

MGO
MT OWEN / GLENDELL

GLENCORE



Environmental Management Strategy

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1. Commitment and Policy

1.1 Background

Mt Owen Glendell Operations (MGO) is located in the Hunter coal fields of New South Wales, approximately 20 kilometres north-west of Singleton.

MGO is owned and managed by Mt Owen Pty Ltd (MTO) which is a wholly owned subsidiary business unit of Glencore Coal Assets Australia Pty Ltd (Glencore).

MGO consists of the Mt Owen and Glendell Open Cut Coal Mines (refer to **Figure 1.1**). The mining area within the Glendell Mine is referred to as the Barrett Pit. The mining areas at Mt Owen Mine consist of the Bayswater North Pit (BNP) and the North Pit.

The North Pit is currently contract mined by Thiess Pty Ltd (Thiess), with the BNP and Barrett Pit operated by Glencore.

Mining operations at MGO include the integrated use of the Mount Owen coal handling and preparation plant (CHPP), coal stockpiles and rail load-out facility.

1.2 Purpose

This Environmental Management Strategy (Strategy) outlines how MGO manages environment and community aspects, impacts and performance.

It provides an overview for the standards, plans and procedures implemented so operations are managed in accordance with Glencore's business principles as well as all relevant approvals and licences held by the operation.

This Strategy is an integral part of the overall MGO Environmental Management System (EMS), which outlines MGO's commitment to proactive community and environmental management and demonstrates MGO's commitment to managing, mitigating and reducing environmental and community impacts.

1.3 Objectives

The objectives of this Strategy are to:

- Provide the overall framework for environmental management at MGO utilising the principles of the Environmental Management Standard *ISO14001*;
- Maintain compliance with:
 - Mount Owen Mine (SSD-5850) and Glendell Mine (DA 80/952) development consents;
 - environmental licences and permits; and
 - commitments contained in environmental assessments, and other relevant legal requirements.
- Effectively integrate the requirements of the Glencore Environmental Management Framework and relevant legal and other requirements into a site-specific document, detailing environmental management objectives and responsibilities at MGO; and
- Provide effective mechanisms for external communications, in particular the on-going relationship with the local community.

This Strategy sets out the procedures for periodic review, auditing and revision so that it is maintained to reflect current mining operations to the satisfaction of the Department of Planning, Industry and Environment (DPIE).

This Strategy has been prepared to satisfy relevant conditions of SSD-5850 and DA 80/952 (refer to **Section 1.4**) and the GCAA requirement (*11.0 Environment GCAA-625378177-9978*).

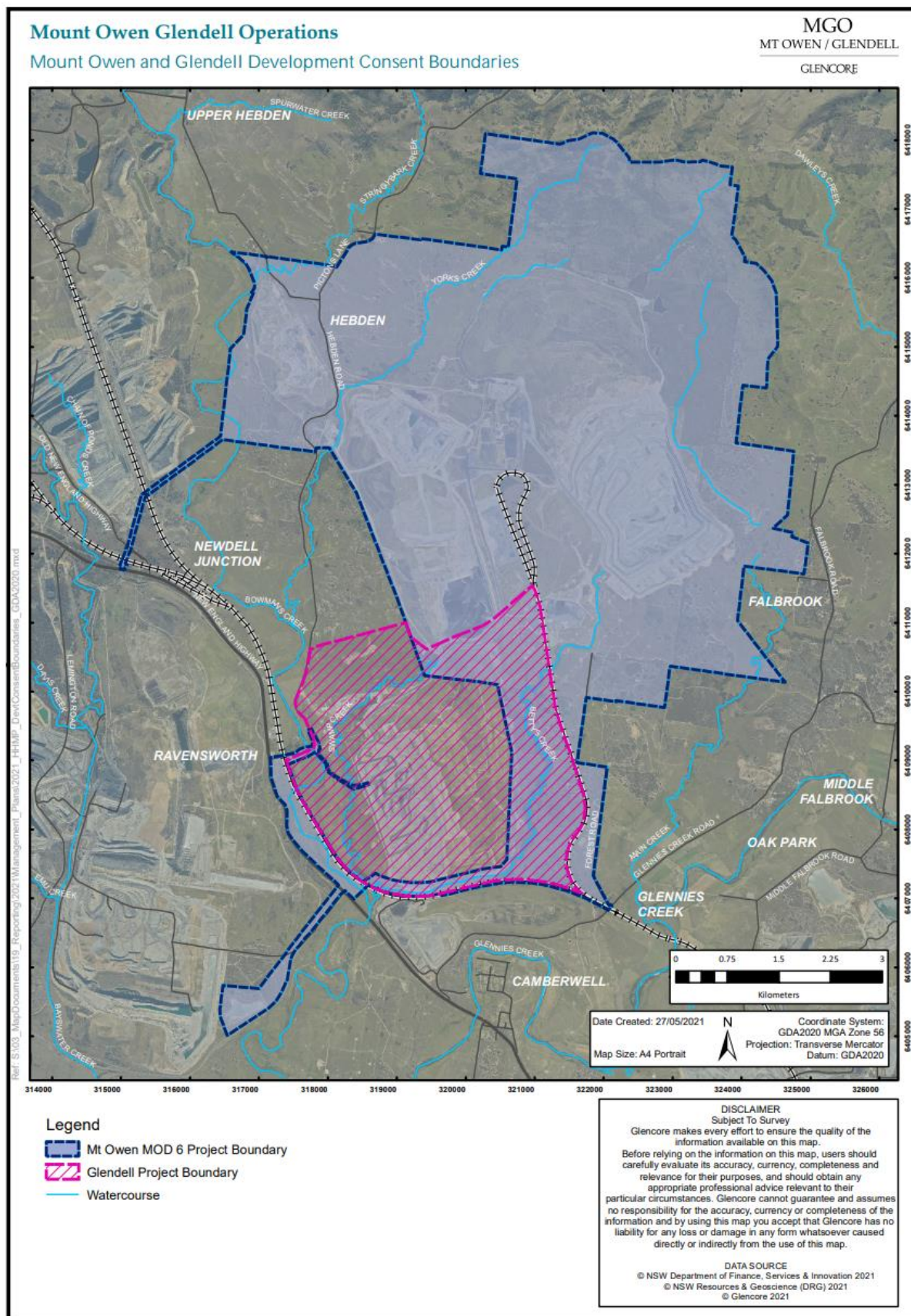


Figure 1.1 - Mt Owen Glendell Operations

1.4 Statutory Requirements

Details of all statutory approvals held by MGO are maintained in the compliance database CMO. An outline of statutory approvals maintained by MGO is provided in **Appendix A.1**.

The specific requirements of the consent conditions and where they are addressed within this document are listed in **Appendix A.1**.

The MGO EPBC Act Approval (*EPBC 2013/6978*) also contains conditions that specify relevant considerations for this Strategy. These conditions and where they are addressed within this document are listed in **Appendix A.1**.

MGO notes this document has been prepared in accordance with Schedule 5 Condition 2 of SSD-5850 and DA 80/952. Whilst this document guides operations across MGO as a whole and is required to be implemented, this document is required for approval under SSD-5850 only.

1.5 GCAA Requirements

GCAA has developed a comprehensive set of health, safety, environment and community (HSEC) standards. These standards have been developed to address the Glencore requirements as a minimum and provide guidance to operations on their effective implementation.

The requirements of the Glencore HSEC Standards and Policies have been incorporated into the Strategy documentation where relevant.

1.5.1 Glencore Corporate Practice Framework

The Glencore Corporate Practice provides the corporate governance framework and fundamental requirements that apply across the Group. Our Values, the Code of Conduct, and the underlying policies supporting them, represent the commitment to upholding good business practices to work with every day.

All employees, including contractors, are to uphold these expectations and may be held accountable for any breach.

1.6 Supplementary Documents

The supporting documents relevant to this Strategy are listed in **Section 3.2**.

1.7 Consultation

This Strategy was reviewed by members of the Mount Owen Environment and Community (E&C) Steering Committee and initially endorsed at the meeting on 27 October 2016.

Version and revision history of this document is provided in **Section 8**.

From November 2019, consultation records for post approval documents can be found on the DPIE Major Projects website. DPIE correspondence approving the Strategy is included in **Appendix A.4**.

2. Planning

2.1 Annual Planning Process

MGO undertakes an annual review of environment and community issues and performance, which is completed in conjunction with the E&C Broad Brush Risk Assessment (BBRA).

The annual management reviews consider the following key aspects:

- Outcomes from monitoring and review activities;
- Internal and external inspections, assessments and audits;
- HSEC incident reports and investigation findings;
- Inputs and views of external stakeholders;
- Status of corrective and preventative actions;
- Outcomes from previous management reviews; and
- Government policies and regulation.

Following the annual management review SD strategies, plans, processes, objectives and targets are to be updated as part of the annual planning process. The annual risk management planning and budgeting process implemented for MGO is summarised in **Figure 2.1**.



Figure 2.1 - MGO E&C Management Planning Process

2.2 Environmental Aspects and Impacts

The planning process aims to identify environmental aspects and impacts focused on key aspects of relevance to the environmental and community performance of MGOs operation. It is based upon the *GCAA Risk Management Standard (GCAA-625378177-2844)*.

The process requires:

- Identification of hazards/aspects and impacts;
- Assessment of the risk associated with those hazards/aspects and impacts; and
- Identification of the controls necessary to eliminate or otherwise reduce those risks.

If new aspects and impacts are identified during the risk assessment, they are added to the register.

Operational specific Life of Mine (LOM) risk assessments are also undertaken annually. The LOM identifies key financial and operational risks.

Changes identified during the LOM generally lead to modifications in Development Consents or other main licences.

The results of risk reviews are to be incorporated into the environmental objectives and targets (where appropriate), management programs and work procedures at the next review of the EMS.

2.3 Environmental Approval Documents

Several environmental assessments have been undertaken for MGO as part of development applications and development modification applications.

Recent major assessments undertaken at MGO are listed in **Table 2.1** and are also available through the MGO website; www.glencore.com.au/operations-and-projects/coal/current-operations/mt-owen-glendell-open-cut and the DPIE Major Projects Planning Portal; <https://www.planningportal.nsw.gov.au/major-projects>.

Each of the environmental assessments listed in **Table 2.1** contain various specialist impact assessments and strategies for the various environmental aspects, including but not limited to air quality, noise, surface and groundwater, biodiversity and rehabilitation. Additional approval documents are available on the MGO website; and the DPIE Major Projects Planning Portal.

If an activity is proposed that falls outside of the approved development however is still considered *generally in accordance with the development consent*, or the Mining State Environmental Planning Policy (SEPP), smaller environmental assessments (due diligence works) are undertaken.

2.4 Objectives and Targets

The objectives and targets set in this Strategy have been developed in consideration of a number of Glencore policies. The targets are specific and measurable and achievement of these aim to demonstrate environmental improvement.

In order to meet the objectives and targets MGO implements environmental programs through the action-based reporting tool CMO (see **Section 3.1**).

Progress against the site HSEC annual plan is also documented in the CMO database.

Table 2.1– Environmental Approval Documents

| Environmental Assessment | Year |
|---|------|
| Environmental Assessment for Modification of Glendell Mine Operations (Modification 2) | 2007 |
| Mount Owen Continued Operations Project Environmental Impact Statement | 2015 |
| Mount Owen Continued Operations Project, Environmental Impact Statement, Response to Submissions Report | 2015 |
| Mount Owen Continued Operations Project, Response to Submissions to PAC Review Report | 2016 |
| Glendell Development Consent DA 80-952 (Modification 3) | 2016 |
| Mount Owen Continued Operations Development Consent SSD-5850 | 2016 |
| Environmental Assessment for Modification to Mount Owen Continued Operations Development Consent SSD5850 (Modification 1) | 2017 |
| Mount Owen Continued Operations Development Consent SSD-5850 (Modification 1) | 2017 |
| Statement of Environmental Effects for Modification to Mount Owen Continued Operations Development Consent SSD5850 (Modification 2) | 2018 |
| Mount Owen Continued Operations Development Consent SSD-5850 (Modification 2) | 2019 |
| Mount Owen Continued Operations Development Consent SSD-5850 (Modification 3) | 2020 |
| Glendell Development Consent DA 80-952 (Modification 4) | 2020 |
| Mount Owen Continued Operations Development Consent SSD-5850 (Modification 5) | 2021 |
| Mount Owen Continued Operations Development Consent SSD-5850 (Modification 6) | 2021 |

2.5 Environmental Baseline Studies

Operations at MGO are supported by several baseline studies which were conducted during the application for Development Consent and/or for modifications to existing consents. The major studies as part of these approvals are detailed in **Table 2.1** above.

Numerous minor studies are conducted for developing management plans, as required under licence conditions, depending on whether the aspects have been adequately addressed by the initial assessments. Minor studies and baseline information are detailed further in each respective management plan required for implementation at MGO.

For deviations from the original plan that are still generally in accordance with approvals, due diligence surveys are undertaken to prevent impacts. If significant changes to the operations lead to works not being generally in accordance with approvals, then new assessments are undertaken to support modifications.

These baseline studies together with the conditions of approvals and licences form the core of the MGO environmental compliance management which is addressed in **Section 3.2**.

3. Implementation

3.1 Environmental Systems

MGO uses eight core systems for the administration of environment and community aspects and impacts. These systems are outlined in **Table 3.1** and are implemented in pillars (refer to **Figure 3.1**).

Table 3.1 - MGO Environmental Management Systems

| System | Purpose |
|--|--|
| Environmental Management System | The collection of management plans, procedures and related documents concerning this Strategy. |
| Microsoft SharePoint | The GCAA document management software and operating system used for the storage and publication of documents, including approved plans. E&C management plans that cover MGO are located in SharePoint so that plans are accessible on the individual site intranets. |
| MGO GIS | MGO uses ArcGIS TM software to manage geo-spatial data. The GCAA-625378177-10499 Spatial Data Management Guideline addresses the standard operation procedures for the storage and control of these spatial records. |
| Environmental Monitoring Database (EMD) | The repository for ground water, surface water, air quality, noise, blast and meteorological records. |
| CMO™ | The GCAA approvals and licences compliance storage database. CMO is also used for scheduling compliance actions pertaining to the requirements of licences. |
| Sentinex and Datamaster Systems | Real-time noise, air quality monitors, and blast monitors. |
| Consultation Manager™ | The GCAA storage database for records of stakeholder consultation. |
| MGO E&C Work Plans | There are currently four work plan spreadsheets. One for each role in the E&C team. These are shown in Figure 3.1 . |

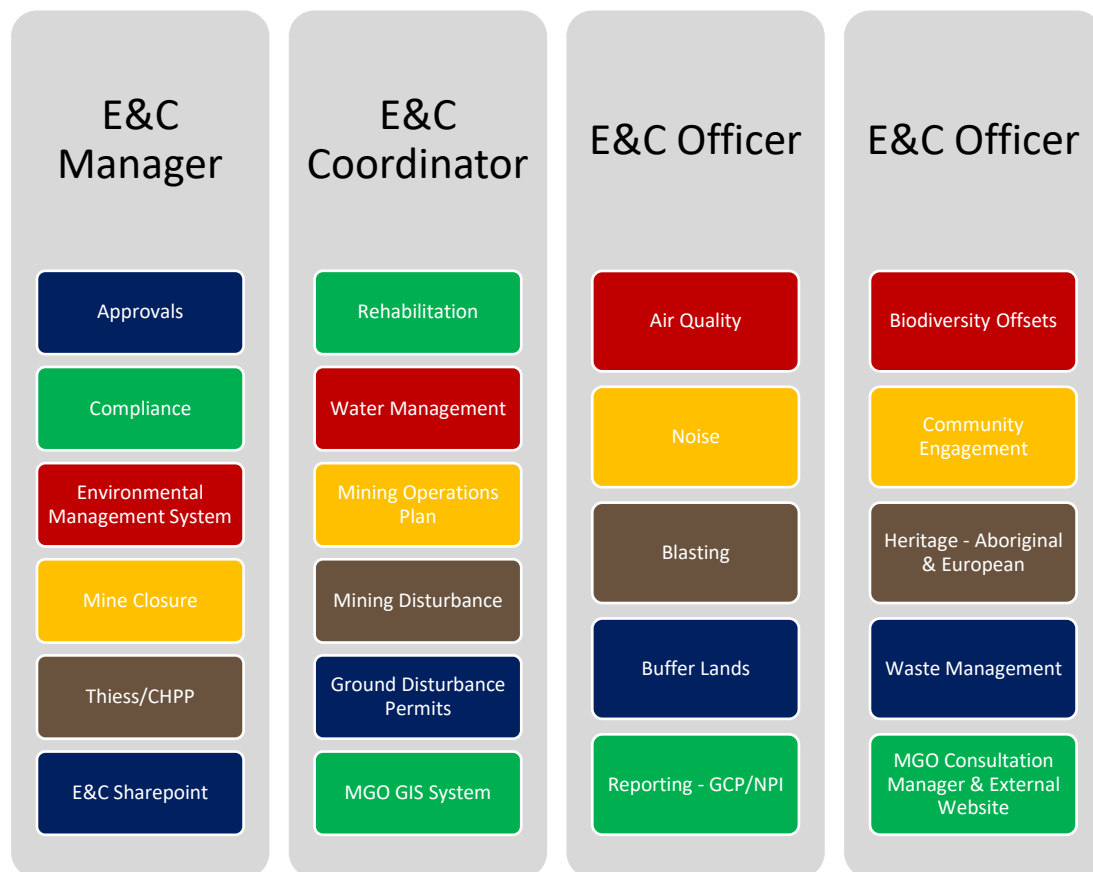


Figure 3.1 - MGO Environmental Pillars and Systems (and responsible position)

3.1.1 Compliance Management

Compliance management at MGO is undertaken in accordance with 11.01 Compliance Management (**GCAA-625378177-10301**). For MGO to maintain compliance with relevant statutory requirements, these requirements need to be identified and performance against them be regularly reviewed.

3.1.1.1 CMO

MGO store obligations from all primary and secondary approvals in CMO. Then actions are assigned to relevant obligations. Evidence is uploaded to complete actions.

MGO E&C personnel then track actions due via an automated email alert, or during the review of actions in the weekly planning meeting.

MGO also upload evidence of compliance to general obligations where no actions are required.

A comprehensive list of MGO approvals and licences is contained in **Appendix A.1**.

3.1.1.2 Changes to Standards, Codes, Legislation

Awareness of changes to GCAA standards or protocols, codes or legislation is addressed in the following ways:

- Receipt of regular updates from GCAA legal advisers;

- Participation in industry groups, such as:
 - NSW Minerals Council
 - Hunter Coal Environment Group;
- Notification from the Glencore General Manager for Environment and Community; and
- Access to State and Federal legislation via the internet.

3.1.1.3 Work Authorisations

MGO uses the work authorisation process in accordance with *CAA HSEC PCL 0036 – Work Authorisation and Permit System*. The *CAA HSEC PER 0001 – Work Authorisation* form contains a checklist of environmental aspects.

A GCAA work authorisation is required where:

- there are changes to existing activities/processes; and
- new projects are proposed that have potential for environmental impact.

The purpose of work authorisations is to consider whether:

- the proposed works have the required environmental approval; and
- the person(s) undertaking the works have appropriately managed risks to minimise impacts on the environment and community.

The work authorisation form may trigger a Ground Disturbance Permit (GDP).

A GDP is required for all surface disturbance work up to and including removal of topsoil. This includes, but is not limited to, tree lopping, removal of topsoil and clearing and access to rehabilitation areas.

3.1.2 Statutory Approval Management

MGO follows a specific approvals and compliance process where:

- approvals required for the continuity of the operations are obtained within the required time frame;
- compliance with these approvals is maintained;
 - Compliance to MGO licences and approvals is managed through CMO. MGO licences and approvals are outlined on the MGO Approvals Register. The objective of the register is to accurately record all current approvals for the MGO, including:
 - date of approval / renewal;
 - date of expiry;
 - whether CMO has been updated with approval:
 - conditions / commitments
 - actions;
 - GCAA applicable protocols.

Where MGO requires a new Development Consent or a modification, the steps to be followed are in accordance with *11.20 Statutory Approval Management (GCAA-625378177-9978)*. A comprehensive list of MGO approvals and licences is contained in **Appendix A.1**.

3.1.3 GIS Spatial Data Management

The Spatial Management Database (SMD) at MGO is a core E&C system. The operating policy for managing the SMD is the 11.19 GIS Spatial Data Management (**GCAA-625378177-10499**). The SMD stores the information listed in **Figure 3.2**. Spatial data has been transitioned to GDA2020 format from October 2020.

Figure 3.2 - MGO SMD Structure

| Folder | Information |
|------------------------|--|
| Documents | Non-spatial information that describes how the SMD operates. This includes this document, procedures, support documents, styles and scripts. |
| Geospatial Data | Vector and raster data within data themes. The datasets are described within the data register, which provides an overview of the available data, where it is located, data currency and responsibilities for maintaining data. |
| Mapping | Contains mapping templates and workspaces. Templates have been developed for specific reporting/constraints requirements, overarching themes and blank bases to complete mapping. Templates are saved as mapping documents/workspaces for manipulation and future retrieval. |
| Plots | Mapping outputs for use in reporting, constraints analysis, field mapping and community distribution. All plots are maintained within this file as an original record and copied to other locations if required. The structure of the Plots folder mirrors the mapping folder. |
| Transfer | GIS related data and information that is received to or sent from site. All received and sent data is maintained in the transfer folder as a record of the original data package. |
| Archive | All historic ArcGIS and MapInfo datasets and workspaces. |

3.2 Environmental Controls

Environmental impacts associated with MGO are mitigated and/or managed through the implementation of the EMS.

The EMS comprises environmental procedures, management plans and monitoring programs. These provide an overview of specific environmental aspects and impacts associated with the operations. They also outline the management measures that the site undertakes to minimise environmental impacts.

The documents associated with this EMS are listed in **Table 3.2**. Each of these management plans are supported by the GCAA EC Protocols, listed in **Section 8.1**.

The implementation of these management plans, monitoring programs and the associated procedures will assist MGO to effectively manage environmental and community performance and reduce cumulative environmental impacts.

The implementation of these management plans is the responsibility of all employees at MGO and is overseen by the MGO E&C Manager.

MGO maintains the latest version of strategies, plans or programs on its public website at <https://www.glencore.com.au/operations-and-projects/coal/current-operations/mt-owen-glendell-open-cut>.

Since November 2019, post approval documents have been provided to DPIE via the DPIE Major Projects Planning Portal.

Procedures are also developed as required to provide specific guidance where legislation or management plans require more detailed explanation or guidance to relevant.

3.2.1 Managing Cumulative Impacts

Cumulative environmental impacts from mining operations, along with the mitigation and management measures implemented (including an assessment of their effectiveness), are addressed in the Annual Review. The air, noise and blasting management plans provide specific procedures in relation to the management of cumulative impacts.

Table 3.2 MGO Environmental Management Plans and Programs

| Area of Management | Mt Owen Mine Development Consent (SSD-5850) | Glendell Mine Development Consent (DA 80/952) | MGO Approach |
|-----------------------------------|---|---|---|
| Air Quality | Air Quality and Greenhouse Gas Management Plan | Air Quality and Greenhouse Gas Management Plan | Air Quality and Greenhouse Gas Management Plan (Incorporates the previous Glendell Greenhouse Gas and Energy Efficiency Plan) |
| Noise | Noise Management Plan | Noise Monitoring Program | Noise Management Plan |
| Blasting and Vibration | Blast Management Plan | Blast Monitoring Program | Blast Management Plan |
| Rehabilitation | Rehabilitation Strategy Rehabilitation Management Plan | Rehabilitation Management Plan Final Void Management Plan Mine Closure Plan | Rehabilitation Strategy Mining Operations Plan (Rehabilitation Management Plan) |
| Water Resources | Water Management Plan that includes: <ul style="list-style-type: none"> Water Balance Salt Balance Erosion and Sediment Control Plan Surface Water Management Plan Groundwater Management Plan | Water Management Plan that includes: <ul style="list-style-type: none"> Erosion and Sediment Control Plan Site Water Balance Surface Water Management and Monitoring Program Groundwater Monitoring Program Surface and Ground Water Response Plan Bettys and Swamp Creek Diversion Plans | Water Management Plan that includes: <ul style="list-style-type: none"> Water and Salt Balance Erosion and Sediment Control Plan Surface Water Management Plan Groundwater Management Plan Creek Diversion Management Plan |
| Biodiversity and Flora and Fauna | Biodiversity Management Plan | Biodiversity Offset Strategy Biodiversity Offset Management Plan Landscape Management Plan | Biodiversity & Offset Management Plan & Strategy |
| Aboriginal Cultural Heritage | Aboriginal Heritage Management Plan | Aboriginal Cultural Heritage Management Plan | Aboriginal Cultural Heritage Management Plan |
| Historic Heritage Management Plan | Historic Heritage Management Plan | N/A | Historic Heritage Management Plan |

N/A: Plan or Program not applicable to Development Consent

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3.2.2 Carbon Management

Glencore is undertaking a range of broad initiatives to address greenhouse gas emissions including the funding of research and development of low emission technologies, implementing projects to capture coal seam gas and convert it to electricity and improving energy efficiency across operations.

Energy consumption at MGO is monitored and reported in accordance with Glencore protocol *11.03 Carbon Management*. MGO uses a Greenhouse and Energy Efficiency Process to monitor greenhouse gas emissions and energy use generated by operations, and to provide a framework for investigating and implementing measures to reduce greenhouse gas emissions and energy use.

3.2.3 Cultural Heritage Management

Aboriginal Cultural Heritage Management Plan (ACHMP) (MGOOC-1779562647-11191) was developed in-line with the requirements of SSD-5850 and DA 80/952 with the Glencore protocol *11.21 Aboriginal Cultural Heritage Management – NSW (GCAA-625378177-10266)*.

The objectives of the ACHMP is to set out controls and protocols to prevent unapproved impact to any identified and/or unidentified Aboriginal cultural heritage sites and values on land occupied by the MGO.

This Plan:

- Details the management procedures for Aboriginal heritage within the MGO;
- Details reporting requirements;
- Presents a detailed process for on-going Aboriginal consultation;
- Outlines the obligations of project personnel to protect Aboriginal sites not subject to approved harm;
- Describes the roles and responsibilities of MGO staff in managing Aboriginal heritage sites before and after salvage works; and
- Provides for continuous improvement through auditing and plan modification.

MGOOC-1779562647-4225 – *Historic Heritage Management Plan* documents procedures for the management of historic heritage values *within* the MGO. The purpose of this Plan is to provide a description of the measures to be implemented by Glencore to manage and protect known heritage values within and in the vicinity of the MGO.

3.2.4 Surface Blast Management

Blasting operations at MGO will be undertaken within the North Pit, Bayswater North Pit (part of the West Pit) and Barrett Pit.

The environment and community impacts of surface blasting are managed using the *MGO Blast Management Plan (MGOOC-1779562647-11183)*.

This Plan applies to all blasting activities within MGO and addresses the relevant conditions of Development Consents SSD-5850 and DA 80/952, as well as conditions of the relevant Environment Protection Licences (EPL) and the Glencore protocol *11.12 Blast Management (GCAA-625378177-9975)*.

The objectives of the Blast Management Plan are to:

- Establish a blast monitoring system to assess the blast and vibration impact on surrounding receivers;

- Detail the controls to be implemented to minimise blasting impacts from the site;
- Provide a blast protocol to assess monitoring results against blast impact assessment criteria to evaluate compliance;
- Manage blast-related community complaints in a timely and effective manner; and
- Detail the procedure for reporting blast criteria exceedances to relevant stakeholders.
- Blast monitoring locations are shown in **Appendix A.3**.

3.2.5 Exploration and Drilling

Exploration and drilling activities at the MGO are undertaken in accordance with *11.09 Exploration and Drilling (GCAA-625378177-10237)*. To assist with the planning of drilling programs, E&C personnel undertake inspections prior to, during and post drilling, so that works are performed in a safe manner and adequate controls are in place to minimise impacts on the environment and community.

3.2.6 Hydrocarbon Management

Hydrocarbon storage and inspections at MGO are addressed by the Mt Owen Glendell Operations *Hydrocarbon Management Plan (MGOOC-1779562647-3840)*, which was developed in accordance with the Glencore protocol *11.07 Hydrocarbon Management (GCAA-625378177-10243)*.

Bulk fuel facilities at MGO are fully bunded in facilities designed to hold 110% of the largest fuel storage tank in accordance with *AS 1940:2017 – The Storage and Handling of Flammable and Combustible Liquids*, and all emergency measures and safeguards are in place in the event of a spill.

There is negligible potential for off-site contamination once fuel is received on-site as all handling and transport is within the contained water management system.

3.2.7 Air Quality Management

Air Quality at MGO is managed in accordance with the *MGO Air Quality and Greenhouse Gas Management Plan (MGOOC-1779562647-4392)* and the Glencore protocol *11.10 Air Quality Management (GCAA-625378177-10324)*.

The MGO air quality monitoring program includes a combination of dust deposition gauges, TSP and PM₁₀ high volume air samplers (HVAS), continuous PM₁₀ monitoring units (TEOMs and EBAMs) and PM_{2.5} monitoring units (TEOM – Mt Owen only). The location of air quality monitoring units are shown in **Appendix A.3**.

The objectives of the Air Quality Management Plan are to:

- Identify the potential impacts of MGO on the local air quality environment;
- Identify energy efficiencies associated with MGO;
- Detail the controls to be implemented to minimise air quality impacts, including greenhouse gas emissions;
- Establish an air quality monitoring system to assess the air quality impact;
- Provide a protocol to assess monitoring results against air quality impact assessment criteria to evaluate compliance;
- Maintain compliance with conditions of development consents, environmental protection licences and legislation relating to greenhouse gas management and energy use efficiency;
- Manage air quality-related community complaints in a timely and effective manner; and

- Detail the procedure for reporting air quality criteria exceedances to relevant stakeholders.

3.2.8 Noise Management

Noise management at the MGO is undertaken in accordance with the *Noise Management Plan (MGOOC-1779562647-10975)*. This Plan applies to all operational activities within the MGO and addresses the relevant conditions of Development Consents as well as the conditions of the EPLs and *11.11 Noise Management (GCAA-625378177-16332)* protocol.

The objectives of the Noise Management Plan are to:

- Describe the measures to be implemented to ensure compliance with relevant noise criteria;
- Describe the noise management system in detail; and
- Outline a monitoring program that:
 - Evaluates and reports on the effectiveness of the noise management system;
 - Assists to calibrate the real-time noise monitoring alarms to provide feedback to manage noise impacts from MGO;
 - Validates the measurements from the real-time monitoring system against observations during attended noise monitoring; and
 - Defines what constitutes a noise incident and a protocol for responding to such incidents.

Noise monitoring is undertaken in accordance with EPL and development consent conditions, which specify required methods of sampling, analysis and frequency of monitoring. The noise monitoring program includes a combination of continuous and attended monitoring measures that are carried out in accordance with the relevant requirements set out in the NSW *Noise Policy for Industry* (EPA, 2017). Noise monitoring locations are shown in **Appendix A.3**.

3.2.9 Pipeline Management

Water pipelines across MGO are not managed under a specific pipeline management plan, but are incorporated into the *Water Management Plan (MGOOC-1779562647-72)* which is a requirement of SSD-5850 and DA 80/952.

Water is transferred around complex using the MGO pump and pipeline infrastructure and inter-site via the Greater Ravensworth Area Water and Tailings Scheme (GRAWTS). Pipelines are inspected regularly as per the GCAA Pipeline Policy *11.02 Pipeline Management (GCAA-625378177-10248)*.

Inspection frequency is risk based depending on water quality being transferred and the environment in which the pipeline is located.

3.2.10 Tailings Management

Tailings at MGO are managed in accordance with the *Tailings Management Plan*, which is referenced within the Mount Owen Complex Mining Operations Plan.

This Plan outlines the environmental management of MGO tailings areas and in particular focuses on rehabilitation aspects. It is not an engineering and design document rather it should be used as a guide for decommissioning and rehabilitating tailings areas within the MGO.

3.2.11 Water Management

MGO has an extensive water management system, which includes mine dewatering systems, creek diversions, water storages, sediment dams, tailings ponds, drains and earthen bunding around stockpiles, hardstand areas, haul roads and refuelling areas.

SSD-5850 and DA 80/952 require a water management plan and includes all activities associated with the management of water across the complex. In addition to this, the MGO is an integral part of the GRAWTS with the Integra Underground, Ravensworth Operations, Ravensworth Underground and Liddell mining operations. The GRAWTS allows greater flexibility in mine water management by MGO.

The Water Management Plan has recently been reviewed to adopt the *11.03 Water Management (GCAA-625378177-10320)* and *11.05 Dams and Diversions protocol (GCAA-625378177-10322)*.

The objectives of the MGO Water Management Plan and functions of the site water management system are to:

- Satisfy regulatory requirements, including meeting required performance criteria;
- Divert clean water around mining operations to minimise capture of upslope runoff and separate clean water runoff from mining activities;
- Segregate mine impacted water and runoff from undisturbed and revegetated areas with better water quality to minimise the volume of mine impacted water that requires reuse;
- Reuse mine impacted water within the WMS and within the GRAWTS to reduce reliance on raw/clean water (that is, extraction from Glennies Creek); and
- Minimise adverse effects on downstream waterways (including hydraulic and water quality impacts).

The Water Management Plan should be read in conjunction with the following plans:

- Erosion and Sediment Control Plan;
- Surface Water Monitoring Program;
- Groundwater Monitoring Program;
- Surface Water and Groundwater Response Plan;
- Swamp Creek Diversion Detailed Designs; and
- Bettys Creek Diversion Detailed Designs.

Water sampling and monitoring is undertaken on a monthly basis for key water storages, catchments and creek lines around MGO. Water monitoring locations are shown in **Appendix A.3**.

3.2.12 Erosion and Sediment

Erosion and sediment control is managed under the MGO Erosion and Sediment Control Plan (ESCP), which was developed in line with the *11.06 Erosion and Sediment Control protocol (GCAA-625378177-10323)*. The MGO ESCP provides the overarching details for how erosion and sediment control is managed across the complex. Individual erosion and sediment control plans for site-specific disturbance activities are developed in accordance with this plan.

The objectives of the ESCP are to:

- Identify activities that could cause erosion and generate sediment or affect flooding, including activities on waterfront land”;

- Describe the location, function and capacity of erosion and sediment controls structures required to minimise soil erosion and the potential for transport of sediment downstream;
- Ensure appropriate erosion and sediment control structures and programs of work are in place;
- Ensure that erosion and sediment control structures are appropriately sized and maintained;
- Fulfil the statutory conditions of relevant approvals and licences; and
- Meet the requirements of the Blue Book (*Managing Urban Stormwater: Soils and Construction Volumes 1 and 2E*) and GCAA.

3.2.13 Land and Property Management

Landholdings total approximately 10,500 hectares (ha) across MGO. This land covers the immediate and surrounding areas of the MGO, excluding the Ravensworth State Forest (approximately 880 ha owned by the Forestry Corporation of NSW to the northeast of Mount Owen). Land not actively used for mining purposes is managed for either grazing or biodiversity offset purposes.

MGO is required by GCAA to submit an annual rehabilitation and land management plan in accordance with the *11.15 Land and Property Management protocol (GCAA-625378177-10242)*. These plans include works on mine-owned land that is not subject to mining as well as mined areas.

3.2.14 Rehabilitation Management

Rehabilitation across the MGO is conducted in line with the approved MGO MOP, which was prepared to meet the requirements of the Rehabilitation Management Plan specified in Schedule 3, Condition 45 of SSD-5850.

MGO is required by GCAA to submit an annual rehabilitation and land management plan in accordance with the *11.16 Rehabilitation Management protocol (GCAA-625378177-10241)*. These plans cover the areas planned to be disturbed and the areas planned to be rehabilitated during that year. The results are then reported in the MGO Annual Review required under SSD-5850 and DA 80/952.

MGO undertakes a rehabilitation monitoring program in accordance with this Glencore standard to provide direction and guidance to GCAA Operations in developing an operation-specific rehabilitation monitoring program that will aid in successfully meeting rehabilitation objectives and completion criteria. The main objectives of the monitoring program are to:

- Assess long term stability of re-established ecosystems on mine effected land;
- Assess rehabilitation performance against closure criteria; and
- Facilitate continuous improvement in rehabilitation practices.

The monitoring program will be continued within rehabilitated areas and non-mined areas until it can be demonstrated that rehabilitation has satisfied the closure criteria. Information from this monitoring program will also be used to refine closure criteria as required.

3.2.15 Mine Closure Planning

The Mount Owen Operational Mine Closure Plan and Glendell Pre-feasibility Mine Closure Plan has been prepared for MGO in accordance with Glencore protocol *11.17 Mine Closure Planning (GCAA-625378177-10325)*.

The primary objectives of closure, decommissioning and rehabilitation at MGO are to:

- Create a stable final landform with acceptable post-mining land capability;

- Return land affected by the operations to native forest and woodland and, in some areas, pasture;
- Provide for the long term protection and management of biodiversity offset areas; and
- Provide for the safety of employees and the public during and following the closure of the mining operations.

3.2.16 Biodiversity Management

The Biodiversity and Offset Management Plan (BOMP) has been prepared in accordance with Glencore's *11.18 Biodiversity Offset Management protocol (GCAA-625378177-10326)*. The BOMP is implemented to guide the on-going management of biodiversity and biodiversity offset areas (BOAs) (including corridors) across MGO. The BOMP provides a framework for the implementation of ecological management actions, regeneration and revegetation strategies, controls and monitoring programs.

The objectives of the BOMP are:

- Re-establish and maintain stable landforms, landscapes and fully functioning ecosystems;
- Maintain and, where practicable, enhance the biodiversity values of the area, including the genetic diversity of native fauna and flora species to ensure their long term viability;
- Maintain and enhance habitat for native fauna to improve the likelihood of their long term survival;
- Implement targeted strategies for the conservation and management of threatened species, populations and communities and their habitats;
- Control and, where practicable, eradicate threats to threatened species, populations and communities and their habitats;
- Implement monitoring requirements to provide information to assist management of threatened species, populations and communities, their habitats and ecosystems;
- Develop a woodland ecosystem resilient to threats that is self-sustaining in the long term;
- Facilitate the establishment of vegetation corridors, where possible, creating links to areas of remnant vegetation surrounding the MGO;
- Guide the implementation of the Mount Owen Biodiversity Offset Strategy;
- Develop objectives and identify mechanisms for the long term security of BOAs; and
- Identify and implement best practice biodiversity conservation, rehabilitation and reforestation measures.

The rehabilitation monitoring program is undertaken across MGO and will assist in developing management measures required to address rehabilitation risks and will assist MGO with relinquishment of rehabilitated areas across the operation.

3.2.17 Waste Management

Waste at MGO is managed under the Mt Owen Glendell Operations *Waste Management Plan (MGOOC-1779562647-3726)*, which was developed in line with the GCAA *11.08 Waste Management (GCAA-625378177-10249)* protocol. These documents provide instruction on the correct handling, storage and disposal of waste materials and encourages efficient resource use and recovery. It also

assist sites to comply with relevant legislation, regulations, standards and consent/licence conditions, along with monitoring, reporting and auditing requirements.

3.3 Communications

Effective communication between MGO management and employees/contractors and between MGO and external stakeholders is important for the successful on-going operation of the MGO. All communication is undertaken in accordance with the specific procedures outlined in the below sub-sections.

3.3.1 Internal Communications

Internal communications are conducted in accordance with the GCAA Internal Communication Standard that provides a protocol for achieving effective and timely internal communication and consultation between different levels of the organisation about company matters, performance, leading practices, sustainable development expectations, risks, and other issues.

The standard sets the expectation to ensure all personnel are required to report environmental incidents, non-conformances and complaints to their immediate supervisor.

Supervisors will then complete an incident/complaint form and forward the details of the incident or non-conformance to the MGO E&C Manager or Senior Thiess Environmental Advisor (EA) for investigation and corrective and/or preventative action.

The MGO E&C Manager or Thiess EA investigate the incident or complaint and prepare an investigation report, which includes recommendations for preventative and/or corrective action. Communication of complaints or incidents to the relevant managers will be undertaken as per the site incident reporting requirements with the details recorded in CMO.

Internal communications listed in Table 5 are conducted in accordance with the *GCAA 10.03 Internal Communication Standard (GCAA-625379177-10330)*. The internal communication performed at MGO is described in **Table 3.3**.

Table 3.3 – Internal Communication

| Communication | Frequency | Information |
|-------------------------------------|-----------|--|
| MGO Production | Daily | Planned activities for the day. Review of previous 24 hours. |
| NSW E&C Teleconference | Weekly | Report by all NSW sites on E&C aspects and incidents. |
| MGO E&C Planning Meeting | Weekly | Review of environmental performance, planned works, CMO actions and tracking against each E&C Work Schedule. |
| MGO Site Managers Meetings | Weekly | Report on E&C management by MGO E&C Manager to Senior Leadership Team. |
| GCOM Session | Monthly | Includes E&C aspects slides to staff and crews. |
| NSW E&C Meeting | Quarterly | Update by all sites and GCAA on performance. |

| Communication | Frequency | Information |
|----------------------------|-----------|--|
| EMS Review and BBRA | Annual | BBRA against life-of-mine plans leading to the development of E&C budgets and update of the MGO EMS. |
| Closure BBRA | Annual | BBRA against mine closure elements applicable to project approval/s. |

3.3.2 External Communication

Regular external communications undertaken by MGO E&C staff are listed in **Table 3.4**.

Table 3.4 – External Communication

| Communication | Frequency | Information |
|--|------------|--|
| Environment Protection Authority (EPA) Monitoring | Monthly | Environmental monitoring required under the EPLs, updated on the external website. |
| Noise Monitoring | Quarterly | Noise monitoring required under the DAs, updated on the external website. |
| Newsletter | Biannually | Review of community and environmental activities for the Greater Ravensworth Area. |
| CCC Meetings | Biannually | Update on MGO E&C performance. |
| Annual Review | Annual | Review of the previous year's environmental performance. Distributed to DPIE, DPIE-Resources Regulator (DPIE RR), DPI Water, Singleton Council, Community Consultative Committee (CCC) and the external MGO website. |

3.3.2.1 External Stakeholders

The stakeholder database 'Consultation Manager', stores a list of all identified external stakeholders. These include, but are not limited to:

- Neighbouring residences;
- Community groups;
- Regulatory agencies;
- Aboriginal groups; and
- Environmental groups.

Stakeholders are provided with regular updates through various communication channels detailed in the MGO Stakeholder Engagement Strategy (SES). The SES is developed in accordance with the *GCAA 10.0 - Community and Stakeholder Engagement Standard (GCAA-625378177-9977)*.

3.3.2.2 Website Reporting

The MGO website (<https://www.glencore.com.au/operations-and-projects/coal/current-operations/mt-owen-glendell-open-cut>) is maintained to provide the wider community with access to the MGO:

- Approvals and licences including future projects;
- Management plans;
- Monitoring programs;
- Monitoring results;
- Details of current activities;
- Scheduled blast times;
- Newsletters and community information sheets;
- A complaints register, which is updated monthly; and
- Minutes of CCC meetings.

From November 2019, consultation records for post approval documents can be found on the DPIE Major Projects website.

3.3.2.3 Media Communication

All media communications are undertaken in accordance with the Glencore Media and Public Relations Protocol.

3.3.2.4 Community Consultative Committee

Consultation with the local community occurs through the MGO CCC in accordance with Schedule 5, Condition 8 of both SSD-5850 and Schedule 5, Condition 5 of DA 80/952. This CCC is operated in general accordance with the *Community Consultative Committee Guidelines State Significant Projects for Mining Projects* (Department of Planning, November 2016).

3.4 Complaints Management

3.4.1 Complaints Management

Complaints received by MGO are managed in accordance with the *10.05 Community Complaints Protocol (GCAA-625378177-10296)*.

Complaints are documented and handled in accordance with consent/licence requirements and company policy.

Complaints are recorded in CMO and are reported in the Annual Review and at CCC meetings. Furthermore, complaints are reviewed as part of the stakeholder feedback during the annual review process.

3.4.2 Dispute Resolution

In the event of a disagreement between MGO and a member of the community, the MGO E&C Manager will undertake the necessary liaison and communication to reach a resolution.

In relation to a dispute over acquisition of a property, if the matter cannot be resolved between the company and the landholder, the matter is to be referred to the Secretary of the DPIE for resolution.

3.5 Document Control

Records will be kept in accordance with MGO Document and Records Control procedure (**MGOOC-1779562647-10987**).

MGO utilise the intranet for the maintenance of the EMS, enabling access to:

- Plans;
- Standards;
- Procedures;
- Forms; and
- Policies

CMO is utilised for recording:

- Complaints and incidents;
- Approvals and associated commitments and actions;
- Audits; and
- Risk register templates.

3.6 Records and Information Management

Records are to be maintained in the appropriate location in a legible form for a minimum period of four years. This is in accordance with *MGO Document and Records Control procedure (MGOOC-1779562647-3330)*.

A master copy of the EMF and its components, including strategies, management plans, and procedures and supporting information, is held in the office of the MGO E&C Manager.

3.7 Emergency Response

The description and location of safety equipment are included in:

- *Principal Control Plan for Emergency Management (MGOOC-1779562647-10892)*; and
- *Pollution Incident Response Management Plan (MGOOC-1779562647-10978)*.

These plans contain:

- Roles and accountabilities of key personnel at each operation in the event of an emergency;
- Contact details for appropriate emergency services;
- Designated evacuation points; and
- Procedures in the event of an emergency.

3.8 Environment and Community Training

Training is managed across the MGO in accordance with the *11.14 Environment and Community Training (GCAA-625378177-10240)*.

All personnel at the MGO undergo environmental induction training before being allowed to commence work on site. Environmental training is conducted for employees and contractors.

Role specific training needs are outlined in each of the environmental management plans. These training needs form part of the MGO Training Needs Analysis (TNA). The TNA details specific training requirements for each role on site.

As per the requirements of the TNA the MGO E&C team is responsible for the coordination of environmental training. This includes developing training modules and toolbox talks for aspects of MGO operations that may potentially result in significant environmental impacts. Environmental training is incorporated into the broader training program for the site.

Training packages are published on 'SharePoint'. Completed assessment work is entered in the training management systems 'Scenario' (for employees) and 'Damstra' (for contractors).

Hard copies of completed assessments are filed in the training filing compactors on site.

It includes the results of competency assessment generally in accordance with the Glencore Training and Inductions Standard.

The effectiveness of training modules and sessions is periodically reviewed. Training modules are updated as required.

4. Measurement and Evaluation

4.1 Environmental Monitoring

Environmental monitoring provides a measure of the environmental performance of the MGO operation.

Monitoring requirements are outlined in individual management plans.

Monitoring is undertaken in accordance with relevant Australian Standards using standard monitoring techniques. Calibrated equipment is operated by trained personnel.

Monitoring results are stored in the EMD, and compared against criteria specified in the MGO licences and development consents. In the event of a non-conformance, an investigation will be undertaken into the cause, and corrective and/or preventative actions will be made.

Calibration of equipment is undertaken in accordance with the manufacturer's recommendations. Calibration records are maintained onsite. Records will be maintained with a contracting company where monitoring is outsourced, and relevant documentation supplied to MGO.

4.2 Environmental Inspections

Site inspections are conducted across MGO by MGO E&C personnel.

Environmental inspections at MGO are undertaken on a monthly, quarterly, bi-annual and annual basis. These inspections monitor, in conjunction with the environmental monitoring and incident/complaint reporting procedures, on-site compliance with the operation's EMS. Site inspections are conducted by the MGO E&C Manager, or delegate and the inspection results are recorded in CMO.

Non-conformances or issues, and opportunities for improvement, are recorded in CMO. Corrective action is recommended by the person undertaking the inspection. The effectiveness of the action

undertaken is assessed at the next monthly site inspection. The MGO E&C Manager will report any significant non-conformances arising from site inspections to the Operations Manager and if required, relevant regulatory agencies.

Table 4.1 provides a summary of the various environmental inspections undertaken.

Table 4.1 – Environmental Inspections

| Type | Frequency | Responsibility | Requirement |
|---|---|--------------------------------|---|
| Behavioural inspections and planned task observations | Several per month per employee as required under HS&T visible leadership guidelines | All personnel | GCAA internal |
| E&C work authorisation | As required on a risk-based frequency | Task coordinators | GCAA internal |
| Ground Disturbance Permit | As required on a risk-based frequency | Permit Issuer E&C personnel | Mining Operations Plan |
| Review of CMO approval document compliance | According to the CMO audit schedule | All E&C personnel | GCAA internal |
| Waste and spill response equipment | Weekly | Contractor | GCAA internal |
| Environmental housekeeping | Monthly | Scheduled by E&C personnel | GCAA internal |
| Hydrocarbon | Monthly | E&C personnel | GCAA internal |
| Rehabilitation and erosion and sediment control structures | Quarterly and annual | Contractor | Water Management Plan, Mining Operations Plan |
| Buffer land management | Bi-annual | Contractor | GCAA internal |
| Water Management | Quarterly | E&C Personnel | Water Management Plan |
| Stream / diversions health | Bi-annual | E&C Personnel | Water Management Plan |
| Quarterly rehabilitation walkover | Quarterly | E&C Personnel | GCAA internal, Mining Operations Plan |
| Annual rehabilitation | Annual | Contractor | Development approvals, Mining Operations Plan |

| Type | Frequency | Responsibility | Requirement |
|------------------------|-----------|----------------|---|
| Annual flora and fauna | Annual | Contractor | Mining Operations Plan, Biodiversity and Offset Management Plan |

4.3 Environmental Audits

4.3.1 Internal Audits

Internal audits will be undertaken generally in accordance with the GCAA Auditing Standard to assess whether the EMS has been properly implemented and maintained and conforms to the environmental policy, objectives and targets of MGO. **Table 4.2** provides a summary of the internal audits undertaken at MGO.

Table 4.2 – Internal Audits

| Type | Frequency | Description | Arranged by |
|--|---|--|----------------------------------|
| Glencore fatal hazard audits | Determined by GCAA | Targeted audit on compliance with Glencore Fatal Hazard Management | GCAA |
| Third Party External SD Risks and Verification Audits | Every three years | In depth assessment of the 5 or 6 specific risks that have material proportions | GCAA HS and E&C General Managers |
| Internal environmental compliance audit | Every three years, and six months prior to external compliance audits | Audit against development consent conditions and associated licences/approvals | GCAA Compliance Coordinator |
| Other internal audits | As determined by the operation's level of risk | Operations and projects conduct their own HSEC inspections and audits as appropriate to their level of HSEC risk | E&C or Operations Manager |

Audit results are communicated to senior management and employees as required. Actions and recommendations from internal audits will be entered into the site's action-based reporting tool CMO.

The North Pit at MGO is operated through a contract agreement with Thiess until 31st December 2022. Periodic audits of the Thiess Management System are also conducted to determine whether the EMS has been properly implemented and conforms to the environmental policy, objectives and targets of the MGO.

4.3.2 External Audits

Table 4.3 lists the external audits undertaken at the MGO.

Table 4.3 – External Audits

| Type | Frequency | Description | Arranged by |
|--|-------------------|--|-----------------|
| External independent environmental compliance audit | Every three years | Compliance audit against environmental legislation, development consent conditions and related licence/approval conditions (Refer to Glencore APP PRO 002) | MGO E&C Manager |

| Type | Frequency | Description | Arranged by |
|------------------------------|--|--|--------------------------|
| External EPBC approval audit | Upon the direction of the Minister | Compliance audit against EPBC 2013/6978 conditions | MGO E&C Manager |
| Other environmental audits | As determined by Glencore Executive HSEC Committee | Targeted audits on focus areas e.g. waste management, etc. | GCAA E&C General Manager |

4.4 Incidents and Corrective Action

MGO manages non-conformances or non-compliances in accordance with the *GCAA Communication and Engagement Standard*, *Incident Management Standard*, *Hazard Management Standard* and the *Monitoring and Review Standard*.

4.4.1 Incident Notification

MGO E&C staff will confirm an exceedance where site is made aware of an exceedance of the limits/performance criteria relating to the environmental performance of the complex. The DPIE and other relevant regulatory agencies will then be notified.

If an incident has occurred and has the potential to cause material harm, it will be managed and reported as per the requirements of the *Pollution Incident Response Management Plan (MGOOC-1779562647-10978)*. The plan includes contact details of the relevant agencies. **Table 4.4** lists the requirements and timing of notifications required.

Table 4.4 – Incident Notifications

| Incident | Notification | Recipient | Requirement |
|--|---------------|--|--|
| Pollution incident that causes, or may lead to, material harm to the environment | Immediately | EPA, DPIE, DPIE RR, Ministry of Health, SafeWork NSW, Singleton Council and emergency services (Fire and Rescue NSW) | EPL 4460 EPL 12840 SSD-5850 DA 80/952 |
| Exceedance of the limits/performance criteria of Development Consent or EPBC 2013/6978 | Within 7 days | Written report to DPIE, EPA, Department of Agriculture, Water and the Environment and any other relevant agencies. Report must include the date, time and nature of exceedance/incident, cause of exceedance/incident, actions to date and proposed measures to address the exceedance | EPL 4460 EPL 12840 SSD-5850 DA 80/952 EPBC 2013/6978 |

| Incident | Notification | Recipient | Requirement |
|-----------------------------------|---------------------|-----------------------------------|---|
| All H&S and E&C incidents on site | By the end of shift | GCAA H&S and E&C General Managers | GCAA Incident Notification and Reporting HSEC and |

4.5 Adaptive Management

Where an exceedance of the performance measures in either of the MGO Development Consents has occurred, at the earliest opportunity the site will respond in accordance with Schedule 5, Condition 1 of SSD-5850 and DA 80/952.

4.6 Reporting

MGO is required to periodically report on environmental management and compliance, including but not limited to:

- Annual Review in accordance with the Development Consents (external);
- Annual Returns in accordance with the EPLs (external);
- National Pollution Inventory (NPI) (external);
- HSEC reporting (internal); and
- Monthly sustainability reporting (internal).

All reporting requirements are maintained in the CMO database.

5. Accountabilities

Environmental management at MGO is the responsibility of all employees and contractors, with the Operations Manager and General Manager having overall responsibility for environmental management of the complex. Key personnel and their relevant E&C management roles and responsibilities are listed in **Table 5.1**.

More specific roles and responsibilities are contained in the environmental management plans, procedures and standards referred to in this Strategy, along with individual position descriptions.

No personnel are permitted to undertake a task unless they have undertaken the required training, are competent and confident that the task can be conducted in an environmentally safe manner, with minimal impact on the community.

Table 5.1 – Responsibility

| Role | Responsibility |
|--|---|
| Operations Manager and General Manager | <ul style="list-style-type: none">• Provide adequate resources for environmental management, including qualified personnel, adequate financial resources and training, as required for all employees; and |

| Role | Responsibility |
|--|---|
| | <ul style="list-style-type: none"> Ensure any proposed works associated with the operation that may have an impact on the environment or the community have the necessary legislative approval prior to the commencement of works. |
| Department Managers and Supervisors | <ul style="list-style-type: none"> Maintain a working knowledge of the EMS, including this Strategy; Be aware of the environmental legislative requirements and community responsibilities associated with their respective operation; Ensure that the operations under his/her control are undertaken in accordance with the EMS and, in particular, in accordance with relevant environmental management plans, procedures and standards; Provide resources for appropriate training to all site employees regarding their environmental and community roles and functions; Implement corrective actions arising from environmental incidents and audits; Allow adequate provision in the annual capital budget for undertaking required environmental capital works; Involve their respective E&C Manager in the assessment of any proposed works associated with the operation that may have an impact on the environment; Maintain a high level of environmental performance at the site; Report any pollution control incidents and/or community complaints to E&C Manager and/or their respective E&C Superintendent as soon as practicable |
| E&C Manager | <ul style="list-style-type: none"> Develop, implement and maintain the EMS, including this Strategy; Liaise with government and community stakeholders regarding environment and community matters associated with MGO; Facilitate the preparation of environmental compliance reports that cover MGO, including the Annual Review, NPI, National Greenhouse and Energy Reporting (NGER), and EPL Annual Return. Maintain a working knowledge of the EMS and be aware of all environmental legislative requirements associated with their respective operation; |

| Role | Responsibility |
|--|--|
| | <ul style="list-style-type: none"> • Liaise with senior management personnel to promote awareness and delegate tasks associated with the management of environmental issues/commitments at their respective operation; • Prepare internal reports associated with the Glencore SD Management System and provide to the Glencore Group Environmental Manager; • Provide environmental risk assessment and develop management protocols for proposed works associated with existing operations and any new or altered works; • Provide environmental assistance and advice on legislative and approval requirements for any proposed works; • Implement corrective actions arising from environmental incidents and audits. • Oversee the implementation of the E&C work plans and monitor progress against the E&C annual schedule, |
| Senior Environmental Advisor (Thiess) | <ul style="list-style-type: none"> • Assist the E&C Manager with the implementation of the EMS, including this Strategy; • Communicate all environmental incidents, complaints and any other issues that need notification to the E&C Manager and to the Thiess management structure in line with this Strategy. |
| Environmental Coordinators / Officers | <ul style="list-style-type: none"> • Assist with the implementation of the EMS, including this Strategy; • Develop and deliver necessary environmental management or awareness training to all personnel at their respective operation; • Coordinate the activities of specialist sub-consultants and project personnel for environmental assessment/monitoring/auditing responsibilities; • Prepare statutory environmental reports in compliance with the approvals associated with their respective operation. • Provide input into the Annual Planning Process and E&C Scheduling Process |
| All Employees and Contractors | <ul style="list-style-type: none"> • Are aware of, and comply with, the conditions of the Development Consents relevant to activities they carry out in respect of the development; • Have a general awareness of the EMS and this Strategy; • Conduct work activities in accordance with the EMS and this Strategy; |

| Role | Responsibility |
|------|--|
| | <ul style="list-style-type: none">Report all environmental incidents or complaints to the environmental personnel or immediate supervisor; andParticipate in relevant environmental training. |

6. Review and Improvement

6.1 Review

This Strategy will be reviewed:

- Every three years;
- Following an independent environmental audit, with findings relevant to this Strategy;
- Following an environmental incident or community complaint relevant to the control measures outlined in this Strategy;
- Following relevant outcomes from a risk assessment or change management process; or
- Following any modification to the conditions of the Development Consents.

The control of documentation associated with the Strategy is to be undertaken in accordance with the Glencore Legal Compliance and Document Control Standard. The document revision history of this Strategy is provided in **Section 8.2**.

7. Commitments

All commitments outlined within this Strategy are detailed in **Table 7.1** below. Management commitments requiring actioning are entered into CMO and actioned.

Records of documentation associated with the management commitments are also maintained within CMO.

Table 7.1 - EMS Commitments

| No. | Commitment | Where in Management Plan |
|-----|---|--------------------------|
| 1 | A review of MGO's environmental aspects and impacts, and an E&C BBRA will be undertaken annually so new aspects or impacts are identified and added to the register. | Section 2.2 |
| 2 | Prior to undertaking any significant changes to the operation a risk assessment will be undertaken in accordance with the <i>Glencore Risk Management Standard Risk Management (GCAA-625378177-2844)</i> so any new aspects and impacts are identified and added to the register. | Section 2.2 |

| No. | Commitment | Where in Management Plan |
|-----|---|--------------------------|
| 3 | Line Managers and Supervisors are to be trained in the EMS requirements including relevant management plans and procedures. | <i>Table 5.1</i> |

8. Document Information

8.1 Reference Information

Reference information, listed in *Table 8.1* below, is information that is directly related to the development of this document or referenced from within this document.

Table 8.1– Reference information

| Reference | Title |
|--------------------------------|---|
| Approvals and Standards | |
| AS/NZS ISO 14001:2015 | Environmental Management Systems – General guidelines on principles, systems and supporting techniques. |
| Umwelt 2007 | Environmental Assessment for Modification of Glendell Mine Operations |
| Umwelt 2015a | Environmental Impact Statement, Mount Owen Continued Operations Project |
| Umwelt 2015b | Environmental Impact Statement, Mount Owen Continued Operations Project, Response to Submissions Report A |
| Umwelt 2016 | Mount Owen Continued Operations Project, Response to Submissions to PAC Review Report |
| Umwelt 2018 | Statement of Environmental Effects for Mount Owen Continued Operations Project |
| Umwelt 2018b | Glendell Mine Modification 4 Statement of Environmental Effects |
| Umwelt 2020a | Mount Owen Continued Operations Project Modification Report Modification 5 |
| Umwelt 2020b | Mount Owen Continued Operations Project Modification 6 Modification Report |
| Hansen Bailey 2016 | Glendell Mine 132 Kv Powerline Relocation MOD 3 Environmental Assessment |

| Reference | Title |
|---|--|
| Hansen Bailey 2017 | Environmental Assessment for Modification to Mount Owen Continued Operations Project |
| SLR Consulting 2021 | Mt Owen Glendell Mining Operations Plan |
| DP&E, 2016 | Community Consultative Committee Guidelines State Significant Projects for Mining Projects |
| EPA, 2017 | NSW Noise Policy for Industry |
| MGO Management Plans | |
| MGOOC-1779562647-11176 | MGO Stakeholder Engagement Strategy |
| MGOOC-1779562647-10892 | Principal Control Plan for Emergency Management |
| MGOOC-1779562647-10978 | Pollution Incident Response Management Plan |
| MGOOC-1779562647-4159 | Aboriginal Cultural Heritage Management Plan |
| MGOOC-1779562647-10987 | Document and Records Control procedure |
| MGOOC-1779562647-11183 | Blast Management Plan |
| MGOOC-1779562647-3840 | Mt Owen Complex Hydrocarbon Management Plan |
| MGOOC-1779562647-4392 | Air Quality and Greenhouse Gas Management Plan |
| MGOOC-1779562647-10975 | Noise Management Plan |
| MGOOC-1779562647-72 | Water Management Plan |
| MGOOC-1779562647-4225 | Historical Heritage Management Plan |
| MGOOC-1779562647-3726 | Mt Owen Complex Non-Mineral Waste Management Plan |
| GCAA Standards, Procedures and Protocols | |
| GCAA-625378177-9977 | 10.0 - Community and Stakeholder Engagement Standard. |
| GCAA-625379177-10330 | 10.03 Internal Communication Standard |
| GCAA-625378177-10296 | 10.05 Community Complaints Protocol |
| GCAA-625378177-2844 | Risk Management |

| Reference | Title |
|-----------------------|---|
| GCAA-625378177-10301 | 11.01 Environmental Compliance Management |
| GCAA-625378177-10248 | 11.02 Pipeline Management |
| GCAA-625378177-10320 | 11.03 Water Management |
| GCAA-625378177-819 | 11.04 Tailings Management |
| GCAA-625378177-10322 | 11.05 Dams and Diversions |
| GCAA-625378177-10323 | 11.06 Erosion and Sediment Control |
| GCAA-625378177-10243 | 11.07 Hydrocarbon Management |
| GCAA-625378177-10249 | 11.08 Waste Management |
| GCAA-625378177-10237 | 11.09 Exploration and Drilling |
| GCAA-625378177-10324 | 11.10 Air Quality Management |
| GCAA-625378177-10238 | 11.11 Noise Management |
| GCAA-625378177-9975 | 11.12 Blast Management |
| GCAA-625378177-10240 | 11.14 Environment and Community Training |
| GCAA-625378177-10242 | 11.15 Land and Property Management |
| GCAA-625378177-10241 | 11.16 Rehabilitation Management |
| GCAA-625378177-10325 | 11.17 Mine Closure Planning |
| GCAA-625378177-10326 | 11.18 Biodiversity Offset Management |
| (GCAA-625378177-10499 | 11.19 GIS Spatial Data Management |
| GCAA-625378177-13514 | 11.20 Statutory Approval Management |
| GCAA-625378177-9978 | 11.20 Statutory Approvals NSW |
| GCAA-625378177-10266 | 11.21 Aboriginal Cultural Heritage NSW |

8.2 Change Information

A summary of the document revision history is provided in **Table 8.2**.

Table 8.2- Document Revision History

| Version | Date | Author/Owner | Description | DPIE Approval |
|---------|------------|-----------------|--|---------------|
| 1 | March 2018 | MGO E&C Manager | Revised document to streamline information | Not required |

| Version | Date | Author/Owner | Description | DPIE Approval |
|---------|----------------|--------------------|---|---------------|
| | | | and reference applicable documents. | |
| 2 | September 2018 | MGO E&C Manager | Revised document to streamline information and reference applicable documents. | Not required |
| 2.1 | January 2020 | MGO E&C Department | Review and Revision of document following approval of MOCO MOD 2. | Not Required |
| 3 | December 2020 | MGO E&C Department | Review and Revision of document following approval of Glendell Mod 4 and subsequent Management Plans. Site was awaiting approval of AQGGMP. GCAA Template update. | Approved |
| 4 | August 2021 | MGO E&C Department | Review and Revision of document following approval of MOCO MOD 5 and MOCO MOD 6 (refer Appendix A.4). | Approved |
| 5 | November 2021 | MGO E&C Department | Approval of document by DPIE with approval letter inserted. | Approved |
| 6 | April 2022 | MGO E&C Department | Review and Revision of document following 2021 Annual Review submission. | TBC |

8.3 Definitions

A summary of definitions used in this document is provided in **Table 8.3**.

Table 8.3 - Definitions

| Term | Definition |
|---------------|--|
| ACHMP | Aboriginal Cultural Heritage Management Plan |
| AL | Assessment Lease |
| AQGGMP | Air Quality and Greenhouse Gas Management Plan |

| Term | Definition |
|---------|--|
| BBRA | Broad Brush Risk Assessment |
| BNP | Bayswater North Pit |
| BOMP | Biodiversity and Offset Management Plan |
| CCL | Consolidated Coal Lease |
| CHPP | Coal Handling Preparation Plant |
| CL | Coal Lease |
| DPIE | Department of Planning, Industry and Environment |
| DPIE RR | Department of Planning, Industry and Environment – Resources Regulator |
| EA | Environmental Advisor |
| EMS | Environmental Management System |
| EPA | Environment Protection Authority |
| EPL | Environment Protection Licence |
| ESCP | Erosion and Sediment Control Plan |
| E&C | Environment & Community |
| GRAWTS | Greater Ravensworth Area Water and Tailings Scheme |
| Ha | Hectare |
| HVAS | High Volume Air Sampler |
| LOM | Life of Mine |
| MGO | Mt Owen Glendell Operations |
| ML | Mining Lease |
| MOCO | Mt Owen Continued Operations Project (SSD-5850) |
| MOP | Mining Operations Plan |
| MTO | Mt Owen Pty Ltd |
| NGER | National Greenhouse and Energy Reporting |
| NPI | National Pollutant Inventory |

| Term | Definition |
|----------|--|
| RMP | Rehabilitation Management Plan |
| SEPP | State Environmental Planning Policy |
| SES | Stakeholder Engagement Strategy |
| Strategy | Environmental Management Strategy |
| TEOM | Tapered Element Oscillating Microbalance |
| Thiess | Thiess Pty Ltd |
| TNA | Training Needs Analysis |

Appendix A - Mount Owen Complex Lease, Licences, Consents and Other Approvals

A summary of the statutory approvals maintained by the MGO is provided in **Table A-1**.

Table A-1 - MGO Statutory Approvals

| Description | Approval Authority |
|---|--------------------|
| Mt Owen and Ravensworth East | |
| MGO Mining Operations Plan (Mt Owen and Ravensworth East) | DPIE RR |
| SSD-5850 Mount Owen Continued Operations Project | DPIE |
| Mt Owen Environmental Protection Licence 4460 | NSW EPA |
| ML 1355 | DPIE RR |
| ML 1419 | DPIE RR |
| ML 1453 | DPIE RR |
| ML 1561 | DPIE RR |
| ML 1475 | DPIE RR |
| ML 1608 | DPIE RR |
| ML 1410 | DPIE RR |
| ML 1415 | DPIE RR |
| ML 1476 | DPIE RR |
| ML 1794 | DPIE RR |
| ML 1629 | DPIE RR |
| ML 1741 | DPIE RR |
| ML 1673 | DPIE RR |
| ML 1694 | DPIE RR |
| ML 1802 | DPIE RR |
| MLA 513 | DPIE RR |
| Consolidated Coal Lease (CCL) 715 | DPIE RR |

| Description | Approval Authority |
|--|--------------------|
| Assessment Lease (AL) 8 | DPIE RR |
| Coal Lease (CL) 383 | DPIE RR |
| Exploration Authorisation (A) 423 | DPIE RR |
| Exploration Authorisation (A) 429 | DPIE RR |
| Exploration Authorisation (A) 268 | DPIE RR |
| Exploration Authorisation (EL) 6254 | DPIE RR |
| Exploration Authorisation (EL) 5824 | DPIE RR |
| Section 126 Emplacement Approval (Stages 1 and 2) | DPIE RR |
| Section 126 Emplacement Approval (Stages 3 and 4) | DPIE RR |
| Section 100 Emplacement Approval (Eastern Rail Pit and RW Pit) | DPIE RR |
| Section 100 Emplacement Approval (West Pit) | DPIE RR |
| Section 101 Approval to Discontinue Tailings Emplacement (Stage 1) | DPIE RR |
| Water Licence (General Security) WAL613 | DPIE - Water |
| Water Licence (Domestic and Stock) WAL7823 | DPIE - Water |
| Water Licence (Domestic and Stock) WAL754 | DPIE - Water |
| Water Licence (Domestic and Stock) WAL7817 | DPIE - Water |
| Water Licence (Unregulated River) WAL18310 | DPIE - Water |
| Water Licence (Domestic and Stock) WAL13750 | DPIE - Water |
| Water License (High Security) WAL 7814 | DPIE - Water |
| Water Approval (Water Supply Works and Water Use) 20CA200390 | DPIE - Water |
| Works Approval (Diversion Works) WAL816 20WA200891 | DPIE - Water |
| Water Approval (Water Supply Works and Water Use) 20CA200779 | DPIE - Water |
| Water Approval (Water Supply Works) 20WA200723 | DPIE - Water |
| Water Approval (Water Supply Works) 20WA201677 | DPIE - Water |
| Water Approval (Water Supply Works) 20WA200727 | DPIE - Water |
| Water Approval (Water Supply Works) 20WA210993 – Swamp Creek Upper Diversion | DPIE - Water |

| Description | Approval Authority |
|--|--------------------|
| Water Approval (Water Supply Works) 20WA211425 – Swamp Creek Middle Diversion | DPIE - Water |
| Water Approval (Water Supply Works) 20WA211429 – Yorks Creek Upper Diversion | DPIE - Water |
| Water Approval (Water Supply Works) 20WA212187 – Bettys Creek Upper Diversion | DPIE - Water |
| Groundwater Licence 20BL168116 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20BL169332 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20BL169333 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20BL169334 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20BL169335 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20BL169336 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20BL171536 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20BL171537 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20BL171538 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20BL171539 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20BL171538 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20BL171544 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20BL171546 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20BL171547 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20AL219002 – Groundwater Excavation | DPIE - Water |
| Groundwater Licence 20BL169544 – Groundwater Excavation | DPIE - Water |
| Groundwater Licence 20BL170294 – Groundwater Excavation | DPIE - Water |
| Groundwater Licence 20BL170295 – Groundwater Excavation | DPIE - Water |
| Groundwater Licence 20BL168209 – Groundwater Extraction | DPIE - Water |
| Groundwater Licence 20BL169337 – Groundwater Extraction (converted to WAL 18326) | DPIE - Water |
| Glendell | |

| Description | Approval Authority |
|---|---------------------------|
| MGO Mining Operations Plan (Glendell) | DPIE RR |
| DA 80/952 | DPIE |
| EPL 12840 | NSW EPA |
| CL 358 | DPIE RR |
| Mining Purposes Lease (MPL) 343 | DPIE RR |
| ML 1629 | DPIE RR |
| ML 1475 | DPIE RR |
| ML 1476 | DPIE RR |
| CL 382 (sublease) | DPIE RR |
| Exploration Authorisation (EL) 8184 | DPIE RR |
| Exploration Authorisation (EL) 6594 | DPIE RR |
| Exploration Licence Application (ELA) 5736 | DPIE RR |
| Water Licence (High Security) WAL704 | DPIE - Water |
| Water Licence (High Security) WAL1118 | DPIE - Water |
| Water Licence (High Security) WAL9521 | DPIE - Water |
| Water Licence (General Security) WAL912 | DPIE - Water |
| Water Licence (General Security) WAL637 | DPIE - Water |
| Water Licence (General Security) WAL705 | DPIE - Water |
| Water Licence (General Security) WAL1119 | DPIE - Water |
| Water Licence (General Security) WAL1215 | DPIE - Water |
| Water Licence (Supplementary Water) WAL1364 | DPIE - Water |
| Water Licence (Supplementary Water) WAL1420 | DPIE - Water |
| Water Licence (Domestic and Stock) WAL706 | DPIE - Water |
| Water Licence (Domestic and Stock) WAL1218 | DPIE - Water |
| Water Licence (Water Supply Works and Water Use) 20CA200608 | DPIE - Water |
| Water Licence (Water Supply Works and Water Use) 20CA201623 | DPIE - Water |

| Description | Approval Authority |
|---|---------------------------|
| Water Licence (Water Supply Works and Water Use) 20CA200382 | DPIE - Water |
| Water Licence (Water Supply Works and Water Use) 20CA200445 | DPIE - Water |
| Water Licence (Water Supply Works and Water Use) 20CA201862 | DPIE - Water |
| Water Approval (Water Supply Works) 20WA201228 | DPIE - Water |
| Water Approval (Water Supply Works) 20WA201868 | DPIE - Water |
| Water Approval (Water Supply Works) 20WA211430 – Swamp Creek Lower Diversion | DPIE - Water |
| Water Approval (Water Supply Works) 20WA212660 – Bettys Creek Lower Diversion | DPIE - Water |
| Groundwater Licence 20BL171534 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20BL171535 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20BL171540 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20BL171541 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20BL171542 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20BL171543 – Monitoring Bore | DPIE - Water |
| Groundwater Licence 20BL171545 – Monitoring Bore | DPIE - Water |

A.1 Statutory Requirements

Table A-2 - Relevant Development Consent Conditions

| Mount Owen Mine (SSD-5850, Schedule 5) | Glendell Mine (DA80/952, Schedule 5) | Condition | Relevant Section |
|---|---|---|--|
| 2 | - | Environmental Management Strategy The Applicant must prepare an Environmental Management Strategy for the development to the satisfaction of the Secretary. This Strategy must: | <i>This document</i> |
| - | 2 | Environmental Management Strategy If the secretary requires, the Applicant must prepare an Environmental Management Strategy for the development to the satisfaction of the Secretary. This Strategy must: | <i>This document (not yet requested by the Secretary)</i> |
| 2 (a) | 2 (a) | be submitted to the Secretary for approval prior to the commencement of development under this consent, unless the Secretary agrees otherwise; | <i>Appendix A.4</i> |
| 2 (b) | 2 (b) | provide the strategic framework for the environmental management of the development; | <i>Sections 1 and 2</i> |
| 2 (c) | 2 (c) | identify the statutory approvals that apply to the development; | <i>Section 1.3, Appendix A.1 and Appendix A.2</i> |
| 2 (d) | 2 (d) | describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development; | <i>Section 5.0</i> |
| 2(e) | 2(e) | describe the procedures that would be implemented to: keep the local community and relevant agencies informed about the operation and environmental performance of the development; receive, handle, respond to, and record complaints; resolve any disputes that may arise during the course of the development; respond to any non-compliance; respond to emergencies; and | <i>Section 3.3 Section 3.4.1 Section 3.4.2</i> |

| Mount Owen Mine (SSD-5850, Schedule 5) | Glendell Mine (DA80/952, Schedule 5) | Condition | Relevant Section |
|--|--|---|---|
| | | | <i>Section 4.4</i> <i>Section 3.7</i> |
| 2(f) | 2(f) | include: copies of any strategies, plans and programs approved under the conditions of this consent; and a clear plan depicting all the monitoring required to be carried out under the conditions of this consent. | <i>Section 8, Appendices 3 and 4</i> <i>Section 4.1 and Appendix A.3</i> |
| | | The Applicant must implement the approved Environmental Management Strategy as approved from time to time by the Secretary. | <i>Appendix A.4</i> |

Table A-3 - Relevant EPBC 2013/6978 Conditions

| Mount Owen Mine EPBC (2013/6978) | Condition | Relevant Section |
|-------------------------------------|---|--|
| 1 (a) | 1. The person taking the action must: Implement administrative conditions 1, 2, 4, 6, 7 and 8 of schedule 2 of the state development consent to minimise the impacts of the action on protected matters. | Conditions maintained in the Compliance Management System CMO (refer to <i>Section 3.1.1</i>) |
| 1 (d) | Notify the Department in writing of any proposed change to the conditions of the state development consent referred to in Conditions 1 a - 1 c, within 14 days of formally proposing a change or becoming aware of any other proposed change. | <i>Section 3.3,</i> |
| 1 (e) | Notify the Department in writing of any change to conditions of the state development consent referred to in Conditions 1 a - 1 c, within 14 days of a change to conditions being finalised. | <i>Section 3.3</i> |
| 4 | Unless otherwise agreed to in writing by the Minister, the person taking the action must publish all management plans and strategies required by conditions 26, 31, 43 and 45 of the state development consent on their website. Each management plan | <i>Section 3.3(refer Website reporting Section 3.3.2.2)</i> |

| Mount Owen Mine EPBC (2013/6978) | Condition | Relevant Section |
|----------------------------------|--|--------------------------|
| | and strategy must be published on the website within 1 month of being approved by the Secretary. | |
| 5 | The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plans and strategies required by conditions 26, 31, 43 and 45 of the state development consent, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. | <i>Section 4</i> |
| 6 | Within three months of every 12 month anniversary of the commencement of the action, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans and strategies required by conditions 26, 31, 43 and 45 of the state development consent, and provide documentary evidence providing proof of the date of publication and noncompliance with any of the conditions of this approval to the Department. The person taking the action must continue to publish the reports until such time as agreed in writing by the Minister. | <i>Section 4.3</i> |
| 7 | The person taking the action must notify the Department by email (to EPBCMonitoring@environment.gov.au or an email advised by the Department) of any actual or potential non-compliance with the conditions of this approval, including any management plan or strategy required by conditions 26, 27, 31, 43 and 45 of the state development consent, within 7 days of the person taking the action becoming aware of the actual or potential contravention. | <i>Sections 4.4, 4.6</i> |
| 8 | Upon the direction of the Minister, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister. | <i>Section 4.3.2</i> |

A.2 Mount Owen EMS Documents

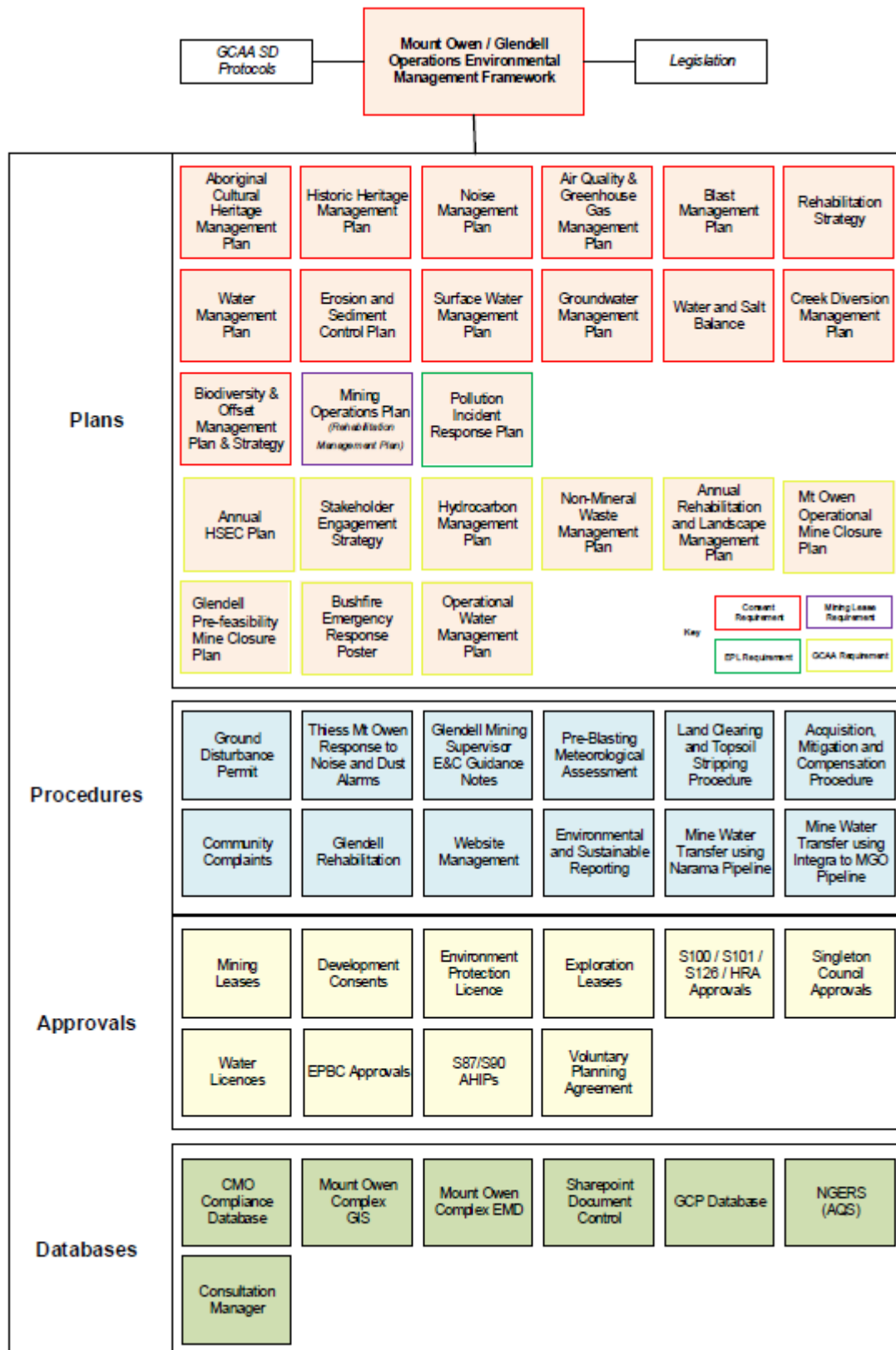
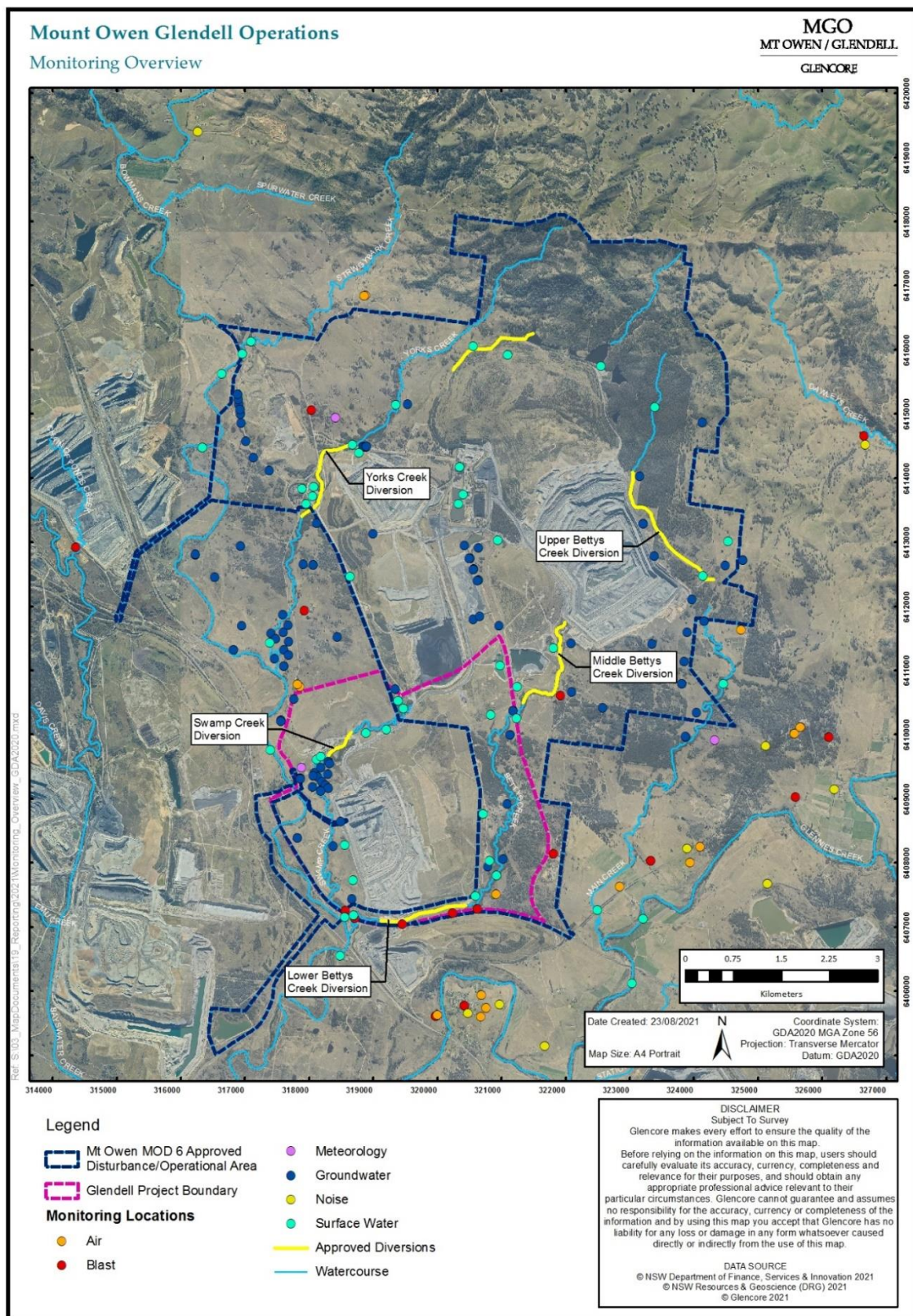


Figure A-1 Supporting documents relevant to this EMS

A.3 Mount Owen Complex Monitoring Sites



A.4 Environmental Management Strategy Approval

To be inserted once approved by DPIE.