CLEAN TEQ

SUNRISE

Independent Planning Commission Briefing

11 October 2018

Clean TeQ & Project Overview

CLEAN TEQ SUNRISE

Clean TeQ Overview

Representative	Experience
Sam Riggall (Chief Executive Officer)	• Sam Riggall is a graduate in law and economics from Melbourne University and has an MBA from Melbourne Business School. Sam worked for over a decade in a variety of roles in the Rio Tinto Group, covering project generation and evaluation, business development and capital market transactions. While at Ivanhoe Mines, Sam was responsible for securing the agreement to develop the Oyu Tolgoi copper / gold mine in Mongolia and led Ivanhoe's other global business development opportunities.
Tim Kindred (Project and Start-Up Director)	• Tim Kindred holds a Bachelor of Chemical Engineering from the University of Melbourne and Graduate Certificate in Management. During his 30 years in the mining industry, Tim has held senior positions across project management, construction, commissioning and ramp-up of development projects, with a strong background in development and operations of pressure-acid-leach (PAL) nickel projects. Tim has worked in PAL operations in Africa, North America and Australasia.
Justine Fisher (GM Government, External Relations & Community)	• Justine Fisher holds a Bachelor of Arts (Hons) from the University of Sydney. Prior to joining Clean TeQ, Justine managed community and external relations at CMOC-Northparkes mines near Parkes, which is well-known for its social licence to operate. Justine has worked in the NSW mining industry for the majority of her career, with seven years at Ernst & Young where she led the Oceania marketing function.
John Hanrahan (Environment and Approvals Lead)	• John Hanrahan holds a Bachelor of Engineering (Chemical) degree from the University of Queensland. He is the Environment and Approvals Lead for the Sunrise Project and has more than 20 years direct experience in the mining and environmental industries. John is also a member of the Australian Institute of Mining and Metallurgy (AusIMM), Engineers Australia and the Australian Land and Groundwater Association.

Clean TeQ Overview

Our vision is to empower the clean revolution

- Produce metals that are highly geared to disruptive changes in technologies and markets, particularly in global energy and transport.
- Deliver water purification solutions for the world's most challenging water treatment problems.

A 'Mine of the future' nickel-cobalt-scandium project

Innovative, low cost waste water treatment solutions

Clean-iX® ION EXCHANGE TECHNOLOGY

Clean TeQ has the capability to extract and process the raw materials located in Central West NSW needed for lithium-ion batteries to power electric vehicles. With our proprietary technologies and an outstanding cobalt and nickel deposit, we are ready to produce the materials needed by society for a cleaner future.

Clean TeQ Overview

- **Australian company** based in Melbourne and listed on the Australian (ASX200) and Toronto Stock Exchanges with a 25 plus year history.

- Experienced and **highly credible** Board and Management team.

- Focused on products to support the renewables and energy storage sectors – cobalt sulphate and nickel sulphate for batteries and scandium for a new generation of lightweight alloys.

- Established partnerships to support the Clean TeQ Sunrise value chain:
  - Global institutional investor support for development of Clean TeQ Sunrise – AustralianSuper and Fidelity are substantial shareholders
  - Significant investment and offtake support for the Project from China and elsewhere

- The project approvals process is important for project financing.

Project Overview

- **1980s and 90s** – various owners explored, drilled and studied the Project area, primarily focused on platinum, nickel and cobalt
- **1999** – Black Range Minerals acquired the Project, completed a Feasibility Study and submitted an EIS
- **2001** – Development Consent issued for the Project
- **2004** – Ivanplats acquired the Project from Black Range Minerals
- **2005** – Ivanplats completed an updated Feasibility Study
- **2006** – Project commenced under current Development Consent
- **2015** – Clean TeQ acquired the Project after identifying strong potential value-add of the Clean iX® technology to the Project
- **2016** – Clean TeQ completed Pre-Feasibility Study (PFS) and approval (MOD 3) for Scandium
- **2017** – Project optimisation, defining design criteria and conducting extensive test work
- **2018** – Mining Lease Granted
- **2018** – Clean TeQ completed Definitive Feasibility Study (June)

Project Benefits

Strong, lasting community benefits over life of mine

1000 JOBS OVER CONSTRUCTION AND 300 IN OPERATIONS

$1.9 BILLION IN EMPLOYEE SALARIES AND WAGES**

**forecast for initial 25 years

OPPORTUNITIES FOR LOCAL BUSINESS AND ECONOMIC GROWTH

$18.3M* VOLUNTARY PLANNING AGREEMENT FOR LACHLAN, PARKES AND FORBES SHIRES

Community enhancement, road maintenance and other payments

*inclusive of CPI, for 21 year mine life plus construction

UPGRADES TO LOCAL INFRASTRUCTURE AND COMMUNITY ENHANCEMENTS

~A$630 Million STATE ROYALTIES AND PAYROLL TAX OVER LIFE OF MINE

TAX

~A$2.2 Billion CORPORATE TAX OVER LIFE OF MINE

- Circa **275** people have expressed interest in future employment
- Circa **180** businesses have expressed interest in procurement opportunities

Modification Overview

CLEAN TEQ SUNRISE

Modification Overview

The Modification optimises the approved Project:

MINING AND PROCESSING IMPROVEMENTS

- Adoption of Resin in Pulp
- Mining in a more selective manner to optimise ore feed grade

Environmental Outcomes ↑
Project Development Costs ↓
Metal Recovery and Project Economics ↑

WATER SUPPLY IMPROVEMENTS

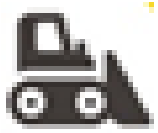
- Addition of surface water extraction
- Water recycling at the mine site

Project Water Supply Security ↑
Raw Water Demand ↓

Modification Overview

MINING AND PROCESSING IMPROVEMENTS

Selective Mining Optimises Ore Feed Grade



Adoption of RIP Removes H_2S and Three Approved Stacks

Optimised Ore Grade Increases H_2SO_4 Demand

Sulphuric Acid Plant

Increased H_2SO_4 Production Produces Steam for Power Generation – Reduces External Power Demand

Power Generation

Processing Plant (Resin in Pulp)

Improved Metal Recovery and Project Economics

Limestone

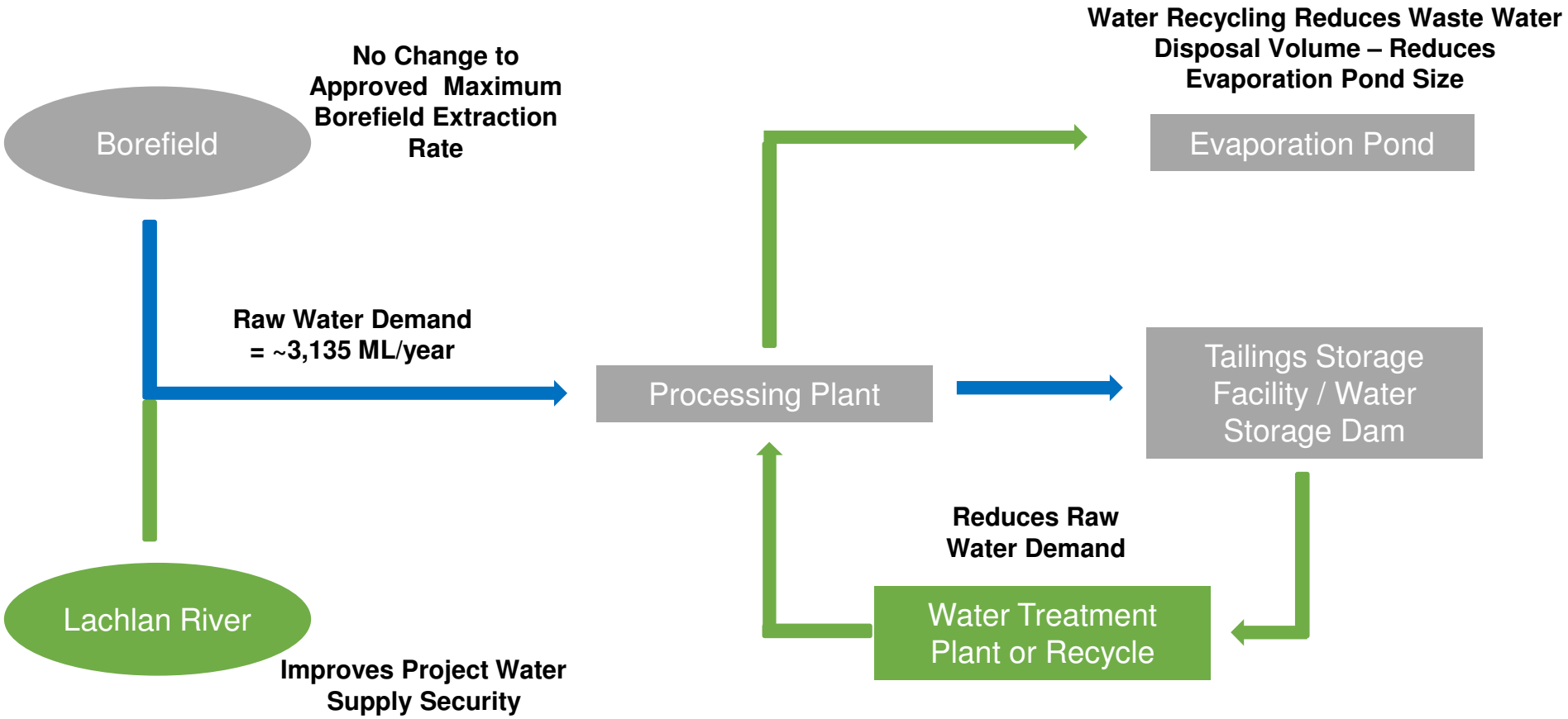
Increased H_2SO_4 Production Increases Limestone Demand

Tailings Storage Facility

Increased Limestone Requires TSF Expansion

Water Management

WATER SUPPLY IMPROVEMENTS




Melrose Plains Road
Fifield Road
Fifield State Forest
330 m AHD
315 m AHD
310 m AHD
311 m AHD
Explosives Magazine
Diversion Dam
TS
Modified Topsoil Stockpile
ROM Pad
Water Storage Dam
Modified Evaporation Ponds
Modified Tailings Storage Facility
Modified Southern Diversion
Infrastructure Area
Modified Infrastructure Area
Access Road
Raw Water Dam
Evaporation Ponds
ML 1770
Site Access Road
Sunrise Lane
Irrigation Area
Sewage Pump Station
Accommodation Camp
Accommodation Camp Services Corridor
Wilmatha Road
N
0
1
Kilometres
GDA 1994 MGA Zone 55

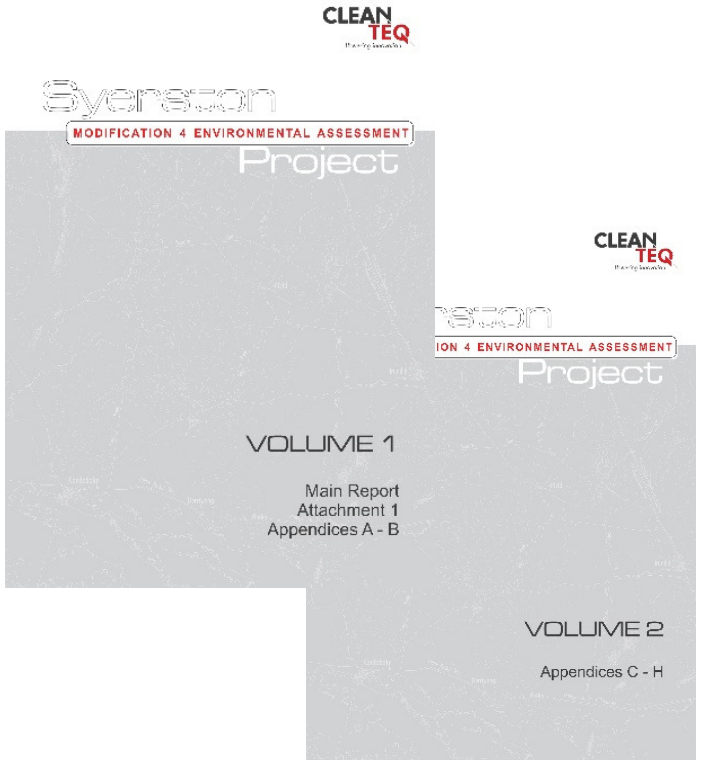
Environmental Assessment Overview

CLEAN TEQ SUNRISE

Environmental Assessment Overview

Key environmental assessment areas:

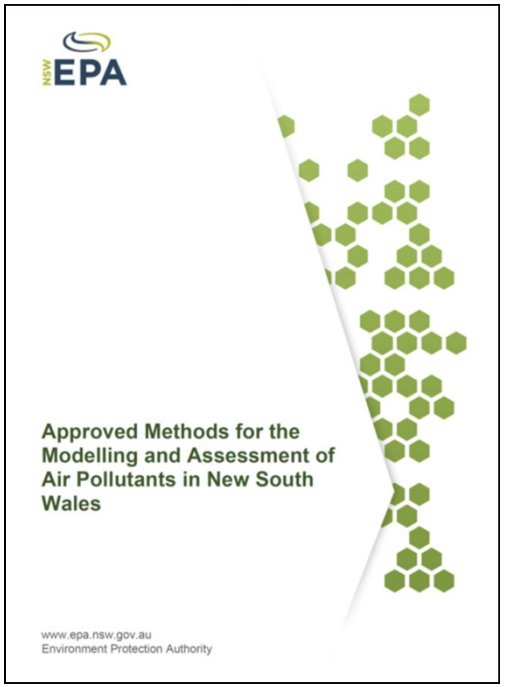
- Air Quality
- Noise
- Road Transport
- Water Management



Air Quality

Mine Site Air Quality Emissions

- Air Quality Assessment undertaken by specialist (Ramboll).
- Air quality assessment undertaken in accordance with the EPA's Approved Methods.
- EPA raised no concerns regarding potential air quality impacts due to the modification.
- EPA supported the baseline data used in the modelling.



Air Quality

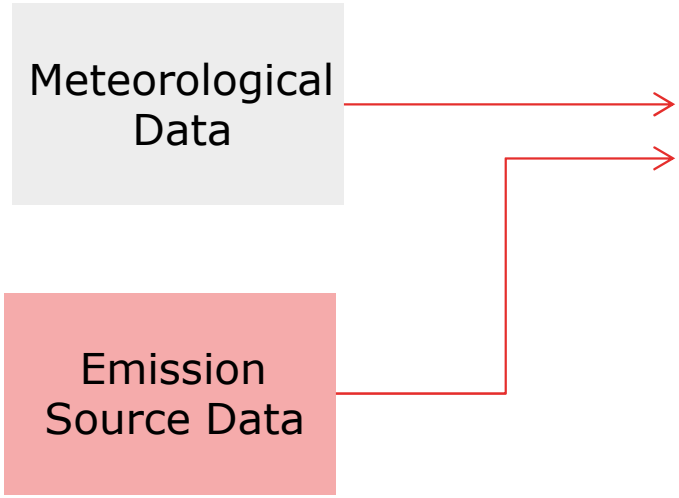
Air Quality Model

Meteorological Data

- Site-representative meteorological data used in accordance with the EPA's Approved Methods.
- Meteorological data used correlated well with meteorological data collected at site for the EIS.
- Onsite meteorological monitoring to be installed Q4 2018.

Air Quality

Air Quality Model



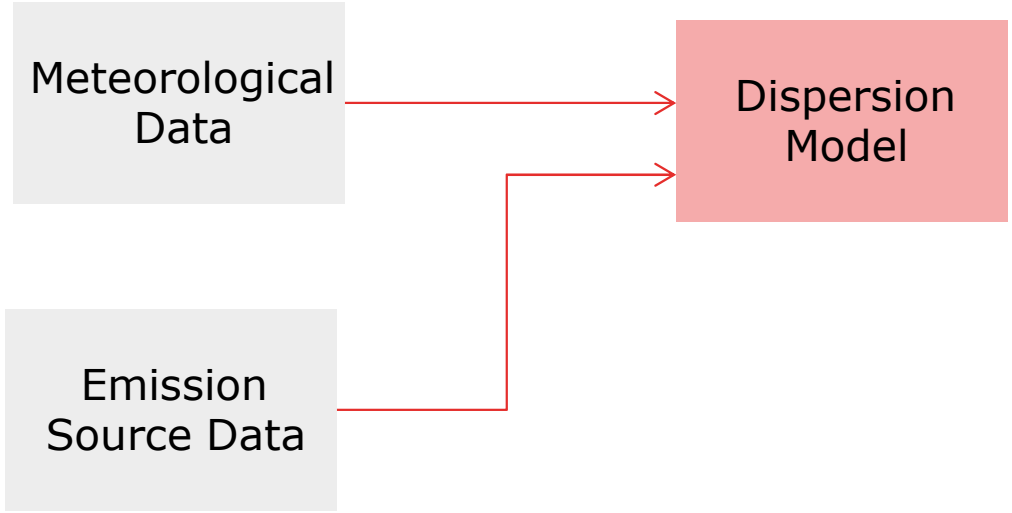
- Adoption of Resin in Pulp eliminates three approved stacks – Extraction Fan over Sulphide Filter Vent, Flare Stack and Hydrogen Reformer Stack.

- Sulphuric acid plant emissions are based on:
  - NSW EPA's allowable in-stack concentration limits (maximum case)
  - Proposed stack design parameters - designed to maximise dispersion

- Processing plant designed to minimise gaseous emissions:
  - Maximise the capture of SO_2 and H_2SO_4 for reuse in the processing plant
  - In-stack concentrations comply with relevant EPA criteria

Air Quality

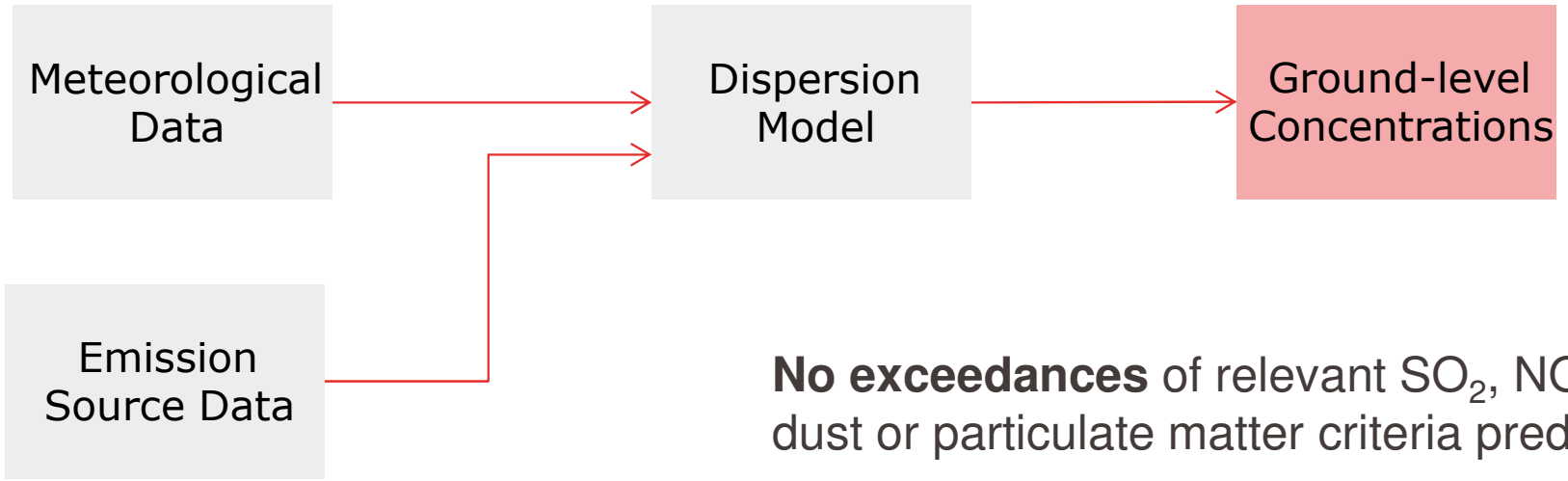
Air Quality Model



- AERMOD model adopted.
- Accepted by the EPA.

Air Quality

Air Quality Model



No exceedances of relevant SO_2, NO_2, H_2SO_4, dust or particulate matter criteria predicted.

Air Quality

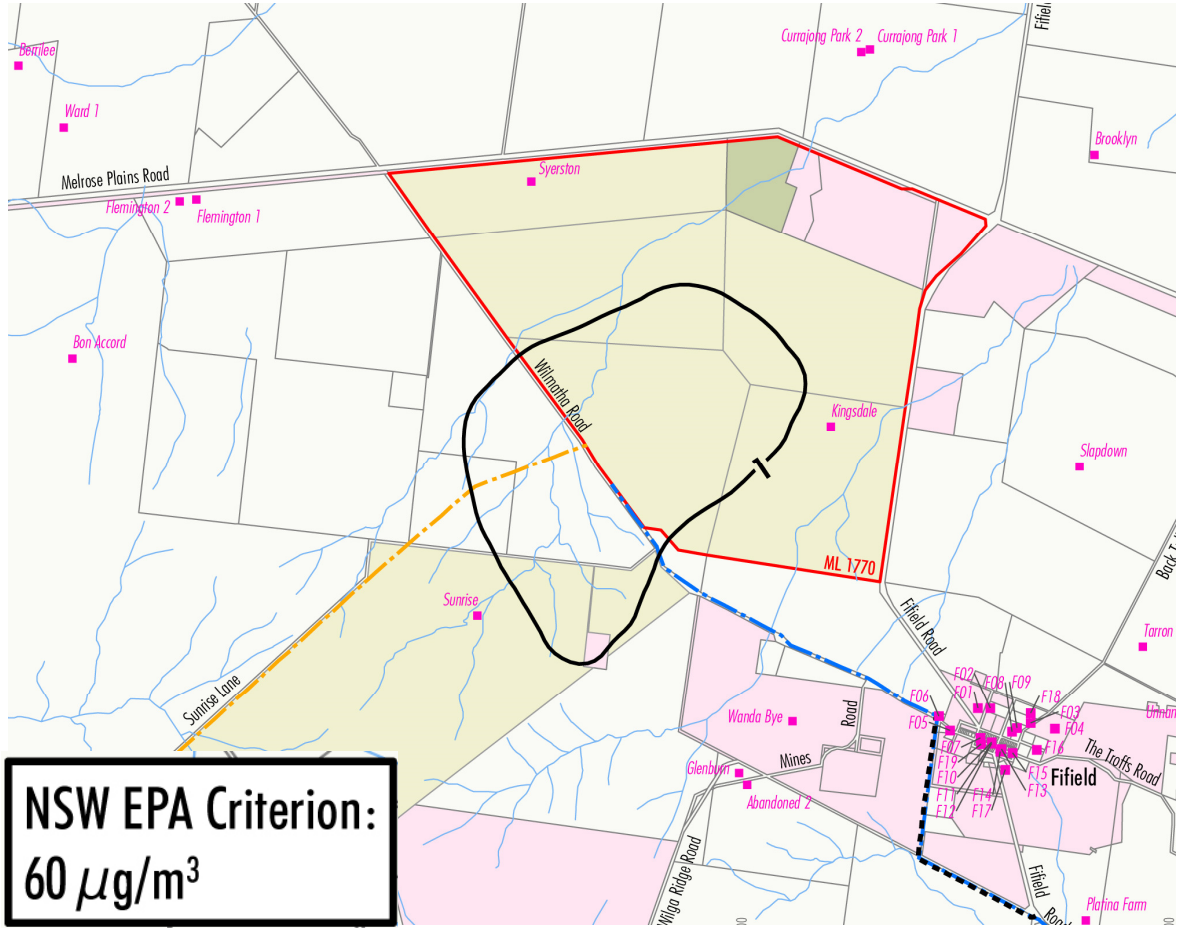
Predicted Maximum Ground Level Concentrations at Assessment Locations

Pollutant	Averaging Period	Criteria (µg/m^3)	Predicted Maximum (µg/m^3)	Percentage of Criteria
Sulphur Dioxide	1 hour	570[1]	38.4	**7%**
	24 hour	228[1]	7.6	**3%**
	Annual	60[1]	0.7	**1%**
Nitrogen Dioxide	1 hour	246[1]	97.9	**40%**
	Annual	62[1]	1.9	**3%**
Sulphuric Acid	1 hour	18[2]	8.1[3]	**45%**

[1] At the nearest existing off-site sensitive receptor. [2] At and beyond the boundary of the facility. [3] Grid maximum

Air Quality

Annual Average SO_2 (µg/m³) – Contour represents 1 µg/m³



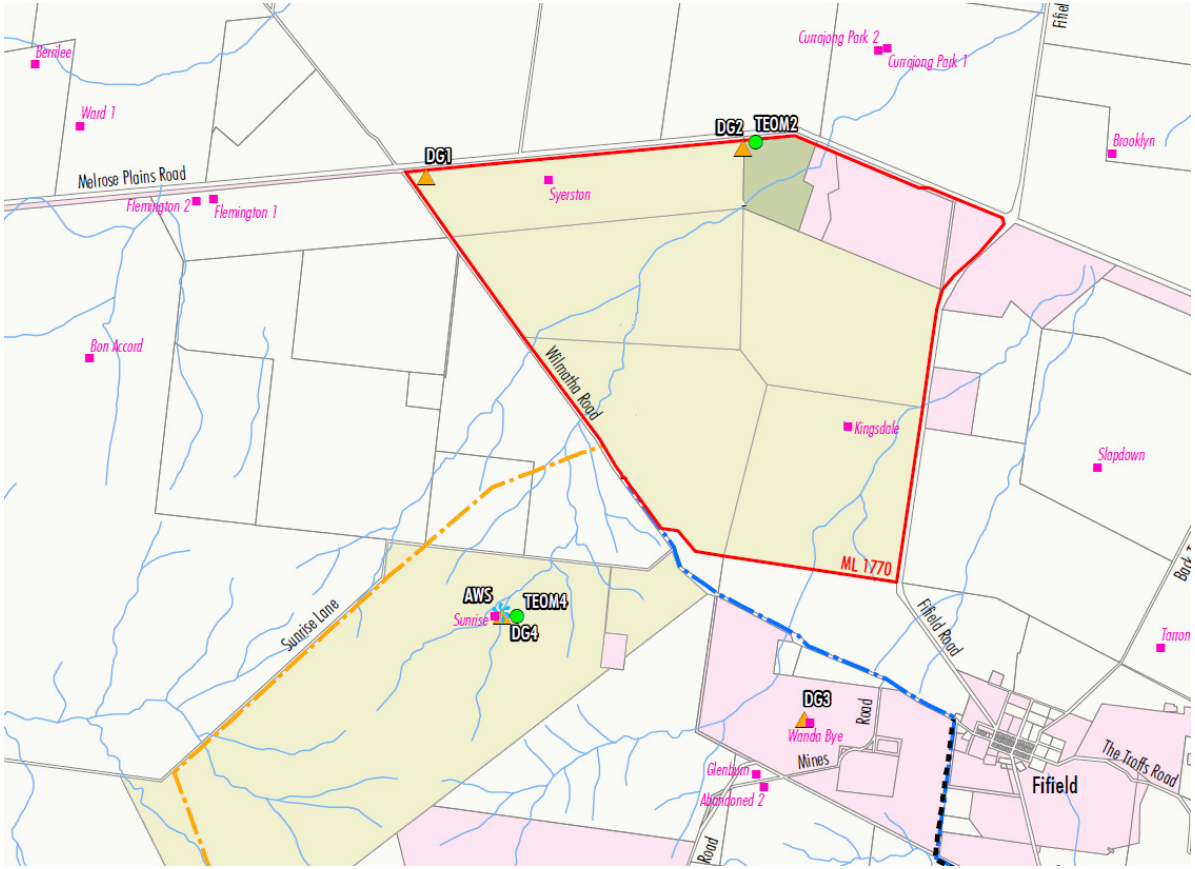
Air Quality

Air Quality Monitoring

- Air quality monitoring to include:
  - Continuous stack emission monitoring (operations)
  - Continuous $PM_{2.5}$ and PM_{10} monitors (TEOM)
  - Dust deposition gauges (DG)

Air Quality Verification Report

- Development Consent requires Clean TeQ to confirm that stack emissions comply with relevant EPA criteria and best practice emission concentrations.



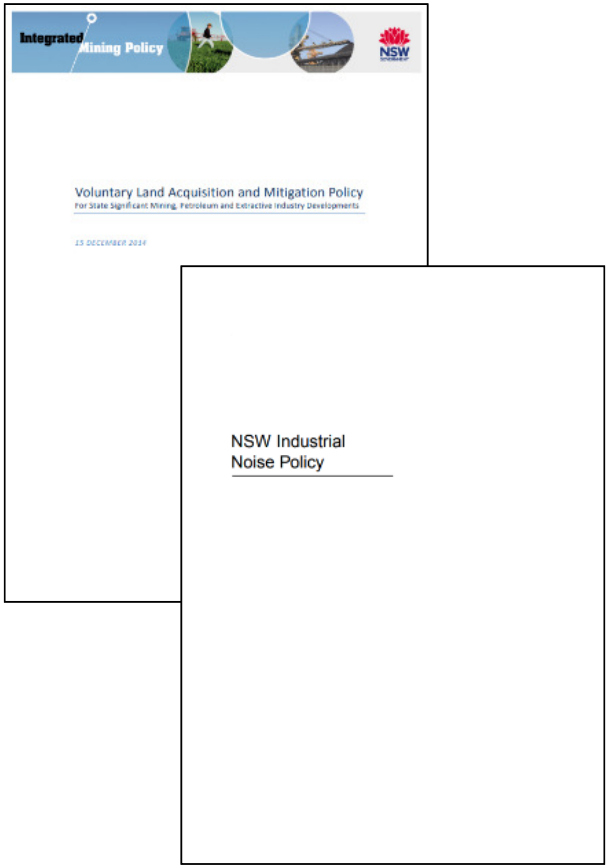
Noise

Mine Site Noise Emissions

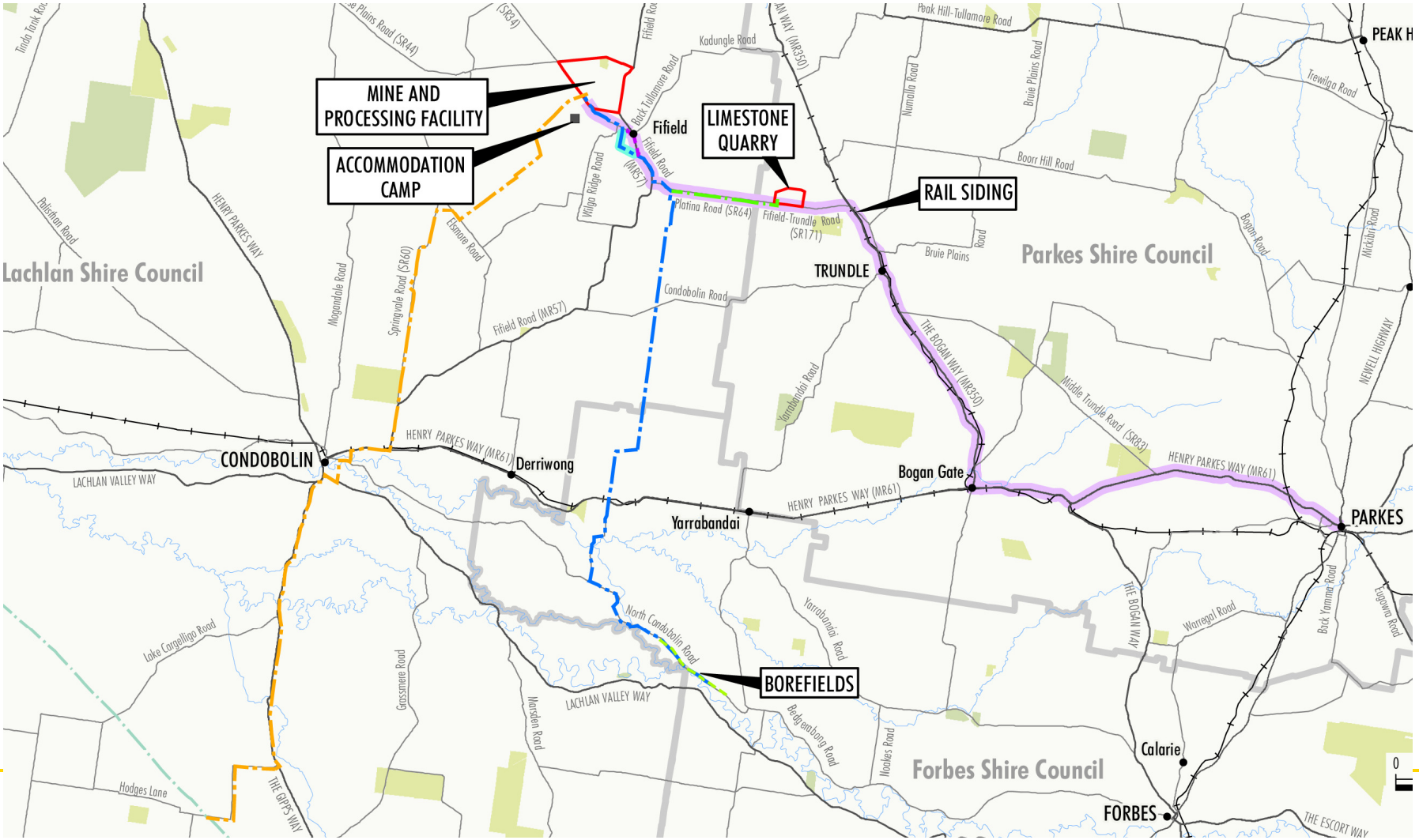
- Minor changes to mine site operations – e.g. tailings storage facility layout, processing plant location.
- Noise assessment undertaken by specialist (Renzo Tonin) in accordance with the INP and VLAMP.
- Reasonable and feasible noise mitigation measures implemented.
- **No marginal, moderate or significant exceedances** of relevant EPA noise criteria predicted.

Limestone Quarry Noise Emissions

- No change to approved limestone quarry and associated noise impacts.



Road Transport



Road Transport

The Bogan Way (Forbes Street), Trundle

Road Transport

Reduction in Project Operational Traffic in Trundle

- Operational traffic generation reduced using higher capacity vehicles - i.e. employee shuttle buses and AB-triples.

Vehicle Type	Operational Project Traffic – Vehicles Per Day		
	Currently Approved Project	MOD 4 Project (Originally Proposed)	MOD 4 Project (Higher Capacity Vehicles)
Light Vehicle	188	256	70
Heavy Vehicle	34	90	70
Shuttle Bus	0	0	6
Total	**222**	**346**	**146**

Overall ~35% Reduction in Project Operational Traffic in Trundle

Road Transport

Pedestrian Access Review

- GTA Consultants concluded:

  … 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, some aspects of the pedestrian and vehicular environment could however be improved to mitigate the existing issues.

Road Transport

Pedestrian Access Review

- GTA Consultants found that The Bogan Way in Trundle is suitable:
  - Part of existing arterial/regional road network
  - Has adequate capacity to accommodate the Project heavy vehicles
  - Has suitable geometry – priority at intersections, avoids sharp turns
  - Approved to carry Project heavy vehicle types

- GTA Consultants also concluded with respect to a traffic bypass of Trundle:

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

Road Transport

Road Transport Improvements

- Improvements to be implemented – kerb treatments, threshold treatments and speed reduction signage (Pedestrian Access Review)

- In addition, Clean TeQ will implement various road and intersection upgrades for the Project in accordance with the VPA and Development Consent.

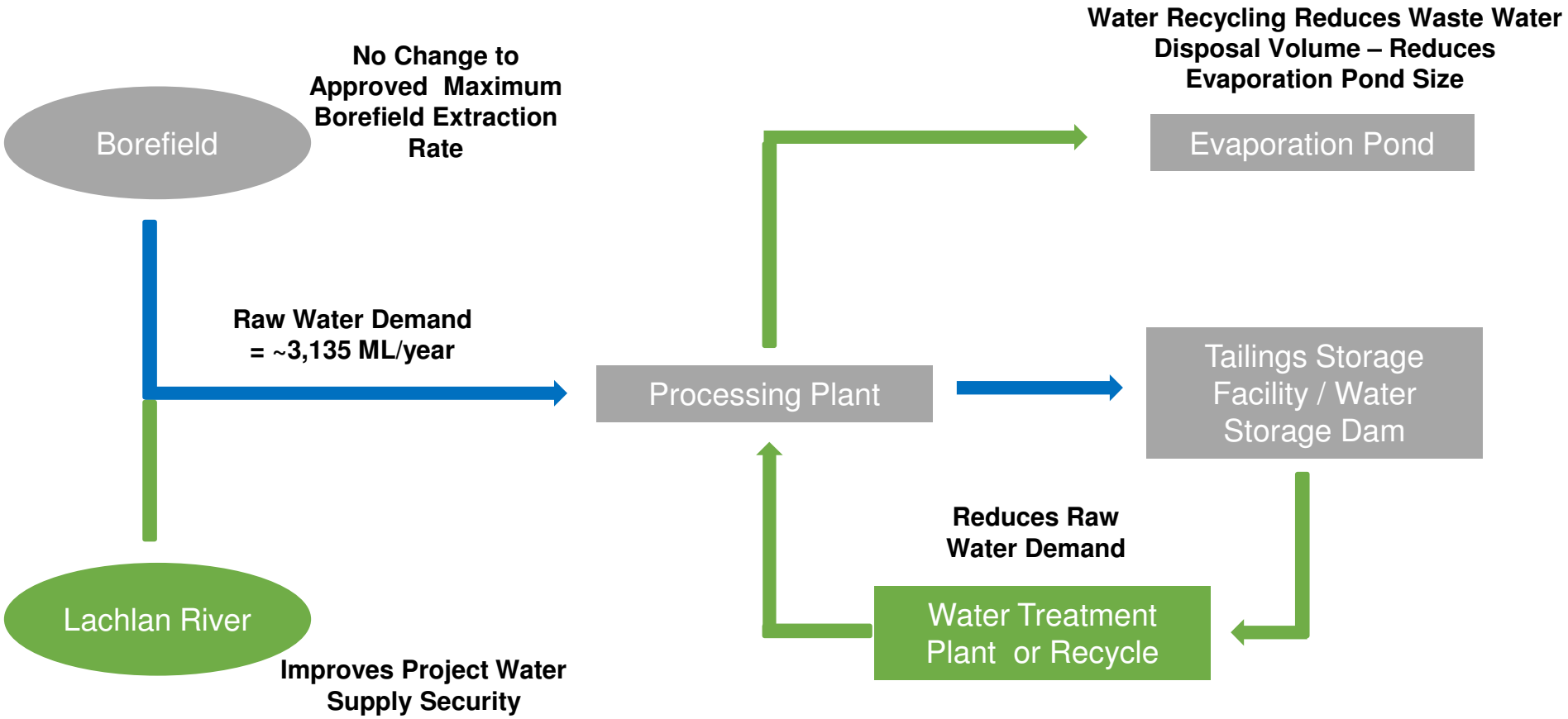
Road Transport

Amenity and Socio-Economic

- Road Transport Noise Assessment:
  - Conducted in accordance with the *Road Noise Policy*
  - No exceedances of relevant road noise criteria
  - EPA supported the modification based on predicted noise levels
- The Traffic Management Plan will include measures to:
  - implement reasonable and feasible measures to minimise amenity impacts (e.g. minimise compression braking)
  - manage appropriate driver behaviour (adherence to speed limit, safe overtaking and following distances)
  - ensure adherence to designated transport routes
  - coordinate heavy vehicle departures (i.e. staggering) to minimise impacts on the road network
- The Traffic Management Plan will include strategies to minimise impacts to community events.

Water Management

WATER SUPPLY IMPROVEMENTS



Water Management

Surface (Clean) Water Diversions

- No substantial change – maximise diversion of clean water.
- Designed to convey 1:100 year (peak flow) rainfall event.
- Design flood characteristics in accordance with the Australian Rainfall and Runoff (ARR) design handbook and the BOM's rainfall intensity-duration-frequency data.
- Designed to be safe, stable and non-polluting.

Tailings Storage Facility

- Increased footprint to allow for increased capacity.
- Designed in accordance with Development Consent and DSC requirements – low permeability liners & seepage collection systems.

Community Engagement

CLEAN TEQ SUNRISE

Building our Social Licence to Operate

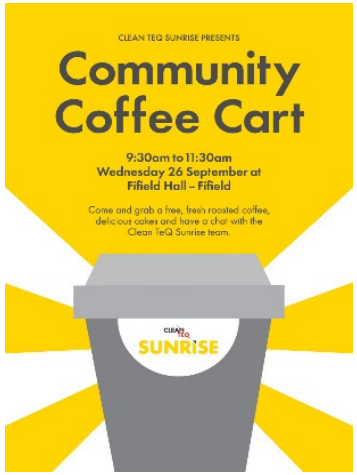
- **Our community**
  - Spans three LGAs. Key consultation communities include Fifield, Trundle, Condobolin, Parkes, Forbes and Warroo.
- **Experienced, locally based team**
  - Local team responsible for stakeholder engagement and attends local events and initiatives.
  - General Manager Government, External Relations & Community and NSW Manager live in Parkes.
  - Members of the Community & Environment teams live and work in Parkes, Condobolin and West Wyalong.
- **Lachlan, Parkes & Forbes Shires:**
  - Frequent meetings at all levels of Council – Mayor, General Manager, Directors and teams.
  - VPA agreed - $18.3 million over 21-year mine life plus construction. Allows for CPI.

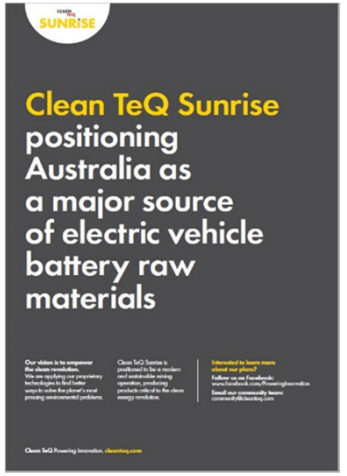
Community Consultative Committee

- Re-formed in August/September 2017, chaired by Lisa Andrews and met five times over the last year.
- Members include near-neighbours, neighbours, Trundle CCC, Parkes and Condobolin Chambers of Commerce, Wiradjuri Condobolin Corporation, Lachlan, Parkes and Forbes Shire Councils.
- **February 2018:** To address questions raised by the community regarding emissions, Ramboll Environment - air quality specialist - presented to the CCC together with Stephen Grocott, Clean TeQ's Chief Technical Development Officer.
- **August 2018:** representatives from Department of Planning & Environment and Environment Protection Authority answered questions and discussed the project.

Open and Engaging Communication

- **Keeping our community updated via local, print and social media**
  - Four **community newsletters** produced since August 2017 to support MOD4: 6,100 copies circulated each time
  - **eNews** bulletins produced between newsletters and circulated to over 500 recipients
  - Active **Facebook** page with a broad reach
- **Extending the reach of our messages**
  - Full page **advertisements** published in local papers in Condobolin, Parkes and Forbes
  - All **community meetings** advertised in local media





Numerous and Varied Engagement Channels

Near neighbours and Fifield community	Shopfronts: Answering questions employment opportunities	Community information sessions: Project employment procurement	Community drop-in meetings: Information sharing	Landholders surrounding the borefield: Consultation	Community coffee carts: Informal and open to all	Getting involved in our community: Local Shows and events
Two BBQ evenings Site tour for neighbours (August 2018) 1:1 meetings at homes or shopfronts	Condobolin and Trundle Established in August 2017	Condo | Parkes | Trundle | Forbes 320 attendees to learn about employment & procurement (July 2018)	Advertised and held in Fifield Trundle, Parkes Forbes Trundle community (November 17)	Met with concerned Bore residents (Warroo Hall – April and May 2018) Visited 155 bores (73 properties) over 3 weeks (June 2018)	Fifield, Trundle, Condobolin, Parkes and Forbes September 2018	11 days of direct engagement (2017 & 2018) at Agricultural Shows.



MOD4 stakeholder engagement summary

1:1	Face-to-Face	CCC	E-News	Facebook	Newsletter
93	**593**	**5**	**1,201**	**51,821^**	**+24,400**
• 1:1 meetings with key community stakeholders *Excludes all commercial meetings* *Excludes formal meetings such as CCC and CoBRA* *Total number includes multiple meetings with individual stakeholders*	• Drop-in sessions • Community information sessions • Public meetings • Special interest group presentations • Shop fronts *Excludes engagement at local shows*	• Five meetings since September 2017 • MOD 4 overviews and summary of environmental assessment outcomes • MOD 4 assessment process updates • Clean TeQ attendees included CEO, CFO and Chief Technical Development Officer	• 2 editions • 547 on mailing list • 446 via Facebook link • Mailing list continues to grow	• 556 followers (330 from central west) • 73 posts • 12,296 active engagement *^Total post reach*	• 5,400 newspaper insert – Parkes, Forbes and Condobolin • 700 mailbox drop – Trundle, Fifield & Tullamore • Local shows • Local businesses • Social media • 4 x editions

Community Engagement and Support

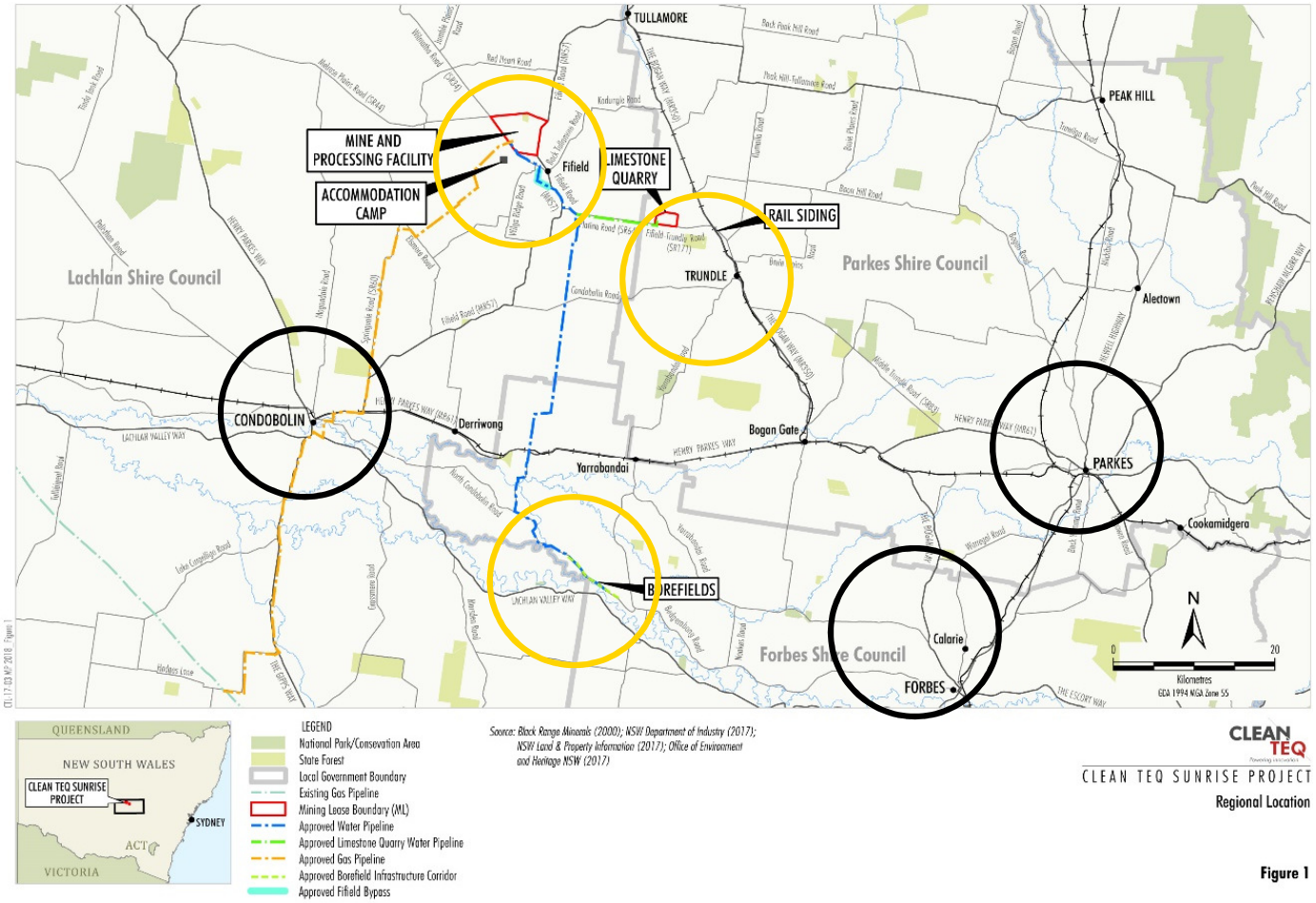


Figure 1

Conclusions

CLEAN TEQ SUNRISE

Conclusions

- **The Modification will result in environmental benefits**:
  - Removal of three approved stacks (including a H_2S stack)
  - Overall reduction in Project operational traffic in Trundle
  - Reduce groundwater demand from Project borefield with addition of surface water

- **The Modification is critical to Clean TeQ to**:
  - Minimise Project development costs
  - Improve initial metal recovery and project economics
  - Improve Project water supply security

- **Clean TeQ will implement mitigation measures and monitoring including**:
  - Use of high capacity vehicles
  - Trundle road safety improvements
  - Continuous stack emissions monitoring
  - Continuous $PM_{2.5}$ and PM_{10} monitoring

- **Extensive Community Engagement**

- **Substantial economic and social benefits in the region.**

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AUSTRALIA

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