



**AUSTRALIAN
ZIRCONIA LTD**

(A wholly owned subsidiary of Alkane Resources Ltd)
ACN: 091 489 511

**A Summary of
Minor Modifications**
to the
Proposed Operations
and/or
**Environmental
Assessment**
of the
Dubbo Zirconia Project

Prepared by:



R.W. CORKERY & CO. PTY. LIMITED

April 2014

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Ref No. 545/14

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LIST OF ABBREVIATIONS

ADG Code	Australian Dangerous Goods Code
AHD	Australian Height Datum
ARI	Average Recurrence Interval
BAL	Bushfire Attack Level
BBAM	BioBanking Assessment Methodology
BSAL	Biophysical Strategic Agricultural Land
DoS	Degree of Saturation
DRE	Department of Primary Resources – Division of Resources & Energy
DZP	Dubbo Zirconia Project
EIS	Environmental Impact Statement
EMM	EMGA Mitchell McLennan
EPA	NSW Environment Protection Authority
EP&A Act	Environmental Planning & Assessment Act 1979
IBC	Intermediate Bulk Containers
INP	Industrial Noise Policy
LoS	Level of Service
LRSF	Liquid Residue Storage Facility
Mtpa	Million tonnes per annum
NOW	Department of Primary Resources – NSW Office of Water
OEH	NSW Office of Environment & Heritage
OzArk EHM	OzArk Environment & Heritage Management Pty Limited
P&I	Planning & Infrastructure NSW
RMS	Roads and Maritime Services
RSA	Road Safety Audit
RTS	Response to Submissions

SoC	Statement of Commitments
SRSF	Solid Residue Storage Facility
Taronga	Taronga Conservation Society Australia
TfNSW	Transport for NSW
VPA	Voluntary Planning Agreement
WM Act	Water Management Act 2000

1. INTRODUCTION

This document has been prepared at the request of the NSW Planning and Infrastructure (P&I) to provide a consolidated summary of changes made to the proposed development of the Dubbo Zirconia Project (DZP), including modifications to environmental assessments and/or additional assessment completed following public exhibition of the Environmental Impact Statement (EIS) in response to either:

- a) requests from affected landowners or other local stakeholders;
- b) submissions received from the general public, special interest groups and government agencies following public exhibition of the EIS;
- c) further submissions received from government agencies following completion and distribution of a Response to Submissions; and
- d) requests for clarification received from the P&I as part of a final detailed review of the development application and preparation of an assessment report.

The purpose of this report is not to re-present information previously submitted in the form of a Response to Submissions (RTS) and formal letter responses to the P&I, rather to identify and highlight those aspects of the Proposal which have changed since public submission of the EIS. Reference to the appropriate documentation supplied is provided, including the section and page number where relevant.

On the basis of project description and assessment modifications, the Applicant has further modified a Statement of Commitments. The updated Statement of Commitments is included in Section 8.

2. REFERENCE DOCUMENTS

2.1 ENVIRONMENTAL IMPACT STATEMENT

The EIS for the DZP was initially submitted as a draft for consideration of adequacy for exhibition on 28 June 2013. Comments received from P&I and other government agencies between 24 July and 17 August 2013¹ were reviewed and a revised EIS was resubmitted to P&I on 5 September 2013.

The revised EIS was considered adequate for public exhibition which commenced on 18 September and concluded on 18 November 2013. It is this version of the EIS which can be viewed on the P&I website and forms the basis for assessment of the DZP.

2.2 RESPONSE TO SUBMISSIONS

Between 15 November and 2 December 2013, P&I forwarded the submissions received in response to the public exhibition of the EIS from government agencies and public authorities, special interest groups and individuals for consideration.

¹ Transport for NSW chose not to provide formal comments on the adequacy of the EIS.

On 20 December 2013, the RTS was supplied to P&I for public exhibition and distribution to the various government agencies. Notably, the RTS includes several small modifications to the DZP proposal, several additional controls and safeguards, as well as some additional assessment. These minor modifications and additional assessments are referenced as relevant throughout this document.

2.3 RESPONSES TO FINAL GOVERNMENT AGENCY FEEDBACK

With the exception of Transport for NSW (incorporating the NSW Roads and Maritime Services) (TfNSW), the various government agencies and public authorities completed their review of the RTS between 15 January 2014 and 6 March 2014. As each of these final responses were received by P&I, which included final requests for clarification or recommendations as to appropriate conditions of approval, they were forwarded to R.W. Corkery & Co. Pty Limited (RWC) for consideration. Formal responses were subsequently prepared and submitted to P&I as follows.

- **54513_31A14_Dumpleton_e** – responding to the final submissions of:
 - the Department of Primary Industries (DPI) – Office of Agricultural Sustainability and Food Security (OASFS);
 - DPI – NSW Office of Water; NSW Environment Protection Authority; and
 - NSW Office of Environment & Heritage.
- **54513_05C14_Dumpleton_e** – responding to the final submission of Dubbo City Council and following comments from DPI – OASFS.
- **54513_07C14b_Dumpleton_e** – responding to the final submission of Taronga Conservation Society Australia.

Appendix 1 includes each of the above documents.

Between late January 2014 and 9 April 2014, various discussions were held between representatives of TfNSW, RWC and the Applicant. This included telephone conversations, emails, formal correspondence between the parties noted above and several meetings. Over this period, the various issues identified by TfNSW were discussed, additional information or clarification provided by the Applicant, and additions and modification made to the Applicant's Statement of Commitments. **Appendix 1** includes the critical correspondence between TfNSW and RWC (on behalf of the Applicant) as follows.

- **TfNSW - DOC110314-11032014121408_2** – which provides the initial response and request for further clarification over the three transport options presented and assessed.
- **54513_17C14_TfNSW_e_final** – which responds to the request of TfNSW for clarification contained within **TfNSW - DOC110314-11032014121408_2**.
- **TfNSW - Proponent Table 26032014** – sent by email to RWC and which reviews **54513_17C14_TfNSW_e_final** and identifies information still considered to be outstanding by TfNSW.

- **54513_27C14_TfNSW_e** – addresses several of the TfNSW requests for additional information contained within **TfNSW - Proponent Table 26032014** and identifies several additional commitments made by the Proponent.
- **TfNSW - Dubbo Zirconia Project follow up letter April 2014 signed** – follows several meetings, teleconferences, emails and supply of outstanding SIDRA data and confirms the conditional support of TfNSW for the consideration of all three transport options for approval.

It is noted that the conditional support of TfNSW is based on the commitments made by the Applicant (see Section 8) and the Applicant completing:

- an economic evaluation of the reinstatement of the Toongi-Dubbo Rail Line;
- consultation with relevant rail authorities;
- a comprehensive and robust network wide analysis of the impact of rail line reopening on the rail and road network; and
- a detailed safety risk assessment of rail crossings; and
- obtaining agreement with Country Rail Contracts of TfNSW, the network owner.

2.4 RESPONSES TO REQUESTS FOR ADDITIONAL INFORMATION MADE BY PLANNING & INFRASTRUCTURE NSW

Following the review of the EIS and RTS by the various government agencies and public authorities, P&I conducted a detailed review of the EIS resulting in a request for clarification of some issues and in some cases additional assessment. Formal responses to the most notable requests for additional information have subsequently been provided.

- **54513_14B14_Dumpleton_e** – responding to a request for clarification over several transport related queries including status of negotiation with Fletcher International Exports, likely transport logistics, potential maximum trucking rates, intersection performance and queuing at rail level crossings.
- **54513_07C14_Dumpleton_e** – responding to a request for clarification in relation to several aspects of the Noise Impact Assessment. This response was accompanied by a letter report from EMGA Mitchell McLennan (**H12019 Dubbo Zirconia Project Response to PI** – see **Appendix 6**).
- **54513_25C14_Dumpleton_e** – responding to queries raised in relation to noise associated with water pumping infrastructure.
- **54513_10D14_Dumpleton_e** – responding to several queries revolving around the proposed route for trucks travelling to the DZP Site and assumptions made as part of the Traffic Impact Assessment.
- **54513_14D14_Dumpleton_e** – responding to a request for additional information on the security of water supply to the DZP.

Appendix 2 includes each of the above documents.

2.5 FINAL STATEMENT OF COMMITMENTS

The final Statement of Commitments (SoC) presented in Section 8 supersedes the versions presented in the EIS and RTS.

To illustrate how the SoC has been modified following public exhibition, updates included in the RTS are presented in [red](#), with subsequent modifications presented in [blue](#).

3. CLARIFICATION OF PLANNING ISSUES

3.1 Section 89 of the *Environmental Planning & Assessment Act 1979*

In *Section 2.1.3* of the EIS (p. 2-10 - point 3), a Water Supply Work and Use Approval issued by NSW Office of Water (NOW) in accordance with Section 92 of the *Water Management Act 2000* (WM Act) is identified as an approval required for the construction and use of any proposed water extraction source.

It is noted that Water Supply Work and Use Approvals are issued under Section 89 and 90 of the WM Act and therefore are not required for State Significant Development by virtue of Section 89J of the *Environmental Planning & Assessment Act 1979* (EP&A Act).

3.2 Voluntary Planning Agreement with Dubbo City Council

Section 4.15.3 (under the sub-headings of “Economic Contribution and Development” and “Infrastructure and Services”) of the EIS (p. 4-316) and *Commitment 17.9* of the RTS (p. 179) affirm the commitment of the Applicant to negotiate an agreement with Dubbo City Council to provide a fair and reasonable contribution to any increase in management or maintenance costs of local services and infrastructure incurred as a consequence of the DZP.

Negotiations since the completion of the EIS and RTS have been ongoing. While agreement between the Applicant and Dubbo City Council over several components of a VPA has been reached in principle, discussion over the final form of an agreement is ongoing.

A position on the form of a VPA between the Applicant and Dubbo City Council is expected to be confirmed prior to final determination of the development application.

4. MINOR MODIFICATIONS TO THE PROJECT DESCRIPTION

4.1 IMPACT FOOTPRINT

It is confirmed that the maximum development footprint on the DZP Site (as presented on *Figure 2.1* of the EIS) would be approximately 808ha (within the DZP Site of 2 864ha). Component areas of disturbance are as follows:

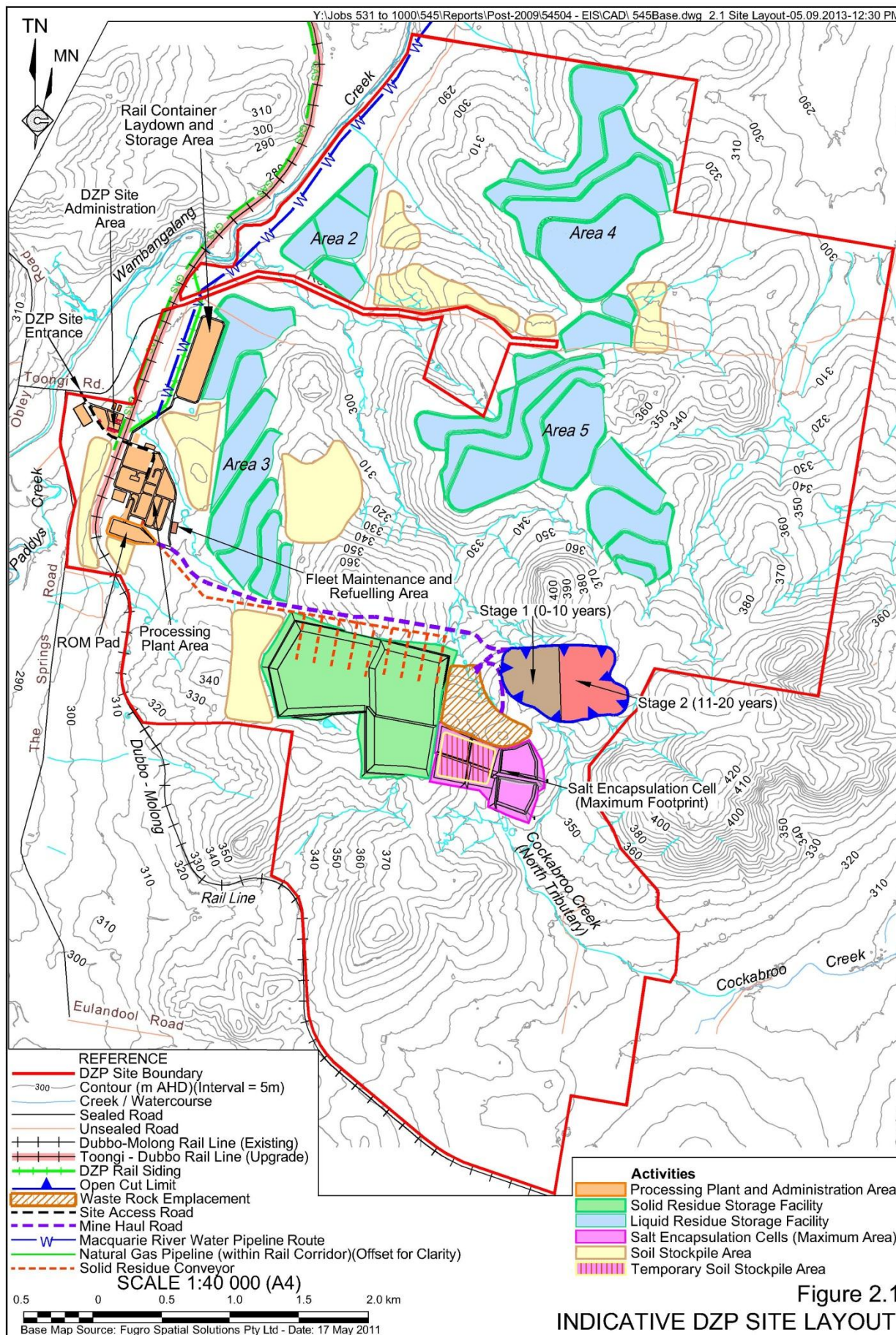
- Open Cut Mine – 40.3ha.
- Waste Rock Emplacement Area – 20.4ha.
- ROM Pad – 4.2ha.
- Processing Plant and DZP Site Administration Area (incorporating the processing plant and associated reagent storage areas, rail siding and container laydown areas and site offices and administration complex) – 43.3ha.
- Solid Residue Storage Facility – 102.8ha.
- Liquid Residue Storage Facility – 425.4ha.
- Salt Encapsulation Cell – up to 34.6ha.
- Soil Stockpile Areas – up to 129.4ha.
- Internal Haul Roads – 7.3ha.

Figure 2.1 is reproduced on the following page.

4.2 HOURS OF OPERATION

There has been some minor modification to the nominated hours of operations, specifically with respect to exceptions for construction based activities.

Activity	Proposed Days of Operation	Proposed Hours of Operation
Vegetation clearing and topsoil stripping	7 days a week (per campaign)	Daylight hours
Construction operations	7 days a week	<ul style="list-style-type: none"> • 7 am to 6 pm, Mondays to Fridays, inclusive. • 8 am to 1 pm on Saturdays. • At no time on Sundays or public holidays.^{1a, 1b}
Open cut mining operations	5.5 days a week	7:00am to 6:00pm
Blasting operations	5.5 days a week	9:00am to 5:00pm ²
Maintenance operations	7 days a week	24 hours per day
Processing operations	7 days a week	24 hours per day
Rehabilitation operations	5.5 days a week	Daylight hours
Transport Operations	7 days a week	24 hours per day
<p>Note 1a: Low noise generating work such as electrical installation and selected plant construction and fit-out may be undertaken outside of these nominated hours of operation.</p> <p>Note 1b: Other construction activities may be undertaken outside of the nominated hours if compliance with noise criteria can be achieved at surrounding residential receivers.</p> <p>Note 2: Unless required for misfire re-blast, emergency or safety reasons.</p>		



These hours are included in Commitment 3.1 of Section 8.

4.3 SCALE OF MINING

As confirmed in the RTS (pp. 54-55), an annual extraction rate of 1Mtpa refers to an approximate average rate of extraction. All assessment has been based on the indicative mining rate provided by *Table 2.4* (refer to *Section 2.4.4*, p. 2-44, of the EIS).

4.4 PRODUCTION LEVEL

Section 2.7.13 of the EIS (p. 2-59) quotes annual production for transport from the DZP Site as 75 000t.

Since the completion of the EIS, the Applicant has determined that the rare earth products may be dewatered considerably prior to despatch. As a result of dewatering, annual production for transport from the DZP Site has been reduced to 55 000tpa. Notably, as the transport of products would represent a back loading of trucks or rail wagons, this does not impact on the volume of traffic entering or exiting the DZP Site.

4.5 MINOR WATER PIPELINE REALIGNMENT

Following further discussion with the land owner of the “Mia Mia” property which fronts the Macquarie River, the proposed location of the pump site has been moved slightly south requiring a small deviation in the alignment of the pipeline on the “Mia Mia” property. *Section 3.1* of the RTS (pp. 6-8) confirms there would be no additional impacts associated with this minor modification.

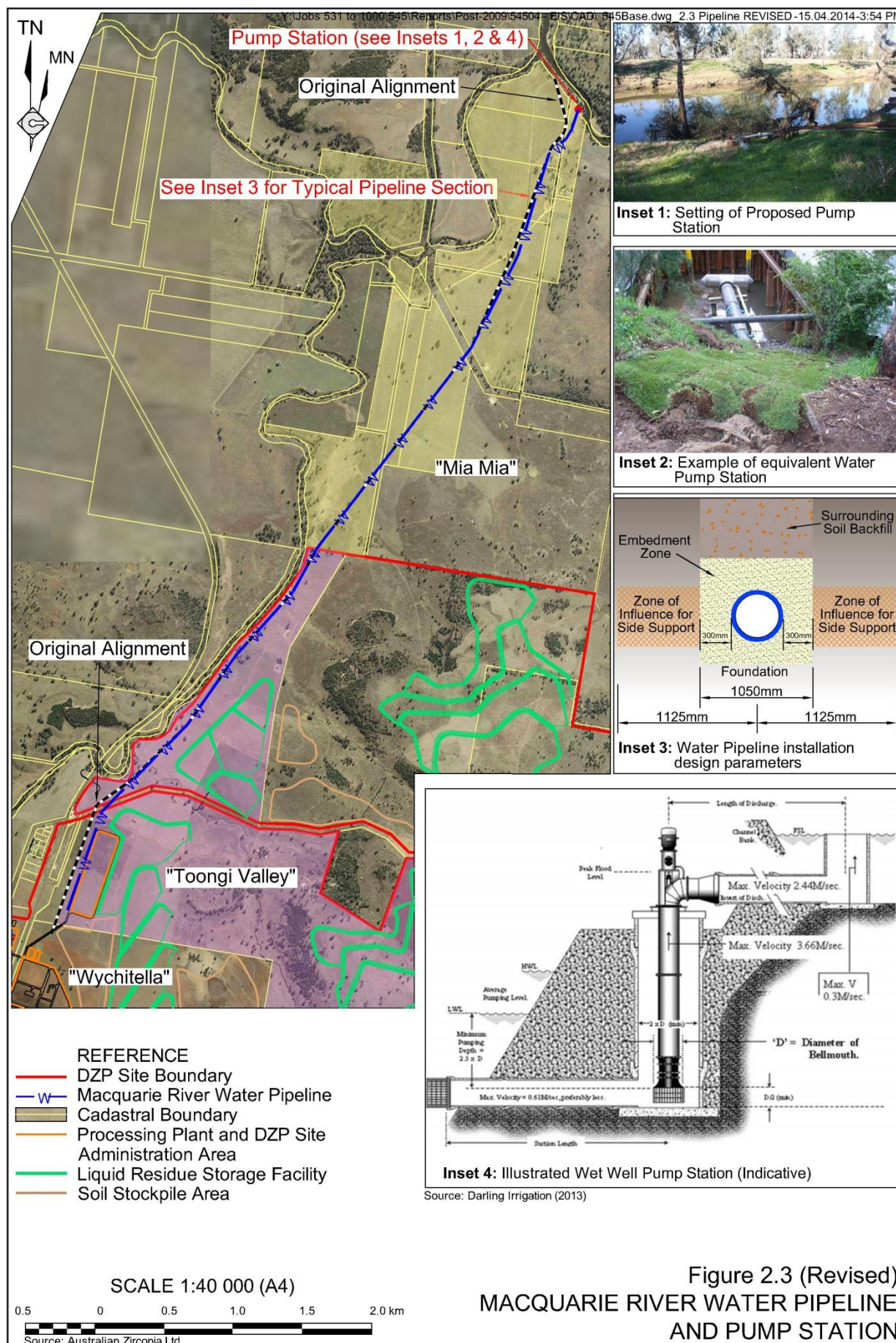
The proposed minor adjustment to the alignment of the Macquarie River Water Pipeline is provided as **Figure 2.3 (REVISED)**.

4.6 ROAD UPGRADES

Following a review of various government and public submissions, the commitments made by the Applicant with respect to the upgrade of Obley and Toongi Roads have been updated to incorporate:

- a 10m pavement seal (two 3.5m lanes + two 1.5m shoulders) over a 12m formation on Obley Road between the Newell Highway and Toongi Road (Commitment 14.4);
- clear zones of 7.5m on straight sections and 9m on the outside of curved sections of Obley Road (Commitment 14.5)²;

² Justification for this clear zone specification is provided in *Section 4.2.4* of the RTS (pp. 31-32) and reviewed in *Section 7.7.1*.



- an upgrade to the intersection between Obley Road and the main visitor entrance to the Taronga Western Plains Zoo (Commitment 14.6);
- an upgrade to intersection between Obley Road and Toongi Road (Commitment 14.7);
- upgrades to the crossings of Hyandra Creek, Twelve Mile Creek and Wambangalang Creek to provide for crossing up to 1 in 20 ARI rainfall event (Commitment 14.8);
- application of asphaltic concrete (“hot seal”) to a 2.4km section of Obley Road from the Newell Highway and 950m section of Obley Road from the Toongi Road intersection (Commitment 14.9);
- a 8.5m seal over a 10m formation on Toongi Road between Obley Road and the DZP Site (Commitment 14.12);
- additional pavement seal as required on approach to and exit from existing bus shelters (Commitment 14.14); and
- pavement life of 20 years for the sections of Obley and Toongi Road incorporated into the transport route (Commitment 14.13).

Appendix 2 of the RTS provides the drawings and treatments of the roads and intersections on which these commitments are based. Section 8 provides the final commitments of the Applicant.

Following additional review of the performance of the Obley Road – Newell Highway intersection (refer to Section 7.7.2), it has been confirmed that no upgrade of the intersection is currently required on the basis of capacity requirements. Following discussion with TfNSW, however, the Applicant has committed to completing a Road Safety Audit (RSA) of this and other key intersections prior to commencement of operational traffic and at 3 yearly intervals thereafter. On the basis of the outcomes of the RSA, and if instructed by TfNSW or RMS, the Applicant has committed to engaging an independent technical specialist to review the RSA and advise on the implementation of any recommended safety measures. If an upgrade to one of more of the key intersections is recommended by the independent technical specialist, the Applicant has committed to providing a contribution to these upgrades commensurate with the level of impact attributable to the DZP. Commitments 14.22 to 14.24 provide the commitments negotiated with TfNSW (refer to Section 8).

4.7 TRANSPORT OPERATIONS

4.7.1 Overview

Both the EIS and RTS highlight the fact that the exact volumes of reagents to be transported to the DZP Site would be subject to review and revision over the initial operational phase of the DZP. The EIS and RTS also highlight that the exact combination of road and rail transport could potentially change over the life of the DZP subject to the results of rail logistics assessments, which are ongoing. Importantly, however, the EIS and RTS present the critical environmental impacts for each of the three transport options considered.

Since the exhibition of the EIS and RTS, and following discussion with TfNSW, there have been several key revisions to the proposed transport operations for which development consent is applied.

4.7.2 Shift Changes

One of the mitigation measures noted in *Section 4.12.4* of the EIS was for the “*Scheduling of shift changes to avoid peak traffic periods in Dubbo by at least 1 hour*” (p. 4-278). In response to a request by Transport for NSW (TfNSW) to nominate the peak hour periods and schedule shift change times around these, the Applicant has included Commitment 14.17 as follows.

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.

4.7.3 Haulage Routes

Section 2.12.1 of the EIS nominates a transport route between the Fletcher International Exports Rail Terminal (“Fletcher’s”) and the Newell Highway as Yarrandale Road – Boothenda Road – Newell Highway (“Boothenda Road route”). This route is not gazetted as a B-Double Route, however, represents the most direct route from Fletcher’s to the Newell Highway. At the time of exhibition of the EIS and RTS, the containerised movement of reagents required the use of single trailer trucks and as such the gazetted of the route was not of major consequence.

Since the exhibition of the EIS and RTS, the Applicant has confirmed that the loading of B-Doubles at Fletcher’s could be accommodated. This would reduce the number of truck movements required and improve the efficiency of the transfer of reagents from Fletcher’s to the DZP Site.

As a result, the Applicant has modified the DZP slightly to include a transport route between Fletcher’s and the Newell Highway incorporating Yarrandale Road – Purvis Lane – Newell Highway (“Purvis Lane route”). This route is a gazetted B-Double and Road Train Route and the Applicant proposes to utilise this route until such time as the Boothenda Road route is gazetted a B-Double Route³.

The suitability of the Purvis Lane route has been confirmed by Constructive Solutions (see **Appendix 3**). Additional justification for the use of this route was supplied to P&I in correspondence dated 10 April 2014 (**54513_10D14_Dumpleton_e**) (see **Appendix 2**). Furthermore, TfNSW has confirmed the use of this route as suitable for the transfer of reagents between Fletcher’s and the Newell Highway subject to a commitment to revert to the Boothenda Road route once this is gazetted for B-Double transport. This commitment, Commitment 14.21 (see Section 8), is as follows.

³ The current realignment of the rail line and upgrading of the Boothenda Road intersection with the Newell Highway is a widely published project recently promoted by the local member (Troy Grant), RMS and Dubbo City Council. The upgrade is to allow road train and B-Double access to the Dubbo Stock Sale Yards and Fletcher International Exports, as well as access via Boothenda road to the B-Double route to Newcastle (avoiding Dubbo city).

Ensure that the approved heavy vehicle transportation route is amended to include the use of the intersection of the Newell Highway and Bootherba 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.

Figure 2.15 (Revised) presents an up to date plan of the proposed transport route.

4.7.4 Transport Volume

Worst case average daily truck movement volumes were presented in *Table 2.16* (of *Section 2.12.1*) of the EIS (p. 2-90).

Following further optimisation of transport logistics, which could include the inclusion of salt as a bulk reagent to be transported by rail, and inclusion of B-Double transport from Fletcher's, the proposed average truck movements per day has been revised downward for all three options. **Table 2.16 (Revised)** provides the proposed average daily truck movements based on the currently optimised transport logistics.

Table 2.16 (Revised)
Obley Road Daily Truck Movements

Option	Source to DZP Site	Fletcher's to DZP Site	Total
Option A: Rail to Toongi / Supplementary Road	61	-	61
Option B: Rail to Dubbo / Road to Toongi	64	61	125
Option C: Road Only	64	61	125
Note 1: The Applicant is also investigating the use of High Mass Limit trucks under Performance Based Standards accreditation which would increase the pay load of each B-Double by 2t to 2.5t (refer to Section 2.12.4.3).			

Appendix 4 provides a more detailed analysis of the reagents to be transported, volumes required and combination of road and rail transport for Options A, B and C.

Notably, the assessment of impacts on local traffic conditions contained within the EIS (*Section 2.12*) considered daily truck movements approximately 25% greater than those which are now more likely and presented in **Table 2.16 (Revised)**.

4.7.5 Haulage Rate

As noted in correspondence to P&I of 14 February 2014 (**54504_14B14_Dumpleton_e** – see **Appendix 2**), the Applicant would have a high level of control over the delivery of reagents and therefore, the variance between highest and lowest volume days will be relatively small. A variance of $\pm 20\%$ is likely to account for the vast majority of days. On the basis of 125 truck movement average, the 'maximum' number of truck movements on any day would be 150. This would likely occur on less than 5% of days annually (<15 days). Notably, the EIS assessed traffic of 158 movements per day.

4.7.6 Dangerous Goods Transport

The Applicant has confirmed that all products would be transported within Intermediate Bulk Containers (IBC's), in compliance with Chapter 6.5 of the *Australian Dangerous Goods Code* (ADG Code) (NTC, 2011). As such, transport of these products is not subject to the ADG Code under Special Provision AU01 which states:

“Environmentally Hazardous Substances meeting the descriptions of UN 3077 or UN 3082 are not subject to this Code when transported by road or rail in;

- a) packaging's that do not incorporate a receptacle exceeding 500 kg(L); or
- b) IBCs.”

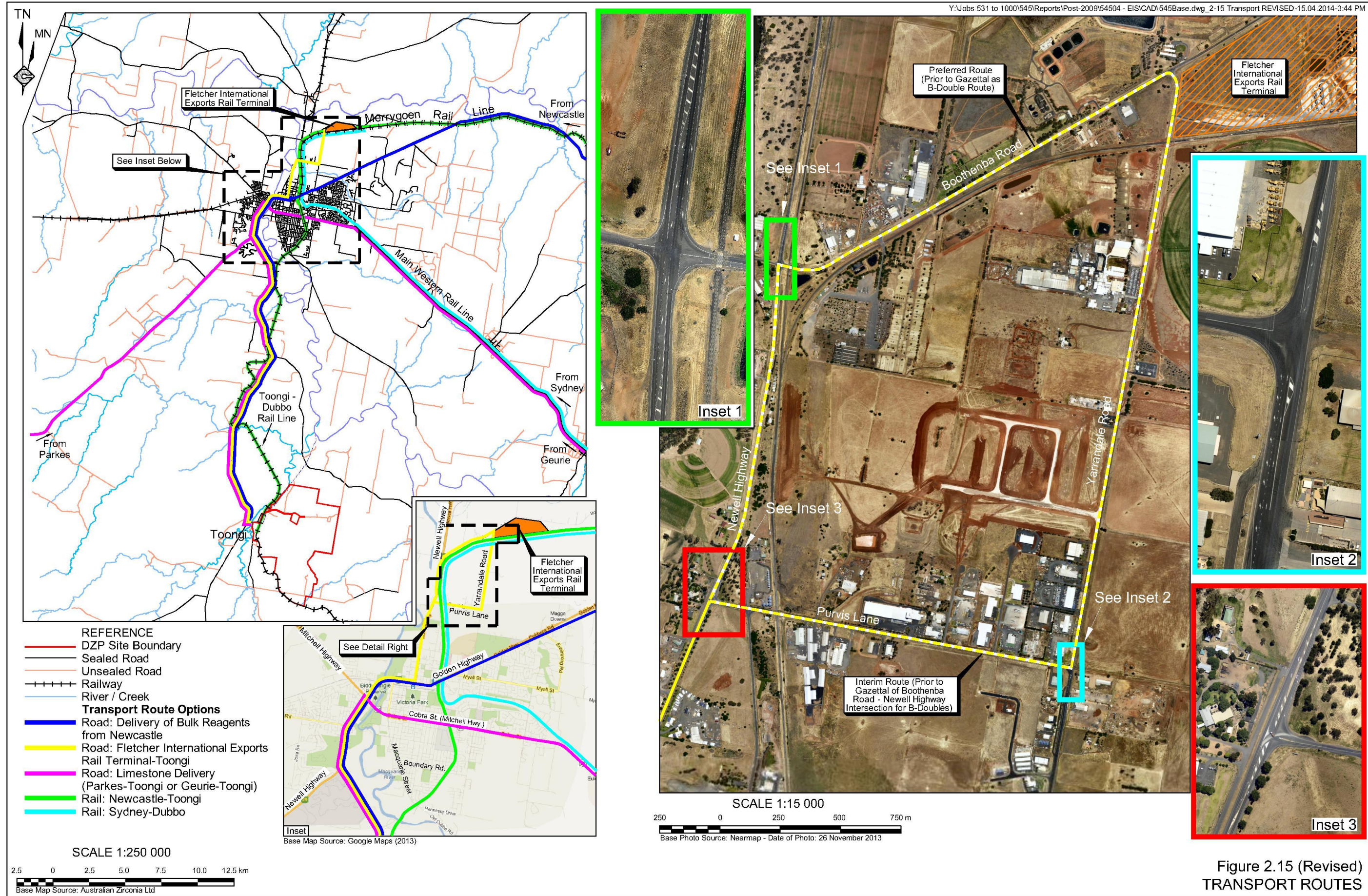
It is recognised that no such exemption applies to Marine Transport for these products, however, as noted in *Section 4.4.4* of the RTS (pp. 51-52) the Applicant is currently obtaining the relevant information to enable classification under UN 3077 and/or UN 3082 for the purposes of export.

4.7.7 Further Assessment

In accordance with the final assessment and recommendations of TfNSW with respect to the potential implementation of transport option A (rail to Toongi) (refer to Section 2.3 and **Appendix 1**), the Applicant is committed to undertaking the following additional evaluation, design and assessment.

- An economic evaluation of the reinstatement of the Toongi-Dubbo Rail Line will be completed for the maximum probable mine life, i.e. considering the continuation of operations beyond the proposed term of the current application until exhaustion of the Toongi ore body.
- Confirmation of rail upgrade requirements and formation of interface agreements for each railway crossing with the network owner and/or appropriate road authority.
- A comprehensive and robust network wide assessment of the impact of the proposed reuse of the Toongi –Dubbo Rail Line on local traffic conditions and the road network. The assessment will include a cost/benefit analysis of the rail transport option when compared to a road transport option.
- A detailed safety assessment of each of the rail crossings in accordance with the *Rail Safety Act 2012* and the network owner's accreditation, including a demonstration as to the safe operation of the proposed level crossing design.

The Applicant would complete each of the above, and obtain agreement for the reinstatement of services on the Toongi-Dubbo Rail Line from Country Rail Contracts of TfNSW, within two years of the commencement of operations on the DZP Site. This represents a reduction in the lead time nominated in the RTS (*Section 2*, p.4), however, is considered achievable.



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4.8 FINAL LAND USE

The final land use for the DZP Site presented on *Figure 2.21* and described in *Section 2.17.5* of the EIS includes reference to ‘Potential Future Industrial Use’.

In response, to comments from the Department of Primary Industries – Division of Resources & Energy (DRE) noting that the Applicant must develop a final land use that is consistent with existing surrounding land uses and zonings, the Applicant acknowledges that future industrial use of the nominated sections of the DZP Site occurring on land zoned RU1 Primary Production has not been approved. The final land use and rehabilitation plans have therefore been amended to reflect a return of land within the RU1 zone to agriculture until such time as an appropriate approval is obtained for an alternative development (see **Figure 2.21 (Revised)**).

5. WATER AVAILABILITY AND SECURITY

Section 2.8.2 of the EIS (pp. 2-60 to 2-63) presents the proposed Water Supply Strategy for the DZP. Further clarification has been provided to P&I in correspondence emailed on 14 April 2014 (**54513_14D14_Dumpleton_e** - see **Appendix 2**) to illustrate that this strategy can provide for water security even in years of low or no allocation of water from the Macquarie River.

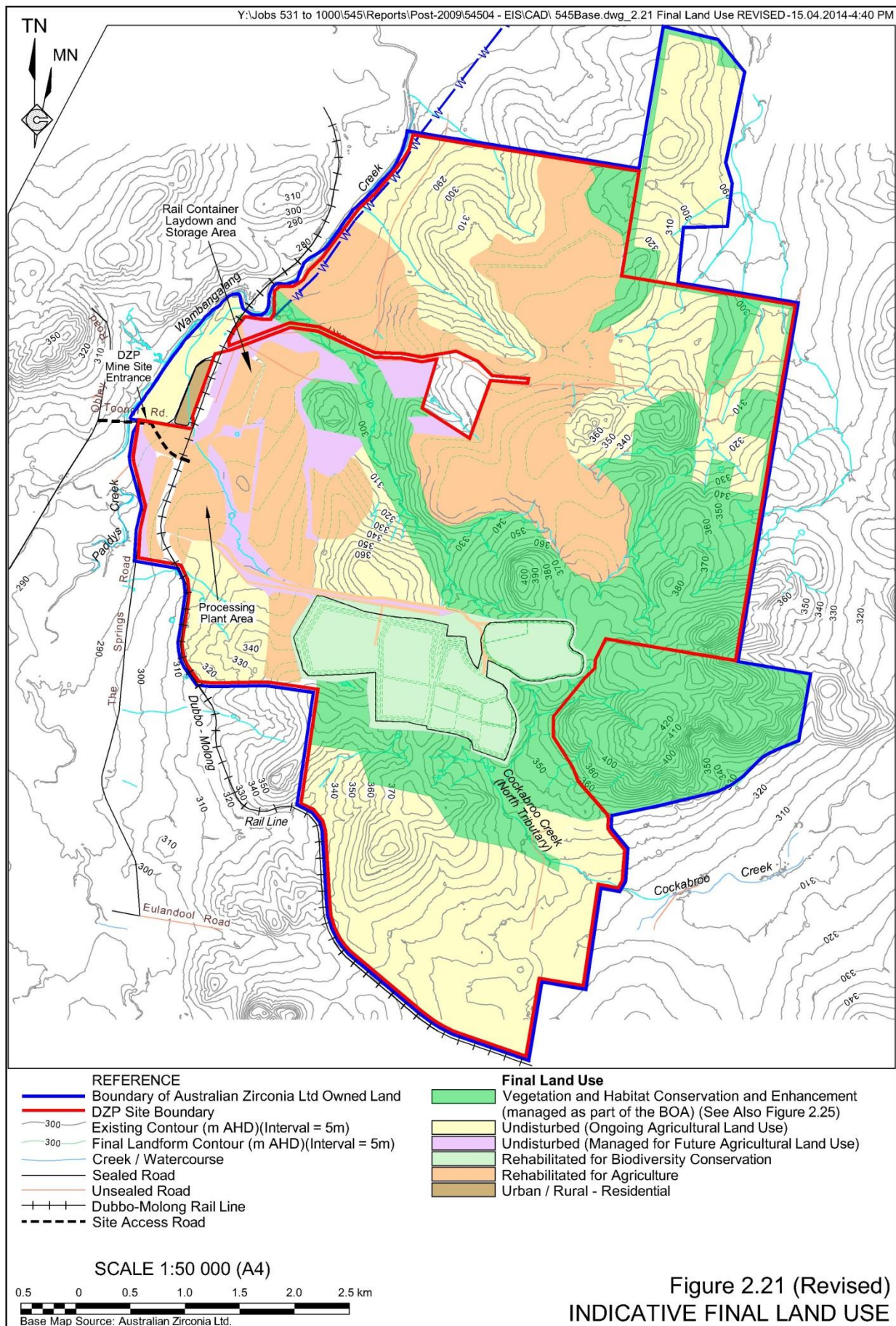
In summary, the Proponent intends on sourcing at least 75% (3 000ML) of its water requirements from High Security allocation from the *Water Sharing Plan for the Macquarie and Cudgong Regulated Rivers Water Source* and groundwater. These allocations entitle the licence holder to a specified number of units from the relevant water source. Each unit is currently equivalent to 1ML and therefore licence entitlement of 3 000 units will provide a secure source of 3 000ML of water annually. While there is the potential for the allocation per unit to be reduced, this would only occur under extreme circumstances, e.g. prolonged drought⁴, or in the event NOW determine the relevant aquifer has been over allocated.

The remaining 25% of the water supply would be obtained from General Security allocation of the Macquarie and Cudgong Regulated Rivers Water Source. The Applicant has nominated obtaining 5 000ML of allocation under general security, with trading to be undertaken as required to obtain the minimum 1 000MLpa.

To illustrate the availability of the 1 000ML of water subject to allocation each year, the following considers the period of 2008/2009 to 2013/2014 (a period of several low allocation, one full allocation and several average allocation years) and a strategy which could be employed to obtain the required volume of water.

- Approaching the **2008/2009** water year that AZL would have purchased water and hence carried over 100% (5 000ML). That is, while the allocation for **2008/2009** was only 10%, AZL could draw upon the water carried over from the previous water trading period.
- A position on other parcels could have been taken (up to 5 000ML) and “parked” with the sellers for the **2009/2010** year. This water would therefore be available to be transferred back to the AZL WAL(s) and drawn upon during the **2009/2010** year even though the allocation of General Security Water was 0%.

⁴ It is worth noting that even during the prolonged drought conditions of the 1995 to 2009, high security allocation from the Macquarie and Cudgong Regulated Rivers Water Source remained 100%.



- In **2010/2011**, when allocation is 100%, AZL could draw 1 000ML from its own WAL(s) and carry over the remainder (4 000ML) for the **2011/2012** year. As noted above, AZL could purchase additional temporary water to ensure that the entire 100% is carried over for the **2011/2012** year. Positions on other parcels could be taken and “parked” to provide for 100% availability of allocation for the **2012/2013** year.
- In **2011/2012**, when allocation is 49%, AZL could draw from the 1 000ML of carried over water temporary traded from willing sellers in **2010/2011**, carry over the 49% of its allocation from its own WAL(s) and purchase temporary water from willing sellers to ensure 5 000ML of water is carried over.
- A similar approach could be taken in **2012/2013**, when allocation of 53% was offered. That is, the water would be drawn preferentially from the temporary traded water carried over (the 53% allocation available on AZL’s own WAL(s)), with additional temporary trades made to ensure sufficient water is carried over to the next year (**2013/2014**), or parked with another licence(s) to be traded back in the year following (**2014/2015**).

For each year 2008/2009 to 2014/2015, it is demonstrated that at least 5 000ML (in excess of 5 years water) would be available. It is therefore demonstrated that even during periods of low allocation of General Security water, trading positions could and would be taken to ensure at least 5 000ML of water is available to draw against each year. Furthermore, evidence provided by NOW records of water trading indicate that even during periods of consecutive very low or zero allocation years, parcels of water remain available in the market place for trade or purchase (refer to **54513_14D14_Dumpleton_e – Appendix 2**). As such, the likelihood that the Applicant would not be able to obtain water under the rules of the Water Sharing Plan is considered very low.

6. REVIEW OF THE BIODIVERSITY OFFSET STRATEGY

Two requests for review of the proposed Biodiversity Offset Strategy were made following exhibition of the EIS.

- Dubbo City Council questioned whether the area of impact considered the clear zone required for Obley Road and therefore whether the credit requirements were correctly calculated.

Additional field survey of the Obley Road corridor was completed in December 2013 by OzArk Environment & Heritage Management Pty Limited (OzArk EHM) who recalculated the area of clearing required to be 2.05ha (of vegetation community CW213). While larger than the 1.08ha quoted in the EIS, it is still less than the area (2.43ha) used in the BioBanking Credit Calculator (refer to *Appendix 1c* of the RTS).

The Biodiversity Offset Strategy presented in the EIS therefore satisfactorily offsets the proposed disturbance of the Obley Road clear zone.

- The NSW Office of Environment & Heritage identified a minor error in the calculation of species credit requirements for the DZP.

OzArk EHM liaised with OEH and recalculated the species credits as requested. **Appendix 5** provides the final BioBanking Credit Report and correspondence of OzArk EHM to OEH following correction of the noted errors.

The updated BioBanking Credit Report confirms a surplus of credits for the Pink-tailed Worm-lizard (148) but a deficit of credits for the Grey Falcon (347 Credits) (see **Table A**).

Table A
Species Credit Matching

Species	Red flag	Species Tg value	Credits Required	Credits Generated	Credit Surplus / Deficit
Grey Falcon	No	0.74	6473	6126	-347
Pink-tailed Worm-lizard	No	0.35	1286	1434	148

The credit deficit for the Grey Falcon may be reduced to 199 (3% of the total credit requirement) by using the surplus credits for the Pink-tailed Worm-lizard. OEH has not objected to the application made by OzArk EHM (on behalf of the Applicant) (refer to **Appendix 5**) to waive this minor deficit in accordance with *Point (e) of Attachment B of the NSW OEH interim policy on assessing and offsetting biodiversity impacts of Part 3A, State significant development (SSD) and State significant infrastructure (SSI) projects* (OEH, 2011).

7. ASSESSMENT OF ENVIRONMENTAL IMPACTS

7.1 NOISE AND VIBRATION

7.1.1 Truck Pass-By Noise

In response to a request by Taronga Conservation Society Australia (Taronga) for additional assessment of truck pass-by noise at Taronga Western Plains Zoo, the Applicant commissioned EMGA Mitchell McLennan (EMM) to undertake monitoring of existing noise levels and maximum noise levels likely to result from truck pass-by's. *Appendix 3* of the RTS provides the results of this additional monitoring and modelling, which incorporates the road upgrades discussed in Section 4.6. In summary, the maximum noise levels received at the sensitive receivers nominated would be as follows.

- Breeding Pens: <65dB(A).
- Zoofari Lodge: not audible.
- Residence of K. Riley: <60dB(A).

These noise levels are below internal noise levels likely to cause sleep disturbance (60 to 65dB(A)) and therefore the impacts on either zoo animals or visitors are expected to be negligible. The above notwithstanding, and as nominated in *Section 4.11.4* of the RTS (p. 84), should the measures outlined above fail to mitigate the impacts of increased traffic on zoo animals and overnight guests, the Applicant would investigate construction of a vertical noise barrier adjacent to the breeding pens.

7.1.2 Construction Noise Assessment

Section 4.2.5.3 of the EIS discusses the methodology used to assess various ‘construction’ activities on the DZP Site and along the various corridors, and *Section 4.2.7.1* of the EIS provides the initial assessment. P&I queried the application of construction noise criteria to the nominated on-site works and requested a review of the predicted noise levels for these as well as off-site construction noise levels.

EMM were subsequently commissioned to undertake additional noise modelling of the activities nominated as ‘Construction’ in the EIS against the Intrusiveness (operational) Criteria of the Industrial Noise Policy. As relevant, these construction activities were modelled concurrently with the operational phase of the DZP. The additional modelling results and discussion (which are contained within the document **H12019 Dubbo Zirconia Project Response to PI**) are provided in **Appendix 6**. These results confirm the following.

- With the adoption of the practices outlined in Australian Standard (AS) 2436 to reduce construction noise emissions, operational noise criteria would be satisfied for all privately owned receptors, with the exception of R18.
- With the adoption of standard noise mitigation measures, the predicted maximum noise levels attributable to the various off-site construction activities would be restricted to below Highly Noise Affected Criteria.

The document **54513_07C14_Dumpleton_e** (see **Appendix 2**), provided to P&I on 7 March 2014, discusses the results of the additional construction noise modelling results and several other minor noise related queries

The results presented in **Appendix 6** with respect to the various construction activities on the DZP Site supersede the results discussed in *Section 4.2.7.1* (and *Table 4.11*) of the EIS.

7.1.3 Clarification over Noise Criteria

The Project Specific Noise Criteria established for Toongi Hall in *Section 4.2.4.2* and *Table 4.5* of the EIS (p. 4-23) references the ‘Passive Recreation’ Amenity Criteria. P&I sought clarification as to the appropriateness of this criterion. EMM address this query in the document **H12019 Dubbo Zirconia Project Response to PI** (see **Appendix 6**).

In summary, as no individuals permanently reside in this locality, adopting a residential receiver category in accordance with *Table 2.1* of the Industrial Noise Policy (INP) (EPA, 2000) is not appropriate. Furthermore, it is not suitable to apply an amenity based criteria that limits noise exposure over a range of assessment periods (day, evening and night) for a space that has no tangible hours of occupancy. Therefore, this area has been considered a passive recreation area, and is consistent with receptor categories such as national parks where camping is also permissible.

7.1.4 Water Pumping Infrastructure

It is noted that noise associated with water pumping from the Macquarie River was not modelled specifically in the EIS on the basis of the following.

- Discussions held with Mr. Matt Clatworthy (owner of the “Mia Mia” property on which the pump and pipeline easement would be located) in relation to location of the pump and issues of concern (see p. A5-6 of the EIS). Mr. Clatworthy, who has operated pumps on the river himself, did not raise noise as an issue. Furthermore, the agreement of Mr. Clatworthy to the establishment of a pipeline easement and pump station on the “Mia Mia” property establishes this property as project-related.
- The significant distance between the noise source and nearest residence (“Mia Mia” homestead) (615m). All other residences are approximately 1km or further from the proposed pump site.
- The commitment of the Applicant to enclose the pumps in “*A Hebel Panel of Coolroom style cladding of a room with approximate dimensions to cover 2 wet wells next to each other with approximate dimensions of 5.0m x 6.0m ... The roof is removable to allow a crane easy access to the pumps*” (see p. A5-11 of the EIS). This would offer significant noise attenuation to the single noise source.

As discussed in the document **54513_25C14_Dumpleton_e** submitted to P&I on 25 March 2014 (see **Appendix 2**), noise generated by the water pump infrastructure would almost certainly be less than 30dB or inaudible on the basis of the following.

- The likely sound power level of the pump would not exceed 110dB (and would more likely approximate 85 to 90dB).
- The likely 30-40dB reduction provided by the enclosure.
- The considerable distance (> 600m) to the nearest non-project related receiver.

7.2 AIR QUALITY

7.2.1 SO₂ Emission Predictions

On review of the EIS, the EPA requested the Applicant to investigate additional controls to eliminate the predicted exceedance of SO₂ emissions at the closest sensitive receiver. A single exceedance of the 10 minute and 1 hour criterion was predicted at Receiver R1 (see *Table 4.31* of the EIS).

Section 4.4.2 of the RTS provides the requested review. In summary, by reducing the SO₂ concentration of the acid plant stack to 190ppm (545mg/m³), compliance at all receivers was predicted under all conditions (see **Table 4.31 (Modified)**).

Table 4.31 (Modified)
Predicted Incremental and Cumulative SO₂ Emissions (Reduced In-Stack SO₂ Concentration)

		Incremental prediction				Cumulative prediction			
Averaging period		10 min	1 hour	24 hour	Annual	10 min	1 hour	24 hour	Annual
EPA Criterion		712	570	220	60	712	570	220	60
Adopted background		-	-	-	-	34	27	11	3
Receiver ID	1 ^a	675	472	20	1	709	499	31	4
	2	186	130	8	1	220	157	19	4
	10	424	296	12	1	458	323	23	4
	23	124	87	6	1	158	114	17	4
	24	200	140	6	1	234	167	17	4
	25	176	123	9	1	210	150	20	4
	26	216	151	11	0	250	178	22	3
	48 ^a	63	44	5	0	97	71	16	3
	49A ^a	37	26	4	0	71	53	15	3
	49B ^a	32	22	4	0	66	49	15	3
	51 ^b	148	103	6	1	182	130	17	4
	54 ^a	178	125	8	1	212	152	19	4
	55 ^c	174	122	7	1	208	149	18	4
	56 ^a	212	148	8	1	246	175	19	4
	58 ^c	400	280	13	1	434	307	24	4
	50 ^d	56	39	6	0	90	66	17	3
^a Mine owned residence; ^b Agreed contract (call option); ^c Agreed contract (put option); ^d Potential future residence.									
Source: PEL (2013)									

On the basis that emissions reduction technology which could reduce the SO₂ stack emissions to below 190ppm (refer to Section 4.4.2 of the RTS, pp. 50-51), AZL has committed to “*Incorporate emission reduction design to reduce operating SO₂ concentration of the Sulphuric Acid Plant stack to comply with criteria at sensitive receivers*” (refer to Commitment 5.6 – see Section 8).

Noting that final detailed design for the various processing plants remains to be completed, and as such the final SO₂ emission rate cannot be confirmed, the Applicant has committed to “*Complete modelling of gaseous emissions from the final plant design and provide results, along with discussion on application of all reasonable and feasible emissions reduction technology, to the Environment Protection Authority*” (refer to Commitment 5.7 – see Section 8).

7.3 WATER RESOURCES

7.3.1 Surface Water

Impact on Catchment Flows

Table 4.47 of the EIS (p. 4-112) notes that the DZP would result in a reduction in flow of 20% to the Macquarie River (Undefined) Catchment. As clarified in Section 4.5.3.3 of the RTS, the value of 20% actually refers to the area of the catchment contained on the DZP Site.



Furthermore, and as also discussed in *Section 4.5.3.3* of the RTS (pp. 57-59), the actual reduction in flow is actually more likely to approximate 65% and when compared against the estimated existing flow for the entire catchment, the reduction would be approximately 1.5%. A revised **Table 4.47** is presented below.

Table 4.47 (Revised)
Reductions in Annual Surface Water Flows – During the Life of the Proposal

Catchment	Area	Estimated Existing Flow	Estimated Temporary Reduction in Flow	Loss
Wambangalang and Paddys Creek Catchments	36 880ha ¹	26 100ML/year	338ML/year	1.3%
Cockabroo Creek catchment	590ha ²	420ML/year	20ML/year	5%
Macquarie River (undefined) Catchment	5 820ha ¹	4 120ML/year	65ML/year	1.5%
Note 1: Area upstream of DZP Site entrance				
Note 2: Area within DZP Site				
Source: SEEC (2013) – After Section 4.1.1				

Location of Processing Area Sediment Basins

With respect to the proposed surface water management controls presented on *Figure 4.23* of the EIS. It is confirmed that both SB2 and SB3 would be constructed above the 1 in 100 ARI flood level.

7.3.2 Groundwater

In response to a recommendation from NOW for further investigations to be undertaken to confirm the presence of permeable aquifers to enable consideration of adequate mitigation measures testing and contingencies, the Applicant has added Commitment 8.7 as follows.

- Drill and hydraulically test additional boreholes along the perimeters of the proposed LRSF to evaluate aquifer properties. If high permeability alluvial aquifers are identified below the proposed LRSF, AZL would either:
 - modify the extent of the LRSF to avoid potential interaction with high permeability aquifer;
 - construct the LRSF cells with a double liner system, leakage detection and capability to pump any leakage similar to the SRSF; and/or
 - design and/or install a quick response seepage interception system as part of the Groundwater Management and Mitigation Plan.

7.4 ECOLOGY

7.4.1 Vegetation of the Macquarie River Water Pipeline Route

Section 4.7.4.1.1 of the EIS (p. 4-158) identified the vegetation of the Macquarie River Water Pipeline as cropped and grazed paddocks without a BioBanking Assessment Methodology (BBAM) equivalent community.

In response to a request by OEH to confirm this assessment in accordance with BBAM, additional field survey was completed by OzArk EHM along the route of the proposed Macquarie River Water Pipeline.

The results of this survey are documented in Section 4.6.6 and Appendix 1a of the RTS which confirm that the pipeline corridor in its entirety is located on cleared agricultural ploughed land dominated by an understory greater than 50% weeds.

7.5 CULTURAL HERITAGE

7.5.1 Scarred Trees of the DZP Site

Figure 4.39 of the EIS incorrectly identifies Site GI-ST1 on the DZP Site. This site, along with PH-ST1, PH-ST2, TV-ST1 and TV-ST2 were classified originally as scarred trees, however, on review this classification was revised. **Figure 4.39 (Revised)** provides an accurate presentation of the identified Aboriginal Sites of the DZP Site.

7.6 AGRICULTURAL ISSUES

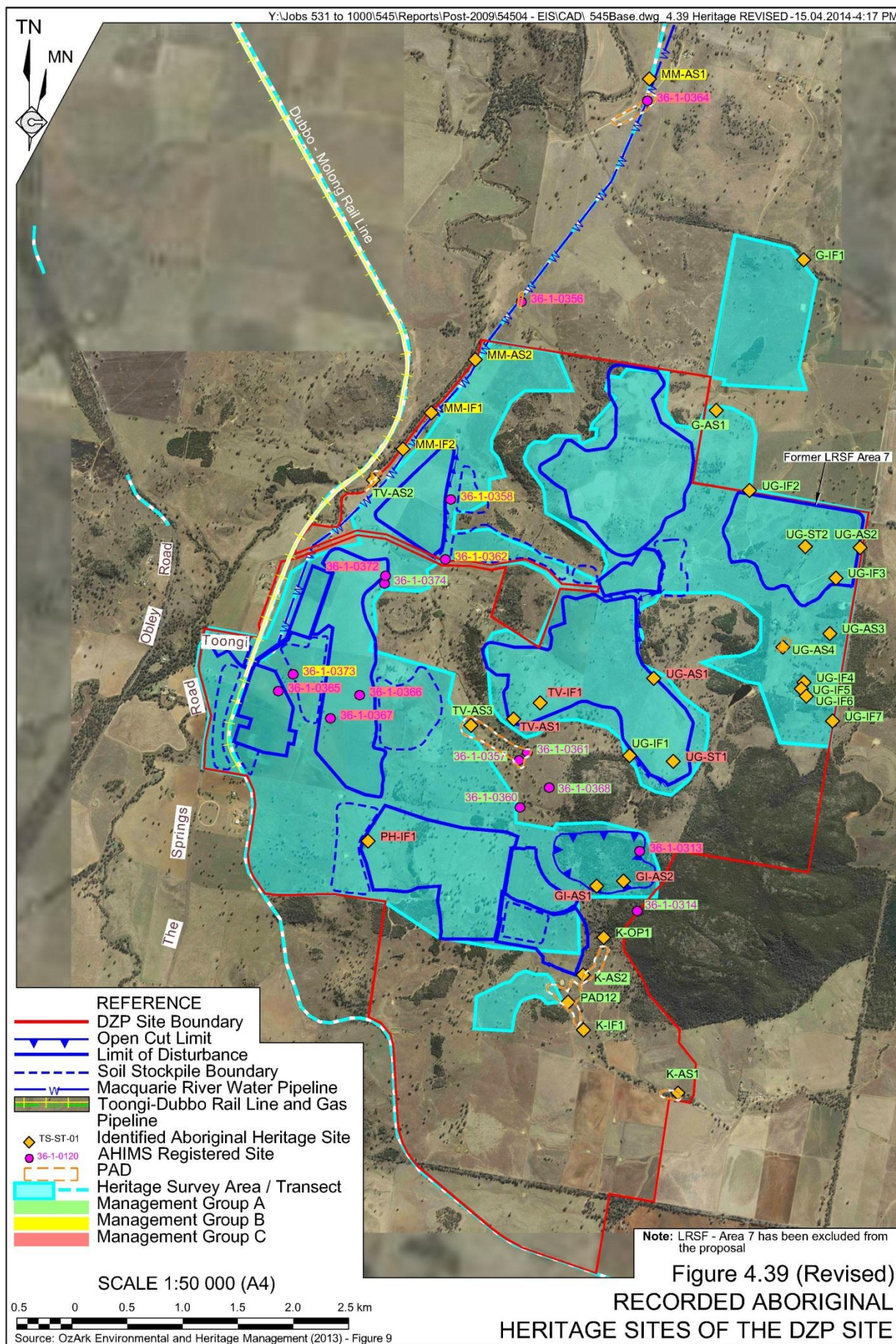
7.6.1 Biophysical Strategic Agricultural Land

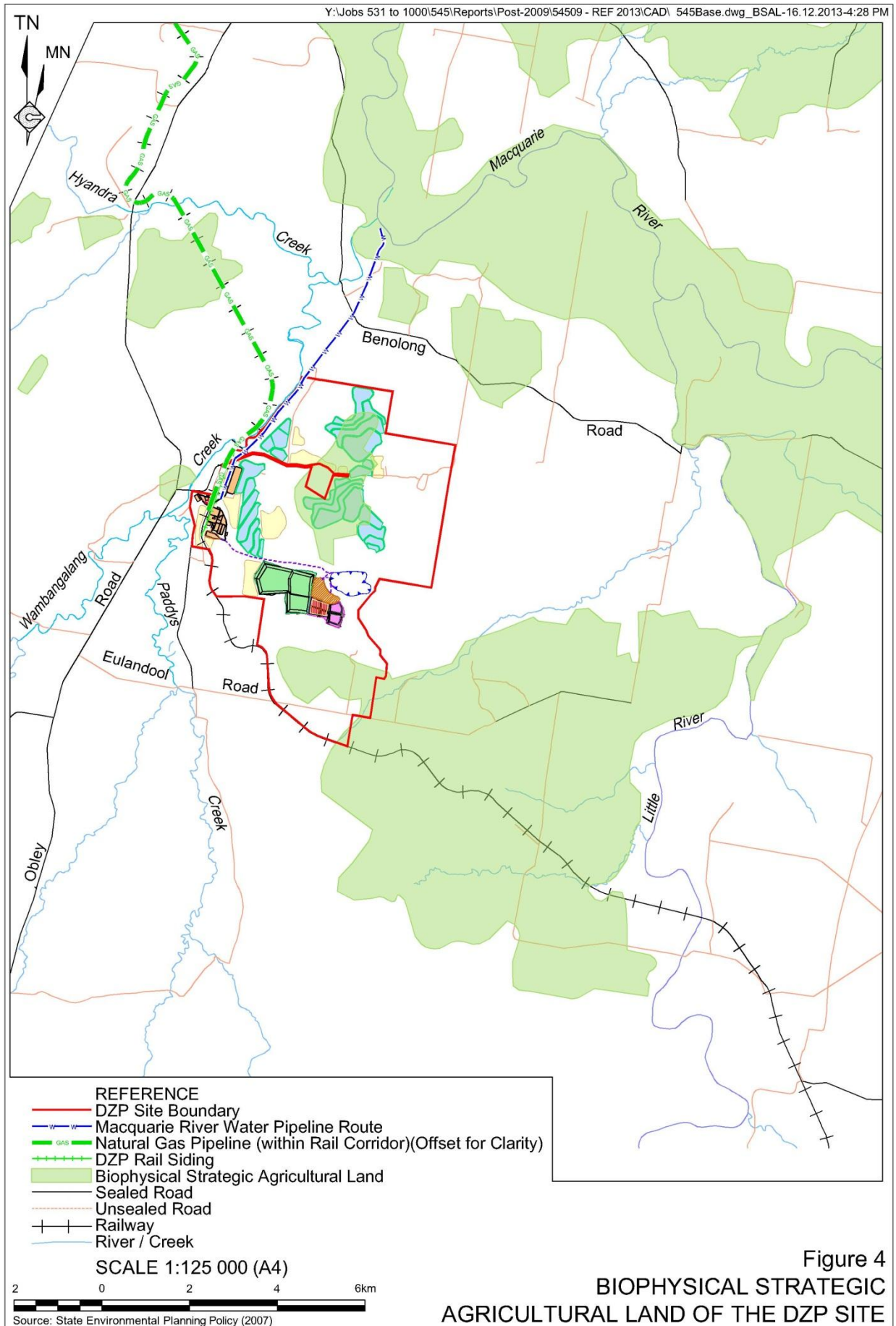
Biophysical Strategic Agricultural Land (BSAL) was not mapped nor identified as part of the EIS for the DZP as the amendment to the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) (Mining SEPP) had not been gazetted prior to the EIS being placed on public exhibition⁵.

While verification of BSAL on the DZP Site is not required on the basis of the above, **Figure 4** of the RTS (reproduced below) provides an illustration of the BSAL mapped over the DZP Site Layout by Strategic Agricultural Land Map – Sheet STA_022 (DP&I, 2013).

Figure 4 suggests that 148ha of LRSF Areas 4 and 5 occur on land identified as BSAL by the mapping currently on exhibition. A desktop review of the potential BSAL on the DZP Site undertaken by SSM, and their knowledge gained through on site investigations suggests that this BSAL mapping likely overstates the BSAL of the DZP Site. BSAL is more likely to be confined to the flatter land adjoining Wambangalang Creek.

⁵ The Mining SEPP amendment 2013 was gazetted on 4 October 2013, which follows the exhibition of the EIS on 18 September 2013.





Noting the occurrence of BSAL on the DZP Site, and importance of maintaining agricultural activity in the local area, the Applicant has committed to “*Establish Land and Soil Capability Classes as nominated in Table 4.71 of the EIS*” (Commitment 13.21 – see Section 8).

7.7 TRANSPORT

7.7.1 Obley Road Clear Zone

In response to a request by Dubbo City Council that a 10m clear zone be applied to the Obley Road upgrade, a review of *Part 6 of the Guide to Road Design* (Austroads, 2010) was completed (see *Section 4.2.2.3(l)* of the RTS). This review confirmed that the blanket application of a 10m vegetation clear zone is not the intent, or an accurate application of Austroads (2010).

In summary, *Section 4.2.2.3(l)* of the RTS confirmed that the clear zone established for a road should reflect the speed zone, average traffic volume and slope of the fill or cut batter on either side of the road. By referencing *Tables 4.1 and 4.2* of Austroads (2010), it is established that the appropriate clear zone for straight sections of road built on flat to 6:1 fill batters for the traffic volumes predicted (750 – 1 500) is 7.5m. By applying the maximum correction factor of 1.5, the clear zone requirement for road curves increases to 9m.

Commitment 14.5 (see Section 8) provides for these standard clear zones.

7.7.2 Obley Road – Newell Highway Intersection Performance

In response to a request by TfNSW, additional SIDRA modelling of performance of the Obley Road – Newell Highway has been undertaken. The modelling considered the peak travel period of 8:00am to 9:00am and 3:00pm and 4:00pm with the afternoon peak hour period identified as carrying the greatest volume of traffic. The input parameters to the SIDRA model were revised in consultation with, and to the satisfaction of TfNSW.

For the purpose of modelling a worst-case scenario, the maximum operational traffic volumes were considered, i.e. 8 heavy vehicle movements through the intersection per 15 minutes, i.e. 32 movements per hour, have been considered. **Table B** below (originally presented in document **54513_10D14_Dumpleton_e** supplied to P&I on 10 April 2014) describes the orientation of these movements over the maximum 15 minute and 1 hour period.

On the basis of this updated SIDRA modelling, the analysis presented in *Table 4.80* of the EIS has been superseded. **Table 4.80 (Revised)** provides the updated intersection performance analysis for the Obley Road – Newell Highway intersection following the most recent modelling.

The results clearly indicate that the introduction of traffic by the DZP, which represents only a relatively minor percentage, would not significantly impact upon the performance of the intersections.

Table B
Maximum DZP Traffic Movements through Obley Road – Newell Highway Intersection

Movement		DZP Traffic Movements	
		15 minute	1 hour
Newell Hwy - Northbound	Through (to Dubbo)	0	0
	Right Turn (on to Obley Road)	1	4
Obley Rd	Left Turn (on to Newell Highway)	1	4
	Right Turn (on to Newell Highway)	3	12
Newell Hwy - Southbound	Through (from Dubbo)	0	0
	Left Turn (on to Obley Road)	3	12
Total		8	32

Table 4.80 (Revised)
Modelled Future Traffic Conditions – Peak Operation

Intersection	Scenarios	Peak Flow	DoS*	Delays (Sec)	LoS* (worst)	Queue (m)
Newell Highway and Obley Road	Background Traffic (2033)	702	0.178	15.7	B	7.3
	Background Traffic (2033) + DZP Traffic	784	0.326	17.5	B	12.1
*DoS = Degree of Saturation *LoS = Level of Service ⁶						
Source: Constructive Solutions (2013) – Table 16						

Notably, the analysis included in *Section 4.12.5.1* of the EIS (p. 4-279) remains valid, i.e. the introduction of DZP-related traffic would not significantly impact upon the performance of the intersections. The final SIDRA modelling confirms that even during the peak traffic period with the maximum number of DZP vehicles using the intersection, practical spare capacity of the intersection remains 145.5%.

7.7.3 Rail Level Crossings

Section 4.12.5.7 of the EIS provides an assessment of the likely impact on road traffic of the reopening of rail level crossings associated with the Toongi-Dubbo Rail Line. Further analysis of possible delays and queue lengths has been undertaken and provided to P&I (54513_07C14_Dumpleton_e – see **Appendix 2**). The analysis considered updated information on the likely train operations and local traffic conditions as follows.

- 41 wagon train (~750m).
- Train moving at both 10km/hr and 20km/hr.
- Traffic for the 24 Hourly periods.
- 2012 traffic and predicted 2036 traffic.

⁶ Level of Service (LoS) is a qualitative measure describing operational conditions within a traffic stream and takes into account service measures such as speed and travel time, freedom to manoeuvre, traffic interruptions, safety, comfort and convenience. There are six levels of service, designated A (best – free flow) to F (worst – breakdown in flow) (Austroads, 2005)

The detailed analysis is included in an attached spreadsheet with **Charts 1 to 4** illustrating the variability in queue length.

The analysis illustrates that the queue length would vary significantly depending on the time of day the crossing is closed. Between 8:00am and 6:00pm, queues of up to 81 cars are predicted based on current traffic levels, increasing to 146 based on forecast 2036 traffic (with growth set at a reasonably high rate of 1.5% per annum), at the Mitchell Highway. However, between 9:00pm and 6:00am the number of queuing cars reduces significantly (maximum of 33 at the Mitchell Highway for a 6 minute delay in 2036).

The speed of the train through Dubbo would also have a significant influence on queue length with approximately 70% more vehicles queuing during the 6 minute delay (10km/hr train) when compared to the 3.5 minute delay (20km/hr train).

The analysis illustrates that the optimal period for rail movement would be between 7:00pm and 7:00am. This fits in with AZL's preferred timetable for train loading and unloading.

As noted in Section 4.7.7, the Applicant understands that prior to obtaining final approval for operation within the rail easement from the rail authority, further analysis of impacts on the local road network and traffic conditions will be required. On the basis of this analysis, final design criteria for the rail level crossings will be determined.

7.8 HAZARDS

7.8.1 Transport Hazard Assessment

Following exhibition of the EIS, a Transport Hazard Analysis was completed by Sherpa Consulting Pty Ltd (Sherpa, 2013). Discussion on this analysis is provided in *Section 3.4* of the RTS and the complete document included as *Appendix 4* of the RTS.

7.8.2 Bushfire Hazard Assessment

Following the exhibition of the EIS, the Bushfire Attack Level (BAL) for the DZP Site was established to replace the Bushfire Attack Category presented in *Table 4.84* of the EIS. **Table 4.84 (Revised)** provides the Bushfire Hazard Assessment incorporating the more up to date BAL.

Table 4.84 (Revised)
Bush Fire Hazard Assessment

Vegetation Classification	Slope	Distance to Activities	Category of Bush Fire Attack
Dry Sclerophyll Forest (Open Forest)	>15° to 18°	>100m	Low
	>5° to 10°	43 – 100m	12.5
Heathlands (shrublands)	>15° to 18°	>100m	Low
Grasslands	0° to <5°	<22m	12.5
Sourced: Based on Appendix 3.3 of RFS (2012) and AS3959:2009			

An updated assessment of bushfire hazard is provided by Section 4.2.5 of the RTS (pp. 34-37).

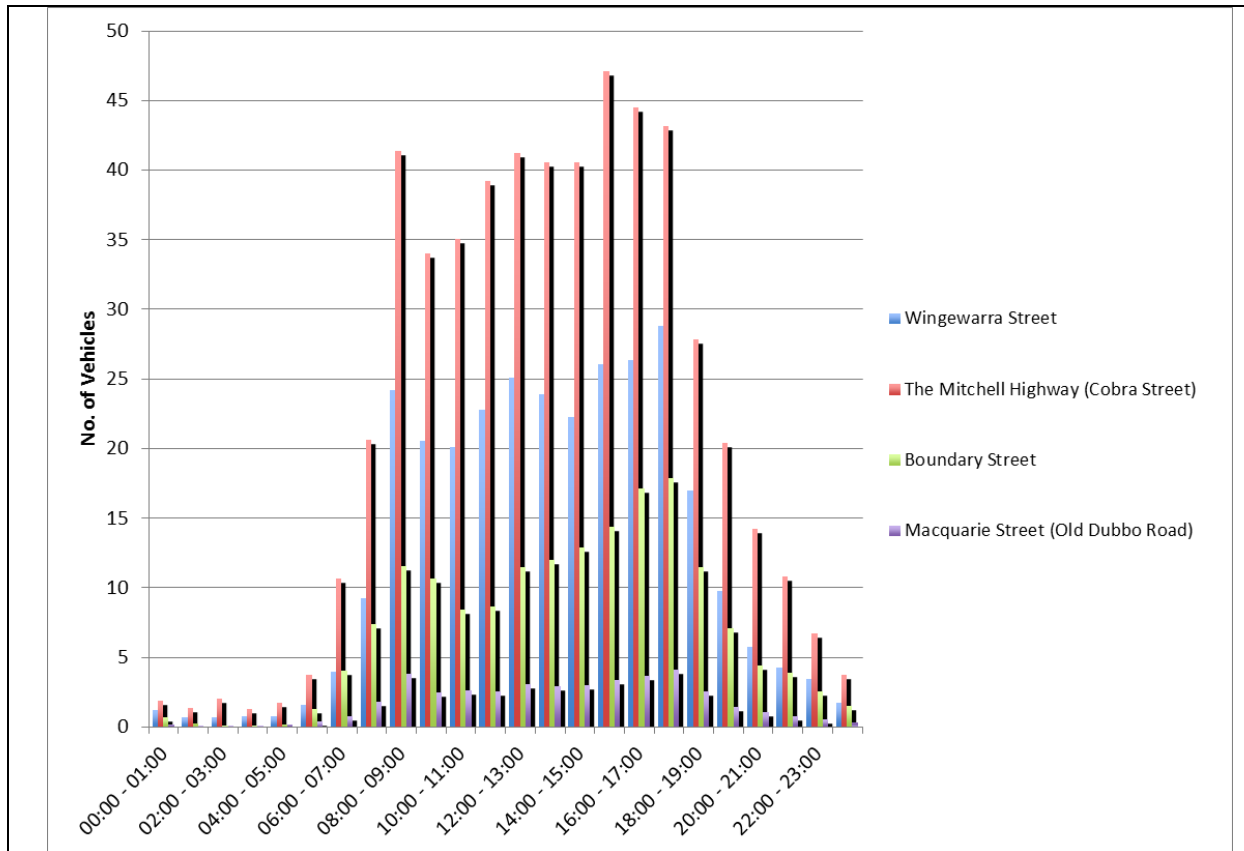


CHART 1
2012 TRAFFIC / 3.5 MINUTE DELAY (20KM/HR TRAIN)

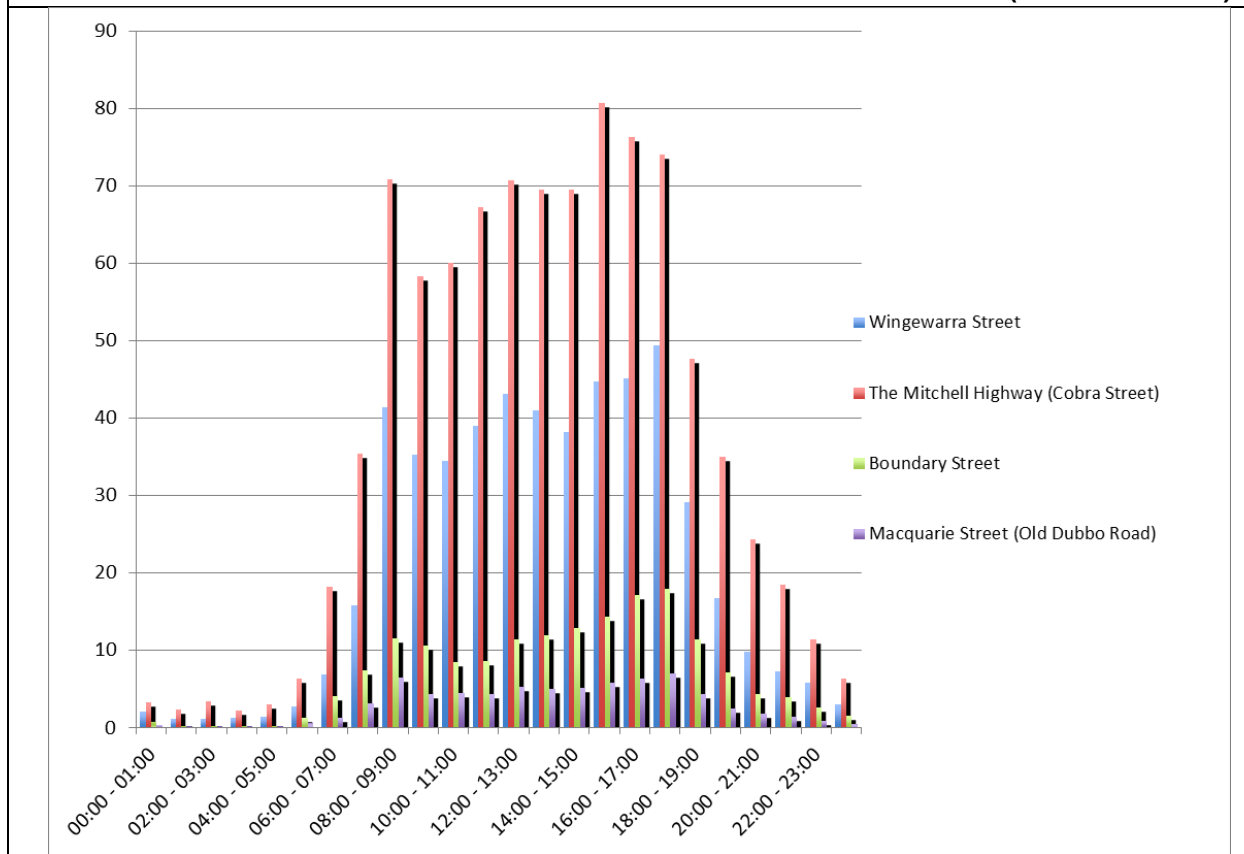


CHART 2
2012 TRAFFIC / 6 MINUTE DELAY (10KM/HR TRAIN)

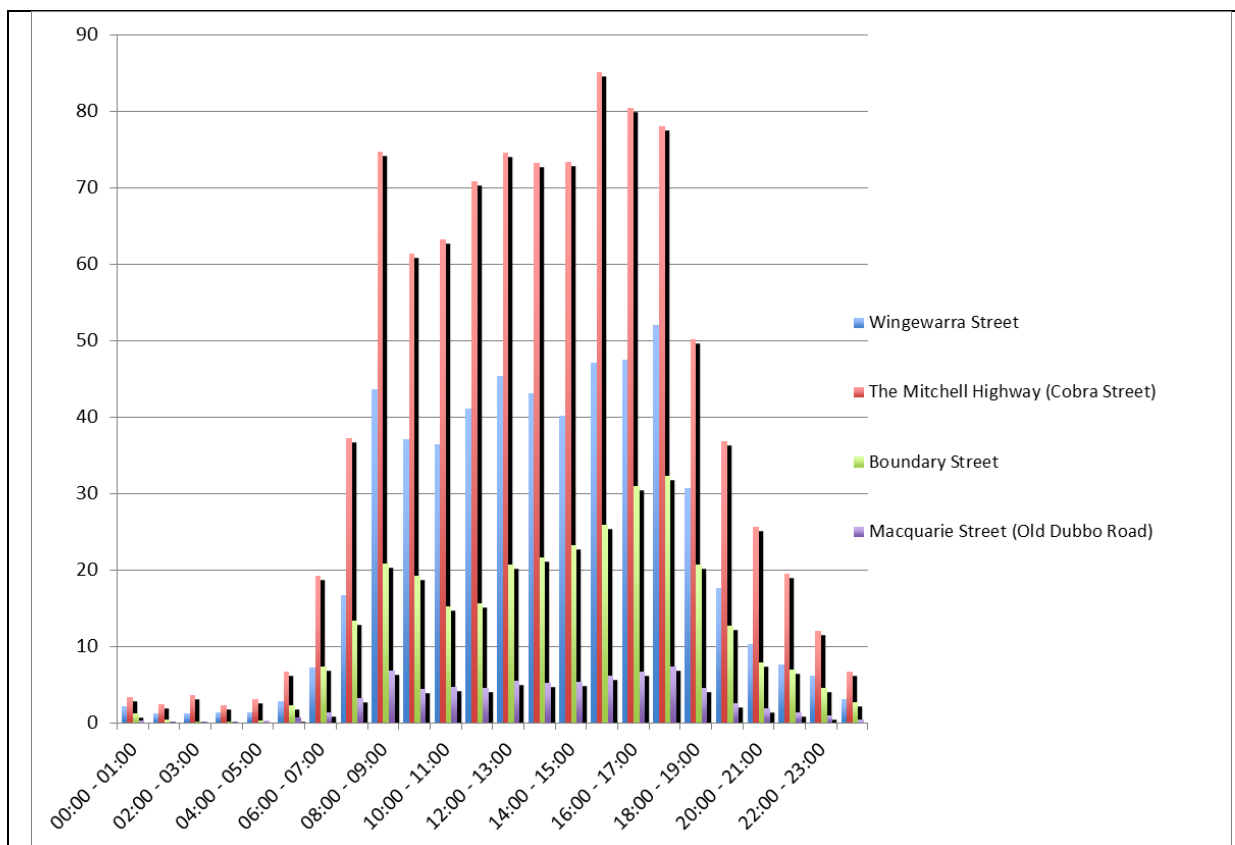


CHART 3
2036 TRAFFIC / 3.5 MINUTE DELAY (20KM/HR TRAIN)

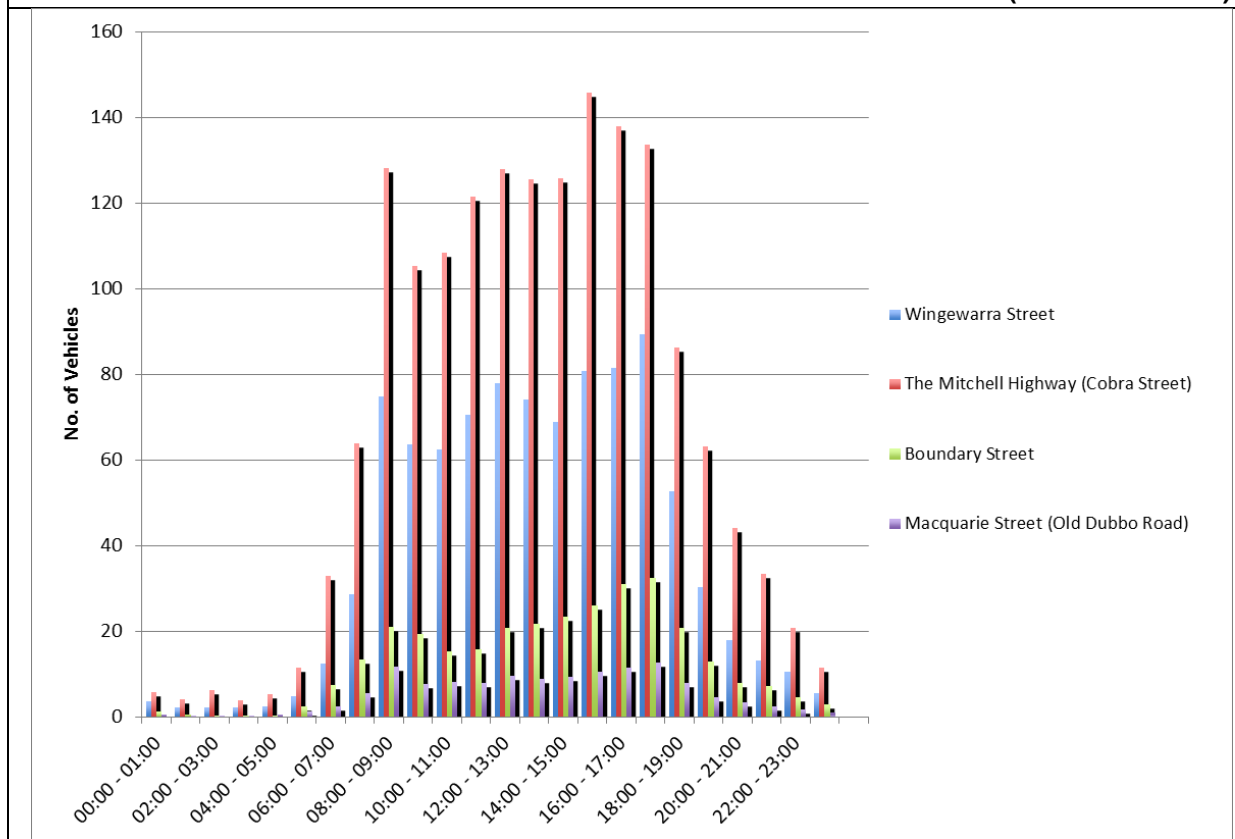


CHART 4
2036 TRAFFIC / 6 MINUTE DELAY (10KM/HR TRAIN)

7.8.3 Hazardous Materials

The Materials Safety Data Sheets for the two Zirconia products (ZrO_2 and $ZrOH_4$) were updated following exhibition of the EIS and are contained within *Appendix 6* of the RTS. Section 4.7.6 discusses the transport of hazardous materials and dangerous goods to and from the DZP Site.

8. STATEMENT OF COMMITMENTS

Table C presents a revised set of commitments, reflecting additional commitments made in response to issues raised in the submissions or other correspondence of the government agencies or general public. Commitments revised or added to those presented in the EIS and included in Table 10 of the RTS are provided in **red text**. Commitments made subsequent to the RTS in response to additional feedback or comments received from government agencies are provided in **blue text**.

Table C
Final Statement of Commitments

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Desired Outcome	Action	Timing
1. Environmental Management		
Compliance with all conditional requirements in all approvals licences and leases.	1.1 Comply with all commitments recorded in Table 5.1 (this table).	Continuous and as required.
	1.2 Comply with all conditional requirements included in the: <ul style="list-style-type: none"> • Development consent; • Environment Protection Licence; • Mining Lease(s); • Approval under the EPBC Act; and • any other approvals. 	Ongoing.
2. Area of Activities		
All approved activities are undertaken generally in the location(s) nominated on the figures shown in Sections 2 and 4.	2.1 Mark, and where appropriate, survey the boundaries of the areas of proposed disturbance on the DZP Site.	Prior to the commencement of site establishment and construction in the respective component area.
	2.2 Mark, and where appropriate, survey the alignment of the Toongi – Dubbo Rail Line and Gas Pipeline Corridor.	Prior to the commencement of the relevant activity.
	2.3 Mark, and where appropriate, survey the alignment of the Macquarie River Water Pipeline.	Prior to the commencement of the relevant activity.
	2.4 Mark, and where appropriate fence, boundaries relevant to the Biodiversity Offset Area.	Within 6 months of approval of the Biodiversity Offset Area.

Table C (Cont'd)
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Desired Outcome	Action	Timing
2. Area of Activities (Cont'd)		
Undertake earthworks with regard to paleontological record of 'Fossil Hill'.	2.5 Undertake (or provide for) an inspection of the 'Fossil Hill' location by a qualified person for any further geological and paleontological information.	Prior to earthworks over or in the vicinity of 'Fossil Hill'.
	2.6 Retain at least one exposure for future reference.	Ongoing.
3. Operating Hours		
All operations are undertaken within the approved operating hours.	3.1 Undertake all activities, where practicable, in accordance with the following operating hours.	Continuous and as required.
4. Noise		
Noise generated by construction and operational activities does not exceed intrusiveness criteria nor significantly impacts on neighbouring landowners and/or residents.	4.1 Strictly adhere to the INP nominated standard hours of operation.	On-going.
	4.2 Install and maintain appropriate mufflers and noise retarding barriers to mechanical plant and equipment.	Ongoing.
	4.3 Prohibit unnecessary idling of equipment during construction operations.	Ongoing during construction.
	4.4 Fit broadband (frequency modulated) reversing alarms to mobile equipment.	Ongoing.
	4.5 Notify local residences of plans for nearby construction, duration of construction and plans in place to mitigate noise impacts.	As required during construction.
	4.6 Educate all contractors and personnel regarding the sensitivities relating to noise	Ongoing and as part of site induction.

Table C (Cont'd)
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Desired Outcome	Action	Timing
4. Noise (Cont'd)		
Noise generated by construction and operational activities does not exceed intrusiveness criteria nor significantly impacts on neighbouring landowners and/or residents. (Cont'd)	4.7 Construct semi-enclosed barriers and screens around the crushing plant and ore handling circuit (or as final design indicates is required to meet noise criteria).	Prior to commencement of plant operation.
	4.8 Complete a detailed review of potential enclosures, noise barriers and other attenuating measures prior to construction, taking into consideration the frequency and amplitude generated by the processing plant.	Prior to construction of processing plant noise attenuation.
	4.9 Avoid night time loading and unloading of trains (unless necessary to meet allocated rail path).	Ongoing.
	4.10 Enforce low noise operation of forklifts for night time loading and unloading of trains.	Ongoing.
	4.11 Prepare a <i>Noise Management Plan</i> (NMP) detailing activities to manage construction and operational noise emissions from project-related activities.	Prior to the commencement of the construction activities.
Noise generated by blasting does not exceed criteria nor significantly impacts on neighbouring landowners and/or residents.	4.12 Design and implement blasting events by a suitably qualified blasting engineer or experienced shot-firer to ensure all relevant noise and safety criteria are met.	Ongoing.
	4.13 Prepare a <i>Blast Management Plan</i> (BMP) detailing activities to manage blasting and vibration emissions from project-related activities.	Prior to the commencement of blasting.
Noise generated by DZP traffic does not exceed criteria nor does it significantly impact on neighbouring landowners and/or residents.	4.14 Ensure, asphaltic concrete seal applied to Obley Road for 2.4km from Newell Highway and 950m from Toongi Road intersection (see also Commitment 14.9).	During construction.
	4.15 Include noise minimisation requirements, e.g. no use of engine brakes on approach to Toongi Road, within a Driver Code of Conduct.	Prior to commencement of operations.
Noise generated by the DZP is monitored and procedures developed and implemented to respond to ensure compliance is maintained.	4.16 Install real-time noise monitoring and communication equipment at an appropriate location.	Prior to commencement of operations.
	4.17 Establish noise monitoring procedures for identifying and managing elevated noise levels .	
	4.18 Ensure that a 24-hour complaints telephone line is maintained and that the surrounding community is made aware of the number.	Prior to the commencement of operations.
	4.19 Ensure that prompt action is taken to identify the nature of any complaint received and verify the relevant noise levels using the real-time noise monitoring equipment.	Within 24 hours of receipt of complaint.
5. Air Quality		
Dust generated during the construction stage does not exceed the nominated air quality criteria.	5.1 Identify triggers and procedures for dealing with unfavourable meteorological conditions, such as when it is dry and windy.	Prior to commencement of construction stage.

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Desired Outcome	Action	Timing
5. Air Quality (Cont'd)		
Dust generated during the operations stage does not exceed the nominated air quality criteria. (Cont'd)	5.2 Prepare an <i>Air Quality Management Plan</i> (AQMP) prior to the commencement of operations to record procedures for controlling dust impacts during operations.	Prior to commencement of operations.
	5.3 Undertake watering of haul roads to control of dust.	Ongoing and as required.
	5.4 Implement dust control measures during drilling of ore and overburden.	Ongoing and as required.
	5.5 Prevent wind erosion on stockpiled material.	Ongoing and as required.
	5.6 Use dust control measures at relevant crushers and miscellaneous transfer points.	Ongoing and as required.
Minimise emissions to the atmosphere from the processing plant.	5.7 Incorporate emission reduction design to reduce operating SO ₂ concentration of the Sulphuric Acid Plant stack to comply with criteria at sensitive receivers.	Ongoing.
	5.8 Operate a dust capture system such as a bag house to capture particulate matter from the grinding mill.	Ongoing.
	5.9 Regulate emissions from the stacks and vents by operating within the prescribed in-stack concentrations limits.	Ongoing.
	5.10 Undertake periodic extractive monitoring to demonstrate compliance with in-stack limits.	Every 3 months for the first year of operation and then annually, if compliance achieved.
	5.11 Implement a regular and documented maintenance and inspection program for all plant items where emissions to air are deemed likely.	Prior to commencement of processing and then ongoing.
	5.12 Complete modelling of gaseous emissions from the final plant design and provide results, along with discussion on application of all reasonable and feasible emissions reduction technology, to the Environment Protection Authority.	Prior to, or as part of an application for an Environment Protection Licence.
6. Radiation		
Provide for appropriate controls to minimise potential for discharge or dispersal of radiation.	6.1 Design the residue storage facilities as a zero-discharge facility with a geo-membrane lining and leak detection system.	Complete.
	6.2 Ensure that all heavy mining equipment is air conditioned to minimise impacts of dust to workers.	Ongoing.
	6.3 Minimise dust using standard dust suppression techniques (refer to Commitments 5.2 to 5.5).	Ongoing.
	6.4 Construct a separate wash-down pad for vehicles that have come from any operating areas.	During construction phase.

Table C (Cont'd)
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Desired Outcome	Action	Timing
6. Radiation (Cont'd)		
Provide for appropriate controls to minimise potential for discharge or dispersal of radiation. (Cont'd)	6.5 Construct bunding to collect and contain spillages from tanks containing process slurries.	During construction phase.
	6.6 Bury or bund the residue pipelines to control spillage from residue pipeline failures.	During construction phase.
	6.7 Ensure sufficient access and egress for mobile equipment to allow clean-up where there is the possibility for large spillages.	Ongoing.
	6.8 Achieve nominated leach and precipitation of radionuclides from ore prior to production of final compounds.	Ongoing.
	6.9 Install a system to capture and remove volatilised Polonium 210 and Lead 210 prior to ventilation from the FeNb processing circuit.	During construction phase.
	6.10 Remove and residues from the scrubbing circuit and combine with other solid residues for disposal in the SRSF.	Ongoing.
Appropriately classify work areas to allow for implementation of appropriate OHS management.	6.11 Define and operate the DZP Site as a "supervised area" (as defined in ARPANSA, 2005).	Prior to commencement of mining and processing.
	6.12 Define and operate the open cut, crushing and grinding areas, light rare earths processing area and FeNb processing circuit as "controlled areas" (as defined in ARPANSA, 2005).	
	6.13 Define and designate employees working in the controlled areas as designated radiation workers.	
	6.14 Ensure "designated workers" change into work clothes at the commencement of their shift and then shower and change into "street clothes" at the end of their shift.	
	6.15 Launder dirty clothes on-site, with waste water sent to an on-site water treatment plant.	
Ensure only authorised access to the DZP Site.	6.16 Ensure all visitors entering and departing the DZP Site report to the gatehouse or other nominated locations for registration including time of arrival and departure, and an induction, if required.	Prior to commencement of mining and processing.
	6.17 Link access to the DZP to a record keeping system to ensure that all personnel accessing the DZP Site have been appropriately inducted.	
	6.18 Ensure vehicle access is through a controlled access point.	
	6.19 Ensure the exit from the DZP Site of all vehicles having trafficked a controlled area pass through the wheel wash.	
Establishment of site-wide administrative controls.	6.20 Ensure pre-employment and routine medical checks for workers.	Prior to employment.
	6.21 Ensure inductions and regular training of all employees and contractors	As part of induction and then ongoing.

Table C (Cont'd)
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Desired Outcome	Action	Timing
6. Radiation (Cont'd)		
Establishment of site-wide administrative controls. (Cont'd)	6.22 Develop safe work procedures which will include: radiation safety aspects; procedures to segregate, isolate and clean up contamination or contaminated equipment; and procedures for equipment or materials leaving the controlled area.	Prior to commencement of operations.
	6.23 Enforce mandatory use of personal hygiene facilities (wash facilities) at entrances to lunch rooms and offices.	Ongoing.
	6.24 Employ suitably qualified and experienced radiation safety professionals to assist during the final design, construction and the operational phases of the Proposal.	As required.
	6.25 Use a computer-based data management system to store and manage all information relating to radiation management and monitoring.	Develop prior to commencement and operate for the life of the DZP.
Systems for managing potentially radioactive wastes.	6.26 Ensure material such as contaminated equipment and wastes from operational areas, including discarded conveyor belts, rubber lining material, pipes, filter media and used protective equipment is cleaned within the Processing Plant Area and disposed of in accordance with approved regulatory controls.	As required.
7. Surface Water		
Appropriately document water management measures including erosion and sediment control.	7.1 Prepare and continuously update a <i>Water Management Plan</i> for the Proposal, including a detailed <i>Erosion and Sediment Control Plan</i> prepared by a suitably qualified expert.	Prior to commencement of operations.
Separate clean water from dirty water	7.2 Ensure that all surface water flows from undisturbed sections of the DZP Site are diverted around disturbed sections and are permitted to flow to natural drainage.	Ongoing.
Design and construct surface water management structures to prevent the discharge of polluted water from the DZP Site and minimise impacts on environmental flows.	7.3 Ensure that all potentially salt or chemical-laden water is retained within the DZP Site and is used for processing operations or is sent to the LRSF.	Ongoing.
	7.4 Ensure 1m freeboard is maintained to provide for 1 in 10 000 ARI event and effects of wave run-up in the LRSF.	Prior to discharge of liquid residue.
	7.5 Complete a detailed analysis of wave run-up and (if necessary) provide for management measures as required.	Prior to LRSF construction.
	7.6 Ensure that all runoff from mineralised ore or waste rock, i.e. from the ROM Pad or WRE, is directed to storage basins capable of accepting double the 1 in 100 ARI storm event and equipped with pumps.	Ongoing.
	7.7 Activate pumps following in-flow of water to the storage basins and discharge to the LRSF.	As required.

Table C (Cont'd)
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Desired Outcome	Action	Timing
7. Surface Water (Cont'd)		
Design and construct surface water management structures to prevent the discharge of polluted water from the DZP Site and minimise impacts on environmental flows. (Cont'd)	7.8 Ensure that all potentially sediment-laden water is directed to appropriately designed sediment basins and is either used for processing operations or dust suppression or, following testing to verify the quality of the water is acceptable, is discharged to natural drainage.	Ongoing.
Site infrastructure does not compromise surface water management.	7.9 Ensure that all roads within the DZP Site are constructed in accordance with Soils and Construction: Managing Urban Stormwater Vol. 2b (DECC, 2008b) .	Prior to the commencement of the relevant activity.
	7.10 Ensure that all areas where reagents or processing-related chemicals are used or stored are bunded and, where appropriate, covered. If not covered, a suitable sump for the collection and removal of incident rainfall will be included.	
	7.11 Maintain a >20m buffer between the DZP Site Administration Area and Watercourse C.	Ongoing.
Surface water control structure integrity is maintained through life of the Proposal.	7.12 Inspect all surface water control structures at least quarterly and following any significant rainfall event (to be defined within the Surface Water Monitoring Program – see Commitment 19.2) .	Ongoing and in response to rainfall events.
Water access does not exceed harvestable rights.	7.13 Ensure that the capacity of existing and proposed water storages to be constructed under the Applicant's harvestable rights does not exceed 182ML.	Ongoing.
Construction within 40m of waterfront land is completed appropriately.	7.14 Design and construct any infrastructure with 40m of waterfront land in accordance with the Controlled Activity Approval Guidelines issued by NOW.	During construction.
Natural surface water management is in effect when site is relinquished.	7.15 Ensure that all areas of proposed disturbance, with the exception of the proposed open cut, are progressively rehabilitated and that surface water control structures are removed once the rehabilitated areas have achieved a 70% cover.	Progressively with rehabilitation.
8. Groundwater		
Minimisation of groundwater contamination from the SRSF and SEC's.	8.1 Construct each cell of the SRSF and SEC with a double liner, at least one of which is HDPE.	Prior to the commencement of processing operations.
	8.2 Construct the SRSF and each SEC cell with a leak detection system and leak / seepage collection mechanisms.	
	8.3 Maintain the leak detection system following the completion of the SECs until such time as leakage is deemed (by hydrogeologist) to be unlikely.	

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Desired Outcome	Action	Timing
8. Groundwater (Cont'd)		
Minimisation of groundwater contamination from the SRSF and SEC's. (Cont'd)	8.4 Install groundwater monitoring bores around the SRSF and SECs to monitor for changes in water chemistry which could indicate a leak.	
Minimisation of groundwater contamination from the LRSF.	8.5 Construct each cell of the LRSF with a HDPE liner.	During construction.
	8.6 Weld the liner to form a continuous barrier over the internal embankments.	During construction.
	8.7 Drill and hydraulically test additional boreholes along the perimeters of the proposed LRSF to evaluate aquifer properties. If high permeability alluvial aquifers are identified below the proposed LRSF, AZL would either: <ul style="list-style-type: none"> • modify the extent of the LRSF to avoid potential interaction with high permeability aquifer; • construct the LRSF cells with a double liner system, leakage detection and capability to pump any leakage similar to the SRSF; and/or • design and/or install a quick response seepage interception system as part of the Groundwater Management and Mitigation Plan. 	As part of the final design phase of the LRSF As required
	8.8 Adopt and implement a <i>Cell and Liner Construction Protocol</i> which would incorporate the following. <ul style="list-style-type: none"> • Certification of all lining material from the manufacturer prior to delivery to the DZP Site. • Registration of all individual batches of the lining material recorded by the contractor. • Construction of cell foundations in accordance with the extents and grades shown on the final drawings. • Preparation of the cell foundations to ensure removal of all roots, rocks and other matter which could impact on the liner. • Procedures for reviewing works completed if delays incurred between cell foundation preparation and liner laying. • Final inspection procedures and contingency measures. 	Prior to construction of the LRSF.

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Desired Outcome	Action	Timing
8. Groundwater (Cont'd)		
Minimisation of groundwater contamination from the LRSF. (cont'd)	8.9 Adopt and implement a <i>Liner Integrity Testing Protocol</i> which would incorporate the following. <ul style="list-style-type: none"> • Installation of the HDPE lining by an experienced contractor. • Conformance of all lining material and construction methods and testing to the relevant Australian Codes. • Certification of all equipment prior to the start of installation and at regular intervals during the work. • Testing of the welding of the liner by the contractor and by an independent testing organisation. • Removal and off-site laboratory testing of small sections of the liner and contingency measures. 	Prior to construction of the LRSF.
	8.10 Monitor the water balance within each cell, based on on-site monitoring of rainfall, evaporation and discharge.	Ongoing following commencement of discharge to the LRSF.
	8.11 Monitor water levels and quality beyond the downstream toe of all external embankments.	Monthly.
	8.12 Design and implement a <i>Leak Detection Response Strategy</i> .	Prior to commencement of discharge to the LRSF.
	8.13 Harvest precipitated salts in accordance with a <i>Salt Harvesting Protocol</i> .	Prior to and during salt harvesting campaigns.
Minimise impact to Groundwater Dependent Ecosystems	8.14 Manage potential leakage from the LRSF, SRSF and SECs in accordance with Commitments 8.1 to 8.12 above.	Ongoing.
Minimise potential for dryland salinity	8.15 Manage potential leakage from the LRSF, SRSF and SECs in accordance with Commitments 8.1 to 8.13 above.	As above.
	8.16 Establish deep rooted vegetation between LRSF Areas 2 and 3 within the proposed Biodiversity Offset Area.	Over initial 5 years of operations.
Appropriately document water management measures including monitoring design in and implementation	8.17 Ensure a <i>Groundwater Management Plan</i> is prepared by a suitably qualified expert including guidance on interpretation of groundwater data (see also <i>Commitment 19.2</i>).	Prior to commencement of mining operations.
Ensure groundwater is available to all surrounding groundwater users	8.18 Include monitoring of standing water levels in <i>Water Management Plan</i> and any significant rise or decline of these levels be investigated immediately.	Ongoing.

Table C (Cont'd)
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Desired Outcome	Action	Timing
9. Terrestrial Ecology		
Avoid impacts on native flora and fauna.	9.1 Locate the DZP Site activities and infrastructure so as to avoid the majority of remnant native vegetation. Restrict disturbance of remnant native vegetation to (approximately): <ul style="list-style-type: none"> 0.1ha of CW138 Fuzzy Box – Inland Grey Box on alluvial brown loam soils of the NSW South West Slopes Bioregion; 27.1ha of CW212 White Box – Tumbledown Gum woodland on fine-grained sediments on the Central West slopes; 43.7ha of CW213 White Box – White Cypress Pine – Inland Grey Box woodland on the western slopes of NSW (Quality Remnants); and 414.0ha of CW213 White Box – White Cypress Pine – Inland Grey Box woodland on the western slopes of NSW (Derived Grasslands western slopes of NSW Central West slopes ZP Site subject , SRSF, open cut, WRE and Salt Encapsulations C). 	Ongoing.
	9.2 Undertake Obley Road realignment and clear zone creation activities to limit disturbance to 2.05ha of CW213 White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW .	Ongoing.
	9.3 Avoid disturbance to Pink-tailed Worm-lizard habitat Areas 2, 3, 4 and 6 by restricting disturbance to areas presented on Figure 2.1 . Disturbance is to be limited to 25.5ha of good and 9.8ha of medium quality habitat.	Ongoing.
	9.4 Clearly mark areas of ground disturbance prior to commencement of activities and disturbance restricted to these areas.	During site establishment phase.
	9.5 Establish clearing procedures or protocols to identify (and avoid) disturbance to nests or roosting sites of threatened fauna. If impact is unavoidable, engage a suitably qualified and experienced ecologist to remove the animal(s) and/or nest/roosting habitat nests prior to clearing.	During site establishment phase.
	9.6 Schedule the clearing of trees between April to September, unless impracticable, to reduce risk of impact to tree dependent microchiropteran bats and birds.	Ongoing.

Table C (Cont'd)
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Desired Outcome	Action	Timing
9. Terrestrial Ecology (Cont'd)		
Avoid impacts on native flora and fauna. (Cont'd)	<p>9.7 Undertake all clearing of trees in accordance with a <i>Vegetation Clearing Protocol</i> (VCP) which requires that the clearing supervisor:</p> <ul style="list-style-type: none"> • check all trees for the presence of nesting or roosting fauna before felling or pushing, then start tree removal immediately after visual inspection; • gradually nudge the tree that requires removal, at intermittent intervals so that any animal occupying the tree has the chance of vacating the area after the initial disturbance period; then • ensure that the felled trees are removed in accordance with the Applicant's proposed timber management strategy (see Section 2.3.2.2) within two weeks. 	Ongoing.
Mitigate unavoidable impacts on native flora and fauna.	9.8 Clear sufficient vegetation for the subsequent 12 months of mining operation only.	Ongoing.
	9.9 Directly transfer stripped soil materials onto rehabilitation areas where practicable.	Ongoing.
	9.10 Manage tree trunks, major limbs, minor branches and other biomass from felled vegetation in accordance with the Applicant's timber management strategy.	Ongoing.
	9.11 Erect signs to notify of the location and significance of vegetation stockpiles.	Ongoing.
	9.12 Implement an <i>Erosion and Sediment Control Plan</i> for all areas of disturbance likely to generate sediment or be subject to erosion.	Ongoing.
	<p>9.13 Familiarise staff undertaking pre-clearing assessments prior to the clearing campaign in order to:</p> <ul style="list-style-type: none"> • ensure they understand the nature and extent of each stage of clearing; • determine what habitats are to be affected, the species which could be affected and how to manage species that may be affected by the activity; and • orientate themselves with the location, nature and extent of unaffected habitat so that they will know the best locations to release relocated fauna. 	Prior to commencement of clearing campaign.
	9.14 Confine, where practicable, vehicular access to formed and marked roads and tracks.	Ongoing.
	9.15 Limit vehicle speeds within the DZP Site to limit the potential for vehicle trauma to wildlife.	Ongoing.
	9.16 Fence, as appropriate, sections of the DZP Site not required for ongoing operations to limit access by non-authorised personnel.	Following completion of clearing campaign.

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Desired Outcome	Action	Timing
9. Terrestrial Ecology (Cont'd)		
Mitigate unavoidable impacts on native flora and fauna. (Cont'd)	9.17 Finalise a <i>Pink-tailed Worm-lizard Plan of Management</i> and implement all management and mitigation measures with respect to: <ul style="list-style-type: none"> conservation, enhancement and management of known high-quality potential habitat areas; passive relocation of Pink-tailed Worm-lizards from the eastern half of the open cut; assisted relocation of Pink-tailed Worm-lizards from the western half of the open cut; and monitoring and reporting. 	Prior to disturbance of Pink-tailed Worm-lizard habitat.
	9.18 Plan all bridge upgrades to avoid nesting and breeding period of Rainbow Bee-eater. If this timing is not possible, inspect any creek bank to be affected for mouse size / snake sized horizontal holes in the expose incised creek bank.	Ongoing.
	9.19 (If suitable holes detected), commission an experienced ecologist to determine if Rainbow Bee-eaters could be affected by the activity and manage them accordingly.	As necessary.
	9.20 Limit the speed of all machinery on the DZP Site at night (nominally maximum of 20km/h) to reduce the risk of collision with arboreal fauna and nocturnal birds (dunnarts, gliders and owls).	Ongoing.
	9.21 Require employees to obey speed limits when travelling to and from work.	Ongoing.
Offset residual impacts on native flora and fauna.	9.22 Develop a <i>Biodiversity Offset Strategy</i> , in consultation with OEHL, in accordance with the general strategy presented in Section 2.17.8 and Figure 2.23 . The <i>Biodiversity Offset Strategy</i> should provide for the following. <ul style="list-style-type: none"> Protection and conservation of existing remnants of native woodland and derived grassland vegetation (1 021ha). Protection, conservation and enhancement of habitat of the Pink-tailed Worm-lizard. 	Within 12 months of receipt of development consent.
	9.23 Establish legally binding arrangement over lands included in the <i>Biodiversity Offset Strategy</i> to for conservation of the land in perpetuity.	Within 18 months of receipt of development consent.
	9.24 Prepare an <i>Integrated Land Management Plan</i> (incorporating measures for application, measurement and management of the specific activities to be implemented as part of the <i>Biodiversity Offset Strategy</i>) in consultation with the relevant government agencies.	Within 12 months of receipt of development consent.

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Desired Outcome	Action	Timing
9. Terrestrial Ecology (Cont'd)		
Rehabilitate disturbed areas to create a final landform that maintains or improves biodiversity values of the Project Site.	9.25 Revegetate the DZP Site as described in Section 2.17 and in accordance with a MOP or REMP to be prepared prior to the commencement of activities on the DZP Site.	Ongoing.
	9.26 Ensure species used during rehabilitation operations are consistent with vegetation community types located within the vicinity of the area to be rehabilitated and are suitable for the proposed final landform and land use.	Ongoing.
	9.27 Monitor all areas of progressive and final rehabilitation and undertake remedial action in the event that rehabilitation does not comply with the relevant completion criteria.	Ongoing and as required.
	9.28 Prepare an <i>Integrated Land Management Plan</i> nominating standard and additional management actions to be undertaken on rehabilitation lands, habitat enhancement areas and the BOA.	Within 12 months of development consent.
10. Aquatic Ecology		
Avoid, minimise or mitigate impacts as a result of DZP construction activities on aquatic biota and habitats	10.1 Design and construct all new structures across watercourses in line with the <i>Guidelines and Policies for Aquatic Habitat Management and Fish Conservation</i> (NSW Fisheries 1999) and <i>Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings</i> (Fairfull & Witheridge 2003)	Prior to construction.
	10.2 Install pipelines across perennial waterways by directional drilling (under-boring) methods.	During construction.
	10.3 Install pipelines across ephemeral drainage lines by trench excavation during periods of no flow within the channels and in accordance with Controlled Activities on Waterfront Land Guidelines 2012 for laying pipes and cables in watercourses on waterfront land.	During construction.
	10.4 Ensure the location of components such as the SRSF and LRSF are at least 200m from the Wambangalang Creek and 50m from other major drainage lines through the DZP Site.	Ongoing.
	10.5 Mark exclusion zones around riparian vegetation to avoid potential impacts.	Ongoing.
Avoid, minimise or mitigate impacts as a result of DZP operations on aquatic biota and habitats	10.6 Contain all hazardous and potentially contaminating materials within bunded areas and on impermeable surfaces.	Ongoing.
	10.7 Prevent leakage of residues or salts from SRSF, LRSF and SEC's in accordance with Commitments 8.1 to 8.13.	Ongoing.

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Desired Outcome	Action	Timing
10. Aquatic Ecology (Cont'd)		
Avoid, minimise or mitigate impacts as a result of water extraction from the Macquarie River on aquatic biota and habitats	10.8 Fit the intake system with a screen with a maximum 2mm mesh size and ideally have an approach velocity no greater than 0.4m/s.	During construction.
	10.9 Enforce pumping protocols that require pumping rates gradually increase and decrease and the commencement and cessation of pumping cycles.	Ongoing.
11. Aboriginal Heritage		
Avoid the 26 heritage sites located away from the impact footprint and ensure no accidental disturbance or damage	11.1 Mark the locations of these sites on mine plans and instruct personnel to avoid these areas.	Prior to commencement of surface disturbing activities.
Manage the 11 sites located adjacent to component disturbance areas and face possible indirect impacts.	11.2 Ensure all DZP personnel are aware of the locations of Aboriginal sites and identify these sites on mine plans.	Prior to commencement of surface disturbing activities.
	11.3 Commission a suitably qualified archaeologist to revisit each site, resurvey and install temporary fencing.	
	11.4 Induct any work crews in the vicinity of any of these sites to inform them of the site's location and its legislative protection under the NPW Act. All work crews should be informed that the fenced area remains a no-go area for the duration of the works.	Prior to commencement of surface disturbing activities.
	11.5 Ensure that if at the time of construction it becomes necessary to disturb any of these sites, appropriate consultation is undertaken to develop specific management measures.	Prior to disturbance of specific site.
Monitor disturbance to one site (TS-GG-01; 36-1-0314) that could be indirectly impacted over time.	11.6 Complete regular assessments of condition.	Following commencement to the eastern half of the open cut.
Manage 14 sites that occur within the impact footprint in accordance with the wishes of the RAPs.	11.7 Prepare an <i>Aboriginal Cultural Heritage Management Plan</i> (ACHMP) including a Statement of Commitments with respect to the management of the identified (and any unidentified) sites. The ACHMP would incorporate the proposed management of sites included in this EIS, measures which have been reviewed by the RAPs for the Proposal.	Prior to surface disturbing activities.
	11.8 Draft and implement a Care Agreement, in consultation with the Registered Aboriginal Parties for the DZP, for the collection, salvage and management of artefacts to be disturbed.	Prior to disturbance of affected sites.

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Desired Outcome	Action	Timing
11. Aboriginal Heritage (Cont'd)		
Manage 14 sites that occur within the impact footprint in accordance with the wishes of the RAPs. (Cont'd)	11.9 Ensure disturbance on the DZP Site, unless appropriately cleared by the RAPs, would remain with the limit of disturbance nominated in this EIS.	Ongoing.
	11.10 Ensure if any other objects or Aboriginal sites be identified during the course of construction, the Applicant would implement an <i>Unanticipated Finds Protocol</i> , as presented in <i>Appendix 5</i> of OzArk (2013b).	As necessary.
12. Historic Heritage		
Minimise the potential for adverse Proposal-related impacts on historic heritage sites within and surrounding the DZP Site.	12.1 Identify on plans held by the Environmental Manager and Mine Surveyor, where relevant, all identified sites and ensure that activities in the vicinity of those sites are appropriately managed.	Prior surface disturbing activities.
	12.2 Avoid impacts on sites DZP-HIF1 and DZP-HIF2 by establishing a fence and buffer zone around the sites.	Ongoing.
	12.3 Ensure that unless unavoidable due to rail line upgrade, avoid DZP HS1.	Ongoing.
	12.4 Document and record sites DZP-HS2, DZP-HS3 and DZP-HS4, and provide this record to Dubbo City Council and the NSW State Archives.	Prior to dismantling.
	12.5 Ensure that if items of suspected historic heritage significance are identified throughout the life of the Proposal, implement the following procedures; 1. No further earth disturbing works would be undertaken in the vicinity of the suspected item of historic heritage significance. 2. A buffer of 20m x 20m would be established around the suspected artefact. No unauthorised entry or earth disturbance would be allowed with this buffer zone until the area has been assessed. 3. A qualified archaeologist would be contacted to make an assessment of the discovery. Mitigation procedures would then be developed and implemented based on the assessment.	Ongoing.
13. Soils and Land Capability		
Undertake soil stripping such that impacts on the quality of the soil for future rehabilitation is maximised.	13.1 Strip soil material to the depths identified in Section 2.3.3.3 and Tables 2.1 and 2.2 .	Ongoing.
	13.2 Ensure that soil material to be stripped is maintained in a slightly moist condition during stripping. Material should not be stripped in either an excessively dry or wet condition.	During soil stripping.
	13.3 Minimise compaction of soil materials during grading or pushing of soil into windrows and loading into trucks.	During soil stripping.
	13.4 Use soil materials immediately in areas undergoing progressive rehabilitation, where practicable.	When areas available for rehabilitation.

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Desired Outcome	Action	Timing
13. Soils and Land Capability (Cont'd)		
Stockpile soil such that impacts on the quality of the soil for future rehabilitation is maximised.	13.5 Minimise, as far as practicable, the operation of machinery on soil stockpiles to minimise compaction.	Ongoing.
	13.6 Ensure that soil stockpiles have a maximum height of 3m for subsoil and 2m for topsoil material.	Ongoing.
	13.7 Ensure that if long term storage (>3 months) is planned, fertilise and establish an appropriate vegetative cover as soon as possible on all soil stockpiles to be retained for more than 3 months.	On storage of soil for > 3 months.
	13.8 Ensure that where practical and when conditions are suitable, occasional grazing on the vegetated stockpiles is undertaken to encourage natural return of organic material, e.g. manure.	Ongoing.
	13.9 Cease grazing on stockpiles when the soil is wet enough that stock impact on the soil structure.	As necessary.
	13.10 Remove livestock when groundcover is less than 70% to encourage survival and growth of the pasture species.	As necessary.
Respread soil such that impacts on the quality of the soil for future rehabilitation is maximised.	13.11 Test the subsoil to ensure that it is not toxic to plant growth.	Prior to soil resspreading.
	13.12 Ensure that subsoil to be worked is moist, or dry but not wet.	
	13.13 Place subsoil to achieve similar density (or slightly less) than natural subsoil.	
	13.14 Lightly tine the surface between lifts to reduce creation of slowly permeable layers.	
	13.15 Test the topsoil prior to resspreading to determine the ameliorants required to achieve the desired level of plant growth.	
	13.16 Tine the surface of underlying subsoil material below the depth of compaction to minimise formation of a dense layer at the top the subsoil / growth material.	
	13.17 Ensure that topsoil is not resspread when either excessively dry or wet.	
	13.18 Place the soil material with only a few lifts from an elevating scraper or similar with sufficient regrading to create a density similar to natural soil.	During resspreading.
	13.19 Minimise, as far as practicable, the operation of machinery / vehicles on resspread topsoil material to minimise compaction.	Following resspreading.
	13.20 Establish vegetation on topsoiled areas as quickly as possible to minimise the risk of erosion from wind or water.	
Establish an appropriate Soil and Land Capability Class on the final landform	13.21 Establish Land and Soil Capability Classes as nominated in Table 4.71 of the EIS.	As part of rehabilitation of the DZP Site.

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Desired Outcome	Action	Timing
14. Traffic and Transportation		
Achieve safe and efficient transport operations.	14.1 Prepare and implement a <i>Construction Traffic Management Plan</i> .	Prior to commencement of construction activities.
	14.2 Prepare and implement a <i>Code of Conduct</i> for contractors / employees travelling to and from the Site.	Prior to commencement of construction activities. Review annually.
	14.3 Construct all road and intersection upgrades in accordance with Austroads Standards with suitable dimensional capacity to accommodate the anticipated oversized loads.	During road upgrading works.
	14.4 Upgrade Obley Road to provide a 10m pavement seal (two 3.5m lanes + two 1.5m shoulders) over a 12m formation between the Newell Highway and Toongi Road.	During road upgrading works.
	14.5 Provide for a 7.5m clear zone on all straight sections, and at least a 9m clear zone on the outside of all curves, of Obley Road between the Newell Highway and Toongi Road. Where the establishment of such a clear zone cannot be attained without impacting on important fauna habitat, e.g. breeding hollows, existing infrastructure, e.g. walkway / cycleway, or encroaching on freehold land, wire rope safety barriers would be installed 500mm from the outer edge of the pavement.	During road upgrading works.
	14.6 Upgrade the intersection between Obley Road and the main visitor entrance to the Taronga Western Plains Zoo to provide an extended channelized right turn into the zoo.	During road upgrading works.
	14.7 Upgrade the intersection between Obley Road and Toongi Road to provide channelized left turn deceleration lane, an auxiliary right turn acceleration lane on to Obley Road and channelized right turn from Obley Road into Toongi Road.	During road upgrading works.
	14.8 Upgrade the crossings of Hyandra Creek, Twelve Mile Creek and Wambangalang Creek.	During road upgrading works.
	14.9 Apply an asphaltic concrete seal to 2.4km section of Obley Road from the Newell Highway (200m beyond Zoofari Lodge / Dundullimal Homestead intersections) and 950m section of Obley Road from the Toongi Road intersection.	During road upgrading works.
	14.10 Liaise with Taronga Western Plains Zoo, Dubbo City Council and the RMS regarding possible modification to pedestrian / cyclist access to Taronga Western Plains Zoo and implement if identified as reasonable, feasible and without creating subsequent drainage, amenity of other traffic hazard.	Prior to completion of road upgrading works.

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Desired Outcome	Action	Timing
14. Traffic and Transportation (Cont'd)		
Achieve safe and efficient transport operations. (Cont'd)	14.11 Liaise with Taronga Conservation Society Australia, Dubbo City Council and the RMS regarding possible installation of lighting at entrances to the Taronga Western Plains Zoo subject to confirmation as to compliance with relevant standards and agreement of payment of operating costs.	Prior to completion of road upgrading works.
	14.12 Upgrade Toongi Road to provide an 8.5m sealed pavement over a 10m formation between Obley Road and the DZP Site.	During road upgrading works.
	14.13 Upgrade Obley and Toongi Roads to provide a 20 year pavement life.	During road upgrading works.
	14.14 Provide additional pavement seal as required on approach to and exit from existing bus shelters.	During road upgrading works.
	14.15 Undertake regular discussions with school bus companies to ensure that information regarding school bus routes, times and pick-up / drop-off locations remains up to date.	At least annually.
	14.16 Consult with organisers of "Zoo to Zoo" road cycling and other annual event organisers to minimise impacts on construction activities, mine operations and the events.	At least annually.
	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.	Ongoing.
	14.18 Where possible, schedule trains outside the peak traffic periods (8:00am to 9:00am and 3:00pm to 4:00pm) to reduce the impact of traffic delays at rail crossings.	Ongoing.
	14.19 Advise personnel on 'Fatigue Management' as part of Staff induction.	On employment of personnel.
	14.20 Consult with the relevant cycling groups to provide specific consideration of safety aspects associated with their use of the road, particularly where sight distance is limited.	Prior to and during construction / road upgrade activities.
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 Bootherba 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.

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Desired Outcome	Action	Timing
14. Traffic and Transportation (Cont'd)		
Manage future and changing traffic environment to maintain safe and efficient transport operations. (Cont'd)	14.22 Commission and complete a Road Safety Audit of the following critical intersections: <ul style="list-style-type: none"> • Obley Road – Newell Highway; • Bootherba 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).
	14.23 Engage an independent technical specialist to review the RSA and advise on the implementation of any recommended safety measures.	If instructed by TfNSW or RMS following RSA (see commitment 14.22).
	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: <ul style="list-style-type: none"> • reasonable safety grounds unfettered by capacity considerations; or • capacity grounds where the DZP is shown to be a significant contributor to the intersection volume. <p>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).</p>	To be negotiated with the road authority(ies) following the completion of the independent technical specialist's report.
15. Visual Amenity		
Manage the impact of activities on the visual amenity surrounding the DZP Site.	15.1 Design Stockpile Area 1 (refer to Figure 2.6) to run along the western side of the rail easement and vegetate with fast growing tree species to create a vegetated amenity bund.	Prior to placement of soil within Stockpile Area 1.
	15.2 Progressively rehabilitate the outer embankments of the LRSF, SRSF, WRE and Salt Encapsulation Cells.	Ongoing.
	15.3 Complete enhancement of native vegetation across and surrounding the DZP Site (see Section 2.17.8).	Within 5 years of development consent.
	15.4 Construct the processing plant and other infrastructure within the DZP Site from predominantly non-reflective, neutral coloured material.	During construction.
	15.5 Select and place permanent and temporary lights that are directed downwards and towards the activity area, i.e. not outward from the DZP Site.	Ongoing.
	15.6 Consider any reasonable request by a potentially affected resident for assistance to create a visual screen adjacent to their residence through planting of fast growing vegetation and/or landscaping, where such a screen would effectively reduce the visual impact of activities during the life of the Proposal.	Ongoing.

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Desired Outcome	Action	Timing
16. Hazards		
Prevent the escape of reagents from the Processing Plant and DZP Site Administration Area.	16.1 Store all chemicals within concrete bunded areas or within appropriate self-bunded containers.	Ongoing.
	16.2 Complete all tanker deliveries over sealed areas with kerbing and drainage design preventing any runoff to the environment if a spill occurs.	Ongoing.
	16.3 Provide spill kits as appropriate, enabling recovery of small quantities of spilt materials.	Ongoing.
Prepare appropriately for the possibility of a bush fire event.	16.4 Consult with Dubbo Local Emergency Management Committee and engage with Cumboogle and Benolong brigades.	Ongoing
	16.5 Prepare and implement a Bushfire Mitigation Plan which will include: <ul style="list-style-type: none"> establishment of hazard reduction and land management activities in order to manage fuel loads within the DZP Site (while also managing for conservation of biodiversity); consideration of appropriate areas for burns, grazing or mechanical hazard reduction would be focused on protecting AZL infrastructure and neighbouring properties; and formation of first response and patrol strategies would be included to enable appropriate land management for mitigating the spread of fire. 	Prior to commencement of operations.
	16.6 Discuss boundary management with the RFS, identify appropriate methods to reduce the potential for a fire to leave the DZP Site and include in Bushfire Mitigation Plan.	Prior to commencement of operations.
Manage a local bush fire to minimise the potential for property damage or personnel injury.	16.7 Maintain an Asset Protection Zone (APZ) of at least 50m around the open cut.	Ongoing.
	16.8 Monitor fuel loads within the APZ and reduce as required (in accordance with the Bushfire Mitigation Plan).	At least annually.
	16.9 Maintain the internal haul road to ensure safe access and egress from the open cut in the event evacuation is called.	Ongoing.
	16.10 Maintain accessibility to the water infrastructure within the Processing Plant Area for management of ember attack on the buildings.	Ongoing.
	16.11 Provide training to site personnel in relation to specific fire fighting tasks and procedures	Annually.
	16.12 Develop Emergency and Evacuation Management Procedures.	Prior to commencement of operations.
	16.13 (In the event of a local bush fire event that threatens the safety of personnel), require all personnel within the affected area to assemble at the designated Emergency Assembly Area and complete a head count.	As necessary.

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Desired Outcome	Action	Timing
16. Hazards (Cont'd)		
Minimise risks associated with initiation of a bush fire within the DZP Site.	16.14 Ensure refuelling is undertaken within designated fuel bays or within cleared area of the DZP Site.	Ongoing.
	16.15 Ensure vehicles are turned off during refuelling.	Ongoing.
	16.16 Ensure no smoking policy is enforced in designated areas of the DZP Site.	Ongoing.
	16.17 Ensure fire extinguishers are maintained within site vehicles and refuelling areas.	Ongoing.
	16.18 Ensure a focus on housekeeping by DZP management.	Ongoing.
	16.19 Ensure that a water cart is available to assist in extinguishing any fire ignited.	Ongoing.
	16.20 Establish appropriate maintenance of mechanical equipment that is being used in the natural landscape, i.e. slashers, mowers, belt driven machinery, etc.	
	16.21 Establish hot work protocols for welding, grinding, oxy work on tenure, including availability of portable water and a lookout for potential ignitions.	
	16.22 Monitor equipment with exhaust stacks capable of throwing embers.	
	16.23 Monitor for lightning strikes on tenure after dry electrical storms.	
	16.24 Minimise the use petrol/diesel vehicles in long grass during hot and dry periods.	
Reduce residual risks of traffic accidents on roads used by Proposal related traffic.	16.25 Erect Give Way signs at the exit of the Site to Toongi Road.	Prior to commencement of construction.
	16.26 Liaise with Dubbo Traffic Committee and erect appropriate signage at intersection of Toongi and The Springs Roads.	Prior to commencement of construction.
	16.27 Advise all truck drivers of the potential conflict between Proposal-related traffic and the general public.	As part of induction process or contract negotiation.
	16.28 Prepare and require contracted truck drivers (or Company representatives) to sign a <i>Driver's Code of Conduct</i> identifying minimum standards for driver behaviour.	As part of induction process or contract negotiation.
	16.29 Implement a comprehensive <i>Transport Management Plan</i> for construction and DZP operation.	Prior to commencement of construction deliveries.
Avoid conflict between aircraft and stacks of the processing plant	16.30 Consult with the relevant government agencies with respect to specifications of the 90m ventilation stack and implement any required visual or other identifiers, e.g. flashing light.	Prior to commencement of construction of the stack.

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Desired Outcome	Action	Timing
17. Social-economic Setting		
Maximise the positive impacts and minimise any actual or perceived adverse impacts on the social fabric or facilities available to the community surrounding the DZP Site.	17.1 Engage the community surrounding the Proposal in regular dialogue in relation to the proposed and ongoing operation of the Project and maintain an "open door" policy for any member of the community who wishes to discuss any aspect of the DZP.	Ongoing.
	17.2 Proactively and regularly consult with those residents most likely to be adversely impacted by the DZP.	Ongoing.
	17.3 Continue to support community organisations, groups and events, as appropriate, and review any request by a community organisation for support or assistance throughout the life of the DZP.	Ongoing.
	17.4 Consult with residences adjoining the Toongi-Dubbo Rail Line to ensure that all reasonable expectations related to local amenity are met, e.g. fencing or no fencing of the rail easement along Margaret Crescent.	Prior to construction of the rail line.
	17.5 Implement a comprehensive and targeted <i>Environmental Monitoring Program</i> , provide the local community with access to the results of monitoring and use these results, in consultation with the local community, to improve environmental performance at the DZP Site.	Within 6 months of development consent.
	17.6 Give preference when engaging new employees, where practicable, to candidates who live within the Dubbo Local Government Area over equivalent candidates with equivalent experience and qualifications based elsewhere and ensure that the mining and other contractors do so as well.	Ongoing.
	17.7 Encourage the involvement of the local Aboriginal community in the workforce.	Ongoing.
	17.8 Encourage and support participation of locally based employees and contractors in appropriate training or education programs that would provide skills and qualifications that may be of use following completion of the DZP.	Ongoing.
	17.9 Enter into an agreement with Dubbo City Council, e.g. a Voluntary Planning Agreement, to provide a fair and reasonable contribution to any increase in management or maintenance costs of local services and infrastructure incurred as a consequence of the DZP.	Prior to commencement of operations.
	17.10 Ensure that infrastructure and services installed for the Proposal, including the gas pipeline, electricity transmission line, appropriate buildings and hardstand areas, remain available for alternative uses following completion of the Proposal	Post-Proposal.

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Desired Outcome	Action	Timing
17. Social-economic Setting (Cont'd)		
Maximise the positive impacts and minimise any actual or perceived adverse impacts on the social fabric or facilities available to the community surrounding the DZP Site. (Cont'd)	17.11 Maintain agricultural operations on land not required for active mining or biodiversity offsetting purposes.	Ongoing.
	17.12 Undertake final landform construction and rehabilitation as nominated in Section 2.17 (so as to return all but 1 200ha of the DZP Site to agricultural production post-DZP).	Ongoing.
Maintain ongoing consultation with the local community and Council.	17.13 Form and maintain a Community Consultative Committee (CCC), including representative members of the community and Dubbo City Council.	Within 6 months of receipt of development consent.
	17.14 Regularly brief the CCC on activities within the DZP Site and seek feedback in relation to Proposal-related impacts whether real or perceived.	As necessary.
Respond to environmental complaints.	17.15 Establish and maintain an environmental complaints line and register of complaints in accordance with the requirements of the Environment Protection Licence, once issued.	Within 6 months of receipt of development consent.
	17.16 Respond promptly to any issue of concern or complaint raised by the community or a government agency.	Ongoing.
18. Waste		
Manage waste appropriately on the DZP Site.	18.1 Maintain a register of the types and quantities of wastes produced on the DZP Site.	Ongoing.
	18.2 Design and maintain storage areas to contain spillages.	
	18.3 Segregate and retain recyclable and non-recyclable waste in designated storage areas prior to removal from the DZP Site.	
	18.4 Keep the DZP Site in a clean and tidy condition.	
	18.5 Ensure waste is regularly removed from the DZP Site by a licensed contractor.	
Manage potentially restricted or hazardous waste and/or dangerous goods appropriately	18.6 Classify all wastes to be disposed of in accordance with the NSW Waste Classification Guidelines. Restricted or hazardous wastes would not leave the DZP Site without obtaining prior EPA approval.	Ongoing
	18.7 Clean used bulky bags, drums and pallets within the relevant covered and bunded storage areas in accordance with the product MSDS or relevant Australian Standard.	
	18.8 Complete a visual (or other required) inspection to confirm any remnant reagent has been removed.	
	18.9 Remove waste materials from the DZP Site by licensed waste removal contractor.	

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Desired Outcome	Action	Timing
19. Environmental Management System		
A systematic set of documents are in place to guide the planning and implementation of all environmental management strategies.	19.1 Incorporate the environmental procedures in an on-site management system.	Prior to relevant activity.
	19.2 Prepare or update the following monitoring programs, management plans and protocols. <ul style="list-style-type: none"> • Environmental Monitoring Program. • Dose Assessment Monitoring Program. • Environmental Radiation Monitoring Program. • Mining Operations Plan (or equivalent). • Integrated Land Management Plan. • Noise Management Plan (incorporating and Noise Monitoring Program). • Blast Management Plan (incorporating and Blast Monitoring Program). • Air Quality Management Plan (incorporating and Air Quality Monitoring Program). • Water Management Plan: including: <ul style="list-style-type: none"> ○ Groundwater Management Plan (including a Groundwater Monitoring Program); ○ Surface Water Management Plan (including a Site Water Balance, Erosion & Sediment Control Plan(s) and Surface Water Monitoring Program); and ○ Water Reuse Management Plan; ○ Residue Storage Facility Management Plan (including a Cell and Liner Construction Protocol, Liner Integrity Testing Protocol, Leak Detection Response Strategy and Salt Harvesting Protocol); and ○ Surface and Ground Water Response Plan. • Aboriginal Cultural Heritage Management Plan. • Care Agreement (for management of artefacts). • Construction Traffic Management Plan. • Transport Management Plan. • Pink-tailed Worm-lizard Plan of Management. • Vegetation Clearing Protocol (incorporating timber management plan). • Cell and Liner Construction Protocol. • Liner Integrity Testing Protocol. • Leak Detection Response Strategy. • Salt Harvesting Protocol. • Bushfire Mitigation Plan. 	Various and as nominated by development consent.
	19.3 Incorporate relevant environmental data / information in <i>Annual Reviews</i> .	Annually.

9. REFERENCES

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