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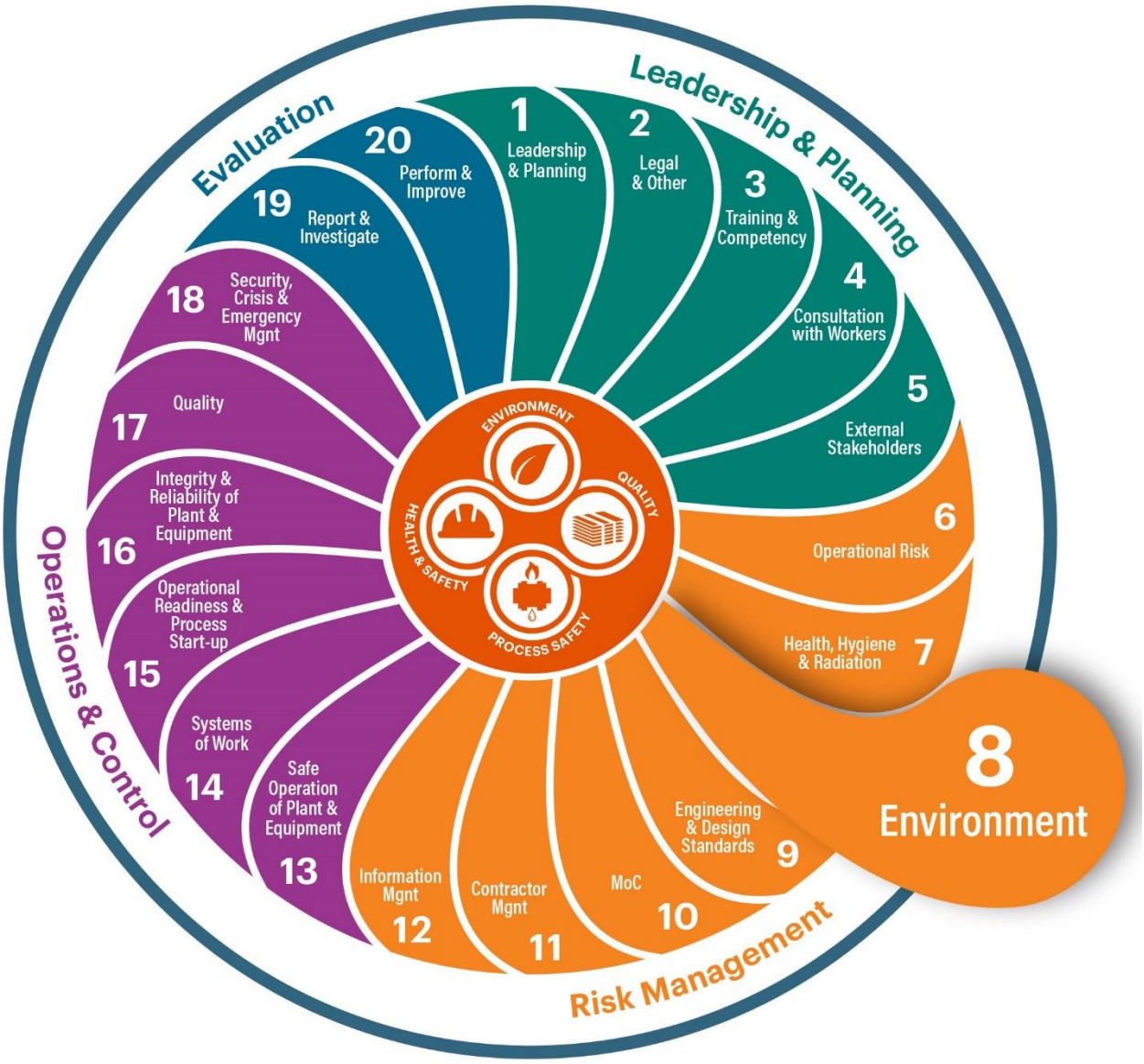

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1 PURPOSE

This document supports *IMS Element 8: Environment Standard, Doc No 012513194*

This Monitoring Program (MP) describes the activities undertaken by BHP Olympic Dam Corporation Pty Ltd (ODC) to monitor and reduce energy use and greenhouse gas (GHG) emissions. It outlines the data collection methodologies and reporting requirements. To address the challenge of climate change, ODC is required to comply with corporate and regulatory requirements associated with energy efficiency and GHG emissions.

This MP addresses a number of distinct elements of energy and greenhouse gas emission monitoring. For each element, the MP sets out some background information, the purpose of the monitoring and the deliverables which are produced as a result of the monitoring. The MP also includes a description of the methods for measuring achievement of **compliance criteria** and the movement of trends towards **leading indicators** (where applicable).

2 SCOPE

This MP considers the Scope 1 and Scope 2 emissions from Olympic Dam which emanate from the following areas:

- Mine;
- Processing;
- Smelter and Refinery;
- Other miscellaneous areas and processes.

Scope 1 emissions are direct emissions from sources within the boundary of an organisation (e.g. fuel used on site). Scope 2 emissions are indirect emissions from the consumption of purchased electricity.

Scope 3 emissions are also considered, providing information that may influence purchasing decisions and reduce the overall emissions footprint of the operation. Scope 3 emissions are all other indirect emissions associated with the activities of an organisation.

Energy use and GHG emissions are reported in gigajoules (GJ) and metric tonnes carbon dioxide equivalent (t CO_2-e) respectively, per unit of production. CO_2-e is used because CO_2 is the dominant greenhouse gas. CO_2-e is the universal unit of measurement to indicate the global warming potential (GWP) of each of the six greenhouse gases, expressed in terms of the GWP of one unit of carbon dioxide. The GWP is a factor relating the radiative forcing impact (contributing to the warming of the atmosphere) of one tonne of a given greenhouse gas relative to one tonne of carbon dioxide.

Calculating GHG emissions takes into account all six groups of direct GHGs listed in Annex A of the Kyoto Protocol (United Nations 1998) as well as in the National Greenhouse Gas and Energy Reporting (NGER) Regulations 2008 (Australian Government, 2008). Emissions of each type are weighted according to their GWP to give a carbon dioxide equivalent emission value in units of t CO_2-e.

The other five direct GHGs listed in the NGER Regulations 2008 are:

- Methane (CH_4);
- Nitrous oxide (N_2O);
- Hydrofluorocarbons (specified) (CHF_2FCF_3);
- Perfluorocarbons (specified) (CF_4 and C_2F_6);
- Sulphur hexafluoride (SF_6).

Emissions of N_2O from Olympic Dam operations are unlikely, and emissions of CHF_2FCF_3 and SF_6 are negligible. Emissions of CF_4 and C_2F_6 are not relevant to Olympic Dam - they are mainly associated with aluminium smelters.

2.1 Responsible ODC personnel

The Olympic Dam Asset President is responsible for ensuring that all legal and other requirements described in this MP are met.

ODC employs sufficient staff with experience and qualifications to fulfil the requirements of this MP.

2.2 Review and modification

This MP is reviewed annually. Major changes or amendments following the review are documented in the EM Program Annual Targets, Actions and Major Changes document.

3 DETAILED PROCEDURE

3.1 Greenhouse gas emissions

3.1.1 Background

Historically, the most significant source of GHG emissions associated with Olympic Dam has been indirect emissions associated with purchased electricity. Reporting emissions to the Olympic Dam workforce helps focus attention on the issue and drive behaviour towards reducing GHG emissions.

3.1.2 Purpose

Monitor and report the GHG emissions arising from the Olympic Dam operation.

3.1.3 Deliverable(s)

- Calculation of the site-wide Scope 1 and Scope 2 GHG emissions, expressed as kilotonnes carbon equivalent (kt CO_2-e).
- Calculation of the site-wide GHG emission intensities, expressed as carbon equivalent intensity (kg CO_2-e/t ore milled).

3.1.4 Method

All calculations and data sources are traceable in accordance with the audit requirements of the *National Greenhouse and Energy Reporting Act 2007* (Australian Government 2007).

The Clean Energy Regulator produces guidelines for complying with the requirements of the Act. These allow for both direct GHG emissions monitoring, as well as methods for the estimation of GHG emissions. Estimates are made through the tracking of observable, closely-related variables such as fossil fuel consumption, with subsequent application of a supplied emission factor to provide an estimate of greenhouse gas emissions from that source.

3.1.5 Greenhouse gas and energy reduction

3.1.6 Background

GHGs, including water vapour, carbon dioxide and methane, contribute to global warming and climate change. Reducing GHG emissions and energy usage can therefore assist in mitigating climate change, and is consistent with BHP's overall strategy and response to climate change, as well as international, national and state policy.

BHP's climate change strategy focuses on reducing our operational GHG emissions, investing in low emissions technologies, promoting product stewardship, managing climate-related risk and opportunity and working with others to enhance the global policy and market response. As a BHP group asset, ODC operates under the BHP group strategy.

3.1.7 Purpose

Identification and investigation of GHG reduction and abatement opportunities that contribute to BHP's overall strategy and response to climate change.

3.1.8 Deliverable(s)

An annual report on BHP initiatives and progress on GHG and energy reduction and abatement opportunities that contribute to BHP strategy and response to climate change, and OD's contribution to that strategy.

3.1.9 Method

Carbon reduction opportunities are reviewed and updated continuously in the context of BHP-wide opportunities to determine viable, cost-effective opportunities and possible timeframes for implementation. Progress and opportunities are reported annually.

4 COMMITMENTS

4.1 Reporting

The results and a discussion of the findings and progress against targets are presented in the annual EPMP report as outlined in the **Environmental Management Manual** (EMM).

ODC is required to report monthly to BHP Corporate on the quantum of direct greenhouse gases by type and the energy sources associated with the emissions.

ODC is responsible for submitting the annual NGER report direct to the Federal Government in accordance with the relevant legislation.

4.2 Summary of commitments

Action	Parameter	Frequency
Assess	Scope 1 and 2 GHG equivalent emissions	Annually
Assess	Scope 1 and 2 GHG equivalent emission intensities	Annually
Report	Progress on GHG reduction and abatement opportunities and monitoring results in the annual EPMP report to the Indenture Minister	Annually
Review	The Energy Use and GHG MP and modify as appropriate	Annually

5 DEFINITIONS AND REFERENCES

5.1 Definitions

Throughout the EPMP some terms are taken to have specific meaning. These are indicated in bold text in the documentation and are defined in the glossary in section 3 of the EMM. Defined terms have the same meaning wherever they appear in bold text. Some other terms and acronyms are also defined in the glossary, but do not appear in bold text.

5.2 References

United Nations 1998, Kyoto Protocol to the United Nations Frames Convention on Climate Change, United Nations, Geneva.

Australian Government, National Greenhouse and Energy Reporting Act 2007, Australian Government, Canberra.

Australian Government, National Greenhouse Gas and Energy Reporting (NGER) Regulations 2008, Australian Government, Canberra.