



TERRAMIN AUSTRALIA LIMITED

ANGAS ZINC MINE

# Community Newsletter

MARCH 2014

## Mine spaces filled to ensure stability Independent experts commend mining backfill practice

In a process that requires exact mining techniques, Terramin mine managers have been regularly 'backfilling' the majority of mined spaces within the Angas Mine to ensure the underground spaces are structurally stable.

As the mine entered the Care and Maintenance phase late last year, 93% of the mined production voids had been backfilled with a combination of rockfill, cemented rockfill, and cemented paste, which is a cement mix of sand, tailings, and cement that is pumped down into the mined voids.

Angas General Manager Joe Ranford said the void filling process was an important step in stabilising the rock around the mine and leaving the underground mine stable and solid.

"This is world's best practice in modern mining and we made a commitment to the community that we would leave this mining lease in better condition than we found it."

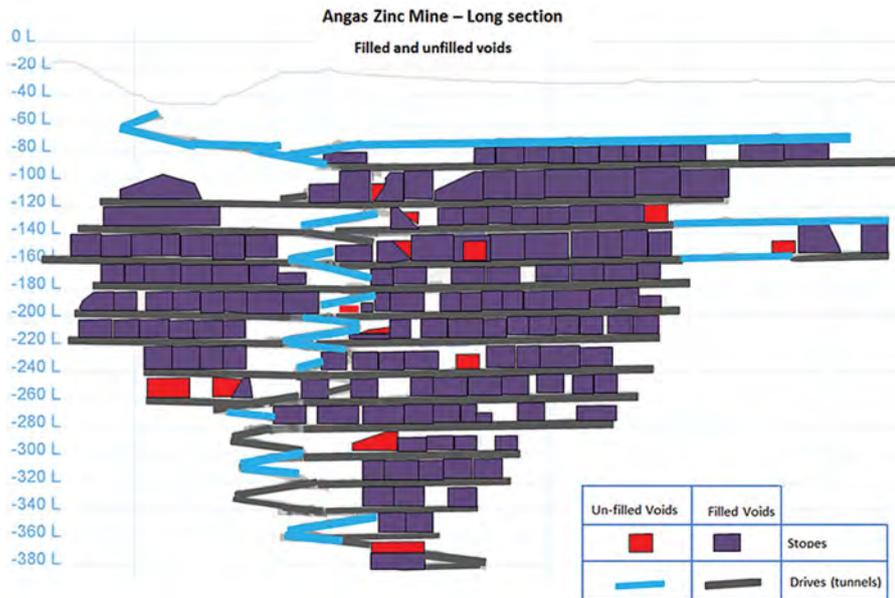
The next step in the care and maintenance phase is filling the remaining mine void spaces with water to reduce the chance of oxidization of the exposed rock which prevents Acid and Metalliferous Drainage (AMD) issues in the underground mine voids.

Water, previously re-injected into the local salty aquifer, will be drawn by bore pumps from four of the re-injection bores on site and will be pumped down existing 'paste fill' pipelines to either 75m, or 140m below ground level, where it will percolate further down the mine void.

Storm water run off on the site will also be directed down the decline (the opening of the mine at ground level) to aid in filling the voids and assist the planned ground water recharge. As a result of these efforts the mine void has currently refilled to the 190RL up from the bottom of the mine at 380RL. The refilling of the mine void with water was part of the plan developed in conjunction with ground water experts, the government regulator DMITRE and the EPA.

Progress with this project is pleasing, water samples have been taken and monitoring continues to measure the progress against that modeled. Under these conditions water is estimated to fill to the 75 metre level after 800 days of pumping.

In the event of recommencement of underground mining water will be pumped out and recycled for use in the process plant, or treated and disposed of through local irrigators and water users.



### Over 90% filled in!

In the side cutaway graphic artwork (known in the industry as a long-section), Angas Zinc Mine is depicted with the decline and drives in blue and grey and the stopes in purple and red. It can be seen that the voids have been back filled with solid rock or cemented ore products down to the 380 metre level where production was stopped last November. The main 'decline' is shown in the colour blue. This is the main driveway into the mine that is wide enough for trucks to 'corkscrew' down into the bottom levels of the mine that will remain accessible into the future when mining for zinc ore returns to profitable levels.

## AZM Fast Facts

- Commenced mining in March 2007
- 119 full time employees
- 120,000 tonnes of Zinc, 46,500 tonnes of Lead and 1,584,461 ounces of Silver produced
- Remained operating despite the global financial collapse that saw zinc price fluctuations from \$5000/tonne to a low of \$1500/tonne
- Water management challenges successfully addressed
- \$273 million into the state economy
- Entered Care and Maintenance in October 2013

### Mining and Processing (Quarter 3, 2013)

- Completed all development to the 380m level
- A total 98,110 tonnes of ore processed
- 10,933 tonnes of zinc concentrate
- 6,148 tonnes of lead copper concentrate

**Total ore mined to date (EOM Sept 2013):  
1,989,251 tonnes**

## A moment for history in the mine... the last man out!

It is always a historic and emotional moment in any mining operation when the last miner exits the deep underground. This is particularly compounded during a time where mines are contracting across Australia. The Strathalbyn area is famous for its 150 year mining history – and this was one of the major moments.

On 29 October, after a seven year life of the mine at Strathalbyn Angas Mine the last miner left the darkness below. That miner was **Anthony 'Murgy' Murgatroyd**. Murgy moved to Strathalbyn from Broken Hill in the early stages of the mining project and fell in love with the area, its people and most importantly its sporting community.

Returning to the Crib Room to hang up his underground safety tag, 'Murgy' was congratulated on a job well done by General Manager Joe Ranford – and received a commemorative bottle of wine – naturally a local product - made by our good friends at Angas Plains Wines.



# Quarterly Environmental Report

Each quarter the mine must report back to the local Strathalbyn Community Consultation Committee (SCCC) on compliance to the PEPR (Program for Environment Protection & Rehabilitation) and general site activities.

This report summarises results of the intensive monitoring program for the Angas Zinc Mine between October and December 2013.

## Mine Closure Process:

On 30 September 2013, global economics and prices for Zinc and Lead concentrate were such that all ore reserves that could be economically recovered and beneficiated were exhausted, and Terramin made a decision to place ML6229 into the Care & Maintenance phase until economic recovery of the metal prices allow the business to recommence.

Mining operations ceased at AZM on 30 September 2013 with the site placed into a Care and Maintenance phase. Backfilling of stopes has resulted in 93% of mined voids being filled, exceeding the 91% compliance requirement. Stockpiled waste rock, recovered from previous mining activity, was moved underground throughout October. Underground shifts concluded on 29 October 2013 and gates were installed across the decline. Waste rock was used to fill voids, drives and parts of the decline.

## Water Management:

The Tailings Storage Facility (TSF) decant pond surface area was 10,138m<sup>2</sup> at the beginning of October and approximately 2,000m<sup>2</sup> on 31 December, significantly within the PEPR criteria of 15,000m<sup>2</sup>.

Quarterly surface water monitoring was undertaken in October 2013 along the Angas River. All analytical results for the surface water monitoring parameters were below both the leading indicators and PEPR criteria.

## Flora & Fauna:

Weed control was undertaken during October, with the aim to control the summer weeds. A controlled fire was also completed. Together with bushfire fuel load reduction this aids in the control of weeds. A weed survey was conducted in December that showed there was a reduction in previously established weeds.

## Community Engagement & Meetings:

The SCCC meeting was held on 22 November to update the community on operations, acid mine drainage, possible future projects, and Care and Maintenance. Throughout the quarter no community complaints were received. As discussed at the November SCCC meeting, Terramin is looking at other potential project uses for the site and understand the requirement to change the lease conditions prior to any approval.

## Noise

All noise levels monitored during November were within the maximum permissible noise levels complying with the current noise criteria. No noise exceedances over the PEPR criteria were recorded at either noise logger during the monitoring period.

# Facts on the close

Mining was completed on 25 September 2013 with processing and clean-up of the above ground ROM completed on 1 October 2013.

Trucking of concentrate to Port Adelaide or Port Pirie continued until the morning of Wednesday 9 October.

The mine has currently moved into Care and Maintenance where the environmental management of the site is continuing and the plant and equipment maintained in a working state for a future restart.

Primary Fans used to ventilate the mine were removed and placed in storage, a secondary fan has been installed at the portal for use during inspections and monitoring.

All equipment has been shut down and isolated, all open holes have either been barricaded or filled.

Security Gates have been installed across the portal to prevent any unauthorized entry. An underground entry procedure is in place for regular inspections and environmental monitoring.

Underground mining voids are now currently 93% filled (91% required) and injection of water into mine voids is neutralising and managing any acid AMD development.

The offices, workshops and control rooms have been cleaned and locked. The last of the concentrate was trucked off site and the shed swept clean. All the mobile equipment has been parked in the shed ready for its next opportunity. The equipment is maintained on a schedule through local contractors and kept secure under the watchful eye of 24-hour security.

## Recycling focus



A total of almost 24 tonnes of general waste and potential recyclables was gathered for proper disposal or recycling around the Angas Zinc Mine site this Quarter.

As a result of positive management and increased recycling measures and implementation of the revised waste management plan, compared to Quarter 1, general waste has decreased by 7 tonnes

and the rate of recycling of recyclables and scrap metal increased by 26 tonnes.

Approximately 16,000 litres of oil/water mixture, 2,100 litres of coolant and 11,400 litres of waste oil was sent to an EPA approved facility for recycling. Terramin is fully committed to recycling programs within the site to ensure we are doing our part to reduce, re-use and recycle.



Water Services Supervisor, Ken McBride

# sure process:

## Ongoing care & maintenance

- Environment, Community, and Water Management staff to remain on-site
- Mine has been placed under Care and Maintenance
- Clean-up work, water and environmental management and monitoring to continue.
- Processing plant including mill and floatation area receiving weekly maintenance
- Mobile and other equipment (pumps, spare parts, cables etc.) stored in workshop and maintained for future use
- On-going budget for Care and Maintenance.

## On-site management continue to:

- Work with DMITRE to ensure ongoing compliance
- Maintain Water, Dust and Environmental management
- Continue TSF management
- Manage mine void AMD management.

## Security is all important!

Environment & Community Superintendent Matt Daniel will remain on site to ensure proper environmental management of the entire Angas property.

Perimeter fencing around the mine lease site is now in place.

Signs relating to security and entry have been placed at entrances to the site and a 24-hour security company is conducting after hour inspections and video surveillance is in place.



# Strathalbyn Community Consultation Committee



*Members of the Strathalbyn Community Consultation Committee (SCCC) and mine management at the new security gates installed at the mine entrance portal.*



Terramin's AZM team had a temporary boost in numbers during the summer university vacation break, with two environmental studies students undertaking work experience at the site.

Students **Katy Fechner** (left) and **Carina Daly** carried out important monitoring activities assisting our Environment & Community Superintendent Matt Daniel with daily technical reporting and managing weeds.

Carina is originally from Birdwood in the Adelaide hills, now studying at the Western Australian School of Mines who will be on site until March. Carina is in her third year of a double degree - Bachelor of Science (Applied Geology) and Bachelor of Science (Environmental Biology).

Katy is from Angaston and is at Adelaide University studying Environmental Science and Law degrees, and will work part-time for Terramin during this year.

# Mine tour was an important event to 'educate the educators'



General Manager, Joe Ranford, welcoming the tour leader (above) and addressing the tour group (below).

The last formal group to take a comprehensive tour of the Angas Zinc Mine was a SACOME (South Australian Chamber of Mines & Energy) organised 'Introduction to Mining' course for SA school teachers in August 2013.

A group of 40 teachers and SACOME staff received an overview of the mining operations and metals extraction processes at AZM and also took a bus tour of the site to view the processing plant and the tailings storage facility.



## Our support of community and economy...

Through various initiatives over the last 5 years, the mine has sponsored a whole range of community, educational, and sporting organisations including;

- CLASS, Community Living and Support Services
- Local and Regional School Visits
- Strathalbyn Swimming Club
- Strathalbyn Cricket Club
- Strathalbyn Tennis Club
- Strathalbyn Soccer Club
- Strathalbyn Senior Citizen's Club
- Strathalbyn CFS
- Strathalbyn Polo & Recreation Club
- Silent Ripples Suicide Bereavement Support
- Make A Wish Australia
- Strathalbyn Band Festival
- TAFE training programs including Indigenous Entry to Mining

The group came to learn about the various career paths available in the mining industry and to discover ways to encourage their students to look positively at a mining career.

### Group tours still available

While the mine and associated processing plant are no longer operational, the opportunity for community groups to visit the mine site for Tours is still available as the company manages aspects of the official Care and Maintenance program.

General Manager Joe Ranford said it was important that the mine and its environmental surrounds should be available for relevant group tours. The mine's Environment and Community Superintendent Matt Daniel and others from the management team would be available on site to assist with tour groups.

### ANGAS ZINC MINE

Callington Road, Strathalbyn, SA 5255  
PO Box 125, Strathalbyn, SA 5255

### ANGAS ZINC MINE OFFICE

**T:** (08) 8536 5950  
COMMUNITY COMMENTS (24 hours)  
**T:** (08) 8536 8010  
**E:** angas\_community@terramin.com.au

### ADELAIDE OFFICE

Terramin Australia Limited  
Level 3, 70 Hindmarsh Square,  
Adelaide, South Australia 5000

**T:** (08) 8213 1415  
**F:** (08) 8213 1416  
**E:** info@terramin.com.au  
**W:** www.terramin.com.au

## Have your say

Terramin welcomes your feedback and there are many ways to contact us. The hotline is your way of reporting urgent matters or seeking an urgent response to a situation. The telephone number is (08) 8536 8010.

Matt Daniel is the company's Environment and Community Superintendent and can be contacted on (08) 8536 5950 or mdaniel@terramin.com.au.

Mike O'Reilly is our Community Engagement Consultant and can be contacted on 0414 882 505 or mike@oreillyconsulting.com, or you can contact a member of the Strathalbyn Community Consultative Committee, which is the two-way conduit between the Community and Terramin.