE DRAIN AT MAX. 10m INTERVALS
DIVERSION MOUNDS INSTALLED UPSLOPE OF WATERWAY (BOTH SIDES) TO DIRECT DIRTY RUNOFF INTO RFD'S. THESE ARE ONLY REQUIRED PRIOR TO RAINFALL
RFD OVERFLOWS DIRECTED ONTO GRASSED LANDS AWAY FROM WORKS
UST
IMPERMEABLE BUNDS INSTALLED AROUND PILING WORKS (BOTH SIDES). USE SANDBAG BUNDS OR SIMILAR
ALL EXPOSED SURFACES WITHIN THE WATERWAY EXTENT MUST BE COVERED.
DIVERT TRAFFIC ONTO THE TEMPORARY ROADWAY CROSSING WHILE CONSTRUCTION OF NEW BRIDGE OCCURS
COMPOUND & PARKING
ROAD
HYANDRA
CREEK
STAGE 2 ESCP - BRIDGE CONSTRUCTION
SCALE - 1:1000
DIVERT TRAFFIC ONTO NEW BRIDGE PRIOR TO THE REMOVAL OF THE TEMPORARY CROSSING
IF RAINFALL IS FORECAST ALL EXPOSED SURFACES WITHIN THE WATERWAY EXTENT MUST BE COVERED.
STAGE 3 ESCP - REMOVAL OF TEMPORARY ROADWAY CROSSING
SCALE - 1:500
REV DATE DES. DRN. APP. REVISION DETAILS
00 21/07/16 A.J.B. A.J.B. M.P. ISSUE FOR APPROVAL
A 19/10/15 AB/MP A.J.B. A.M. DRAFT ISSUE - FOR CONSULTATION
DRAWING STATUS
DESIGN BY A.J.B. / M.P.
DRAWN BY A.J.B.
FINAL APPROVAL M.P.
SCALE: (on A3 Original) AS SHOWN
FOR APPROVAL
North
CLIENT AUSTRALIAN ZIRCONIA LTD
SEEC
PROJECT TITLE DUBBO ZIRCONIA PROJECT
DRAWING TITLE HYANDRA CREEK BRIDGE CONSTRUCTION ESCP - STAGE 2 & 3
PROJECT NO. 15000196 SUB-PR NO. P01 DRAWING NO. ESCP202 REV 00
Plot Date: Thursday, 21 July 2016 9:09:34 AM
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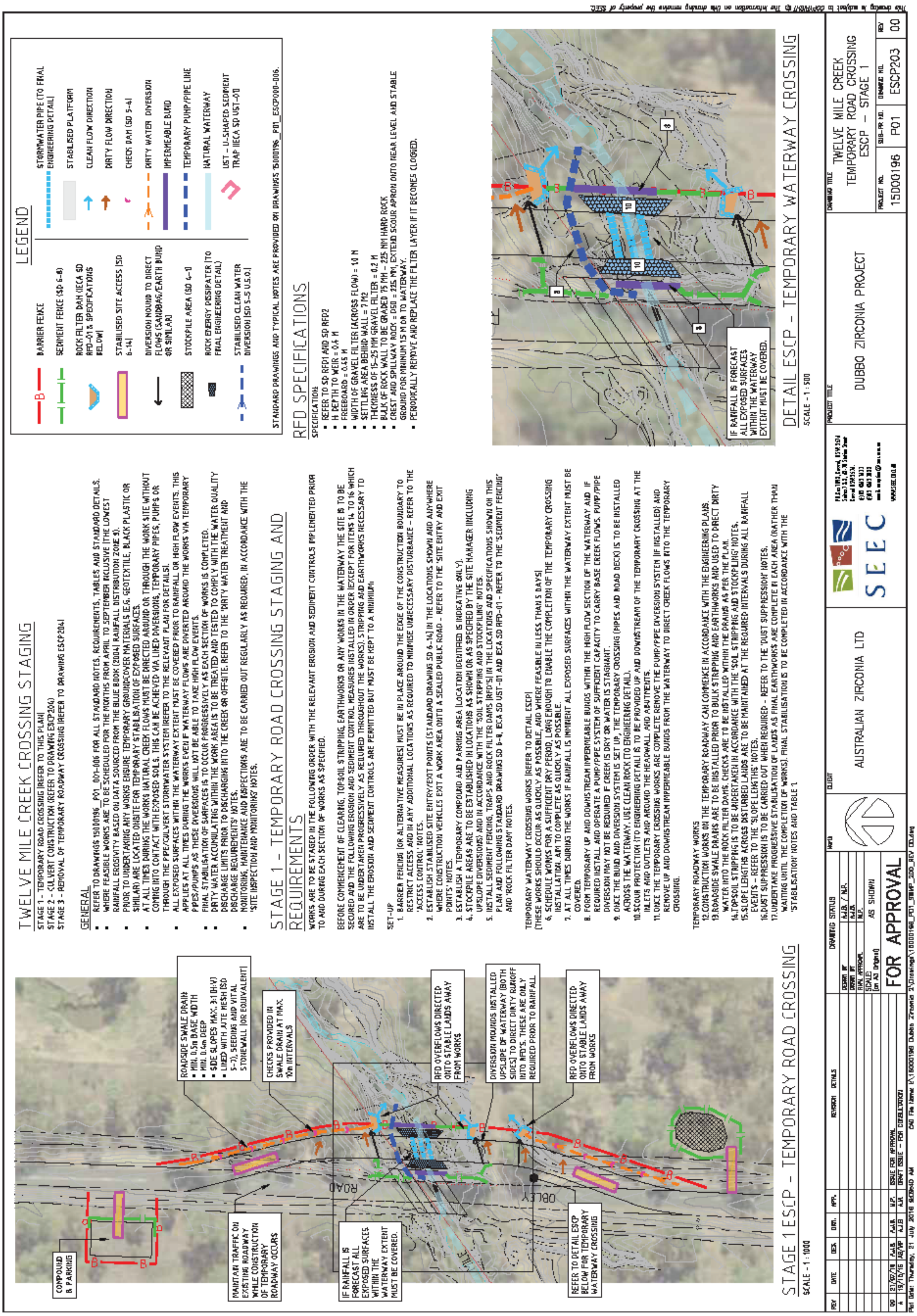
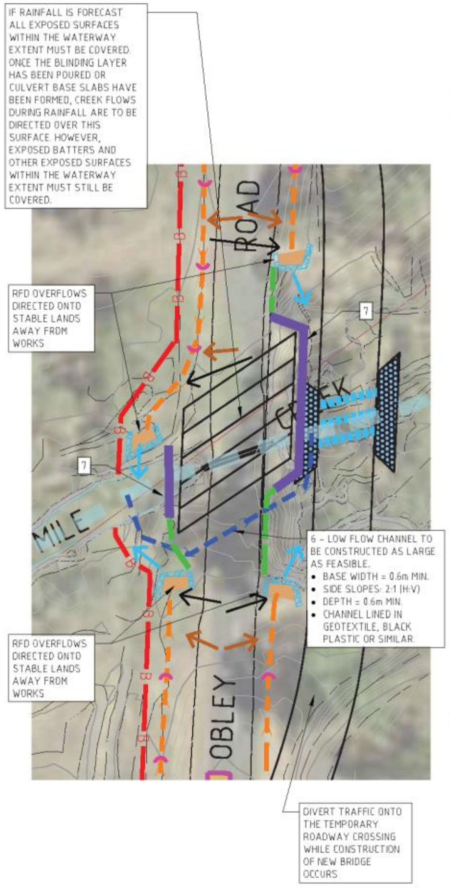

STAGE 1 ESCP - TEMPORARY ROAD CROSSING
SCALE - 1 : 1000
COMPOUND & PARKING
MAINTAIN TRAFFIC ON EXISTING ROADWAY WHILE CONSTRUCTION OF TEMPORARY ROADWAY OCCURS
IF RAINFALL IS FORECAST ALL EXPOSED SURFACES WITHIN THE WATERWAY EXTENT MUST BE COVERED.
REFER TO DETAIL ESCP BELOW FOR TEMPORARY WATERWAY CROSSING
ROADSIDE SWALE DRAIN: MIN. 0.5m BASE WIDTH; MIN. 0.4m DEEP; SIDE SLOPES MAX. 3:1 (H:V); LINED WITH JUTE MESH (SD 5-7), SEEDING AND VITAL STONEWALL (OR EQUIVALENT)
CHECKS PROVIDED IN SWALE DRAIN AT MAX. 10m INTERVALS
RFD OVERFLOWS DIRECTED ONTO STABLE LANDS AWAY FROM WORKS
DIVERSION MOUNDS INSTALLED UPSLOPE OF WATERWAY (BOTH SIDES) TO DIRECT DIRTY RUNOFF INTO RFD'S. THESE ARE ONLY REQUIRED PRIOR TO RAINFALL
RFD OVERFLOWS DIRECTED ONTO STABLE LANDS AWAY FROM WORKS
ROAD
OBLEY
TWELVE MILE CREEK CROSSING STAGING
STAGE 1 - TEMPORARY ROAD CROSSING (REFER TO THIS PLAN)
STAGE 2 - CULVERT CONSTRUCTION (REFER TO DRAWING ESCP204)
STAGE 3 - REMOVAL OF TEMPORARY ROADWAY CROSSING (REFER TO DRAWING ESCP204)
GENERAL
REFER TO DRAWINGS 15000196_P01_001-006 FOR ALL STANDARD NOTES, REQUIREMENTS, TABLES AND STANDARD DETAILS.
WHERE FEASIBLE WORKS ARE TO BE SCHEDULED FOR THE MONTHS FROM APRIL TO SEPTEMBER INCLUSIVE (THE LOWEST RAINFALL EROSIVITY BASED ON DATA SOURCED FROM THE BLUE BOOK (2004) RAINFALL DISTRIBUTION ZONE 5).
PRIOR TO UNDERTAKING ANY WORKS ENSURE TEMPORARY GROUNDCOVER MATERIALS (E.G. GEOTEXTILE, BLACK PLASTIC OR SIMILAR) ARE LOCATED ONSITE FOR TEMPORARY STABILISATION OF EXPOSED SURFACES.
AT ALL TIMES DURING THE WORKS NATURAL CREEK FLOWS MUST BE DIRECTED AROUND OR THROUGH THE WORK SITE WITHOUT COMING INTO CONTACT WITH EXPOSED SOILS. THIS CAN BE ACHIEVED VIA LINED DIVERSIONS, TEMPORARY PIPES, PUMPS OR THROUGH THE PIPE/CULVERT STORMWATER SYSTEM (REFER TO THE RELEVANT PLAN FOR DETAILS).
ALL EXPOSED SURFACES WITHIN THE WATERWAY EXTENT MUST BE COVERED PRIOR TO RAINFALL OR HIGH FLOW EVENTS. THIS APPLIES AT ALL TIMES DURING THE WORKS EVEN IF WATERWAY FLOWS ARE DIVERTED AROUND THE WORKS VIA TEMPORARY PIPES/PUMPS AS THESE DIVERSIONS WILL NOT BE ABLE TO TAKE HIGH FLOW EVENTS.
FINAL STABILISATION OF SURFACES IS TO OCCUR PROGRESSIVELY AS EACH SECTION OF WORKS IS COMPLETED.
DIRTY WATER ACCUMULATING WITHIN THE WORK AREA IS TO BE TREATED AND TESTED TO COMPLY WITH THE WATER QUALITY DISCHARGE LIMITS PRIOR TO DISCHARGING INTO THE CREEK OR OFFSITE. REFER TO THE 'DIRTY WATER TREATMENT AND DISCHARGE REQUIREMENTS' NOTES.
MONITORING, MAINTENANCE AND INSPECTIONS ARE TO BE CARRIED OUT REGULARLY AS REQUIRED, IN ACCORDANCE WITH THE 'SITE INSPECTION AND MONITORING' NOTES.
STAGE 1 - TEMPORARY ROAD CROSSING STAGING AND REQUIREMENTS
WORKS ARE TO BE STAGED IN THE FOLLOWING ORDER WITH THE RELEVANT EROSION AND SEDIMENT CONTROLS IMPLEMENTED PRIOR TO AND DURING EACH SECTION OF WORKS AS SPECIFIED.
BEFORE COMMENCEMENT OF CLEARING, TOPSOIL STRIPPING, EARTHWORKS OR ANY WORKS IN THE WATERWAY THE SITE IS TO BE SECURED AND THE FOLLOWING EROSION AND SEDIMENT CONTROL MEASURES INSTALLED IN ORDER (EXCEPT FOR ITEMS 14 TO 16 WHICH ARE TO BE UNDERTAKEN PROGRESSIVELY AS REQUIRED THROUGHOUT THE WORKS). STRIPPING AND EARTHWORKS NECESSARY TO INSTALL THE EROSION AND SEDIMENT CONTROLS ARE PERMITTED BUT MUST BE KEPT TO A MINIMUM:
SET-UP
1. BARRIER FENCING (OR ALTERNATIVE MEASURES) MUST BE IN PLACE AROUND THE EDGE OF THE CONSTRUCTION BOUNDARY TO RESTRICT ACCESS AND IN ANY ADDITIONAL LOCATIONS AS REQUIRED TO MINIMISE UNNECESSARY DISTURBANCE - REFER TO THE 'ACCESS CONTROL' NOTES.
2. ESTABLISH STABILISED SITE ENTRY/EXIT POINTS (STANDARD DRAWING SD 6-14) IN THE LOCATIONS SHOWN AND ANYWHERE WHERE CONSTRUCTION VEHICLES EXIT A WORK AREA ONTO A SEALED PUBLIC ROAD - REFER TO THE 'SITE ENTRY AND EXIT POINTS' NOTES.
3. ESTABLISH A TEMPORARY COMPOUND AND PARKING AREA (LOCATION IDENTIFIED IS INDICATIVE ONLY).
4. STOCKPILE AREAS ARE TO BE ESTABLISHED IN LOCATIONS AS SHOWN OR AS SPECIFIED BY THE SITE MANAGER (INCLUDING UPSLOPE DIVERSIONS) AND IN ACCORDANCE WITH THE 'SOIL STRIPPING AND STOCKPILING' NOTES.
5. INSTALL SEDIMENT FENCING, TRAPS AND ROCK FILTER DAMS (RFD'S) IN THE LOCATIONS AND SPECIFICATIONS SHOWN ON THIS PLAN AND FOLLOWING STANDARD DRAWING SD 6-8, IECA SD UST-01 AND IECA SD RFD-01 - REFER TO THE 'SEDIMENT FENCING' AND 'ROCK FILTER DAM' NOTES.
TEMPORARY WATERWAY CROSSING WORKS (REFER TO DETAIL ESCP)
(THESE WORKS SHOULD OCCUR AS QUICKLY AS POSSIBLE, AND WHERE FEASIBLE IN LESS THAN 5 DAYS)
6. SCHEDULE WORKS FOR A SUFFICIENT DRY PERIOD, LONG ENOUGH TO ENABLE THE COMPLETION OF THE TEMPORARY CROSSING INSTALLATION. AIM TO COMPLETE AS QUICKLY AS POSSIBLE.
7. AT ALL TIMES DURING THE WORKS IF RAINFALL IS IMMINENT ALL EXPOSED SURFACES WITHIN THE WATERWAY EXTENT MUST BE COVERED.
8. FORM TEMPORARY UP AND DOWNSTREAM IMPERMEABLE BUNDS WITHIN THE HIGH FLOW SECTION OF THE WATERWAY AND IF REQUIRED INSTALL AND OPERATE A PUMP/PIPE SYSTEM OF SUFFICIENT CAPACITY TO CARRY BASE CREEK FLOWS. PUMP/PIPE DIVERSION MAY NOT BE REQUIRED IF CREEK IS DRY OR WATER IS STAGNANT.
9. ONCE THE BUND AND DIVERSION SYSTEM IS SET UP, THE TEMPORARY CROSSING (PIPES AND ROAD DECK) IS TO BE INSTALLED ACROSS THE WATERWAY. USE CLEAN ROCK (TO ENGINEERING DETAIL).
10. SCOUR PROTECTION (TO ENGINEERING DETAIL) IS TO BE PROVIDED UP AND DOWNSTREAM OF THE TEMPORARY CROSSING AT THE INLETS AND OUTLETS AND AROUND THE HEADWALL AND ABUTMENTS.
11. ONCE THE TEMPORARY CROSSING WORKS ARE COMPLETE REMOVE THE PUMP/PIPE DIVERSION SYSTEM (IF INSTALLED) AND REMOVE UP AND DOWNSTREAM IMPERMEABLE BUNDS FROM THE WATERWAY TO DIRECT CREEK FLOWS INTO THE TEMPORARY CROSSING.
TEMPORARY ROADWAY WORKS
12. CONSTRUCTION WORKS ON THE TEMPORARY ROADWAY CAN COMMENCE IN ACCORDANCE WITH THE ENGINEERING PLANS.
13. ROADSIDE SWALE DRAINS ARE TO BE INSTALLED PRIOR TO BULK STRIPPING AND EARTHWORKS AND USED TO DIRECT DIRTY WATER INTO THE ROCK FILTER DAMS. CHECKS ARE TO BE INSTALLED WITHIN THE DRAINS AS PER THE PLAN.
14. TOPSOIL STRIPPING IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE 'SOIL STRIPPING AND STOCKPILING' NOTES.
15. SLOPE LENGTHS ACROSS DISTURBED LANDS ARE TO BE MAINTAINED AT THE REQUIRED INTERVALS DURING ALL RAINFALL EVENTS - REFER TO THE 'SLOPE LENGTHS' NOTES.
16. DUST SUPPRESSION IS TO BE CARRIED OUT WHEN REQUIRED - REFER TO THE 'DUST SUPPRESSION' NOTES.
17. UNDERTAKE PROGRESSIVE STABILISATION OF LANDS AS FINAL EARTHWORKS ARE COMPLETE IN EACH AREA (RATHER THAN WAITING UNTIL THE COMPLETION OF WORKS). FINAL STABILISATION IS TO BE COMPLETED IN ACCORDANCE WITH THE 'STABILISATION' NOTES AND TABLE 1.
LEGEND
BARRIER FENCE
SEDIMENT FENCE (SD 6-8)
ROCK FILTER DAM (IECA SD RFD-01 & SPECIFICATIONS BELOW)
STABILISED SITE ACCESS (SD 6-14)
DIVERSION MOUND TO DIRECT FLOWS (SANDBAG/EARTH BUND OR SIMILAR)
STOCKPILE AREA (SD 4-1)
ROCK ENERGY DISSIPATER (TO FINAL ENGINEERING DETAIL)
STABILISED CLEAN WATER DIVERSION (SD 5-5 U.S.O.)
STORMWATER PIPE (TO FINAL ENGINEERING DETAIL)
STABLISED PLATFORM
CLEAN FLOW DIRECTION
DIRTY FLOW DIRECTION
CHECK DAM (SD 5-4)
DIRTY WATER DIVERSION
IMPERMEABLE BUND
TEMPORARY PUMP/PIPE LINE
NATURAL WATERWAY
UST - U-SHAPED SEDIMENT TRAP (IECA SD UST-01)
STANDARD DRAWINGS AND TYPICAL NOTES ARE PROVIDED ON DRAWINGS 15000196_P01_ESCP000-006.
RFD SPECIFICATIONS
SPECIFICATION:
REFER TO SD RFD1 AND SD RFD2
H: DEPTH TO WEIR = 0.4 M
FREEBOARD = 0.45 M
WIDTH OF GRAVEL FILTER (ACROSS FLOW) = 10 M
SETTLING AREA BEHIND WALL = 7 M2
THICKNESS OF 15-25 MM GRAVEL FILTER = 0.2 M
BULK OF ROCK WALL TO BE GRADED 75 MM - 225 MM HARD ROCK
CREST AND SPILLWAY ROCK = D50 = 225 MM, EXTEND SCOUR APRON ONTO NEAR LEVEL AND STABLE GROUND FOR MINIMUM 1.5 M OR TO WATERWAY.
PERIODICALLY REMOVE AND REPLACE THE FILTER LAYER IF IT BECOMES CLOGGED.
IF RAINFALL IS FORECAST ALL EXPOSED SURFACES WITHIN THE WATERWAY EXTENT MUST BE COVERED.
DETAIL ESCP - TEMPORARY WATERWAY CROSSING
SCALE - 1 : 500
DRAWING STATUS
AS SHOWN
FOR APPROVAL
CLIENT
AUSTRALIAN ZIRCONIA LTD
SEEC
PROJECT TITLE
DUBBO ZIRCONIA PROJECT
DRAWING TITLE
TWELVE MILE CREEK TEMPORARY ROAD CROSSING ESCP - STAGE 1
PROJECT NO. 15000196
SUB-PR NO. P01
DRAWING NO. ESCP203
REV 00



STAGE 2 ESCP - CULVERT CONSTRUCTION

SCALE - 1 : 1000

TWELVE MILE CREEK CROSSING STAGING

STAGE 1 - TEMPORARY ROAD CROSSING (REFER TO DRAWING ESCP203)
STAGE 2 - CULVERT CONSTRUCTION (REFER TO THIS PLAN)
STAGE 3 - REMOVAL OF TEMPORARY ROADWAY CROSSING (REFER TO THIS PLAN)

GENERAL

- REFER TO DRAWINGS 15000196_P01_001-006 FOR ALL STANDARD NOTES, REQUIREMENTS, TABLES AND STANDARD DETAILS.
- REFER TO THE GENERAL REQUIREMENTS ON DRAWING ESCP203

STAGE 2 - CULVERT CONSTRUCTION STAGING AND REQUIREMENTS

WORKS ARE TO BE STAGED IN THE FOLLOWING ORDER WITH THE RELEVANT EROSION AND SEDIMENT CONTROLS IMPLEMENTED PRIOR TO AND DURING EACH SECTION OF WORKS AS SPECIFIED.

BEFORE COMMENCEMENT OF CLEARING, TOPSOIL STRIPPING, EARTHWORKS OR ANY WORKS IN THE WATERWAY THE SITE IS TO BE SECURED AND THE FOLLOWING EROSION AND SEDIMENT CONTROL MEASURES INSTALLED IN ORDER (EXCEPT FOR ITEMS 12 TO 14 WHICH ARE TO BE UNDERTAKEN PROGRESSIVELY AS REQUIRED THROUGHOUT THE WORKS). STRIPPING AND EARTHWORKS NECESSARY TO INSTALL THE EROSION AND SEDIMENT CONTROLS ARE PERMITTED BUT MUST BE KEPT TO AN ABSOLUTE MINIMUM:

SET-UP

1. BARRIER FENCING (OR ALTERNATIVE MEASURES) MUST BE IN PLACE AROUND THE EDGE OF THE CONSTRUCTION BOUNDARY TO RESTRICT ACCESS AND IN ANY ADDITIONAL LOCATIONS AS REQUIRED TO MINIMISE UNNECESSARY DISTURBANCE - REFER TO THE 'ACCESS CONTROL' NOTES.
2. ESTABLISH STABILISED SITE ENTRY/EXIT POINTS (STANDARD DRAWING SD 6-14) IN THE LOCATIONS SHOWN AND ANYWHERE WHERE CONSTRUCTION VEHICLES EXIT A WORK AREA ONTO A PUBLIC ROAD - REFER TO THE 'SITE ENTRY AND EXIT POINTS' NOTES.
3. INSTALL SEDIMENT FENCING, TRAPS AND ROCK FILTER DAMS (RFD'S) IN THE LOCATIONS AND SPECIFICATIONS SHOWN ON THIS PLAN AND FOLLOWING STANDARD DRAWING SD 6-8, IECA SD UST-01 AND IECA SD RFD-01 - REFER TO THE 'SEDIMENT FENCING' AND 'ROCK FILTER DAM' NOTES.

CULVERT CONSTRUCTION WORKS

4. SCHEDULE WORKS FOR A SUFFICIENT DRY PERIOD, LONG ENOUGH TO ENABLE THE BLINDING LAYER OF THE CULVERT TO BE POURED. AIM TO COMPLETE AS QUICKLY AS POSSIBLE.
5. AT ALL TIMES DURING THE WORKS IF RAINFALL IS IMMINENT ALL EXPOSED SURFACES WITHIN THE WATERWAY EXTENT MUST BE COVERED.
6. CONSTRUCT AND LINE THE LOW FLOW CLEAN WATER DIVERSION CHANNEL AROUND THE CULVERT WORKS.
7. FORM TEMPORARY UP AND DOWNSTREAM IMPERMEABLE BUNDS WITHIN THE HIGH FLOW SECTION OF THE WATERWAY AND DIRECT CREEK FLOWS INTO THE CLEAN WATER DIVERSION CHANNEL TO TAKE LOW FLOWS AROUND THE WORKS.
8. ONCE CREEK FLOWS ARE DIVERTED AROUND THE WORKS, THE CULVERT WORKS CAN COMMENCE.
9. SCOUR PROTECTION (TO ENGINEERING DETAIL) IS TO BE PROVIDED UP AND DOWNSTREAM OF THE CULVERT CROSSING AT THE INLETS AND OUTLETS AND AROUND THE HEADWALL AND ABUTMENTS.
10. ONCE THE CULVERT WORKS ARE COMPLETE REMOVE THE PUMP/PIPE DIVERSION SYSTEM AND REMOVE UP AND DOWNSTREAM IMPERMEABLE BUNDS FROM THE WATERWAY TO DIRECT CREEK FLOWS INTO THE NEWS CULVERTS.

ROAD CONSTRUCTION WORKS

11. CONSTRUCTION WORKS ON THE ROADWAY CAN COMMENCE IN ACCORDANCE WITH THE ENGINEERING PLANS.
12. ROADSIDE SWALE DRAINS ARE TO BE INSTALLED PRIOR TO BULK STRIPPING AND EARTHWORKS AND USED TO DIRECT DIRTY WATER INTO THE ROCK FILTER DAMS. CHECKS TO BE INSTALLED WITHIN THE DRAINS AS PER THE PLAN.
13. TOPSOIL STRIPPING IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE 'SOIL STRIPPING AND STOCKPILING' NOTES.
14. SLOPE LENGTHS ACROSS DISTURBED LANDS ARE TO BE MAINTAINED AT THE REQUIRED INTERVALS DURING ALL RAINFALL EVENTS - REFER TO THE 'SLOPE LENGTHS' NOTES.
15. DUST SUPPRESSION IS TO BE CARRIED OUT WHEN REQUIRED (REFER TO THE 'DUST SUPPRESSION' NOTES.
16. UNDERTAKE PROGRESSIVE STABILISATION OF LANDS AS FINAL EARTHWORKS ARE COMPLETE IN EACH AREA (RATHER THAN WAITING UNTIL THE COMPLETION OF WORKS). FINAL STABILISATION IS TO BE COMPLETED IN ACCORDANCE WITH THE 'STABILISATION' NOTES AND TABLE 1.

STAGE 3 - REMOVAL OF TEMPORARY ROADWAY CROSSING

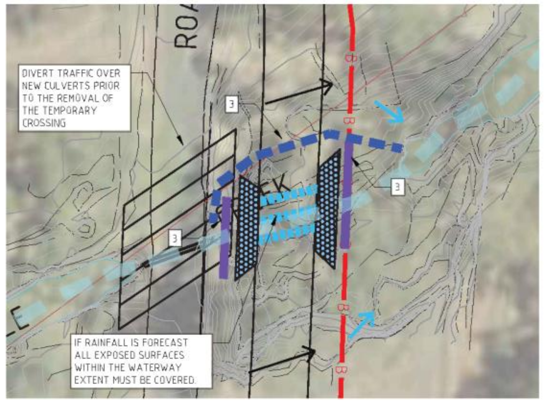
(THESE WORKS SHOULD OCCUR AS QUICKLY AS POSSIBLE, AND WHERE FEASIBLE IN LESS THAN 5 DAYS)

1. SCHEDULE WORKS FOR A SUFFICIENT DRY PERIOD, LONG ENOUGH TO ENABLE THE REMOVAL OF THE TEMPORARY CROSSING AND COMPLETION OF STABILISATION WORKS. AIM TO COMPLETE AS QUICKLY AS POSSIBLE.
2. AT ALL TIMES DURING THE WORKS IF RAINFALL IS IMMINENT ALL EXPOSED SURFACES WITHIN THE WATERWAY EXTENT MUST BE COVERED.
3. FORM TEMPORARY UP AND DOWNSTREAM IMPERMEABLE BUNDS WITHIN THE HIGH FLOW SECTION OF THE WATERWAY AND AND IF REQUIRED INSTALL AND OPERATE A PUMP/PIPE SYSTEM OF SUFFICIENT CAPACITY TO TAKE CREEK FLOWS AROUND THE WORKS. PUMP/PIPE DIVERSION MAY NOT BE REQUIRED IF CREEK IS DRY OR WATER IS STAGNANT.
4. ONCE THE DIVERSION SYSTEM IS SET UP, THE TEMPORARY CROSSING IS TO BE REMOVED AND REHABILITATION/STABILISATION WORKS UNDERTAKEN IN ACCORDANCE WITH ENGINEERING DETAIL.
5. ONCE THE TEMPORARY CROSSING REMOVAL AND REHABILITATION WORKS ARE COMPLETE REMOVE THE PUMP/PIPE DIVERSION SYSTEM AND REMOVE UP AND DOWNSTREAM IMPERMEABLE BUNDS FROM THE WATERWAY.

LEGEND

- BARRIER FENCE
- SEDIMENT FENCE (SD 6-8)
- ROCK FILTER DAM (IECA SD RFD-01 & SPECIFICATIONS BELOW)
- STABILISED SITE ACCESS (SD 6-14)
- DIVERSION MOUND TO DIRECT FLOWS (SANDBAG/EARTH BUND OR SIMILAR)
- STOCKPILE AREA (SD 4-1)
- ROCK ENERGY DISSIPATER (TO FINAL ENGINEERING DETAIL)
- STABILISED CLEAN WATER DIVERSION (SD 5-5 U.S.O.)
- STORMWATER PIPE (TO FINAL ENGINEERING DETAIL)
- STABILISED PLATFORM
- CLEAN FLOW DIRECTION
- DIRTY FLOW DIRECTION
- CHECK DAM (SD 5-4)
- DIRTY WATER DIVERSION
- IMPERMEABLE BUND
- TEMPORARY PUMP/PIPE LINE
- NATURAL WATERWAY
- UST - U-SHAPED SEDIMENT TRAP (IECA SD UST-01)

STANDARD DRAWINGS AND TYPICAL NOTES ARE PROVIDED ON DRAWINGS 15000196_P01_ESCP000-006.



STAGE 3 ESCP - REMOVAL OF TEMPORARY ROADWAY CROSSING

SCALE - 1 : 500

REV	DATE	DES.	DRN.	APP.	REVISION DETAILS
00	21/07/16	A.J.B.	A.J.B.	M.P.	ISSUE FOR APPROVAL
A	19/10/15	AB/MP	A.J.B.	A.M.	DRAFT ISSUE - FOR CONSULTATION

DRAWING STATUS: DESIGN BY A.J.B. / M.P.; DRAWN BY A.J.B.; FINAL APPROVAL M.P.; SCALE: (on A3 Original) AS SHOWN

FOR APPROVAL

CLIENT: AUSTRALIAN ZIRCONIA LTD

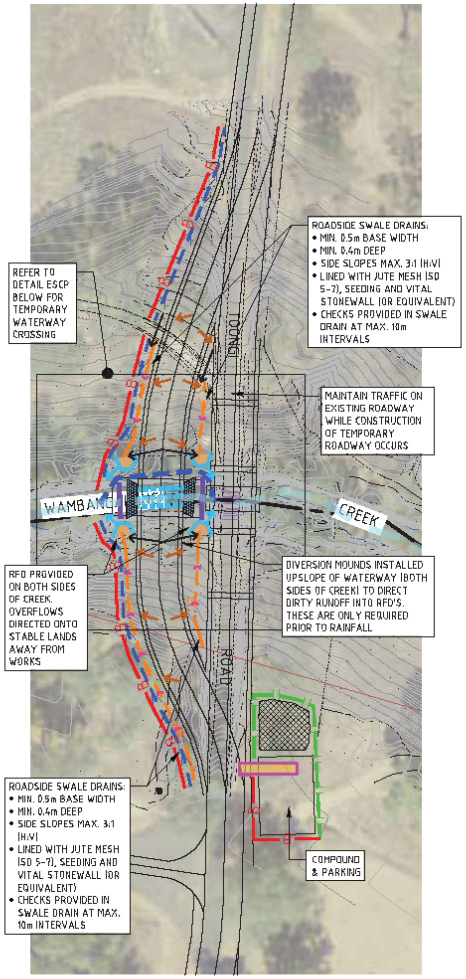
SEEC

PROJECT TITLE: DUBBO ZIRCONIA PROJECT

DRAWING TITLE: TWELVE MILE CREEK CULVERT CONSTRUCTION ESCP - STAGE 2 & 3

PROJECT NO.	SUB-PR NO.	DRAWING NO.	REV
15000196	P01	ESCP204	00

Plot Date: Thursday, 21 July 2016 9:09:44 AM CAD File Name: I:\15000196 Dubbo Zirconia 2\Drawings\15000196_P01_SWMP_200_REV 00.dwg



STAGE 1 ESCP – TEMPORARY ROAD CROSSING

SCALE – 1 : 1000

WAMBANGALANG CREEK CROSSING STAGING

STAGE 1 – TEMPORARY ROAD CROSSING (REFER TO THIS PLAN)
STAGE 2 – BRIDGE CONSTRUCTION (REFER TO DRAWING ESCP206)
STAGE 3 – REMOVAL OF TEMPORARY ROADWAY CROSSING (REFER TO DRAWING ESCP206)

GENERAL

- REFER TO DRAWINGS 15000196_P01_001-006 FOR ALL STANDARD NOTES, REQUIREMENTS, TABLES AND STANDARD DETAILS.
- WHERE FEASIBLE WORKS ARE TO BE SCHEDULED FOR THE MONTHS FROM APRIL TO SEPTEMBER INCLUSIVE (THE LOWEST RAINFALL EROSIVITY BASED ON DATA SOURCED FROM THE BLUE BOOK (2004) RAINFALL DISTRIBUTION ZONE 9).
- PRIOR TO UNDERTAKING ANY WORKS ENSURE TEMPORARY GROUNDCOVER MATERIALS (E.G. GEOTEXTILE, BLACK PLASTIC OR SIMILAR) ARE LOCATED ONSITE FOR TEMPORARY STABILISATION OF EXPOSED SURFACES.
- AT ALL TIMES DURING THE WORKS NATURAL CREEK FLOWS MUST BE DIRECTED AROUND OR THROUGH THE WORKS SITE WITHOUT COMING INTO CONTACT WITH EXPOSED SOILS. THIS CAN BE ACHIEVED VIA LINED DIVERSIONS, TEMPORARY PIPES, PUMPS OR THROUGH THE PIPE/CULVERT STORMWATER SYSTEM (REFER TO THE RELEVANT PLAN FOR DETAILS).
- ALL EXPOSED SURFACES WITHIN THE WATERWAY EXTENT MUST BE COVERED PRIOR TO RAINFALL OR HIGH FLOW EVENTS. THIS APPLIES AT ALL TIMES DURING THE WORKS EVEN IF WATERWAY FLOWS ARE DIVERTED AROUND THE WORK VIA TEMPORARY PIPES/PUMPS AS THESE DIVERSIONS WILL NOT BE ABLE TO TAKE HIGH FLOW EVENTS.
- FINAL STABILISATION OF SURFACES IS TO OCCUR PROGRESSIVELY AS EACH SECTION OF WORKS IS COMPLETED.
- DIRTY WATER ACCUMULATING WITHIN THE WORK AREA IS TO BE TREATED AND TESTED TO COMPLY WITH THE WATER QUALITY DISCHARGE LIMITS PRIOR TO DISCHARGING INTO THE CREEK OR OFFSITE. REFER TO THE 'DIRTY WATER TREATMENT AND DISCHARGE REQUIREMENTS' NOTES.
- MONITORING, MAINTENANCE AND INSPECTIONS ARE TO BE CARRIED OUT REGULARLY AS REQUIRED, IN ACCORDANCE WITH THE 'SITE INSPECTION AND MONITORING' NOTES.

STAGE 1 – TEMPORARY ROAD CROSSING STAGING AND REQUIREMENTS

WORKS ARE TO BE STAGED IN THE FOLLOWING ORDER WITH THE RELEVANT EROSION AND SEDIMENT CONTROLS IMPLEMENTED PRIOR TO AND DURING EACH SECTION OF WORKS AS SPECIFIED.

BEFORE COMMENCEMENT OF CLEARING, TOPSOIL STRIPPING, EARTHWORKS OR ANY WORKS IN THE WATERWAY THE SITE IS TO BE SECURED AND THE FOLLOWING EROSION AND SEDIMENT CONTROL MEASURES INSTALLED IN ORDER (EXCEPT FOR ITEMS 14 TO 16 WHICH ARE TO BE UNDERTAKEN PROGRESSIVELY AS REQUIRED THROUGHOUT THE WORKS). STRIPPING AND EARTHWORKS NECESSARY TO INSTALL THE EROSION AND SEDIMENT CONTROLS ARE PERMITTED BUT MUST BE KEPT TO A MINIMUM:

SET-UP

1. BARRIER FENCING (OR ALTERNATIVE MEASURES) MUST BE IN PLACE AROUND THE EDGE OF THE CONSTRUCTION BOUNDARY TO RESTRICT ACCESS AND IN ANY ADDITIONAL LOCATIONS AS REQUIRED TO MINIMISE UNNECESSARY DISTURBANCE – REFER TO THE 'ACCESS CONTROL' NOTES.
2. ESTABLISH STABILISED SITE ENTRY/EXIT POINTS (STANDARD DRAWING SD 6-14) IN THE LOCATIONS SHOWN AND ANYWHERE WHERE CONSTRUCTION VEHICLES EXIT A WORK AREA ONTO A SEALED PUBLIC ROAD – REFER TO THE 'SITE ENTRY AND EXIT POINTS' NOTES.
3. ESTABLISH A TEMPORARY COMPOUND AND PARKING AREA (LOCATION IDENTIFIED IS INDICATIVE ONLY).
5. STOCKPILE AREAS ARE TO BE ESTABLISHED IN LOCATIONS AS SHOWN OR AS SPECIFIED BY THE SITE MANAGER (INCLUDING UPSLOPE DIVERSIONS) AND IN ACCORDANCE WITH THE 'SOIL STRIPPING AND STOCKPILING' NOTES.
5. INSTALL CLEAN WATER DIVERSIONS INCLUDING LINING/STABILISATION.
6. INSTALL SEDIMENT FENCING AND ROCK FILTER DAMS (RFD'S) IN THE LOCATIONS AND SPECIFICATIONS SHOWN ON THIS PLAN AND FOLLOWING STANDARD DRAWING SD 6-8 AND IECA SD RFD-01 – REFER TO THE 'SEDIMENT FENCING' AND 'ROCK FILTER DAM' NOTES.

TEMPORARY WATERWAY CROSSING WORKS (REFER TO DETAIL ESCP)
(THESE WORKS SHOULD OCCUR AS QUICKLY AS POSSIBLE, AND WHERE FEASIBLE IN LESS THAN 5 DAYS)

7. SCHEDULE WORKS FOR A SUFFICIENT DRY PERIOD, LONG ENOUGH TO ENABLE THE COMPLETION OF THE TEMPORARY CROSSING INSTALLATION. AIM TO COMPLETE AS QUICKLY AS POSSIBLE.
8. FORM TEMPORARY UP AND DOWNSTREAM IMPERMEABLE BUNDS WITHIN THE WATERWAY AND INSTALL A PUMP/PIPE SYSTEM TO TAKE CREEK FLOWS AROUND THE WORKS. PUMP/PIPE DIVERSION TO BE OF SUFFICIENT CAPACITY TO CARRY CREEK BASE FLOWS.
9. ONCE CREEK FLOWS ARE DIVERTED, THE TEMPORARY CROSSING (PIPES AND ROAD DECK) IS TO BE INSTALLED ACROSS THE WATERWAY. USE CLEAN ROCK (TO ENGINEERING DETAIL).
10. SCOUR PROTECTION (TO ENGINEERING DETAIL) IS TO BE PROVIDED UP AND DOWNSTREAM OF THE TEMPORARY CROSSING AT THE INLETS AND OUTLETS AND AROUND THE HEADWALL AND ABUTMENTS.
11. ONCE THE TEMPORARY CROSSING WORKS ARE COMPLETE REMOVE THE PUMP/PIPE DIVERSION SYSTEM AND REMOVE UP AND DOWNSTREAM IMPERMEABLE BUNDS FROM THE WATERWAY TO DIRECT CREEK FLOWS INTO THE TEMPORARY CROSSING.

TEMPORARY ROADWAY WORKS

12. CONSTRUCTION WORKS ON THE TEMPORARY ROADWAY CAN COMMENCE IN ACCORDANCE WITH THE ENGINEERING PLANS.
13. ROADSIDE SWALE DRAINS ARE TO BE INSTALLED PRIOR TO BULK STRIPPING AND EARTHWORKS AND USED TO DIRECT DIRTY WATER INTO THE ROCK FILTER DAMS. CHECKS ARE TO BE INSTALLED WITHIN THE DRAINS AS PER THE PLAN.
14. TOPSOIL STRIPPING IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE 'SOIL STRIPPING AND STOCKPILING' NOTES.
15. SLOPE LENGTHS ACROSS DISTURBED LANDS ARE TO BE MAINTAINED AT THE REQUIRED INTERVALS DURING ALL RAINFALL EVENTS – REFER TO THE 'SLOPE LENGTHS' NOTES.
16. DUST SUPPRESSION IS TO BE CARRIED OUT WHEN REQUIRED – REFER TO THE 'DUST SUPPRESSION' NOTES.
17. UNDERTAKE PROGRESSIVE STABILISATION OF LANDS AS FINAL EARTHWORKS ARE COMPLETE IN EACH AREA (RATHER THAN WAITING UNTIL THE COMPLETION OF WORKS). FINAL STABILISATION IS TO BE COMPLETED IN ACCORDANCE WITH THE 'STABILISATION' NOTES AND TABLE 1.

LEGEND

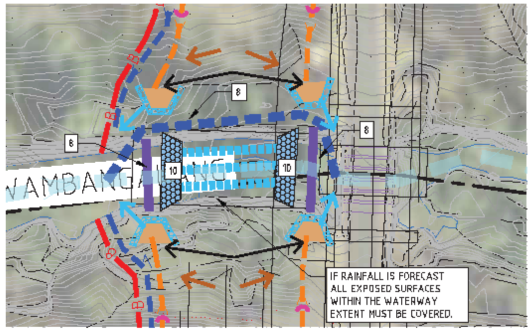
- BARRIER FENCE
- SEDIMENT FENCE (SD 6-8)
- ROCK FILTER DAM (IECA SD RFD-01 & SPECIFICATIONS BELOW)
- STABILISED SITE ACCESS (SD 6-14)
- DIVERSION MOUND TO DIRECT FLOWS (SANDBAG/EARTH BUND OR SIMILAR)
- STOCKPILE AREA (SD 4-1)
- ROCK ENERGY DISSIPATER (TO FINAL ENGINEERING DETAIL)
- STABILISED CLEAN WATER DIVERSION (SD 5-5 U.S.O.)
- STORMWATER PIPE (TO FINAL ENGINEERING DETAIL)
- STABILISED PLATFORM
- CLEAN FLOW DIRECTION
- DIRTY FLOW DIRECTION
- CHECK DAM (SD 5-4)
- DIRTY WATER DIVERSION
- IMPERMEABLE BUND
- TEMPORARY PUMP/PIPE LINE
- NATURAL WATERWAY
- UST – U-SHAPED SEDIMENT TRAP (IECA SD UST-01)

STANDARD DRAWINGS AND TYPICAL NOTES ARE PROVIDED ON DRAWINGS 15000196_P01_ESCP000-006.

RFD SPECIFICATIONS

SPECIFICATION:

- REFER TO SD RFD1 AND SD RFD2
- H: DEPTH TO WEIR = 0.4 M
- FREEBOARD = 0.45 M
- WIDTH OF GRAVEL FILTER (ACROSS FLOW) = 1.0 M
- SETTLING AREA BEHIND WALL = 7 M2
- THICKNESS OF 15-25 MM GRAVEL FILTER = 0.2 M
- BULK OF ROCK WALL TO BE GRADED 75 MM – 225 MM HARD ROCK
- CREST AND SPILLWAY ROCK = D50 = 225 MM, EXTEND SCOUR APRON ONTO NEAR LEVEL AND STABLE GROUND FOR MINIMUM 1.5 M OR TO WATERWAY.
- PERIODICALLY REMOVE AND REPLACE THE FILTER LAYER IF IT BECOMES CLOGGED.



DETAIL ESCP – TEMPORARY WATERWAY CROSSING

SCALE – 1 : 500

REV	DATE	DES.	DRN.	APP.	REVISION DETAILS
00	21/07/16	A.J.B.	A.J.B.	M.P.	ISSUE FOR APPROVAL
A	18/10/15	AB/MP	A.J.B	A.M.	DRAFT ISSUE – FOR CONSULTATION

DRAWING STATUS: DESIGN BY A.J.B. / M.P.; DRAWN BY A.J.B.; FINAL APPROVAL M.P.; SCALE: (on A3 Original) AS SHOWN

FOR APPROVAL

North

CLIENT: AUSTRALIAN ZIRCONIA LTD

SEEC

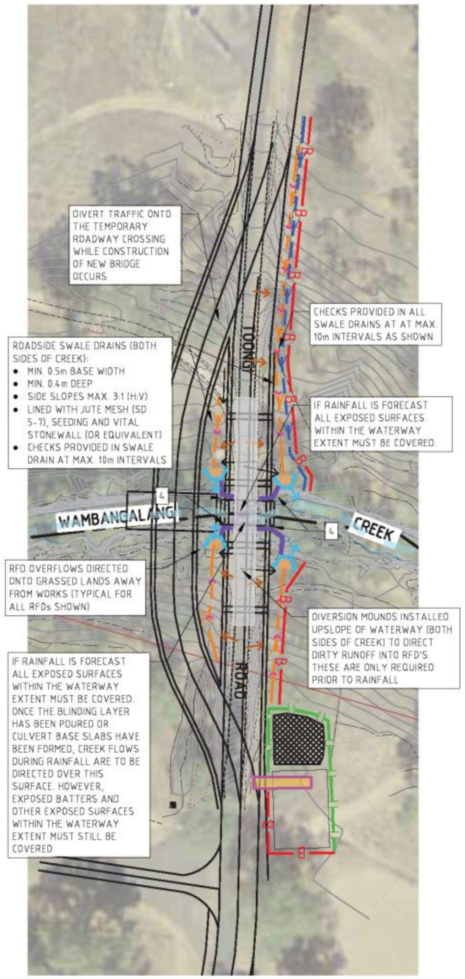
WWW.SEEC.COM.AU

PROJECT TITLE: DUBBO ZIRCONIA PROJECT

DRAWING TITLE: WAMBANGALONG CREEK TEMPORARY ROAD CROSSING ESCP – STAGE 1

PROJECT NO.	SUB-PR NO.	DRAWING NO.	REV
15000196	P01	ESCP205	00

Plot Date: Thursday, 21 July 2016 9:09:50 AM CAD File Name: I:\15000196 Dubbo Zirconia 2\Drawings\15000196_P01_SWMP_200_REV 00.dwg



STAGE 2 ESCP – CULVERT CONSTRUCTION

SCALE – 1 : 1000

WAMBANGALANG CREEK CROSSING STAGING

STAGE 1 – TEMPORARY ROAD CROSSING (REFER TO DRAWING ESCP205)
STAGE 2 – BRIDGE CONSTRUCTION (REFER TO THIS PLAN)
STAGE 3 – REMOVAL OF TEMPORARY ROADWAY CROSSING (REFER TO THIS PLAN)

GENERAL

- REFER TO DRAWINGS 15000196_P01_001-006 FOR ALL STANDARD NOTES, REQUIREMENTS, TABLES AND STANDARD DETAILS.
- REFER TO THE GENERAL REQUIREMENTS ON DRAWING ESCP205

STAGE 2 – BRIDGE CONSTRUCTION STAGING AND REQUIREMENTS

WORKS ARE TO BE STAGED IN THE FOLLOWING ORDER WITH THE RELEVANT EROSION AND SEDIMENT CONTROLS IMPLEMENTED PRIOR TO AND DURING EACH SECTION OF WORKS AS SPECIFIED.

BEFORE COMMENCEMENT OF CLEARING, TOPSOIL STRIPPING, EARTHWORKS OR ANY WORKS IN THE WATERWAY THE SITE IS TO BE SECURED AND THE FOLLOWING EROSION AND SEDIMENT CONTROL MEASURES INSTALLED IN ORDER (EXCEPT FOR ITEMS 11 TO 13 WHICH ARE TO BE UNDERTAKEN PROGRESSIVELY AS REQUIRED THROUGHOUT THE WORKS). STRIPPING AND EARTHWORKS NECESSARY TO INSTALL THE EROSION AND SEDIMENT CONTROLS ARE PERMITTED BUT MUST BE KEPT TO AN ABSOLUTE MINIMUM:

SET-UP

1. BARRIER FENCING (OR ALTERNATIVE MEASURES) MUST BE IN PLACE AROUND THE EDGE OF THE CONSTRUCTION BOUNDARY TO RESTRICT ACCESS AND IN ANY ADDITIONAL LOCATIONS AS REQUIRED TO MINIMISE UNNECESSARY DISTURBANCE – REFER TO THE 'ACCESS CONTROL' NOTES.
2. ESTABLISH STABILISED SITE ENTRY/EXIT POINTS (STANDARD DRAWING SD 6-14) IN THE LOCATIONS SHOWN AND ANYWHERE WHERE CONSTRUCTION VEHICLES EXIT A WORK AREA ONTO A PUBLIC ROAD – REFER TO THE 'SITE ENTRY AND EXIT POINTS' NOTES.
3. INSTALL SEDIMENT FENCING, TRAPS AND ROCK FILTER DAMS (RFD'S) IN THE LOCATIONS AND SPECIFICATIONS SHOWN ON THIS PLAN AND FOLLOWING STANDARD DRAWING SD 6-8, IECA SD UST-01 AND IECA SD RFD-01 – REFER TO THE 'SEDIMENT FENCING' AND 'ROCK FILTER DAM' NOTES.
4. INSTALL IMPERMEABLE BUNDS AROUND PILING WORKS. USE SANDBAG BUNDS OR SIMILAR.

BRIDGE CONSTRUCTION WORKS

5. ONCE ALL OF THE ABOVE MEASURES ARE IN PLACE AND STABLE THE BRIDGE CONSTRUCTION WORKS CAN COMMENCE IN ACCORDANCE WITH THE ENGINEERING PLANS (INCLUDING ARMOURING AND SCOUR PROTECTION).
8. EXISTING ROAD PAVEMENTS ARE TO BE MAINTAINED FOR THE PILING PLATFORM AND BRIDGE WORKING AREA IN THE LOCATIONS SHOWN. IF THE EXISTING PAVEMENTS ARE DISTURBED OR CANNOT BE MAINTAINED ALL SURFACES IN THESE LOCATIONS ARE TO BE MAINTAINED STABLE USING CRUSHED ROCK, AGGREGATE OR SIMILAR. ALTERNATIVELY SURFACES CAN BE SPRAYED WITH A SOIL POLYMER (E.G. VITAL STONEWALL) PRIOR TO RAINFALL.
9. ROADSIDE SWALE DRAINS ARE TO BE INSTALLED PRIOR TO BULK STRIPPING AND EARTHWORKS AND USED TO DIRECT DIRTY WATER INTO THE ROCK FILTER DAMS. CHECKS TO BE INSTALLED WITHIN THE DRAINS AS PER THE PLAN.
10. TOPSOIL STRIPPING IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE 'SOIL STRIPPING AND STOCKPILING' NOTES.
11. SLOPE LENGTHS ACROSS DISTURBED LANDS ARE TO BE MAINTAINED AT THE REQUIRED INTERVALS DURING ALL RAINFALL EVENTS – REFER TO THE 'SLOPE LENGTHS' NOTES.
12. DUST SUPPRESSION IS TO BE CARRIED OUT WHEN REQUIRED – REFER TO THE 'DUST SUPPRESSION' NOTES.
13. UNDERTAKE PROGRESSIVE STABILISATION OF LANDS AS FINAL EARTHWORKS ARE COMPLETE IN EACH AREA (RATHER THAN WAITING UNTIL THE COMPLETION OF WORKS). FINAL STABILISATION IS TO BE COMPLETED IN ACCORDANCE WITH THE 'STABILISATION' NOTES AND TABLE 1.

STAGE 3 – REMOVAL OF TEMPORARY ROADWAY CROSSING

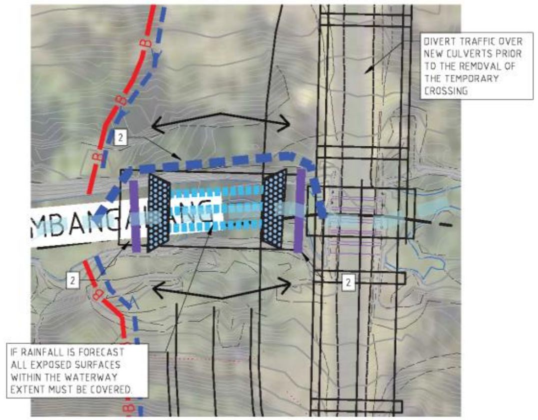
(THESE WORKS SHOULD OCCUR AS QUICKLY AS POSSIBLE, AND WHERE FEASIBLE IN LESS THAN 5 DAYS)

1. SCHEDULE WORKS FOR A SUFFICIENT DRY PERIOD, LONG ENOUGH TO ENABLE THE REMOVAL OF THE TEMPORARY CROSSING AND COMPLETION OF STABILISATION WORKS. AIM TO COMPLETE AS QUICKLY AS POSSIBLE.
2. FORM TEMPORARY UP AND DOWNSTREAM IMPERMEABLE BUNDS WITHIN THE WATERWAY AND INSTALL A PUMP/PIPE SYSTEM TO TAKE CREEK FLOWS AROUND THE WORKS. PUMP/PIPE DIVERSION TO BE OF SUFFICIENT CAPACITY TO TAKE GENERAL CREEK FLOWS.
3. ONCE CREEK FLOWS ARE DIVERTED AROUND THE WORKS, THE TEMPORARY CROSSING IS TO BE REMOVED AND REHABILITATION/STABILISATION WORKS UNDERTAKEN IN ACCORDANCE WITH ENGINEERING DETAIL.
4. ONCE THE TEMPORARY CROSSING REMOVAL AND REHABILITATION WORKS ARE COMPLETE REMOVE THE PUMP/PIPE DIVERSION SYSTEM AND REMOVE UP AND DOWNSTREAM IMPERMEABLE BUNDS FROM THE WATERWAY.

LEGEND

- BARRIER FENCE
- SEDIMENT FENCE (SD 6-8)
- ROCK FILTER DAM (IECA SD RFD-01 & SPECIFICATIONS BELOW)
- STABILISED SITE ACCESS (SD 6-14)
- DIVERSION MOUND TO DIRECT FLOWS (SANDBAG/EARTH BUND OR SIMILAR)
- STOCKPILE AREA (SD 4-1)
- ROCK ENERGY DISSIPATER (TO FINAL ENGINEERING DETAIL)
- STABILISED CLEAN WATER DIVERSION (SD 5-5 U.S.O.)
- STORMWATER PIPE (TO FINAL ENGINEERING DETAIL)
- STABILISED PLATFORM
- CLEAN FLOW DIRECTION
- DIRTY FLOW DIRECTION
- CHECK DAM (SD 5-4)
- DIRTY WATER DIVERSION
- IMPERMEABLE BUND
- TEMPORARY PUMP/PIPE LINE
- NATURAL WATERWAY
- UST – U-SHAPED SEDIMENT TRAP (IECA SD UST-01)

STANDARD DRAWINGS AND TYPICAL NOTES ARE PROVIDED ON DRAWINGS 15000196_P01_ESCP000-006.



STAGE 3 ESCP – REMOVAL OF TEMPORARY ROADWAY CROSSING

SCALE – 1 : 500

REV	DATE	DES.	DRN.	APP.	REVISION DETAILS
00	21/07/16	A.J.B.	A.J.B.	M.P.	ISSUE FOR APPROVAL
A	19/10/15	AB/MP	A.J.B.	A.M.	DRAFT ISSUE – FOR CONSULTATION

DRAWING STATUS: DESIGN BY A.J.B. / M.P.; DRAWN BY A.J.B.; FINAL APPROVAL M.P.; SCALE: (on A3 Original) AS SHOWN; FOR APPROVAL

North

CLIENT: AUSTRALIAN ZIRCONIA LTD

SEEC — PO Box 1098, Bowral, NSW 2576; Suites 7 & 8, 68-70 Station Street, Bowral NSW 2576; (t) 02 4862 1633; (f) 02 4862 3088; email: reception@seec.com.au; WWW.SEEC.COM.AU

PROJECT TITLE: DUBBO ZIRCONIA PROJECT

DRAWING TITLE: WAMBANGALONG CREEK BRIDGE CONSTRUCTION ESCP – STAGE 2 & 3

PROJECT NO. 15000196 | SUB–PR NO. P01 | DRAWING NO. ESCP206 | REV 00

Plot Date: Thursday, 21 July 2016 9:09:54 AM   CAD File Name: I:\15000196 Dubbo Zirconia 2\Drawings\15000196_P01_SWMP_200_REV 00.dwg

Appendix 6

National Heavy Vehicle Regulator Information Sheet: Oversize Overmass (OSOM) vehicles (NHVR, 2014)

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NHVR
National Heavy Vehicle Regulator

February | 2014

Oversize Overmass (OSOM) vehicles

What is a OSOM load-carrying vehicle?

An Oversize Overmass (OSOM) vehicle is a heavy vehicle that is carrying, or specially designed to carry, a large indivisible item.

A heavy vehicle is a Class 1 heavy vehicle if it, together with its load, does not comply with a prescribed mass requirement or prescribed dimension requirement applying to it and is a heavy vehicle carrying, or designed for the purpose of carrying, a large indivisible item including, for example, a combination including a low loader.

Examples of OSOM vehicles include a combination of prime movers, low loaders, low loader dollies, platform trailers and jinkers.

A Class 1 OSOM vehicle does not require a permit to operate provided the movement of the vehicle complies with all of the requirements and travel conditions outlined in a transition notice. Operators still need to comply with the operating conditions specified in their relevant transition notice.

If a Class 1 OSOM vehicle does not comply with the mass or dimension limits set out in a transition notice, an operator must apply to the National Heavy Vehicle Regulator (NHVR) to obtain a Mass or Dimension Exemption Permit.

OSOM vehicles:

large indivisible item - an item that:-

- can not be divided without extreme effort, expense or risk of damage to it;
- can not be carried on any heavy vehicle without contravening a mass requirement or dimension requirement.

low loader - a trailer with a loading deck no more than 1m above the ground.

low loader dolly - a device for distributing mass that:-

- is usually coupled between a prime mover and low loader;
- consists of a rigid frame of a gooseneck shape;
- does not directly carry any load;
- is equipped with 1 or more axles, a kingpin and a fifth wheel coupling.

yellow, in relation to a light, includes amber.

Exemption under Mass or Dimension Exemption Gazette Notice

The NHVR may grant a Mass or Dimension Exemption Gazette Notice for a period of not more than five years to a Class 1 OSOM vehicle from a prescribed mass or dimension requirement.

A Mass or Dimension Exemption Gazette Notice will include the following information:

- the category of heavy vehicles to which the exemption applies
- the mass or dimension requirements
- the areas or routes to which the exemption applies
- the road conditions or travel conditions required by the relevant road manager/s
- the period for which the exemption applies

Operators can continue to operate under a current transition gazzette notice. If the vehicle exceeds the requirements of the gazette you can apply to the NHVR to obtain a mass or Dimension Exemption Permit.

Gazette notices or guidelines specific to the movement of OSOM vehicles have seen consolidated into a national gazette notice.

Exemptions by permit

The NHVR may grant a Mass or Dimension Exemption Permit for a period of not more than three years. For access to the road network that is not covered under a transition notice an application to the NHVR will be required.

Will I have to apply for a permit again?

All permits that were already in force at the time the Heavy Vehicle National Law (HVNL) commenced continue to have effect as if they were made under the HVNL. They will remain current until their expiry date or they are replaced under the national access framework, whichever comes first.

All new and renewal permit applications must be directed to the NHVR.

Where the dimensions of the vehicle are likely to interfere with overhead wires, bridges and other structures on or beside the road, approval to travel the route must be sought from the relevant authorities. These third party approvals will be required prior to the issue of a permit. It is the responsibility of the OSOM vehicle operator to obtain approval from the relevant organisation. For further details regarding third party providers please see the *Third party utility provider fact sheet*.

The driver of a Class 1 heavy vehicle who is driving the vehicle under a Mass or Dimension Exemption Permit must keep a copy of the permit in the driver's possession.

What if my permit doesn't have an expiry date?

In almost all cases, permits should have an expiry date attached to them. Some older permits which were issued in perpetuity continue to exist. In this small number of cases, the permits will continue under the HVNL for three years. At the end of the three year period, the permit will lapse and you must apply to the NHVR if you want the permit to be reissued.

Warning devices

In some instances OSOM vehicles may require conditions of operations such as warning devices or warning lights to operate on the road network. If operating under a transition notice or a permit, these requirements will be specified in detail.

Examples of warning devices that may apply to an OSOM vehicle.

Warning lights

A warning light attached to a OSOM vehicle, when switched on, must:

- emit a yellow coloured light of rotating and flashing effect
- flash between 120 and 200 times a minute
- have a power of at least:
  - if LED technology is used— 25W, or
  - if another technology is used—55W
- not be a strobe light.

A warning light attached to a OSOM vehicle must be:

- clearly visible at a distance of 500m in all directions, or
- supplemented by 1 or more additional warning lights so that the light emanating from at least 1 of them is clearly visible at a distance of 500m in any direction

Warning flags

4 brightly coloured red, red and yellow, or yellow flags, each at least 450mm by 450mm, fixed as follows:

- a flag must be attached at each side of the front of the vehicle or, if a load projects from the front of the vehicle, at each side of the front of the load.
- a flag must be fixed at each side of the rear of the vehicle or, if a load projects from the rear of the vehicle, at each side of the rear of the load.

Warning lights and delineators

If a load projects more than 150mm beyond a side of a Class 1 heavy vehicle, and the projection is less than 500mm thick from top to bottom:

- a warning light must be attached to the vehicle
- 2 delineators must be attached to the projection in the way stated in subsection (2) on each side of the vehicle on which the load projects more than 150mm.

The delineators must be attached in the following way—

- at least 1 delineator must be attached to the front of the projection and at least 1 delineator must be attached to the rear of the projection
- a delineator attached to the front of the projection must be attached so that its reflective surface is facing forward of the vehicle
- a delineator attached to the rear of the projection must be attached so that its reflective surface is facing rearward from the vehicle.

'Delineator' means a yellow, rigid piece of material that:

- is at least 300mm long and at least 300mm wide
- complies with Class 1 or 2 of AS 1906 'Retro-reflective Materials and Devices for Road Traffic Control Purposes'.

Oversize sign

The warning sign on a OSOM vehicle must be at least 1200mm long and at least 450mm high. The length of the sign may be split in two parts, in which case the combined length of its parts must be at least 1200mm.

A warning sign on OSOM vehicle must have a face showing:

- the word **OVERSIZE**, in black capital letters and in typeface Series C(N) complying with AS 1744 Forms of Letters and Numerals for Road Signs

Note – AS 1744 Forms of Letters and Numerals for Road Signs may be purchased from Standards Australia at www.standards.org.au.

- the letters must be at least 200mm high and at least 125mm from the top and bottom of the warning sign.

If the length of the warning sign is spilt into two parts:

- the word **OVER** must be on the left part and the word **SIZE** on the right part
- there must be no border between the two parts
- both parts must be mounted at the same height.

A warning sign on a OSOM vehicle must be fitted horizontally. The lower edge of the warning sign must be:

- above the bottom bumper bar, or
- if there is no bumper bar, at least 500mm above ground level.

The face of a warning sign on a Class 1 OSOM vehicle must have:

- a yellow surface complying with Class 1 or 2 of AS 1906 'Retro-reflective Materials and Devices for Road Traffic Control Purposes'
- a black border that is at least 20mm wide and, unless the sign is made with a box edge, whose outermost edge is at least 10mm in from the edge of the sign
- its manufacturer's name or trademark, and the brand and class of material aused for the warning sign's surface, permanently marked in letters at least 3mm but no more than 10mm high on any visible part of the sign.

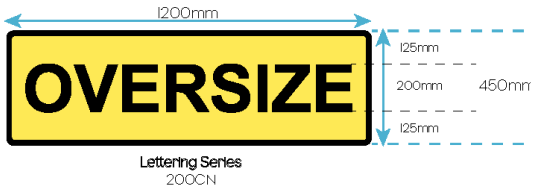
A warning sign on a OSOM vehicle must be made of stiff, flat, weatherproof material for example:

- zincalume that is at least 0.8mm thick
- aluminium that is at least 1.6mm thick

However it may be made of flexible, weatherproof material if the sign is:

- held taught
- clearly visible
- unlikely to become dislocated, furl or otherwise difficult to be read by other road users.

▼Example of a warning sign for an oversize vehicle or combination



Other requirements

Smallest practicable size of unloaded vehicle

A Class 1 heavy vehicle that is not carrying goods must be kept at its smallest practicable dimensions, with any booms fully retracted. This includes retracting extendible trailers, closing in widened trailers and disassembling trailer extension supports.

Vehicle loading

If a load can be safely loaded in more than one way, it must be loaded in a way that minimises the width of the vehicle and its load.

Towing a low loader dolly with an unladen low loader

A low loader dolly must not be towed in combination with an unladen low loader unless the combination is 2.5m wide or less and there are exceptional difficulties in loading or unloading the dolly due to the nature of the site or because of the short distance to be travelled.

About the NHVR

The National Heavy Vehicle Regulator (NHVR) is Australia's dedicated independent regulator for heavy vehicles over 4.5 tonnes gross vehicle mass.

The NHVR was created to administer one set of rules for heavy vehicles under the Heavy Vehicle National Law (HVNL), improve safety and productivity, minimise the compliance burden on the heavy vehicle transport industry and reduce duplication and inconsistencies across state and territory borders.

For more information

subscribe	www.nhvr.gov.au/subscribe
visit	www.nhvr.gov.au
email	info@nhvr.gov.au
fax	07 3309 8777
post	PO Box 492, Fortitude Valley Q 4006
tel	1300 MYNHVR* (1300 696 487)

*Standard 1300 call charges apply. Please check with your phone provider.

Appendix 7

Transport Management Plans for Oversize and/or Overmass Movement in NSW (RMS, 2013)

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Transport Management Plans for oversize and/or overmass movements in NSW

Transport Roads & Maritime Services
NSW GOVERNMENT

FACT SHEET

Introduction

This information sheet provides information about oversize and/or overmass (OSOM) Transport Management Plans (TMPs) for the movement of OSOM vehicles and/or loads in NSW. It aims to assist transport operators conducting such movements by providing information on the requirements for completing a TMP.

Transport Management Plans

A Transport Management Plan (TMP) is a comprehensive document that describes how an OSOM movement will be safely carried out in NSW. The document is structured to enable you to record your plans, procedures and other operational activities that are required to safely transport an OSOM movement in NSW.

Due to the changing nature of the road environment, increasing traffic levels and demand for OSOM movements there is an increased need to closely manage the risk and journey disruptions caused by OSOM movements. To provide the necessary management of "High Risk" OSOM movements, Roads and Maritime Services (RMS) has introduced the OSOM TMP.

The TMP provides an increased planning and execution focus for "High Risk" OSOM movements to ensure that these movements are carried out in a safe, responsible manner with reduced impact on other road users and road infrastructure.

TMP Requirements

When is a TMP required?

A TMP is required prior to a permit being assessed for OSOM movements that are greater than 6.5 metres wide. From 6 January 2014 all OSOM movements that are classified as "High Risk", either due to their dimensions and/or weights and/or route, will be required to complete a TMP prior to a permit being issued for the movement. OSOM movements that involve "Critical/Sensitive" loads will also be required to complete a TMP.

Table 1: "High Risk" Criteria for OSOM Movements*

Criteria	TMP required if:
Length	> 40 metres
Height	> 5.2 metres(1)
Rear overhang	> 7.5 metres(2)
Forward projection	> 5.5 metres(3)
Width	> 6.0 metres(4)
Total combination weight	> 150 tonnes
Route	See "High Risk" Routes at http://www.rms.nsw.gov.au/heavyvehicles/osom/tmp.html

* In assessing whether a particular OSOM movement is classified as "High Risk", RMS will also consider the following but not limited to; time and date of movement, traffic volumes along the proposed route, speed zones along the proposed route, location, grade, terrain and road geometry, frequency of movements and type of load.

(1) If within 200 millimetres of overhead structure(s) along the proposed route, please supply a route survey identifying overhead structure(s) and the traffic management arrangements for travelling under these structure(s).

(2) The rear overhang criteria for "High Risk" agricultural combinations travelling in the Western Zone is > 10 metres.

(3) High risk mobile cranes are exempt from the forward projection "High Risk" criteria as they must be enrolled in the Intelligent Access Program (IAP).

Level 15, 101 Miller Street, North Sydney NSW 2060
Locked Bag 928, North Sydney 2060 DX10516 Sydney
www.rms.nsw.gov.au | 13 22 13

October.13
RMS. 13.431

[4] The width criteria for "High Risk" agricultural combinations travelling in the Western Zone is > 6.5 metres.

Table 2: Definition of "Critical/Sensitive" Load

Health Risk	Movements that have the potential to affect the immediate health and welfare of the operator, driver and public i.e. loads with radiation, chemicals, magnets, asbestos etc.
Hazardous/ Environmental	Movements that pose a substantial or potential threat to public health or the environment, whether that be in either gas, liquid or solid form and what type of material it is – corrosive, toxic, radiation.

What information is required in a TMP?

A TMP is made up of the following five criteria:

1. Vehicle and load details;
2. Route survey details of the proposed route(s);
3. Traffic management arrangements;
4. Stakeholder and community consultations; and
5. Rail Infrastructure Manager(s) (RIM) approval.

The information below provides further guidance on each of the five criteria.

1. Vehicle and load details

This section requires information about your vehicle(s) and OSOM load that will be transported.

You will need to provide a diagram and/or photograph showing the overall dimensions of the load and the vehicle/s that will be transporting the load. The diagram and/or photograph needs to show the width, length, height from the ground, both sides and front and rear perspectives.

The weight of the load and weight of the total combination must also be provided.

In your diagram and/or photograph please provide details of the individual axle spacings, ground contact axle width and the required axle group mass.

The details of the load type and the number of loads will need to be provided.

2. Route survey details of the proposed route(s)

This section requires a pictorial route survey of your proposed route. You will need to identify obstacles and 'pinch points' along your proposed route, and document the plans and procedures that will be used to safely navigate through these areas.

It is important that all access issues are documented in this section. You will also need to ensure access has been authorised under the stakeholder and community consultation criteria.

Common obstacles for OSOM loads can include roadside furniture, roundabouts and guardrail. Common 'pinch points' include narrow lane widths, entry and off ramps and bridge crossings.

In your route survey you will also need to identify and provide:

- measured dimensional restrictions at intersections, bridges, crossings, underpasses, overhead structures and road carriageway widths (*including vegetation*);
- any current roadworks along your proposed route (please note that dates and times of roadwork's along a proposed route may change between when a route survey is conducted and when the movement occurs. Please visit livetraffic.com for up to date information);
- proposed movement or relocation of roadside furniture such as signs and lights *including details of individual/organisation who will be moving or relocating the road furniture*;
- suitable "pull over" locations along the proposed route where the OSOM movement can pull over to allow any following and/or oncoming traffic to safely pass; and
- any other activity that may be affected by the passage of the OSOM movement e.g. school bus and coach services.

Google Maps and Google Street view images may be used as a tool to assist in completing a route survey; however they are not a replacement for a physical survey of the proposed route.

You will also need to identify where rest or fatigue breaks will be taken along the proposed route.

3. Traffic management arrangements

This section is about providing information on how the interaction and traffic impacts along the route of the movement will be managed.

When completing this section you will need to consider:

- how the safety of all parties involved in the movement will be managed.
- how delays and traffic impacts to other road users will be minimised.

You will need to provide details on the procedures that will be used to activate a "pull over" as well as the length of time between "pull over's" along the proposed route. Information on the method used to

allow following and/or oncoming traffic to pass must also be provided.

Details of how traffic will be managed at each of the identified 'pinch points' and obstacles must also be provided.

This includes specifying the roles and responsibilities of each party involved in the OSOM movement and how information will be passed between each party involved in the procedures. Please ensure that you also provide a diagram showing the positions of each of the personnel involved in the OSOM movement. For example:

- pilots.
- escorts/Police.
- vehicle/s involved in the movement.
- electrical escort vehicles.

It is important that each person's role and responsibility in the OSOM movement is documented in this section to avoid any confusion on the day of the movement. Contact details of each party should also be recorded to ensure smooth communication.

The indicative speed of the movement along the route must also be provided and proposed travel timings between points must be provided in order to measure an appreciation of associated traffic impacts. Information on the time of day the load is being transported must also be provided detailing the start, end and other key points along the route together with the proposed trip timeline.

In this section you will also need to document contingency and/or emergency arrangements in the event of an emergency and/or breakdown and/or incident. Changes in weather conditions may also result in new risks, it is important that procedures for dealing with these risks are provided.

4. Stakeholder and community consultations

This section is about informing other road users about your movement and also obtaining the relevant approvals from infrastructure authorities along the route of your movement.

In your TMP you must provide approvals from Local Councils where your route involves travel on a council road. You are also required to provide relevant approvals from electricity and telecommunication providers for the length of your route if the height of your movement is over 5.0 metres.

Due to the impact that OSOM movements have on the road network it is important to provide other road users with advance notification of your movement in order to minimise any potential disruption the movement may cause.

In this section you must provide details on what steps will be used to provide notification to other road users, for example the use of Variable Message Signs (VMS), radio and newspaper advertising. It may be necessary to use more than one form of advertising. These methods should be used both prior to the day and/or night of the movement and throughout the duration of the movement.

5. Rail Infrastructure Manager(s) (RIM) approval

Where an OSOM movement involves travel over a railway crossing, it is now a requirement to obtain the approval of the relevant Rail Infrastructure Manager(s) for each railway crossing on the proposed OSOM route. Please note a railway crossing is defined as where a road and railway cross at the same grade i.e. a level crossing. Contact details of the Rail Infrastructure Manager(s) can be found at:

http://www.rms.nsw.gov.au/heavyvehicles/osom/rmp.html

Submitting your TMP

After you have completed your TMP you need to send it to RMS for assessment and review. In order to do this you will need to download the TMP Coversheet OSOM at:

http://www.rms.nsw.gov.au/heavyvehicles/osom/tmp.html

This coversheet provides further information on how to complete a TMP. Please ensure that you complete the coversheet addressing all relevant criteria and sign the declaration prior to attaching it to your TMP.

You should also re-check your TMP to make sure you have provided all the relevant information and have addressed all requirements. Failure to address all the listed requirements in your TMP will result in your TMP being returned with the request for further information.

Completed TMPs can be sent via email to spu@rms.nsw.gov.au

Assessing your TMP

Once your TMP is received, RMS will conduct a review to ensure that you have met all the requirements and can demonstrate that you will safely conduct your OSOM movement. The length of time required to assess a TMP will vary depending on the complexity, dimensions and route of your movement. It is important that you allow sufficient time for this assessment in your planning.

Where further information is required in your TMP you will be contacted by RMS.

Once your TMP has been reviewed you will be asked to submit a permit application for your proposed movement. The permit, once issued, may also include additional conditions such as time of day, traffic management requirements and contact requirements in order to minimise any impact the movement may have on other road users and the road environment.

Please note that the completion of a TMP does not guarantee that an OSOM movement will be permitted. RMS reserves the right to reject or place additional conditions on your movement. For further information on TMPs please contact the Special Permits Unit.

Email: spu@rms.nsw.gov.au
Fax: 1300 361 570
Mail: Roads and Maritime Services
Special Permits Unit
PO Box 94
Glen Innes NSW 2370

RMS Transport Management Plans for oversize and/or overmass movements in NSW

4

Appendix 8

Driver Code of Conduct

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AUSTRALIAN STRATEGIC MATERIALS LTD

(A wholly owned subsidiary of Alkane Resources Ltd)

ABN 51 091 489 511

Dubbo Project

Driver Code of Conduct

for
Employment or Contracting of Services to the Dubbo Project

TABLE OF REVISIONS

Revision Number	Revision Date	Prepared By	Approved by	Comments
1.0	10/11/2016	A. Irwin	M. Sutherland	Reviewed by RMS, DRC & TCSA
2.0	17/02/2017	A. Irwin		

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CONTENTS

Page

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1. GENERAL REQUIREMENTS

1.1 APPLICATION

This Driver Code of Conduct (the Code) applies to all Dubbo Project personnel and any other person conducting business for the Dubbo Project, or on any project associated with the Dubbo Project, whether a direct employee of ASML or employed by some other organisation providing a service or product to ASML.

The Code requires compliance with all the relevant legal requirements and accepted community standards whilst conducting work or business for or associated with the Dubbo Project. Whether you are an employee of ASML or operate any service to ASML, your behaviour on the road reflects upon the community reputation of ASML and in this regard your full compliance with the Code is required.

1.2 PENALTIES AND DISCIPLINARY ACTION

Failure to comply with the Code will lead to either the issue of a "warning notice" or "disciplinary action" if the offender is an employee of ASML. If the offending party represents another company then "disciplinary action" may be treated as suspension or cancellation of a service contract or arrangement with that company.

A warning notice may be issued for a number of reasons, which may include if, you:

- drive at excessive speed;
- abuse other road users or customers;
- do not carry out instructions as advised;
- do not comply with project consent operating hours for delivery of transport services;
- do not transport goods in the manner prescribed by contract arrangements, e.g. load may need to be covered;
- do not observe the site speed restrictions; and/or
- do not report incidents/accidents.

Disciplinary action maybe taken if you:

- consume or are under the influence of alcohol or drugs whilst on duty;
- fight or commit acts of violence towards any person; and/or
- are charged and found guilty of a serious offence causing an accident.

1.3 STATUTORY REQUIREMENTS

The Code requires knowledge and compliance with all road rules pertaining to the vehicle operated (whether standard passenger car, utility or heavy transport vehicle).

1.4 DRIVERS LICENCE

A current and valid driver's licence, appropriate for the class of vehicle operated, is required. This must be carried by the driver whilst ever operating the vehicle.

ASML must be informed immediately if this licence is cancelled or suspended.

1.5 MINIMUM VEHICLE MAINTENANCE AND OPERATING CONDITION

All vehicles must be maintained and operated in accordance with the vehicle manufacturers recommended standards (refer to vehicle manufacturer's handbook).

1.6 OCCUPATIONAL HEALTH AND SAFETY

All ASML employees, suppliers or contractors are required to adhere to the occupational health and safety legislation. This requires:

- the carrying out of duties in a way which does not adversely affect your own health and safety or that of others;
- cooperation with measures introduced in the interest of workplace health and safety;
- attendance at OHS training as provided;
- reporting of all matters which may affect workplace health & safety to your supervisor;
- correct use any information, training, personal protective equipment and safety devices provided;
- no intentional misuse or reckless interference with anything that has been provided for health and safety reasons;
- implementation of tasks only for which authorisation and/or the necessary training has been provided, and for which all necessary safety arrangements are in place.

1.7 ENVIRONMENT

ASML is committed to protecting the environment and preventing air, water and noise pollution. The Code requires consideration of environmental regulations relating to vehicle emission and product spill.

The Code requires understanding and an appreciation of the seriousness of polluting the environment and the consequences of such events.

The Code requires acknowledgement that careless or neglectful vehicle operation could result in personal injury, loss of life, property damage, substantial fines, and adverse publicity for ASML.

1.8 NOISE CONTROL

The use of engine brakes near residences and built-up areas is to be avoided.

The areas adjacent to Taronga Western Plains Zoo and approaching the Toongi Road-Obley Road intersection are identified as noise sensitive areas. Additional caution and consideration of noise is required at these locations.

2. DRIVING PRACTICES

2.1 GENERAL COURTESY

ASML may suffer complaints and reputational damage as a result of driver behaviour and the Code requires each driver to operate his/her vehicle in a way which is courteous and respectful of other road users and the general community.

2.2 SPEED RESTRICTIONS

Drivers are required to adhere to sign-posted speed limits and warnings.

- Always adhere to sign-posted speed limits.
- Always reduce speed in wet conditions.
- Drive cautiously in fog or heavy rain.
- Descend hills in the lowest gear to suit the conditions.
- Always observe the special limits that apply for road works or modified conditions.
- Do not drive at speed past schools, school buses, parks, shopping areas etc.
- Reduce speed from dusk to dawn in areas where nocturnal wildlife may be present.
- Avoid the use of bright headlights as blinded animals cannot see the vehicle and do not move away from the road.
- Be aware of cyclists on Obley Road.
- Be aware of heavy pedestrian and vehicular traffic near the entrance to Taronga Western Plains Zoo

Drivers are required to adjust speed and take precautions to account for changes in road or environmental conditions.

2.3 DEFENSIVE DRIVING

The Code requires drivers to operate vehicles in a manner that will help avoid incident or accident, despite incorrect/inappropriate actions of others or poor driving conditions.

2.4 DUBBO PROJECT SPEED RESTRICTIONS

ASML operates variable speed limits within the Dubbo Project Site. These limits are to ensure the interaction between personnel and vehicles are managed to minimise the risk of injury to all personnel.

Drivers are required to observe the posted speed limits and other traffic signage at all times. All incidents where drivers do not observe speed limits and other traffic instructions will be logged, investigated and where appropriate, disciplinary action will be taken.

2.5 APPROVED ROUTES

Drivers of haulage vehicles are to be aware of approved routes for haulage of materials or products and adhere to these.

Unless provided specific dispensation by ASML management, such as residential address, all access to the Dubbo Project Site is to be by Newell Highway – Obley Road – Toongi Road.

2.6 RESTRICTED ACCESS VEHICLE OPERATION

Operators of B-Double, Higher Mass Limit (HML) or Oversize Overmass (OSOM) vehicles are to ensure that:

- the route followed only uses roads gazetted for the particular classification of Restricted Access Vehicle (RAV) being driven;
- additional permits are obtained as required and a copy retained by the driver;
- a Transport Management Plan has been prepared (for high risk OSOM vehicles); and
- the vehicle is driven in accordance with the Transport Management Plan.

2.7 VEHICLE BRAKING

The driver of heavy vehicles should be aware of upcoming traffic conditions, allowing driver behaviour to be modified accordingly. The requirement to brake heavily may arise, however, the driver must be aware of the possible consequences.

Always brake with care, remembering that the truck will react differently according to the weight of the load, weight distribution of the load and road surface condition.

Never, under any conditions, drive a vehicle with faulty or suspect brakes. Immediately report the fault to your supervisor to be fixed.

In general, the following should be observed regarding engine brakes.

- Do not use the engine brake on slippery or wet surfaces, as a jack-knife may occur.

- Do not use engine brakes in or near residences and built-up areas, as this causes excessive noise and is a public disturbance.

2.8 TAILGATING

By law, a gap is required to the vehicle in front is required to avoid the need for heavy braking or potential accident. The gap should be determined based on several factors including speed, vehicle weight, traffic congestion and road condition. During wet weather or other adverse conditions, the gap distance should be doubled.

The legal distance for heavy vehicles in areas without streetlights is 60m (200m for B Doubles and OSOM vehicles).

2.9 OVERTAKING/PASSING

Avoid overtaking in awkward, inappropriate situations or where there is unclear vision.

Do not overtake/pass in the following situations.

- Over continuous lane separation lines.
- On narrow roads.
- Near or on a curve or crest.
- Near or on a bridge.
- Near or on a railway crossing or tunnel.
- When clear vision is restricted.
- Through roadwork areas.

Do not indicate or signal to encourage other road users to overtake or pass (this action is against the law and may result in personal culpability/liability should an incident occur).

2.10 CONVOYING

Drivers of trucks hauling materials to and from the Dubbo Project are to ensure adequate separation between vehicles. No tailgating or formation of rolling convoys is permitted.

ASML requires driver of heavy vehicles travelling to the Dubbo Project to advise the Project transport logistics manager of arrival time at Obley Roar prior to the last opportunity to park-up. The driver will park-up at a rest stop as instructed by the Project transport logistics manager to avoid multiple vehicles arriving at Obley Road simultaneously or with limited separation.

2.11 ROAD HAZARDS

Always be alert for these hazards and make your adjustments as necessary.

Examples of hazards are as follows.

- Rough/slippery surfaces.
- Narrow or winding roads.
- Low wires or awnings.
- Low bridges, tunnels.
- Crossings, rail/people.
- Animals.
- Cyclists.
- Underpasses and trees.

Be aware that the vehicle itself may become a road hazard when it is parked on a roadway, broken down or otherwise. In this circumstance, use portable warning signals, placing them 50m to 150m in front of and behind the vehicle (or as practicable), as well as at the side.

2.12 PARKING

Avoid parking on or within 1m of the roadway. If this is not possible, make sure that portable warning signs are used (refer to Section 2.9).

Always park the vehicle where the vehicle is visible and as far away from moving traffic as possible. If in doubt, leave hazard lights on.

If transporting dangerous goods, implement additional requirements as required.

2.13 REVERSING

Avoid reversing whenever possible. If unavoidable:

- get out of the vehicle and check the rear surrounding area;
- check clearances at sides, top and bottom; and
- constantly monitor mirrors for pedestrians or other traffic when reversing.

2.14 VEHICLE CONDITION

All vehicles are to be maintained in a clean and roadworthy condition.

Drivers are responsible for ensuring that all tailgates are properly closed and that there is no excessive leakage of water from the vehicle to the road surface.

Drivers are responsible for ensuring that all loads are properly covered and that there is no spillage or leakage of the load from the vehicle to the road surface.

3. OPERATING TIMES

No heavy vehicles are to enter Obley Road prior to 6:00am Monday to Friday and 8:00am Saturday.

All heavy vehicles are to have exited Obley Road by 10:00pm Monday to Friday and 5:00pm Saturday.

4. COMPLAINT MANAGEMENT

Drivers are to be aware that a complaints telephone number is available to the public to lodge complaints against any driver contravening these guidelines. The contact details are displayed on the signs at the entrance to the Dubbo Project Site.

All complaints will be logged and investigated and, where appropriate, disciplinary action will be taken.

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