BHP Billiton Olympic Dam

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LM1 ANNUAL REPORT

August 2013

BHP Billiton Olympic Dam Corporation Pty Ltd

Registered Office: Rialto Towers Level 29, 525 Collins St, Melbourne, Victoria 3000, Australia

OLYMPIC DAM

LM1 ANNUAL REPORT

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DISTRIBUTION

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1 Introduction

This document is the LM1 report on radiation protection for BHP Billiton Olympic Dam. As required under the terms of the licence LM1, granted on September 28 1988 under the Radiation Protection and Control Act 1982 to mine and treat uranium bearing ores, the following information is included in this document:

- Plans of mine workings showing all existing workings and facilities for ventilation of the mine as of 31st July 2013;

- Indications of areas in which new mine development is planned and of areas from which ore extraction is planned for the period to 30 June 2014;

- Details of significant changes in processing plant layout, major equipment, or mill process during the twelve months ending 30 June 2013; and

- Estimates of quantities of radioactive wastes produced at Olympic Dam during the twelve months ending 30 June 2013.

A separate annual report containing employee radiation dose assessments, dose calculation methodologies, dose parameters and dose conversion factors for the period 1 July 2012 to 30 June 2013 will be submitted to the Radiation Protection Branch of the SA EPA in October 2013.

2 Mine workings during FY13

2.1 Mining methods

2.1.1 Current Mining Method

Sub-level open stoping has been the mining method of choice at Olympic Dam since the commencement of operations in 1988. Once the stopes are mined out they are backfilled with either unconsolidated rock fill or a mixture of aggregate and binder as Cemented Aggregate Fill (CAF). The nature of the backfill material is based on future requirements of the fill mass. Where the operation plans to expose walls or backs in the future, CAF will be selected to backfill the stope. Conversely, if the fill mass is not going to be exposed at a later date, then the stope will be filled using rock fill.

In cycle fibrecrete (shotcrete containing synthetic fibres) is a part of the mining cycle which provides a greater level of surface support for developing drives and rehabilitation sites.

2.1.2 Stope Size and Shape

The current stope design contains stopes of various shapes and sizes. Footprints vary from 20m by 20m to 30m by 30m. Stope height is designed as much as possible to encompass the full extent of the ore. Current stope heights generally vary from 1 to 5 lifts high (~60m to ~300m). Consequently, stope tonnages can vary from under 100,000t to in excess of 500,000t.

2.1.3 Extraction Sequence

The initial stope extraction sequence at Olympic Dam is defined as ‘Primary-Secondary-Tertiary’ (P/S/T). The extraction sequence was modified in 2005 to a pillarless sequence known as ‘Mining Fronts’.

The Mining Fronts extraction sequence minimises re-work caused by the need to re-access areas over time (i.e. for rehabilitation work, ventilation controls, etc.). This sequence also minimises dilution caused by CAF falling from a primary into a secondary stope and minimises ore losses caused by primary stope CAF shadowing secondary stope ore. Furthermore, the Mining Fronts sequence minimises any future impact of stress increase or decrease on the rock mass behaviour, thus maximising ore recovery. No remnant pillars need to be recovered in a Mining Front scenario and the operator retains the ability to close off areas upon completion of the stope extraction. Mining Fronts also provides the opportunity for consistent and systematic designs, increased predictability, reliability and sustainability of the mining plan, and minimises potential for ore loss.

2.1.4 Backfill Requirements

The permanent (existing) plant produces CAF via a pug mill and utilises neutralised tailing sands, whilst the temporary plant produces CAF via a large agitator-mixing bowl and utilises quarry fines as the sand medium. Both plants are operated by BHP Billiton and a contractor delivers the CAF to surface boreholes using semi-trailer bottom dump trucks. Binders (cement, fly ash and lime) are added to the CAF mixture according to strength requirements and are sourced externally. Crushed dolomite/limestone aggregate is sourced from an onsite quarry. Water comprises both recycled process water and local saline water.

2.2 Mine development and Production during FY13

The actual production, backfill and raise drilling schedules for FY13 are described in Tables 1 - 4.

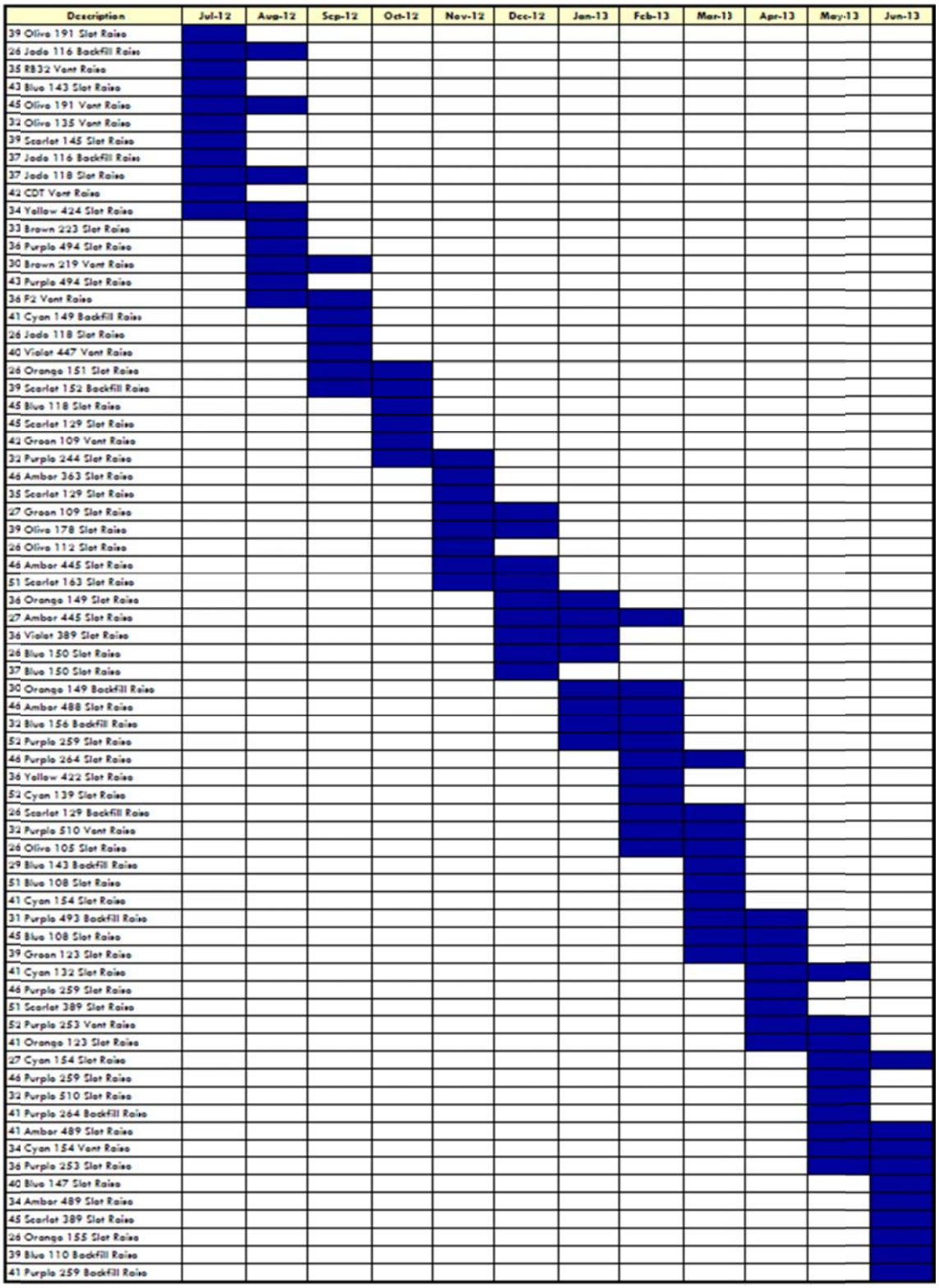
Table 1: Actual Production Schedule FY13

STOPE	Mine Area	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
Olive153	C												
Orange104	DNW												
Cyan113	FN												
Amber329	FN												
Orange109	DNW												
Scarlet120	DSE												
Orange552	DCN												
Purple202	DNW												
Cyan149	FN												
Yellow417	B												
Blue156	DC												
Purple255	F												
Purple263	F												
Olive102	C												
Purple244	F												
Jade116	DSE												
Orange114	DNW												
Brown219	F												
Purple493	F												
Olive191	C												
Cyan156	FN												
Scarlet139	DSE												
Yellow424	B												
Green101	DNW												
Blue143	DC												
Scarlet146	DSE												
Brown223	F												
Purple453	F												
Cyan440	FN												
Olive135	C												
Scarlet145	DSE												
Orange151	DC												
Jade118	DSE												
Amber363	FN												
Scarlet129	DSE												
Amber445	FN												
Green109	DNW												
Olive112	C												
Blue150	DC												
Scarlet163	DSE												
Violet389	A												
Blue118	DC												
Green103	DNW												
Amber488	FN												
Orange149	DCN												
Olive178	C												
Cyan139	FN												
Purple259	F												
Purple264	F												
Yellow422	B												
Olive105	C												
Blue108	DC												
Green123	DNW												
Scarlet389	DSE												

Table 2: Actual Backfill Schedule FY13

Stope	Fill Type	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
OLIVE 113	CAF												
AMBER 322	CAF												
PURPLE 238	SRF												
GREEN 115	URF												
YELLOW 10	CAF												
SCARLET 159	CAF												
ORANGE 103	CAF												
BLUE 104	CAF												
GREEN 106	CAF												
ORANGE 148	CAF												
AMBER 448	CAF												
BLUE 101	CAF												
BLUE 110	CAF												
PURPLE 225	CAF												
SCARLET 120	CAF												
SCARLET 151	CAF												
PURPLE 252	CAF												
PURPLE 219	CAF												
CYAN 144	CAF												
JADE 116	CAF												
BROWN 219	CAF												
PURPLE 255	CAF												
CYAN 149	CAF												
OLIVE 169	CAF												
SCARLET 152	CAF												
ORANGE 114	CAF												
SCARLET 139	CAF												
ORANGE 552	CAF												
PURPLE 202	CAF												
PURPLE 453	CAF												
OLIVE 153	CAF												
ORANGE 101	CAF												
PURPLE 244	CAF												
CYAN 113	CAF												
BLUE 156	CAF												
ORANGE 109	CAF												
PURPLE 263	CAF												
PURPLE 236	CAF												
OLIVE 102	CAF												
YELLOW 424	CAF												
PURPLE 493	CAF												
AMBER 329	CAF												
YELLOW 417	CAF												
SCARLET 145	CAF												
OLIVE 191	CAF												
CYAN 156	URF												
PURPLE 224	URF												
BROWN 223	URF												
ORANGE 151	URF												

Table 3: Actual Raise Drilling Schedule FY13



2.2.1 Mine Ventilation

Total air in circulation as of 31st July 2013 was 5031 m^3/s, an increase of approximately 300 m^3/s or 6% from the previous year. A list of the air intake and exhaust shafts is shown in Table 4.

Table 4: Intake and Exhaust Shafts

INTAKES	EXHAUST SHAFTS
RB5	RB2
RB11	RB3
RB13	RB4
RB14	RB6
RB18	RB7
RB22	RB8
RB23	RB9
RB26	RB10
RB27	RB12
RB28	RB15
RB31	RB16
RB32	RB17
Robinson Shaft	RB19
Clark Shaft	RB20
Whenan Shaft	RB21
Surface Decline	RB24
A-North Decline	RB29
	RB30
	RB33
	RB34
	RB35

2.2.2 Financial Year 2013 - Changes to Primary Ventilation Circuit

RB1 has been decommissioned during FY13. There have been no other major changes to the ventilation circuit during FY13.

3 Planned Mine Development for FY14

The approximate scheduling of major Mine development activities can be seen in Tables 5 - 8. Programming of the work may change with operational requirements. New stopes will be developed and brought on line as existing stopes are depleted. All stopes currently planned for FY14 are in the A, B, C, DC, DCN, DNW, DSE, F and FN mine areas.

Table 5: Production Schedule FY14

STOPE	Mine Area	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14
Amber363	FN												
Scarlet146	DSE												
Violet389	A												
Green109	DNW												
Blue150	DC												
Scarlet163	DSE												
Purple264	F												
Yellow422	B												
Brown203	F												
Green103	DNW												
Olive105	C												
Amber488	FN												
Scarlet129	DSE												
Orange149	DCN												
Blue108	DC												
Cyan154	FN												
Scarlet389	DSE												
Amber445	FN												
Green123	DNW												
Purple510	F												
Purple259	F												
Olive178	C												
Orange123	DCN												
Jade118	DSE												
Olive135	C												
Cyan132	FN												
Amber489	FN												
Scarlet166	DSE												
Purple253	F												
Violet447	A												
Purple655	F												
Olive156	C												
Pink389	C												
Orange155	DCN												
Blue119	DC												
Orange110	DNW												
Olive103	C												
Blue147	DNW												
Amber305	FN												
Scarlet156	DSE												
Yellow419	B												
Yellow436	B												
Scarlet142	DSE												
Blue102	DC												
Scarlet121	DSE												
Green304	DNW												
Purple245	F												
Cyan114	FN												
Cyan104	FN												
Brown202	F												
Pink119	C												
Green108	DNW												
Orange147	DC												
Amber385	FN												
Violet369	A												
Purple509	DNW												
Purple494	F												

Table 6: Backfill Schedule FY14

Stope	Fill Type	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14
Cyan156	URF												
Brown223	CAF												
Blue150	CAF												
Brown219	CAF												
Blue143	CAF												
Scarlet145	CAF												
Olive191	CAF												
Cyan139	SRF												
Orange104	CAF												
Blue118	CAF												
Yellow417	CAF												
Amber329	CAF												
Olive112	CAF												
Brown203	CAF												
Scarlet146	URF												
Green103	SRF												
Green109	SRF												
Amber363	CAF												
Purple238	CAF												
Violet389	CAF												
Scarlet129	CAF												
Scarlet163	SRF												
Yellow422	URF												
Orange151	SRF												
Olive105	CAF												
Amber488	URF												
Purple264	URF												
Cyan154	URF												
Orange149	CAF												
Blue108	CAF												
Scarlet389	CAF												
Purple510	CAF												
Green123	CAF												
Amber445	CAF												
Scarlet166	CAF												
Scarlet166	URF												
Purple259	CAF												
Orange123	CAF												
Olive178	CAF												
Olive156	CAF												
Orange110	CAF												
Jade118	CAF												
Amber489	URF												
Olive135	CAF												
Blue119	URF												
Olive103	URF												
Cyan132	CAF												
Pink389	CAF												
Violet447	CAF												
Olive103	CAF												

Table 7: Underground Raise Drill Schedule FY14

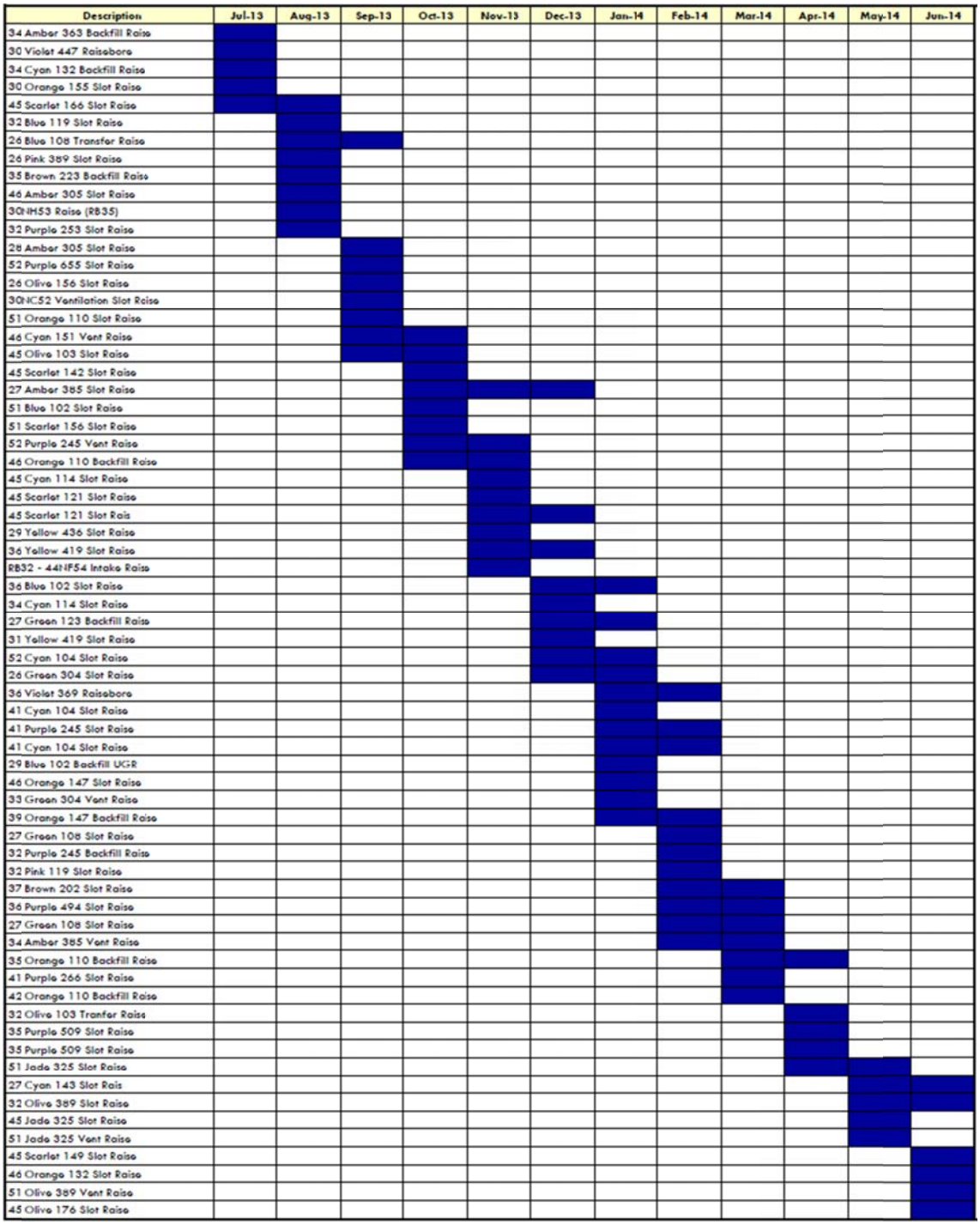
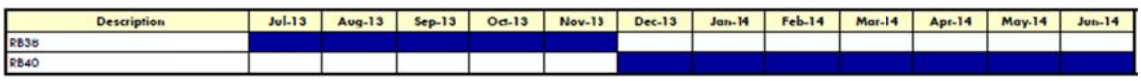


Table 8: Raise Bore Schedule FY14



3.1 Planned Additions to Primary Ventilation Circuit during FY14

The following raises are planned to be completed during FY14:

- RB38 intake raise to service the Lime area
- RB40 exhaust raise to service the Lime area

3.2 Changes to Equipment or Process in Mine Production

3.2.1 Changes to Mine Equipment

Equipment purchased during the course of FY13:

- For BHP Billiton Limited the following equipment was purchased and decommissioned during the reporting period:
    - Trucks TR046, TR047, TR048, TR049, TR050, TR051, TR052, TR053 TR054 and TR055 were commissioned
    - Loaders UL055, UL056, UL057, UL058 and UL059 were commissioned
    - Drills DG0039, DG0041, DG0042 and DG0043 were commissioned
    - Light Vehicles UP427 and UP444 were commissioned
    - Loaders UL042, UL043, and UL044 were decommissioned
    - Drills UJ0027, UJ0028, UJ0029 and UJ0031 were decommissioned
    - Light Vehicles UP346 and UP259 were decommissioned
- For Macmahon Underground Pty. Ltd. and Macmahon Raise Drilling Pty. Ltd., the following equipment changes occurred:
    - Jumbo DR0084 was commissioned
    - Cable bolter DR3204 was commissioned
    - Loaders LO7024 and LO7025 were commissioned
    - Grader GD0013 was commissioned
    - Raise Bore Rig 73R was commissioned
    - Jumbos DR0025 and DR0028 were decommissioned
    - Cable bolter DR3204 was decommissioned
    - Loaders LO7006 and LO7008 were decommissioned
    - Grader GD0001 was decommissioned
    - Shotcrete Rigs TR1919 and TR1920 were decommissioned
    - Integrated Tool Carriers LO4047, SV66 and SV81 were decommissioned
    - Light Vehicles LV0309, LV0317, LV0337, LV0341 and LV5150 were decommissioned
- For Boart Longyear Pty Ltd, there have been no equipment changes for FY13.
- For Heading Contractors Pty Ltd, the following equipment changes occurred:
    - Light Vehicles H9 and H10 were decommissioned
    - Bobcats 463/1 and 463/3 were decommissioned
    - Loaders L2 and L4 were decommissioned

  - Backhoe BH4 was decommissioned
  - Excavator X08 was decommissioned
- For Exact Mining Pty Ltd, the following equipment changes occurred for the CAF plant, quarry and batch plant:
  - Truck agitators HV720, HV723, HV733 and HV812 were commissioned
  - Light vehicles PC008, LV324, LV334, LV337, LV441 and LV443 were commissioned
  - Medium vehicles MV021 was commissioned
  - Compressor RC052 was commissioned
  - Loader WL009 was commissioned
  - Dump truck DT315 was decommissioned
  - Truck agitator HV729 was decommissioned
  - Light vehicles LV336, LV338, LV339, LV340, LV341 and LV391 were decommissioned
  - Medium vehicles MV016 was decommissioned
  - Crushers NC003. NC004 and SC013 were decommissioned
  - Screening Plants SP006 and SP007 were decommissioned
  - Stackers ST004, ST007 and ST012 were decommissioned
  - Trailer TB013 was decommissioned
  - Loader WL022 was decommissioned

3.2.2 Changes to Mine Procedures

There have been no changes to mine operating procedures with a bearing on environmental and radiation management in the FY13 period.

3.2.3 Changes to Mine Processes

Mining Method

There have been no changes to the mining method in the FY13 period.

Stope size/shape

There have been no changes to the stope size/shapes in the FY13 period.

Extraction sequence

There have been no changes to the extraction sequence in the FY13 period.

Backfill Requirements

Backfill production last year was 2.683 Mm^3. The current schedule for FY14 is 2.45 Mm^3. This will be achieved by fully utilising the permanent CAF plant (CAF plant 1) and using the temporary CAF plant (CAF Plant 2) on an ad-hoc basis.

Studies will continue to examine varying CAF mix designs to achieve different strengths, as required by mine design.

4 Changes to Equipment or Process in the Process Plant

4.1 Changes to Process Plant Equipment

Changes that have a bearing on environmental and radiation management in the plant are as below:

Concentrator

Though there were no major changes to the Concentrator plant, the noted changes or replacements were as follows:

- Maintenance of ANI, Fuller and Svedala Mills
- Maintenance of the Slag Flotation Circuit
- Repairs to Cons Leach Feed Tank
- Repairs to the final Concentrate Storage Tank

Hydromet

Though there were no major changes to the Hydromet and Solvent Extraction (SX) plant the noted changes or replacements were as follows:

Hydromet Plant:

- Tails Leach Tanks 1, 4 and 5 were cleaned/repaired
- CCD2, 4 and 6 were overhauled
- Deslimes Thickener was overhauled

SX Plant:

- Pulse columns 1, 2, 3 and 12 were overhauled
- Copper SX A-train and B-train units were cleaned out
- Tricanters for crud treatment in Uranium SX were commissioned
- New ammonia facility is currently being commissioned
- Barren solvent to pulse columns pipeline was cleaned
- Loaded strip tank was replaced

Smelter

The smelter has continued close monitoring for polonium 210 (Po-210) in order to ensure that airborne radionuclide concentrations are maintained below the derived air concentration (DAC). Critical streams in the smelter are regularly assayed for Po-210. Routine monitoring of airborne activity exposures to the workforce and fume emission sources has continued.

There were no major operational or process changes in the Smelter. During the Smelter Major Outage (November-December 2012), as part of the hygiene ventilation system's ongoing maintenance program, the following activities were completed:

- Hygiene ductwork inspections and repairs
- Damper testing and repairs

Refinery ER/EW/Goldroom area

Some minor changes in the refinery process operating parameters that happened in FY13 were as follows:

ER:

- Acid concentration in the electrolyte has been raised to 185-195 g/L H_2SO_4 from 175-185 g/L acid to promote bleeding and eliminate top nodulation issues
- Cl in the electrolyte also has been raised to 40-42 from 38-40 mg/L to lower Ag in the cathodes

EW:

- Electrolyte bleed rates have been increased from 6 m^3/hr to 8-12 m^3/hr depending on the severity of pre-stripping copper observed

Goldroom:

- No major change instituted

Analytical Laboratory

Though there were no major changes to the Analytical Laboratory, the noted changes or replacements were as follows:

- Ortec Octete 8-channel alpha spectroscopy system was purchased
- Gamma G5000 Series Alpha Beta Proportional Counter was purchased
- DSA-1000 16K channel integrated Multichannel Analyser was purchased

Tailings Storage Facility

There were no changes at the Tailings Storage Facility during July 2012 to June 2013.

Radioactive Waste Storage

A contaminated waste management strategy is being developed to treat low level radioactive and contaminated waste onsite. This strategy will include a classification system, decontaminating options, recycling options, and a permanent disposal facility design and location.

The temporary radioactive waste storage facility is still being utilised until a permanent Contaminated Waste Disposal Facility is approved and commissioned.

4.2 Changes to Process Plant Procedures

There were no changes to process plant operating procedures with a bearing on environmental and radiation management in the FY13 period.

5 Estimated Quantities of Radioactive Wastes

During the production of copper cathode and uranium oxide concentrate from ore mined on site, waste streams containing radioactive materials are generated. These are discussed further in the following sections.

5.1 Solid Wastes

Solid wastes from the processing of ore reach the Tailings Storage Facility (TSF) in the form of tailings slurry, deposited via spigots along the edges of any of five TSF Cells. The solids consolidate over time and the majority of the liquor either evaporates on the tailings cell, is captured then transferred to a system of evaporation ponds, or is neutralised by the limestone underneath the TSF before entering the groundwater where it is reclaimed via a number of bores.

For the period 1 July 2012 to 30 June 2013, the mass of solid tailings produced was approximately 9,111,014 tonnes. The TSF water balance indicates that a volume of approximately 9,328,292 m^3 of liquor was delivered to the TSF, of which approximately 1,730,089 m^3 was decanted to the evaporation ponds with the balance remaining in the tailings cells or evaporating. The data for the previous five years is shown below in Figure 1. The low levels seen in FY10 were the result of reduced production due to the Clark Shaft incident.

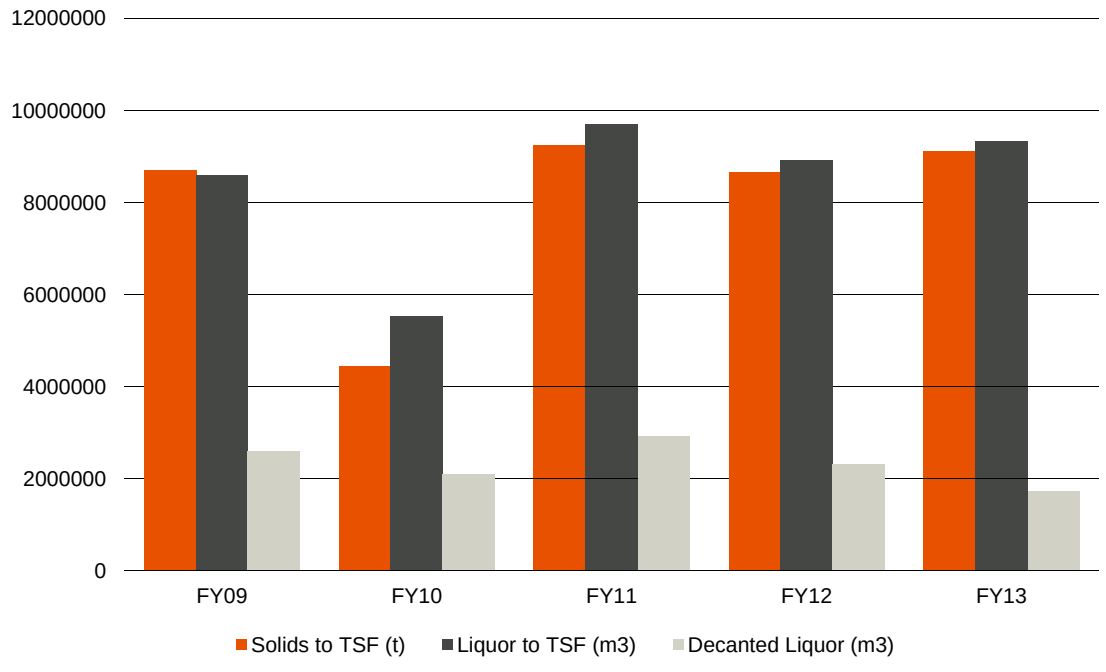


Figure 1: Wastes to the Tailings Storage Facility (TSF)

5.2 Gaseous Wastes

Fugitive radon is emitted from all areas of site; however the most significant are the mine ventilation raise bores, the ore stockpiles, milling activities, emission from the TSF and a component derived from ambient background concentrations.

Using the methodology derived from a review of radon source terms undertaken in 2002, the total site fugitive emission of radon decay products is approximately 264TBq for the reporting period. This represents an increase over the previous reporting period's estimation of 250TBq. The change is a result of increased production, which is consistent with increases seen previously where there were similar levels of mine development and process plant production. The previous five year radon emission activity is trended in Figure 2.

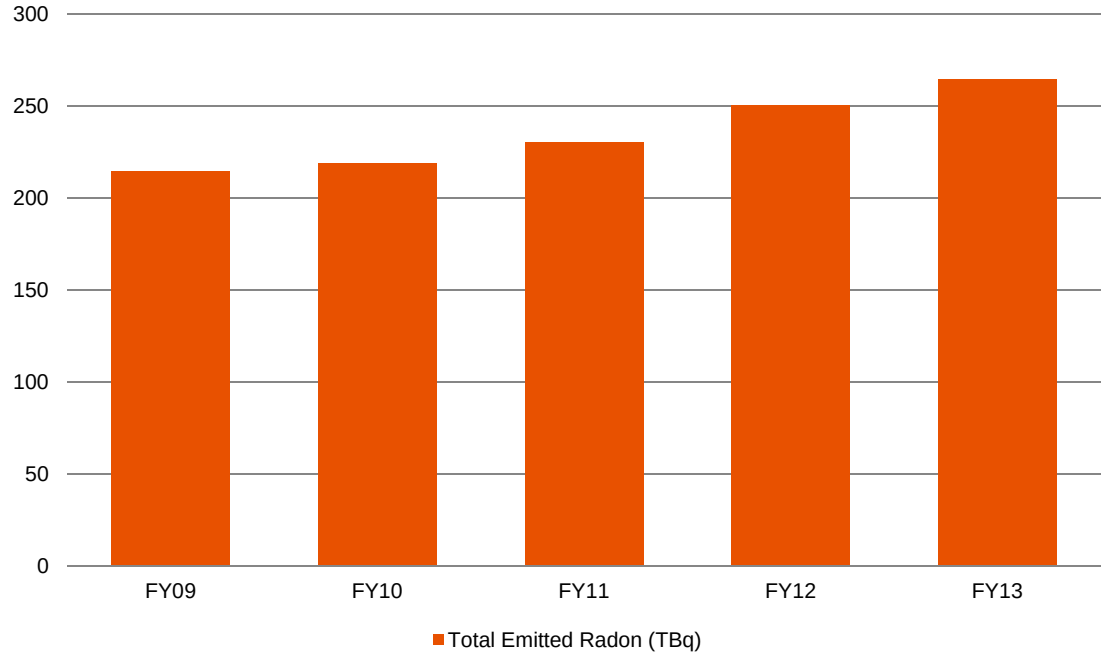


Figure 2: Site total emitted radon

5.3 Dust and Particulate Emissions

Quantities of dust and particulate are generated from point-sources during the processing of ore. The principal point-sources of dust and particulate emissions are Smelter 2 (Smelter 1 only being used for the remelting of clean refinery scrap copper), the Uranium Calcining Facility and the Slimes Treatment Plant (STP).

Smelter 2 processes copper concentrates produced during the milling, flotation, leach and feed preparation stages of the process, and consists of a Flash Furnace (FF), an Electric Slag Reduction Furnace (EF) and two Anode Furnaces. Concentrate is fed into the FF, generating slag, blister copper and off-gas containing significant quantities of sulphur dioxide (SO_2) and dust. The dust is captured within the Waste Heat Boiler (WHB) and the Electrostatic Precipitator (ESP), and either recycled to the FF, or leached and pumped to the Hydromet Tails Leach facility.

The SO_2 goes to the Acid Plant and is converted and absorbed to produce sulphuric acid. The EF takes FF slag and further reduces it to produce blister copper, slag and off-gas containing particulate. The particulate is captured via a quench tower and venturi scrubbing system, before off-gas is emitted to atmosphere. The two Anode Furnaces undertake the final fire-refining of the copper prior to casting copper anodes for use in the refinery. The off-gas from the Anode Furnaces is treated in a gas

cleaning system similar to that of the EF. All furnaces are fitted with gas cleaning system bypass stacks for use in emergency or abnormal situations.

The precipitation area of the hydrometallurgical plant includes two calcining furnaces, used to convert ammonium diuranate (ADU) to uranium oxide (U_3O_8). Each calciner has a dedicated gas cleaning system to remove particulate material prior to emission to atmosphere.

The STP (or Gold Room) treats the slimes generated during the electro-refining process to recover gold and silver. The facility includes a Roaster Scrubber designed to treat various furnace off-gas streams and a NOx Scrubber designed to treat emissions from the aciding process.

Using process control system data in coordination with isokinetic sampling, the total site particulate emission is estimated at 121,007kg for the period 1 July 2012 to 30 June 2013. The previous five year point source particulate emission data is shown in Figure 3.

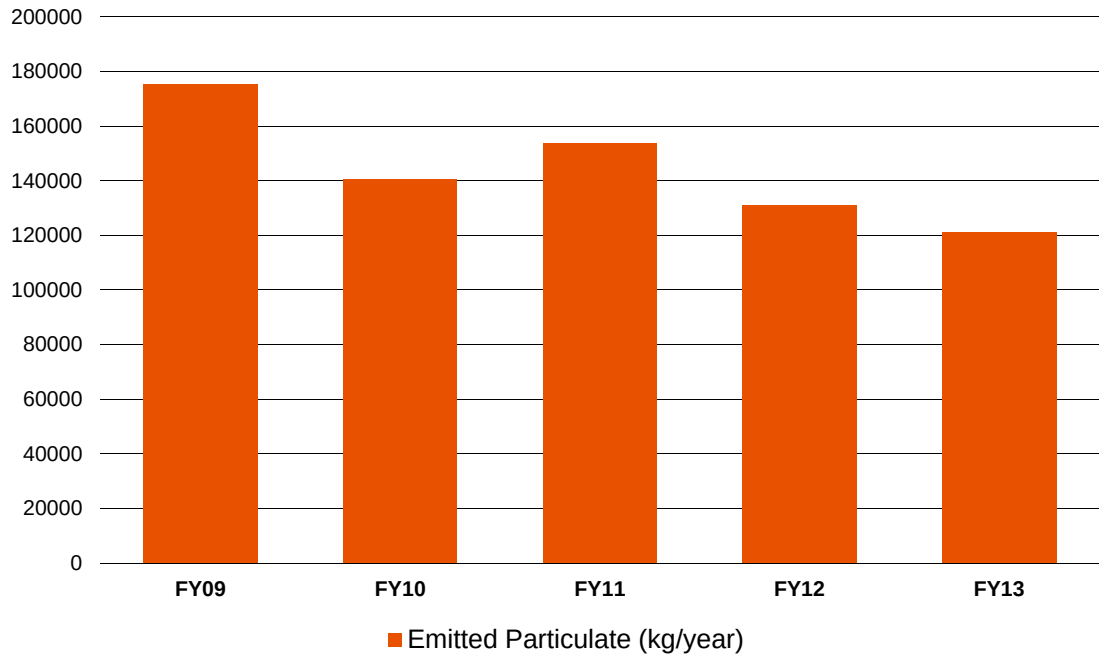


Figure 3: Total emitted point source particulate

Uranium oxide emissions from the calciners are shown in Figure 4. The uranium oxide emissions were determined from radionuclide analysis of samples collected during FY13 stack testing for. It is important to note that data is currently available for the first 3 quarters of FY13 while the reaming quarter is still waiting for data analysis. An amended LM1 will be supplied once analysis results are provided from the lab.

The current uranium oxide component of calciner stack emissions was calculated to be 15kg for FY13, down from 82kg in FY12. This is due to a decrease in U238 content of emitted particles.

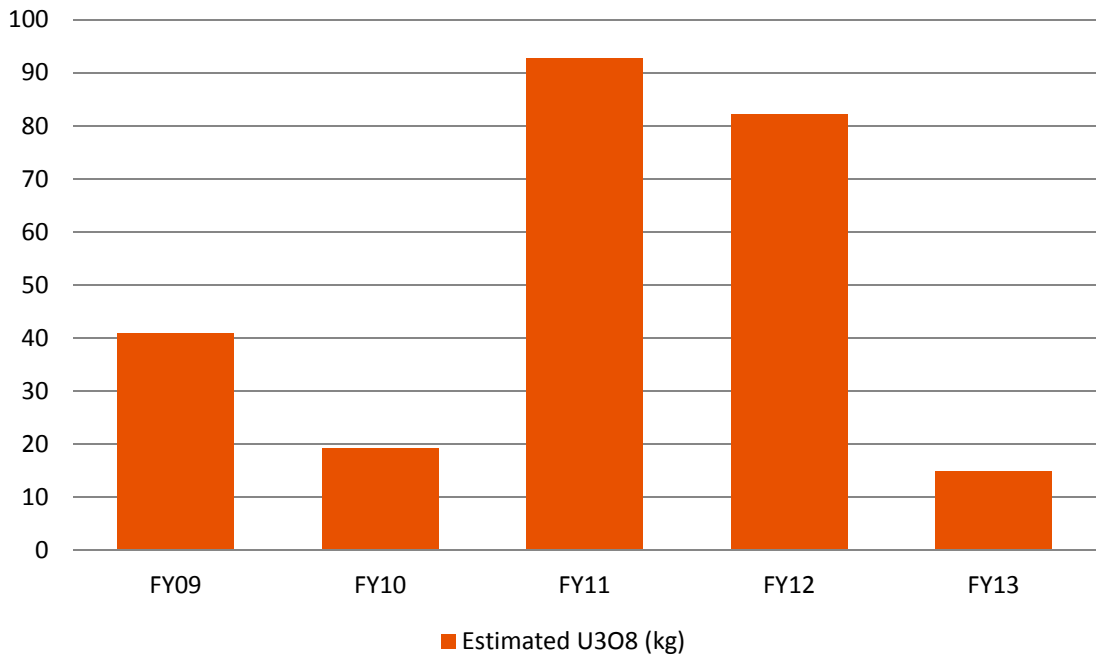


Figure 4: Total emitted uranium oxide (U3O8) from the Calciner facilities