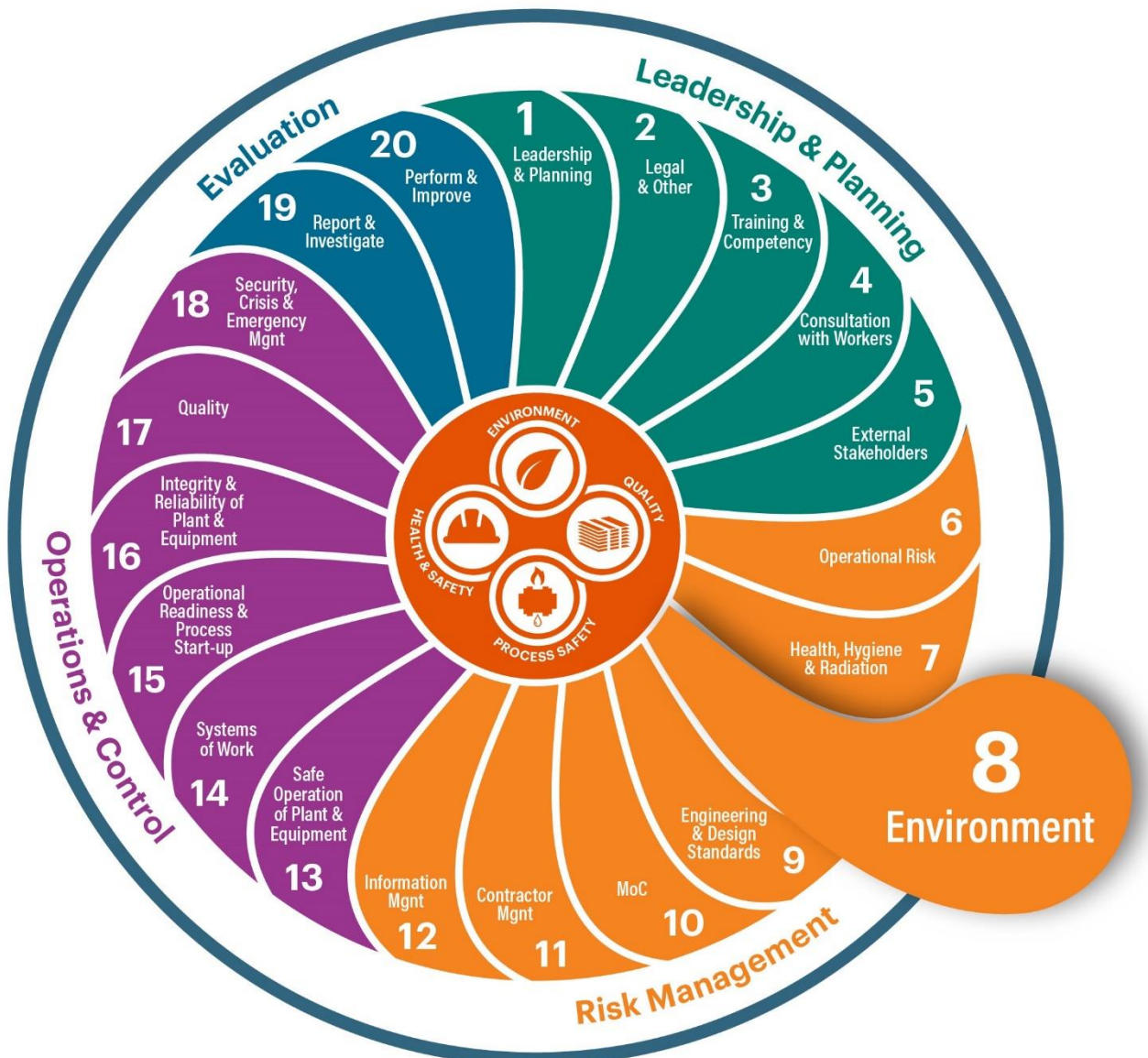


IMS MANAGEMENT PLAN		Document No.	000114697
Document Title	IMS Element 8 – Environmental Management Program Annual Targets, Actions and Major Changes 2022		
Function	Integrated Management System	Issue Date	
Department	Element 8: Environment	Version Number	1
Document Owner	Asset President		



Contents

1 INTRODUCTION 3

2 SCOPE 3

3 INTERPRETATION 3

4 CONTINUOUS IMPROVEMENT, ACTIONS AND TARGETS 2021 5

5 SUMMARY OF MAJOR CHANGES AND AMENDMENTS TO THE EPMP 2021 13

1 INTRODUCTION

This document 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.

This document supports *IMS Element 8: Environment. Document No 012513194 Environment Standard.*

2 SCOPE

This document outlines the Environmental Management (EM) Program self-improvement 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 is monitored and reported within the annual EPMP Report. Targets, actions and continuous improvement opportunities outlined in this document may (but do not necessarily) result in changes to the EPMP management or monitoring requirements.

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.

Note: Performance against targets is monitored. Failure to meet a target is not a compliance issue, but will result in further review.

- 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.

Note: Performance against actions is monitored. Failure to achieve an action is not a compliance issue, but will result in further review.

- 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.

Note: Performance against continuous improvement opportunities is monitored. Failure to achieve a continuous improvement opportunity is not a compliance issue, but will result in further review.

3 INTERPRETATION

This document should be read in conjunction with the following:

Procedures:

- 37623 Environmental Management Manual
- 48052 Environmental Management Program

Management Programs:

- 36322 Monitoring Program - Airborne Emissions
- 59910 Monitoring Program - Energy Use & Greenhouse Gas Emissions
- 36332 Monitoring Program - Environmental Radiation
- 36339 Monitoring Program - Fauna
- 36331 Monitoring Program – Flora
- 36081 Monitoring Program - Great Artesian Basin (GAB)
- 36173 Monitoring Program - Groundwater
- 91417 Monitoring Program - Social Effects

- 49183 Monitoring Program - Waste

All of these documents support the implementation and development of the Olympic Dam EPMP.

4 CONTINUOUS IMPROVEMENT, ACTIONS AND TARGETS 2021

EM PROGRAM ID	CONTINUOUS IMPROVEMENT OPPORTUNITIES	ACTION	TARGET
ID 1 USE OF NATURAL RESOURCES			
ID 1.1 LAND DISTURBANCE AND REHABILITATION	<p>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 LUP 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.</p> <ul style="list-style-type: none"> • Opportunity: Implement actions as identified in the Olympic Dam Rehabilitation Strategy. <p>The Olympic Dam Closure Management and Rehabilitation Plan was reviewed (March 2020). Risk workshops have been conducted annually using BHP's Risk Management methodology to evaluate the closure risks for all operational areas, and the accounting provision for closure is recalculated each year.</p> <ul style="list-style-type: none"> • Opportunity: Clarify closure risks and assumptions identified in the Olympic Dam Closure Management and Rehabilitation Plan. Considerable work has been undertaken to formalise weed monitoring and management at Olympic Dam. • Opportunity: Continue to undertake a regional approach to weed management through the coordination of annual workshops with Arid Recovery, Roxby Downs Council, Kingoonya Landscape Group and relevant pastoralists and contractors. • Opportunity: Contribute to a regional database, in collaboration with the wider SAAL Landscape Group to record areas of known weed infestations and management actions. 	<ul style="list-style-type: none"> • Continue to implement actions and identify progressive rehabilitation opportunities in the Mine Closure Plan. • Review closure risks and assumptions through annual workshop. • Align pest plant and animal control with SAAL Landscape objectives outlined in the SAAL Regional Landscape Plan (2021-2026). 	None applicable

EM PROGRAM ID	CONTINUOUS IMPROVEMENT OPPORTUNITIES	ACTION	TARGET
	<p>Declared plant species under the Landscape South Australia Act are present on ODC owned land within the Roxby Downs township (e.g. Buffel Grass).</p> <ul style="list-style-type: none"> • Opportunity: Implement highest standard of vehicle hygiene in collaboration with the SAAL Landscape Board where development is planned in known 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 Landscape and implement actions from the State Buffel Grass Strategic Plan: 2019 to 2024 where appropriate. • Opportunity: Continue to improve community and BHP employee knowledge about the impacts of pest plants and animals in the Roxby Downs region. 		
<p>ID 1.2 AQUIFER LEVEL DRAWDOWN</p>	<p>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.</p> <ul style="list-style-type: none"> • Opportunity: Eliminate or minimise the influence of pastoral flow on reported drawdown. <p>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.</p>	<ul style="list-style-type: none"> • Continue implementation of water use conservation and recycling initiatives. • Continue substitution of saline water for high quality water where possible. 	<ul style="list-style-type: none"> • Maintain an annual 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.

EM PROGRAM ID	CONTINUOUS IMPROVEMENT OPPORTUNITIES	ACTION	TARGET
ID 2 STORAGE, TRANSPORT AND HANDLING OF HAZARDOUS MATERIALS			
<p>ID 2.1 CHEMICAL / HYDROCARBON SPILLS</p>	<p>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 there is a risk that bunds will be insufficient to contain a spill if it is found that a spill is likely to occur.</p> <p>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.</p> <p>PFAS exemption # 51301 received under <i>South Australian Environment Protection (Water Quality) Policy 2015</i> on the 7th of April 2021. An Environment Improvement Program (EIP) and Foam Management Plan (FMP) were developed and approved by the EPA on the 16th of April 2021.</p>	<ul style="list-style-type: none"> • Maintain a register of recordable chemical and hydrocarbon spills and corrective actions. <p><i>Note: An internally recordable spill of chemicals and/or hydrocarbons is defined as a spill of 10 litres or greater, outside of a bund, in a single event.</i></p> <p>Continue to implement environment improvement plans in areas of concern, as identified through the annual Aspects and Impacts risk register review.</p> <p>Implement the PFAS Environment Improvement Program as required by EPA Exemption 51301</p> <p>Implement the Foam Management Plan as required by EPA Exemption 51301 to ensure all PFAS firefighting foam is appropriately managed during the phase out program.</p>	<ul style="list-style-type: none"> • Finalise updated spills register to align with the Global Event Management System roll out. • Corrective actions for all reportable spills of chemicals and hydrocarbons are implemented in a timely manner and do not result in material environmental harm (as defined in the EMM). <p><i>Note: Spills are externally reportable if they result in potential or actual material environmental harm in accordance with the EP Act 1993.</i></p>
<p>ID 2.2 RADIOACTIVE PROCESS MATERIAL SPILLS</p>	<p>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.</p> <ul style="list-style-type: none"> • Opportunity: Review data to identify actions to be included in the area Environment Improvement Plans. <p>An audit of all existing bunds has been undertaken to determine compliance against EPA Guideline –Bunding and Spill Management (2016).Based on the audit a risk based approach and review is being applied to bund management. Process controls are implemented when</p>	<ul style="list-style-type: none"> • 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 	<p>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.</p>

EM PROGRAM ID	CONTINUOUS IMPROVEMENT OPPORTUNITIES	ACTION	TARGET
	<p>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.</p> <p>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.</p>	<p>(DEM), known as 'Bachmann Criteria'.</p> <p>Continue to implement environment improvement plans for areas of concern as identified in the annual Aspects and Impacts risk register review.</p>	
ID 3 OPERATION OF INDUSTRIAL SYSTEMS			
ID 3.1 PARTICULATE EMISSIONS	<p>The current dust monitoring system is designed with the intent of monitoring an open pit mining operation.</p> <ul style="list-style-type: none"> Opportunity: Review the dust monitoring system to ensure it is applicable to current underground mining operations. 	<ul style="list-style-type: none"> Implement an Environment Improvement Plan (EIP) should any significant increase of operationally contributed PM₁₀ 24-hour average of 50 µg/m³ occur over the year. 	<p>Review and update the dust monitoring system to ensure it is applicable to current mining operations.</p>
ID 3.2 SULPHUR DIOXIDE EMISSIONS	<p>Continue a watching brief on sulphur dioxide emission reduction technology</p>	<p>None applicable</p>	<p>Capture approximately 99 per cent of all SO₂ generated during the smelting process</p>
ID 3.4 RADIOACTIVE EMISSIONS	<p>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.</p> <ul style="list-style-type: none"> 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. 	<p>None applicable</p>	<p>Maintain radiation doses as low as reasonably achievable, as assessed through the annual Radiation Management Plan Review.</p>

EM PROGRAM ID	CONTINUOUS IMPROVEMENT OPPORTUNITIES	ACTION	TARGET
	<ul style="list-style-type: none"> Opportunity: Consider impacts of potential changes to ICRP recommended internal dose coefficients and implement as required 		
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	None applicable
ID 4 GENERATION OF INDUSTRIAL WASTES			
ID 4.1 EMBANKMENT STABILITY OF TSF	<p>Several contingency options exist to maintain slope stability and reduce the risk of potential piping failures.</p> <ul style="list-style-type: none"> Opportunity: Identify, design and install contingency options as required. <p>Regular audits of the TRS operation are undertaken as described in the Waste MP.</p> <p>Opportunity: Ensure improvement actions and recommendations from audits are documented and where appropriate implemented in a timely manner.</p>	<ul style="list-style-type: none"> Undertake periodic (2-3 year) CPTu testing of tailings to confirm strength parameters used in stability analysis. 	None applicable
ID 4.2 TAILINGS SEEPAGE	<p>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.</p> <p>Opportunity: Install a liquor interception system where seepage of liquor has potential to impact native vegetation.</p>	Identify and install additional liquor interception systems as required	None applicable
ID 4.3 FAUNA INTERACTIONS WITH TRS	<p>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.</p> <ul style="list-style-type: none"> Opportunity: Identify new opportunities to reduce fauna mortalities through ongoing research into management practices relating to fauna interaction with tailings storage systems. 	Continue investigating and trial alternative deterrent technologies when they become available.	None applicable

EM PROGRAM ID	CONTINUOUS IMPROVEMENT OPPORTUNITIES	ACTION	TARGET
	<p>Opportunistic and standardised monitoring of fauna interactions at the TRS has occurred since the implementation of the TRS fauna project.</p> <p>Opportunity: Continue to assess the impact to fauna and the efficacy of various management tools through monitoring.</p>		
<p>ID 4.4 SOLID WASTE DISPOSAL</p>	<p>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.</p> <ul style="list-style-type: none"> Opportunity: Improve at source segregation waste segregation system. <p>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).</p>	<ul style="list-style-type: none"> Implement a site wide paper/cardboard recycling programme with bailing and off site removal/recycling. Continue to monitor and store used LV/HV tyres in line with accepted guidelines. Improve paper and cardboard recycling awareness and on ground participation. 	<ul style="list-style-type: none"> Increase at source waste segregation to reduce waste to landfill.
<p>ID 4.5 RADIOACTIVE WASTE</p>	<p>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.</p> <ul style="list-style-type: none"> Opportunity: Maintain a watching brief on ICRP and IAEA recommendations and any new national Codes of Practice and implement as necessary. <p>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</p>	<p>None applicable</p>	<ul style="list-style-type: none"> Maintain radiation doses as low as reasonably achievable, as assessed through the annual Radiation Management Plan Review.

EM PROGRAM ID	CONTINUOUS IMPROVEMENT OPPORTUNITIES	ACTION	TARGET
	<p>conducted for all phases of any future expansion with findings incorporated into designs.</p> <ul style="list-style-type: none"> • Opportunity: Develop and implement optimisation in design process. <p>Olympic Dam produces waste of various streams as a result of normal operations. A permanent facility specifically designed for disposing 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.</p>		
ID 5 EMPLOYMENT AND ACCOMODATION OF PEOPLE			
ID 5.1 COMMUNITY INTERACTION	<ul style="list-style-type: none"> • Olympic Dam provides opportunities for employment and businesses locally, regionally and state-wide with a focus on Aboriginal people and communities. 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 and ongoing economic development for the region. • Opportunity: Maximise opportunities for South Australian and Aboriginal employment and business participation at Olympic Dam: <ul style="list-style-type: none"> ○ 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; ○ Continue to explore opportunities to enable 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. 	<ul style="list-style-type: none"> • Complete and implement Olympic Dam Social Value Plan for the FY21-25 period. • Undertake the biennial Community Perception Survey (2022) to monitor local community perceptions of ODC, and of local services and facilities. • Establish a formal community engagement mechanism which will provide regular engagement with community representatives and the provision of measurable shifts in community sentiment. • Review and update local procurement plans with targets to maximise the participation of local, regional and State businesses and employment in 	None applicable

EM PROGRAM ID	CONTINUOUS IMPROVEMENT OPPORTUNITIES	ACTION	TARGET
	<ul style="list-style-type: none"> • Opportunity: Maintain and enhance the amenity and lifestyle of Roxby Downs as a desirable place to live and work: <ul style="list-style-type: none"> ○ Undertake a regular (five-yearly) assessment (social baseline study) of Roxby Downs, Andamooka and Woomera and regular surveying to understand key issues. ○ 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; ○ In collaboration with the South Australian Government and key stakeholders, identify indicators to assist in planning, delivering and monitoring social infrastructure provision; <p>Work collaboratively with the South Australian Government and key stakeholders to investigate and deliver appropriate social services and infrastructure.</p>	<p>supplying goods and services to Olympic Dam.</p> <ul style="list-style-type: none"> • Continue to explore opportunities to build involvement of Aboriginal people and businesses to participate and benefit from Olympic Dam. 	

5 SUMMARY OF MAJOR CHANGES AND AMENDMENTS TO THE EPMP 2021

DOCUMENT	SECTION	DESCRIPTION OF CHANGE	CHANGE EXPLANATION
All	All	Updated to IMS document format, including some realignment of sections	To align with the updated document management system implemented at Olympic Dam.
All	All	Removal or reference to Billiton in company name	Company name was changed from BHP Billiton Olympic Dam Corporation Pty Ltd to BHP Olympic Dam Corporation Pty Ltd in 2021
Environment Management Manual (EMM)	6.4.5.6	Removed historical range for radionuclide concentrations in groundwater	This information is reported on annually by BHP and is not appropriate for inclusion in the EPMP, which describes monitoring requirements, not results.
EM Program	4.1.9	Interim maximum supernatant pond area defined for TSF6	To reflect commissioning of TSF6. Note that this is based on TSF5 parameters and that determination of the final maximum supernatant pond area will be based on the actual beach slope and distance to embankment which is not expected to be known until several years post commissioning.
Environmental Management Program – Annual Targets, Actions and Major Changes	4	Removed the opportunity of 'BHP to provide an update to regulators during FY22'	An update is provided annually in the annual EPMP Report.
Great Artesian Basin MP	Table 9.4	Removed spring flow monitoring at HHS 125 and replaced with HHS 125a	To more accurately reflect monitoring location
Great Artesian Basin MP	Table 9.4	Removed monitoring at HHS 184	No longer monitored as recorded as extinct or merged with a neighbouring spring already monitored
Great Artesian Basin MP	Table 9.4	Added spring monitoring at HWF 001, removed spring monitoring at HOF 096	HWF001 has been monitored for spring flow since 2010, incorrectly labelled HOF096. The addition of HWF001 and removal of HOF096 aligns with the spring flow data previously collected with the correct spring being monitored. Aligning the flora and fauna monitoring on the same spring(HWF001). Where

			previously two separate springs were being monitored; Spring flow monitoring HWF001 and flora monitoring HOF096 .
Great Artesian Basin MP	Table 9.4	Removed monitoring at LMS 007	Flora monitoring has not occurred at LMS007 since prior to 2015. Monitoring at this site is considered terminated and does not attribute value to the monitoring programme.
Groundwater MP	Section 3.5	Section removed	BHP has never used its approval to discharge groundwater from beneath TSF5 to an adjacent clay pan and instead reuses this water on-site. This is not expected to change. Groundwater levels beneath TSF5 are managed to remain below the leading indicator value of 70m AHD.
Groundwater MP	Table 6.1	Bores LT23, RD436 and RD1953 removed	Bores no longer exist due to construction project impacts
Groundwater MP	Table 6.1	Bore RD66 removed	Open cased well blocked and unable to be readily cleared
Groundwater MP	Table 6.1	Bores RD503, RD591, RD2153, RD2551 and RD2875 removed	Monitoring data from these bores is not used for compliance purposes. Other suitable wells available in the area.
Community Interaction	Section 5.1	Mechanisms for measuring community sentiment have been updated.	The CSIRO monthly pulse survey has been discontinued by BHP global. To replace this survey, the frequency of the Community Perceptions Survey has been increased and a formal community consultation mechanism is being established directly between ODC and the local community of Roxby Downs and surrounding areas which will produce relevant insights.