Procedure		Document No.	155246
Document Title	**Environmental Management Program Targets, Actions and Major Changes 2016**		
Area	HSE	**Issue Date**	
Major Process	Environment	**Sub Process**	
Authoriser	Jacqui McGill – Asset President Olympic Dam	**Version Number**	2

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1 SCOPE

This document outlines the Environmental Management (EM) Program targets, actions and continuous improvement opportunities which are updated annually (where required) as part of the Environmental Protection and Management Program (EPMP) review process and forms part of the EPMP. Progress in achieving these targets and actions is reported in the annual EPMP Report.

Targets, Actions and Continuous Improvement Opportunities as used in this EPMP are defined below.

Targets – are to reflect either a level of environmental impact that is as low as reasonably achievable (ALARA), or to indicate a long-term aspirational goal, or an interim target leading to a long-term goal. Failure to meet a target is not a breach of compliance.

Actions – are derived from the continuous improvement opportunities that have been identified for the relevant environmental aspect. Actions should be achievable within the EPMP review period (1-3 years) or may form part of addressing a more complex improvement opportunity. Where the environmental impact is ALARA, actions may not be applicable.

Continuous Improvement Opportunities – are activities that have been previously identified to either reduce operational impact on the environment or improve the way in which an environmental aspect is managed or monitored.

This document also provides a summary of any major changes to the Environmental Management Manual (EMM), EM Program and Monitoring Programs (MPs) that have resulted from the annual EPMP review process.

2 INTERPRETATION

This document should be read in conjunction with the EMM (Olympic Dam Document Number 2617), EM Program (Olympic Dam Document Number 49329) and MPs (Olympic Dam Document Numbers 2663, 2664, 2788, 2789, 2790, 2791, 2792, 49329, 110687 that form the Olympic Dam EPMP.

3 CONTINUOUS IMPROVEMENT OPPORTUNITIES, ACTIONS & TARGETS 2016

EM Program ID	CONTINOUS IMPROVEMENT OPPORTUNITIES	ACTIONS	TARGETS
ID1 USE OF NATURAL RESOURCES			
ID 1.1 LAND DISTURBANCE AND REHABILITATION	Limited management of short-term surface rehabilitation has occurred on site due to the small areas involved, planned areas for expansion of the operations, and the low level of risk associated with these areas. Rehabilitation requirements of short-term surface disturbance permitted under the Olympic Dam EDP System, including backfill areas, sand acquisition facilities, exploration areas, temporary storage facilities, temporary access routes and maintenance facilities. All other rehabilitation requirements are addressed through the Olympic Dam Rehabilitation Strategy. • Opportunity: Implement actions as identified in the Olympic Dam Rehabilitation Strategy. The Olympic Dam Mine Closure and Rehabilitation Plan was reviewed and submitted to government in September 2013. Risk workshops have been conducted annually using BHP Billiton's Risk Management methodology to evaluate the closure risks for all operational areas, and the accounting provision for closure is recalculated each year. • Opportunity: Clarify closure risks and assumptions identified in the Olympic Dam Mine Closure and Rehabilitation Plan. Considerable work has been undertaken to formalise weed monitoring and management at Olympic Dam, including the development of the Weed Risk Assessment (2007) and the Olympic Dam Weed Management Strategy. • Opportunity: Continue to undertake a regional approach to weed management through the	• Implement FY15 continue actions identified in the site Rehabilitation Strategy. • Review closure risks and assumptions through annual workshop. • Align pest plant and animal control with SAALNRM objectives • Develop and execute a control strategy for cat management on the SML and Olympic Dam Village.	• None Applicable

EM Program ID	CONTINOUS IMPROVEMENT OPPORTUNITIES	ACTIONS	TARGETS
	coordination of biennial meetings with relevant land owners. • Opportunity: Develop and or contribute to a regional database, in collaboration with the wider SAAL NRM, to record areas of known weed infestations and management actions. Innocent Weed (*Cenchrus longispinus*) is a declared plant species under the NRM Act that is present on ODC owned land within the Roxby Downs township. Various provisions of the NRM Act apply to this species. • Opportunity: Continue to destroy and control all outbreaks of Innocent Weed on BHP Billiton land with a plan to eradicate. • Opportunity: Implement highest standard of vehicle hygiene in collaboration with the SAAL NRM Board where development is planned in known Innocent Weed infestation locations. • Opportunity: Continue to progress control of Buffel Grass within the SML and Roxby Downs Municipality through ongoing control in the weeks following rain. • Opportunity: Actively engage with SAAL NRM and implement actions from the State Buffel Grass Strategic Plan: 2012 to 2017 where appropriate. • Ongoing education of BHP Billiton employees and residents of the local Roxby Downs community is important to improve understanding of pest plants and animals and their associated impacts in the region. • Opportunity: Continue to improve community knowledge about the impacts of pest plants and animals in the Roxby Downs region.		

EM Program ID	CONTINOUS IMPROVEMENT OPPORTUNITIES	ACTIONS	TARGETS
ID 1.2 AQUIFER LEVEL DRAWDOWN	Within the GAB, pastoral abstraction may influence the reported drawdown. The elimination of pastoral flow at Jackboot Bore has resulted in drastically reduced drawdown, previously incorrectly attributed to Wellfield B operations. Some of the declining trends observed in current reported drawdown at D2 and Tarkanina 2 may also be influenced by antecedent pastoral flow and temperature effects. • Opportunity: Eliminate or minimise the influence of pastoral flow on reported drawdown. Within the deeper GAB the combination of high temperatures (> 60°C) and the depth of the aquifer (north of Wellfield B > 700 m) makes the monitoring of GAB groundwater heads challenging. Opportunities exist for improving the quality of data collected and the accuracy of interpreted drawdown by reviewing the methods used for measurements and the way drawdown is calculated. • Opportunity: Establish Practical Reference Heads (PRHs) for GAB monitoring bores where possible. The use of alternative water sources and implementation of water conservation initiatives can help minimise aquifer pressure reduction caused by abstraction from the GAB. • Opportunity: Investigate opportunities for end users to change to non-GAB water sources around site.	• Continue improvement work on establishing Practical Reference Heads (PRHs). • Continue implementation of water use conservation and recycling initiatives. • Continue substitution of saline water for high quality water where possible.	• Maintain an industrial water efficiency of 1.16 kL/t at the budgeted production rate. • Maintain a domestic water use target of 3.2 ML/day average.
ID2 STORAGE, TRANSPORT AND HANDLING OF HAZARDOUS MATERIALS			
ID 2.1 CHEMICAL / HYDROCARBON SPILLS	An audit of all existing bunds was undertaken in FY13 to determine compliance against the EPA Guidelines. Based on the audit a risk based approach and review is being applied to bund management. Process controls are implemented when bund capacity is inadequate or	• Maintain a register of recordable chemical and hydrocarbon spills and corrective actions. *Note: An internally recordable spill of*	Corrective actions for all reportable spills of chemicals and hydrocarbons are implemented in a timely manner and do not result in **material environmental harm**

EM Program ID	CONTINOUS IMPROVEMENT OPPORTUNITIES	ACTIONS	TARGETS
	there is a risk that bunds will be insufficient to contain a spill if it is found that a spill is likely to occur. • Opportunity: Ensure bunds are continuously maintained and process controls are implemented such as safe fill levels and Citect alarms when a risk has been identified. The controls must be captured in the site aspect and impact register against the functional location of the bund.	*chemicals and/or hydrocarbons is defined as a spill of 10 litres or greater, outside of a bund, in a single event.* • Continue to implement environment improvement plans for areas of concern, as identified through the annual Aspects and Impacts risk register review	(as defined in the EMM)**.** *Note: Spills are reportable if they result in potential or actual material environmental harm in accordance with the EP Act 1994*
ID 2.2 RADIOACTIVE PROCESS MATERIAL SPILLS	The majority of spill events occur in areas within secondary and tertiary containment systems and have minimal potential to cause significant **environmental impact**. The data from these incidents are reviewed to identify root causes and reduce the potential for further spill events. • Opportunity: Review data to identify actions to be included in the area Environmental Improvement Plans. An audit of all existing bunds has been undertaken to determine compliance against EPA Guideline –Bunding and Spill Management (2007).Based on the audit a risk based approach and review is being applied to bund management. Process controls are implemented when bund capacity is inadequate or there is a risk that bunds will be insufficient to contain a spill if it is found that a spill is likely to occur. • Opportunity: Ensure bunds are continuously maintained and process controls are implemented such as safe fill levels and Citect alarms when a risk has been identified.	• Maintain a register of recordable spills of radioactive process material resulting from operations at Olympic Dam. *Note: Reportable and recordable spills of radioactive process material as defined by the Criteria and Procedures for Recording and Reporting Incidents at SA Uranium Mines (DSD), known as 'Bachmann Criteria'* • Continue to implement environment improvement plans for areas of concern as identified in the annual Aspects and Impacts risk register review	• No spill of Radioactive Process Material into an undisturbed environment • Corrective actions resulting from a reportable spill of radioactive process material are executed in a timely manner to ensure no adverse impacts to human health
ID 3 OPERATION OF INDUSTRIAL SYSTEMS			
ID 3.1 PARTICULATE EMISSIONS	None Applicable	• Implement an Environmental Improvement Plan should any significant increase of operationally contributed PM_{10} 24-hour	• None applicable

EM Program ID	CONTINOUS IMPROVEMENT OPPORTUNITIES	ACTIONS	TARGETS
		average of 50 µg/m^3 occur over the year.	
ID 3.2 SULPHUR DIOXIDE EMISSIONS	Sampling has identified Acid Plant bypasses as being the emission most likely to result in **environmental impact**. • Opportunity: Investigate threshold levels for effects of sulphur dioxide (SO_2) on flora in the region of Olympic Dam.	• None Applicable	• 99 per cent of all SO2 generated during the smelting process is captured.
ID 3.3 SALINE AEROSOL EMISSIONS	Saline aerosols emitted from raise bores impact on surrounding flora and fauna. As such, standards have been produced for implementing controls on new and existing raise bores to minimise the emissions of saline aerosols to the surrounding environment. • Opportunity: Understand the reduction foot print of saline aerosol emissions achieved through implementing controls and the actual saline aerosol emission impact zone based on emission levels.	• Install and maintain controls as per the design standard around raise bores.	• Reduce the deposition of salt from saline aerosol emissions at RB21 salt jars to <800 mg/m2/day.
ID 3.4 RADIOACTIVE EMISSIONS	International and national standards, guidance and codes are subject to change from time to time, to ensure effective protection of humans and the environment from the harmful effects of radiation. Any new recommendations or revisions should be reviewed and implemented as necessary. • Opportunity: Maintain a watching brief on ICRP and IAEA recommendations and any new or revised national Codes and implement as necessary. • Opportunity: Consider impacts of potential changes to ICRP recommended dose conversion factors for radon decay products and implement as required.	• Finalise the establishment of the contaminated waste disposal facility for contaminated waste that is unable to be disposed of to the TSF.	• Maintain radiation doses as low as reasonably achievable, as assessed through the annual Radiation Management Plan Review

EM Program ID	CONTINOUS IMPROVEMENT OPPORTUNITIES	ACTIONS	TARGETS
ID 3.5 GREENHOUSE GAS EMISSIONS	• Continue to identify and implement energy efficiency projects for the existing operation, particularly those identified opportunities that do not require capital expenditure.	• None applicable	• Targets were set in FY 12 for the period FY12 – FY17, being 3.7ktpa CO2 reduction. This target has been achieved. Further targets will be introduced in the period FY18 – FY22
ID 4 GENERATION OF INDUSTRIAL WASTES			
ID 4.1 EMBANKMENT STABILITY OF TSF	Several contingency options exist to maintain slope stability and reduce the risk of potential piping failures. • Opportunity: Identify, design and install contingency options as required. Regular audits of the TRS operation are undertaken as described in the Waste MP. • Opportunity: Ensure improvement actions and recommendations from audits are documented and where appropriate implemented in a timely manner.	• Develop an action plan for appropriate recommendations arising from audits undertaken in FY16. • Undertake CPTu testing of tailings to confirm strength parameters used in stability analysis.	• None applicable
ID 4.2 TAILINGS SEEPAGE	Regular inspections around the perimeter of the TSF identify any new areas of lateral seepage. Existing perimeter features are also monitored to determine if there is any change in size, location and appearance. • Opportunity: Install a liquor interception system where seepage of liquor has potential to impact native vegetation.	• Identify and install additional liquor interception systems as required.	• None applicable

EM Program ID	CONTINOUS IMPROVEMENT OPPORTUNITIES	ACTIONS	TARGETS
ID 4.3 FAUNA INTERACTION WITH TAILINGS RETENTION SYSTEM	The TRS fauna project was instigated after an increase in numbers of birds interacting with the TRS became apparent in 2004. This project manages research, on-ground work and monitoring relating to the interaction of fauna with the TRS. • Opportunity: Identify new opportunities to reduce fauna mortalities through ongoing research into management practices relating to fauna interaction with tailings storage systems. Investigations and trials of various deterrent systems have continued since the implementation of the TRS fauna project. • Opportunity: Incorporate adverse light deterrent technology developed in partnership with Deakin University into existing TRS deterrent systems (PALS II). • Opportunity: Investigate different plastic-coated materials that could be implemented at the TRS in the place of wire to act as a bird deterrent. Opportunistic and standardised monitoring of fauna interactions at the TRS has occurred since the implementation of the TRS fauna project. • Opportunity: Continue to assess the impact to fauna and the efficacy of various management tools through monitoring.	• Assess validity of deterrent measures listed as recommendations in the Deakin University research project. • Continue investigating and trial alternative deterrent technologies when they become available.	• A minimum liquor depth on operating TRS evaporation ponds of 250 mm. *Note: Operating ponds are those in normal operational use and excludes ponds that are out of service, ponds being dried for maintenance, embankment raising or other purposes, and ponds required for temporary management of excess liquids as a result of rain.*
ID 4.4 SOLID WASTE DISPOSAL	The opportunity to reuse and recycle materials would be greater if more waste materials were segregated at their source. Segregation reduces contamination and double handling and enable more accurate tracking of waste streams. Waste segregation has been rolled out across site however still needs improvement and extension to the mine and underground mine. • Opportunity: Improve at source segregation and	• Implement a site wide paper/cardboard recycling programme with bailing and off site removal/recycling. • Implement plan for reducing stockpiles of recyclable material.	• Increase at source waste segregation to reduce waste to landfill. • Reduce recycling stockpiles by 20%

EM Program ID	CONTINOUS IMPROVEMENT OPPORTUNITIES	ACTIONS	TARGETS
	improve mine end waste segregation system. No site-standard recycling program exists for office-based waste. • Opportunity: Develop an office-based recycling program to enhance recycling of paper/cardboard and refundable drink containers. One of the largest volumes of waste generated on site is rubber tyres. Used tyres are already reused on site where possible, as road berms and for area demarcating. Reducing the quantity of waste tyres is key to reducing the volume of landfill. Investigations regarding initiatives to increase tyre life will be progressed during detailed design of the project (DEIS 5.6.3; SEIS 5.4.3). • Opportunity: Investigate ways to increase tyre life for haul trucks. Spent catalyst (acid plant catalyst containing vanadium pentoxide) is a hazardous waste produced on site and is currently disposed of into the TSF. Investigations into the radiological components of the waste product have been undertaken in the past to aid in determining if alternative disposal or treatment methods are available. Historically, recycling has not proved to be viable in Australia. • Opportunity: Investigate alternative treatment methods for spent catalyst (DEIS 5.6.6).		
ID 4.5 RADIOACTIVE WASTE	International and national standards, guidelines and codes are subject to change from time to time, to ensure effective protection of humans and the environment from the harmful effects of radiation. Any new recommendations or revisions should be reviewed and implemented as necessary. • Opportunity: Maintain a watching brief on ICRP and IAEA recommendations and any new national	• Implement cleaning and recycling strategies in order to minimise radioactive waste generated. • Finalise the establishment of the permanent contaminated waste disposal facility for contaminated waste which cannot be disposed of in the TRS.	• Maintain radiation doses as low as reasonably achievable, as assessed through the annual Radiation Management Plan Review.

EM Program ID	CONTINOUS IMPROVEMENT OPPORTUNITIES	ACTIONS	TARGETS
	Codes of Practice and implement as necessary. **ALARA** is built into the design of the operation. This means that all reasonable efforts are made to ensure that radiation and radioactive emissions are controlled and managed in the design of new plant. Radiation protection design criteria have been established and are mandatory for all facilities. An optimisation (**ALARA**) study will be conducted for all phases of any future expansion with findings incorporated into designs. • Opportunity: Develop and implement optimisation in design process. Olympic Dam produces waste of various streams as a result of normal operations. A temporary facility specifically designed for **storing** contaminated waste has been established. Maximising the capacity whilst minimising the volume of waste deposited at the facility, is a key factor in reducing the environmental impact through land disturbance and improved resource recovery. • Opportunity: Continue to develop, update and implement a strategy towards managing radioactive waste produced at the site (including waste minimisation strategy).		
ID 5 EMPLOYMENT AND ACCOMMODATION OF PEOPLE			
ID 5.1 COMMUNITY INTERACTION	• Olympic Dam provides opportunities for employment and businesses locally, regionally and state-wide and for specific target groups such as Aboriginal people. These opportunities would increase with any future expansion at Olympic Dam. ODC is also committed to increasing Aboriginal employment in the Olympic Dam workforce and to enabling Aboriginal enterprises from the Northern Region of South Australia to secure contracts at site.	• Undertake the triennial Community Perception Survey to monitor local community perceptions of ODC, and of local services and facilities.	• A long-term desirable trend towards a minimum housing rental vacancy rate in Roxby Downs of 5%.

EM Program ID	CONTINOUS IMPROVEMENT OPPORTUNITIES	ACTIONS	TARGETS
	• Opportunity: Maximise opportunities for South Australian and Aboriginal employment and business participation at Olympic Dam: o Develop and implement a local procurement plan with targets to maximise the participation of local, regional and State businesses and employment in supplying goods and services to Olympic Dam; and o Continue to explore opportunities to build the capacity of Aboriginal people and businesses to participate in Olympic Dam. • ODC is committed to maintaining and enhancing the amenity and lifestyle of Roxby Downs. This requires a good understanding of the social and economic environment and the factors that influence amenity, such as the social cohesion, living costs, housing and social services. It is also recognised that responsibility for some social matters lies outside of the authority of ODC, and as such, will need to be managed collaboratively with the State Government and other key stakeholders. • Opportunity: Maintain and enhance the amenity and lifestyle of Roxby Downs as a desirable place to live and work. o undertake a regular (five-yearly) social assessment of Roxby Downs, Andamooka and Woomera; o continue to build on best practice and learnings from other remote Australian mine sites to enhance liveability and build sustainable relationships between the residential community and non-resident workforce; o in collaboration with the South Australian Government and key stakeholders, identify		

EM Program ID	CONTINOUS IMPROVEMENT OPPORTUNITIES	ACTIONS	TARGETS
	indicators to assist in planning, delivering and monitoring social infrastructure provision; and o work collaboratively with the South Australian Government and key stakeholders to investigate and deliver appropriate social services and infrastructure.		

4 SUMMARY OF AMENDMENTS TO THE EPMP 2015

Document	Section	Description of Change	Change Explanation
All		Removal of all cross references to conditions of the 2011 **Major Development Approval.**	Olympic Dam expansion has not progressed. Cross-references may be reinstated in future if required.
EM Program	All	All continuous improvement opportunities have been migrated to the Annual Actions and Targets document. Amendments to the continuous opportunities from 2015 described in this table will reference the applicable section of the 2015 EPMP.	Continuous improvement opportunities relate to actions and targets and have been moved to improve the readability of EPMP
EM Program	1.1	Information from ID 1.2, Spread of pest plants and animals has been added to ID 1.1	To streamline the EM Program, ID 1.1 has been altered to include ID 1.2, Spread of pest plants and animals.
EM Program	1.1.12	Removal of references to the expanded Olympic Dam and the Port Augusta pre-assembly yard.	The Olympic Dam expansion has not progressed and the Port Augusta pre-assembly yard is due to be relinquished in May 2016.
EM Program	1.2	ID 1.2 Spread of pest plants and animals has been removed.	To streamline the EM Program, ID 1.1 has been altered to include ID 1.2, Spread of pest plants and animals.
EM Program	1.2.9	Addition of leading indicator	The hydraulic gradient in the North East Sub-Basin of Wellfield A can be used as an indicator of impending issues with spring flow in conjunction with the GAB8/HH2 drawdown compliance limit. A leading indicator for the six-monthly running mean hydraulic gradient between wells in the NESB and HH2 of 0.0009 m/m will provide early warning of potential spring impacts.
EM Program	1.3.14 (2015)	Removal of continuous opportunities relating to improving the understanding of hydrogeology and ecology of Yarra Wurta Springs.	Any potential future impacts to Yarra Wurta Springs would be in relation to open pit mining and is no longer applicable for the current operation.
EM Program	2.1.12	Removed " The EPA Guidelines are used for all new installations, which require bund sizes to be 120 per cent of the net capacity of the largest tank within the bund (or the sum of the capacity of any interconnected tanks) or 133 per cent for flammable liquids (EPA 1301.S-5).	Changed to align with wording in current EPA 1301.7(S-5) and EPA3101.8 (S-22)

EM Program	2.1.12	Removed statement “Relevant senior management personnel have personal KPIs for improving the performance of spill management. Regular environment updates which include spill performance are presented to site personnel and site management.”	Changes in organisational structure and a different approach to managing spill events at Olympic Dam have resulted in the removal of spill targets for operational areas. Operational areas will report on maintenance and corrective actions being executed in a timely manner.
EM Program	2.1.14 (2015)	Changes made to the continuous improvement /development opportunity section and removal of an opportunity “Identify any gaps and, if necessary, develop an action plan to ensure existing stormwater retention ponds are constructed to prevent the escape of material into the soil, surface water or groundwater resources.”	A change in the approach to managing the risk to the environment from spill events occurred during this review. ODC will continue to focus on bund maintenance and process controls to minimise risks to the environment from spill events. Updates on listed development and improvement opportunities have been included. Changes to the Environment Protection (Water Quality) Policy in 2015 have resulted in the groundwater beneath the SML being considered as having no environmental value under Schedule 1 of the Policy (as it has a TDS level >13,000mg/L). Given that existing site requirements ensure that chemicals are appropriately bunded and spill events are remediated, there are not further bund upgrades proposed to existing stormwater ponds at this time.
EM Program	2.2.12	Removal of “Regular reports on spill performance are emailed to all personnel and presented to site management” and Relevant senior management personnel have personal KPI’s for improving the performance of spill management”	Spill performance data are no longer emailed sitewide. Spill events are analysed and discussed with area managers during the annual aspects and impacts risk register review. Changes in organisational structure and a different approach to managing spill events at Olympic Dam have resulted in the removal of spill targets for operational areas. Operational areas will report on maintenance and corrective actions being executed in a timely manner.
Annual Actions and Targets	Table 3 ID2.1	Opportunity added “Ensure bunds are continuously maintained and process controls are implemented such as safe fill levels and Citect alarms when a risk has been identified.”	Changes to the approach for spill management at ODC is focusing on existing bund maintenance and effectiveness of process controls where risks have been identified. The wording has been updated to reflect this.
EM Program	3.1.14 (2015)	Removal of continuous improvement opportunity as it has been realised. “Determine the most appropriate methods of at-source particulate mitigation and include air quality management options into the Dust Management Plan”	Operational controls for point source particulates have been implemented.

EM Program	3.1.14 (2015)	Removal of continuous improvement opportunity as it is already an action. " Opportunity: Implement the improvements identified in the Environmental Improvement Plan"	Development of an EIP is an action should it be necessary.
EM Program	3.1.14 (2015)	Removal of continuous improvement opportunity as it has been realised. "To ensure dust levels at sensitive receivers do not exceed compliance criteria, a detailed understanding of the relationship between operational activities, background dust concentrations and local meteorology is required to be developed. This understanding will inform the operational response/control element of the dust management system, the exact nature of which is also to be investigated • Opportunity: Investigate the most appropriate and effective means of implementing an operational control regime to ensure the compliance criteria is not exceeded."	Real time data has been collected for the past three years which continuously shows us background dust levels; weather conditions and operational contributed dust. Daily reports are received which provide insight on all of the above criteria which allows the operation to make informed decisions regarding dust management on site. Detail is contained in the Dust Management Plan.
EM Program	3.2.14 (2015)	Removal and rewording of continuous improvement "Investigate options to reduce acid plant bypasses and reduce Acid Plant Tails Stack exceedances through the Smelter Environmental Improvement Plan."	Majority of Acid Plant Tails Stack exceedances only occur on plant start up after a plant shut down. This has an exemption attached and is currently unavoidable. Acid Plant bypasses are due to emergency plant maintenance requirements. The bypass is only operated after a purge of 120 minutes to ensure the SO_2 has decayed to not be a significant impact. A more value adding improvement has been included to help understand SO_2 emission threshold levels on vegetation.
EM Program	3.2.10	Removal of the Airborne Emission Monitoring Program, Document No. 2788: • An inventory of the main sources of air emissions (both point and diffuse source emissions) and the location of sensitive receivers is maintained, along with an impact assessment. Controls are also identified which reduce impacts to sensitive receivers, along with the associated monitoring programs.	The Airborne Emission Monitoring Program is not a management plan and it is referenced below in 3.2.11Included the Dust Management plan as it has been amended to include all airborne emissions
EM Program	3.3.13 (2015)	Removal of continuous improvement opportunity "Install and repair controls as per the standards around raise bores to improve capture of saline aerosol emissions" and include	Controls and standards are implemented on every new RB an improvement is required on what % they control emissions.

Annual Actions and Targets	Table 3 ID3.3	Addition of continuous improvement opportunity "Understand the reduction foot print of saline aerosol emissions achieved through implementing controls and the actual saline aerosol emission impact zone based on emission levels."	Controls and standards are implemented on every new RB an improvement is required on what % they control emissions.
EM Program	3.4.11	Included the Airborne Emissions Monitoring Program, Document No. 2788 • monitoring of control systems (such as baghouse efficiencies and stack emissions).	The Airborne emissions monitoring program refers to radioactive emissions.
EM Program	3.4.11	Removal of the "Flora Monitoring Program, Document No. 2664, vegetation distributions"	Vegetation distributions are not used for Non-Human Biota (NHB) assessments.
EM Program	3.4.14 (2015)	Removal of continuous improvement opportunity as it has been realised. "As part of the expanded air quality monitoring network, BHP Billiton installed new generation radon and radon decay product monitors. The monitors provide real time data. Opportunity: Utilisation of the new generation radon and radon decay product monitors to improve understanding of radiological impacts of the operation."	Real time data is used to determine radiological impacts to the operation.
EM Program	3.4.14 (2015)	Removal of continuous improvement opportunity "Excess or uncontrolled radioactive waste can lead to emissions from the project leading to potential exposures to people and the environment. As the project expands, more permanent low level radioactive waste management becomes important. Opportunity: Continue to develop, update and implement a strategy towards management of radioactive waste on site (including the waste minimisation philosophy)."	A permanent contaminated waste disposal facility has been designed for construction.

EM Program	3.4.14 (2015)	Removal of continuous improvement opportunity 'The fundamental basis of radiation protection is the ALARA principle. To date BHP Billiton has implemented operational programs to ensure that occupational and public doses remain low. Radiation impacts are best controlled through good design and as the project expands, it is appropriate to better formalise the company's approach to ALARA to ensure that radiological impacts are managed. Opportunity: Develop and implement optimisation in design process.	Already incorporated into design see EMP 3.3.12.3 optimisation in design section.
EM Program	3.5.3	Removal of large part of section describing the planning process.	The plan has already been developed in accordance with approval conditions. The section has been simplified to focus on the requirement to quantify and report on emission reduction opportunities.
EM Program	3.5.8	Compliance criteria wording changed	Updated to reflect current operational requirements.
EM Program	3.5.10	Reference to reduce greenhouse gas levels by at least 60% of 1990 levels by 2050 removed	A plan has been developed, however the implementation is not relevant to current operations.
EM Program	3.5.13	Contingency options removed	The change to compliance criteria means that contingency options no longer apply.
EM Program	3.5.14 (2015)	Removal of all existing continuous improvement opportunities	Opportunities were developed in expectation of large scale expansion but removed given quantum possible at current production rates. Improvement opportunity to align with current operational direction.
Annual Actions and Targets	Table 3 ID3.5	• Added "Continue to identify and implement energy efficiency projects for the existing operation, particularly those identified opportunities that do not require capital expenditure."	Operational targets for current reporting period have already been achieved. Changed to reflect current operational direction.
Annual Actions and Targets	Table 3 ID4.1	Removal of existing target; "rate of rise of tailings at an average of 2 m per annum or less" from the Actions and Targets document.	The target has been moved to the Leading Indicator section of the EM Program for Embankment Stability.

EM Program	4.1.9	Rewording of the existing and inclusion of two (2) new Leading Indicators.	The new Leading Indicators for Embankment Stability improve the transparency of operational controls that are already in place to monitor potential causes of an embankment failure. Maximum pond sizes, pore pressure comparisons and rate of rise data are clear and measureable leading indicators.
EM Program	4.1.14 (2015)	Addition of continuous improvement opportunity "Regular audits of the TRS operation are undertaken as described in the Waste MP. Opportunity: Ensure improvement actions and recommendations from audits are documented and where appropriate implemented in a timely manner."	Opportunity was developed to capture the continuous improvement opportunities identified in regular operational and geotechnical audits.
EM Program	4.4.10	Updated the "Waste Management Plan" to Landfill Environmental Management Plan	Fulfils the requirements of the Landfill guidelines 2007
EM Program	4.4.14 (2015)	Amended the continuous improvement opportunity. Deleted "During FY13 a trial was conducted in the Concentrator Hydromet area which involved the implementation of four waste segregation stations (each station housed six waste stream disposal bins; steel; wood; plastic; oily waste; cardboard/paper and general waste). Data was collected on a regular basis, to determine correct segregation compliance and the general sustainability of the stations (housekeeping, maintenance, resource recovery centre upkeep)."	Segregation across surface has been implemented. Further program to improve waste segregation at mine end and underground for FY17.
EM Program	4.4.14 (2015)	Removal of continuous improvement opportunity as it has been realised. The Environmental Management of Landfill Facilities Guideline 2007 details the minimum standards required for landfill operations regarding engineering, monitoring and management. The development of a Landfill Environmental Management Plan (LEMP) is one component of the Landfill Guidelines. Opportunity: Expand the Waste Monitoring Program and Groundwater Monitoring Program to include assessment of specific impacts from the landfill operations.	Water samples are taken form LT17 and a Landfill Environmental Management Plan has been compiled as per the EPA Landfill guidelines (2007).

EM Program	4.5.3	Removed “An Environment Report is produced for each operational area: Mine, Processing, Smelter and Refinery and Non-Process Infrastructure. Details of non-conformances are included in these documents”	This process is now captured in the Quarterly EMS update to management.
EM Program	4.5.4	Removed “ Environmental Management of Landfill Facilities Guideline (SA EPA 2007)”	This is not applicable to radioactive waste management.
EM Program	4.5.10	Removed “Waste Management Plan, Document No. 83202” and replaced this with “Contaminated Waste Management Plan, Document No. 156800”	This is a new document that deals with contaminated waste and the waste management plan does not exist and is now a Landfill Environmental Management Plan for general waste.
EM Program	4.5.11	Removal of “Monitoring of data collection, including: number of radioactive process spills.”	Monitoring of radioactive process spills does not contribute to radioactive waste management monitoring.
EM Program	4.5.12.3	Added “All structural contaminated waste to be disposed to the CWDF must be cleaned to ensure an activity concentration of 1Bq/g or less.	A permanent contaminated waste disposal facility is being commissioned in the quarry with guideline son waste to be disposed to the facility.
Airborne Emissions MP	2.6	Removal of reference to the construction of the open pit mine and Rock Storage Facility.	No current expansion.
Airborne Emissions MP	3.2	Removal of Fugitive particulate emissions – dust deposition monitoring and ^{238}U ^{230}Th ^{226}Ra ^{210}Po ^{210}Pb activity in dust deposition.	This monitoring is discussed in the Environmental Radiation MP.
Energy Use and GHG Emissions MP	2.2.1	Modification of wording around how GHG emissions reductions will be achieved	Aligns with changes related to the expansion not being progressed
Energy Use and GHG Emissions MP	2.2.4	Method simplified to reflect changes to 2.2.3	Condition 13a refers to the expansion project which has not progressed.
Energy Use and GHG Emissions MP	Table 3.1	Update of carbon reduction targets, changed to carbon reduction opportunities.	Changed to align with condition requirements due to the expansion not being progressed

Environmental Radiation MP	Table 2.1	Removal of airborne radioactive dust concentration monitoring and radioactive dust deposition monitoring as they are not discussed in the Airborne Emissions Document No. 2788	Dust deposition monitoring and HiVolume Air Sampling are already discussed in the Environmental Radiation MP.
Environmental Radiation MP	2.3.4	Removal of reference to annual limestone dust monitoring	Visual inspection of limestone dust monitoring is not utilised for radiation monitoring neither does it form part of the Erica Assessment.
Environmental Radiation MP	2.4.1	Removal of reference to “radionuclides in airborne dusts are analysed when dust filter papers from the high volume dust monitoring program are analysed”	This is discussed in the Environmental Radiation MP in section 2.2.4
Environmental Radiation MP	Table 2.2	Removal of Note: PM10 monitoring is undertaken and used for the radiation assessment. (see section 2.2.4 and of the Airborne Emissions MP	PM10 dust monitoring is not used for the radiation dose assessment.
Environmental Radiation MP	Table 2.2	Removal of reference to (see section 2.5.4 of the Airborne Emissions MP)	Dust deposition is not discussed in the airborne emissions MP.
Environmental Radiation MP	2.3.4.	Removal of visual inspection of limestone dust deposition conducted during the flora inspection.	The visual inspection of limestone dust deposition during the flora monitoring is not used for the NHB or determining public dose.
Fauna MP	2.1	Removal of the Yarra Wurta Springs Lake Eyre Hardyhead monitoring program.	Open pit dewatering had the potential to impact groundwater levels at a regional scale and reduce fish habitat. As the open pit project has ceased and the local groundwater levels have recovered post dewatering the monitoring is considered unnecessary. Sufficient baseline data for any future modelling work has been collected over the last 5 years
Fauna MP	2.5	Remove the reduction of supernatant pond surface area (≤35 ha across all 5 cells) environmental target and the current bird deterrent system (gas cannons and Duck-off Lighting system) from ODC’s current management plan.	Monitoring data suggests that both the reduction of supernatant pond surface area (≤35 ha across all 5 cells) environmental target and the current bird deterrent system (gas cannons and Duck-off Lighting system) are ineffective at reducing bird mortalities on the TRS. Ongoing research will continue into new technology that may be more effective at reducing bird numbers at the TRS.

Flora MP	2.1	Removal of Emission impacts to vegetation monitoring.	A comparison of the results from both the vegetation sampling and dust deposition records over a 10 year period has demonstrated that the area of impact has remained localised and that variations in the total detectible area are likely to be impacted by local rainfall events. Work by Griffin and Dunlop (2008) also showed that besides copper and sodium, very few plant symptom rank scores were related to the measured levels in the foliage. Given this, and acknowledging that the long-term vegetation monitoring programme which allows ODC to monitor changes in perennial plant communities surrounding the operation will continue, ODC proposes removing the short-term (annual) emissions-based monitoring program and investigate through improvement opportunities the links between changes in vegetation and emissions levels in plants and soil.
Flora MP	2.5	Removal of the Great Artesian Basin (GAB) springs vegetated wetland area monitoring program.	The changes in vegetated wetland area can potentially arise from changes in spring flow and/or a combination of other environmental factors, such as changes in spring water chemistry, broad scale weather patterns and spring community composition. Analysis of our data suggests that there is no correlation between vegetated wetland area and spring flow for springs monitored. Therefore, other programs, such as GAB springs wetland vegetation composition assessment and endemic invertebrate abundance surveys, are better suited to assessing the impact of aquifer drawdown.
Groundwater MP	Table 5-2	Removal of table 5-2 Yarra Wutra Bores and Spring Flow monitoring	Removal of Yarra Wurta bores and Spring monitoring. Open pit dewatering had the potential to impact groundwater levels at a regional scale. As the open pit project has ceased and the local groundwater levels have recovered post dewatering the monitoring is considered unnecessary. Sufficient baseline data for any future modelling work has been collected over the last 5 years
Waste MP	Table 3.2	Removal of monitoring size of solid waste inventories against relevant regulatory guidelines and criteria.	No relevant regulatory guidelines and criteria for solid waste inventories.
Waste MP	Table 3.2	Edited reference to maintain register of LLRW to include contaminated waste.	LLRW is disposed to the tailings facility while structural contaminated waste is disposed to the contaminated waste disposal facility.