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1 SCOPE

The Fauna Monitoring Program (MP) describes the environmental monitoring activities that are undertaken by BHP Billiton Olympic Dam Corporation Pty Ltd (ODC) in relation to fauna at Olympic Dam and the surrounding areas that may be impacted by current mining, processing, or construction activities. The purpose of this MP is to set out the measures ODC uses to quantify any change in the extent or significance of impacts of its activities on fauna, assess the performance of control measures employed to limit these impacts, and to meet relevant legal and other requirements.

The Fauna MP addresses a number of distinct elements of fauna monitoring. For each element, the MP sets out 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).

This MP relates to fauna that is normally associated with open rangeland ecosystems and Great Artesian Basin (GAB) springs in the wellfield areas.

Important Biodiversity and Ecosystems and feral and abundant species are monitored. Fauna losses associated with ODC are monitored to direct control efforts to avoid mortalities.

1.1 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 an environmental scientist and sufficient other staff with experience and qualifications to fulfil the requirements of this MP.

1.2 Review and modification

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

It should be noted that as a result of operational activities or through optimisation of sample design some existing monitoring sites may be lost and others added (where possible) to maintain the integrity of the sampling program. Access restrictions can result in some sites occasionally being unable to be monitored.

2 DETAILED PROCEDURE

2.1 Feral and abundant species

2.1.1 Background

Kangaroos are native and commonly recorded within the region; however the presence of artificial water bodies and the lack of domestic grazing on the SML influence their abundance. Both kangaroo and rabbit numbers directly affect the condition of the vegetation on the mine and municipal leases. These herbivores also affect the success of rehabilitation measures and amenity plantings within the mine and municipal leases. Similarly, cat, wild dog (south of the dingo fence) and fox numbers have the potential to increase in response to land management practices and have an impact on native vertebrate populations. Therefore, these species can potentially have an impact on the ecology of the region. For this reason, feral and abundant mammal populations are monitored regularly and controlled when necessary.

2.1.2 Purpose

- Manage feral and abundant species within the SML and surrounding areas.

2.1.3 Deliverable(s)

- An annual report of monitoring and control actions undertaken within the SML and surrounding areas.
- An assessment of the abundance of specific feral and abundant species within the region.

2.1.4 Method

The focus of this program is the management of feral and abundant species based on control effectiveness, feasibility and alignment with current regional management priorities.

An annual risk assessment is undertaken to determine specific actions that are to be applied in the next 12 months and documented as a part of the EPMP review process. The risk assessment focuses on the feasibility of monitoring and management actions that can be undertaken to deliver boarder regional outcomes in line with SAAL NRM conservation priorities.

The annual report will document all feral and abundant species management actions undertaken within the SML and surrounding areas for the financial year.

2.2 GAB springs endemic invertebrates

2.2.1 Background

A diverse, endemic invertebrate fauna group occurs in springs associated with the GAB in South Australia and Queensland. As GAB springs are small aquatic habitats, widely separated in an arid environment, it has been found that localised groups of GAB springs support their own specific types of endemic invertebrates (Ponder 1986).

GAB springs in the Lake Eyre South region support at least six species of Hydrobiid in two genera (Trochidrobia and Fonscochlea), a phreatoicid isopod (**Phreatomerus latipes**), an ostracod (**Ngarawa dirga**) and an amphipod (Austrochiltonia sp.). All these species are aquatic and are currently only known to occur in GAB springs between Marree and Oodnadatta (the only known exception is a species of Hydrobiid recorded in low abundance from Coward Springs Railway Bore) (Ponder et al. 1989).

The persistence of GAB spring aquatic invertebrates is intimately linked to the availability and chemistry of free-flowing water at GAB springs. While the aquatic populations have been exposed to natural spring processes of emergence and decline over considerable time periods, it is likely that populations would be susceptible to any accelerated spring changes over comparatively short periods, which may be caused by excessive drawdown.

2.2.2 Purpose

- Qualify the level of population change that may be attributed to water extraction from the wellfields.

2.2.3 Deliverables

- Comparison of the abundance of Hydrobiid species against baseline data to quantify population change.
- Triennial qualitative comparison of GAB spring monitoring data incorporating GAB spring flow

2.2.4 Method

Spring groups within the potential impact zones of the GAB are visited triennially and sampled for the presence/absence of endemic invertebrate species. Sampling and sorting analyses is to be completed during the same year.

Previous research has shown that presence/absence data provides the same level of information as measures of abundance (Tyre and Possingham 2001). Therefore a large number of springs are visited and sampled for presence/absence, as opposed to visiting a small number of springs and providing a quantitative analysis. This enables a broader impression of current population status to be gained.

Substrate samples are taken at each of the designated springs using a standardised scoop and tray, and analysed for presence/absence of key fauna species/groups.

Time series data are summarised and inspected for long-term trends. Baseline data consists of samples collected during 1995–1996 with further additional sampling conducted in more recent years. The next round of monitoring is scheduled for the latter half of 2020 (FY21). Monitoring sites are grouped in zones for analysis based on predicted levels of impact listed in Appendix D of the Great Artesian Basin Monitoring Program (Document No. 36081).

2.3 Fauna losses

2.3.1 Background

Evaporation ponds and tailings storage facilities (which together form the TRS) are sometimes visited by fauna, which can result in deaths (particularly wetland birds). ODC seeks to understand the ongoing impact that the operation of the TRS has on native fauna and has trialled various measures to deter fauna from visiting the TRS. ODC is committed to ongoing improvement in this area by investigating new measures to decrease the attractiveness of the TRS waterbodies to fauna.

Potential impacts to listed fauna species from land disturbance activities are managed through ODC's internal Environmental Disturbance Permit (EDP) process, which is described in detail in Section 2.4 of the Flora MP.

2.3.2 Purpose

- Understand the current impact of the TRS on listed fauna species comparative to previous trends.
- Assess the performance of applicable control measures that aim to minimise the risk of listed fauna species interacting with the TRS.

2.3.3 Deliverable(s)

- An assessment of fauna activity and losses within the TRS.
- An evaluation of the effectiveness of applicable control measures in reducing the number of listed migratory birds lost within the TRS.

2.3.4 Method

Standardised monitoring of the TRS is conducted weekly to detect the presence of any fauna (dead or alive). This monitoring is conducted by trained staff members, and any fauna carcasses are removed when safe to do so. Opportunistic observations of fauna on the TRS are also made by trained staff and technicians. Analysis is conducted on the effectiveness of control measures and targets in reducing the number of **listed migratory bird** deaths within the TRS.

3 COMMITMENTS

3.1 Reporting

The results and a discussion of the results are presented in the annual EPMP Report, as outlined in the EMM. The monitoring results relating to fauna are made publicly available through the annual EPMP Report.

3.2 Summary of commitments

Table 3.1: Summary of commitments

Action	Parameter	Frequency
Manage	Feral animal and kangaroo abundance	Ongoing
Monitor	Endemic invertebrate abundance in GAB springs	Triennially
Monitor	Fauna presence and losses within the TRS	Weekly
Assess	Effectiveness of applicable control measures and targets in reducing the number of listed migratory birds lost within the TRS	Annually
Employ	Environmental Specialist to undertake the requirements of the MP – Fauna	Ongoing
Report	Monitoring results in the Annual EPMP Report to the Indenture Minister and make fauna data publicly available through the Annual EPMP Report.	Annually
Review	Important Biodiversity and Ecosystems Register and modify as appropriate	Annually
Review	The Fauna MP and modify as appropriate	Annually

Uncontrolled when printed

4 DEFINITIONS AND REFERENCES

4.1 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 5 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.

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