

# ***Broken Hill Operations***

## ***RASP MINE PROJECT TAILINGS DAM SPRAY SYSTEM***

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Prepared by:



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BROKEN HILL OPERATIONS  
RASP MINE PROJECT TAILINGS DAM SPRAY SYSTEM

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## INTRODUCTION

This document details the design for TSF2 Tailings Dam Dust Control Spray System for Broken Hill Operations Rasp Mine.

### 1.1. Design Requirements

The following are the design requirements for the system:

- Sprinklers to provide full coverage of the TSF2 including walls with adequate overlap to account for variable conditions.
- System to be able to apply water spray to the TSF2 in one hour.
- Water supply for the system be designed to ensure adequate water at the required pressure is available to run the spray system in all circumstances foreseen by the CBH and Wet Earth.
- System to be able to take multiple inputs (eg real time dust monitors, wind speed and direction sensors) to automatically start the spray system

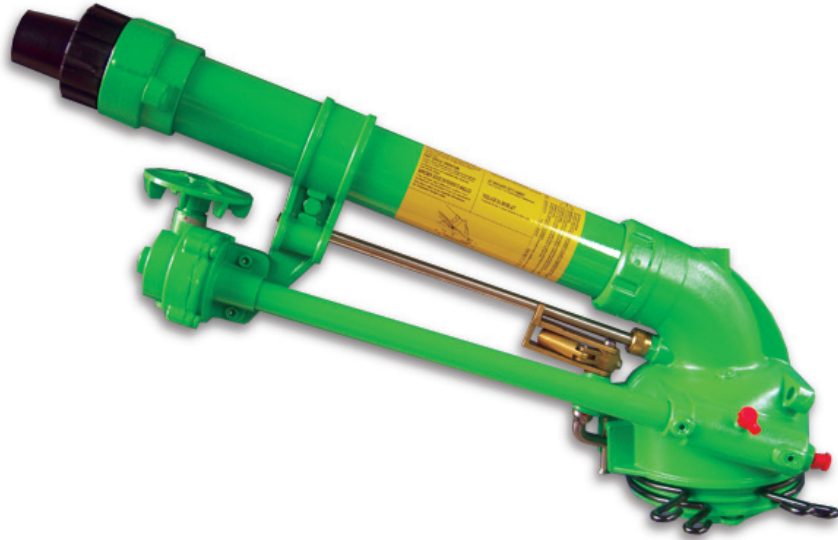
### 1.2. Summary

The following is a summary of the system design:

- 24 sprinklers with a throw distance of 64m to 67m provide full coverage of the TSF2
  - 16 sprinklers on the outside of the TSF
  - 8 sprinklers on the inside of the TSF
- will deliver 2L per m<sup>2</sup> of water to the whole TSF2 in 48 minutes
- will be able to suppress dust using only water for almost 3 days based on historical January evaporation data
- will be able to apply a crusting agent to the complete TSF2 in 48 minutes
- will be able to suppress dust using water only for 2.5 days with no inflow from town water supply
- PLC based control system with the ability to control individual sprinklers
- will support the rising levels of the TSF2
- will be regularly tested
- has been designed for easy maintenance.
- system will have redundant pumps and backup power supply

## DESIGN

### 2.1. Sprinkler



The Sime Mariner Mining sprinkler is recommended for this application because it is a robust anodised aluminium sprinkler that Wet Earth has used on mining projects with clients including:

- Barrick
- BMA Coal
- BHP
- CITIC Pacific
- Glencore
- Rio Tinto
- FMG

The performance point we recommend for the Sime Mariner for this project is a 34mm nozzle operating at between 7 and 8 bar pressure with a throw distance of 64m to 67m and a flow rate of max 130m<sup>3</sup>/hr.

The Sime Mariner Mining sprinkler is a customisation of the Sime Mariner sprinkler to harden it and make it more suitable to mining applications.

A datasheet for the Sime Mariner will be provided with this design.

## 2.2. Tailings Dam Sprinkler Layout

To ensure adequate coverage in variable wind conditions the spacing design was based on providing coverage of the complete TSF2 and walls assuming the sprinklers were only throwing 60m. We consider this provides an adequate over coverage considering the sprinklers will have a throw distance of between 64m and 67m.

The layout drawing of sprinkler locations on the TSF2 will be provided with this design but showing the 64m throw distance.

It is important to note that some sprinklers will be located inside the TSF2.

### 2.2.1. Sprinklers Located Inside TSF2

Piping for these sprinklers will be initially laid on the surface of the TSF2 and will ultimately be covered in tailings.

A sprinkler stand / supporting structure will be designed taking consideration the following factors

- compatibility with the tailings material
- capable of supporting the sprinkler with a height of between 0.5m and 4m above the tailings level
- easy to increase the height of the stand, supporting structure as tailings level increases.

The sprinkler stand / supporting structure will have its height increased every 12 months to ensure it is between 0.5m and 4m above the tailings level

Based on the client's advice the TSF2 is safe to walk when dry, so installation and planned maintenance of the sprinklers inside the Tailings Dam will be undertaken when the surface is dry.

Should maintenance be required when the surface is wet then a hovercraft will be used to access the sprinklers.

## SPRAY SYSTEM OPERATION

### 3.1. Spray System Operation Constraints

The following are the design constraints on the system operation:

- Sime Mariner takes 180 seconds (at 5 bar) to rotate 360 degrees
- Sime Mariner delivers the following amount of water
  - ~1L per m<sup>2</sup> in 6 minutes in 360 degree operation
  - ~1L per m<sup>2</sup> in 3 minutes in 180 degree operation
- Sime Mariner uses 130m<sup>3</sup>/hr
- Sprinklers located and have arc coverage as shown on layout drawing.
  - 16 sprinklers rotating 180 degrees on outside of TSF2
  - 8 sprinklers rotating 360 degrees on inside of TSF2
- To deliver an adequate amount of crusting agent typically requires 2L per m<sup>2</sup>

### 3.2. Spray System Operation Detail

To deliver 2L per m<sup>2</sup> for all the sprinklers requires a sprinkler run time of 192 minutes. To enable the system to deliver the 2L per m<sup>2</sup> in one hour requires 4 sprinklers to run simultaneously.

With 4 sprinklers running simultaneously it will be able to deliver the 2L per m<sup>2</sup> in 48 minutes.

### 3.3. Piping

The following are the piping requirements for this project (to support the delivery of 2L per m<sup>2</sup> in 48 minutes). Please see 6. Appendix: System Pressure Calculations for summary of the system pressure loss calculations:

#### 3.3.1. Sprinkler Support Piping

The piping to support the sprinkler will be 100mm pipe. This pipe will start at 4m high and be increased annually to ensure it is between 0.5m and 4m above the tailings level. The system has been designed to support a maximum pipe height of 15m from initial installation level.

#### 3.3.2. Pipe from Sprinkler Support Base to TSF2 Ring Main

The sprinkler that are positioned in the TSF2 are connected to the TSF2 Ring Main using up to 100m of 200mm PN12.5 Metric Poly

### 3.3.3. TSF2 Ring Main

A ring main will run around the TSF2. Sprinklers located on the outside of the TSF2 will be connected to the ring main with a short piece of flexible rubber hose. Those that are located in the TSF2 will be connected as per the previous section.

### 3.3.4. Pipe from Pump / Mil Tank to Ring Main

The pipe from the Tank / Pump will need to be 400mm PN12.5 Thermopipe to accommodate the flow rates required to run 4 sprinklers simultaneously (520m<sup>3</sup>/hr) and to account for variability in pump pressure (up to 9.9 bar) and temperature derating of the pipe (9.9 bar at 45 degree C)

### 3.3.5. Piping Air Relief

Air relief valves will be located periodically and at high points along the main pipeline and ring main.

## 3.4. Pumping

The pumping system needs to be able to supply 520m<sup>3</sup> per hour at a pressure of 9 bar.

We would recommend the site standard for pumps be used to ensure site support and spares. If the site does not have a site standard we would recommend the Grundfos NBG pumps due to their reputation, reliability and Australia wide support.

Grundfos NBG 150-125-250/265 2 Pole 200kW

Two identical pumps will be installed, wired and plumbed within the pumping room with the ability to quickly switch between the pumps should a pump fail.

A diesel generator will be available to provide backup power should mains electricity not be available to the pumps.

### 3.5. Water Supply

The water supply will be comprised of the following elements which are maintained at capacity using float valves:

- The New Mill Tank will have a capacity of 2.5ML and will be constructed for this project at the mill to add to the capacity of the existing Mill Raw Water Tank.
- The Existing Mill Raw Water Tank has a total capacity of 1.4ML of which 30% (0.4ML) is reserved for firefighting). The Mill currently uses 0.1ML per day. This means that there is 0.9ML available in this tank for the TSF Spray System. This tank is supplied from the Silver Tank at a rate of 1.7ML per 24hr period.
- The Silver Tank has a capacity of 6.4ML storage tank of which 0.7ML is used per day by the site (plus 0.1ML used by the mill). This is supplied from the town raw mains water at a rate of up to 1.2ML per day.

In summary, there is 3.4ML of water in the Mill tanks available for the TSF2 spray system plus an inflow of 1.7ML per day.

A single application of 2mm of water to the TSF2 will utilise 0.42ML. The average pan evaporation rate during summer is 12mm. To supply the equivalent of 12mm through the spray system would use 2.5ML per day.

This would allow almost 3 days of spraying water at 12mm per day before the spray system requirements outstripped the storage and inflows. See 7. Appendix: Mill Tank Water Level

The Silver Tank (6.4ML) would have the capacity to support the 1.7ML transfer to the Mill Tanks and 0.7ML of site usage (plus 0.1ML at the Mill). The inflow from the town raw water supply has historically been capable of at least 1.2ML per day.

Assuming max transfers of 1.7ML from the Silver Tank to the Mill Tanks per day, the capacity of the Silver Tank would provide 6 days of capacity with normal inflows or 2.5 days capacity with no inflows from the town supply.

### 3.6. Crusting Agent

The system will have the capacity to apply a crusting agent to the TSF2 through the sprinkler spray system.

This will be used for expected extreme conditions beyond the capability of the water sprays or in the event of extended conditions needing dust suppression when the water supply is predicted to be exhausted.

This will be used when the identified criteria are triggered - refer BHOP monitoring protocol. Criteria that will be considered include predictions of prolonged windy conditions, wind speed and water level remaining in tank.



The crusting agent will be delivered by a dosing system that injects the appropriate amount of crusting agent based on the system water flow.

The dosing system will have a variable speed pump controlled by a flow meter on both the water line and crusting agent supply line to ensure the correct concentration is dosed.

It will require 1 application of 2L per sqm of water (0.42ML) dosed with the crusting agent to crust the TSF2. This will take 48 minutes. It may be possible to only crust the dry parts of the TSF2 which are likely to release dust.

### 3.7. Control System

The control system will be based around an Allen Bradley PLC. The PLC will take inputs from:

- Air Quality Monitoring System (either individual sensors or from system)
- Users
- Main Line Flow Meter

The PLC will control the:

- Pump
- Dosing System
- Electric Valves which control water to individual sprinklers.

The PLC will also provide warnings such as:

- No water flow on mainline (eg Pump failure)
- Low water flow on mainline (eg sprinkler valve does not open)
- High water flow on mainline (eg sprinkler valve fails open)
- No dosing chemical (eg valve on dosing chemical tank closed)
- Sensor / communications failure

#### 3.7.1. Bermad Valve

Each sprinkler will be controlled by its own Electric Valve. We have selected the Bermad 400 Series 150mm Ductile Iron Polymer Coated Valve as it is a high quality valve used commonly throughout the mining industry in Australia and throughout the world for this sort of application.

The 150mm version was selected as it would have (what we consider to be an acceptable) pressure loss of 0.09 bar when operating with a flow of 130m<sup>3</sup>/hr.

Valves for sprinklers located in the TSF2 will be located on the ring main to ensure easy access for maintenance or manual operation.

All valves will also have a lockable manual butterfly valve for physical isolation.

## MAINTENANCE & TESTING

The system will be tested by running through each sprinkler monthly. The test system will be designed to run for 30 minutes to ensure that it is possible to check the full rotation performance of each sprinkler while minimise the amount of water used for the test.

## RISKS

<b>Risk</b>	<b>Control</b>
Lack of reliability of town water supply	The existing Mill Raw Water Tank and New Mill Tank will be kept full. The Silver Tank is kept full and has more than 6 days storage capacity of maximum predicted usage including spraying the TSF2 use with normal inflows. The Silver Tank has 2.5 days of storage with the same usage and no inflows from the town raw water supply.
Pump failure	Backup pumps will be wired and plumbed so they can be easily switch over should the primary pump fail for both the Silver Tank to Mill Tanks supply pump and for the TSF spray system pump.
Electric supply failure	A diesel generator will be available to power the pumps should the mains electricity fail
Sprinkler / valve failure	The system will be tested monthly. It will be possible to access the wet areas of the TSF2 using a hovercraft for maintenance or during operation.
Increasing height of the TSF2	The height of the sprinklers inside the TSF will be increased each year to ensure they stay above the tailings
Control system failure	The pump will be able to be manually started and individual valves can be manually opened and closed – without power.
Ongoing extreme dust causing conditions	The crusting agent will be able to seal the tailings dam to prevent dust lift off. Triggers will be outlined in BHOP Monitoring Protocol.

## APPENDIX: SYSTEM PRESSURE CALCULATIONS

The following illustrates the pressure loss calculations in a worst-case model.

Item	Pressure Required	Pressure Total
Mariner located at 325 RL in middle of TSF2	7.00	7.00
Riser Piping for Mariner 130m <sup>3</sup> /hr , 15m x 4" pipe	0.32	7.32
Pipe from Mariner located in TSF2 to Ring Main 130m <sup>3</sup> /hr, 100m x 200mm PN12.5 Poly	0.13	7.45
Bermad 150mm Valve 130m <sup>3</sup> /hr	0.09	7.54
Ring Main 520m <sup>3</sup> /hr, 1,500m x 315mm PN12.5 Poly	0.34	7.88
Elevation Change from TSF2 325RL and New Mill Tank 315RL	1.0	8.38
Supply Pipe from New Mill Tank to TSF2 520m <sup>3</sup> /hr, 50m x 400mm PN2.5 Poly	0.05	8.93
<b>Required Pump Pressure</b>		<b>8.43 bar</b>

## APPENDIX: MILL TANK WATER LEVEL

The following illustrates the water level of the Mill Storage Tanks when the TSF is being sprayed.

<b>Day @ Time</b>	<b>Description</b>	<b>Water In</b>	<b>Water Out</b>	<b>Mill Storage Level</b>
Day 1: 9:00	Starting Mill Storage available			3.4
Day 1: 10:00	Apply 2mm to TFSF2	0.07	0.42	3.05
Day 1: 11:00	Inflow from Silver Tank	0.07	0	3.12
Day 1: 12:00	Apply 2mm to TFSF2	0.07	0.42	2.77
Day 1: 13:00	Inflow from Silver Tank	0.07	0	2.84
Day 1: 14:00	Apply 2mm to TFSF2	0.07	0.42	2.49
Day 1: 15:00	Inflow from Silver Tank	0.07	0	2.56
Day 1: 16:00	Apply 2mm to TFSF2	0.07	0.42	2.21
Day 1: 17:00	Inflow from Silver Tank	0.07	0	2.28
Day 1: 18:00	Apply 2mm to TFSF2	0.07	0.42	1.93
Day 1: 19:00	Inflow from Silver Tank	0.07	0	2
Day 1: 20:00	Inflow from Silver Tank	0.07	0	2.07
Day 1: 21:00	Apply 2mm to TFSF2	0.07	0.42	1.72
Day 1: 22:00	Inflow from Silver Tank	0.07	0	1.79
Day 1: 23:00	Inflow from Silver Tank	0.07	0	1.86
Day 1: 24:00	Inflow from Silver Tank	0.07	0	1.93
Day 2: 1:00	Inflow from Silver Tank	0.07	0	2
Day 2: 2:00	Inflow from Silver Tank	0.07	0	2.07
Day 2: 3:00	Inflow from Silver Tank	0.07	0	2.14
Day 2: 4:00	Inflow from Silver Tank	0.07	0	2.21
Day 2: 5:00	Inflow from Silver Tank	0.07	0	2.28
Day 2: 6:00	Inflow from Silver Tank	0.07	0	2.35
Day 2: 7:00	Inflow from Silver Tank	0.07	0	2.42
Day 2: 8:00	Inflow from Silver Tank	0.07	0	2.49
Day 2: 9:00	Mill Daily Use	0.07	0.1	2.46
Day 2: 10:00	Apply 2mm to TFSF2	0.07	0.42	2.11
Day 2: 11:00	Inflow from Silver Tank	0.07	0	2.18
Day 2: 12:00	Apply 2mm to TFSF2	0.07	0.42	1.83
Day 2: 13:00	Inflow from Silver Tank	0.07	0	1.9
Day 2: 14:00	Apply 2mm to TFSF2	0.07	0.42	1.55
Day 2: 15:00	Inflow from Silver Tank	0.07	0	1.62
Day 2: 16:00	Apply 2mm to TFSF2	0.07	0.42	1.27
Day 2: 17:00	Inflow from Silver Tank	0.07	0	1.34
Day 2: 18:00	Apply 2mm to TFSF2	0.07	0.42	0.99
Day 2: 19:00	Inflow from Silver Tank	0.07	0	1.06

<b>Day @ Time</b>	<b>Description</b>	<b>Water In</b>	<b>Water Out</b>	<b>Mill Storage Level</b>
Day 2: 20:00	Inflow from Silver Tank	0.07	0	1.13
Day 2: 21:00	Apply 2mm to TF2SF2	0.07	0.42	0.78
Day 2: 22:00	Inflow from Silver Tank	0.07	0	0.85
Day 2: 23:00	Inflow from Silver Tank	0.07	0	0.92
Day 2: 24:00	Inflow from Silver Tank	0.07	0	0.99
Day 3: 1:00	Inflow from Silver Tank	0.07	0	1.06
Day 3: 2:00	Inflow from Silver Tank	0.07	0	1.13
Day 3: 3:00	Inflow from Silver Tank	0.07	0	1.2
Day 3: 4:00	Inflow from Silver Tank	0.07	0	1.27
Day 3: 5:00	Inflow from Silver Tank	0.07	0	1.34
Day 3: 6:00	Inflow from Silver Tank	0.07	0	1.41
Day 3: 7:00	Inflow from Silver Tank	0.07	0	1.48
Day 3: 8:00	Inflow from Silver Tank	0.07	0	1.55
Day 3: 9:00	Mill Daily Use	0.07	0.1	1.52
Day 3: 10:00	Apply 2mm to TF2SF2	0.07	0.42	1.17
Day 3: 11:00	Inflow from Silver Tank	0.07	0	1.24
Day 3: 12:00	Apply 2mm to TF2SF2	0.07	0.42	0.89
Day 3: 13:00	Inflow from Silver Tank	0.07	0	0.96
Day 3: 14:00	Apply 2mm to TF2SF2	0.07	0.42	0.61
Day 3: 15:00	Inflow from Silver Tank	0.07	0	0.68
Day 3: 16:00	Apply 2mm to TF2SF2	0.07	0.42	0.33
Day 3: 17:00	Inflow from Silver Tank	0.07	0	0.4
Day 3: 18:00	Apply 2mm to TF2SF2	0.07	0.42	0.05
Day 3: 19:00	Inflow from Silver Tank	0.07	0	0.12
Day 3: 20:00	Inflow from Silver Tank	0.07	0	0.19
Day 3: 21:00	Not Enough to Apply 2mm	0.07	0.42	-0.16

## APPENDIX: WET EARTH PROFILE

Wet Earth has been operating since 2004 and focused on dust control in mining since 2006.

Wet Earth philosophy has always been to find the best solution to our customers' problems. This has resulted in the continual increase in our product range as customer identified new problems we needed to solve. This has resulted in Wet Earth being unique in the Australian market place as we can provide a vast range of different solutions to dust problems including:

- Fog Cannons® for airborne dust control
- DustExNet® for containment of dust
- Chemicals that can be applied to prevent the lift off of dust
- Automated spray systems to prevent the lift off of dust
- Nozzles & misting systems to prevent and control dust

Wet Earth has partnerships with leading international dust control solution providers to ensure it provides the best solutions to its customers. Some of these companies include:

- Ecology Srl ([www.ecology.it](http://www.ecology.it))
- RST - Reynold Soil Technology ([www.rstsolutions.com.au](http://www.rstsolutions.com.au))
- Spraying Systems ([www.spray.com](http://www.spray.com))

Wet Earth continues to provide dust control solutions to leading mining companies including:

- BHP Billiton;
- Barrick Gold;
- Bechtel;
- Birla;
- BMA;
- CITIC Pacific;
- Ensham Resources;
- Fortescue Metal Group;
- Glencore Xstrata;
- Goldfields;
- Hillgrove Resources;
- MMG;
- MacMahon;
- NCIG;
- New Gold;
- Newcrest Mining Ltd;
- Newmont;
- Nystar;
- Rio Tinto;
- Sibelco;
- Thiess;
- Whitehaven Coal;

## 8.1. Key Personnel

### Nicholas Marks

Nicholas has a Bachelor of Electrical Engineering and spent a number of years in corporate and operational roles at BHP Billiton before moving into Electronic Commerce and ultimately founding Wet Earth.

Nicholas experience with safety, environmental management and quality systems at BHP Billiton gave him a thorough understanding of the corporate requirements of mining companies.

The engineering mindset allows Nicholas to be solution focused when working with clients.

### Stephen Martin

Stephen has a Bachelor of Science and spent a number of years in operational roles within agriculture, the food industry and irrigation before founding Wet Earth.

Similar to Nicholas, Stephens experience in the corporate environment has given him a thorough understanding of the requirements of mining companies.

Stephen also has a very technical mindset which has helped drive Wet Earths solution focused approach.

## 8.2. Relevant Project

The following are some of the larger spray system projects Wet Earth has undertaken using the Sime Mariner sprinklers:

- BMA Peak Downs: 2 x Waste Water Evaporation Projects  
144 Sime Skippers  
60 Sime Mariners
- BMA Saraji: 3 x Waste Water Evaporation Projects  
68 Sime Skipper  
58 Sime Mariner  
99 Sime Mariners
- Citic Pacific Mining: Stockpile Spray System:  
88 Sime Mariners
- Glencore Koniambo: Stockpile Spray System  
88 Sime Mariners
- FMG Cloudbreak  
21 Sime Mariners & 5 other Sime Sprinklers

### 8.3. Project History in Photos

BMA Peak Downs Tailings Dam Waste Water Evaporation



Viva Energy Stack Demolition Dust Suppression





BHP Billiton Iron Ore: Yandi, Area C, Eastern Ridge,  
Jimblebar  
Haul Road Dust Control – DustWorx Dosing System



Barminto Underground Fog Cannon Dust Control



### NCIG Fog Cannon Dust Control



### BHP Mt Keith ROM Pad Dust Control



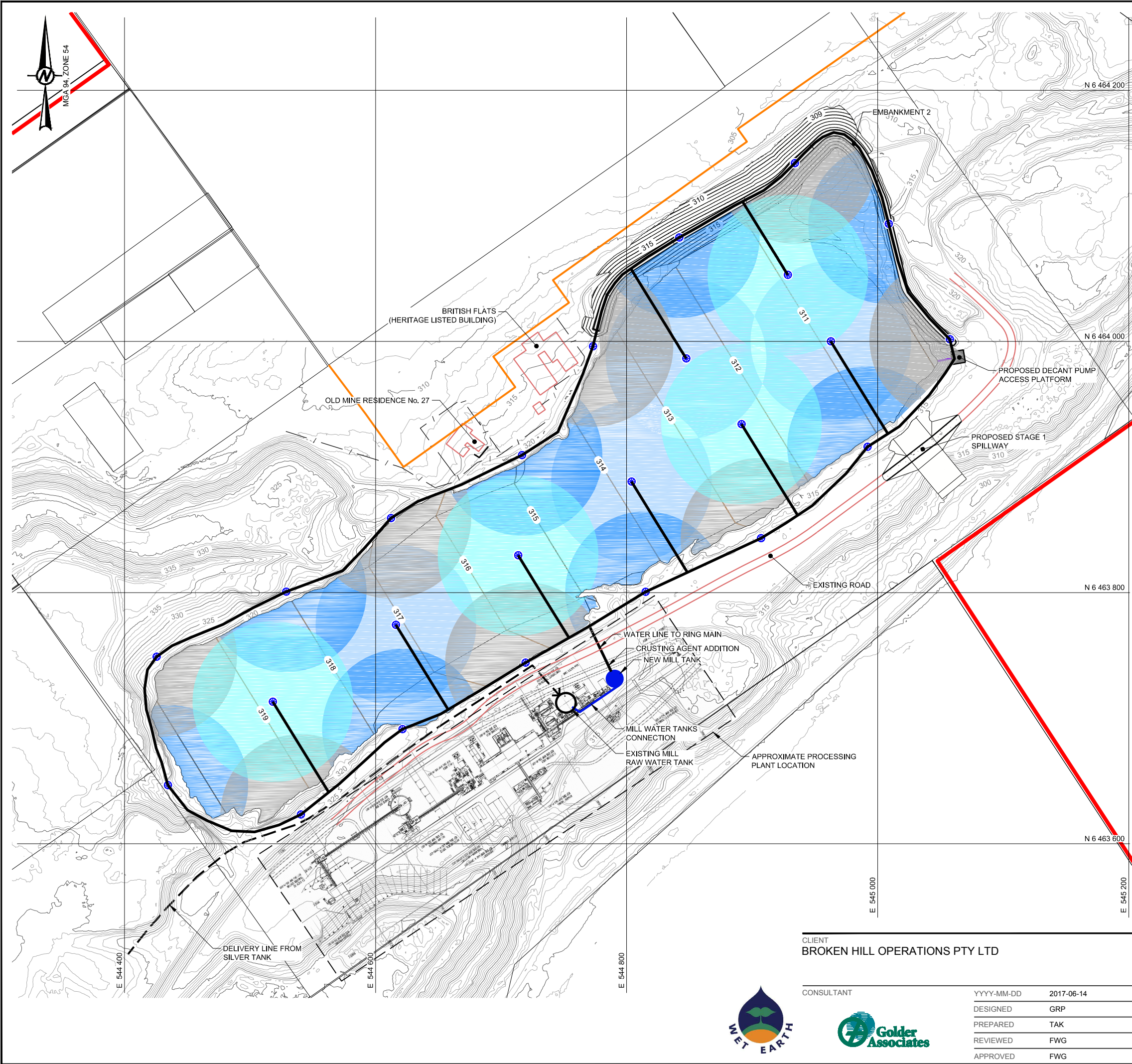
### CITIC Pacific Mining Sino Project Mine Stockpile Dust Control



Rio Tinto Tom Price Fog Cannon



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**LEGEND**

- EXISTING CONTOURS AT 1 m INTERVALS
- PROPOSED EMBANKMENT CONTOURS AT 1 m INTERVALS
- ANTICIPATED INTERMEDIATE TAILINGS CONTOURS AT 1 m INTERVALS
- DUST SUPPRESSION SPRINKLER LOCATION
- THROW RADIUS (TYP. 64 m) WITH OVERLAP
- LEASE BOUNDARY EXTENT
- SURVEYED CML7 SURFACE EXCLUSION BOUNDARY
- RING MAIN (BY OTHERS)

**NOTE(S)**  
 1. ALL LEVELS ARE REFERENCED IN METRES TO AUSTRALIAN HEIGHT DATUM (m AHD).

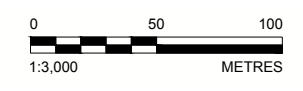
**REFERENCE(S)**  
 EXISTING SURVEY SHOWN FROM FILES: 160425 Tailings Dam 1m Contours.dxf AND 160425 RASP Tailings Dam Area.dxf (1 m CONTOURS), RECEIVED FROM CBH RESOURCES ON 11 MAY 2016.

SITE BOUNDARIES SHOWN FROM FILES: mga\_cml7\_lease\_bdy.dwg, surf\_leases\_mga.dxf, RECEIVED FROM CBH RESOURCES ON 11 MAY 2016.

CML SURFACE EXCLUSION BOUNDARY SHOWN FROM FILES: GFH\_D2319.DXF AND GFH\_M25352.dxf, RECEIVED FROM CBH RESOURCES ON 22 AUGUST 2016.

APPROXIMATE PROCESSING PLANT LOCATION PROVIDED BY CBH RESOURCES, DRAWING: "RMP100M002", DATED: 20 OCTOBER 2011, RECEIVED: 7 JUNE 2017.

NOT FOR CONSTRUCTION



CLIENT  
 BROKEN HILL OPERATIONS PTY LTD

CONSULTANT



YYYY-MM-DD	2017-06-14
DESIGNED	GRP
PREPARED	TAK
REVIEWED	FWG
APPROVED	FWG

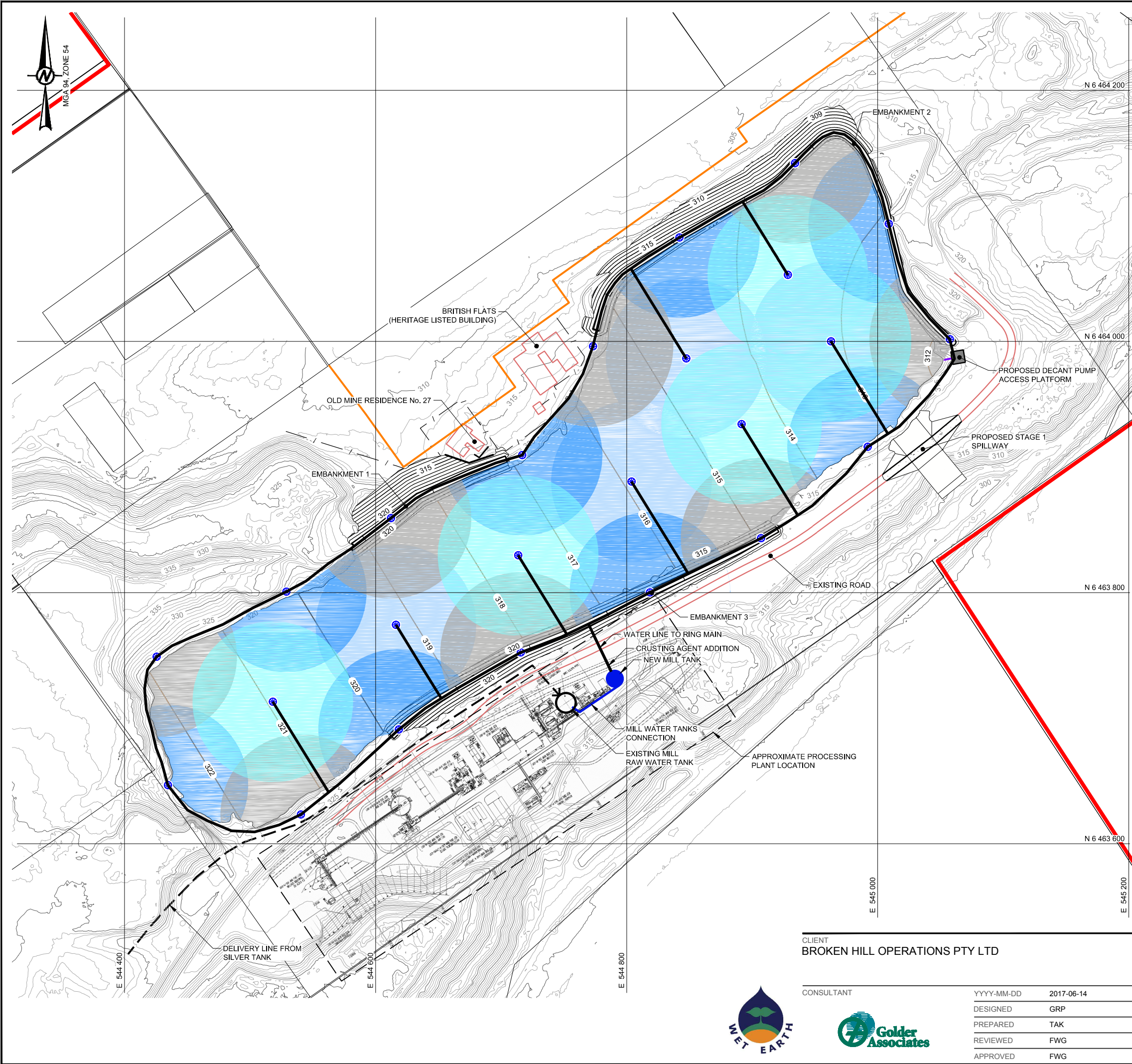
PROJECT  
 BLACKWOOD PIT TAILINGS STORAGE FACILITY  
 RASP MINE, BROKEN HILL

TITLE  
**PROPOSED DUST SUPPRESSION SYSTEM AT STAGE 1**

PROJECT NO.	CONTROL	REV.	FIGURE
1654895	011-L	3	1

25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ISO A3

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**LEGEND**

- EXISTING CONTOURS AT 1 m INTERVALS
- PROPOSED EMBANKMENT CONTOURS AT 1 m INTERVALS
- ANTICIPATED FINAL TAILINGS CONTOURS AT 1 m INTERVALS
- DUST SUPPRESSION SPRINKLER LOCATION
- THROW RADIUS (TYP. 64 m) WITH OVERLAP
- LEASE BOUNDARY EXTENT
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- RING MAIN (BY OTHERS)

**NOTE(S)**  
 1. ALL LEVELS ARE REFERENCED IN METRES TO AUSTRALIAN HEIGHT DATUM (m AHD).

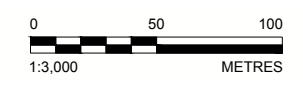
**REFERENCE(S)**  
 EXISTING SURVEY SHOWN FROM FILES: 160425 Tailings Dam 1m Contours.dxf AND 160425 RASP Tailings Dam Area.dxf (1 m CONTOURS), RECEIVED FROM CBH RESOURCES ON 11 MAY 2016.

SITE BOUNDARIES SHOWN FROM FILES: mga\_cml7\_lease\_bdy.dwg, surf\_leases\_mga.dxf, RECEIVED FROM CBH RESOURCES ON 11 MAY 2016.

CML SURFACE EXCLUSION BOUNDARY SHOWN FROM FILES: GFH\_D2319.DXF AND GFH\_M25352.dxf, RECEIVED FROM CBH RESOURCES ON 22 AUGUST 2016.

APPROXIMATE PROCESSING PLANT LOCATION PROVIDED BY CBH RESOURCES, DRAWING: "RMP100M002", DATED: 20 OCTOBER 2011, RECEIVED: 7 JUNE 2017.

NOT FOR CONSTRUCTION



CLIENT  
 BROKEN HILL OPERATIONS PTY LTD

CONSULTANT	YYYY-MM-DD	2017-06-14
	DESIGNED	GRP
	PREPARED	TAK
	REVIEWED	FWG
	APPROVED	FWG

PROJECT  
 BLACKWOOD PIT TAILINGS STORAGE FACILITY  
 RASP MINE, BROKEN HILL

TITLE  
**PROPOSED DUST SUPPRESSION SYSTEM AT STAGE 2**

PROJECT NO.	CONTROL	REV.	FIGURE
1654895	011-L	3	2



25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ISO A3