CLEAN TEQ

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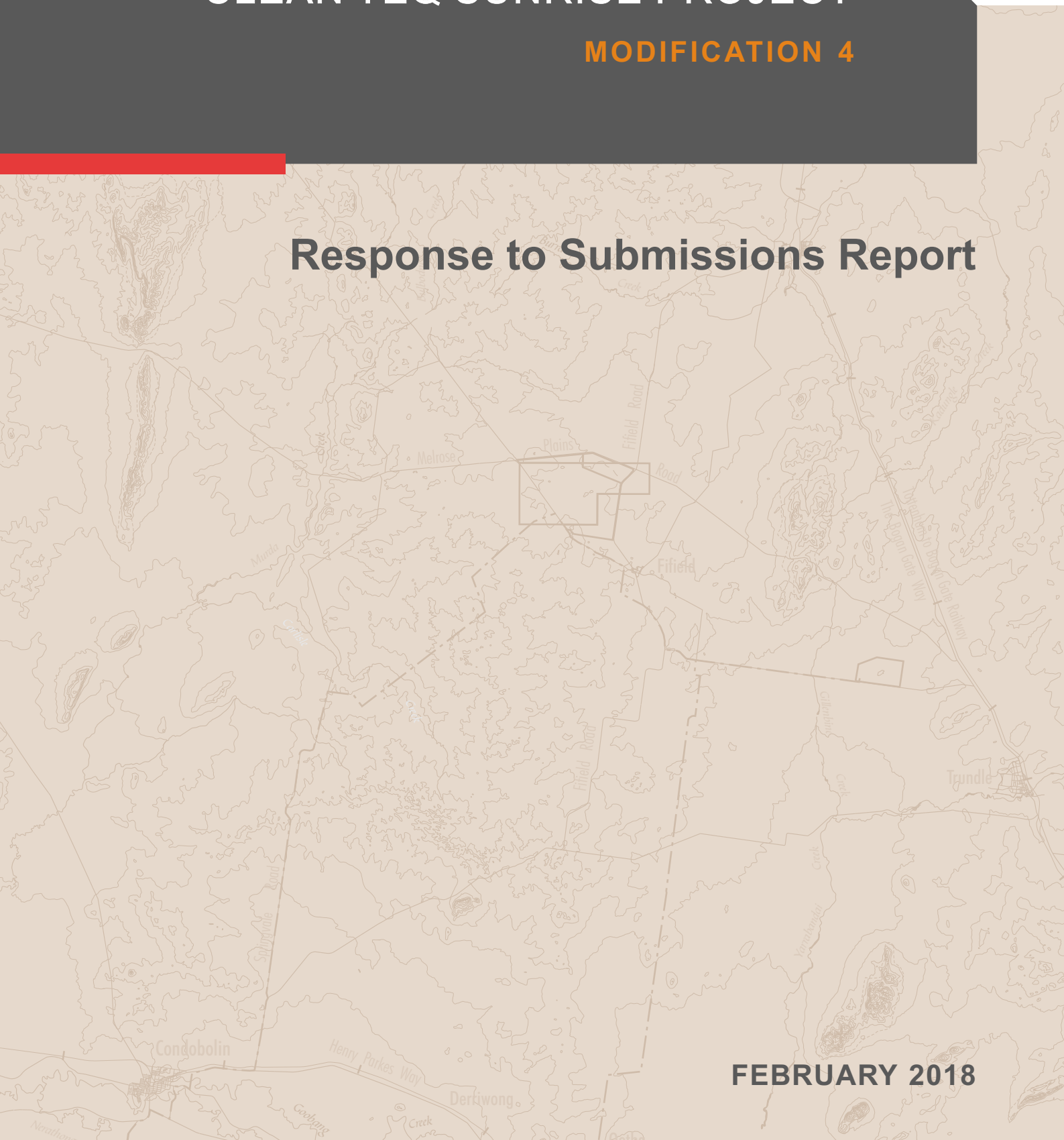
CLEAN TEQ SUNRISE PROJECT

MODIFICATION 4

Response to Submissions Report



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1 Introduction

The Clean TeQ Sunrise Project (the Project) (previously known as the Syerston Project) is an approved nickel cobalt scandium mining project situated approximately 350 kilometres (km) west-northwest of Sydney, near the village of Fifield, New South Wales (NSW).

Scandium21 Pty Ltd owns the rights to develop the Project. Scandium21 Pty Ltd is a wholly owned subsidiary of Clean TeQ Holdings Limited (Clean TeQ).

Development Consent DA 374-11-00 for the Project was issued under Part 4 of the NSW *Environmental Planning and Assessment Act, 1979* (EP&A Act) in 2001. The Project includes the establishment and operation of the following:

- mine (including the processing facility);
- limestone quarry;
- rail siding;
- gas pipeline;
- borefields and water pipeline; and
- associated transport activities and transport infrastructure (e.g. the Fifield Bypass, road and intersection upgrades).

The Project includes an initial scandium oxide focussed production phase (the Initial Production Phase) prior to shifting to scandium oxide and nickel and cobalt precipitate production by developing the full Project (the Full Production Phase). The Project would transition to the Full Production Phase once scandium-rich areas of the Syerston deposit are depleted or sooner if favourable market conditions prevail for larger scale nickel cobalt scandium production.

Construction of the Project commenced in 2006 with the construction of components of the borefields, however Project operations are yet to commence.

Clean TeQ (2017) prepared the *Syerston Project Modification 4 Environmental Assessment* (the EA), that is being assessed under the EP&A Act.

The EA was placed on public exhibition by the NSW Department of Planning and Environment (DP&E) from 28 November 2017 to 13 December 2017.

During this period, Government agencies, non-government organisations (NGOs), businesses and members of the public were invited to provide submissions on the EA to the DP&E.

The DP&E has requested that Clean TeQ review and respond to the submissions that were received on the EA.

Clean TeQ's responses to submissions have been structured as follows:

- Part A – Responses to Government agency and Non-government Organisation Submissions (Section 6.1).
- Part B – Responses to Public Submissions (Section 6.2).

This Response to Submissions Report has been structured generally consistent with the *Draft Environmental Impact Assessment Guidance Series June 2017 – Responding to Submissions* (DP&E, 2017).

2 Overview of the Exhibited Modification

Clean TeQ has undertaken a Project Optimisation Study to identify opportunities to improve the overall efficiency of the Full Production Phase of the Project. The Modification involves the implementation of these opportunities and would include:

- mining in a more selective manner to initially increase the processing facility ore feed grade;
- adoption of the resin-in-pulp (RIP) processing method option (i.e. the counter current decantation processing method option is no longer proposed)[1];
- increased sulphur demand and sulphuric acid production to leach additional nickel, cobalt and scandium from the higher grade ore;
- increased limestone demand to neutralise the additional acid required in the acid leach circuit;
- addition of a crystalliser to the processing facility to extract ammonium sulphate from an existing waste stream for use as a fertiliser product;
- changes to process input and product road transport requirements;
- addition of a water treatment plant to the processing facility to recycle process water and minimise make-up water demand;
- increased tailings storage facility capacity to hold increased tailings volume due to the additional limestone required for acid neutralisation;
- reduced evaporation pond capacity due to the recycling of process water;
- relocation of mine infrastructure to avoid resource sterilisation and improve operational efficiency;
- addition of drilling and blasting at the mine site;
- addition of surface water extraction from the Lachlan River to improve water supply security;
- minor changes to borefield transfer station layout and water pipeline alignment;
- short-term road transport of water from the borefield to the mine site during the initial construction phase; and
- reduced gas demand as the increased sulphuric acid production would generate additional steam for power generation.

The Modification would not involve changes to any aspects of the approved limestone quarry, rail siding or gas pipeline.

Table 1 provides a comparative summary of the approved and proposed modified Project.

[1] The approved Project includes the option to use either the RIP or counter current decantation processing method.

Table 1 Comparative Summary of the Approved and Modified Project

Component	Approved Project [1,2]	Modification
Mining Tenement	• Mining Lease Application (MLA) 113, 132, 139, 140, 141 and limestone quarry MLA 162.	• Unchanged.
Mine Life	• 21 years from commencement of mining.	• Unchanged.
Hours of Operation	• 24 hours per day, seven days per week.	• Unchanged.
Open Cut Mining	• Open cut mining method.	• Unchanged, however ore would be mined in a selective manner to initially increase the processing facility ore feed grade.
Blasting	• Blasting undertaken at the limestone quarry only.	• No change to limestone quarry blasting. • Blasting undertaken at the mine site.
Waste Rock Management	• Waste rock deposited in open cut voids and in waste rock emplacements.	• Unchanged.
Mineral Processing	• Autoclave feed rate of up to 2.5 million tonnes per annum. • Processing facility consists of counter current decantation or RIP circuit/metals recovery.	• No change to autoclave feed rate. • RIP circuit only (i.e. no counter current decantation circuit). • Addition of a crystalliser to allow production of ammonium sulphate.
Reagent Production	• Up to 700,000 tonnes per annum (tpa) of sulphuric acid would be produced in the sulphuric acid plant. • Hydrogen sulphide, hydrogen and nitrogen would be produced in the processing facility.	• Sulphuric acid demand (and production) would increase to up to 1,050,000 tpa. • Hydrogen sulphide, hydrogen and nitrogen would no longer be produced in the processing facility.
Product	• Up to 180 tpa of scandium oxide. • Up to 40,000 tpa of nickel and cobalt metal equivalents, as either sulphide or sulphate precipitate products.	• No change to scandium oxide production. • Up to 40,000 tpa of nickel and cobalt metal equivalents, as sulphate precipitate products only. • Up to 100,000 tpa of ammonium sulphate.
Tailings Management	• Waste deposited in the tailings storage facility and evaporation ponds.	• Increased tailings storage facility capacity to hold increased tailings volume. • The size of the evaporation ponds would decrease due to the increase in water recycling.
Mine Surface Facilities	• Construction of surface facilities within the approved surface development area.	• Relocation of some infrastructure components inside the approved surface development area to avoid potential resource sterilisation and improve operational efficiency.
Surface Water Management	• Overall objective is to control runoff from the construction and operational areas while diverting upstream water around these areas. • The water management system will include both permanent features that will continue to operate post-closure and temporary structures during mining operations.	• Overall objectives of the surface water management would be unchanged. • A water treatment plant would be added to the processing facility to increase process water recycling and minimise make-up water demand. • Changes to the site water management system to reflect modified layout.

Table 1 Comparative Summary of the Approved and Modified Project (Continued)

Component	Approved Project [1,2]	Modification
Water Supply	• Development of borefields and water pipeline from the borefields to the mine.	• Borefields unchanged. • Transfer station relocated and reconfigured initially to allow water to be transported to the mine site by road. • Addition of surface water extraction from the Lachlan River to improve water supply security. • Alternative water pipeline alignment through Fifield may be used.
Limestone Supply	• Development of a limestone quarry to extract up to 790,000 tpa of limestone.	• No change in limestone quarry. • Increased limestone demand (990,000 tpa). • Up to 560,000 tpa of limestone would be sourced from third party suppliers.
Power Supply	• On-site gas power plant (34 megawatts). • Diesel standby generators.	• No change to gas power plant, however gas demand would be reduced as the increased sulphuric acid production would generate additional steam for power generation. • Increased capacity of the diesel standby generators.
Gas Pipeline	• Development of a gas pipeline from an existing gas pipeline to the mine.	• Unchanged.
Material Transport	• Transport of inputs and products via a combination of road and rail (including development of a rail siding).	• Changes to approved transport sources, frequencies, routes and transport method.
Road Upgrades	• Road upgrades in accordance with the Development Consent DA 374-11-00 and Voluntary Planning Agreements (VPAs).	• Minor changes to reflect changes to Project road transport requirements.
Employees	• Approximately 300 people during operations.	• Unchanged.

1 Development Consent DA 374-11-00 (as modified).

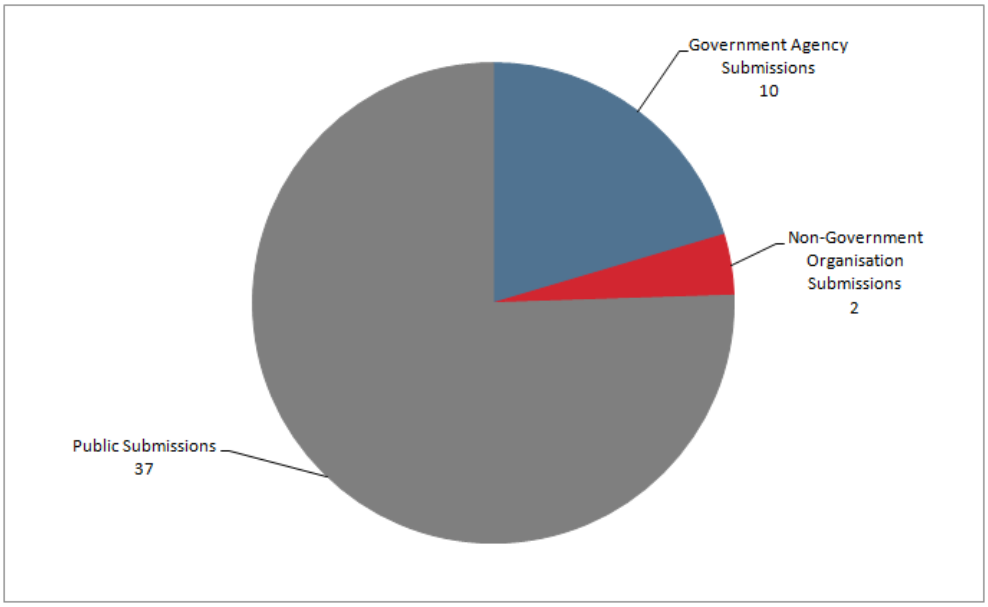
2 Full Production Phase (maximum case) has been described.

3 Analysis of Submissions

3.1 Number of Submissions

A total of 49 submissions on the Modification were received from Government agencies, NGOs, and members of the public. Graph 1 presents a summary of the number of submissions by submitter category.

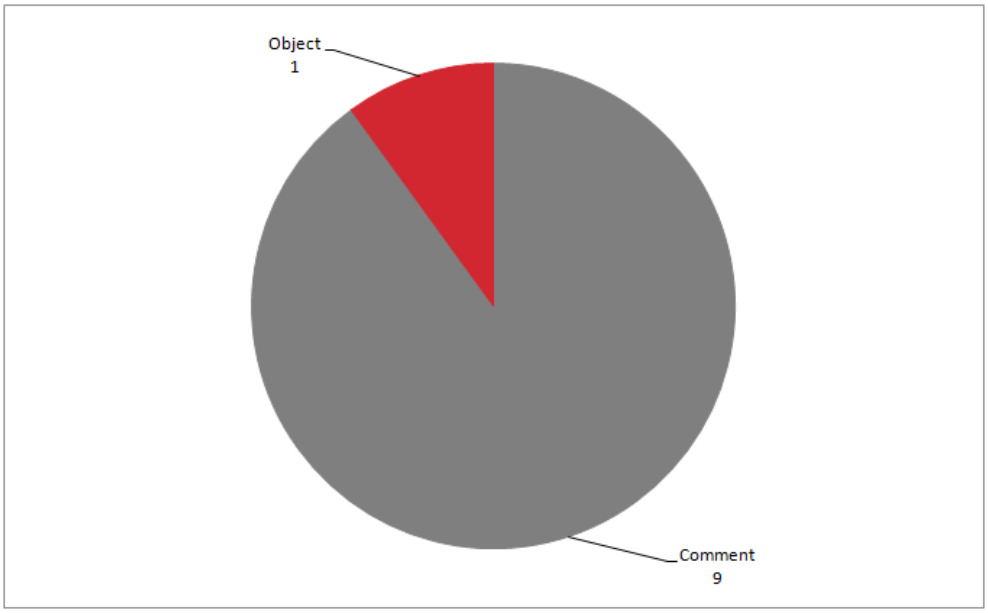
Graph 1 Summary of All Submissions



3.2 Summary of Government Agency Submissions

A total of ten submissions were received from Government agencies, of which nine were in the form of comments or suggested conditions, and one, from the Forbes Shire Council (FSC), was in the form of an objection (Graph 2).

Graph 2 Summary of Government Agency Submissions



It is noted the DP&E also provided a letter to Clean TeQ dated 19 December 2017 requesting a response to submissions report be prepared and submitted.

3.3 Summary of Non-Government Organisation Submissions

A total of two submissions were received from NGOs, both from businesses located in Trundle. Both of the submissions objected to the Modification.

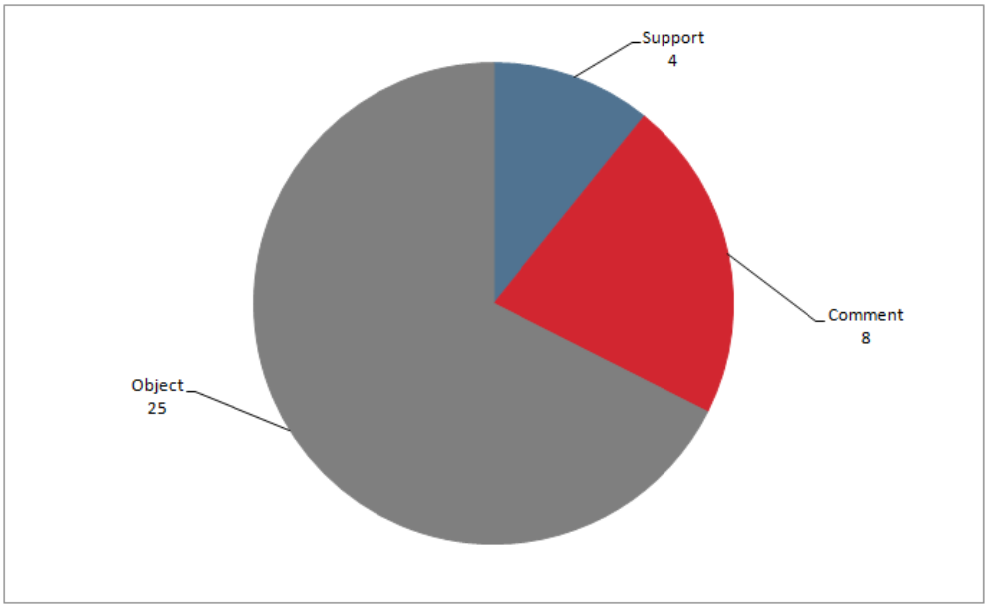
A register categorising the issues raised in NGO submissions is provided in Attachment 1.

3.4 Public Submissions

3.4.1 Summary of Public Submissions

A total of 37 public submissions were received from members of the public, with four of the public submissions supporting the Modification, eight providing comments on the Modification and some 25 objecting to the Modification (Graph 3).

Graph 3 Summary of Public Submissions



A register characterising each public submission (i.e. support, comment and object) and a reconciliation with the issues raised is provided in Attachment 1.

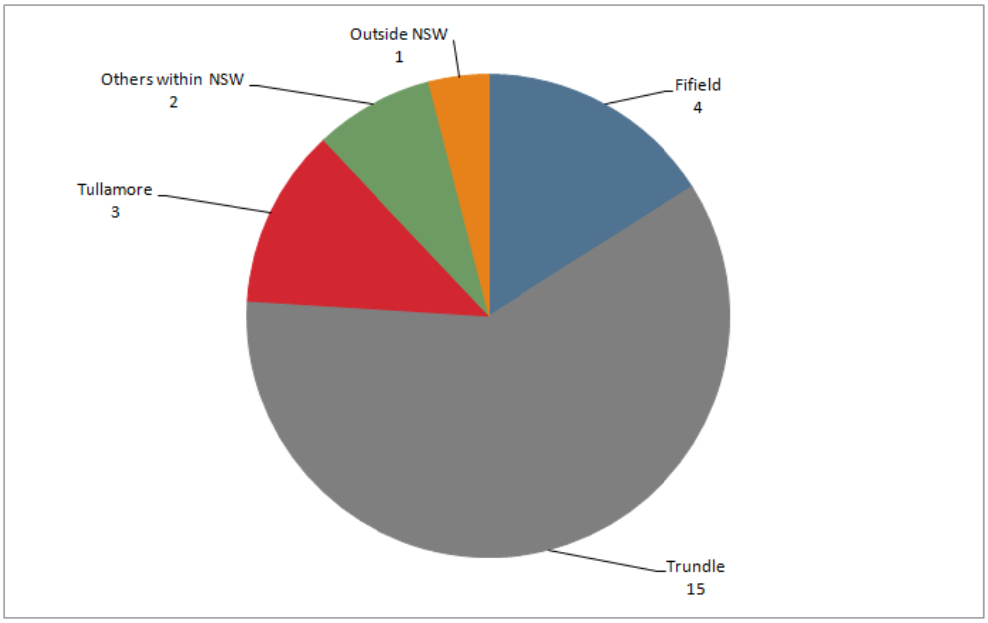
A summary of the key issues and positive factors raised in public submissions is provided in Section 3.5.

3.4.2 Locations of Public Submitters

Seven of the public objections were made by those who reside in the vicinity of the mine site (Fifield and Tullamore)[2], while 15 of the public objections were made by those who reside in Trundle. Furthermore, two of the public objections were from the wider regional community and one from outside NSW. The distribution of the public objection locations is shown on Graph 4.

[2] It is noted four of the public objections were received from two households.

Graph 4 Summary of Public Objection Locations



3.5 Key Issues Raised in Submissions

While not exhaustive, the most commonly raised issues or concerns in commenting or objecting submissions pertained to:

- safety concerns regarding increased traffic volumes passing through Trundle;
- the local road network and associated upgrades;
- operational noise, blasting emissions, transportation noise and associated management;
- operational and transportation air quality emissions and management;
- potential for land use conflict with local agricultural enterprises; and
- potential impacts to water resource quality and quantity.

Clean TeQ also notes the most commonly raised points in supporting submissions pertained to:

- potential economic flow-on effects to the local and regional economies;
- employment opportunities for local and regional residents; and
- social benefits that increased employment opportunities can provide.

4 Actions Taken Following Exhibition of Environmental Assessment

4.1 Engagement Activities

Since the lodgement of the application, Clean TeQ has continued to consult with key Government agencies and the community regarding the Project and the Modification.

An overview of recent key consultation is provided below.

Local Community

Initial consultation with the local community following submission of the Modification highlighted concern within some members of the community regarding potential impacts of Project traffic within Trundle. A key outcome of this consultation was for Clean TeQ to engage GTA Consultants to undertake a Pedestrian Access Review. The Pedestrian Access Review was undertaken in December 2017.

As part of the Pedestrian Access Review, Clean TeQ met with Trundle community members to discuss potential road transport impacts in Trundle. Consultees included the Trundle and District Progress Association, Trundle Central School and St Patrick's Primary School principals, local businesses and other community members.

In addition, Clean TeQ engaged Renzo Tonin & Associates to prepare a Supplementary Road Noise Assessment to clarify potential road noise impacts in Trundle associated with the Modification. More detail on the Pedestrian Access Review and Supplementary Road Noise Assessment is provided in Section 4.2.

Clean TeQ committed to the implementation of the higher capacity vehicles and shuttle bus services to the CCC in February 2018.

In response to concerns regarding potential air quality impacts of the Project (including the Modification), Clean TeQ engaged the air quality specialist (Ramboll Environ) who prepared the Air Quality Assessment for the Modification (Appendix A of the EA) to provide a briefing to the Community Consultative Committee (CCC) in February 2018 to provide further explanation of the assessment approach adopted in the Air Quality Assessment for the Modification and proposed mitigation measures, impact assessment criteria, modelling methodology and results.

Office of Environment and Heritage

The Office of Environment and Heritage (OEH) (2017) submission requested that a biodiversity offset be provided for the Modification.

Clean TeQ provided the OEH with further information in regard to the potential biodiversity impacts of the Modification and clarification of why an offset is not proposed or considered necessary for the Modification on 19 January 2018.

The OEH responded in a letter dated 25 January 2018 indicating that it agreed that a biodiversity offset is not required or practical for the Modification (Attachment 2).

Local Councils

Both preceding and following submission of the EA, Clean TeQ has continued to engage with the Lachlan Shire Council (LSC), Parkes Shire Council (PSC) and FSC regarding the Project and the draft VPAs with each Council. At the time of writing, Clean TeQ had obtained in-principle agreement with the LSC, PSC and FSC on the terms of the VPAs.

4.2 Further Environmental Assessment

Pedestrian Access Review

As an outcome of consultation with the community members, Clean TeQ commissioned GTA Consultants (2018) to conduct further assessment in December 2017 in the form of a Pedestrian Access Review to further consider the potential implications of the modified Project traffic on pedestrian safety in Trundle.

The Pedestrian Access Review is provided in Attachment 3.

GTA Consultants (2018) (Attachment 3) concluded:

> *Overall, the review found that the existing pedestrian and vehicular environment in Forbes Street is generally satisfactory, with no major issues which would require immediate upgrading to meet current standards. Some aspects of the pedestrian and vehicular environment could however be improved to mitigate the issues identified and described in this report.*
>
> *Considering the forecast modified Project traffic in the context of the review of the existing pedestrian and vehicular environment in Forbes Street, it is considered unlikely that a significant deterioration in the safety of that environment would result with the modified Project. No major issues are therefore anticipated which would require immediate upgrading to meet current standards.*
>
> *As for the existing conditions, some aspects of the pedestrian and vehicular environment could however be improved to mitigate the existing issues identified and described in this report. The recommended treatments are:*
>
> - *a modified kerb extension treatment near 61/63 Forbes Street;*
> - *a modified kerb extension treatment between Croft Street and East Street;*
> - *threshold treatments at the northern and southern entries to Trundle;*
> - *speed reduction warning signs on the northern and southern approaches to Trundle; and*
> - *audit of heavy vehicles and consultation with the Trundle community within 12 months of commencement of operations at the Project.*

Clean TeQ proposes to implement all of the recommendations of the Pedestrian Access Review (GTA Consultants, 2018) in consultation with the PSC.

Supplementary Road Noise Assessment

In response to concerns raised by members of the community, Clean TeQ commissioned Renzo Tonin & Associates (2018) to conduct a Supplementary Road Noise Assessment to clarify potential road noise impacts in Trundle associated with the Modification (Attachment 4).

Renzo Tonin & Associates (2018) concluded that the Modification would not lead to any exceedances of the relevant road noise criteria in Trundle.

5 Changes to the Modification

No material changes to the proposed Modification are proposed as a result of Clean TeQ's review of the various Government, NGO and public submissions on the Modification.

However, following completion of an investigation into the feasibility of operating shuttle bus services for employees to and from the Project (e.g. operating to and from Parkes, Forbes and Condobolin), Clean TeQ has determined it would operate shuttle bus services to and from Parkes, Forbes and Condobolin and the mine site.

Clean TeQ also obtained Heavy Vehicle Authorisation Permit 119039 to operate higher capacity vehicles from Parkes to the mine in January 2018. Clean TeQ would therefore also use higher capacity vehicles to transport limestone to the mine.

The combined use of higher capacity vehicles and a shuttle bus service would significantly reduce the number of vehicles associated with the modified Project that would travel through Trundle, as described in the Pedestrian Access Review (GTA Consultants, 2018).

Clean TeQ has committed to the implementation of the higher capacity vehicles and shuttle bus services to CCC.

Notwithstanding the above, Clean TeQ proposes to implement the recommendations of the Pedestrian Access Review (i.e. traffic management measures that could be implemented within Trundle to improve existing pedestrian safety) (Section 4.2).

While not changes to the proposed Modification, a number of clarifications to address concerns that were raised on the basis of alternative interpretations of some text in the EA are presented where relevant in Section 6.

6 Responses to Submissions

6.1 Part A – Responses to Government Agency and Non-government Organisation Submissions

Responses to issues raised by Government agencies are provided in the sub-sections below.

The following Government agencies raised queries and/or concerns or made comments regarding the Modification and are addressed in the sub-sections below:

- LSC;
- FSC;
- PSC;
- OEH;
- Crown Lands and Water (CL&W) and Department of Primary Industries (DPI) (within the Department of Industry);
- NSW Environment Protection Authority (EPA);
- NSW Roads and Maritime Services (RMS);
- Resources Regulator (within the DP&E);
- Division of Resources and Geoscience (within the DP&E); and
- NSW Rural Fire Service (RFS).

Where relevant, supporting or generally positive comments from relevant Government agencies are also referred to in the following sub-sections.

6.1.1 Groundwater

The EPA and CL&W raised concerns regarding potential groundwater impacts associated with the Modification.

Consideration of the Aquifer Interference Policy

Issue

CL&W (2017) requested an assessment of whether the seepage from the tailings storage facility would result in a change to the beneficial use category of the groundwater source as required by the NSW *Aquifer Interference Policy* (AIP) (NSW Government, 2012).

Response

Consideration of the AIP is provided in Section 6.2.4 of the EA.

Seepage from the tailings storage facility is constrained by:

- the low permeability liner of the tailings storage facility, which would be designed in accordance with Condition 29, Schedule 3 of Development Consent DA 374-11-00 that requires the floor and walls of the tailings storage facility to be designed with a minimum of a 900 millimetres (mm) clay or modified soil liner with a permeability of no more than 1 x 10^{-9} metres per second (m/s), or a synthetic (plastic) liner of 1.5 mm minimum thickness with a permeability of no more than 1 x 10^{-14} m/s (or equivalent); and
- the low permeability of the underlying and adjacent soil and rock.

It is noted the depth to the phreatic groundwater table at the mine site ranges from approximately 30 metres (m) to 60 m below ground level.

Golder Associates (2017) used the groundwater model to predict the potential impacts of seepage on groundwater quality and determined the potential impact to groundwater quality would be very low and there would be no groundwater quality impacts on groundwater users.

The fractured rock aquifers associated with the mine site are considered to be 'less productive' under the AIP as testing of groundwater monitoring bores indicate the yield is less than 5 litres per second. The following AIP minimal impact consideration therefore applies for groundwater quality at the mine site (Golder Associates, 2017):

> *Any change in the groundwater quality should not lower the beneficial use category of the groundwater source beyond 40 m from the activity.*

Groundwater quality in the vicinity of the mine site (including the tailings storage facility) is brackish and saline in the south-east area of the site (Golder Associates, 2017) and therefore provides limited potential for beneficial use. This is supported by the lack of registered groundwater users in the vicinity of the mine site with the nearest downgradient registered groundwater user located approximately 2.8 km from the site).

The *National Land and Water Resources Audit* (Murray Darling Basin Commission, 2005) specified groundwater quality ranges for beneficial use categories based on salinity (Table 2). These salinity based categories generally align with the beneficial uses within the *NSW Groundwater Quality Protection Policy* (Department of Land & Water Conservation, 1998).

Table 2 Groundwater Quality Categories: Electrical Conductivity

Beneficial Use	Quality Range	Description
Potable	Up to 800 µS/cm (500 mg/L TDS)*	Suitable for all drinking water and uses.
Marginal Potable	800-2,350 µS/cm (500-1,500 mg/L TDS)*	At the upper level, this water is at the limit of potable water, but is suitable for watering of livestock, irrigation and other general uses.
Irrigation	2,350-7,800 µS/cm (1,500-5,000 mg/L TDS)*	At the upper level, this water requires shandying for use as irrigation water or to be suitable for selective irrigation and watering of livestock.
Saline	7,800-22,000 µS/cm (5,000-14,000 mg/L TDS)*	Generally unsuitable for most uses. It may be suitable for a diminishing range of salt-tolerant livestock up to about 6,500 mg/L [~10,150 µS/cm] and some industrial uses.
Highly Saline	>22,000 µS/cm (>14,000 mg/L TDS)*	Suitable for coarse industrial processes up to about 20,000 mg/L [~31,000 µS/cm].

Source: *National Land and Water Resources Audit* (Murray Darling Basin Commission, 2005).

*Approximate electrical conductivity (EC) ranges derived from total dissolved solids (TDS) ranges, with conversion Factor of 1.5625 applied.

µS/cm = microSiemens per centimetre.

mg/L = milligrams per litre.

Given the above (i.e. the tailings storage facility design would include a very low permeability liner, the low permeability of the underlying and adjacent soil and rock, depth to groundwater table and existing limited beneficial use category), the Modification is not expected to lower the beneficial use category of the groundwater source at the mine site beyond 40 m of the activity and therefore the relevant AIP minimal impact consideration would be met.

Notwithstanding, if required, relevant bores would be assigned a beneficial use category based on a bore census / survey. At any bore where a monitored EC value is outside the applicable baseline range of the assigned beneficial use classification for that bore, at two successive monitoring rounds, a groundwater investigation would be initiated. Such protocols and responses would be developed in consultation with CL&W as part of the Groundwater Management Plan required by Condition 30(c), Schedule 3 of Development Consent DA 374-11-00.

Tailings Storage Facility Underdrainage and Seepage Collection System

Issue

EPA (2017) requested additional information regarding the tailings storage facility underdrainage and seepage collection system. Requested information included:

- the depth and permeability of the liner beneath the seepage collection sumps;
- the location of interception drains in regard to the tailings storage facility liner and confirmation they would not interfere with the functionality of the liner;
- the number and location of the seepage collection sumps; and
- details of where collected seepage is pumped to.

EPA (2017) also queried the appropriateness of pumping collected seepage to the tailings storage facility decant pond or the water storage dam, as these structures would also need to be lined.

Response

As described in the response above regarding consideration of the AIP, the liner of the tailings storage facility would be a very low permeability liner designed in accordance with Condition 29, Schedule 3 of Development Consent DA 374-11-00.

The interception drains would be located in the tailings storage facility embankment to intercept potential horizontal seepage through the embankment (i.e. the interception drains would not be located below or above the tailings storage facility liner). Seepage collected in the interception drains would drain via finger drains to an embankment toe seepage collection drain. The seepage would then flow to a seepage collection sump.

The seepage collection sump would be concrete lined and would be located at the north-eastern corner (i.e. downstream) of the tailings storage facility.

The pumping of tailings storage facility seepage to the tailings storage facility decant pond and/or water storage dam is consistent with the approved Project. Consistent with the approved Project, and as required by Condition 29, Schedule 3 of Development Consent DA 374-11-00, the floor and walls of the water storage dam would be lined.

Groundwater Management Plan

Issue

CL&W requested that a Groundwater Management Plan be prepared for the Project in consultation with CL&W.

Response

Clean TeQ accepts this recommendation and will prepare a Groundwater Management Plan in consultation with CL&W and EPA in accordance with Condition 30(c), Schedule 3 of Development Consent DA 374-11-00.

6.1.2 Surface Water

The EPA, CL&W and FSC raised issues regarding the potential surface water impacts associated with the Modification.

Assessment of Potential Water Quality Impacts

Issue

EPA (2017) raised concerns that the assessment of potential surface water quality impacts associated with potential releases from the water management system.

Response

The overall objective of the approved water management system is to control runoff from the development/construction areas and the operation areas, while diverting upstream water around these areas. In addition, the approved water management system is required to comply with the water management performance measures in Condition 29, Schedule 3 of Development Consent DA 374-11-00.

The Modification would not change the overall objective of the water management system or the water management performance measures for the Project.

Consistent with the approved Project, an internal drainage system would be constructed to collect and contain surface water runoff generated within the development/construction areas and operation areas. The contained surface water runoff would preferentially be used to supply the mine water demand (Section 3.8.2 of the EA). Any release from the water storages would only occur in the event of a rainfall event larger than the approved capacity requirements outlined in Condition 29, Schedule 3 of Development Consent DA 374-11-00.

None of the main water storages proposed on-site (i.e. tailings storage facility, water storage dam, or evaporation pond) will be used to harvest runoff from land as these storages will be used to contain mine water or effluent in accordance with best management practice. Consistent with Condition 29, Schedule 3 of Development Consent DA 374-11-00, all water storages at the mine site (except for sediment dams) would have capacity to capture a 100 year, 72-hour average recurrence interval rainfall event.

The sediment dams would be designed, installed and maintained generally in accordance with *Managing Urban Stormwater: Soils and Construction – Volume 1* (NSW Government, 2004a) and *Managing Urban Stormwater: Soils and Construction – Volume 2E Mines and Quarries* (NSW Government, 2004b) as required by Condition 29, Schedule 3 of Development Consent DA 374-11-00. In accordance with the *Managing Urban Stormwater: Soils and Construction – Volume 1* (NSW Government, 2004a) and *Managing Urban Stormwater: Soils and Construction – Volume 2E Mines and Quarries* (NSW Government, 2004b), the sediment dams would generally be designed and constructed to have capacity for a 90th percentile, 5-day rainfall event.

Storages at the mine site (excluding sediment dams) would be designed, installed and maintained to capture a 100 year, 72-hour average recurrence interval rainfall event in accordance with Condition 29, Schedule 3 of Development Consent DA 374-11-00. Any releases from these storages would therefore only occur as a result of a rainfall event that exceeds this design rainfall event. The probability of such a rainfall event occurring is less than 1%.

The Modification would not change the number or nature of potential release point locations. The location of release points would be outlined in the Surface Water Management Plan prepared in accordance with Condition 30(b), Schedule 3 of Development Consent DA 374-11-00. Consistent with consultation outcomes with the EPA, Clean TeQ will provide the Surface Water Management Plan to the EPA as part of the Environment Protection Licence application.

Surface water runoff from disturbed areas could potentially contain sediments, dissolved solids, oil, grease, metals and salts. The sediment dams would collect runoff from disturbed areas associated with the waste rock emplacements, tailings storage facility (outer batters) and topsoil stockpiles. Surface water runoff from these areas would predominately contain sediments from soil and waste rock material. The geochemical characterisation undertaken for the Environmental Impact Statement (EIS) concluded that the waste rock material is highly weathered, oxidised and non-acid forming. Given the above, surface water runoff from waste rock areas would maintain a near neutral pH into the long term, therefore the risk of increased solubility of metals is expected to be low (Black Range Minerals, 2000).

A Water Management Plan would be prepared for the modified Project in accordance with Condition 30, Schedule 3 of Development Consent DA 374-11-00 and would include a Water Balance and Surface Water Management Plan.

The Water Balance would provide for periodic review and revision of the site water balance. This would be undertaken over the life of the Project to record and document the status of inflows (water capture), storage and consumption (e.g. dust suppression and processing plant water supply) and to optimise water management performance. Monitoring would be undertaken over the life of the modified Project to provide data for refinement of the site water balance, including:

- mine water storage and raw water dam levels and volumes (stored and freeboard), including development of storage curves;
- mine pit inflows/dewatering (where measurable from pumping records);
- water received at the mine from the borefield and/or surface water extraction;
- potable water supply;
- dust suppression water demands;
- processing water inputs and outputs; and
- any discharges (volume, rate and quality) licensed by an Environment Protection Licence.

The Surface Water Management Plan would include:

- a detailed description of the water management system;
- detailed plans, including design objectives and performance criteria;
- trigger levels for investigating any potentially adverse impacts associated with the Project;
- contingency mitigation/compensation/offset measures that would be implemented in the event that downstream surface water users are adversely affected by the Project; and
- a surface water monitoring program.

As described in the EA, the Modification is predicted to have no change to the approved potential water quality impacts in the receiving drainage lines with the implementation of the water management system operated in accordance with the approved water management performance measures in Condition 29, Schedule 3 of Development Consent DA 374-11-00.

Need for Surface Water Extraction

Issue

FSC (2017) questioned the need for the proposed extraction of surface water from the Lachlan River.

It is noted that the CL&W did not raise any concerns with the proposed extraction of surface water from the Lachlan River.

Response

The CL&W (2016) submission on Modification 3 for the Project recommended that Clean TeQ consider alternative water supply options such as surface water extraction from the Lachlan River to improve water supply security.

Consistent with the CL&W's advice, Clean TeQ has proposed the following Project changes as part of the Modification to improve water supply security:

- addition of a water treatment plant to the processing facility to recycle process water and minimise make-up water demand; and
- addition of licensed surface water extraction from the Lachlan River to the Project water supply.

CL&W (2017) did not raise any concerns with the proposed extraction of surface water from the Lachlan River.

The modified Project raw water demand would be in the order of 3,135 million litres per year (ML/year).

Clean TeQ currently holds 3,154 share components (currently equivalent to 3,154 ML/year) in the Zone 5 of the Upper Lachlan Alluvial Groundwater Source which is administered by the *Water Sharing Plan for the Lachlan Unregulated and Alluvial Water Sources, 2012* under the *Water Management Act, 2000*.

The Modification would include the extraction of approximately 350 ML/year of surface water from the Lachlan River. Clean TeQ would make an application for a new specific purpose Water Access Licence (WAL) or zero share component WAL for subsequent trading of water on the open market. Water would be extracted from the Lachlan River in accordance with the WALs and the rules prescribed in the relevant water sharing plan (i.e. the *Water Sharing Plan for the Lachlan Regulated River Water Source, 2016*).

As all extraction from the Lachlan River would be conducted in accordance with the licensed entitlements issued by the CL&W, and in accordance with the rules in the water sharing plan, impacts to the Lachlan River water source are not anticipated to be of any significance, as licensed water extractions are regulated by upstream releases from Wyangala Dam.

The addition of a surface water source to the Project water supply would improve the water supply security of the Project by diversifying the water supply sources (e.g. Clean TeQ could utilise surface water in the event the borefield was unavailable).

In addition to the above, the additional use of surface water for the Project water supply would have a potential benefit to reduce the volume of groundwater extraction required from the Project borefield in the long term.

In accordance with Condition 26, Schedule 3 of Development Consent DA 374-11-00, Clean TeQ would ensure that sufficient water is supplied for all stages of the development, the necessary water licences for the development under the *Water Management Act, 2000* are obtained, and if necessary, the scale of development on-site will be adjusted to match the available water supply.

Bank Stabilisation Methods at the Surface Water Pump Station

Issue

CL&W (2017) requested that the bank stabilisation methods for the proposed pump station are not consistent with the *Guidelines for Controlled Activities on Waterfront Land, 2012* and details of the proposed self-cleaning fish diversion screen.

Response

Clean TeQ would design and construct the proposed pump station in accordance with the requirements of the *Guidelines for Controlled Activities on Waterfront Land, 2012* in consultation with the CL&W.

In addition, Clean TeQ would consult with NSW Fisheries regarding the detailed designs for the self-cleaning fish diversion screen.

Surface Water Management Plan

Issue

CL&W (2017) requested that a Surface Water Management Plan be prepared for the Project in consultation with CL&W.

Response

Clean TeQ accepts this recommendation and will prepare a Surface Water Management Plan in consultation with CL&W and EPA in accordance with Condition 30(b), Schedule 3 of the Development Consent DA 374-11-00.

6.1.3 Biodiversity

Acknowledgment of Threatened Freshwater Fish Species

Issue

CL&W (2017) raised that the Silver Perch (*Bidyanus bidyanus*), Olive Perchlet (*Ambassis agassizii*), Flathead Galaxias (*Galaxias rostratus*) and Eel Tailed Catfish (*Tandanus tandanus*) identified in the NSW Fisheries *Freshwater Threatened Species Distribution Maps* (DPI, 2017) were not considered in the EA.

Response

It is acknowledged that a number of freshwater threatened species and populations have been modelled by NSW Fisheries (DPI, 2017) as potentially distributed in the Lachlan River.

Clean TeQ acknowledges that the lower Lachlan River is recognised habitat for Silver Perch in Section 4.12.1 of the EA, which states:

> *The lower Lachlan River is also recognised habitat for the Sliver Perch (Bidyanus bidyanus) (listed as 'Vulnerable' under the Fisheries Management Act 1994).*

However, due to the limited number of naturally occurring self sustaining populations of the species, it is unlikely to occur within the lower Lachlan River and consequently, it is not likely to be impacted by the modified Project and it does not require further assessment. Section 4.12.1 of the EA affirms this position and states:

> *It is noted that the only natural occurring self sustaining population of this species occurs in the Murray River, and its anabranches and tributaries.*

Clean TeQ is of the view that the Olive Perchlet, Flathead galaxis, and Eel Tailed Catfish species are not expected to occur within the Lachlan River adjacent to the surface water extraction infrastructure. Reasoning for each species is detailed below.

Olive Perchlet - Ambassis agassizii (Western Population)

The distribution of the Olive Perchlet has been significantly reduced in recent years and it is limited to areas of the Murray-Darling system. NSW Fisheries website states:

> *'Its distribution throughout the Murray-Darling system (western population) has significantly declined in recent years and now appears to be limited to a few localities in the Darling drainage upstream from Bourke. It has not been recorded in any NSW survey of the lower Murray or lower Darling below Bourke since the 1960s.'*

As the populations of this species are limited to localities which are significant distances from the modified Project, it is therefore not likely to be impacted by the Modification.

Flathead Galaxias - Galaxias rostratus

Flathead Galaxias is not likely to be impacted by the modified Project as the species is considered by NSW Fisheries to be locally extinct. This is supported by information taken from the NSW Fisheries website, which states:

> *They have not been recorded and are considered locally extinct in the lower Murray, Murrumbidgee, Macquarie and Lachlan Rivers. The species is now only known from the upper Murray River near Tintaldra and wetland areas near Howlong.'*

Murray-Darling Basin population of Eel Tailed Catfish - Tandanus tandanus

The modified Project is unlikely to impact the Eel Tailed Catfish as the species is considered by NSW Fisheries to be virtually absent from the Lachlan River, which is supported by the statement from the NSW Fisheries website:

> *Are now virtually absent from the Murray, Murrumbidgee and Lachlan catchments.*

Due to the aforementioned reasons concerning the distribution of threatened species in the Lachlan River adjacent to the Pump Station, it is Clean TeQ's view that further assessment of these species is not required.

Despite the above, Section 4.12.2 of the EA addresses potential impacts on fish via the following measures:

- *installing a suitable self-cleaning screen that would reduce the intake of fish at the pump inlet; and*
- *starting the pump slowly and then ramping up velocity to reduce the likelihood of fish in the vicinity of the intake being drawn into the pump.*

In addition, Clean TeQ would design and construct the pump station near the Lachlan River in consideration of the *Controlled Activities on Waterfront Land Guidelines for instream works on waterfront land* (DPI Office of Water, 2012).

Requirement for Biodiversity Offset

Issue

OEH (2017) requested that a biodiversity offset be provided for the additional 0.31 hectares (ha) of native vegetation that would be developed as a result of the Modification.

Response

Clean TeQ provided the OEH with further information in regard to the potential biodiversity impacts of the Modification and clarification of why an offset is not proposed or considered necessary for the Modification on 19 January 2018.

In response via letter on 25 January 2018 (Attachment 2), OEH agreed with this position, stating that a biodiversity offset is not required or practical for the Modification.

6.1.4 Road Transport

Heavy Vehicle Routes

Issue

The PSC (2017) requested that Project heavy vehicle transport routes utilise National, State, Regional and then local roads in order of priority. In particular, the PSC raised concerns about the use of Middle Trundle Road (a local road) by Project heavy vehicles.

Response

Project heavy vehicle traffic would generally utilise routes consistent with road priority proposed by the PSC (refer to Section 4.3 of the Road Transport Assessment [Appendix E of the EA]).

In relation to the heavy vehicle use of Middle Trundle Road, only a limited number of Project heavy vehicle movements (8 vehicles per day) are expected to utilise this route. These heavy vehicle movements would be associated with minor deliveries from Parkes (e.g. materials and equipment). All of the heavy vehicle movements associated with the key deliveries (e.g. limestone) would not use Middle Trundle Road.

The Road Transport Assessment (Appendix E of the EA) prepared by GTA Consultants (2017) includes an assessment of the forecast cumulative traffic movements of the modified Project including on Middle Trundle Road. GTA Consultants (2017) found that the Modification would have no significant impacts on the performance, capacity, efficiency and safety of the road network is expected to arise as a result of the traffic associated with the Modification.

In addition, it is noted that Clean TeQ will contribute to the maintenance of Middle Trundle Road as part of the VPA with the PSC in accordance with Condition 17, Schedule 2 of Development Consent DA 374-11-00.

Intersection Upgrades

Issue

RMS (2017) recommended that the intersection of Henry Parkes Way and Middle Trundle Road be upgraded to a Channelised Right Short (CHR[s]) turn lane intersection treatment.

Safe intersection sight distances in accordance with Austroads (2013) *Guide to Road Design* along key Project access routes was also raised by RMS (2017).

Response

The Road Transport Assessment (Appendix E of the EA) prepared by GTA Consultants (2017) includes an assessment of the forecast cumulative traffic movements of the modified Project at the intersection of Henry Parkes Way and the Middle Trundle Road against the Austroads (2017) warrants for rural road intersection treatments.

GTA Consultants (2017) concluded that the existing Basic Auxiliary Right treatment is sufficient for the modified Project. GTA Consultants (2017) did however recommend that the shoulders be sealed and signage and line marking at the intersection be upgraded.

Given the above, Clean TeQ proposes the sealing of the shoulders and the upgrading of the signage and line marking. Clean TeQ would contribute to these upgrades in accordance with Conditions 43 and 44, Schedule 3 of Development Consent DA 374-11-00.

All road and intersection upgrades undertaken for the Project would be undertaken in accordance with Austroads (2013) *Guide to Road Design*.

Traffic Management Plan

Issue

RMS (2017) requested that a Traffic Management Plan be prepared for the Project in consultation with RMS, LSC and PSC and that is should include a focus on driver fatigue management.

Response

Clean TeQ accepts this recommendation and will prepare a Traffic Management Plan in consultation with RMS, LSC, PSC and FSC in accordance with Condition 45, Schedule 3 of Development Consent DA 374-11-00, which includes a fatigue management component.

The fatigue management component of the Traffic Management Plan would include management measures such as the shuttle bus service described in Section 5.

Other Approvals

RMS (2017) raised that Clean TeQ may require a Works Authorisation Deed and Road Occupancy Licence for the Project road upgrades.

Response

Clean TeQ acknowledges that a Works Authorisation Deed and Road Occupancy Licence may be required and would obtain these approvals where required for the Project.

6.1.5 Other

Potential Socio-economic Impact of Securing Surface Water Extraction Licences

Issue

FSC (2017) requested a socio-economic assessment to quantify the potential impact of Clean TeQ securing relevant surface water extraction licences on the agricultural sector within the Forbes Shire Local Government Area.

Response

Clean TeQ would obtain necessary water licences under the *Water Management Act, 2000* in consultation with CL&W to extract up to approximately 350 ML/year of surface water from the Lachlan River. The *Water Management Act, 2000* provides the statutory framework for managing water in NSW and its object is to provide for the sustainable and integrated management of NSW's water sources for the benefit of both present and future generations.

In accordance with the water management framework provided for in the *Water Management Act, 2000*, Clean TeQ would make an application for a new specific purpose WAL or zero share component WAL for subsequent trading of water on the open market. Water would be extracted from the Lachlan River in accordance with the WALs and the rules prescribed in the relevant water sharing plan (i.e. the *Water Sharing Plan for the Lachlan Regulated River Water Source, 2016*).

As all extraction from the Lachlan River would be conducted in accordance with the licensed entitlements issued by the CL&W, and in accordance with the rules in the water sharing plan, impacts to the Lachlan River water source are not anticipated to be of any significance, as licensed water extractions are regulated by upstream releases from Wyangala Dam.

As demonstrated below by the available share components in the Lachlan Regulated River Water Source (i.e. 592,801 general security unit shares and 27,680 high security unit shares), history of available water determinations orders and recent water trading statistics, while the water market is variable (availability subject to significant rainfall events), it is mature (administered since 2004) and has significant depth of available shares for trading (refer to Section 4.8.1 of the EA).

The volume of surface water proposed to be extracted from the Lachlan River (i.e. 350 ML/year) represents (based on an Available Water Determination of 1):

- approximately 0.06% of the available share components of the regulated river (general security) access licences from the Lachlan Regulated River Water Source; or
- less than 1% of the total share components of general security access licences traded since 1 July 2016 under the *Water Sharing Plan for the Lachlan River Regulated River Source, 2016*.

As the volume of surface water proposed to be extracted would represent a minor proportion of the available share components of the regulated river (general security) access licences and surface water traded under the water sharing plan, the use of this surface water at the modified Project would not have a material impact on agricultural production in NSW.

In addition, the proposed surface water extraction would form part of the modified Project which would provide significant social and economic benefits to the region and NSW.

The modified Project would produce up to 40,000 tpa of nickel and cobalt metal equivalents (as sulphate precipitates), approximately 180 tpa of scandium oxide and approximately 120,000 tpa of ammonium sulphate.

The modified Project would provide employment opportunities for approximately 300 personnel during the operational phase.

Clean TeQ would also pay substantial royalties and other taxes to the NSW Government, as well as annual community contributions to FSC, LSC and PSC in accordance with the VPAs.

In addition to the first-round effect described above, the modified Project is expected to give rise to incremental flow-on impacts on the regional economy associated with additional disposable income and direct benefits to businesses and their employees in the region associated with additional operating expenditures.

Rehabilitation

Issue

The CL&W (2017) recommended that the soil and land classification of the mine site should be returned to the same level (or better) as the existing soil and land classification.

Response

The Modification does not propose a change to the approved final land use (i.e. a combination of agriculture [pasture for grazing] and nature conservation [endemic woodland areas]).

The soil and land classification of areas of the mine site that would be rehabilitated to agriculture areas would therefore be rehabilitated to be suitable for grazing activities.

Voluntary Planning Agreements

Issue

The LSC (2017) noted that it is continuing to work with Clean TeQ to finalise the VPA.

Response

Clean TeQ will continue to work with the LSC, PSC and FSC regarding the finalisation of the VPA prior to the commencement of construction of the Project in accordance with Condition 17, Schedule 2 of Development Consent DA 374-11-00. At the time of writing, Clean TeQ had obtained in-principle agreement with the LSC, PSC and FSC on the terms of the VPAs.

Crown Lands Access Approvals

Issue

CL&W (2017) noted that Clean TeQ would need to gain authority to occupy Crown Lands required for the modified Project.

Response

Clean TeQ acknowledges this requirement and will work with CL&W to obtain relevant approvals before occupying any Crown Land required for the Project.

Environment Protection Licence

Issue

EPA (2017) noted that Clean TeQ would need to obtain an Environment Protection Licence for the Project.

Response

Clean TeQ acknowledges this requirement and will obtain an Environment Protection Licence prior to the commencement of the Project.

Fire Safety and Management

Issue

RFS (2017) recommended a number of Development Consent conditions relevant to bushfire management at the modified Project, including:

- the development of a Fire Management Plan in consultation with the local NSW RFS Fire Control Centre;
- incorporating a 20 m defendable space between operational areas and the surrounding bush fire hazard, to be managed as an Asset Protection Zone; and
- provision of water supply points consistent with RFS' requirements.

Response

Clean TeQ supports the inclusion of a Fire Management Plan in the modified Development Consent (subject to review of the final draft Development Consent conditions).

Air Quality Management Plan

Issue

EPA requested that an Air Quality Management Plan be prepared for the Project.

Response

Clean TeQ accepts this recommendation and will prepare an Air Quality Management Plan in consultation with EPA in accordance with Condition 23, Schedule 3 of Development Consent DA 374-11-00.

Mining Operations Plan and Annual Environmental Review

Issue

The Resource Regulator (within the DP&E) (2017) noted that a Mining Operations Plan and an Annual Rehabilitation Report would be required for the modified Project.

Response

Clean TeQ acknowledges these requirements and will prepare Mining Operations Plans and Annual Rehabilitation Reports for the modified Project.

6.2 Part B – Response to Public Submissions

Attachment 1 provides a reconciliation of the submissions received from members of the public and the locality of the submitter.

The comments and issues/concerns raised by members of the public are addressed in Table 3.

Table 3 Responses to Public Submissions

Issue ID No.	Subject	Issues Raised	Response
1	Road Transport	Concerns were raised regarding the potential impacts associated with increased traffic volumes through Trundle, including potential safety impacts given current road conditions (e.g. lack of pedestrian crossings and lighting deficiencies).	The Road Transport Assessment (Appendix E of the EA) prepared by GTA Consultants (2017) includes an assessment of the forecast cumulative traffic movements (including modified Project traffic) including The Bogan Way in the vicinity of Trundle. GTA Consultants (2017) found that the Modification would have no significant impacts on the performance, capacity, efficiency and safety of the road network as a result of the traffic associated with the Modification. As described in Section 4.2, as an outcome of consultation with members of the community, Clean TeQ commissioned GTA Consultants (2018) to conduct a Pedestrian Access Review to further consider the potential implications of the modified Project traffic for pedestrian safety in Trundle (The Bogan Way or Forbes Street). GTA Consultants (2018) concluded (emphasis added): *Overall, the review found that the existing pedestrian and vehicular environment in Forbes Street is generally satisfactory, with no major issues which would require immediate upgrading to meet current standards. Some aspects of the pedestrian and vehicular environment could however be improved to mitigate the issues identified and described in this report.* *Considering the forecast modified Project traffic in the context of the review of the existing pedestrian and vehicular environment in Forbes Street, it is considered unlikely that a significant deterioration in the safety of that environment would result with the modified Project. No major issues are therefore anticipated which would require immediate upgrading to meet current standards.* *As for the existing conditions, some aspects of the pedestrian and vehicular environment could however be improved to mitigate the existing issues identified and described in this report. The recommended treatments are:* • *a modified kerb extension treatment near 61/63 Forbes Street;* • *a modified kerb extension treatment between Croft Street and East Street;* • *threshold treatments at the northern and southern entries to Trundle;* • *speed reduction warning signs on the northern and southern approaches to Trundle; and* • *audit of heavy vehicles and consultation with the Trundle community within 12 months of commencement of operations at the Project.* Clean TeQ proposes to implement the recommendations of the Pedestrian Access Review (GTA Consultants, 2018) in consultation with the PSC.

Issue ID No.	Subject	Issues Raised	Response
2	Road Transport	Concern was raised regarding the magnitude of increased traffic through Trundle associated with the Modification and there was some confusion regarding the quantity of the proposed Project traffic movements.	Traffic travelling through Trundle associated with the approved Project is forecast to be approximately 222 vehicles per day (GTA Consultants, 2018). The Modification proposed an increase in Project traffic travelling through Trundle to approximately 346 vehicles per day under the maximum case scenario (i.e. maximum third party limestone supply and no shuttle bus service or higher capacity vehicles to transport limestone) (GTA Consultants, 2018). As described in Section 5, Clean TeQ has since determined that it would operate shuttle bus services to and from Parkes, Forbes and Condobolin and the mine site and use higher capacity heavy vehicles to transport limestone to the mine. This would reduce Project light and heavy vehicle movements compared to the maximum case scenario by approximately 70% and 20%, respectively. The modified Project traffic travelling through Trundle would reduce to approximately 146 vehicles per day which is approximately 30% lower than the approved Project traffic (i.e. 222 vehicles per day).
3	Road Transport	A number of submissions proposed alternatives to road transport through Trundle (to reduce traffic through Trundle), for example with a bypass similar to the approved Fifield Bypass.	As described in response to Issue 1, the Road Transport Assessment (Appendix E of the EA) concluded that the Modification would have no significant impacts on the performance, capacity, efficiency and safety of the road network (GTA Consultants, 2017). Further, the Pedestrian Access Review (GTA Consultants, 2018) concluded that it is unlikely that a significant deterioration in the safety of Forbes Street would result with the modified Project and therefore no major issues are anticipated which would require immediate upgrading to meet current standards. Notwithstanding the above, the Pedestrian Access Review (GTA Consultants, 2018) considered potential local and regional bypass routes around Trundle. The analysis highlighted that the use of such bypass routes would divert heavy vehicle traffic from an existing regional road (i.e. The Bogan Way) that in its current state, functions as a regional connector road and is suited to the type and number of traffic movements proposed by the Modification, to the local road network, on roads that are not suited to the traffic proposed by the Project and the Modification. In addition, diverting heavy vehicle traffic from regional roads to local roads would be inconsistent with PSC's (2017) submission on the Modification, which stated: *Council requests that the transport of materials, including sulphur and limestone utilise National, State, Regional and then local roads in order or priority.* GTA Consultants (2018) concluded that the existing and forecast heavy vehicle volumes (including Project traffic) on Forbes Street would not justify construction of a bypass route.

Issue ID No.	Subject	Issues Raised	Response
4	Road Transport	Concern was raised regarding the transportation of hazardous material on public roads through Fifield and Trundle.	The Preliminary Hazard Analysis (Appendix C of the EA) prepared by Pinnacle Risk Management (2017) included assessment of the potential hazards associated with the transport of hazardous materials. Consistent with the approved Project, the transport risks associated with the modified Project were concluded to be acceptable (Pinnacle Risk Management, 2017). Notwithstanding the above, Clean TeQ will prepare a Transport of Hazardous Materials Study for the Project in accordance with Condition 53(a), Schedule 3 of Development Consent DA 374-11-00. In addition, a Safety Management System will be prepared for the Project by Clean TeQ in accordance with Condition 53(c), Schedule 3 of Development Consent DA 374-11-00. The Safety Management System will cover Project transport activities involving hazardous materials and include safety-related procedures, responsibilities and policies, along with details of mechanisms for ensuring adherence to procedures.
5	Road Transport	Concern was raised regarding the impact of increased traffic volumes on the quality of public roads and their maintenance (for example the upgrade and maintenance of the railway crossing along The Bogan Way).	As part of the Road Transport Assessment (Appendix E of the EA), GTA Consultants (2017) reviewed the current road upgrades and maintenance requirements and whether the Modification would necessitate changes to these requirements. GTA Consultants (2017) determined that no additional upgrades would be required as a result of the modified Project. Clean TeQ will contribute to the maintenance of key access routes to the Project (e.g. The Bogan Way) in accordance with VPAs between Clean TeQ and the LSC, PSC and FSC. Clean TeQ will continue to consult with the relevant councils regarding the road maintenance requirements as part of VPA negotiations. At the time of writing, Clean TeQ had obtained in-principle agreement with the LSC, PSC and FSC on the terms of the VPAs.
6	Road Transport	Additional detail was requested regarding the road transport of water from the borefields to the mine site (e.g. duration, number of trucks and any required road upgrades).	As described in Section 4.51 of the Road Transport Assessment (Appendix E of the EA), the proposed short-term road transport of water from the borefields to the mine site would be undertaken for a short period (approximately six months) during the initial construction phase while the water pipeline is being constructed. The water trucks would operate six days per week during daylight hours only, with between 23 and 35 deliveries per day (GTA Consultants, 2017). The potential road transport impacts of the short-term construction phase road transport of water are considered small, and well within the capacity of the existing roads (GTA Consultants, 2017). No specific road upgrades beyond those required for the Project are therefore proposed for the short-term construction phase water transport route. It is noted that PSC (2017), in its submission on the Modification, stated: *Council supports the Short-term Water Transport Route which utilises State and Regional Roads within Parkes Shire.*

Issue ID No.	Subject	Issues Raised	Response
7	Road Transport	Concerns were raised regarding the potential impacts on agricultural enterprises that require crossings of the Project transport routes.	Clean TeQ will prepare a Traffic Management Plan for the Project in accordance with Condition 45, Schedule 3 of Development Consent DA 374-11-00 that will include measures to minimise disruption to local road users. The Traffic Management Plan would also include a Road Transport Protocol that would include measures to minimise impacts to stock movements (e.g. provisions for stock movements).
8	Noise and Vibration	Concerns that noise generated from increased traffic volumes would disrupt local amenity and health.	The Noise and Blasting Assessment (Appendix B of the EA) prepared by Renzo Tonin & Associates (2017) included an assessment of potential road traffic noise impacts in accordance with *Road Noise Policy* (Department of Environment, Climate Change and Water, 2011). The Noise and Blasting Assessment indicated no exceedances of the relevant traffic noise criteria would be expected based on the forecast total traffic volumes (i.e. traffic associated with the modified Project as well as all other non-Project traffic). The Noise and Blasting Assessment also indicated that the relative change in traffic noise between the modified Project and the approved Project would be less than the relevant criterion (i.e. a change of 12 decibels or more) at all sensitive receivers. Notwithstanding this, in response to concerns raised by members of the community Clean TeQ commissioned Renzo Tonin & Associates (2018) to conduct a Supplementary Road Noise Assessment to clarify potential road noise impacts in Trundle associated with the Modification. Renzo Tonin & Associates (2018) concluded that the Modification would not lead to any exceedances of the relevant road noise criteria in Trundle. It is also noted the EPA (2017), in its submission on the Modification, stated: *The EPA can support the modification based on the predicted levels for noise and blasting, with the incorporation of mitigation measures, as described in the noise and blasting assessment.*

Issue ID No.	Subject	Issues Raised	Response
9	Noise and Vibration	Concerns that noise and blast vibration/overpressure generated by mining operations would disrupt local amenity and health.	The Noise and Blasting Assessment (Appendix B of the EA) prepared by Renzo Tonin & Associates (2017) included an assessment of potential operational noise and blasting impacts in accordance with the NSW *Industrial Noise Policy* (EPA, 2000) and *Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration* (Australian and New Zealand Environment Conservation Council, 1990). The Noise and Blasting Assessment indicated that under adverse weather conditions and with the implementation of feasible and reasonable mitigation measures, a small number of negligible exceedances of the Project-specific noise criteria are predicted at the nearest privately-owned receivers to the mine site. Such exceedances would not be discernible by the average listener and would not warrant receiver based treatments or controls. Notwithstanding, Clean TeQ is pursuing negotiated or purchase agreements with the nearest privately-owned receivers to the mine site to mitigate any unforeseen noise impacts at these receivers. In regard to potential blasting impacts, the Noise and Blasting Assessment indicated no exceedances of the relevant criteria are predicted if blasting is conducted Monday to Saturday, between 6.00 am and 8.00 pm. It is noted the EPA (2017), in its submission on the Modification, stated: *The EPA can support the modification based on the predicted levels for noise and blasting, with the incorporation of mitigation measures, as described in the noise and blasting assessment.*
10	Air Quality	Concerns were raised that potential air quality impacts associated with material transport for the Project would disrupt local amenity.	The transport of materials to and from the Project would generally be undertaken on sealed roads, and therefore the potential for dust generation and associated impacts would not be significant. In addition, the Project traffic volumes would not be sufficient for potential impacts associated with combustion products (e.g. carbon monoxide), which are generally only associated with major roads (e.g. motorways). It is noted that the EPA (2017), in its submission on the Modification, raised no concerns with regard to potential air quality impacts of the Modification.

Issue ID No.	Subject	Issues Raised	Response
11	Air Quality	Concerns were raised regarding emissions generated from mining operations (e.g. due to overburden and ore extraction and haulage) and ore processing (in particular due to the proposed RIP processing methodology) and the associated potential air quality impacts in the region (including potential health or agricultural impacts).	The Air Quality and Greenhouse Gas Assessment (Appendix A of the EA) prepared by Ramboll Environ (2017) assessed the potential air quality impacts (including potential health impacts) of the Modification in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (EPA, 2016). The adoption of the RIP processing methodology (as opposed to the counter-current decantation processing methodology) as part of the Modification would result in the elimination of the 'Extraction Fan over Sulphide Filter Vent', 'Flare Stack' and 'Hydrogen Reformer Stack' emission release points associated with the counter current decantation circuit, including all associated hydrogen sulphide emissions (Section 4.3.2 of the EA). The RIP processing method is currently approved and would not be significantly changed for the Modification. It is noted Clean TeQ has operated a large-scale pilot plant using the RIP processing methodology to process ore obtained from the mine site and no material gaseous emissions were generated by the process. The Modification would also not significantly change approved mining operations and associated air quality emissions. The Air Quality and Greenhouse Gas Assessment predicted no exceedances of relevant EPA criteria for dust and gaseous pollutants. It is noted that the EPA (2017), in its submission on the Modification, raised no concerns with regard to potential air quality impacts of the Modification.

Issue ID No.	Subject	Issues Raised	Response
12	Air Quality	Concern was raised regarding increased emissions of sulphur dioxide from the process plant and the potential for acid rain production. A number of submissions quantify the expected increase in sulphur dioxide emissions as more than a five-fold increase in emissions.	As described in the Air Quality and Greenhouse Gas Assessment (Appendix A of the EA), the processing facility would be designed to minimise emissions of gaseous pollutants, and comply with relevant standards of concentration, by incorporating appropriate well-known, effective emission control equipment (e.g. appropriate stack design). With the implementation of these emission controls, it is expected that pollutant in-stack concentrations would be below the standards of concentration in the *Protection of the Environment Operations (Clean Air) Regulation, 2010*. Notwithstanding, Ramboll Environ (2017) conservatively adopted pollutant in-stack concentrations equal to the standards of concentration in the *Protection of the Environment Operations (Clean Air) Regulation, 2010* in the Air Quality and Greenhouse Gas Assessment. Although the sulphur dioxide emissions from the sulphuric acid plant stack are higher for the Modification than the approved emissions (consistent with the increase in sulphuric acid production), the total sulphur dioxide emissions from the modified processing facility are less than the currently approved emissions. The total sulphur dioxide emissions associated with the modified processing facility are approximately 53.2 grams per second (g/s) compared to approximately 59.2 g/s for the approved processing facility. This overall reduction is due to the removal of the counter-current decantation method. The Air Quality and Greenhouse Gas Assessment predicted no exceedances of relevant EPA criteria for dust and gaseous pollutants. Ramboll Environ (2017) considered the potential risk of emissions of sulphur dioxide and oxides of nitrogen from the processing facility causing the rare phenomenon known as ‘acid rain’ in the vicinity of the mine site. ‘Acid rain’ is historically associated with very high emission rates of sulphur dioxide and oxides and nitrogen, for example from large, uncontrolled coal-fired power generation. There is currently no evidence of ‘acid rain’ occurring in NSW, even in concentrated heavy industrial areas (e.g. Wollongong and the Hunter Valley). Given the low magnitude of emissions from the processing facility (i.e. resulting in ground-level concentrations significantly below the relevant criteria) Ramboll Environ (2017) concluded that the likelihood of an ‘acid rain’ event would be insignificant. It is also noted that the EPA (2017), in its submission on the Modification, raised no concerns with regard to potential air quality impacts of the Modification.

Issue ID No.	Subject	Issues Raised	Response
13	Air Quality	Concerns were raised regarding the community's ability to interpret the information within the EA in relation to relevant guidelines/legislation, particularly the air quality contours in the Air Quality and Greenhouse Gas Assessment.	Ramboll Environ (2017) prepared the Air Quality and Greenhouse Gas Assessment for the Modification. The assessment presents the predicted results in a standard format, with ground-level concentrations provided in both tabular form (i.e. noting the predicted result at each assessed receiver) as well as contour diagrams (i.e. providing a graphical representation of the predicted impacts). A key aspect to interpreting contour diagrams is understanding the criterion associated with the modelled pollutant and averaging period. The contour line associated with the criterion level approximates the extent of impact (i.e. the area between the criterion contour line and the source of emissions would generally be considered impacted by the project). Clean TeQ organised for an air quality specialist to attend the CCC meeting in February 2018 to assist in the interpretation of information and the predicted impacts of the Modification.
14	Air Quality	Concern was raised regarding the use of meteorological data from Condobolin, with a submitter noting weather could be different at the mine site than at Condobolin.	As described in the Air Quality and Greenhouse Gas Assessment for the Modification (Ramboll Environ, 2017), contemporary background meteorological monitoring is unavailable at the mine site. Ramboll Environ (2017) reviewed meteorological data recorded at the six closest Bureau of Meteorology automatic weather stations (AWS). The closest weather station to the mine site, the Condobolin Airport AWS, was found to have recorded prevailing wind directions similar to the historic baseline data recorded at the mine site. Given the relatively uncomplicated regional terrain (i.e. no significant elevated terrain such as mountains, which would affect regional weather patterns), Ramboll Environ (2017) concluded the Condobolin Airport AWS meteorological data would be suitable for modelling the mine site. It is also noted that the EPA (2017), in its submission on the Modification, raised no concerns with regard to the air quality assessment completed for the Modification, including the meteorological data used.
15	Greenhouse Gases	Concern was raised that the greenhouse gas assessment completed for the Modification did not include third party deliveries of limestone, and therefore the assessment was incomplete.	Deliveries from third parties would generally be classified as Scope 3 emissions (e.g. indirect greenhouse gas emissions that occur as a consequence of the activities of a facility, but from sources not owned or controlled by that facility's business). As national greenhouse gas reporting does not include Scope 3 emissions, greenhouse gas assessments typically only assess and report Scope 1 and Scope 2 emissions, unless Scope 3 emissions are significant. Notwithstanding this, if Scope 3 greenhouse gas emissions associated with third party deliveries were to be quantified, these emissions would not change the estimated Scope 1 greenhouse gas emissions reported in the Modification Air Quality and Greenhouse Gas Assessment (Ramboll Environ, 2017).

Issue ID No.	Subject	Issues Raised	Response
16	Water	Concerns were raised that the Project borefield and Lachlan River cannot support the water supply requirements of the Project (e.g. some submissions are concerned the Lachlan River is already 'depleted').	The Modification would not change the approved groundwater extraction from the Project borefield. Groundwater investigations and supply feasibility assessments by Coffey Geosciences (2000) indicated that the borefields could maintain a sufficient groundwater supply for the Project. However, as described in Section 6.1.2 in response to a query raised by the FSC regarding surface water supply, the CL&W (2016) submission on Modification 3 for the Project recommended that Clean TeQ consider alternative water supply options such as surface water extraction from the Lachlan River to improve water supply security. Consistent with the CL&W's advice, Clean TeQ has proposed the following Project changes as part of the Modification to improve water supply security: • addition of a water treatment plant to the processing facility to recycle process water and minimise make-up water demand; and • addition of licensed surface water extraction from the Lachlan River to the Project water supply. The extraction of groundwater from the Project borefields and surface water from the Lachlan River would be undertaken in accordance with relevant licences (i.e. either groundwater licences currently held by Clean TeQ, or surface water licences that would be obtained following approval of the Modification). Water would be extracted from the Lachlan River in accordance with WALs (with volumetric allocations obtained on the open market) and the rules prescribed in the relevant water sharing plan (i.e. the *Water Sharing Plan for the Lachlan Regulated River Water Source, 2016*). It is noted CL&W (2017) did not raise any concerns with the proposed extraction of surface water from the Lachlan River.

Issue ID No.	Subject	Issues Raised	Response
17	Water	Concerns were raised that the Modification would result in adverse impacts to the quality and quantity of surface water.	The overall objective of the approved water management system is to control runoff from the development/construction areas and the operation areas, while diverting upstream water around these areas. In addition, the approved water management system is required to comply with the water management performance measures in Condition 29, Schedule 3 of Development Consent DA 374-11-00. The Modification would not change the overall objective of the water management system or the water management performance measures for the Project. Consistent with the approved Project, an internal drainage system would be constructed to collect and contain surface water runoff generated within the development/construction areas and operation areas. The contained surface water runoff would preferentially be used to supply the mine water demand (Section 3.8.2 of the EA). Any release from the water storages would only occur in the event of a rainfall event larger than the approved capacity requirements outlined in Condition 29, Schedule 3 of Development Consent DA 374-11-00. None of the main water storages proposed on-site (i.e. tailings storage facility, water storage dam, or evaporation pond) will be used to harvest runoff from land as these storages will be used to contain mine water or effluent in accordance with best management practice. Storages at the mine site (excluding sediment dams) would be designed, installed and maintained to capture a 100 year, 72-hour average recurrence interval rainfall event in accordance with Condition 29, Schedule 3 of Development Consent DA 374-11-00. Any releases from these storages would therefore only occur as a result of a rainfall event that exceeds this design rainfall event. The probability of such a rainfall event occurring is less than 1%. The sediment dams would collect runoff from disturbed areas associated with the waste rock emplacements, tailings storage facility (outer batters) and topsoil stockpiles. Surface water runoff from these areas would predominately contain sediments from soil and waste rock material. The geochemical characterisation undertaken for the EIS concluded that the waste rock material is highly weathered, oxidised and non-acid forming. Given the above, surface water runoff from waste rock areas would maintain a near neutral pH into the long term, therefore the risk of increased solubility of metals is expected to be low (Black Range Minerals, 2000). A Water Management Plan would be prepared for the modified Project in accordance with Condition 30, Schedule 3 of Development Consent DA 374-11-00 and would include a Water Balance and Surface Water Management Plan.

Issue ID No.	Subject	Issues Raised	Response
18	Water	Concern was raised regarding the interception of the groundwater table from open cut pit mining and potential impacts on groundwater users.	As the Modification would not change the extent of the approved open cut pits, the groundwater inflows and drawdown would remain unchanged as a result of the Modification. Notwithstanding this, the Water Management Assessment (Appendix D of the EA) prepared by Golder Associates (2017) includes the predicted pit inflows during the short-term period of mining that intercepts the groundwater table. Predicted pit inflows are minor. The potential groundwater drawdown was estimated using the groundwater model and the predicted maximum extent of 1 m groundwater drawdown does not extend beyond the mine boundary (Golder Associates, 2017). Given there are no privately-owned bores within the mine boundary (the nearest groundwater user is approximately 2.8 km from the mine), no groundwater drawdown impacts are predicted to groundwater users. Notwithstanding the above, Clean TeQ will prepare a Groundwater Management Plan in accordance with Condition 30(c), Schedule 3 of Development Consent DA 374-11-00 that will include a groundwater monitoring program.
19	Water	Concerns were raised regarding the permeability of soils beneath the tailings storage facility and water storage dam and potential impacts of seepage of hazardous materials into water table were not assessed in the Project EIS or the Modification Environmental Assessment.	The tailings storage facility and water storage dam would be lined in accordance with Condition 29, Schedule 3 of Development Consent DA 374-11-00, which requires the floor and walls of the tailings storage facility to be designed with a very low permeability. A Tailings and Site Water Management assessment was prepared for the EIS, which provided a summary of the typical constituents of the tailings slurry (Golder Associates, 2000). The tailings slurry would be neutral and would primarily constitute magnesium, chlorine and sodium (Golder Associates, 2000). Seepage from the tailings storage facility is constrained by the dam liner as described above and the low permeability of the underlying and adjacent soil and rock and therefore the impact to groundwater quality would be very low (Golder Associates, 2017). It is noted the depth to the phreatic groundwater table at the mine site ranges from approximately 30 m to 60 m below ground level. In addition, a seepage collection system would be used to capture any seepage from the tailings storage facility. The seepage collection system would be generally unchanged by the Modification. Notwithstanding the above, potential seepage rates from the tailings storage facility and water storage dam were conservatively estimated using the groundwater model (Golder Associates, 2017). The modelling results indicated that under these conditions, seepage from the tailings storage facility could migrate up to 400 m (horizontally) outside of the mine site, however would not impact any surrounding groundwater users.

Issue ID No.	Subject	Issues Raised	Response
20	Water	Concern was raised regarding potential contamination of downstream water storages due to overflowing sediment dams during overland flow events.	As described in response to Issue 17, the Modification would not change the overall objective of the water management system or the water management performance measures for the Project. The sediment dams would be designed, installed and maintained generally in accordance with *Managing Urban Stormwater: Soils and Construction – Volume 1* (NSW Government, 2004a) and *Managing Urban Stormwater: Soils and Construction – Volume 2E Mines and Quarries* (NSW Government, 2004b) as required by Condition 29, Schedule 3 of Development Consent DA 374-11-00. In accordance with *Managing Urban Stormwater: Soils and Construction – Volume 1* (NSW Government, 2004a) and *Managing Urban Stormwater: Soils and Construction – Volume 2E Mines and Quarries* (NSW Government, 2004b), the sediment dams would generally be designed and constructed to have capacity for a 90th percentile, 5-day rainfall event. A Water Management Plan would be prepared for the modified Project in accordance with Condition 30, Schedule 3 of Development Consent DA 374-11-00 and would include a Water Balance and Surface Water Management Plan.
21	Overburden Geochemistry	Concerns were raised regarding the composition of the overburden and whether the material is hazardous or has the potential to contaminate surrounding land.	The Modification would not change the extent of the approved open cut pits and therefore the composition of the overburden would remain unchanged from the approved Project. An Environmental Geotechnical Assessment of Waste Rock and Tailings was prepared for the EIS and concluded that the waste rock material is highly weathered, oxidised and non-acid forming. Given the above, surface water runoff from waste rock areas would maintain a near neutral pH into the long term, therefore the risk of increased solubility of metals is expected to be low (Black Range Minerals, 2000). Therefore, consistent with the approved Project, the overburden emplacements would not comprise any substances that would lead to potential land contamination and the potential for acid generation would be low.

Issue ID No.	Subject	Issues Raised	Response
22	Socio-economics	Concerns were raised that the Project would contribute limited socio-economic benefits to local community.	The Project would stimulate the local economy through direct employment, as well as indirect beneficial flow on effects (e.g. increased use of contractors for construction of Project components, which would increase business for local suppliers of construction materials). The Modification would not lead to increased socio-economic impacts from the approved Project as there is no change to the workforce. Beneficial flow on effects to the socio-economics of the area would be observed if the Modification was to be approved. For example, towns within the vicinity of the Project would benefit from increased incidental use of services from the increased traffic movements. In accordance with Condition 17, Schedule 2 of the Development Consent DA 374-11-00, Clean TeQ would enter into a VPA with the LSC, PSC and FSC, which will include funding for road upgrades, ongoing maintenance and other community contributions. At the time of writing, Clean TeQ had obtained in-principle agreement with the LSC, PSC and FSC on the terms of the VPAs. In addition to the above, Clean TeQ also intends to support a range of community initiatives in the region, including charities, sporting and cultural endeavours and community events. It is noted that all public submissions that supported the Modification highlighted the potential positive socio-economic benefits of the Project and Modification, including employment opportunities.
23	Socio-economics	Concerns were raised regarding the potential loss of tourism (e.g. Trundle is known for the Trundle ABBA Festival, the Trundle Hotel veranda and the wide Forbes Street streetscape) due to Project traffic movements.	Clean TeQ will prepare a Traffic Management Plan for the Project in consultation with RMS, LSC, PSC and FSC in accordance with Condition 45, Schedule 3 of Development Consent DA 374-11-00 that will include measures to minimise disruption to local road users. The Traffic Management Plan would also include a Road Transport Protocol that would include measures to: • ensure adherence to designated transport routes; • coordinate heavy vehicle departures (i.e. staggering) to minimise impacts on the road network; • ensure travelling stock access and right of way to the adjacent travelling stock route; and • implement contingency plans when the transport route is disrupted. The Traffic Management Plan for the Project would also include consideration of notable events throughout the year (e.g. the Trundle ABBA Festival and harvest season), and strategies to minimise potential impacts during these events.

Issue ID No.	Subject	Issues Raised	Response
24	Socio-economics	Concern was raised regarding the decrease in land value for properties in proximity of the mine site.	The Modification does not propose to change the location of the approved Project. Furthermore, the Project has been designed and would be operated by Clean TeQ to minimise potential impacts to the environment, including adjacent landholdings.
25	Socio-economics	Concern was raised regarding increases in housing prices in the surrounding region increasing financial pressures on existing residents within Trundle.	The Modification does not propose to change the approved construction or operational workforce and therefore there would be no additional pressure on the local housing market due to the Modification. The Road Transport Assessment (GTA Consultants, 2017) prepared for the Modification describes the forecast distribution of employees in the surrounding region. The majority of employees are expected to reside in Parkes and Condobolin, with a smaller proportion of the Project workforce expected to reside in Trundle.
26	Explosions and Bushfire	Concern was raised regarding the increased risk of explosions, gas leaks and loss of containment along the properties dissected by the gas pipeline. Concerns were raised regarding the increased risk of bushfires emanating from the mine site	The Modification would not change the approved gas pipeline. As described in Section 3.10.1 of the EA, if the modified sulphuric acid plant is able to produce sufficient steam to power the co-generation plant and meet the power requirements of the mine site, there would be no need for the external gas supply to generate steam and therefore the gas pipeline would not be constructed. In accordance with Condition 49, Schedule 3 of Development Consent DA 374-11-00, Clean TeQ would be able to respond to any fires on site and prepare procedures to manage fires within or in the vicinity of the Project. Furthermore, Clean TeQ would provide reasonable assistance to emergency services in the event of a fire in the vicinity of the Project. Development Consent DA 374-11-00 also requires the preparation of pre-construction and pre-commissioning studies and plans, which aim to reduce the likelihood and/or consequences of potentially hazardous incidents (including in relation to the gas pipeline), including: • Fire Safety Study (Condition 52[a], Schedule 3); • Final Hazard Analysis (Condition 52[b], Schedule 3); • Construction Safety Study (Condition 52[c], Schedule 3); • Hazard and Operability Study (Condition 52[d], Schedule 3); • Transport of Hazardous Material Study (Condition 53[a], Schedule 3); • Emergency Plan (Condition 53[b], Schedule 3); and • Safety Management System (Condition 53[c], Schedule 3).

Issue ID No.	Subject	Issues Raised	Response
27	Emergency Services	Concerns were raised regarding the limited availability of emergency services at the mine site and surrounding community and the consideration of this during the development of emergency plans.	Development Consent DA 374-11-00 requires the preparation of pre-construction and pre-commissioning studies and plans, which aim to reduce the likelihood and/or consequences of potentially hazardous incidents, including: • Fire Safety Study (Condition 52[a], Schedule 3); • Final Hazard Analysis (Condition 52[b], Schedule 3); • Construction Safety Study (Condition 52[c], Schedule 3); • Hazard and Operability Study (Condition 52[d], Schedule 3); • Transport of Hazardous Material Study (Condition 53[a], Schedule 3); • Emergency Plan (Condition 53[b], Schedule 3); and • Safety Management System (Condition 53[c], Schedule 3). These studies and plans would consider the availability of emergency services such as ambulances and would include detailed procedures, responsibilities and mechanisms to ensure adherence to the protocols. Clean TeQ would consult with relevant stakeholders, including the NSW State Emergency Service, NSW RFS and Fire & Rescue NSW, during preparation of the Emergency Plan (Condition 53[b], Schedule 3 of Development Consent DA 374-11-00). In addition, in accordance with Condition 49, Schedule 3 of Development Consent DA 374-11-00, Clean TeQ would be able to respond to any fires on site and prepare procedures to manage fires within or in the vicinity of the Project. Furthermore, Clean TeQ would provide reasonable assistance to emergency services in the event of a fire in the vicinity of the Project.
28	Environmental Monitoring	Concerns were raised regarding a perceived lack of proposed off-site monitoring of air quality, noise and water quality.	Monitoring for the modified Project would be undertaken in accordance with a number of Environmental Management Plans (e.g. Air Quality Management Plan, Noise Management Plan, Blast management Plan and Water Management Plan) to be prepared in accordance with Development Consent DA 374-11-00. These Environmental Management Plans would reflect any changes to Development Consent DA 374-11-00 that arise from the Modification and would detail monitoring to be undertaken for the Project, including off-site monitoring. Monitoring would also be undertaken in accordance with an Environment Protection Licence issued by the EPA. Monitoring locations would be finalised in consultation with relevant stakeholders (e.g. the EPA, DP&E and proximal landholders).

Issue ID No.	Subject	Issues Raised	Response
29	Environmental Modelling	Concern was raised regarding the adequacy and accuracy of the modelling conducted for the Modification (e.g. air quality and groundwater modelling).	Modelling completed to support the Modification (e.g. to predict potential air quality, noise and groundwater impacts) was conducted: • in general accordance with relevant NSW Government guidelines (e.g. the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales, 2016*, in the case of air quality modelling); • using established models (e.g. AERMOD for air quality dispersion modelling and the Seep/W modelling software [version 8.16] for 2D groundwater modelling) that have been used for similar assessments throughout NSW; and • by suitably qualified technical experts with experience modelling similar projects. It is also noted that neither the EPA (2017) nor CL&W (2017), in their submissions on the Modification, noted specific concerns with regard to modelling undertaken to support the Modification.
30	Consultation	Concerns were raised regarding a perceived lack of consultation with the community regarding the Modification.	Clean TeQ has undertaken a range of community consultation activities regarding the Modification, including: • the establishment of community liaison shopfronts in Trundle and Condobolin (August 2017); • the distribution of a community newsletter (October 2017) and various fact sheets that provided updates on the Project and the Modification; • held a community meeting in Trundle on 23 November 2017 to provide information on the Project and the Modification; • presenting details of the Project and Modification at the CCC meeting in October and November 2017. Furthermore, Clean TeQ has also undertaken consultation with a number of private landholders that reside in the vicinity of the Project to discuss the Modification.
31	Electricity Transmission Line	Concern was raised that a proposed electricity transmission line was not assessed in the EA.	Clean TeQ is separately considering importing electricity to the mine site via an electricity transmission line to supplement on-site generation (Section 3.10.1 of the EA). The electricity transmission line would be subject to separate environmental assessment and approval and therefore was not assessed in the EA.

Issue ID No.	Subject	Issues Raised	Response
32	Public Exhibition	Concerns were raised regarding the number of copies of the Environmental Assessment that were available for public access at local councils.	Clean TeQ understands that this is a comment addressed to the DP&E. Notwithstanding, hardcopies of the EA were made available in various locations for the exhibition period in accordance with the requirements of the DP&E. In addition, Clean TeQ organised for hardcopies of the EA to be provided to community members when requested. An electronic version of the EA was also made available on the DP&E website during the exhibition period.
33	Voluntary Acquisition Provisions	Concerns were raised that the voluntary acquisition process does not adequately protect landholders.	Clean TeQ notes the issue, but is outside the scope of the Modification as it relates to government policy and regulation.
34	Number of Modifications	Concern was raised regarding the number of modifications to the Project Development Consent.	Clean TeQ notes the issue raised by the submission, but is outside the scope of the Modification as it relates to government policy and regulation. Clean TeQ has lodged the Modification in accordance with the requirements of the EP&A Act. The need for a number of modifications to Development Consent DA 374-11-00 is based on the progressive output of a range of optimisation and feasibility studies, as well as environmental approval timeframes.

7 Project Evaluation

Based on Clean TeQ's consideration of the submissions by regulatory agencies, NGOs and members of the public, Clean TeQ considers that the justification provided in the EA remains unchanged.

8 References

Australian and New Zealand Environment Conservation Council (1990) *Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration*.

Austroads (2013) *Guide to Road Design.*

Austroads (2017) *Guide to Road Design Part 4: Intersections and Crossings – General (2017 Edition).*

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Clean TeQ Holdings Limited (2017) *Syerston Project Modification 4 Environmental Assessment.*

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Department of Environment, Climate Change and Water (2011) *Road Noise Policy*.

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Golder Associates (2017) *Syerston Project Modification 4 Water Management Assessment*. Report prepared for Clean TeQ Holdings Limited.

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GTA Consultants (2018) *Pedestrian Access Review, Forbes Street, Trundle*. Report prepared for Clean TeQ Holdings Limited.

Lachlan Shire Council (2017) *Re: Submission in response to the EA on Modification No. 4 - Sunrise Mine Project (DA 374-11-00 Mod 4)*.

Murray Darling Basin Commission (2005) *National Land and Water Resources Audit*.

New South Wales Government (2004a) *Managing Urban Stormwater: Soils and Construction – Volume 1*.

New South Wales Government (2004b) *Managing Urban Stormwater: Soils and Construction – Volume 2E Mines and Quarries*.

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New South Wales Office of Water (2012) *Guidelines for Controlled Activities on Waterfront Land.*

Office of Environment and Heritage (2017) *Sunrise Mine Modification 4*.

Parkes Shire Council (2017) *Submission on Sunrise Mine Modification 4*.

Pinnacle Risk Management (2017) *Syerston Project Modification 4 Preliminary Hazard Analysis*. Report prepared for Clean TeQ Holdings Limited.

Ramboll Environ (2017) *Syerston Project Modification 4 Air Quality and Greenhouse Gas Assessment*. Report prepared for Clean TeQ Holdings Limited.

Renzo Tonin & Associates (2017) *Syerston Project Modification 4 Noise and Blasting Assessment*. Report prepared for Clean TeQ Holdings Limited.

Renzo Tonin & Associates (2018) *Clean TeQ Sunrise Modification 4 - Supplementary Road Traffic Noise Assessment*.

Resources Regulator (2017) *Environmental Assessment, Modification to the Sunrise Mine – DA 374-11-00 Mod 4*.

Roads and Maritime Services (2017) *DA 374-11-00 MOD 4: Lots 4-10 and Part Lot 13 DP 754021; Wilmatha Road, Fifield; Sunrise Mine*.

Rural Fire Service (2017) *Exhibition – Sunrise Mine (formerly Syerston Mine) Mod 4*.

ATTACHMENT 1

REGISTER OF PUBLIC SUBMITTERS

Table A1-1
Public Objections

ID	Name	Location	Issue Raised
233844	Andrew Rawsthorne	Trundle	1, 3
234968	Barry Harmer	Trundle	1, 3
234671	Bob Schneider	Trundle	4, 10
234708	Carol Schneider	Trundle	1, 3, 4, 6, 8, 10, 16, 27
235435	Cherie Stitt	Forbes	1
234511	Debbie Anderson	Trundle	1, 3, 22
234976	Deborah Merton	Alderley	1, 2, 3, 8, 10
234555	Denis Quade	Trundle	1, 7, 8, 10
235104	Des Ward	Tullamore	2, 4, 5, 6, 9, 18, 21, 24, 27, 28, 29, 30, 31, 32, 33, 34
235371	Garry Sunderland	Fifield	2, 4, 5, 6, 9, 18, 19, 21, 20, 24, 27, 28, 29, 30, 31, 32, 33, 34
235309	Narelle Sunderland	Fifield	4, 11, 16, 17, 18, 19, 29, 33
235030	Greg Quade	Trundle	1, 2, 7, 8, 10
234912	Helen Quade	Trundle	1, 2, 4, 9, 11, 12, 13, 14, 15, 24, 29, 33, 34
234277	Jo-Anne Bartyn	Trundle	1, 3, 4, 5, 7
233822	Lucinda Leighton	Trundle	1, 3
235208	Pam Crowley	Trundle	3
235283	Robyn McMahon	Tullamore	4, 11, 16, 17, 18, 20, 24, 28, 29
235281	Ross McMahon	Fifield	4, 9, 10, 11, 16, 17, 18, 20, 29, 33
234061	Sally Capell	Trundle	1, 2, 3
234998	Sandra Stevenson	Trundle	1, 8
234003	Sue Crowley	Trundle	1,3
235110	Terrie L'Estrange	Condobolin	4, 7, 9, 11, 19, 21, 24, 26, 28, 33
235336	Withheld	Fifield	4, 7, 11, 29, 33
235102	Withheld	Tullamore	1, 4, 5, 6, 7, 11, 16, 17, 18, 19, 26, 27, 29, 30, 33
234388	Withheld	Trundle	3, 8, 11, 22

Table A1-2
Public Comments

ID	Name	Location	Issue Raised
235397	Brett Farrow	Orange	1, 2, 3, 5, 6, 10, 22, 27
235511	Withheld	Trundle	1, 3, 5, 8, 11, 21
235495	Withheld	Trundle	1, 7
234984	Withheld	Trundle	1, 3, 11, 16, 17, 18, 22, 25, 26, 27
234659	Withheld	Trundle	1, 3
234519	Withheld	Trundle	1, 3, 8, 10
Via email	Withheld	Trundle	1, 3

Table A1-3
Public Supports

ID	Name	Location	Issue Raised
235361	Karen Worthington	Condobolin	22
235381	Peter Kelly	Trundle	22
235320	Shaorn MacDonald	Bogan Gate	22
235307	Withheld	Trundle	22

ATTACHMENT 2

OFFICE OF ENVIRONMENT AND HERITAGE CORRESPONDENCE

DOC18/32485

Mr John Hanrahan
Approvals Lead
Clean TeQ Holdings Ltd
PO Box 227
MULGRAVE VIC 3170

Dear Mr Hanrahan

Sunrise Mine Modification 4 – Response to Submissions

I refer to your request dated 19 January 2018 seeking comment from the Office and Environment and Heritage (OEH) on the Response to Submissions (RTS) for Sunrise Mine mod 4.

OEH have reviewed the information provided. OEH note that the proposed surface water extraction infrastructure has been sited to avoid all mature River Red Gums and impacts to native vegetation have been minimised as much as practical. It is also understood that the vegetation to be cleared is heavily degraded as a result of past land uses. Given the site values and that this modification is being assessed under section 75W of the *Environmental Planning and Assessment Act 1979* and there is no requirement for offsetting, OEH accepts that establishing an offset area for the proposed 0.31 additional disturbance is impractical.

If you have any questions regarding this matter please contact Michelle Howarth, Senior Conservation Planning Officer on 02 6883 5335 or email michelle.howarth@environment.nsw.gov.au.

Yours sincerely

PETER CHRISTIE
Director North West
Regional Operations Division

25 January 2018

Contact officer: MICHELLE HOWARTH
02 6883 5335

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ATTACHMENT 3

PEDESTRIAN ACCESS REVIEW

GTAconsultants

Pedestrian Access Review
Forbes Street
Trundle

Client // Clean TeQ Holdings Limited
Office // NSW
Reference // N108042
Date // 14/02/18

Pedestrian Access Review

Forbes Street

Trundle

Issue: A 14/02/18

Client: Clean TeQ Holdings Limited
Reference: N108042
GTA Consultants Office: NSW

Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
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References

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1. Introduction

This Pedestrian Access Review includes a review of the pedestrian environment along Forbes Street (The Bogan Way) through Trundle, New South Wales (NSW), with regard to existing traffic conditions and forecast traffic conditions incorporating predicted Clean TeQ Sunrise Project (the Project) traffic.

A key component of this review was consultation with a range of stakeholders and local community representatives, who provided input on existing conditions, and concerns about the possible traffic and transport impacts of the Project. A representative of GTA Consultants also observed existing pedestrian and driver behaviour along Forbes Street on 13 and 14 December 2017.

This Pedestrian Access Review has been prepared with consideration of the current NSW Roads and Maritime Services (RMS) and Austroads guidelines and Australian Standards relating to pedestrians and pedestrian facilities.

References to pedestrians in this discussion paper also include people using prams, and mobility aids such as motorised scooters and wheelchairs which require an accessible path of travel.

The remainder of this Pedestrian Access Review is set out as follows:

- Section 2 describes the existing road transport environment in Forbes Street, including vehicle and pedestrian volumes, issues raised by community representatives and a review of crash history of Forbes Street over a five year period.
- Section 3 presents the forecast of vehicle traffic expected to be generated by the Project.
- Section 4 discusses the principles and options for management of the road transport environment in Trundle based on established guidelines and the desires of the local Trundle community.
- Section 5 presents the recommended options for treatment of Forbes Street.
- Section 6 provides a summary of the key conclusions of the Pedestrian Access Review.

2. Existing Conditions

2.1 Forbes Street Traffic Environment

Forbes Street forms part of a Regional Road known as The Bogan Way which extends from the Newell Highway at Forbes to Henry Parkes Way near Bogan Gate thence via Trundle and Kadungle to the Peak Hill-Tullamore Road near Tullamore (Figure 2.1). The Bogan Way (including Forbes Street) is a RMS approved road train route, permitting Type 1 A-double and Modular B-triple [with conditions] vehicles as well as B-doubles.

The speed limit on The Bogan Way is generally 100 kilometres per hour (km/h), reducing to 50 km/h along Forbes Street through Trundle (Figure 2.2). There is also a 40 km/h school zone at the southern end of Trundle near the Trundle Central School (Figure 2.2). The 40 km/h school speed zone has standard pavement markings and signs with flashing lights.

Trundle Central School (K-12) lies adjacent to Forbes Street and Croft Street at the southern end of Trundle. A 40 km/h school zone extends along Croft Street from Forbes Street for approximately 300 metres (m) (Figure 2.2). A Type 1 (with flags) Children's Crossing is provided on Croft Street.

St Patricks Primary School (K-6) is located on Austin Street (Figure 2.2). Two 40 km/h school zones on Austin Street and Gobondery Street (Figure 2.2) are associated with the St Patricks Primary School. A Type 1 (with flags) Children's Crossing is provided on Austin Street.

Forbes Street has a single travel lane in each direction (Figure 2.3), however as the reservation for Forbes Street is very wide, angle parking, substantial clear zones and service lanes are available on each side of the road. Lighting/electricity poles are located within the carriageway of Forbes Street, and street trees mark an Avenue of Remembrance along Forbes Street between Parkes Street and Hutton Street. The trees are located underneath the power lines, and a proposal has been prepared to replace the trees and relocate them closer to the travel lanes of Forbes Street (*Trundle Main Street Avenue of Remembrance Tree Replacement Proposal,* Parkes Shire Council).

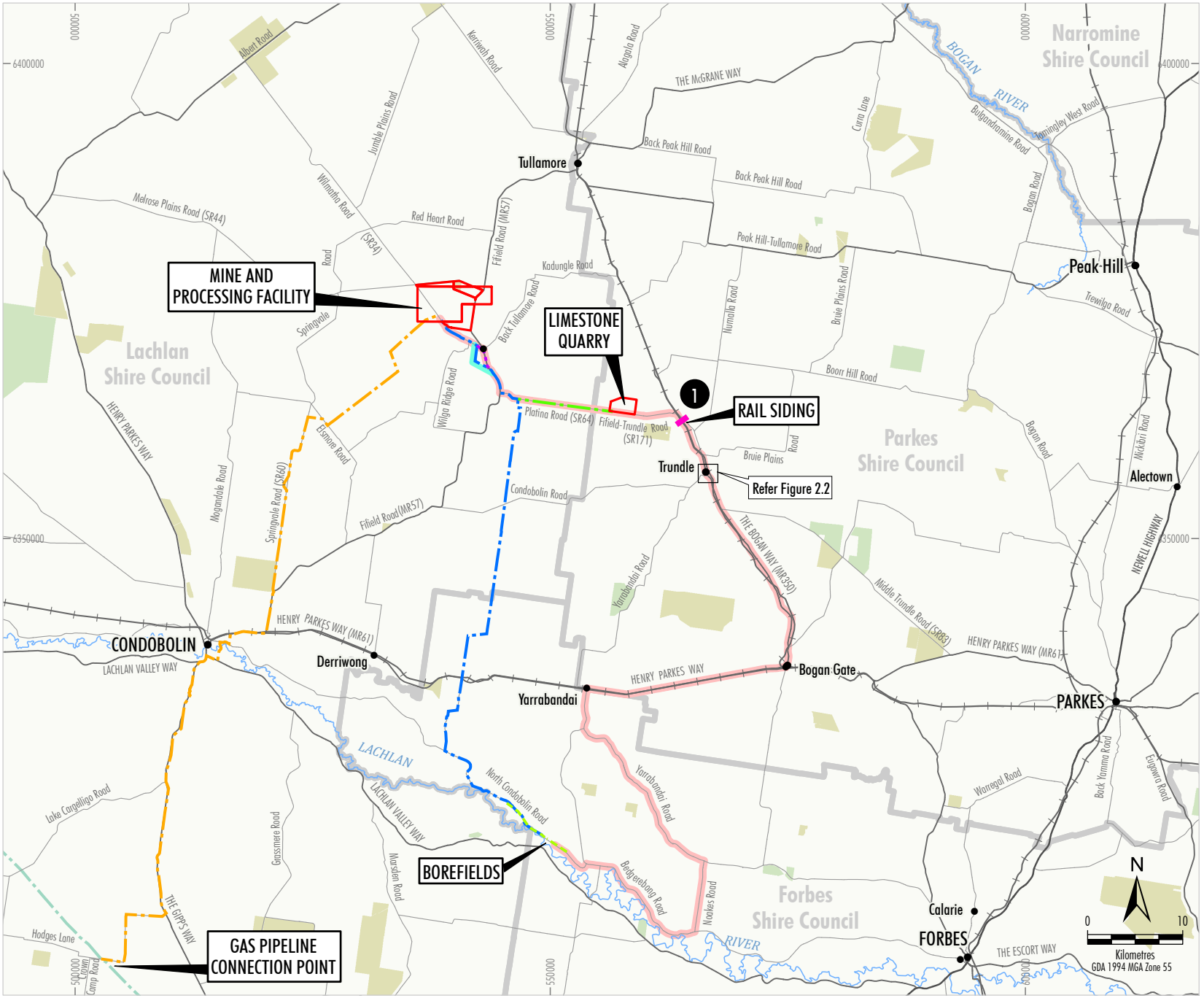
As a Regional Road, the RMS provides financial assistance to the Parkes Shire Council for the management of The Bogan Way (including Forbes Street).

2.2 Existing Traffic Volumes

Clean TeQ Holdings Limited (Clean TeQ) has been undertaking continuous traffic volume surveys throughout 2017 at a number of locations in the region, including on The Bogan Way between Trundle and Fifield-Trundle Road (Figure 2.1). The surveyed volumes at that location are considered to be indicative of volumes on Forbes Street, which are expected to be slightly higher due to local activity in Trundle.

The surveys show that between January and December 2017 (inclusive), heavy vehicles made up nearly 20 per cent of vehicular traffic on The Bogan Way. Table 2.1 summarises the average daily volumes and 85th percentile daily volumes by day of the week, being the volume exceeded on 15 per cent of days.

Peak hourly volumes are typically between 8 and 12 percent of daily volumes. The busiest days were recorded around the ABBA Festival, with a peak daily volume of 726 vehicles per day recorded on 6 May 2017. The least busy day of the year was recorded on 25 December 2017, with 160 vehicles per day.



Source: Black Range Minerals (2000); NSW Department of Industry (2017); NSW Land and Property Information (2017); Office of Environment and Heritage NSW (2017)

CLEAN TEQ SUNRISE PROJECT

Regional Location and Traffic Survey Location

Figure 2.1

CTL-16-02 Mod4_PedRev_201A

LEGEND

Posted Speed Limits

- 100 km/h
- 50 km/h
- 40 km/h School Zone
- 3 → Vehicle Movement
- 4 → Pedestrian Movement
- ✖ School Pedestrian Crossing

Source: NSW Land and Property Information (2017)
NSW Image: © Department of Finance, Services & Innovation (2017)

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CLEAN TEQ SUNRISE PROJECT

Trundle Road Network

Figure 2.2

LEGEND

Posted Speed Limits

- 100 km/h
- 50 km/h
- 40 km/h School Zone
- Viewpoint Location

Source: NSW Land and Property Information (2017)

CLEAN TEQ SUNRISE PROJECT

Viewpoint Photos

Figure 2.3

CTL-16-02 Mod4_PedRev_204A

Table 2.1: Daily Traffic by Day of the Week The Bogan Way North of Trundle 2017 (vehicles per day)

	Average	85th Percentile
Monday	400	451
Tuesday	422	473
Wednesday	418	471
Thursday	435	489
Friday	482	536
Saturday	346	384
Sunday	332	393
Weekdays	**431**	**488**
All Days	**405**	**478**

Traffic volumes on The Bogan Way are impacted by seasonal activity, with increased numbers of heavy vehicles occurring in response to harvesting. Table 2.2 presents the average daily traffic on The Bogan Way by month throughout 2017.

Table 2.2: Average Daily Traffic by Month The Bogan Way North of Trundle 2017 (vehicles per day)

Month	Light Vehicles	Heavy Vehicles	Total Vehicles
January	274	63	337
February	295	67	362
March	319	85	404
April	363	96	459
May	359	103	462
June	340	86	426
July	325	74	399
August	339	79	418
September	328	72	400
October	305	70	375
November	354	72	426
December	344	48	393

These results demonstrate that the average number of heavy vehicles per day peaked during May, at 103 heavy vehicles per day. The highest number of heavy vehicles recorded on any day during 2017 was 185 heavy vehicles on Friday 5 May, i.e. just prior to the ABBA Festival. The lowest number of heavy vehicles recorded on any day during 2017 was 3 heavy vehicles on Christmas Day.

Overall, vehicular traffic volumes are relatively low on Forbes Street, and do not result in any specific concerns regarding the capacity of the road or its intersections to accommodate the existing demands.

2.3 Crash History

Road crash data was obtained from RMS for Forbes Street between Bamford Street and Hutton Street. The data covers the period from 1 January 2012 to December 2017, with data being finalised for the period from 1 January 2012 to 30 March 2017, and provisional for the period from 1 April 2017. Data during the provisional period may be incomplete and subject to change. The data includes those crashes which conform to the national guidelines for reporting and classifying road vehicle crashes based on the following criteria:

- The crash was reported to the police.
- The crash occurred on a road open to the public.

- The crash involved at least one moving vehicle.
- The crash involved at least one person being killed or injured or at least one motor vehicle being towed away.

The crash data revealed one crash on Forbes Street, which occurred at 3.00 pm on Thursday 15 December 2016. The crash occurred 20 m north of Parkes Street during fine weather on a dry road surface. A southbound car travelling at 75 km/h left the carriageway to the left, and struck a west-facing parked car, a west-facing stationary truck, and a west-facing parked four wheel drive. One person was seriously injured, one person was moderately injured, and two people experienced minor injuries. Speed was nominated as a contributing factor to the crash, noting that the posted speed limit at this location is 50 km/h.

No crashes involving pedestrians were reported over the period under investigation.

2.4 Observed Traffic and Pedestrian Behaviour

A representative of GTA Consultants observed existing pedestrian and driver behaviour along Forbes Street on 13 and 14 December 2017. Two main pedestrian areas were identified during the survey, one being around the Trundle Central School and the other around the business area.

Trundle Central School Zone

On Wednesday 13 December 2017, traffic and pedestrian movements were observed near the Trundle Central School for 30 minutes at the start of the school day between approximately 8:40 am and 9:10 am. Over that time, it is estimated that the through vehicular traffic along Forbes Street was made up of approximately 70 per cent light vehicles and 30 per cent heavy vehicles, while all turning movements into and out of Croft Street with the exception of school buses were light vehicles. Some vehicles (both heavy and light vehicles) were observed to be travelling moderately in excess of the posted 40 km/h school zone speed limit.

On Forbes Street, traffic is a combination of local town-based traffic (residents of Trundle travelling around Trundle), local region traffic (residents of properties in the region travelling to and from Trundle and/or other properties in the region) and through traffic (vehicles which do not stop in Trundle and do not start or end their trip in the region). This traffic make-up is consistent with the function of Forbes Street (The Bogan Way) as a Regional Road.

During the morning before-school period in December 2017 (Figure2.2), 59 vehicles travelled on Forbes Street adjacent to the school (i.e. between Bamford Street and Croft Street) over a period of 30 minutes. Of those 59 vehicles, 22 vehicles turned into or out of Croft Street (suggesting that the driver started or ended their trip in Trundle) and 37 vehicles continued along Forbes Street. Some of those 37 vehicles would be assumed to start or end their trip in Trundle and some would be assumed to be "though" traffic. The contribution of through traffic to total traffic on Forbes Street would be expected to vary throughout the day and week.

Around school drop off and pick up times, there was some pedestrian movement across Forbes Street. However, the majority of children were either dropped off by private vehicle or by school bus. Consultation with the Principals of Trundle Central School and St Patricks Primary School indicated that only a limited number of students (approximately 15 students) walk across Forbes Street as the majority of students live on the western side of Forbes Street.

On Thursday 14 December 2017, a NSW Police officer was parked adjacent to the school zone on Forbes Street. Despite the school zone being in effect and the presence of a marked police car, some vehicles appeared to travel in excess of the speed limit and were visually cautioned by the NSW Police officer.

Business Area

The other main pedestrian area identified by GTA Consultants was associated with movement between the businesses and services located on Forbes Street centred around the intersection of Forbes Street and Parkes Street (Figure 2.2).

Some limited pedestrian activity was observed between the shops on opposite sides of Forbes Street, with an average of approximately one person crossing Forbes Street every few minutes. The highest numbers were observed during the early morning. The primary destinations for pedestrians were the general store on the western side and the newsagent on the eastern side. Pedestrians waiting to cross Forbes Street experience negligible delays as a result of passing traffic.

Some pedestrians indicated that if they need to cross the road, that they will generally drive to a parking spot on the opposite side of the road.

2.5 Community Consultation

GTA Consultants met with various community representatives to gain an appreciation of existing issues for pedestrians in Trundle and the surrounding roads. The community representatives included:

- various business owners on Forbes Street;
- the Principal of Trundle Central School;
- the Principal of St Patricks Primary school;
- a NSW Police officer;
- representatives of the Trundle Progress Association; and
- members of the general public.

Overwhelmingly, it appeared that the community representatives support the Project in principle, however, there were a number of issues raised regarding the potential impact of the increase in traffic to Forbes Street. Key issues and concerns identified by the community representatives included:

- concern about the volume of vehicles (particularly heavy vehicles) moving along Forbes Street;
- concern about the safety of people crossing the road in Trundle, particularly children and elderly pedestrians and users of mobility scooters;
- there is a poor sightline for school children crossing Forbes Street due to a crest in Forbes Street between East Street and Little Lane (Figure 2.2);
- the lack of a tapering of the speed limit entering Trundle, which changes from 100 km/h to 50 km/h (or 40 km/h during school zone hours) without warning or an intermediate speed limit for northbound vehicles into Trundle; and
- issues with adherence to speed limits, especially by heavy vehicles, particularly at the school zone.

Other issues raised outside the scope of this Pedestrian Access Review included:

- concern with the safety of stock crossing the road on roads outside of Trundle; and
- the perceived narrowness of roads between towns, particularly when passing heavy vehicles.

2.6 Summary of Existing Conditions

- The Bogan Way (including Forbes Street) is a Regional Road and is a RMS approved road train (Type 1 A-double and Modular B-triple [with conditions]) and B-double route.
- Vehicular traffic volumes are relatively low on Forbes Street, and do not result in any specific concerns regarding the capacity of the road or its intersections to accommodate the existing demands.
- Consistent with its function as Regional Road, Forbes Street accommodates the movement of "through" traffic that does not start or end its trip in Trundle. Some of the perceived "through" traffic would be intra-regional traffic with an origin or destination in the surrounding region, while some would be inter-regional traffic.
- RMS crash data over the period January 2012 to December 2017 reports:
  - no crashes involving pedestrians; and
  - one speed-related crash in the vicinity of the intersection of Forbes Street and Parkes Street.
- Two main pedestrian areas were identified during the survey, one being near the Trundle Central School and the other being in the business area.
- Although there is some pedestrian movement across Forbes Street before and after school, the majority of children are dropped off by private vehicle or by school bus.
- Limited pedestrian activity was observed between businesses and services located on Forbes Street centred around the intersection of Forbes Street and Parkes Street.
- There is poor sightline for school children crossing Forbes Street due to a crest in Forbes Street between East Street and Little Lane.
- The existing layout of Forbes Street tends to prioritise vehicle movements over pedestrian movements and the road width does not actively encourage drivers to slow their vehicle to the posted speed limit when driving through Trundle.
- There is a perceived speed limit compliance issue, and specifically, the entries to Trundle from The Bogan Way do not actively encourage drivers to reduce their vehicle speed by way of physical means or visual treatments.

Overall, the review found that the existing pedestrian and vehicular environment in Forbes Street is generally satisfactory, with no major issues which would require immediate upgrading to meet current standards. Some aspects of the pedestrian and vehicular environment could however be improved to mitigate the issues identified and described above.

3. Clean TeQ Sunrise Project Traffic

3.1 Background

Development Consent DA 374-11-00 for the Project was issued under Part 4 of the NSW *Environmental Planning and Assessment Act, 1979* in 2001.

The Project is a nickel cobalt scandium mining project and includes the establishment and operation of the following (Figure 2.1):

- mine (including the processing facility);
- limestone quarry;
- rail siding;
- gas pipeline;
- borefields and water pipeline; and
- associated transport activities and transport infrastructure (e.g. the Fifield Bypass, road and intersection upgrades).

Scandium21 Pty Ltd owns the rights to develop the Project. Scandium21 Pty Ltd is a wholly owned subsidiary of Clean TeQ.

In November 2017, Clean TeQ lodged a modification application to improve the overall efficiency of the Project (Modification 4). Modification 4 involves the implementation of a number of opportunities to improve the overall efficiency of the Project and would result in changes to Project traffic movements on the road network. A detailed description of Modification 4 is provided in the modification application.

The NSW Department of Planning and Environment is currently assessing the Modification 4 application.

3.2 Forecast Project Traffic Movements

Approved Project

The approved Project will generate traffic on the road network (including Forbes Street) as a result of the movement of employees, deliveries of raw materials, and transport of product. Forecast traffic movements for the approved Project are described in *Traffic Report Syerston Nickel Cobalt Project* (Masson Wilson Twiney, 2005). Table 3.3 summarises the forecast daily traffic for the approved Project in Trundle as outlined in Masson Wilson Twiney (2005).

Table 3.1: Approved Project Daily Traffic in Trundle (vehicles per day)

	Light Vehicles	Heavy Vehicles	Total Vehicles
Approved Project[A]	**188**	**34**	**222**
Employees	154	-	154
Limestone	-	-	-
Lime	-	-	-
Other	34	34	68

Source: Masson Wilson Twiney (2005)

Modified Project (Modification 4)

GTA Consultants (2017) prepared a Road Transport Assessment for Modification 4, which examines the implications of the modified Project on the operation of the road network. Table 3.2 summarises the forecast daily traffic for the modified Project in Trundle as outlined in GTA Consultants (2017).

Table 3.2: Modified Project Daily Traffic in Trundle (vehicles per day)

	Light Vehicles	Heavy Vehicles	Total Vehicles
Modified Project[B]	**256**	**90**	**346**
Employees	236	-	236
Limestone	-	72	72
Lime	-	8	8
Other	20	10	30

Source: GTA Consultants (2017)

The Road Transport Assessment adopted conservatively high forecasts of Project-generated traffic to assess the maximum case potential impacts of the Project on the road network. Based on these conservative forecasts, Modification 4 would result in the following key changes to traffic movements in Trundle compared with the approved Project (Table 3.1):

- Increased employee light vehicle movements (from 154 to 236 vehicles per day) due to conservative assumptions of the number of employees present per day and the level of car pooling being assumed for the modified Project compared with the approved Project, as well as variations in the assumed residential distribution of the workforce.
- Increased heavy vehicle movements (from 34 to 90 vehicles per day) due to the proposed transport of limestone and lime from external suppliers via the Bogan Way[1].

Employee traffic would tend to occur during the periods immediately prior to the start of a shift and after the end of a shift. With two 12-hour shifts expected, employee traffic would thus occur over two distinct peaks of half of the daily traffic occurring during the early morning 6.00 am to 7.00 am and half during the evening 6.00 pm to 7.00 pm. Employee traffic would not coincide with school peak periods. Materials transport would be permitted to occur throughout the day and night, although the majority would tend to occur during daylight hours. The heavy vehicle volume generated by the modified Project is equivalent to an average of under four heavy vehicles per hour on Forbes Street.

Modified Project (Modification 4) with Higher Capacity Vehicles

As described in Section 4.2.1 of the Road Transport Assessment, Clean TeQ was investigating the feasibility of operating shuttle bus services for employees to and from the Project. Based on this investigation, Clean TeQ has determined that it would operate shuttle buses to and from Parkes, Forbes and Condobolin to the mine. This initiative would significantly reduce Project light vehicles on Forbes Street.

[1] The number of vehicle movements associated with limestone transport assessed in the Road Transport Assessment relates to a scenario in which the maximum amount of limestone is transported from external suppliers to the mine (i.e. 560,000 tonnes per annum), and those vehicles travel through Trundle. If the maximum amount of limestone is transported from the Project limestone quarry, the amount from local quarries would be reduced below that assessed, and the number of limestone truck trips on Forbes Street would also be reduced.

Clean TeQ obtained Heavy Vehicle Authorisation Permit 119039 to operate higher capacity vehicles from Parkes to the mine in January 2018. Clean TeQ would therefore also use higher capacity vehicles to transport limestone to the mine than was assumed in the Road Transport Assessment. The use of higher capacity vehicles would reduce Project heavy vehicles on Forbes Street by approximately 20 heavy vehicle trips per day.

Table 3.3 summarises the forecast daily traffic for the modified Project in Trundle with use of employee shuttle buses and higher capacity trucks for limestone transport.

Table 3.3: Modified Project Daily Traffic in Trundle with Higher Capacity Vehicles (vehicles per day)

	Light Vehicles	Heavy Vehicles	Shuttle Buses	Total Vehicles
Modified Project – With Higher Capacity Vehicles	**70**	**70**	**6**	**146**
Employees	50	-	-	50
Employee Shuttle Buses	-	-	6	6
Limestone (with higher capacity trucks)	-	52	-	52
Lime	-	8	-	8
Other	20	10	-	30

With implementation of employee shuttle buses and the use of higher capacity vehicles to transport limestone, the modified Project would result in the following key changes to traffic movements in Trundle (Table 3.3) compared with the approved Project (Table 3.1):

- reduced employee light vehicle movements (from 154 to 50 vehicles per day);
- increased heavy vehicle movements (from 34 to 70 vehicles per day); and
- increased shuttle bus movements (from 0 to 6 vehicles per day).

The modified heavy vehicle movements (i.e. 70 vehicles per day) is equivalent to an average of approximately three heavy vehicles per hour on Forbes Street.

In addition to the above, it is understood that Clean TeQ is considering employing approximately one-third of the Project operational workforce (i.e. approximately 100 personnel) in a Regional Operations Centre in Parkes rather than working at the mine site (subject to separate approval). If this occurs, this would result in a significant reduction in the number of light vehicle trips through Trundle from that assessed by GTA Consultants (2017) (Table 3.2) and below that estimated with shuttle bus services (Table 3.3).

3.3 Traffic Management Plan

Condition 45, Schedule 3 of Development Consent DA 374-11-00 requires that a Traffic Management Plan be developed for the Project, which includes:

- details of all transport routes and traffic types to be used for development-related traffic;
- a program to monitor and report on the amount of limestone and product transported;
- the measures that would be implemented to minimise traffic safety issues and disruption to local users of the transport route/s;
- and a Road Transport Protocol for all drivers transporting materials to and from the site with measures to:
  - ensure drivers adhere to the designated transport routes;
  - verify that these heavy vehicles are completely covered whilst in transit;

- co-ordinate the staggering of heavy vehicle departures to minimise impacts on the road network, where practicable;
- minimise disruption to school bus timetables and rail services;
- ensure travelling stock access and right of way to the adjacent travelling stock route;
- maintain radio communications between all school buses and heavy vehicle operators operating on the transport route between the rail siding and mine;
- manage worker fatigue during trips to and from the site;
- manage appropriate driver behaviour including adherence to speed limits, safe overtaking and maintaining appropriate distances between vehicles (i.e. a Driver Code of Conduct);
- inform drivers of relevant drug and alcohol policies;
- regularly inspect vehicles maintenance and safety records;
- implement contingency procedures when the transport route is disrupted;
- respond to emergencies;
- transport processing reagents safely; and
- ensure compliance with and enforcement of the protocol.

The Road Transport Assessment for the modified Project (GTA Consultants, 2017) recommends that a Traffic Management Plan be prepared for the modified Project. This would include appropriate consideration of protocols for vehicles travelling through Forbes Street at Trundle.

3.4 Potential Impacts of the Modified Project on Forbes Street Environment

The modified Project would result in increased numbers of light and heavy vehicles on Forbes Street as described above. The light vehicle traffic would generally occur at the shift change-over times, with the morning peak occurring prior to the school peaks, and the evening peak occurring later than the school peaks. Outside of the times during which employees travel to and from the modified Project, the number of light vehicle trips generated by the Project would be very low. Heavy vehicle traffic would be spread throughout the day, with an average of under four heavy vehicles per hour on Forbes Street generated by the modified Project assuming no use of higher capacity vehicles. If higher capacity vehicles are used, the average would reduce to three heavy vehicles per hour on Forbes Street. Heavy vehicle driver behaviour would be managed via the Traffic Management Plan and Road Transport Protocol required as conditions of the Project approval.

Considering the forecast modified Project traffic in the context of the review of the existing pedestrian and vehicular environment in Forbes Street, it is considered unlikely that a significant deterioration in the safety of that environment would result with the modified Project. As for the existing conditions, no major issues are anticipated which would require immediate upgrading to meet current standards. Some aspects of the pedestrian and vehicular environment could however be improved to mitigate the existing issues identified and described previously (Section 2.6). Options for such improvements and the principles underlying them are discussed in Section 4.

4. Potential Management Options

4.1 Management Principles for Trundle

Based on the Austroads *Guide to Traffic Management Part 7: Traffic Management in Activity Centres* (2015) Forbes Street at Trundle would be classified as a mixed function centre with through traffic, consistent with a "Type II corridor" where both traffic and frontage activities are important. The relative importance of the activities may change during the day, week or year. The traffic functions include local and through vehicular traffic and pedestrian traffic, on-street parking and delivery, and parking manoeuvres. The frontage activity functions include the retail shops, schools, services and special buildings which attract people and their vehicles to the centre.

Austroads (2015) identifies the following key traffic management objectives and elements for an activity centre with through traffic such as Trundle:

- sharing the main street;
- moderating traffic speeds;
- providing priority to on-road public transport (where relevant); and
- maintaining adequate traffic capacity.

Traffic service expectations tend to be lower through activity centres, meaning that lower speeds and some delays are expected and accepted by drivers, and can be used as management tools. At lower speeds, lane widths can be reduced, noting that in Trundle, lane widths are not constrained but need to allow for heavy vehicles to safely pass each other travelling in opposite directions. A single travel lane in each direction will provide adequate capacity for the traffic volumes expected along Forbes Street, and observations suggest that auxiliary turn lanes are not required at the intersections along Forbes Street for capacity reasons or to reduce delays to through vehicles.

While existing and forecast traffic and pedestrian volumes are relatively low and do not require consideration of road or intersection capacity, adaption of the environment to encourage appropriate vehicle speeds would better serve pedestrians and other frontage activity in Forbes Street.

4.2 Speed Environment

The fundamental principle in setting the speed limit for a road is that the speed limit should reflect the safety risk to the road users while maintaining mobility and amenity. RMS is responsible for reviewing and setting speed limits on all roads in NSW. The default speed limits in urban built-up areas in NSW is 50 km/h, and 100 km/h in rural non built-up areas. The speed limit for a school zone in NSW is 40 km/h during the before and after school periods. The posted speed limits on The Bogan Way and Forbes Street are therefore consistent with RMS standards and drivers' expectations.

Buffer or transition zones, where a gradual reduction in speed limit is imposed (such as an 80 km/h speed limit between a 100 km/h rural limit and a 50 km/h urban limit) are not recommended in NSW. The use of an intermediate speed limit may be considered by RMS where adjacent roadside development supports the intermediate speed limit. The adjacent roadside development leading into Trundle (northbound or southbound) is not likely to support an intermediate speed limit between the 100 km/h rural speed limit and the 50 km/h urban speed limit.

The speed restriction ahead sign (G9-79) (Figure 4.1) is used by RMS to provide advance warning of changes in speed limits, notably where there is a speed reduction of 30 km/h or more. There are currently no speed restriction ahead signs to the north or south of Trundle. The use of speed restriction ahead signs is considered appropriate to alert both northbound and southbound drivers on The Bogan Way prior to entering Trundle.

Figure 4.1: Speed Restriction Ahead Sign

Awareness of posted speed limits may be enhanced by installation of radar speed signs (on either a temporary or permanent basis). These signs detect the speed of approaching vehicles, and display an alert if the posted speed limit is exceeded. Such speed signs are more regularly used in circumstances such as road works, however, the use of such technology can also be used in problematic area of speed limit compliance.

4.3 Pedestrian Facilities

Creating crossing points on Forbes Street will concentrate the movement of pedestrians to selected locations where facilities exist to improve the safety and amenity of the environment and accessibility for pedestrians. Any treatments need to effectively manage conflicts between vehicles and pedestrians, and be readily identifiable by all road users as a crossing point.

The potential conflict between pedestrians and vehicles can typically be managed by means of:

- time separation, including marked footcrossing (zebra crossings), raised marked footcrossings (wombat crossings), children's crossings, mid-block traffic signals, pelican crossings, signalised intersection crossings;
- spatial separation, including pedestrian refuges, traffic islands, medians, kerb extensions, pedestrian fencing, chicanes;
- grade separation, including subways and bridges; and/or

- advance warning of the presence of pedestrian and pedestrian facilities ahead, including user-activated warning signs, similar to those which have been piloted[2] in the Cootamundra region.

The choice of facility will be dependent on a number of factors, the first of which is the demand. Infrequently used facilities come to be ignored, hence RMS publishes warrants for pedestrian and vehicular volumes which need to be met before provision of time separation facilities will be considered. The observed pedestrian volumes across Forbes Street, observed traffic volumes along Forbes Street and surveyed traffic volumes on The Bogan Way north of Trundle are well below the levels required to meet the standard warrants for installation of a zebra crossing or children's crossing, and well below the special warrant levels which may be used to consider installation of a zebra crossing in special circumstances. The additional traffic forecast to travel along Forbes Street with the approved Project (Table 3.1) or modified Project (Table 3.2) would not be sufficient to increase demands to a point where the requirements of the warrants would be met.

Similarly, grade separation of pedestrians and vehicles would not be justified by the observed vehicle and pedestrian volumes, and would not be practical for a main street such as Forbes Street.

Spatial separation of pedestrians and vehicles is considered the most appropriate treatment in a rural activity centre which includes through traffic such as Trundle. Appropriate spatial separation treatments for Trundle may include pedestrian refuges, traffic islands, medians, and kerb extensions. Pedestrian fencing is not considered appropriate on Forbes Street, and chicanes are not considered appropriate due to the need to permit access by heavy vehicles.

4.3.1 Medians and Refuge Islands

Due to the width available in Trundle, wide medians or pedestrian refuges may be used along Forbes Street to provide "shelter" for pedestrians, and visually reduce the width of the carriageway to encourage lower vehicle speeds. Landscaping or pocket park treatments may be incorporated into such treatments. Median islands and pedestrian refuges often result in some loss of on-street parking due to the need to divert traffic lanes around the island, and the need for "no stopping" restrictions typical of pedestrian crossing locations. Due to the layout of Forbes Street, significant loss of on-street parking may not necessarily be required, due to the availability of the clear zones on each side of the traffic lanes, and the ability to restrict access to some parking bays from the main road and permit access from the service lane. The Trundle Progress Association developed an option for an oversize median island/pedestrian refuge treatment for Forbes Street, which is presented in Appendix A.

While space is available for such a treatment, or other median or centre refuge treatments, consultation with the community suggests that while some members of the community were in support of this concept, others did not support it due to the impact on the streetscape of the iconic wide main street.

[2] https://www.cootamundraherald.com.au/story/3453750/cyclists-light-up/, accessed 19 December 2017 (See 0)

4.3.2 Kerb Extensions

Kerb extensions provide shelter for pedestrians adjacent to the travel lanes, reduce their exposure to moving traffic, may improve visibility of pedestrians, and visually reduce the width of the street for drivers. They thus improve pedestrian safety and reduce vehicle speeds (Austroads, 2016). They can be used in conjunction with refuges or median islands, but also as a standalone facility. Kerb extensions would still require pedestrians to cross two lanes of traffic in one movement, but allows them to wait close to the edge of the travel lanes. They are likely to be less intrusive to the wide streetscape of Forbes Street. Installation of kerb extensions is generally likely to result in some localised loss of on-street parking, and the adequacy of street lighting should be considered. Typical examples of kerb extensions are presented in Appendix B.

Due to the layout of Forbes Street, with service lanes, angle parking, clear zones and travel lanes, kerb extensions would need to be installed in a modified format, to allow pedestrians to cross the service lanes, then be sheltered across the width of the parking and clear zones. The kerb extension would thus effectively form an island between the main carriageway lanes and the service lanes, and be constructed with a raised surface, requiring kerb ramps on the island and footpath to provide an accessible path of travel for all users. If desired, the pedestrian path across Forbes Street at the crossing point may be highlighted by use of a contrasting pavement surface, giving an additional visual cue to drivers of the presence of pedestrians.

4.3.3 Pedestrian-Activated Warnings

While this is not a current standard treatment, the concept of user-activated warning signs has been trialled for cyclists (Appendix C) and may be adapted for use by pedestrians by way of flashing lights combined with the standard pedestrian (W6-1) sign. The design of such a system would need to be developed with consideration of the specific needs of the location, to determine how the warning lights would be activated and where the lights would be appropriately located. Unless installed at a marked pedestrian crossing, any such system should not suggest to pedestrians that they have right of way over vehicles.

4.4 Threshold Treatments

Threshold treatments aim to alert approaching drivers that they are entering an environment that is different from the one they have just left, and may incorporate contrasting colour or textured road surface treatments, raised or flush median treatments, and signage and "statement" landscaping as a visual cue to the new road environment. Textured pavement surfaces at an entry threshold may also provide an auditory cue to drivers, however may not be appropriate with heavy loadings such as on major rural roads, and may create stability issues for motorcyclists and cyclists.

In rural towns, an entry threshold often incorporates a town entry statement, with Shire branding or local features highlighted. Austroads (2016) suggests a threshold pavement treatment should extend for a minimum of 5 m to create adequate visual impact. Coloured pavement thresholds used in conjunction with speed signage can assist to reduce vehicle speeds (Center for Transportation Research and Education, 2007).

Examples of typical threshold treatments in rural environments are presented in Appendix D.

4.5 Traffic Bypass of Trundle

Community representatives raised the idea of Project heavy vehicles using a bypass route to avoid travelling through Trundle:

- a regional bypass via Fifield Road, Condobolin Road, Condobolin-Trundle Road to The Bogan Way; or
- a local bypass around the eastern side of Trundle from The Bogan Way via Numulla Road, Bruie Plains Road and Ravenswood Lane to The Bogan Way.

These routes are unclassified local roads, with the exception of Fifield Road, that include unsealed sections with sub-standard intersection layouts. These local roads are not designed for heavy vehicle transport movements and significant road upgrades would be required to carry heavy vehicles.

Use of the regional bypass route would not impact the use of Forbes Street by non-Project heavy vehicles, which would continue to use The Bogan Way. The local bypass route may be used by all heavy vehicles using The Bogan Way which do not have need to stop in Trundle, which would result in significant proportional increases in traffic along that route, with adverse impacts for users of these roads and its residents.

The adoption of either of the proposed bypasses would result in the diversion of heavy vehicle traffic from an existing Regional Road that functions as a regional connector road to local roads that are principally for local access and currently do not experience any significant traffic volumes. Use of the Regional Road by the heavy vehicles is consistent with Parkes Shire Council's submission in response to the Modification 4 application, which requests that the transport of materials use the National, State, Regional and then local roads in order of priority.

In addition, an economic evaluation of town bypasses (NSW Roads and Traffic Authority, 2012) used Gunning as an example of a small town which is broadly similar in its composition and structure to Trundle. The study concluded that "*small towns (less than 2,500 persons) were shown to be more at risk of adverse economic impacts than medium or larger size towns.*"

Overall it is considered that the existing and forecast heavy vehicle volumes on Forbes Street would not justify construction of a bypass route.

5. Recommendations

After consultation with the community, it is clear that there are a range of views of the impacts of traffic on the town of Trundle that would result from the modified Project. There is a need to retain the iconic streetscape, but appropriately manage the existing and future traffic conditions. This is particularly relevant to the elderly population and school students.

The review has found that no major issues are anticipated for the pedestrian and vehicular traffic environment of Forbes Street as a result of the Project that would require immediate upgrading to meet current standards. Some aspects of the pedestrian and vehicular environment could however be improved to mitigate the existing issues identified and described previously.

5.1 Recommended Treatments

Although median island or central pedestrian refuge treatments would improve conditions for pedestrians by allowing for staged crossing of Forbes Street, these treatments are not preferred for Forbes Street due to the impacts on the iconic streetscape.

A kerb extension treatment would improve existing conditions for pedestrians, and is the preferred treatment as the impact on the streetscape would be less significant. Kerb extension treatments will potentially result in some loss of on-street parking, however observations indicate that there is adequate capacity to accommodate a small loss.

Any kerb extensions should be designed and located with consideration of the relocation of street trees proposed under the Parkes Shire Council's Trundle Main Street Avenue of Remembrance Tree Replacement Proposal.

Kerb extensions can be supplemented by road markings, warning signs and potentially the installation of rumble strips, although the latter would need to consider the potential for noise impacts to residents and businesses. Subject to further discussion with the community, Parkes Shire Council and RMS, the suggested location for a kerb extension would be near the northern end of the Trundle Hotel, in line with 61/63 Forbes Street (Figure 5.1). This links the relevant businesses in Trundle, but is set back adequately from the major intersection with Parkes Street. The kerb treatment would be modified to suit the conditions of Forbes Street, effectively forming an island between the edge of the service lane and the edge of the carriageway (across the angle parking), with kerb ramps on the footpath, and each side of the island/extension. Minor loss of parking is anticipated.

It is also recommended that a kerb extension treatment be considered on Forbes Street south of Parkes Street, to serve not only general pedestrian activity but also to assist those school students who need to cross Forbes Street (Figure 5.1). A treatment close to the school would make use of the narrower carriageway and good sightlines near Croft Street, while a treatment close to Little Lane may assist to slow vehicles in the vicinity of the crest, and thus mitigate the sight distance concerns. Either option would thus result in some improvement for pedestrians, however on balance, provision of a defined pedestrian route near the school and within the 40 km/h school speed zone is considered the preferred location. As there are grassed verges on each side of Forbes Street, the kerb extension would need to be modified from a standard design, and may therefore be constructed by providing sealed footpaths directed towards the carriageway, with kerb ramps on each side. This provides a clear cue to students that this is the preferred crossing location, which would be located between East Street and Croft Street.

It is recommended that consideration be given to installing threshold treatment at the entries to the built-up area of Trundle (Figure 5.1). The purpose of these treatments would be to announce the entry into Trundle and act as a visual reminder to all drivers that they have left the high-speed rural environment and are entering the low-speed urban environment. The form of such an entry should ultimately be decided by the Trundle community. The threshold treatments may incorporate contrasting pavement surfaces, lighting and landscaping, and location branding.

The installation of speed reduction warning signs on The Bogan Way to alert drivers to the reduction in the posted speed limit is recommended (Figure 5.1). These should be placed in accordance with RMS guidelines, i.e., between 110 m and 170 m from the speed zone change for vehicles travelling in a 100 km/h speed zone.

5.2 Operational Review

The management of potential road transport impacts would be managed in accordance with the Traffic Management Plan (Section 3.3).

It is recommended that the Traffic Management Plan include an audit of heavy vehicle movements on Forbes Street and for Clean TeQ to consult with the Trundle community regarding the traffic and pedestrian environment impacts within 12 months of commencement of operations at the Project. Such consultation would aim to identify any unforeseen issues which may have arisen, and the need for any further management or monitoring of heavy vehicles through Trundle. Further management measures may include (but are not limited to):

- a restriction on Project heavy vehicles on Forbes Street during school speed zone periods;
- temporary or permanent installation of radar speed signs which detect the speed of approaching vehicles, and display an alert if the posted speed limit is exceeded; and/or
- pedestrian-activated flashing signage at crossing points. The concept of user-activated warning signs has been trialled (Appendix C) and may be adapted to pedestrians in Trundle by way of flashing lights combined with the standard pedestrian (W6-1) sign.

LEGEND

Posted Speed Limits

- 100 km/h
- 50 km/h
- 40 km/h School Zone
- School Pedestrian Crossing
- Proposed KerbTreatment
- Proposed Threshold Treatment
- Proposed Speed Reduction Warning Sign

Source: NSW Land and Property Information (2017)
NSW Image: © Department of Finance, Services & Innovation (2017)

CLEAN TEQ SUNRISE PROJECT

Recommended Treatments

Figure 5.1

CTL-16-02 Mod4_PedRev_203B

6. Summary

Overall, the review found that the existing pedestrian and vehicular environment in Forbes Street is generally satisfactory, with no major issues which would require immediate upgrading to meet current standards. Some aspects of the pedestrian and vehicular environment could however be improved to mitigate the issues identified and described in this report.

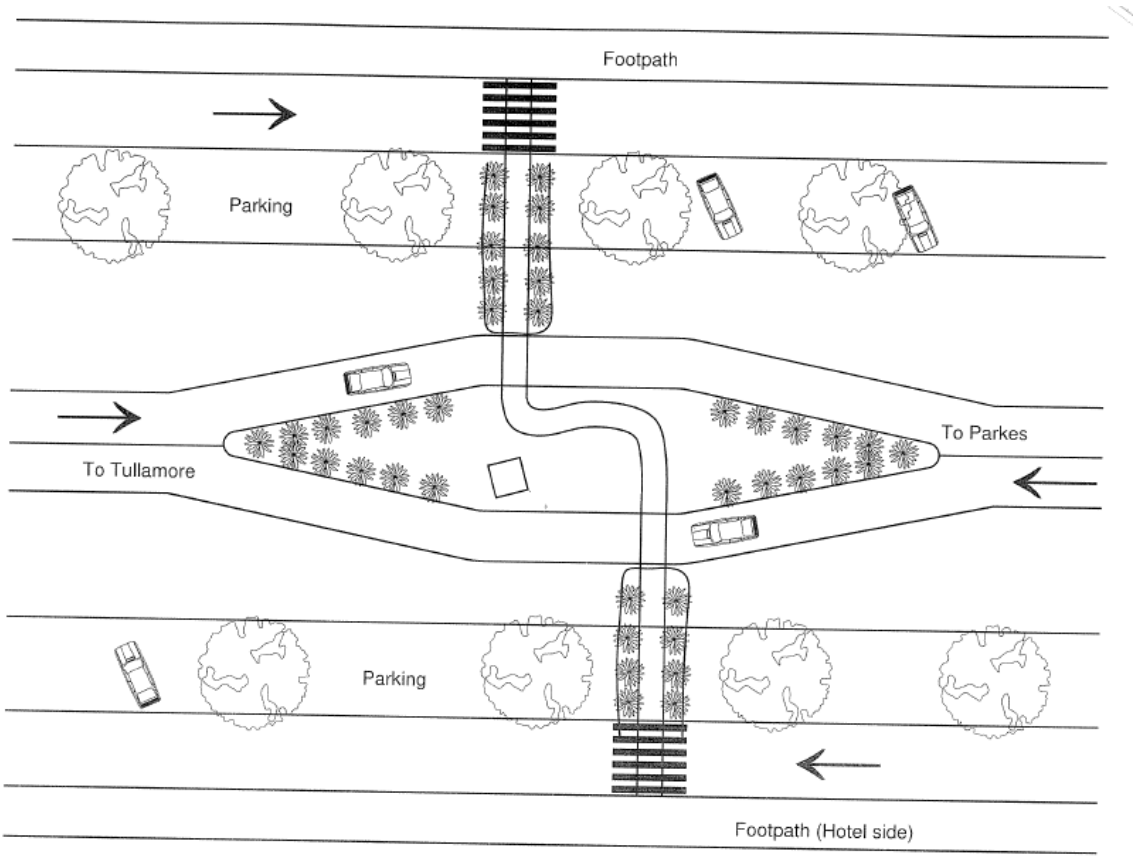
Considering the forecast modified Project traffic in the context of the review of the existing pedestrian and vehicular environment in Forbes Street, it is considered unlikely that a significant deterioration in the safety of that environment would result with the modified Project. No major issues are therefore anticipated which would require immediate upgrading to meet current standards.

As for the existing conditions, some aspects of the pedestrian and vehicular environment could however be improved to mitigate the existing issues identified and described in this report. The recommended treatments are:

- a modified kerb extension treatment near 61/63 Forbes Street;
- a modified kerb extension treatment between Croft Street and East Street;
- threshold treatments at the northern and southern entries to Trundle;
- speed reduction warning signs on the northern and southern approaches to Trundle; and
- audit of heavy vehicles and consultation with the Trundle community within 12 months of commencement of operations at the Project.

Appendix A

Trundle Progress Association Oversize Median Proposal



Appendix B

Kerb Extension Examples

City of Yarra, Victoria

City of Glenorchy, Tasmania

Source: Austroads (2016)

Source: http://www.victoriawalks.org.au/crossings/ accessed 12 January 2018

Source: http://engage.burnside.sa.gov.au/eastwood-local-area-traffic-management-latm/news_feed/treatment-options-include accessed 12 January 2018

Appendix C

User-Activated Warning Sign

From https://www.cootamundraherald.com.au/story/3453750/cyclists-light-up/, accessed 21 December 2017

CYCLISTS LIGHT UP

INNOVATION: Rod Holder demonstrates the new bicycle safety warning sign he has produced, and hopes to soon see around Cootamundra Shire. Picture: Harrison Vesey

ROD Holder is breaking new ground in cyclist safety with what may be a world-first innovation.

The keen cyclist has been working for 12 months on his idea for a user-activated warning sign.

“The main complaint motorists have is when they’re coming over a hill or around a corner and a cyclist is right there, it shocks them,” Rod said.

The solar-powered warning signs are similar to those in place around school zones. Rather than running during set hours though, they are activated by a cyclist who hits the trigger as they ride past.

The warning lights can be set to flash for a set amount of time, depending on how long it takes the average cyclist to navigate that section.

Rod's dream is for the signs to be placed in hazardous sections of road around the shire.

"Cootamundra is a cyclist-friendly town, I want to see what we can do to make it even more friendly and safe."

Whilst he is hesitant to call it a world first, Rod has not come across any similar designs in his research or in conversations with other cyclists around the country.

The first signs have been set up on either end of Berthong Rd for a six-month trial period, thanks to the support of Cootamundra Shire Council (CSC).

CSC Engineering Services director Gary Arthur said the council was happy to support the local initiative.

"It sounds like a good idea. It may not be used everywhere, but it could be a good thing for hill areas and dangerous corners," he said.

The council is now monitoring the signs to "see what happens" and decide whether the design has a place.

Cootamundra Cycle Club president Mark Loiterton agrees it is a "brilliant" proposal.

"I'm fully in agreement with the whole thing, it's got to be a great idea from a safety perspective," he said.

Berthong Rd was selected for the trial due to its popularity with local cyclists. The road is also heavily used by trucks during harvest.

The signs light up for 25 minutes after being turned on, and the timer resets if another cyclist hits the trigger.

Rod is now urging all local cyclists to use the signs so he can keep track of their usage and report back to council.

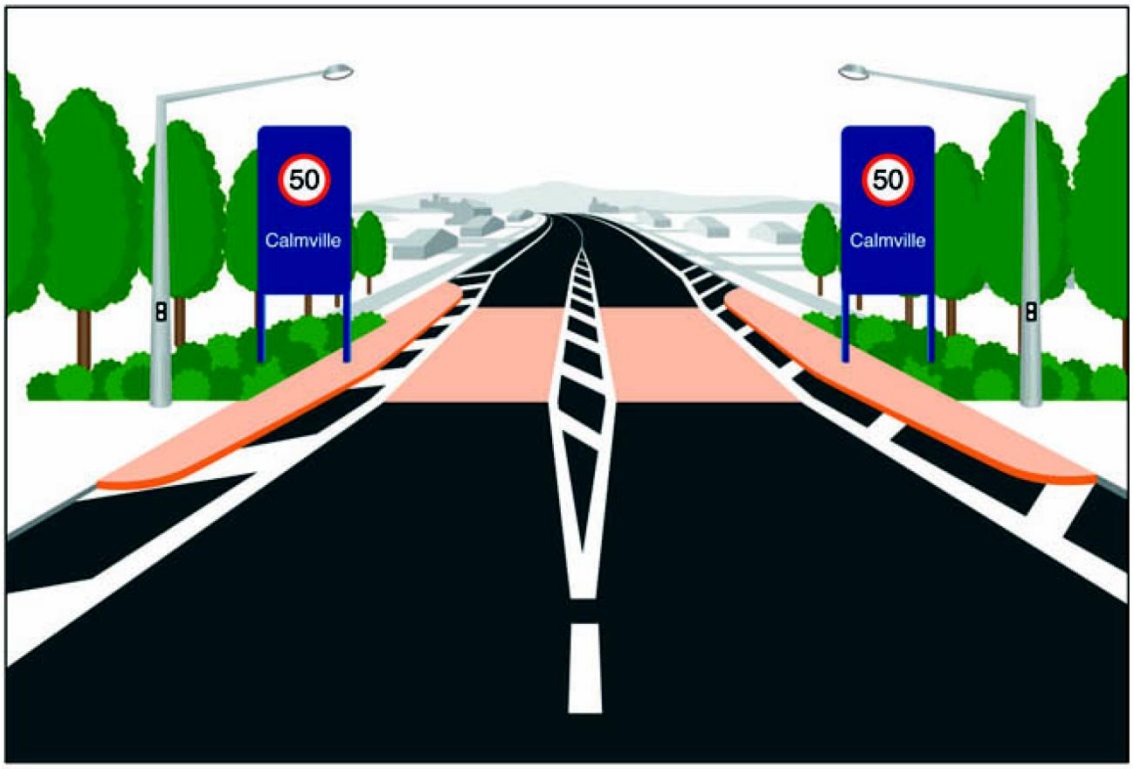
Rod estimates ten signs would be enough for shire roads.

He is currently in talks with Roads and Maritime Sevices regarding the possibility of signs on Gundagai Rd.

For any feedback, positive or negative, is welcome at rod.holder@agland.com.au.

Appendix D

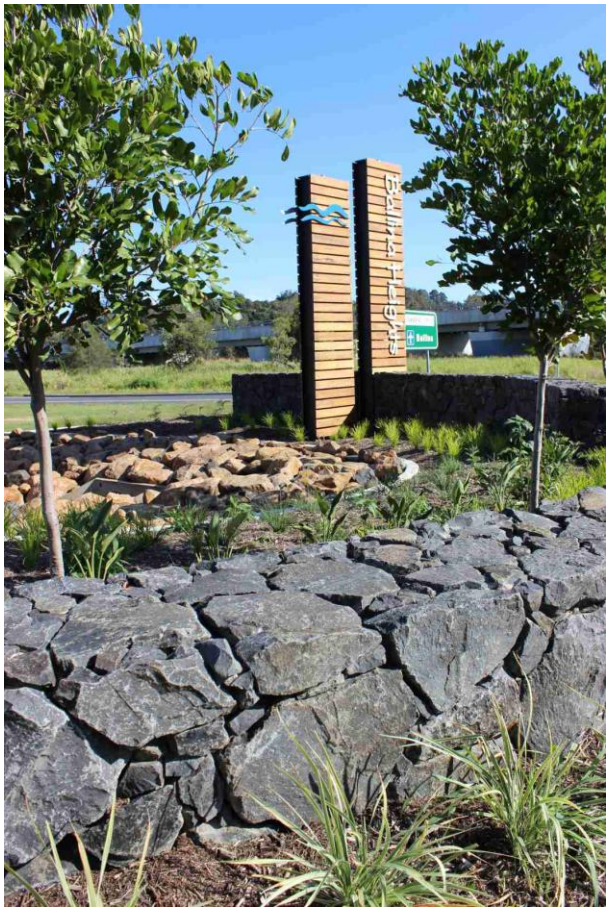
Entry Threshold Examples



Source: *Guidelines for urban-rural speed thresholds,* Land Transport Safety Authority (2002)


MURRURUNDI


WELCOME
TOWN OF
PARADISE VALLEY



Source http://www.designteamink.com/ballina-heights-drive-landscaping-and-entry-treatment/ accessed 21 December 2017

Source: http://static.panoramio.com/photos/large/50156146.jpg, accessed 21 December 2017

Source: https://www.google.com.au/maps/@-35.3428802,150.4655385,3a,75y,126.09h,92.53t/data=!3m6!1e1!3m4!1sO-u4HyCpOBcEQmR8GEO6Zg!2e0!7i13312!8i6656, accessed 21 December 2017

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ATTACHMENT 4
SUPPLEMENTARY ROAD NOISE ASSESSMENT

RENZO TONIN & ASSOCIATES
inspired to achieve

Acoustics
Vibration
Structural Dynamics

14 February 2018

TJ345-04F01 (r1) Supplementary Road Traffic Noise Assessment.docx

John Hanrahan
Clean TEQ Holdings Limited
Approvals Lead - Clean TeQ Sunrise Project

Clean TeQ Sunrise Project Modification 4 - Supplementary Road Traffic Noise Assessment

Introduction

Renzo Tonin & Associates (2017) prepared a Noise and Blasting Assessment for the Clean TeQ Sunrise Project (the Project) Modification 4. The Noise and Blasting Assessment included an assessment of potential road traffic noise impacts in the vicinity of the Project (including The Bogan Way) in accordance with the 'NSW Road Noise Policy' (RNP) (Department of Environment, Climate Change and Water, 2011).

Renzo Tonin & Associates was engaged by Clean TeQ Holdings Limited (Clean TeQ) to prepare a supplementary road traffic noise assessment to clarify the potential road traffic noise impacts within Trundle (The Bogan Way or Forbes Street).

Road Traffic Noise Criteria

Potential road traffic noise impacts in New South Wales are assessed in accordance with the RNP. The RNP sets out criteria to be applied to particular types of road and land uses. These noise criteria are to be applied when assessing potential noise impacts and determining mitigation measures for sensitive receivers that are potentially affected by road traffic noise associated with the construction and operation of the subject site, with the aim of preserving the amenity appropriate to the land use.

Table 1 sets out the relevant road noise assessment criteria for residences within Trundle.

Table 1 – Road Traffic Noise Assessment Criteria for Residential Land Uses

Road Category	Type of Project/Land Use	Assessment Criteria, dB(A)	
		Day 7:00 am – 10:00 pm	Night 10:00 pm – 7:00 am
Freeway/arterial/sub-arterial roads	Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments	$L_{Aeq,15\ hour}$ 60 (external)	$L_{Aeq\ 9\ hour}$ 55 (external)

dB(A) = A-weighted decibels. L_{Aeq} = Equivalent noise level over a period of time.
After: Department of Environment, Climate Change and Water (2011).

As described in the RNP, in assessing feasible and reasonable mitigation measures, an increase of up to 2 decibels (dB) represents a minor impact that is considered barely perceptible to the average person.

For existing residences and other sensitive land uses affected by *additional traffic on existing roads generated by land use developments*, any increase in the total traffic noise level should be limited to 2 dB above that of the corresponding 'no build option'.

Road Traffic Noise Assessment

Road Traffic Volumes

The road traffic noise component of the Modification 4 Noise and Blasting Assessment was based on the traffic forecasts for 2027 provided by GTA Consultants based on the Modification 4 Road Transport Assessment (GTA Consultants, 2017).

GTA Consultants (2018) prepared a 'Pedestrian Access Review Forbes Street Trundle' that confirmed that the traffic forecasts for The Bogan Way in the Modification 4 Road Transport Assessment (GTA Consultants, 2017) are relevant to the section of The Bogan Way (or Forbes Street) in Trundle.

Table 2 presents the year 2027 day (7:00 am to 10:00 pm) and night (10:00 pm to 7:00 am) total traffic (i.e. Project and non-Project traffic) for the approved and modified Project on The Bogan Way / Forbes Street in Trundle, including a breakdown of light and heavy vehicles.

Table 2 – Total Traffic Volumes in Trundle (Forbes Street)

Road	Total Traffic (vehicles per day)					
	Day (7:00 am – 10:00 pm)			Night (10:00 pm - 7:00 am)		
	Light	Heavy	Total	Light	Heavy	Total
Modified Project (Year 2027)						
The Bogan Way / Forbes Street	473	135	608	138	40	178
Approved Project (Year 2027)						
The Bogan Way / Forbes Street	420	92	512	123	27	150

It is understood that Clean TeQ has determined that it would operate shuttle buses between Parkes and Forbes and the mine, which would significantly reduce Project light vehicles on Forbes Street. In addition, Clean TeQ would operate higher capacity vehicles to transport limestone to the mine. The use of higher capacity vehicles would reduce Project heavy vehicles on Forbes Street by approximately 20 heavy vehicle trips per day.

Receiver Locations

A review of the receiver locations in Trundle was undertaken to identify the receiver closest to the road carriageway. The receiver on the corner of The Bogan Way (Forbes Street) and Bamford Street was the closest to the road corridor at an estimated 22 metres (m) from the road carriageway (Figure 1).

Predicted Road Traffic Noise

Based on the predicted traffic volumes in Table 2, predicted traffic noise levels for the nearest receiver (located 22 m) from the edge of the carriageway (Figure 1), are reproduced in Table 3 below.

Table 3 – Predicted Day $L_{Aeq, 15hour}$ and Night $L_{Aeq, 9hour}$ Traffic Noise Levels

Road	Distance to Nearest Receiver (m)	Day $L_{Aeq, 15hour}$ (dB[A]) (7:00 am – 10:00 pm)			Night $L_{Aeq, 9hour}$ (dB[A]) (10:00 pm - 7:00 am)		
		Total Traffic	Approved Traffic	Difference	Total Traffic	Approved Traffic	Difference
The Bogan Way / Forbes Street	22	56	54	1.2	53	51	1.2

Predicted traffic noise levels for the nearest receiver along The Bogan Way (Forbes Street) were within the RNP criteria of $L_{Aeq, 15hour}$ of 60 dB(A) for day time and $L_{Aeq, 9hour}$ of 55 db(A) for night time. The relative increase in traffic noise with the Project was also within the acceptable criterion of 2 dB(A).

The predicted traffic noise levels for the nearest receiver along The Bogan Way (Forbes Street) (Table 3) would be lower with the implementation of the shuttle buses and higher capacity vehicles to transport limestone to the mine.

Source: NSW Land and Property Information (2017)
NSW Image: © Department of Finance, Services & Innovation (2017)

CLEAN TEQ SUNRISE PROJECT

Location of Nearest Receiver

Figure 1

CTL-16-02 Mod4_SRTNA_201A

Conclusion

The predicted road traffic noise impacts for the receiver closest to the road carriageway in Trundle (i.e. the maximum case impact) were found to comply with the RNP criteria.

The predicted traffic noise levels for the nearest receiver along The Bogan Way (Forbes Street) (Table 3) would be lower with the implementation of the shuttle buses and higher capacity vehicles to transport limestone to the mine.

Regards,

William Chan
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References

Department of Environment, Climate Change and Water (2011) 'NSW Road Noise Policy'.

GTA Consultants (2017) 'Syerston Project Modification 4 Road Transport Assessment'.

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