Appendices

(Total No. of pages including blank pages = 102)

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Appendix 1

Correspondence Supplied to Planning and Infrastructure NSW in Response to Final Feedback from Government Agencies and Public Authorities

(Total No. of pages including blank pages = 40)

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Correspondence Between RWC and Planning & Infrastructure NSW

R.W. CORKERY & CO. PTY. LIMITED
Geological and Environmental Consultants
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EMAIL TRANSMISSION

TO:	Carl Dumpleton	EMAIL:	carl.dumpleton@planning.nsw.gov.au
ORGANISATION:	Department of Planning & Infrastructure	DATE:	31 January 2014
REFERENCE:	545	COPY:	AZL

NO. OF PAGES (including attachments): 2

SUBJECT: Response to government agency recommended conditions of consent

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

MESSAGE:

Dear Carl,

Thank you for sending through the feedback from the various government agencies with respect to the Dubbo Zirconia Project. These have been reviewed, in particular the recommended conditions of development consent, and the following provides the position of the Applicant with respect to these.

DPI – Office of Agricultural Sustainability and Food Security

It is noted, as discussed in the Soil and Land Capability Assessment of SSM (2013), that the allocation of soil and land capability class was originally provided as a range, e.g. Class 3-5 or Class 1-2. The land class presented on **Figure 4.44** of the EIS represents the highest land and soil class of this range and therefore potentially overstates the land class in some areas. This notwithstanding, the choice of areas mapped as Class 3 land for the placement of the residue storage facilities was taken following considerable assessment of various factors including topography, proximity to creeks and significant watercourses, soil and subsoil conditions, vegetation, etc. The areas chosen offered the most appropriate topography and underlying soil and subsoil conditions and minimised the impact or potential impact on native vegetation and local watercourses.

The inconsistency between the text of the Response to Submissions (RTS) and revised Statement of Commitments noted by OASFS is acknowledged. Following preparation of the RTS text, it was identified that a commitment to return all land back to its former land capability and productivity would not be feasible. **Table 4.71** of the EIS represents a more reasonable assessment of the potential land capability of the final landform. Unfortunately the revision to the Statement of Commitments was not reflected in the main text of the RTS.

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EMAIL TRANSMISSION

TO:	Carl Dumpleton	EMAIL:	carl.dumpleton@planning.nsw.gov.au
ORGANISATION:	Department of Planning & Infrastructure	DATE:	5 March 2014
REFERENCE:	545	COPY:	AZL

NO. OF PAGES (including attachments): 2

SUBJECT: Response to DPI-OASFS and Dubbo City Council recommended conditions of consent

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

MESSAGE:

Dear Carl,

Thank you for sending through the feedback from the Department of Primary Industries – Office of Agricultural Sustainability & Food Security (DPI-OASFS) and Dubbo City Council with respect to the Dubbo Zirconia Project. These have been reviewed, in particular the recommended conditions of development consent, and the following provides the position of the Applicant with respect to these.

DPI – OASFS

In an email from Wendy Goodburn, Acting Leader Land Use Planning, to the DP&I on 28 February 2014, the recommended condition of DPI-OASFS with respect to final land use was modified to require "*that the overall agricultural productivity of the project area be restored*".

This is in line with the objectives of the Applicant and therefore is considered a reasonable condition.

Dubbo City Council

An assessment of the recommended conditions of consent supplied by Dubbo City Council (Council) to the DP&I on 3 March 2014 are as follows.

1) The Applicant accepts any conditional requirement with respect to adherence to Australian Standards for installation of infrastructure and services.
2) The Applicant accepts the requirement to upgrade Obley Road and Toongi Roads as nominated in the Statement of Commitments.

   The Applicant notes that a commitment has been made to upgrade creek crossings which do not accommodate a 1 in 20 ARI flood event. Consideration of existing creek crossings

identified only Hyandra, Twelve Mile and Wambangalang Creeks as requiring upgrade to meet this standard (although should further survey work required for road upgrade identify the Cootha Creek crossing as not providing for 1 in 20 ARI flow this would also be included). The Applicant opposes the condition to require creek crossings to provide for flood flows up to a 1 in 50 ARI.

The Applicant is not opposed to the relocation of the 'waste transfer station', however, notes that there is no strict requirement for this as the proposed road upgrades and DZP operation would not prevent continued operation in the current location.

3) The Applicant accepts the requirement to comply with s138 of the *Roads Act 1993*.
4) The Applicant intends on entering into a Voluntary Planning Agreement (VPA) with Council. Draft terms have been presented to Council for consideration.
5) The Applicant suggests that as maintenance of roads and road infrastructure forms part of the VPA (as requested by Council – see (4) above), a separate condition as nominated by Council is not required.

As we have discussed, Transport for NSW (incorporating the NSW Roads and Maritime Services) have yet to formally respond. On receipt of their feedback, AZL will review and respond accordingly.

As always, I am happy to discuss any matters associated with the above or other aspects of the DZP.

Regards,

Alex Irwin
Senior Environmental Consultant

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EMAIL TRANSMISSION

TO:	Carl Dumpleton	EMAIL:	carl.dumpleton@planning.nsw.gov.au
ORGANISATION:	Department of Planning & Infrastructure	DATE:	7 March 2014
REFERENCE:	545	COPY:	AZL

NO. OF PAGES (including attachments): 2

SUBJECT: Response to Taronga Conservation Society Australia requested conditions of consent

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

MESSAGE:

Dear Carl,

Thank you for sending through the feedback from the Taronga Conservation Society Australia (Taronga) with respect to the Dubbo Zirconia Project. This submission has been reviewed, in particular the requested conditions of development consent, and the following provides the position of the Applicant with respect to these.

Traffic Safety

- Lighting. Should there be a demonstrated need to improve night time visibility of the intersection, the Applicant is committed to working with the relevant stakeholders to arrive at an acceptable outcome. At this stage it has not been demonstrated that lighting of the intersection is required or would provide any safety benefit if installed and the commitment has been worded accordingly. The Applicant stands by its commitment, however, to collaborate with relevant stakeholders on this issue.

  (Following recent discussion with Dubbo City Council regarding applicable mining rates and development of a Voluntary Planning Agreement (VPA), the Applicant now considers that given the significant contribution to local infrastructure and services (both hard and social), any cost of such lighting could be accommodated by these payments.)

- Left Hand Turn Lane. The Applicant does not believe that the traffic levels currently entering the zoo from the south justify a designated left hand turn lane.

- Pedestrian / Bicycle Access. The Applicant remains committed to ensuring that pedestrian / bicycle access between the Tracker Riley cycle way and Taronga Western Plains Zoo is considered when final road designs are prepared. The documented consultation with Taronga and reference to such considerations in the Statement of Commitments is evidence

of this. As with the potential for lighting at the Obley Road – Taronga Western Plains Zoo intersection, the Applicant stands by its commitment to collaborate with all relevant stakeholders in order to achieve the most effective outcome.

- Newell Highway. The upgrade and maintenance of the Newell Highway is the responsibility of the RMS. The Applicant contends that the proposed upgrade works to Obley Road and Taronga Western Plains Zoo intersection are significant and appropriate.
- Transport Hazard Risk Analysis. The Applicant intends on consulting with Taronga as part of this process. Specific conditioning is not considered necessary.
- Speed Zone. The Applicant notes this is the responsibility of RMS and Council and has maintained this through the consultation with TWPZ.

Traffic Noise

- The Response to Submissions submitted in December 2013 demonstrated that with the implementation of the commitment to 'hot seal' Obley Road adjacent to the Taronga Western Plains Zoo, relevant noise criteria would be achieved. The Statement of Commitments therefore restricts commitments to these measures.

  While other noise mitigation measures have been considered (included a noise barrier as noted by Taronga), these would only be applied in the event that those specifically proposed proved ineffective OR if additional noise reduction could be justified by Taronga. The Applicant rejects the request to condition these additional noise mitigation measures (such as the noise barrier fence).

  It is worth noting that the Taronga Western Plains Zoo exists in an environment subject to various noise sources, e.g. traffic on the Newell Highway, Obley Road and Morris Park Speedway. As has been continuously maintained by the Applicant, the DZP would not be introducing any new noise sources to the local setting to which the animals at the zoo are not already subjected to. Furthermore, the proposed noise attenuation commitments made by the Applicant will reduce the level of traffic noise generated by individual truck pass-by's. It is a reasonable assessment on the basis of the above that the proposed traffic of the DZP will not impact on any breeding programs. The additional contingency noise measures have been discussed to illustrate that there would be additional measures available in the event that adverse impacts on the zoo population or programs (as a result of DZP traffic noise) is demonstrated

I trust that this information assists the Department in its consideration of the submission from Taronga.

As I have previously noted, I will be on leave for the period 10 March 2014 to 24 March 2014 and as such if you have any further questions in relation to issues relevant to Taronga Western Plains Zoo I advise you to direct these to Mike Sutherland (msutherland@alkane.com.au / 02 6882 2866).

Regards,

Alex Irwin
Senior Environmental Consultant

Correspondence Between Transport for NSW and RWC

NSW GOVERNMENT Transport for NSW

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

Dear Mr Dumpleton

Dubbo Zirconia Project - Response to Submissions

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

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

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

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

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

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

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

Yours sincerely

11/3/14

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

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

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

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

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

Discussion

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

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

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

Table 16 - Modelled Future Traffic Conditions – Peak Operation

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

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

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

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

Recommended Response for both Option B & Option

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

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

Option B Only

Discussion

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

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

Recommended additional response for Option B

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

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

Option C (Road only)

Discussion

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

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

Recommended additional response for Option C

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

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

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EMAIL TRANSMISSION

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

NO. OF PAGES (including attachments): 6

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

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

MESSAGE:

Dear Mark

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

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

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

Transport Option A

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

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

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

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

Transport Options B and C

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

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

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

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

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

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

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

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

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

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

R.W. CORKERY & CO. PTY. LIMITED

17 March 2014 Page 3

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

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

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

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

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

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

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

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

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

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

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

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

Transport Option B only

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

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

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

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

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

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

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

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

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

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

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

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

Transport Option C only

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

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

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

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

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

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

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

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

R.W. CORKERY & CO. PTY. LIMITED

17 March 2014 Page 6

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

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

Regards

Mitchell Bland
Principal Environmental Consultant

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Alex Irwin

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

Alex,

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

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

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

Regards

Tim Dewey

Dubbo Zirconia – Response to R.W.Corkery

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

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

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

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

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

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

R.W. CORKERY & CO. PTY. LIMITED
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EMAIL TRANSMISSION

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

NO. OF PAGES (including attachments): 3

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

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

MESSAGE:

Dear Mark

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

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

1. **SIDRA Data**

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

2. **Transport Option A**

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

3. **Definition of Peak Period**

   No further Proponent comment required.

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4. Commitment 14.17

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

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

5. Raw Traffic Data / SIDRA

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

6. SIDRA Modelling of possible Acceleration Lane

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

7. Intersection Treatment

An initial treatment has been completed and is attached

8. Road Safety Audit

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

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

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

See also response to 9. below.

9. Right Turn Acceleration Lane / Road Safety Audits

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

R.W. CORKERY & CO. PTY. LIMITED

27 March 2014 Page 3

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

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

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

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

10. Commitment 14.21

The Proponent accepts the minor modifications to the commitment

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

11. Newell Highway Transport Route

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

12. Details of Haulage Routes

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

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

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

Regards

Alex Irwin
Senior Environmental Consultant

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NSW GOVERNMENT | Transport for NSW

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

Dubbo Zirconia Project
Response to Submissions

Dear Mr Dumpleton

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

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

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

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

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

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

Yours sincerely

4/4/14

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

CD14/04108

Option A

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

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

Lead time for progressing Option A

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

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

Confirmation of relevant rail authorities

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

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

Comprehensive and robust area wide traffic and train crossing model

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

Level Crossing Safety

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

Final approval by TfNSW

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

Traffic Issues

SIDRA Files

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

Avoidance of peak times

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

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

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

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

Heavy Vehicle Transportation Route

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

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

Road Safety Audit

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

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

Right Turn Acceleration Lane and Safety Audits of Newell Highway

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

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

as follows:

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

List of SIDRA Printouts

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

NSW GOVERNMENT | Transport for NSW

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

Dear Mr Dumpleton

Dubbo Zirconia Project - Response to Submissions

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

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

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

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

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

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

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

Yours sincerely

11/3/14

Mark Ozinga
Manager, Land Use Planning and Development
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CD14/04108

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Annexure A Detail Comments on Option A (Rail Option)

Transport for NSW cannot properly consider Option A until further strategic information is provided and arrangements entered into by the applicant. The following comments are provided to assist the applicant should they wish to proceed with this option at a later time.

TfNSW is concerned that the long lead time required for progressing Option A - Rail Option (by the end of the fifth year of the project with an expected life of up to 22 years (11-14 TIA))) will significantly reduce the likelihood of that option being progressed. This concern is based on the fact that the proponent will have made significant investment decisions that support its road-based operations by the time the rail option is assessed, including site design and fleet acquisition.

TfNSW requests that confirmation from the relevant rail authority be obtained demonstrating the permissibility of the rail line being used for transportation related to the project and required upgrades to facilitate this usage.

Reinstatement of railway crossings would have the potential to cause delays to vehicular movements and are likely to increase the likelihood of serious crashes at the proposed level crossings. TfNSW requests that the following assessments be undertaken to assess the feasibility of this option:

- A comprehensive and robust network wide analysis assessing the impacts of the project use of the Toongi Rail Line on traffic on the Mitchell Highway and the local road network needs to be undertaken in consultation with RMS. An area wide traffic model needs to be used to assess traffic impacts based on peak hour traffic volumes (background and mine related) scenarios for level and grade separated options.
- A detailed safety risk assessment needs to be undertaken for all proposed rail crossings using the relevant RMS/Road Authority guidelines in consultation with RMS and ARTC. Following the detailed safety risk assessment, TfNSW requests the proponent demonstrate the safe operation of proposed level crossings to be reopened.
- Given the estimated queuing (more than 80 vehicles) at the proposed level crossing of the Mitchell Highway and safety risks associated with high number of vehicles (more than 20,000 vehicles per day in 2013) expected to cross at this location, the proponent should be able to demonstrate using a detailed traffic and safety assessment that a grade separated crossing would not be necessary at this location. TfNSW/RMS maintains that a grade separated crossing be provided at the proposed level crossing of the Mitchell Highway until a comprehensive assessment by the proponent can demonstrate otherwise to TfNSW/RMS satisfaction.

TfNSW requests the proponent demonstrate engagement with the infrastructure owners and commitment to forming interface agreements for each railway crossing with RMS, rail operator/rail authority and local government authority.

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

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

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

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

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

Discussion

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

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

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

Table 16 - Modelled Future Traffic Conditions – Peak Operation

Intersection	Scenarios	Peak Flow	DoS	Delays (Sec)	LoS (worst)	Queue (m)
Newell Highway and Obley Road	Background Traffic (2036)	905	0.312	15.0	B	10.3
	Background Traffic (2036) + DZP Traffic	939	0.339	15.1	B	11.8
Newell Highway and Boothenba Road	Background Traffic (2036)	1,217	0.500	32.4	C	20.6
	Background Traffic (2036) + DZP Traffic	1,236	0.508	33.8	C	20.8

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

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

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

Recommended Response for both Option B & Option

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

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

Option B Only

Discussion

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

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

Recommended additional response for Option B

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

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

Option C (Road only)

Discussion

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

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

Recommended additional response for Option C

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

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

Appendix 2

Correspondence Supplied to Planning and Infrastructure NSW in Response to Request for Additional Information

(Total No. of pages including blank pages = 22)

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EMAIL TRANSMISSION

TO:	Carl Dumpleton	EMAIL:	Carl.Dumpleton@planning.nsw.gov.au
ORGANISATION:	Department of Planning	DATE:	14 February 2014
REFERENCE:	545	COPY:	N. Earner, M. Sutherland, B. Shepherd

NO. OF PAGES (including attachments):

SUBJECT: Review of DP&I Query of Proposed Transport Options for the DZP

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

MESSAGE:

Carl,

The following provides responses to the queries raised over the last couple of days with respect to the proposed transport operations of the Dubbo Zirconia Project.

As a preamble of sorts to this information, it is reiterated that AZL seeks an approval that allows the efficiency and effectiveness of the transport task to be maximised over the life of the DZP. It should be recognized that for a project such as the DZP, where there is a heavy reliance on imported reagents, the specific source of these and/or most efficient method of delivery may change over time.

This notwithstanding, whether delivered by road or rail (or a combination of both), all reagents would be delivered to Dubbo via the established State Highway or rail network and then transported to the DZP Site either via:

- Obley Road;
- Fletcher International Rail Terminal and local roads to Newell Highway then Obley Road; or
- the Dubbo-Toongi Rail Line.

The information presented in the EIS, RTS and in this correspondence therefore focusses on those components of the transport routes that are common to the three options assessed (Option A: Rail to Toongi, Option B: Rail to Dubbo – Road to Toongi, and Option C: Road to Toongi) whilst providing a more general overview of the likely source and therefore delivery pathways beyond Dubbo.

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In summary, the EIS, RTS and this correspondence supports the application to allow for flexibility in the sourcing and delivery of reagents by:

a) identifying that transport of reagents to and products from the DZP Site could be via road, rail or a combination of both;

b) identifying that initial transport would almost certainly be by road whilst the logistics of rail are reviewed and specific details such as reagent sourcing, transfer to rail, and specific rail related approvals are finalised or obtained.

c) providing detailed assessment of the delivery of reagents to the DZP Site between Dubbo and Toongi; and

d) providing a more general description of the transport of reagents over the remainder of the State transport network.

AZL recognizes that there will likely be a requirement to obtain specific licences and approvals related to the reopening of the Toongi-Dubbo Rail Line and use of the rail network more generally. The specific details required of, and by these would be provided at the appropriate time. It is considered that the information provided with respect to the various transport options in the EIS, RTS and this correspondence is sufficient such that approval can be granted for transport via road and rail (subject to the appropriate licences or approvals being obtained).

Fletcher International Rail Terminal

Correspondence from Fletcher International (Fletcher's) has been supplied to confirm that high level discussions have been held between Fletcher's and AZL regarding the use of the Fletcher International Rail Terminal (Fletcher Rail Terminal) as a hub for unloading, loading to trucks and despatch of reagents to the DZP Site. The correspondence from Fletcher's is attached.

Review of Transport Options

In order to provide a more comprehensive summary of road movements to and from the DZP Site, the likely integration of the road and rail components of transport task is required. Consistent with the introductory statements above, since public exhibition of the EIS, there have been some minor amendments to the overall transport task. These small amendments are identified below, however, do not significantly affect the numbers or methods of delivery presented in the EIS.

- An option for sourcing salt from Dampier Western Australia, via the Port of Newcastle, has been identified. Should this be undertaken, it would replace the transport of salt from Salt Lake NE Victoria (via Newell Highway) identified in the EIS. Whilst transport would, as noted above, initially utilise the road network, delivery of salt to Newcastle now raises the potential for it to be transported by rail either to Toongi (Option A) or Fletcher International Rail Terminal (Option B).
- Following discussions with third parties associated with the supply and transfer of reagents from the Port of Newcastle it has been identified that road transfer of reagents between storage and the rail head may not be required. As a consequence, road truck weight restrictions would not apply and an additional 5t payload included within each container. The net effect would be to reduce the length of each train from 48 wagons to 41 wagons. For

ease of assessment, this modification to rail arrangement is presented for Option B (although it could as easily be applied to Option A).

- Following ongoing discussions with Fletcher's regarding the use of the Fletcher Rail Terminal as a hub for transferring bulk reagents from rail to road, the more likely option would be for the material to be unloaded at the Fletcher Rail Terminal and reloaded to trucks (as opposed to being containerized). As a result, B-double trucks could be used to transport the reagents from the Fletcher Rail Terminal to Toongi (reducing the number of truck movements).
- The use of B-doubles from the Fletcher Rail Terminal would require these to turn left out of Fletcher's into Yarrandale Road, right onto Purvis Lane and then left onto the Newell Highway. Notably, this is an RMS gazette Restricted Access Vehicle (RAV) route for B-doubles (up to 26m) (see attached RAV Map B-Double Route (Yarrandale Road - Purvis Lane).jpg).

Transport Movements

Following consideration of the minor amendments to the transport task noted above, a spreadsheet identifying each reagent, annual volume, mode of transport and annual and daily movements has been prepared (Transport Movements (14 February 2014).xls) (*it is best viewed if printed as an A3/landscape page*).

Notably, the maximum average daily truck movements have been reduced to 125 (61 for Option A). It is also noted that given B-double transport of reagents from the Fletcher Rail Terminal is proposed, the daily truck numbers for Option B and C are now the same.

As discussed previously, AZL would have a high level of control over the delivery of reagents. Therefore, the variance between highest and lowest volume days will be relatively small. A variance of ± 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.

Intersection Performance

Advice from our traffic consultants (Constructive Solutions Pty Ltd) is that intersections involving the State highway network are generally exempt from intersection performance analysis. In the case of the DZP, the Newell Highway – Obley Road and Newell Highway – Boothenba roads, these intersections were considered given the RMS noted "the traffic study is to address impacts on key intersections with the Newell Highway including Obley Road" and Dubbo City Council requested specific consideration of the Newell Highway – Obley Road intersection in their contribution to the DGRs.

With respect to the intersection of minor roads with Obley Road, Constructive Solutions Pty Ltd note that these (with the exception of the entrance to Taronga Western Plains Zoo) are nowhere near the threshold that would justify SIDRA analysis. Typically you would require >1 000 vehicles per hour (total movements) to justify such an analysis.

R.W. CORKERY & CO. PTY. LIMITED

14 February 2014 Page 4

Analysis of the zoo entrance would be impractical as there is very variable flow which is affected by the proximity of the Newell Highway – Obley Road intersection. Notably, AZL has provided a commitment to a significant upgrade to this intersection to improve overall traffic flow.

Dubbo Rail Level Crossings

The delays and possible queue lengths at the four rail level crosssings in Dubbo have been reanaylsed considering:

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

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 Highweay 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.

I trust that the additional information included in and with this correspondence assists the Department in the review and assessment of the DZP. Should you require further clarification or additional information, please do not hesitate to contact me.

Regards,

Alex Irwin

Att: Fletcher International - 14 Feb 2014.pdf
RAV Map B-Double Route (Yarrandale Road - Purvis Lane).jpg
Transport Movements (14 February 2014).xls
Railway crossing traffic – 140214.xls

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14 February 2014 Page 5

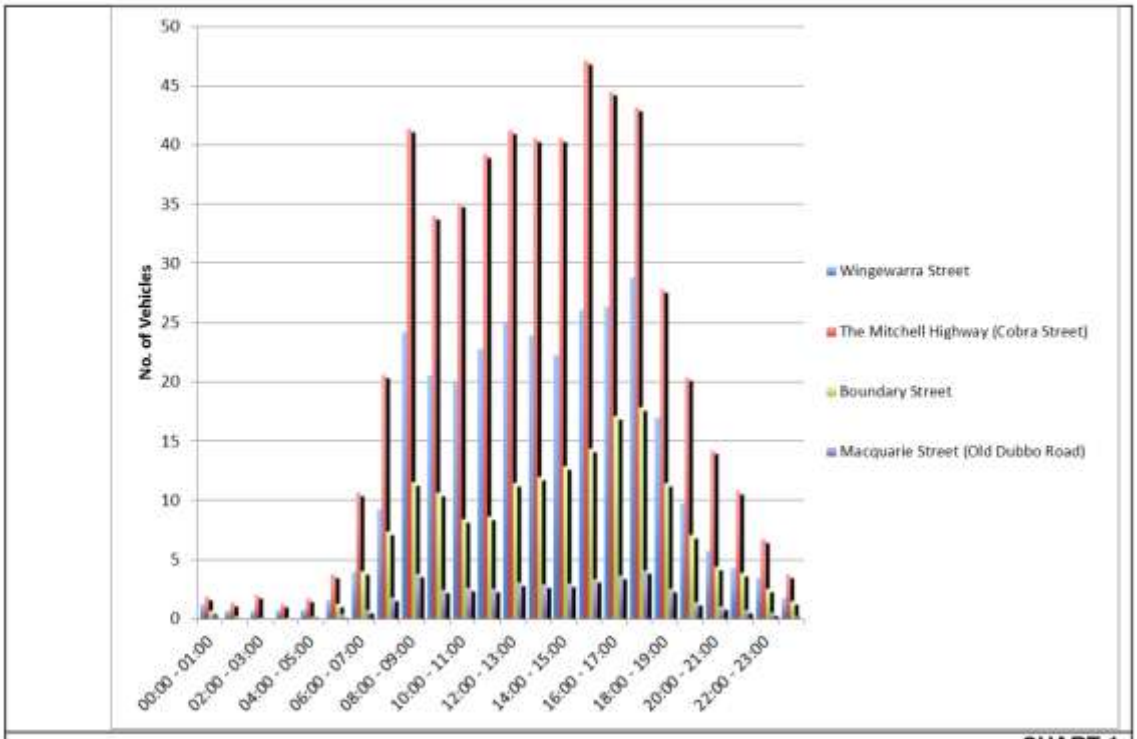

CHART 1
2012 TRAFFIC / 3.5 MINUTE DELAY (20KM/HR TRAIN)

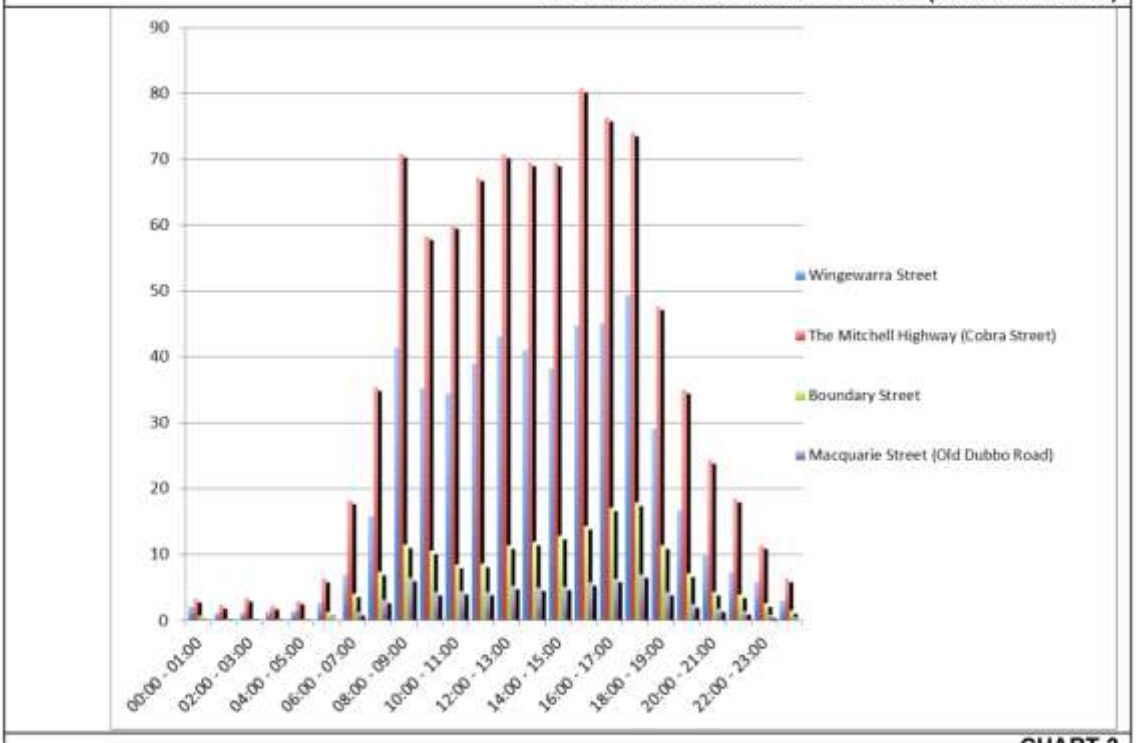

CHART 2
2012 TRAFFIC / 6 MINUTE DELAY (10KM/HR TRAIN)

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14 February 2014 Page 6

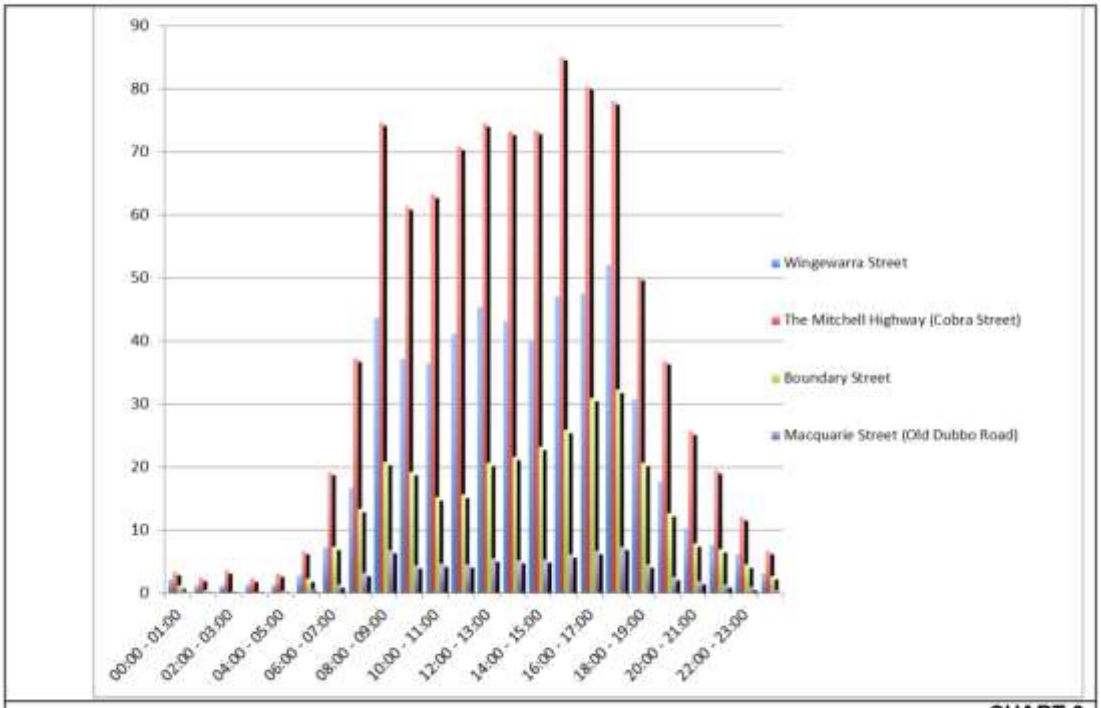

CHART 3
2036 TRAFFIC / 3.5 MINUTE DELAY (20KM/HR TRAIN)

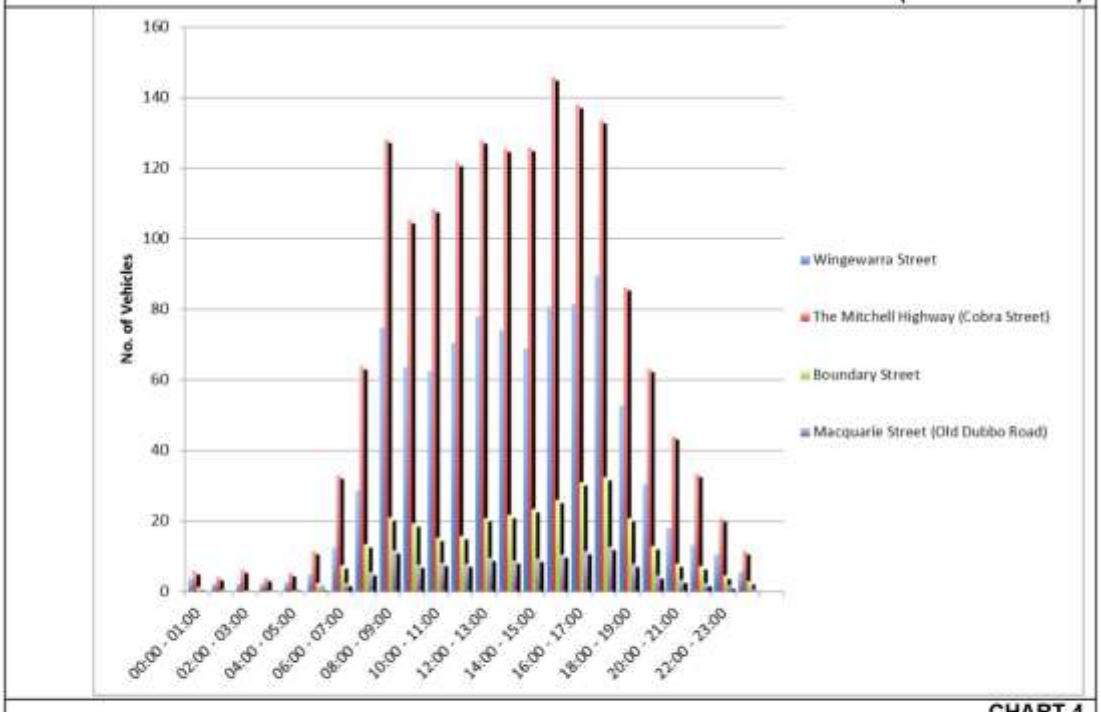

CHART 4
2036 TRAFFIC / 6 MINUTE DELAY (10KM/HR TRAIN)

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Fletcher International Exports Pty Ltd

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***Yarrandale Road, Dubbo*, N.S.W.2830 Australia**
Locked Bag 10, Dubbo, NSW. 2830. Australia
Telephone : (612) 68 818 133
Fax : (612) 68 820 300
Email : kurtw@fletchint.com.au

Dubbo Zirconia Project

12/02/2014

Care of Alkaine Resources

Dear Bob,

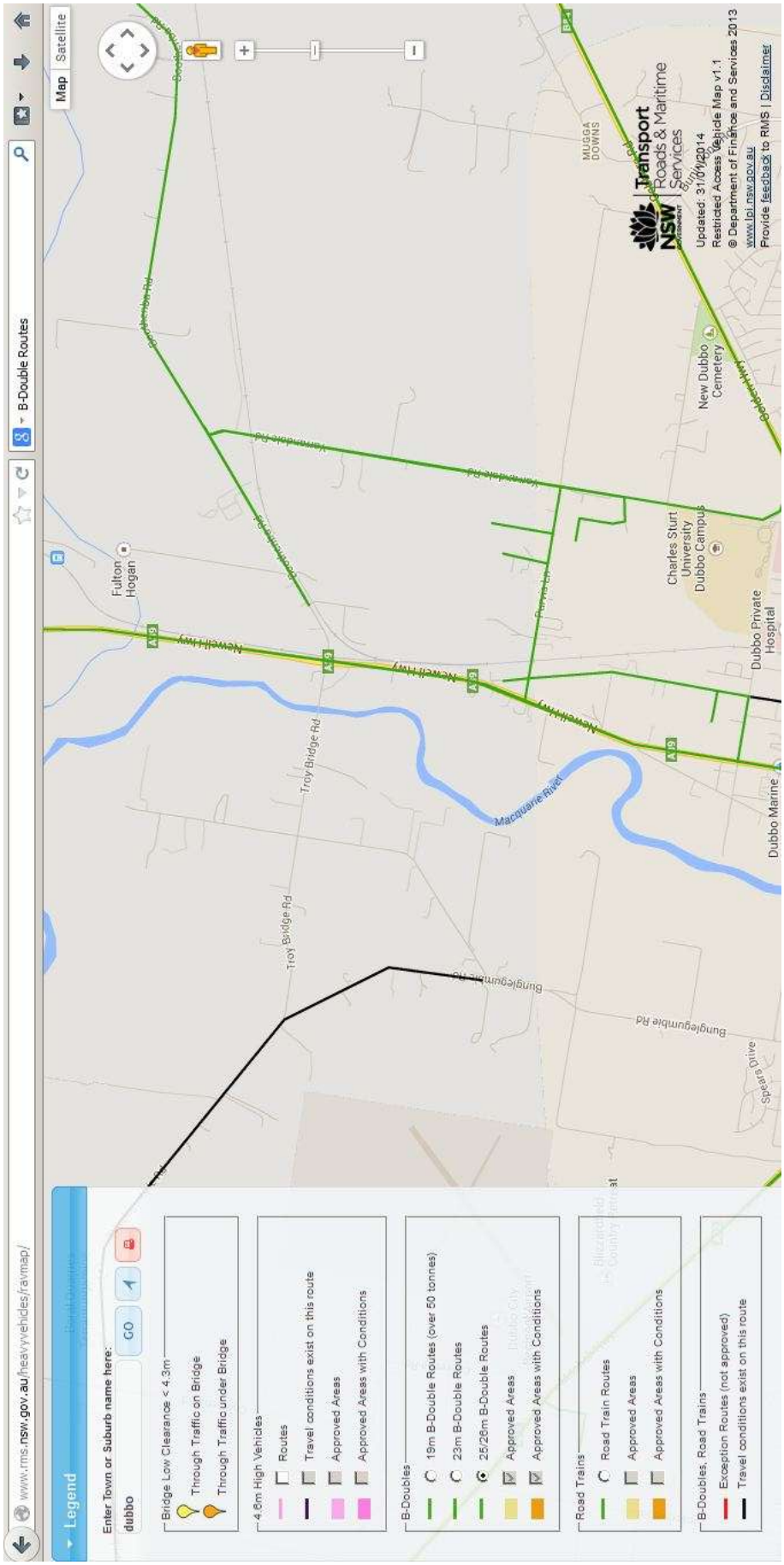
I am writing to confirm that Fletcher International Exports is currently in preliminary high level discussions with Alkaine Resources regarding requirements for the handling of import re-agents and exporting of processed materials from the Dubbo Zirconia Project through the Fletcher Terminal. We are aware that the freight task through the terminal could exceed the current infrastructure flow path. Lead times for infrastructure expansion have been discussed if the Fletcher Terminal is to become an integral part of the freight task. Space is available for the terminal to expand if additional infrastructure is needed. At this point no commitments have been made by either party. If a working agreement is reached, it is understood that both companies will work towards a mutually satisfactory outcome to ensure existing intermodal and grain packing operations are not impacted at all.

Please contact me if any further queries.

Kind Regards

Kurt Wilkinson
Commodities Trading Manager
Fletcher International Exports Pty
Lot 11 Yarrandale Rd Dubbo 2830 NSW
Mb: 0427 709 916

1


B-Double Routes
Map
Satellite
Legend
Enter Town or Suburb name here:
dubbo
GO
Bridge Low Clearance < 4.3m
Through Traffic on Bridge
Through Traffic under Bridge
4.6m High Vehicles
Routes
Travel conditions exist on this route
Approved Areas
Approved Areas with Conditions
B-Doubles
19m B-Double Routes (over 50 tonnes)
23m B-Double Routes
25/26m B-Double Routes
Approved Areas
Approved Areas with Conditions
Road Trains
Road Train Routes
Approved Areas
Approved Areas with Conditions
B-Doubles, Road Trains
Exception Routes (not approved)
Travel conditions exist on this route
Transport NSW Roads & Maritime Services
Updated: 31/01/2014
Restricted Access Vehicle Map v1.1
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www.lpi.nsw.gov.au
Provide feedback to RMS | Disclaimer
Fulton Hogan
Troy Bridge Rd
Newell Hwy
Macquarie River
Charles Sturt University Dubbo Campus
Dubbo Private Hospital
New Dubbo Cemetery
Dubbo Marine
Bunglegumbie Rd
Spears Drive
MUDGA DOWNS

*Attachment: Transport Movements (14 February 2014).xls – see **Appendix 3***

*Attachment: Railway crossing traffic_140214.xls – see **Charts 1** to **4***

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EMAIL TRANSMISSION

TO:	Carl Dumpleton	EMAIL:	carl.dumpleton@planning.nsw.gov.au
ORGANISATION:	Department of Planning & Infrastructure	DATE:	7 March 2014
REFERENCE:	545	COPY:	AZL

NO. OF PAGES (including attachments): 3

SUBJECT: Response to Department of Planning & Infrastructure raised Queries of the Noise Impact Assessment – Dubbo Zirconia Project

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

MESSAGE:

Dear Carl,

The Department has requested clarification or further information on several aspects of on the Noise Impact Assessment (NIA) completed for the Dubbo Zirconia Project. On review of the various emails and conversations in relation to the NIA (including a teleconference involving Oliver Muller of EMGA Mitchell McLennan [EMM]), our understanding of the issues requiring review and response are as follows.

1. The Department's position is that with limited exception, all on-site activities should be considered operational noise in accordance with the INP. With respect to the NIA, this affects the various site establishment activities such as processing plant, haul road and residue storage facility construction.
2. The Department requires a more defined prediction of the noise impacts associated with site establishment activities (the NIA provided a range of noise levels reflecting the atypical and variable noise emission types associated with construction activities on a day to day basis).
3. The Department requested we review the noise levels predicted for off-site construction noise, e.g. pipeline installation, rail construction, etc., to consider noise attenuation and provide a more defined prediction of the noise impacts (rather than the range provided in the NIA).
4. The Department requested clarification as to the appropriateness of the passive recreation noise criteria for Toongi Hall (and associated camping ground).
5. The Department requested clarification of the nominated construction hours of operation.

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R.W. CORKERY & CO. PTY. LIMITED

7 March 2014 Page 2

6. The Department has sought clarification as to whether truck movements within the Processing Plant and associated infrastructure areas has been included in the operational scenario models of the NIA.

I have previously provided clarification on **Issue 5**, however, this is reproduced below for your record.

The operating hours and exceptions for construction are as nominated below (this represents a slight modification to Commitment 3.1 of Section 6 of the RTS).

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*	• *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*

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.
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.
Note 2: Unless required for misfire re-blast, emergency or safety reasons.

With respect to **Issue 6**, EMM has confirmed that the operational scenarios of the NIA include both idling and moving trucks within the Processing Plant and associated infrastructure areas (refer to *Appendix A* of the NIA)

A letter report responding to **Issues 1 to 4** has been prepared by EMM and is attached. As noted in the letter report, and as previously indicated in emails provided to you (on 28 February 2014), we would like to reiterate that the various site establishment activities undertaken prior to the commencement of mining and processing (Activities 1 to 5 in the letter report) would be (with some exceptions noted below) undertaken consecutively (not concurrently). Therefore, presenting noise levels for each activity individually, as opposed to cumulatively, is appropriate. The exceptions are as follows.

- Construction and commissioning of the Processing Plant and associated areas (Rail Container Laydown and Storage Area, DZP Site Administration Area) are likely to be undertaken over the entire construction period. However, the period associated with the major noise generating activities, i.e. when the full suite of equipment nominated in *Table 5.4* of the NIA is operating, would be approximately 20 weeks.
- Construction of LRSF Aras 2 and 4 may be delayed until the commencement of operations. While this would involve the repurposing of equipment already included in the Operational Scenarios modelled in NIA (Years 1 and 5), the letter report attached considers the cumulative noise levels associated with concurrent mining, processing, transport and LRSF construction.

R.W. CORKERY & CO. PTY. LIMITED

7 March 2014 Page 3

I trust the information contained in this correspondence and attached letter report satisfies the Department's request for information. Please note that I will be unavailable between 10 March and 24 March during which time I suggest you refer specific noise related to queries to Mike Sutherland (msutherland@alkane.com.au) and/or Oliver Muller (omuller@emgamm.com). More general queries should be referred to Mike Sutherland and/or Mitchell Bland (Mitchell@rwcorkery.com).

Regards,

Alex Irwin
Senior Environmental Consultant

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Attachment: H12019 Dubbo Zirconia Project Response to PI.pdf – see ***Appendix 6***

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EMAIL TRANSMISSION

TO:	Carl Dumpleton	EMAIL:	carl.dumpleton@planning.nsw.gov.au
ORGANISATION:	Department of Planning & Infrastructure	DATE:	25 March 2014
REFERENCE:	545	COPY:	AZL

NO. OF PAGES (including attachments): 2

SUBJECT: Water Pump Noise

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

MESSAGE:

Dear Carl,

I refer to your email query of 21 March 2014 in relation to the assessment of noise generated by water pumping from the Macquarie River (**Figure 1** of the Response to Submissions identifies the proposed location).

Noise associated with the pumping was 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.

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25 March 2014 Page 2

Given the likely sound power level of the pump would not exceed 110dB (and would more likely approximate 85 to 90dB), and the likely 30-40dB reduction provided by the enclosure, at a distance of 600m the pump would be barely audible and far less than the established 30dB background noise level for the local setting. At distances of 1km or greater, the pump would almost certainly be inaudible.

On the basis of the above, we can confirm that the water pumping operations would not impact on surrounding residences with compliance with Project Specific Noise Levels to be attained.

As always, I am happy to field any questions you might have on this and other matters..

Regards,

Alex Irwin
Senior Environmental Consultant

Att: Figure 1 (of RTS)

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25 March 2014 Page 3

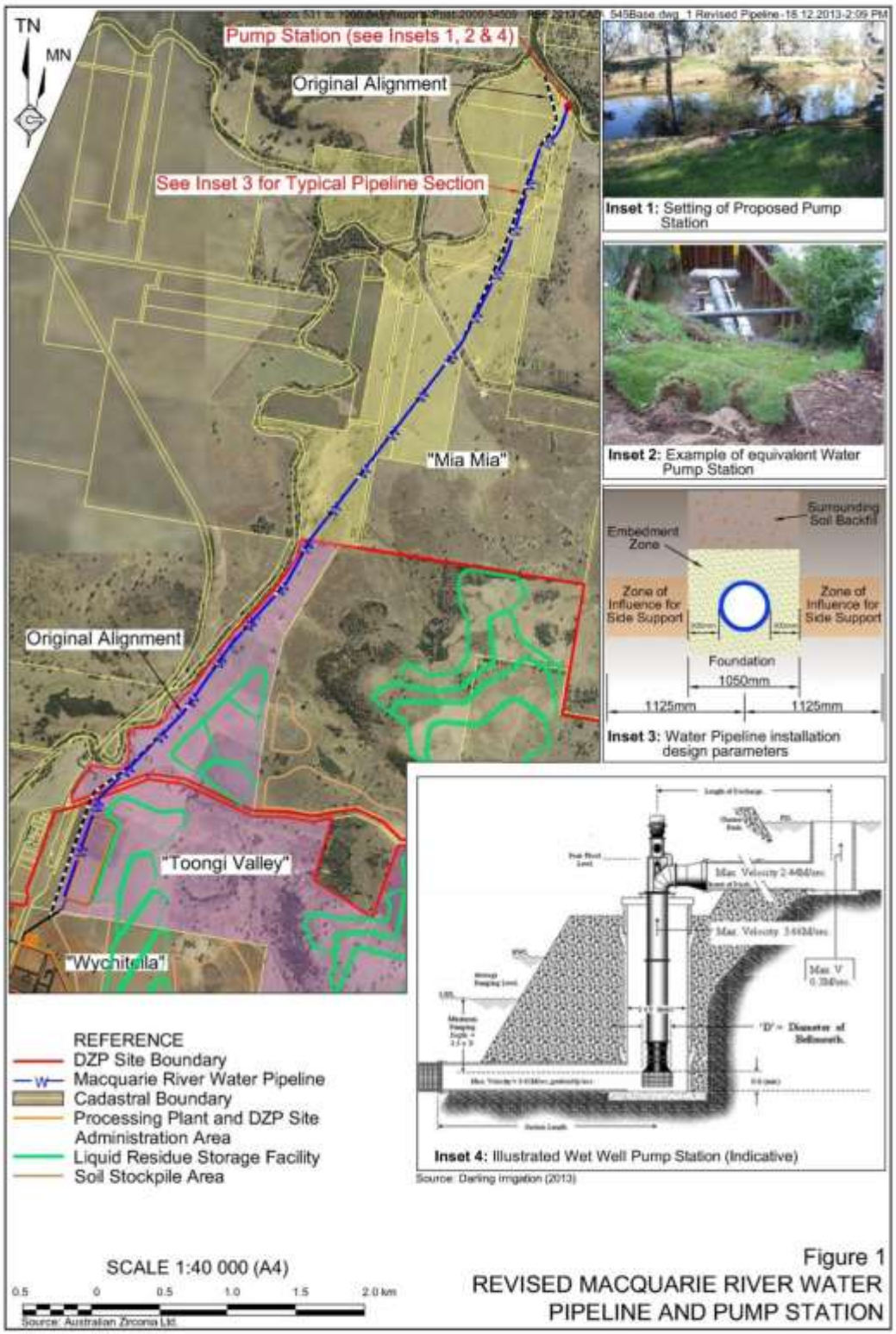

Figure 1
REVISED MACQUARIE RIVER WATER PIPELINE AND PUMP STATION

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EMAIL TRANSMISSION

TO:	Carl Dumpleton	EMAIL:	carl.dumpleton@planning.nsw.gov.au
ORGANISATION:	Planning & Infrastructure	DATE:	10 April 2014
REFERENCE:	545	COPY:	AZL

NO. OF PAGES (including attachments): 5

SUBJECT: Additional Information to Support Traffic Impact Assessment for the DZP

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

MESSAGE:

Dear Carl,

I refer to your emails of Thursday 3 April and Friday 4 April requesting additional information to support the Traffic Impact Assessment for the Dubbo Zirconia Project (DZP). This information is provided below.

- Supply a revised **Figure 2.15** showing the new route via Purvis Lane.

As discussed subsequently, the two routes in question from Fletcher International Exports are both considered suitable routes for the movement of reagents between the rail network and the DZP Site. As such, ***Figure 2.15 REVISED*** *has been updated to include both. Additional insets have been included presenting recent aerial photography of the three key intersections associated with the Boothenba Road and Purvis Lane routes between Fletcher International Exports and the Newell Highway.*

- Clarify the 14.6 second average delay figure in Constructive Solutions letter and what scenario it relates to.

The 14.6s average delay refers to the average delay for the worst movement through the intersection for the existing intersection arrangement in 2036 with mine related traffic included. Notably, for the same time period without mine related traffic, the average delay for the worst movement was 14.0s.

The scenario considered 8 mine related vehicle movements through the intersection per 15 minutes, i.e. 32 movements per hour. Each movement was considered a heavy vehicle for the sake of conservatism.

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- Provide some additional justification regarding the suitability of the Purvis Lane / Newell Highway intersection, i.e. its current treatment and capacity.

Justification for the use of the Purvis Lane – Newell Highway intersection is drawn from its status as a gazetted B-Double and Road Train route. The road design, alignment and intersection treatments have been assessed and considered suitable for B-double traffic by the relevant Local Traffic Committee. Notably, Transport for NSW has accepted the use of this intersection for transport between Fletcher International Exports and the Newell Highway on the basis of Commitment 14.21 (see below).

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

Further to the above, Constructive Solutions Pty Ltd has reviewed the existing design of the Yarrandale Road – Purvis Lane and Purvis Lane – Newell Highway intersections as to their suitability with respect to the volume of B-Double transport proposed. Notably, Constructive Solutions confirms that both the Purvis Lane and Boothenba Road routes are suitable for B-Double transport (see attached). Furthermore, given the Purvis Lane – Newell Highway and Boothenba Road – Newell Highway are equivalent in formation, the impact on level of service at Purvis Lane would be similar to that at Boothenba Road, i.e. not significant.

- Please advise what the assessed maximum trucking rate per hour was in the TIA.

For the purpose of assessing the impacts of DZP traffic on the local traffic environment, the Traffic Impact Assessment (TIA) considered:

- *Total daily traffic movements to assess the affect on capacity of the affected roads. The traffic volumes considered are presented in Section 2.6.2.3 of the TIA (Part 11 of the SCSC) with assessment on factors such as road capacity and condition provided in Section 3 of the TIA.*
- *Peak hourly traffic was considered for intersection performance using SIDRA modelling. As noted above, maximum operational traffic volumes of 8 DZP related vehicle movements through the intersection per 15 minutes, i.e. 32 movements per hour, have been considered. **Table 1** below describes the orientation of these movements over the maximum 15 minute and 1 hour period.*

R.W. CORKERY & CO. PTY. LIMITED

10 April 2014 Page 3

Table 1
Maximum DZP Traffic Movements Through Obley Road – Newell Highway Intersection

Movement		DZP Traffic Movements	
		15 minute	1 hour
Newell Hwy - Northbound	Through	0	0
	Right Turn	1	4
Obley Rd - Westbound	Left Turn	1	4
	Right Turn	3	12
Newell Hwy - Southbound	Through	0	0
	Left Turn	3	12
Total		**8**	**32**

I trust the information provides the clarification requested.

For your information, agreement with Roads and Maritime Services (RMS) has been reached over the remaining outstanding issues. I expect RMS will notify Planning & Infrastructure NSW of the agreed position on the various transport related matters raised following review of the Response to Submissions.

Should you require any further information, please do not hesitate to contact me.

Regards,

Alex Irwin
Senior Environmental Consultant

Att:

Figure 2.15 REVISED
Letter Report of Constructive Solutions (DZP Reagent Haulage Routes BR100414.pdf)

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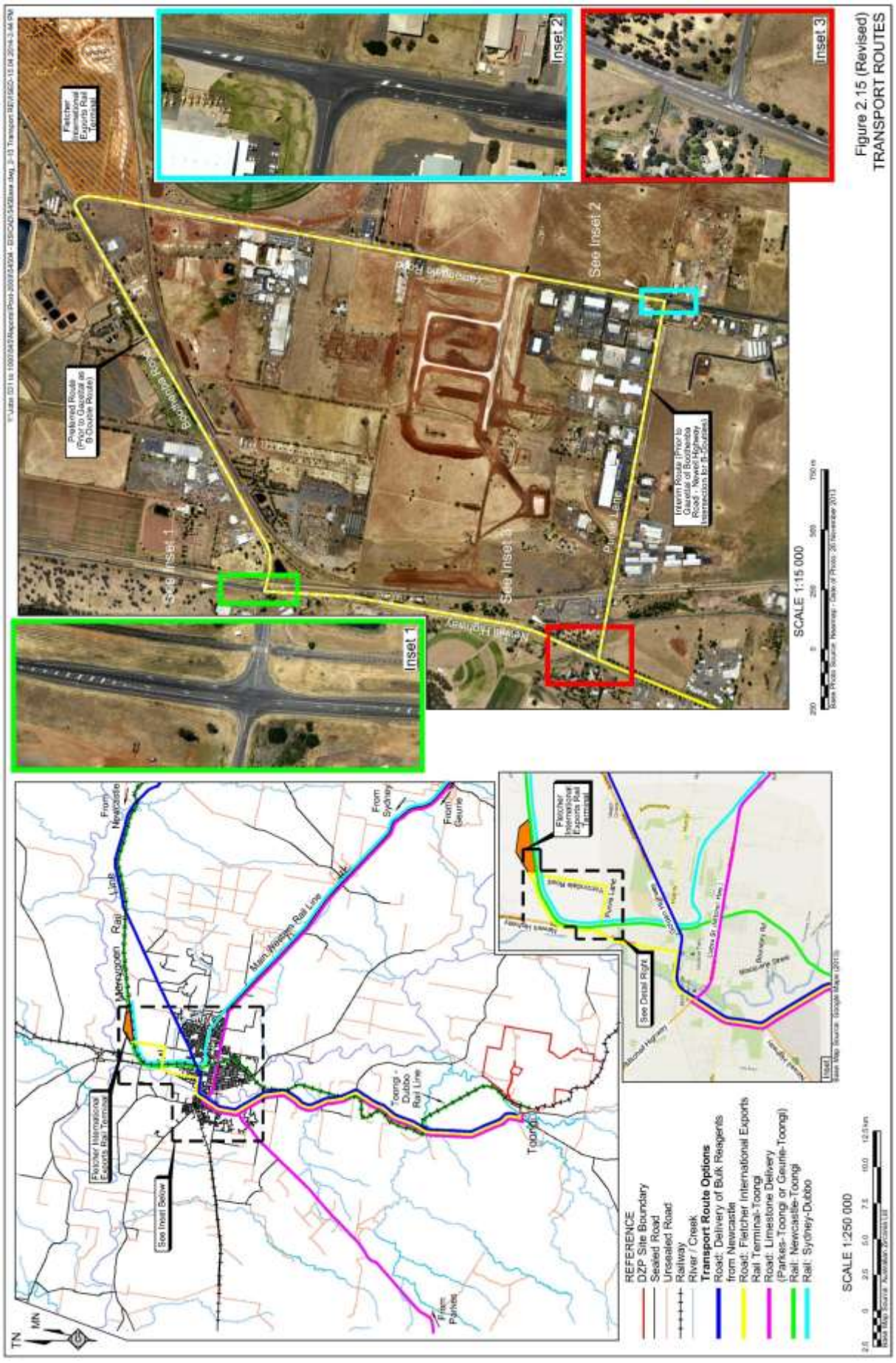
Figure 2.15 (Revised)
TRANSPORT ROUTES
Inset 1
Inset 2
Inset 3
See Inset 1
See Inset 2
See Inset 3
Preferred Route (Prior to Gazettal as 'B' Double Route)
Interim Route (Prior to Construction of Bypass Road) - New Highway Intersection for B-Doubles
Fletcher International Exports Rail Terminal
Newell Highway
Purvis Lane
SCALE 1:15 000
TN
MN
From Newcastle
From Sydney
From Gilgandra
Main Western Rail Line
Werrygoden Rail Loop
Toongi - Dubbo Rail Line
Toongi
From Parkes
See Inset Below
See Detail Right
Inset
REFERENCE
DZP Site Boundary
Sealed Road
Unsealed Road
Railway
River / Creek
Transport Route Options
Road: Delivery of Bulk Reagents from Newcastle
Road: Fletcher International Exports Rail Terminal-Toongi
Road: Limestone Delivery (Parkes-Toongi or Geurie-Toongi)
Rail: Newcastle-Toongi
Rail: Sydney-Dubbo
SCALE 1:250 000

Attachment: DZP Reagent Haulage Route BR100414.pdf – see ***Appendix 3***

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EMAIL TRANSMISSION

TO:	Carl Dumpleton	EMAIL:	carl.dumpleton@planning.nsw.gov.au
ORGANISATION:	Department of Planning & Infrastructure	DATE:	14 April 2014
REFERENCE:	545	COPY:	AZL

NO. OF PAGES (including attachments): 2

SUBJECT: Water Security

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

MESSAGE:

Dear Carl,

I refer to your email of Friday 21 March to Mitchell Bland, where you request a more detailed site water balance to consider the frequency/likelihood of the 4.05GL (plus dust suppression) required to process 1Mtpa.

Water for dust suppression (annual requirement of ~48MLpa) would be obtained from surface water harvest (with additional harvested water used for processing [109MLpa]) (refer to Section 6.2.2, pp. 4-66 to 4-67 of the Surface Water Assessment).

By implementing the water supply strategy proposed in Section 2.8.2 of the EIS (which would provide up to 75% of processing water requirements from either Macquarie River High Security allocation or groundwater (Macquarie alluvial or Lachlan Fold Belt fractured rock aquifers), the proportion subject to restriction in allocation would be reduce to 25% (1 000ML).

With respect to the security of access to the 4.05GL of water required annually for processing, the likelihood that this volume of water could not be secured (even during very dry periods of minimal general security water allocation) is considered very low.

During a period of very low general security water allocation, Australian Zirconia Limited (AZL) aims to obtain at least 75% of the water requirement from Macquarie River High Security allocation and/or groundwater (Macquarie alluvial or Lachlan Fold Belt fractured rock aquifers).

- At the time of writing, AZL has secured 846ML of high security water with a further 820ML considered to be available for purchase by Peter Hennessy Water (see ***Appendix 7*** of the EIS). In total there is 6 508ML of tradable High Security water within the Macquarie and Cudgegong Regulated Rivers Water Source. On this basis, the target of 1 000ML (or more) of High Security water is considered achievable.

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- A yield of 300MLpa (~10L/s) has been identified from a bore installed on the "Mia Mia" property and there are other highly productive bores within the alluvial aquifer within several kilometers (e.g. GW802169 with a reported yield of 9L/s). Considering only the land of the DZP Site, and taking a conservative approach based on the relatively restricted database of hydrogeological records, Environmental Earth Sciences concluded that a yield of up to 1 000MLpa could be achievable (***Appendix 8*** of the EIS). AZL has commenced hydrogeological investigations to identify the main alluvial channel from which higher yield bores would be developed. Based on the yields noted above, there is little doubt that the nominated 2 000MLpa could be identified and secured from the main alluvial channel. Proper process with respect to the assessment and licensing of alluvial water supply would be undertaken (in accordance with the *Water Management Act 2000*).

The above described water would not be subject to allocation and is therefore considered secure.

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

A review of the Water Management Act Registers (http://registers.water.nsw.gov.au/wma/) maintained by the NSW Office of Water (NOW) illustrates that even during periods of low allocation, there is significant volumes of water traded (see **Table A**).

Table A
Water Trading Records (Macquarie and Cudgegong Regulated Rivers Water Source)

Period	Allocation (%) [A]	No. of Trades [A]	Volume (ML) [A]	Average cost ($/ML)[1 (B)]
2008/2009	10	149	16 305	$1,254
2009/2010	0	193	31 444	$1,257
2010/2011	100	219	106 236	$1,247
2011/2012	49	224	202 302	$1,210
2012/2013	58	296	296 862	$1,206
2013/2014 (to date)	6	357	103 851	
Note 1: Permanent transfer of General Security Water. Transfer of temporary water				
Source A: http://registers.water.nsw.gov.au/wma/ Source B: Peter Hennessy Water				

Table A illustrates that even during low or zero allocation years, water was traded and therefore available for purchase. Some of this traded water is likely to have been High Security water. The General Security water traded is likely to have been allocation unused but carried over from previous years (the rules of the Water Sharing Plan allow for 100% of a licence entitlement to be carried over to the next year). It is also worthy of note that in each of the years nominated in **Table A**, there remained parcels of water which remained untraded (either as the seller wanted a higher price or there were no further buyers at the time the parcel was listed for trade) (pers. comm. P. Hennessy).

By owning a set allocation, e.g. 5 000ML, the options available to AZL to secure water from year to year would be increased. For example, during a wet year when the allocation is high, the allocation not required may be carried over to the following year. During such a year, all or a portion of the High Security allocation could also be converted to General Security via a temporary transfer from a High to a General Security licence. This would increase the volume of water which could be carried over under the rules of the Water Sharing Plan.

Other options available include 'parking' water within a third parties licence allowing for additional carry over of water which could be transferred back to AZL's licence(s) as required.

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%.
- 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) would be carried over 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.

AZL would maintain this proactive trading and even in years of high allocation still take positions on parcels to maintain a healthy allocation for the following years. Managing the high security licences held by AZL each year will also provide for carry over each year. In the event of a severe dry period AZL would have a healthy buffer to continue operations.

R.W. CORKERY & CO. PTY. LIMITED

14 April 2014 Page 4

On the basis of the preceding, it can be 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. The evidence indicates 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. As such, the likelihood that AZL would not be able to obtain water under the rules of the Water Sharing Plan is considered very low.

As always, I am available to discuss the information contained within this correspondence along with any other aspects of the DZP.

Regards,

Alex Irwin
Senior Environmental Consultant

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Appendix 3

Review of Purvis Lane Haulage Route by Constructive Solutions

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Constructive Solutions *Realising potential*

10 April 2014

Alex Irwin
Senior Environmental Consultant
RW Corkery & Co Pty Ltd
62 Hill Street
ORANGE NSW 2800

Dear Alex

Re: Dubbo Zirconia Project – Reagent Haulage Route Options

I refer to your request to review the proposal for the haulage of reagents to and from Fletchers International Exports to the DZP mine site utilising b – double trailer configurations. Based on the most recent assessment of reagent requirements and logistics, I understand that an average of 32 b - double trucks per day (64 movements) would be required between the Fletcher International Exports Rail Terminal and the DZP Site.

As recommended in the traffic and transport assessment, Boothenba Road provides the most direct route from the Newell Highway to Fletchers International Exports. It is therefore considered to be the preferred route although it is noted that a short section of this route, associated with the proximity of the rail level crossing to the Newell Highway, is not gazetted for b – double access. This section of rail is to be relocated to the east to increase the available queuing distance therefore negating this issue.

If the short section of Boothenba Road cannot be gazetted as a b – double route, or in the interim whilst the works are completed, an alternative route via Purvis Lane and Yarrandale Road is available. This route is currently gazetted as a road train route. The Purvis Lane intersection with the Newell Highway has a channelised right turn lane into Purvis Lane however no acceleration lane for vehicles turning left out of Purvis Lane. All turn manoeuvres appear to have suitable dimensional capacity for b – doubles. This intersection is similar to the standard provided at the Boothenba Road intersection with the Newell Highway with the primary difference being that street lighting is not provided for the Purvis Lane intersection.

Traffic turning left into Yarrandale Road merge directly into the through lane whilst traffic turning right from Yarrandale Road into Purvis Lane would utilise a short channelised right turn lane. The arrangements at this intersection would generally appear to be suitable to accommodate the haulage of reagents by b –

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Constructive Solutions *Realising potential*

doubles although the background traffic volumes of Purvis Lane is unknown. The AADT for Yarrandale Road from a count undertaken by Dubbo City Council in March 2010 is 1,399 and observation of traffic on these roads would suggest that traffic on Purvis Lane would be at least equivalent to Yarrandale Road and potentially higher as you approach the Newell Highway.

It is noted SIDRA modelling confirms the proposed traffic to be generated by the DZP through the Boothenba Road – Newell Highway intersection would have minimal affect on the level of service of this intersection. Similarly it could also be surmised that the impact at the Purvis Lane – Newell Highway intersection would also have a minimal impact on the level of service given they are both of a similar standard and both cater for similar traffic volumes.

For the reasons outlined above both routes to Fletchers International Exports for the haulage of reagents are considered suitable[1] for the transport of reagents. It is recommended that ongoing consultation with Council and RMS be undertaken, however, to ensure traffic facilities and the associated road pavements are maintained in a suitable condition given the increase in heavy vehicles associated with the proposal.

If you require further information please contact the undersigned.

Yours faithfully,

Ben Rossiter
Project Manager

1 Provided relocation of rail line to the east along Boothenba Road is complete.

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Appendix 4

Reagent Transport Logistics Review – February 2014

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

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Rail

Option A: Rail Direct to Toongi

Reagent Description	Annual Volume (t)	Consignment size	Weight including Container	Containers per year
Dense Soda Ash	44,064	26 tonnes	30 tonnes	1695
Sodium Sulphate (Anhydrate)	29,485	26 tonnes	30 tonnes	1134
Sulphur (powder)	114,015	26 tonnes	30 tonnes	4385
Sodium Sulphide	2,817	26 tonnes	30 tonnes	108
Salt	90,740	26 tonnes	30 tonnes	3490
Caustic Soda (liquid 50% Soln) (wet tonnes)	48,648	25.5 tonnes	30 tonnes	1907
Hydrochloric Acid solution (wet tonnes)	29,050	25.5 tonnes	30 tonnes	1139
Total	***358,579***			***13858***

Option B: Rail to Fletchers (OR Toongi)

Reagent Description	Annual Volume (t)	Consignment size	Weight including Container	Containers per year
Dense Soda Ash	44,064	30.5 tonnes	35 tonnes	1445
Sodium Sulphate (Anhydrate)	29,485	30.5 tonnes	35 tonnes	966
Sulphur (powder)	114,015	30.5 tonnes	35 tonnes	378
Sodium Sulphide	2,817	30.5 tonnes	35 tonnes	93
Salt	90,407	30.5 tonnes	35 tonnes	2975
Caustic Soda (liquid 50% Soln) (wet tonnes)	48,648	30 tonnes	35 tonnes	1622
Hydrochloric Acid solution (wet tonnes)	29,050	30 tonnes	35 tonnes	968
Total	***358,579***			***11807***

Option C Road

Road

Bulk Reagents

Fletchers to Toongi

Reagent Description	Annual Volume (t)	Consignment size	Trucks per year	Trucks per day
Dense Soda Ash	44,064	45 tonnes	979	3
Sodium Sulphate (Anhydrate)	29,485	45 tonnes	655	2
Sulphur (powder)	114,015	45 tonnes	2534	9
Sodium Sulphide	2,817	45 tonnes	63	0
Salt	90,407	45 tonnes	2009	7
Caustic Soda (liquid 50% Soln) (wet tonnes)	48,648	25.5 tonnes	1908	7
Hydrochloric Acid solution (wet tonnes)	29,050	25.5 tonnes	1139	4
Total	***358,579***		***9287***	**32**

Newcastle to Toongi

Reagent Description	Annual Volume (t)	Consignment size	Trucks per year	Trucks per day
Dense Soda Ash	44,064	45 tonnes	979	3
Sodium Sulphate (Anhydrate)	29,485	45 tonnes	655	2
Sulphur (powder)	114,015	45 tonnes	2534	9
Sodium Sulphide	2,817	45 tonnes	63	0
Salt	90,407	45 tonnes	2009	7
Caustic Soda (liquid 50% Soln) (wet tonnes)	48,648	25.5 tonnes	1908	7
Hydrochloric Acid solution (wet tonnes)	29,050	25.5 tonnes	1139	4
Total	***358,579***		***9287***	**32**

Other Reagents, Materials and Products

Various to Toongi

Reagent / Material	Source	Annual Volume (t)	Trucks per week	Trucks per day	Total Truck Movements per Day
Limestone	Geurie or Parkes	194,039	94	16	**39**
Quick Lime	Charbon	31,281	16	3	**11**
Anhydrous Ammonia	Newcastle	9,767	7	1	**20**
Diesel	Dubbo	1,424	1	NA	
Various	Fletcher Rail	5,865	6	1	**16**
Exports	Fletcher Rail	55,000	57	10	**32**
					8
TOTAL		297,376	181	31	**125**

Various to Toongi

Reagent / Material	Source	Annual Volume (t)	Trucks per week	Trucks per day	Total Truck Movements per Day
Limestone	Geurie or Parkes	194,039	94	16	**39**
Quick Lime	Charbon	31,281	16	3	**11**
Anhydrous Ammonia	Newcastle	9,767	7	1	**20**
Diesel	Dubbo	1,424	1	NA	
Various	Fletcher Rail	5,865	6	1	**16**
Exports	Fletcher Rail	55,000	57	10	**32**
					8
TOTAL		297,376	181	31	**125**

Total

Total Truck Movements per Day
32
6
2
2
19
61

Appendix 5

Revised BioBanking Credit Report by OzArk Environmental and Heritage Management Pty Ltd

(Total No. of pages including blank pages = 16)

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OzArk Environmental & Heritage Management Pty Ltd
ABN: 59 104 582 354

22 January 2014

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OEH adequacy response DOC13/84435 Dubbo Zirconia Project (SSD-5251)

Dear Alex,

In correspondence dated 19 November 2013, OEH queried the species credit calculations used in the Terrestrial Ecology Assessment of the Dubbo Zirconia Project (OzArk, 2013a). Salient transcript of the issue has been presented below for transparency:

> '*Errors in Biobanking calculations*
> *Species Credits have been incorrectly calculated resulting in errors in the calculation of credits required to offset the development. Section 8.3.3 provides an introduction to BBAM. The definition of Species Credits provided has been misinterpreted and has led to an error in inputting information into the BioBanking calculator.*
>
> *The definition provided in the EIS is as follows:*
> *Species Credits – these are created or required for all impacts for impacts on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates. Threatened species that require Species Credits are identified in the Threatened Species Profile Database. Species Credits are applied where a threatened species has been recorded but not predicted by the BBAM credit calculator (Pink-tailed Worm-lizard, Grey Falcon, Little Pied Bat, Square-tailed Kite and Little Eagle).*
>
> *The last sentence is not entirely correct. If a threatened species is recorded on the site but was not predicted to occur there, the species may be added to the list at Step 5f of inputting data into the credit calculator. Importantly, only species that require species credits may be added to the survey results. Of the species specifically mentioned, only the Pink-tailed Worm-lizard and Grey Falcon generate Species Credit, the remaining three species generate Ecosystems Credits. In the case of the Grey Falcon the Threatened Species Profile Database includes the following notes regarding habitat constraints: land within 100 m of riparian woodland on inland rivers containing mature living eucalypts or isolated paddock trees overhanging water or dry watercourses. The habitat constraint for the Pink-tailed Worm-lizard is land containing surface rocks (embedded or loose). On this basis, only the Worm-lizard should have been added to the list as a Species Credit.*
>
> *Recommendation*
> *OEH requests that the BioBanking credit calculator be re-run in order to generate a correct credit report.'*

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OzArk Environmental & Heritage Management Pty Ltd
ABN: 59 104 582 354

OzArk has recalculated the species credits as requested by OEH and the Biobanking credits reports have been provided as separate documents. This letter provides a summary of the relevant conclusions.

Recalculated species offset matching shows *Aprasia parapulchella* (Pink-tailed Worm-lizard) (a Vulnerable species under TSC Act and EPBC Act) meets or exceeds the credit requirements but *Falco hypoleucos* (Grey Falcon) (an Endangered species under TSC Act) remains 347 credits in deficit (**Table 1**).

Table 1: Development Area (Orange) and Offset Area (Green) Species Credit Matching

Scientific name	Common name	Red flag	Species Tg value	Final credits	Scientific name	Common name	Species Tg value	Final credits	Credit Surplus / Deficit
Falco hypoleucos	Grey Falcon	No	0.74	6473	*Falco hypoleucos*	Grey Falcon	0.74	6126	-347
Aprasia parapulchella	Pink-tailed Worm-lizard	No	0.35	1286	*Aprasia parapulchella*	Pink-tailed Worm-lizard	0.35	1434	148

Section 8.3.9.4 in OzArk (2013a) provides discussion on *Variation of the Offset Rules* where the argument is presented for reduction in the deficit for Grey falcon to 199 credits by using surplus credits for Pink-tailed Worm-lizard (148) and waiving the remaining deficit by applying *Waive the requirements for species credits*. A request for variation criterion for mitigated loss in the OEH interim Polity Attachment B 'point e' is made to waive the requirements for species credits on the basis of the following.

- The remaining credit deficit represents only 3% of the credit requirement (199 of 6,473).
- Ecosystem credits in the most productive habitats have been achieved as Tier 1 and Tier 2.
- Removal of a >50% weedy, rotationally cropped areas will not detrimentally affect the availability of prey species. In contrast, the availability of prey for *Falco hypoleucos* is likely to be increased with an increase of biodiversity in the Biodiversity Offset Area (BOA). Furthermore, operational, derelict and rehabilitated mines in the western region are more likely to attract prey species due to an increase habitat complexity and implementation of sustainable grazing or removal of grazing on some areas.
- Reinstatement of 'Grassy Woodlands' in the BOA would directly benefit this species. Currently much of the area is dominated by White Cypress Pine, a species reducing biodiversity in vegetated areas of the DZP Site.

Please feel free to contact me if there are any further questions or comment.

Yours faithfully,

Phillip Cameron
Senior Project Manager OzArk EHM.

BioBanking credit report

This report identifies the number and type of credits required at a DEVELOPMENT SITE.

Date of report: 20/01/2014 Time: 2:08:00PM Tool version: v2.1

Development details

Proposal ID:	127/2012/0398D
Proposal name:	Dubbo Zirconia Project
Proposal address:	Toongi Road, Toongi Dubbo NSW 2380
Proponent name:	Alkane Resources
Proponent address:	PO Box 910 Dubbo NSW 2830
Proponent phone:	02 6882 2866
Assessor name:	Heidi Kolkert
Assessor address:	PO Box 2028 ARIMDALE NSW 2350
Assessor phone:	0418 324 136
Assessor accreditation:	127

Improving or maintaining biodiversity

An application for a red flag determination is required for the following red flag areas

Red flag	Reason
White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Vegetation type being > 70% cleared; or it contains an endangered ecological community;
White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Vegetation type being > 70% cleared; or it contains an endangered ecological community;
White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Vegetation type being > 70% cleared; or it contains an endangered ecological community;
White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Vegetation type being > 70% cleared; or it contains an endangered ecological community;
Fuzzy Box - Inland Grey Box on alluvial brown loam soils of the NSW South Western Slopes Bioregion and southern BBS Bioregion (Benson 201)	Vegetation type being > 70% cleared; or it contains an endangered ecological community;
White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Vegetation type being > 70% cleared; or it contains an endangered ecological community;
White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Vegetation type being > 70% cleared; or it contains an endangered ecological community;
Inland Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (Benson 76)	Vegetation type being > 70% cleared; or it contains an endangered ecological community;
White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Vegetation type being > 70% cleared; or it contains an endangered ecological community;
White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Vegetation type being > 70% cleared; or it contains an endangered ecological community;

Inland Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (Benson 76)	Vegetation type being > 70% cleared; or it contains an endangered ecological community;

The application for a red flag determination should address the criteria set out in the BioBanking Assessment Methodology. Please note that a biobanking statement cannot be issued unless the determination is approved.

Additional information required for approval:

☐ Change to percent cleared for a vegetation type/s

- White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)
- White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)
- White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)

☐ Use of local benchmark

☐ Change negligible loss

☐ Expert report..

■ Request for additional gain in site value

☐ Predicted threatened species not on site

- Koala — Phascolarctos cinereus
- Spotted-tailed Quoll — Dasyurus maculatus

☐ Change threatened species response to gain (Tg value)

- Barking Owl — Ninox connivens
- Masked Owl — Tyto novaehollandiae
- Powerful Owl — Ninox strenua

Ecosystem credits summary

Vegetation type	Area (ha)	Credits required	Red flag
Fuzzy Box - Inland Grey Box on alluvial brown loam soils of the NSW South Western Slopes Bioregion and southern BBS Bioregion (Benson 201)	0.28	17.00	Yes
Inland Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (Benson 76)	1.08	50.00	Yes
White Box - Tumbledown Gum woodland on fine-grained sediments on the NSW central western slopes (Benson 270)	27.75	1,303.00	No
White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	47.98	2,339.00	Yes
Total	492.53	10,006	

Credit profiles

1. Fuzzy Box - Inland Grey Box on alluvial brown loam soils of the NSW South Western Slopes Bioregion and southern BBS Bioregion (Benson 201), (CW138)

Number of ecosystem credits created	17
CMA sub-region	Talbragar Valley
Minimum percent native vegetation cover class	31-70%
Minimum adjacent remnant area class	0-5 ha

Offset options - vegetation types	Offset options - CMA sub-regions
Fuzzy Box - Inland Grey Box on alluvial brown loam soils of the NSW South Western Slopes Bioregion and southern BBS Bioregion (Benson 201), (CW138)	Talbragar Valley Pilliga - Central West Pilliga (Part A) Upper Slopes - Lachlan Upper Slopes - Central West

2. Inland Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (Benson 76), (CW145)

Number of ecosystem credits created	37
CMA sub-region	Talbragar Valley
Minimum percent native vegetation cover class	11-30%
Minimum adjacent remnant area class	>100 ha

Offset options - vegetation types	Offset options - CMA sub-regions
Inland Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (Benson 76), (CW145)	Talbragar Valley Pilliga - Central West Upper Slopes - Central West

3. Inland Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (Benson 76), (CW145)

Number of ecosystem credits created	13
CMA sub-region	Upper Slopes - Central West
Minimum percent native vegetation cover class	11-30%
Minimum adjacent remnant area class	>100 ha

Offset options - vegetation types	Offset options - CMA sub-regions
Inland Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (Benson 76), (CW145)	Upper Slopes - Central West Pilliga - Central West

4. White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (CW213)

Number of ecosystem credits created	52
CMA sub-region	Talbragar Valley
Minimum percent native vegetation cover class	11-30%
Minimum adjacent remnant area class	>100 ha

Offset options - vegetation types	Offset options - CMA sub-regions
White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (CW213) White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (LA218) White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (MR643) White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (MU606)	Talbragar Valley MU Fans Pilliga - Central West Upper Slopes - Central West

5. White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (CW213)

Number of ecosystem credits created	990
CMA sub-region	Talbragar Valley
Minimum percent native vegetation cover class	31-70%
Minimum adjacent remnant area class	>100 ha

Offset options - vegetation types	Offset options - CMA sub-regions
White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (CW213) White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (LA218) White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (MR643) White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (MU606)	Talbragar Valley MU Fans Pilliga - Central West Upper Slopes - Central West

6. White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (CW213)

Number of ecosystem credits created	3,698
CMA sub-region	Talbragar Valley
Minimum percent native vegetation cover class	31-70%
Minimum adjacent remnant area class	0-5 ha

Offset options - vegetation types	Offset options - CMA sub-regions
Apple Box - Yellow Box dry grassy woodland of the South Eastern Highlands, (CW102) Black Sallee - Tussock Grass open woodland of the South Eastern Highlands, (CW109)	Wollemi - Central West Capertee Bathurst - Central West

Blakely's Red Gum - Yellow Box grassy woodland of the NSW South Western Slopes Bioregion (Benson 277), (CW112) Fuzzy Box - Inland Grey Box on alluvial brown loam soils of the NSW South Western Slopes Bioregion and southern BBS Bioregion (Benson 201), (CW138) Fuzzy Box on loams in the Nandewar Bioregion and northern Brigalow Belt South Bioregion (Benson 202), (CW139) Inland Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (Benson 76), (CW145) White Box - Rough-barked Apple alluvial woodland on the NSW western slopes (Benson 274), (CW211) White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (CW213) White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions, (CW215) White Box grassy woodland on well drained podsolic clay soils on hills in the NSW South Western Slopes Bioregion (Benson 266), (CW216) Yellow Box tall grassy woodland on alluvial flats mainly in the NSW South Western Slopes Bioregion (Benson 276), (CW226)	Hill End Orange - Central West Oberon - Central West Kerrabee - Central West Talbragar Valley Liverpool Range - Central West Pilliga Outwash - Central West Pilliga - Central West Nymagee-Rankins Springs - Central West Upper Slopes - Central West Lower Slopes - Central West Bogan-Macquarie - Central West Canbelego Downs - Central West Castlereagh-Barwon - Central West

7. White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (CW213)

Number of ecosystem credits created	355
CMA sub-region	Upper Slopes - Central West
Minimum percent native vegetation cover class	11-30%
Minimum adjacent remnant area class	>100 ha

Offset options - vegetation types	**Offset options - CMA sub-regions**
White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (CW213)	Upper Slopes - Central West MU Fans Pilliga - Central West

8. White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (CW213)

Number of ecosystem credits created	587
CMA sub-region	Upper Slopes - Central West
Minimum percent native vegetation cover class	11-30%
Minimum adjacent remnant area class	0-5 ha

Offset options - vegetation types	**Offset options - CMA sub-regions**
Apple Box - Yellow Box dry grassy woodland of the South Eastern Highlands, (CW102) Black Sallee - Tussock Grass open woodland of the South Eastern	Wollemi - Central West Capertee

Highlands, (CW109) Blakely's Red Gum - Yellow Box grassy woodland of the NSW South Western Slopes Bioregion (Benson 277), (CW112) Fuzzy Box - Inland Grey Box on alluvial brown loam soils of the NSW South Western Slopes Bioregion and southern BBS Bioregion (Benson 201), (CW138) Fuzzy Box on loams in the Nandewar Bioregion and northern Brigalow Belt South Bioregion (Benson 202), (CW139) Inland Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (Benson 76), (CW145) White Box - Rough-barked Apple alluvial woodland on the NSW western slopes (Benson 274), (CW211) White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (CW213) White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions, (CW215) White Box grassy woodland on well drained podsolic clay soils on hills in the NSW South Western Slopes Bioregion (Benson 266), (CW216) Yellow Box tall grassy woodland on alluvial flats mainly in the NSW South Western Slopes Bioregion (Benson 276), (CW226)	Bathurst - Central West Hill End Orange - Central West Oberon - Central West Kerrabee - Central West Talbragar Valley Liverpool Range - Central West Pilliga Outwash - Central West Pilliga - Central West Nymagee-Rankins Springs - Central West Upper Slopes - Central West Lower Slopes - Central West Bogan-Macquarie - Central West Canbelego Downs - Central West Castlereagh-Barwon - Central West

9. White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (CW213)

Number of ecosystem credits created	25
CMA sub-region	Upper Slopes - Central West
Minimum percent native vegetation cover class	11-30%
Minimum adjacent remnant area class	>100 ha

Offset options - vegetation types	**Offset options - CMA sub-regions**
White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (CW213)	Upper Slopes - Central West MU Fans Pilliga - Central West

10. White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (CW213)

Number of ecosystem credits created	917
CMA sub-region	Upper Slopes - Central West
Minimum percent native vegetation cover class	31-70%
Minimum adjacent remnant area class	>100 ha

Offset options - vegetation types	**Offset options - CMA sub-regions**
White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (CW213)	Upper Slopes - Central West MU Fans

	Pilliga - Central West

11. White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (CW213)

Number of ecosystem credits created	2,012
CMA sub-region	Upper Slopes - Central West
Minimum percent native vegetation cover class	31-70%
Minimum adjacent remnant area class	0-5 ha

Offset options - vegetation types	Offset options - CMA sub-regions
Apple Box - Yellow Box dry grassy woodland of the South Eastern Highlands, (CW102)	Wollemi - Central West
Black Sallee - Tussock Grass open woodland of the South Eastern Highlands, (CW109)	Capertee
Blakely's Red Gum - Yellow Box grassy woodland of the NSW South Western Slopes Bioregion (Benson 277), (CW112)	Bathurst - Central West
Fuzzy Box - Inland Grey Box on alluvial brown loam soils of the NSW South Western Slopes Bioregion and southern BBS Bioregion (Benson 201), (CW138)	Hill End
Fuzzy Box on loams in the Nandewar Bioregion and northern Brigalow Belt South Bioregion (Benson 202), (CW139)	Orange - Central West
Inland Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (Benson 76), (CW145)	Oberon - Central West
White Box - Rough-barked Apple alluvial woodland on the NSW western slopes (Benson 274), (CW211)	Kerrabee - Central West
White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267), (CW213)	Talbragar Valley
White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions, (CW215)	Liverpool Range - Central West
White Box grassy woodland on well drained podsolic clay soils on hills in the NSW South Western Slopes Bioregion (Benson 266), (CW216)	Pilliga Outwash - Central West
Yellow Box tall grassy woodland on alluvial flats mainly in the NSW South Western Slopes Bioregion (Benson 276), (CW226)	Pilliga - Central West
	Nymagee-Rankins Springs - Central West
	Upper Slopes - Central West
	Lower Slopes - Central West
	Bogan-Macquarie - Central West
	Canbelego Downs - Central West
	Castlereagh-Barwon - Central West

12. White Box - Tumbledown Gum woodland on fine-grained sediments on the NSW central western slopes (Benson 270), (CW212)

Number of ecosystem credits created	437
CMA sub-region	Upper Slopes - Central West
Minimum percent native vegetation cover class	11-30%
Minimum adjacent remnant area class	>100 ha

Offset options - vegetation types	Offset options - CMA sub-regions
White Box - Tumbledown Gum woodland on fine-grained sediments on the NSW central western slopes (Benson 270), (CW212)	Upper Slopes - Central West

13. White Box - Tumbledown Gum woodland on fine-grained sediments on the NSW central western slopes (Benson 270), (CW212)

Number of ecosystem credits created	866
CMA sub-region	Upper Slopes - Central West
Minimum percent native vegetation cover class	31-70%
Minimum adjacent remnant area class	>100 ha

Offset options - vegetation types	Offset options - CMA sub-regions
White Box - Tumbledown Gum woodland on fine-grained sediments on the NSW central western slopes (Benson 270), (CW212)	Upper Slopes - Central West

Species credits summary

Common name	Scientific name	Extent of impact Ha or individuals	Number of species credits created
Pink-tailed Worm-lizard	Aprasia parapulchella	45.00	1,286
Grey Falcon	Falco hypoleucos	479.02	6,473

BioBanking Credit Calculator

NSW GOVERNMENT Office of Environment & Heritage

Ecosystem credits

Proposal ID :	127/2012/0398D
Proposal name :	Dubbo Zirconia Project
Assessor name :	Heidi Kolkert
Assessor accreditation number :	127
Tool version :	v2.1
Report created :	20/01/2014 15:02

Assessment circle name	Landscape score	Vegetation zone name	Vegetation type name	Condition	Red flag status	Management zone name	Management zone area	Current site value	Future site value	Loss in site value	Credit required for no diversity	Credit required for TS	TS with highest credit requirement	Average species loss	Species TS Value	Final credit requirement for management zone
1	22.00	CW212_Moderate/Good	White Box - Tumbledown Gum woodland on fine-grained sediments on the NSW central western slopes (Benson 270)	Moderate/Good	No	MZ1	13.36	58.85	0.00	58.85	371	866	Speckled Warbler	66.67	0.40	866
1	22.00	CW213_Moderate/Good_Medium	White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Moderate/Good_Medium	Yes	MZ3a	17.70	70.14	0.00	70.14	406	917	Squirrel Glider	66.33	0.45	917
1	22.00	CW213_Low	White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Low	No	MZ4a	128.75	39.06	0.00	39.06	1,965	0		0.00	0.00	1,965
1	22.00	CW213_Moderate/Good_Other	White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Moderate/Good_Other	No	MZ5a	2.43	55.73	0.00	55.73	47	0		0.00	0.00	47
2	19.50	CW212_Moderate/Good	White Box - Tumbledown Gum woodland on fine-grained sediments on the NSW central western slopes (Benson 270)	Moderate/Good	No	MZ1b	9.39	58.85	0.00	58.85	184	437	Speckled Warbler	66.67	0.40	437
2	19.50	CW213_Moderate/Good	White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Moderate/Good	Yes	MZ2b	7.62	59.38	0.00	59.38	150	355	Bush Stone-curlew	66.67	0.40	355
2	19.50	CW213_Low	White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Low	No	MZ4b	39.24	39.06	0.00	39.06	574	0		0.00	0.00	574
2	19.50	CW213_Moderate/Good_Other	White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Moderate/Good_Other	No	MZ5b	0.70	55.73	0.00	55.73	13	0		0.00	0.00	13

Assessment circle name	Landscape score	Vegetation zone name	Vegetation type name	Condition	Red flag status	Management zone name	Management zone area	Current site value	Future site value	Loss in site value	Credit required for bio diversity	Credit required for TS	TS with highest credit requirement	Average species loss	Species TS Value	Final credit requirement for management zone
3	21.10	CW213_Moderate/Good	White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Moderate/Good	Yes	MZ2a	20.83	59.33	0.00	59.33	419	978	Bush Stone-curlew	66.67	0.40	978
3	21.10	CW213_Moderate/Good_Medium	White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Moderate/Good_Medium	Yes	MZ3b	0.25	59.33	0.00	59.33	5	12	Bush Stone-curlew	66.67	0.40	12
3	21.10	CW213_Low	White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Low	No	MZ4c	238.57	39.06	0.00	39.06	3,688	0		0.00	0.00	3,688
3	21.10	CW213_Moderate/Good_Other	White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Moderate/Good_Other	No	MZ5c	5.75	55.73	0.00	55.73	110	0		0.00	0.00	110
3	21.10	CW133_Moderate/Good	Fuzzy Box - Inland Grey Box on alluvial brown loam soils of the NSW South Western Slopes Bioregion and southern BRS Bioregion (Benson 201)	Moderate/Good	Yes	MZ6	0.28	100.00	0.00	100.00	8	17	Yellow-bellied Sheathtail-bat	100.00	0.45	17
4	12.00	CW213_Moderate/Good_Medium	White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Moderate/Good_Medium	Yes	MZ3c	0.26	70.14	0.00	70.14	5	13	Squirrel Glider	88.89	0.45	13
5	12.00	CW213_Moderate/Good_Medium	White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Moderate/Good_Medium	Yes	MZ3d	0.25	70.14	0.00	70.14	5	12	Squirrel Glider	88.89	0.45	12
5	12.00	CW145_Moderate/Good_Medium	Inland Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (Benson 78)	Moderate/Good_Medium	Yes	MZ7a	0.28	79.17	0.00	79.17	6	13	Yellow-bellied Sheathtail-bat	77.78	0.45	13
6	12.00	CW213_Moderate/Good_Medium	White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Moderate/Good_Medium	Yes	MZ3e	0.25	70.14	0.00	70.14	5	12	Squirrel Glider	88.89	0.45	12
7	12.00	CW213_Moderate/Good_Medium	White Box - White Cypress Pine - Inland Grey Box woodland on the western slopes of NSW (Benson 267)	Moderate/Good_Medium	Yes	MZ3f	0.82	70.14	0.00	70.14	17	40	Squirrel Glider	88.89	0.45	40
8	12.00	CW145_Moderate/Good_Medium	Inland Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (Benson 78)	Moderate/Good_Medium	Yes	MZ7b	0.80	79.17	0.00	79.17	18	37	Yellow-bellied Sheathtail-bat	77.78	0.45	37

BioBanking Credit Calculator

Species credits

Office of Environment & Heritage
NSW GOVERNMENT

Proposal ID :	127/2012/0398D
Proposal name :	Dubbo Zirconia Project
Assessor name :	Heidi Kolkert
Assessor accreditation number :	127
Tool version :	v2.1
Report created :	20/01/2014 15:02

Scientific name	Common name	Species TG value	Identified population?	Can Id. popn. be offset?	Area / number of loss	Negligible loss	Red flag status	Number of credits
Aprasia parapulchella	Pink-tailed Worm-lizard	0.35	No		45.00	9,999,999.00	No	1,286
Falco hypoleucos	Grey Falcon	0.74	No		479.02	9,999,999.00	No	6,473

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Appendix 6

Review of Construction Noise Predictions by EMGA Mitchell McClennan (H12019 Dubbo Zirconia Project Response to PI)

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EMGA Mitchell McLennan

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6 February 2014

Alex Irwin
Senior Environmental Consultant
RW Corkery & Co Pty Limited
62 Hill Street
ORANGE NSW 2800

Re: Response to Planning and Infrastructure (P&I) - Dubbo Zirconia Project

Dear Alex,

1 Introduction

EMGA Mitchell McLennan Pty Limited (EMM) has compiled information requested by Mr Carl Dumpleton of Planning and Infrastructure (DP&I) NSW pertaining to the noise impact assessment for the proposed Dubbo Zirconia Project (DZP).

The information requested is summarised below:

- Assess any onsite activities that are related to mining such as the construction of plant or structures must be assessed as operational noise including two scenarios for;
  - Option 1 - LRSF Areas 2 with year 1 operations; and
  - Option 2 - LRSF Areas 4 with year 5 operations
- Incorporate indicative noise control measures in accordance with AS 2436-2010 for construction activities and show resultant predicted noise levels; and
- Provide comment on the suitability of adopting passive recreation for the Toongi Hall area as a receptor.

2 Findings

2.1 Onsite construction noise assessment

Several on-site construction tasks such as the site access road, processing plant and administration area, residue storage facility areas (LRSF and SRSF), haul road, open cut, WRE and SECs have been assessed as operational noise. Table 1 provides a summary of tasks completed within the operational boundary of the DZP.

Table 1 Constructions activities, type/duration and associated plant items

Activity	Type/duration	Plant items used
1.Processing area (a), haul road (b) and LRSF 1 (c)	Static - 20 weeks	(a) - Compactor, trencher, jackhammer, pneumatic wrench, rock breaker, scrapers, dozer, grader, generators, road trucks (b) - Compactor, grader, water truck, FEL, haul truck, scraper and light vehicle (c) - scrapers, dozers, water truck, excavator, grader and light vehicle
2.LRSF 2	Static - 20 weeks	scrapers, dozers, water truck, excavator, grader and light vehicle
3.LRSF 3	Static - 20 weeks	scrapers, dozers, water truck, excavator, grader and light vehicle
4.LRSF 4	Static - 20 weeks	scrapers, dozers, water truck, excavator, grader and light vehicle
5.Open cut (a), WRE (b) and SRSF (c)	Static - 20 weeks	(a)- Drilling rig, dozer, FEL and haul trucks (b)- Dozer and haul trucks (c)- Grader, scrapers, compactor, water truck, haul trucks and light vehicle

The proposed activities presented in Table 1 will not occur simultaneously onsite, two activities have the potential to coincide with extraction including LRSF Areas 2 (activity 2) with Year 1 operations; and LRSF Areas 4 (activity 4) with Year 5 operations. However, since either activity would utilise the same onsite plant, it is unlikely that both will occur simultaneously. Notwithstanding, modelling results (Table 2) are provided for each activity along with the combined noise emissions for simultaneous extraction operations with activity 2 and activity 4. Results are for day only and are compared against the INP operational noise criteria.

Table 2 Predicted on-site construction noise

Receptor ID	$L_{eq(15\text{-}min)}$ criteria, dB(A)	Modelled $L_{eq(15\text{-}min)}$ noise level, dB(A)[3]				
		Activity				
		1	2[1]	3	4[2]	5
		Privately owned receptors				
R11	50[4]	50	32	<30	<30	<30
R13	35[5]	33	<30	<30	<30	<30
R18	35	52	<30	<30	<30	30
R19	35	33	30	<30	<30	<30
R20	35	41	31	<30	31	30
R21	35	43	<30	<30	<30	30
R22	35	34	34	<30	32	<30
R23	35	45	35	<30	34	31
R24	35	48	37	<30	33	31
R25	35	47	40	31	33	31

Table 2 Predicted on-site construction noise

Receptor ID	$L_{eq(15\text{-}min)}$ criteria, dB(A)	Modelled $L_{eq(15\text{-}min)}$ noise level, dB(A)[3]				
R26	35	47	32	31	<30	31
R27	35	34	<30	<30	<30	<30
R28A	35	<30	<30	<30	<30	<30
R28B	35	<30	<30	<30	<30	<30
R30A	35	<30	<30	<30	<30	<30
R30B	35	<30	<30	<30	<30	<30
R31A	35	<30	<30	<30	<30	<30
R31B	35	<30	<30	<30	<30	<30
R32	35	<30	<30	<30	<30	<30
R35A	35	<30	30	<30	<30	<30
R35B	35	30	30	<30	<30	<30
R36	35	<30	32	<30	<30	<30
R38	35	32	<30	32	<30	<30
R4	35	<30	<30	30	<30	<30
R40	35	31	<30	<30	<30	35
R42	35	<30	<30	<30	<30	<30
R43	35	<30	<30	32	<30	30
R46	35	<30	<30	32	<30	31
R6	35	<30	<30	35	<30	<30
R61	35	30	<30	<30	31	30
R7	35	31	<30	<30	<30	36
R8A	35	31	30	<30	<30	30
R8B	35	38	<30	<30	<30	30
Receptors with a contractual agreement in place with AZL						
R1	35	52	37	<30	35	31
R2	35	45	35	<30	36	35
R3	35	36	35	<30	34	43
R51	35	48	41	32	35	32
R55	35	50	40	31	35	31
R58	35	49	41	32	34	32

Note 1: LRSF Areas 2 combined with year 1 operations
Note 2 : LRSF Areas 4 combined with year 5 operations
Note 3 : results are for worst case prevailing winds where applicable
Note 4 : $L_{eq(period)}$ for passive recreation area (when in use)
Note 5 : Internal noise level for school classroom (when in use)

Results of the onsite construction/operations noise assessment identify that activity 1 has generally the greatest potential to impact offsite receptors. Australian Standard AS 2436-2010 "*Guide to Noise Control on Construction, Maintenance and Demolition Sites*" sets out numerous practical recommendations to assist in mitigating construction noise emissions.

It is estimated that adopting strategies contained in AS2436 may result in the following noise attenuation:

- Up to 10 dB(A) where space limitations allow for the attenuation options available; and
- Up to 20 dB(A) in situations where at source noise mitigation measures (silencers, mufflers, etc.) can be combined with noise barriers and other management techniques;

The noise control and management techniques include, but are not limited to:

- utilise mobile acoustic barriers adjacent to noisy plant where practical;
- radios should not be used and no yelling;
- no slamming of doors;
- prohibit the use of air brakes;
- park plant in accessible and where possible shielded locations prior to being used for out of hours works;
- drive all plant in a conservative manner (no over-revving);
- obtain site access via entry points most remote to receptors;
- do not permit plant to 'warm-up' before the nominated working hours;
- where possible, machinery is to be orientated to direct noise away from the closest sensitive receptors;
- adopt mobile barriers/screens or utilise the location of earth/rock stockpiles adjacent to static rock breaking sources to shield neighbouring receptors;
- undertake regular maintenance of machinery to minimise noise emissions. Maintenance would be confined to standard daytime construction hours and where possible, away from noise sensitive receptors;
- select the quietest suitable machinery reasonably available for each work activity;
- all machinery would have efficient low noise muffler design and be well-maintained;
- maximise the offset distance between noisy items of plant/machinery and nearby sensitive receptors;
- do not queue vehicles adjacent to any residential receptor/catchment;
- where queuing is required, for example due to safety reasons, a site entry position would be selected that is well removed from receptors/catchments. Where this is not feasible, engines are to be switched off to reduce their overall noise impacts on receptors;
- where practicable, ensure the coincidence of noisy plant/machinery working simultaneously in close proximity to sensitive receptors is avoided; and
- monitoring of out of hours work would be undertaken to verify modelled noise levels and to highlight potential mitigation options where relevant for any audible activities.

It is recommended that AZL contractors adopt practices outlined in AS2436 to reduce construction noise emissions. Resultant noise levels at surrounding receptors taking into consideration a typical attenuation of 15 dB for noise management and control as per AS2436 is presented in Table 3. Following the implementation of noise management and control as per AS2436, operational noise criteria would be satisfied for all privately owned receptors, with the exception of R18.

Table 3 Predicted on-site construction noise, with noise control and management as per AS2436

Receptor ID	$L_{eq(15\text{-}min)}$ criteria, dB(A)	Modelled $L_{eq(15\text{-}min)}$ noise level, dB(A)	
		Activity	
		1 (no attenuation)	1 (with attenuation)
		Privately owned receptors	
R11	50[2]	50	35
R13	35[3]	33	<30
R18	35	52	37
R19	35	33	<30
R20	35	41	<30
R21	35	43	<30
R22	35	34	<30
R23	35	45	<30
R24	35	48	<30
R25	35	47	<30
R26	35	47	<30
R27	35	34	<30
R28A	35	<30	<30
R28B	35	<30	<30
R30A	35	<30	<30
R30B	35	<30	<30
R31A	35	<30	<30
R31B	35	<30	<30
R32	35	<30	<30
R35A	35	<30	<30
R35B	35	30	<30
R36	35	<30	<30
R38	35	32	<30
R4	35	<30	<30
R40	35	31	<30
R42	35	<30	<30
R43	35	<30	<30
R46	35	<30	<30
R6	35	<30	<30
R61	35	30	<30
R7	35	31	<30
R8A	35	31	<30
R8B	35	38	<30
		Receptors with a contractual agreement in place with AZL	
R1	35	52	37
R2	35	45	30
R3	35	36	<30
R51	35	48	33
R55	35	50	35
R58	35	49	34

Note 1: results are for worst case prevailing winds where applicable

Note 2 : $L_{eq(omin)}$ for passive recreation area (when in use)

Note 3 : Internal noise level for school classroom

2.2 Off site construction noise assessment

It is recommended that AZL contractors also adopt practices outlined in AS2436 for all offsite construction work to reduce noise exposure to the community. Resultant noise levels at surrounding receptors taking into consideration a typical attenuation of 15 dB for noise management and control as per AS2436 is presented in Table 4. Following the implementation of noise management and control as per AS2436, the highly noise affected criteria of the ICNG would be satisfied for all privately owned receptors.

Table 4 Noise Levels from offsite construction activities at closest receptor

Task	Noise affected $L_{eq(15\text{-}min)}$ criteria, dB(A)	Highly noise affected $L_{eq(15\text{-}min)}$ criteria, dB(A)	Modelled $L_{eq(15\text{-}min)}$ noise level, dB(A)[1]	Modelled $L_{eq(15\text{-}min)}$ noise level, with noise control dB(A)[1]
Gas Pipeline Corridor	40	75	**78**	63
Rail Line upgrade	40	75	**79**	64
Water Pipeline	40	75	72	57
Obley Road upgrade	40	75	**77**	62
Wambangalang Creek Bridge	40	75	45	30
Hyandra Creek Bridge	40	75	52	37
Twelve Mile Creek Bridge	40	75	53	38

Note 1: modelled level is to the nearest receptor from construction activities

2.3 Toongi Hall area

It s understood that the Toongi Hall area may be used by the public for camping and other activities, therefore P&I require more clarification why adoption of a passive recreation receiver category (Table 2.1 of the INP) has been adopted rather than a residential category.

The exact extent and frequency of use of the hall is unclear, as the area relies on an honesty system of a gold coin donation from patrons. Notwithstanding, local residents have indicated that the hall is used sporadically throughout the year. Therefore, as no individuals permanently reside in this locality, adopting a residential receiver category in accordance with Table 2.1 of the INP is considered inappropriate. Furthermore, is not considered 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.

We trust this letter addresses your outstanding questions, if you wish to discuss the above please contact the undersigned.

Yours Sincerely

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Review : NI