

Chapter 30
Environmental management plans

ESMERALDA GRAPHITE PROJECT

aarc ENVIRONMENTAL SOLUTIONS
APEM Group

GRAPHINEX

Table of Contents

Glossary, acronyms and abbreviations 1

30 Environmental management plans 1

30.1 Introduction 1

30.2 Legislative context 1

30.3 Environmental Management System strategic framework 3

30.3.1 Document hierarchy 3

30.3.2 Environmental Policy 5

30.3.3 Environmental Management Strategy 6

30.3.4 Environmental Management Plans 17

30.3.5 Roles and responsibilities 28

30.3.6 Monitoring, reporting and improvement 28

30.4 TOR Reconciliation table 30

List of Figures

Figure 30-1: Graphinex EMS document hierarchy 4

List of Tables

Table 30-1: Queensland and Commonwealth legislative requirement 1
Table 30-2: Environmental Management System document hierarchy 4
Table 30-3: Aspects and impacts register 9
Table 30-4: EMP Summary 18

Glossary, acronyms and abbreviations

Acronym or Abbreviation	Meaning
AS	Australian Standard
CH	Cultural heritage
CHMP	Cultural heritage Management Plan
DAF	Department of Agriculture and Fisheries
EA	Environmental Authority
EIS	Environmental Impact Statement
EM	Environmental Management
EMP	Environmental Management Plan
EMS	Environmental Management System
EP Act	*Environmental Protection Act 1994*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPP (Noise)	Environmental Protection (Noise) Policy 2019
ERA	Environmentally Relevant Activity
EV	Environmental Values
GAB	Great Artesian Basin
GDE	Groundwater Dependent Ecosystems
GGS Act	*Greenhouse Gas Storage Act 2009*
GHG	Greenhouse Gas
HSE	Health, Safety and Environment
ISO	International Organisation for Standardisation
MEDLI	Model for Effluent Disposal using Land Irrigation
MNES	Matters of National Ecological Significance
MQSH Act	*Mining and Quarrying Safety and Health Act 1999*
NC Act	*Nature Conservation Act 1992*
NICH	Non-indigenous cultural heritage
NT Act	*Native Title Act 1993*
PMLU	Post mining land use
PRCP	Progressive Rehabilitation and Closure Plan
ROM	Run-of-Mine

Acronym or Abbreviation	Meaning
SHMS	Safety and Health Management System
SSE	Site Senior Executive
STP	Sewage treatment plant
TOR	Terms of Reference
TSF	Tailings Storage Facilities
WMP	Water Management Plan
WoNS	Weeds of National Significance

30 Environmental management plans

30.1 Introduction

The purpose of this chapter is to outline the environmental management plans (EMPs) that form part of the Graphinex overarching Environmental Management System (EMS) and implement the Environmental Management Strategy (EM Strategy) for the Project. The EMS, EM Strategy and EMPs apply across all phases of the Project, including construction, operation, decommissioning and rehabilitation. This chapter outlines the legislative context and the EMPs as part of an overarching environmental management framework for the Project. It provides relevant information from other EIS chapters and identifies where additional assessments are to be completed before or during each Project phase.

The EMPs enable the Project to implement environmental objectives and management measures that consider statutory requirements, Project activity environmental aspects, environmental impacts - both positive and negative - and develop appropriate management measures to control these. The EMS is guided by the principles of ISO14001.201 and sits within the legislative framework described in Chapter 6, Legislative requirements and Project approvals.

The following sections outline the EM Strategy, starting with the legislative context strategic framework that includes key objectives and commitments that guide how environmental management will be delivered through the Project.

30.2 Legislative context

The Project's regulatory framework defines the key Queensland and Commonwealth legislative requirements and associated compliance obligations necessary to ensure the Project meets all relevant environmental approvals, safety standards, water management obligations, and greenhouse gas (GHG) management requirements.

Key legislation within the broader state and Commonwealth regulatory framework relevant to the Project is summarised in Table 30-1. A comprehensive detailed discussion of local, state and Commonwealth legislation for the Project is provided in Chapter 6, Legislative Requirements and Project Approvals.

Table 30-1: Queensland and Commonwealth legislative requirement

Legislation	Description	Project compliance
Queensland		
Environmental Protection Act 1994 (EP Act)	The EP Act governs environmental approvals and compliance for mining and processing activities in Queensland.	• Environmental Authority (EA): An EA is required for activities classified as Environmentally Relevant Activities (ERAs) under Schedule 2 of the EP Act. This includes mining, mineral processing, and graphite purification activities. The Project will comply with all site-specific EA requirements.
Mining and Quarrying Safety and Health Act 1999 (MQSH)	The MQSH Act ensures safety standards for mining operations.	• Statutory Positions: Dedicated roles such as Senior site executives (SSE) and other officers such as mechanical engineering managers will be appointed for mandatory compliance • Safety Management Systems: A Safety and Health Management System (SHMS) has been established, supported by policies on key risks and workplace practices. The system will

Legislation	Description	Project compliance
		include measures to support workforce safety, health, and wellbeing to mitigate risks associated with mining and processing activities.
Greenhouse Gas Storage Act 2009 (GGS Act)	The GGS Act regulates greenhouse gas storage activities.	• The Project has ensured compliance with the GGS Act for any Greenhouse gas (GHG) related activities outside the Great Artesian Basin (GAB)
Water Act 2000	This Act provides for the sustainable management of water and the management of impacts on underground and surface water and other purposes.	• The Project will ensure compliance with prescribed regulations for any significant water extractions or usage. Chapter 14, Water Resources, provides details on the management of the water resources.
Water Plan (Great Artesian Basin and Other Regional Aquifers) 2017	The Water Plan outlines water management requirements for the GAB and other regional aquifers.	• Environmental Impact Assessments: A Groundwater Impact Assessment (Appendix L), Groundwater Dependent Ecosystem Assessment (Appendix G) and Surface Water Impact Assessment (Appendix K) has been conducted to mitigate impacts on groundwater and surface water resources. • A Water Management Plan (WMP) to examine and address all issues relevant to the importation, generation, use and management of water for the Project is in place.
Nature Conservation Act 1992 (NC Act)	The NC Act aims to achieve nature conservation through an integrated and comprehensive conservation strategy for Queensland	• Assessments for biodiversity conservation to mitigate impacts on threatened species and ecological communities have been conducted. • and migratory species The Project's potential impacts on flora and fauna are described in Chapter 18, Flora and Fauna
Explosives Act 1999	The Explosives Act 1999 regulates the use, storage, and transport of explosives, which is relevant for mining operations involving blasting activities.	• Appropriate storage and handling of explosives will be done in accordance with prescribed regulations. Employee training, apt supervision and critical controls relating to blast management will be in place. Further information can be found in Chapter 22, Hazards, Health and Safety.
Environmental Protection Regulation 2019	This regulation specifies conditions for small-scale mining activities and documentation requirements for environmental authority applications, including waste management plans and water use strategies	• The Project will ensure compliance with environmental approvals in regard to waste management, water use, and emissions standards.
Commonwealth		
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The EPBC Act regulates activities that may impact matters of national environmental significance (MNES). Key provisions include: • Matters of National Environmental Significance (MNES): The EPBC Act	• The Project was referred to the Commonwealth under the EPBC Act in 2025 (EPBC 2025/10140) and was subsequently declared 'not a controlled action'. The Project will not therefore

Legislation	Description	Project compliance
	identifies nine MNES, including world heritage properties, national heritage places, wetlands of international importance, nationally threatened species and ecological communities, migratory species, Commonwealth marine areas, the Great Barrier Reef Marine Park, nuclear actions, and water resources related to coal seam gas and large coal mining developments. • Environmental Approvals: Proponents must seek approval for activities likely to have a significant impact on MNES. This involves submitting a referral to the Commonwealth Department of Climate Change, Energy, the Environment and Water, followed by an environmental impact assessment if required.	require EPBC approval or the provision of offsets, prior to Project commencement.
Native Title Act 1993 (NT Act)	The NT Act recognises the rights and interests of Aboriginal and Torres Strait Islander people over particular land and waters and provides for the determination of native title claims and treatment of future acts which may impact on native title rights	• The Proponent has engaged in formal negotiations with the Tagalaka people, who are the Traditional Owners. All existing land tenure and Native Title within the Project impact assessment area is discussed in Chapter 8, Tenure including Native Title.

30.3 Environmental Management System strategic framework

The EMS strategic framework aligns the legislative requirements and the identification and management of environmental impacts. The EMS is structured as a tiered framework that ensures commitments are translated from the legislative context to tangible commitments that are then translated into action. The legislative requirements and approvals outline the mandatory requirements and conditions for the Project which are the foundations for identifying potential impacts (both positive and negative) and developing appropriate management measures for the Project.

30.3.1 Document hierarchy

The EMS is structured as a tiered framework that ensures environmental commitments are translated into practical, ongoing actions. The EMS will be developed prior to construction of the Project and will be reviewed and updated over the life of the Project from pre-construction to decommissioning.

The Environmental Policy is the overarching guiding document of the EMS. The EM Strategy sits beneath the Policy and outlines the high-level approach for implementing its commitments. The EM Strategy in turn, informs the development of the EMPs, which detail the practical measures and process through which the strategy will be implemented. EMS documents beneath the EMPs detail specific instructions on tasks.

The EMS document hierarchy is shown in Figure 30-1 with the EMPs position within the document hierarchy highlighted.



Figure 30-1: Graphinex EMS document hierarchy

In accordance with the sustainability standards outlined in the Graphinex Environmental Policy, a key requirement of the EM Strategy is to systematically manage information in a structured and auditable manner, aligned with ISO 14001 standards. The proponent has a five-layer document hierarchy for the implementation of EMPs. Each level serves a purpose to ensure consistency and traceability between planning, implementation and performance monitoring as summarised in Table 30-2.

Table 30-2: Environmental Management System document hierarchy

Document hierarchy	Description
Level 1 Environmental Policy	Defines the overall organisational direction for the Project and the expectation of commitments to achieve this direction. • The environmental policy of the Proponent states the Project commitments to minimisation of environmental harm, engaging with stakeholders, environmental compliance and continual improvement of the strategy. • The Policy provides the direction and linkages between different components of the EMS.
Level 2 Environmental Management Strategy (EM Strategy)	Defines how key EMS processes are managed and controlled across the Project and organisation. It describes how the EMS operates for specific purposes at a systems level and includes the requirement for: • Document and record control • Operations control • Emergency preparedness and response • Environmental risk mitigation and monitoring (e.g. water quality management) • Environmental audits • Corrective actions

Document hierarchy	Description
Level 3 Environmental management plans (EMPs)	Documents at this level translate the strategy into actionable plans. They includes Project-specific documents that define and detail environmental management, mitigation for site-specific and phase-related activities, such as: • Water Management Plan • Progressive Rehabilitation and Closure Plan; and • Erosion and Sediment Control Management Plan.
Level 4 Procedures, operational instructions and sub-plans	These documents provide task-level instructions for staff to implement environmental controls correctly, in compliance with the EMPs • Receiving environment and monitoring procedures • Waste segregation and disposal instructions • Spill response steps • Chemical handling instructions • Air emissions control steps
Level 5 Forms, templates, checklists, records and reports	These documents standardise how environmental tasks, inspections, and controls are documented and support day-to-day implementation: • Monitoring logs • Inspection checklists • Permit to work forms • Training attendance sheets • Monitoring reports • Aspects & impacts register • Legal register • Monitoring and measurement results • Audit reports • Incident records

30.3.2 Environmental Policy

The Graphinex Environmental Policy outlines the intent of the Proponent to comply with legislative requirements and commitment to operating the Project in a manner that is environmentally responsible by avoiding, minimising or mitigating environmental impacts (Chapter 3, Introduction). The policy outlines the commitment to develop, implementation and maintain a framework to identify, assess and manage impacts on the environment and community throughout the Project lifecycle.

A key objective of the policy is the proponent's commitment to sustainable development and sound environment management strategies essential for continued, successful operations through to closure. The Proponent is committed to "responsible, environmental management and aims to prevent unnecessary environmental impact from the Company's operations through a policy of minimisation of disturbance and degradation of ecosystems " (Environmental Policy, Graphinex 2025).

The Environmental Policy identifies commitments to:

- develop, implement and maintain a framework to identify, assess and manage impacts on the environment and community at all stages of our operations;
- ensure employees work within Graphinex policies and procedures, which are designed to take account of environmental and community considerations;
- identify, report and fix (if possible) any environmental or community risks and / or incidents;

- incorporate environmental and community considerations into development plans and designs, seeking appropriate technologies which are environmentally sound and community appropriate;
- protect Indigenous sites of environmental, cultural or spiritual significance;
- ensure personnel understand the environmental effects of their activities;
- ensure operational compliance with all relevant laws, regulations and standards as a minimum;
- listen to community needs and expectations and seek regular feedback;
- ensure that impacts on the community or environment are thoroughly investigated and recommendations followed up;
- build a culture of environmental and community awareness;
- implement exploration programs to conserve resources, reduce waste and promote recycling;
- observe all environmental laws and conduct activities in compliance with applicable legislation, regulations and license requirements;
- actively promote environmental awareness among Company personnel and contractors to increase the understanding of environmental matters;
- incorporate environmental matters into planning and operational decisions and conduct regular audits of operations including those of contractors to ensure performance standards are maintained at the highest level;
- undertake environmental awareness training programs for management and staff and contractors to recognise the value of the environments in which they work; and
- always comply with the Project Environmental Authority and the Code of Environmental Compliance.

30.3.3 Environmental Management Strategy

The EM Strategy, sitting directly beneath the policy in the document hierarchy, outlines the high level approach for achieving the policy commitments. It comprises of multiple elements of the EMS including EMPs. The EM Strategy defines the strategic pathways, performance expectations and governance arrangements required to manage environmental risks across the Project life cycle.

The EM Strategy is developed after the policy through the development of an Environmental Aspects and Impact Register. The register is a foundational tool to understand the Projects activities and the potential impacts. This understanding enables the development of meaningful strategy which, for Graphinex, is a set of key Environmental Management Plans and other operational instruments.

30.3.3.1 EM Strategy objectives and tools

In addition to the commitments directly outlined in the Environmental Policy, a key objectives of the EM Strategy is to ensure full adherence to, and compliance with, applicable legislation. This includes the relevant State and Commonwealth regulatory frameworks such as the EP Act, the EPBC Act and associated instruments, to support sustainable development and minimise adverse environmental impacts.

The EM Strategy objectives are to;

- provide a framework to ensure the potential environmental risks associated with the Project are appropriately planned for and subsequently managed during all phases of the Project;
- establish a framework from which to develop EMPs including identification of risk and harm, associated objectives and targets, control strategies, responsibilities, monitoring, including corrective actions and reporting;
- provide processes for documentation, communication and implementation of EMPs and an overall framework to ensure that environmental management detail is captured, documented, communicated and implemented throughout all stages of the Project.;

- operate the Project in a way that efficiently minimises water, energy consumption, waste generation and promotes recycling;
- conserve and/or protect biodiversity by avoiding or mitigating impacts on ecosystems, threatened species, and ecological communities;
- identify and report GHG emissions, develop GHG abatement measures through energy efficiency, adoption of renewable energy and thereby contribute to Australia's climate goals;
- integrate community needs and protocols for regular feedback and build a culture of environmental and community awareness;
- ensure that all personnel responsible for the construction and operation phases have appropriate access to training and are aware of their environmental responsibilities; and
- ensure the implementation of the conditions of approval for the Project, if and when they are granted; compliance with the Project Environmental Authority and the Code of Environmental Compliance.

The EMS is the framework that will ensure potential environmental risks associated with the Project are appropriately planned for and subsequently managed during all phases of the Project. The EMPs are one part of the EM Strategy and are developed to manage impacts (both adverse and beneficial) that are identified in the environmental risk assessment and management process.

30.3.3.2 Environmental risk assessment and management

This section describes the methodology used to develop the Aspects and Impacts Register. It includes the identification, assessment and control of environmental risk. This includes the potential hazards and ongoing risks to environmental values or community resulting from the Project's construction, operation, decommissioning or rehabilitation phases.

Development of the register applies standard risk management process as described in Chapter 22, Hazards, health and Safety, and focusses specifically on risks to environmental values. The Aspects and Impacts register is prepared with input from a range of stakeholders and will be reviewed and updated as the Project develops.

Development of the Aspects and Impacts Register includes:

- identification of environmental aspects and potential impacts;
- assessment of likelihood and consequence using the Proponent's standard risk matrix;
- determination of inherent and residual risk ratings;
- application of management measures consistent with the hierarchy of controls; and
- ongoing monitoring, review and update of risks throughout the Project lifecycle.

Aspects and impacts

Environmental aspects are the elements of the Project activities, products or services that interact with the environment. They are the 'cause' in the cause-and-effect relationships applied to risk management e.g. clearing vegetation or stripping topsoil during construction. Environmental impacts are the changes to environmental values as a result of the aspect. Impacts can be positive or negative e.g. loss of habitat or biodiversity (adverse impact) or improved ecological understanding of threatened species (beneficial impact). Impacts can be direct, indirect, cumulative, short or long-term.

Risk identification and analysis

The EMS risk management process involved an assessment of all specific project aspects and impacts associated with the pre-construction, construction, operations, decommissioning and rehabilitation phases of the Project. These impacts are then given a rating based on the seriousness of the impact. Management measures based on risk ranking are then added to the register. The process follows the same risk management

process identified in Chapter 22, Hazards, health and Safety but applied to the Aspects and Impacts Register. Environmental risks are categorised based on the following:

- the environmental aspect;
- scale of the potential impact;
- type of potential impact; and
- Likelihood or occurrence of impact.

Management control measures

Environmental Management Plans (EMPs) function as the primary risk management measures for the environmental impacts identified in the Aspects and Impacts Register. The EMPs are developed only when a clear understanding of activities and their potential impact is clarified in the register. The EMPs apply the risk management hierarchy of controls, focussing on preventative measures that avoid adverse impacts or maximise beneficial impacts where possible. The EMPs are developed to provide targeted, practical management measures that manage impacts and enhance environmental values where practical.

Each EMP sets out the specific controls, monitoring requirements, roles, responsibilities and performance criteria required to prevent, minimise or mitigate the identified environmental risks. In this way, EMPs operationalise the outcomes of the Aspects and Impacts Register, ensuring that environmental risks are systematically managed throughout the life of the Project. EMPs may apply to one or many impacts and address both the causes of impacts and the mitigation of impacts should they occur. EMPs are supplemented by other controls and subordinate documents in the EMS.

Aspects and Impacts Register

The Aspects and Impacts Register, including risk controls and EMPs is provided as Table 30-3.

Table 30-3: Aspects and impacts register

Environmental value	Aspect	Phase	Potential impact	Risk rating (without additional controls)	Management measures	Risk rating (with additional controls)	Environmental Management Plans or other controls
Water	General earthworks and construction Operation of tailings Storage Facility (TSF) and processing plant	All phases	• Potential for surface or groundwater discharge, resulting in localised contamination of surface or groundwater • Impact to water quality due to fuels and leaks and inappropriate storage of material • Impacts to various sensitive receiving environments	High	• Establishment of surface and groundwater monitoring network • Buffer zones of vegetation maintained adjacent to waterway or sensitive receptors • Effective storage, handling and containment to prevent spillage and leaks • Design and management of drainage control measures	Low	• Water Management Plan • Non-Mineral Waste Management Plan • Tailings Management • Water Monitoring program (surface and groundwater) • Erosion and Sediment Control Plan • Receiving Environment Monitoring Program
	Waterway crossings Creek diversion		• Change of flood behaviour due to road infrastructures placed on floodplain • Localised impacts to grazing land or native ecosystems • Change to creek bed and bank stability due to increased volumes of runoff and flow rates.	High	• The permanent diversion will be designed and managed in accordance with the 'Permanent Watercourse Diversion design criteria'. Rehabilitation of the diversion area will be conducted to achieve conditions similar to those of the existing stream • Baseline monitoring before construction to establish baseline data to assess the performance of the diversion over its lifetime • Monitoring during construction and operation in accordance with design	Low	• Engineered design of creek diversion and crossings • Water Monitoring Program (surface and groundwater) • Monitoring data storage and management • Receiving Environment Monitoring Program

Environmental value	Aspect	Phase	Potential impact	Risk rating (without additional controls)	Management measures	Risk rating (with additional controls)	Environmental Management Plans or other controls
					• Establishment of successful vegetation to reduce erosion and flow risks		
Flooding	Regulated structures	All phases	• Seepage due to failure to contain • Spills or releases from overtopping and dam break	High	• Routine sampling of the site water storages • Monitoring to be done for baseline, construction and operation • Designed to overflow to the pit as contingency storage • Preferential re-use of water from TSFs for processing, reducing standing water. • Structures to be engineered with completed consequence category assessments	Moderate	• Water Monitoring Program • Monitoring data storage and management
Land and soil	• General earthworks and construction • Sewage treatment Plant (STP) • Temporary access road constructions • Vegetation clearing • Drainage works • Storage of fuels,	All phases	Soil contamination due to fuels, leaks and inappropriate storage of material	Medium	• All substances will be stored and handled in accordance with the relevant standards, label instructions and material safety data sheets • Erosion and sediment controls will be implemented during the construction, operation and rehabilitation phases of the Project • Topsoil stockpiles will be placed away from drainage areas, roads, machinery, transport corridors and stock grazing areas	Low	• Erosion and Sediment Control Plan • Topsoil Management Plan • Weed and Pest Management Plan • Progressive Rehabilitation and Closure Plan • Water Monitoring program • Mineral Waste Management Plan • Irrigation Management Plan
			Soil contamination and increased weeds/pests in STP irrigation area	Medium		Low	
			Potential acidic leachate from tailings	High		Low	

Environmental value	Aspect	Phase	Potential impact	Risk rating (without additional controls)	Management measures	Risk rating (with additional controls)	Environmental Management Plans or other controls
	explosives. Chemicals and other dangerous goods • Sewage • Material stockpiles • Retained infrastructure including Tailings Storage Facility (TSF) • Presence of pit void		Erosion risks from earthworks, construction and rehabilitation works	Medium	• STP will be operated according to irrigation procedures identified in the MEDLI to achieve all performance objectives of effluent reuse, soil protection and water balance • Design and management of drainage control measures to prevent erosion from concentrated flows and manage the flow of clean and sediment runoff • Mine pit will be backfilled to a final landform, inclusive of an engineered low permeability capping layer, intended to replicate pre-mining landform use. • Topsoil management and soil amelioration is proposed to be undertaken where required to support the desired PMLU outcome.	Low	
			Loss of organic matter, fertility and soil structure decline	Medium		Low	
			Long-term risks to water quality, slope stability and public safety	High		Low	
Flora and fauna	Vegetation clearing Topsoil stripping and stockpiling Construction works near vegetation Vehicular movement Watercourse diversion	All phases	• Clearing and fragmentation of terrestrial fauna, riparian and aquatic fauna habitat • Direct mortality of fauna from vehicle strikes • Invasion and spread of terrestrial and	High	• Progressive clearing activities and managed in accordance with CH matters • Safe driving procedures and speed limits will be implemented • Implementation of ongoing weed monitoring and management programs • Design and construct all temporary and permanent	Low	• Water Management Plan • Weed and Pest Management Plan • Flora and Fauna Management Plan • Erosion and Sediment Control Plan • Water Monitoring Program

Environmental value	Aspect	Phase	Potential impact	Risk rating (without additional controls)	Management measures	Risk rating (with additional controls)	Environmental Management Plans or other controls
	Waterway crossings		aquatic weeds and pest fauna species • Vegetation clearing for creek crossings • Impacts to fish passageways from diversions • Potential negative impacts to groundwater dependent ecosystems (GDE) and stygofauna		waterway crossings to maintain fish passage • Diversion will be designed and constructed such that it meets the performance outcomes of the 'State code 18: Constructing or raising waterway barrier works in fish habitats' (DAF 2022) • Project-related impacts to stygofauna are not predicted		
Visual amenity	• Excavation of open-pit, construction of waste rock dumps	All phases	• Changes to visual amenity values for sensitive receptors	Low	• Rehabilitation of Project-site to a landform similar to existing pre-mining, flat, grazing landscape	Low	• Community Stakeholder and Engagement Plan • PRC Plan
Noise and vibration	• Noise and vibration emissions from plant and equipment • Blasting and drilling	Construction Operations Rehabilitation	• Potential negative impacts on sensitive receptors	Medium	• Usage of noise management hierarchy – avoid, minimise and manage • Adoption of a conservative version of EPP (Noise) in Schedule 1, consistent with similar mining projects • Adoption of air blast and vibration limits	Nil	• Noise Management Plan • Community Stakeholder and Engagement Plan • Progressive Rehabilitation and Closure Plan
Cultural heritage (CH)	• Vegetation clearing, topsoil stripping, excavation, bulldozing	Construction Operations	• Changes to CH values • Impacts to CH artifacts	Medium	• CH survey prior to any disturbance • Ongoing consultation with the Traditional Owners – the Tagalaka Peoples	Low	• Cultural Heritage Management Plan • Stop work procedures • Topsoil Management Plan

Environmental value	Aspect	Phase	Potential impact	Risk rating (without additional controls)	Management measures	Risk rating (with additional controls)	Environmental Management Plans or other controls
					• CHMP in place		
Non-indigenous cultural heritage (NICH)	• Vegetation clearing, topsoil stripping, excavation, bulldozing	Construction Operations	• Changes to non-indigenous cultural heritage values from initial earthworks	Low	• No NICH sites were identified in assessments • Due diligence will be practised regardless	Low	• Stop work procedures • Excavated Material Management Plan • Topsoil Management Plan
Traffic and transport	• Vehicular movement • Temporary access roads	Construction and operation	• Road safety impacts from increased traffic • Temporary disruptions and delays to local traffic • Noise, vibration and dust emissions • Interactions with flora and fauna	Medium	• Engagement with relevant authorities to maintain road networks through proposed infrastructure agreements with local and state bodies • Continued monitoring and engagement with relevant stakeholders • Controls and signage, speed limits to be established • Appropriate vehicular maintenance to reduce noise, emissions	Low	• Road Use Management Plan
Air quality and greenhouse gas (GHG)	• General earthworks and site-works • Rehabilitation works • Vegetation clearing • Bulk earthworks • Stockpiling	All phases	• Decreased air quality due to dust generation form activities and emissions from heavy machinery • Dust impacts to sensitive receptors from stockpiles • Potential negative impacts on sensitive receptors in	High	• All vehicles, equipment and machinery will be designed, operated and maintained to control the emissions of smoke, dust, odours and fumes • Vegetation clearing to be staggered to minimise time of exposure of surface areas • Appropriate distance of source from sensitive receptors • Watering on all overburden, haulage roads etc.	Low	• Air Quality Management Plan • Dust Management Plan • Decarbonisation Plan

Environmental value	Aspect	Phase	Potential impact	Risk rating (without additional controls)	Management measures	Risk rating (with additional controls)	Environmental Management Plans or other controls
	• Vehicular movements and emissions • Drilling and blasting • Equipment and plant usage		surrounding environment • Adverse health effects • Release of scope 1,2 and 3 emissions		• Establishment of vegetation on topsoil stockpiles and waste rock dumps • Project GHG abatement hierarchy to be used		
Mineral and non-mineral waste	• Generation of general waste emerging in mining operations • Generation of overburden and waste rock from mining operations • Operation of the Tailings Storage Facility (TSF)	Construction, operations and rehabilitation	• Impacts from difficulty disposing non-mineral waste materials • Impacts to flora and fauna from litter • Health and hygiene issues • Contaminant release from non-biodegradable objects into watercourses	Medium	• Designated waste collection and disposal areas • General waste segregation according to recyclable and non-recyclable streams • Appropriate and marked locations for waste storage and handling • Designated waste to be transferred to licensed, waste disposal facility	Low	• Implementation of waste management hierarchy • Non-Mineral Waste Management Plan • Reduce, reuse and recycling programs • Annual review of waste management performances • Mine Waste Management Plan
			• Impacts from mineral waste materials • Potential seepage from the TSF leading to contamination of soils and groundwater	High	• Overburden and waste rock materials are retained for backfill and capping material for backfilled void and does not require management for acid drainage • Design and management of TSFs aligned with geotechnical and geochemical considerations • Tailings waste from three of the four TSFs will be progressively transported to the base of pit void, one TSF will remain as a		

Environmental value	Aspect	Phase	Potential impact	Risk rating (without additional controls)	Management measures	Risk rating (with additional controls)	Environmental Management Plans or other controls
					landform on the surface at closure		
Social and community	• Workforce management • Housing and accommodation • Local business and industry procurement • Community health and wellbeing	Construction and operations	• Increase in workforce health, safety and well-being due to Project operations	High	• Recruitment hierarchy prioritising local employment • Collaboration with local employment and training providers • Training and skills development programs • On-site accommodation for workforce • Supply chains of Project integrate local and First Nations business • Advance notice of Project supply requirements and tendering opportunities through various channels • Investment in local community initiatives • Regular stakeholder consultations	Medium	• Community Stakeholder and Engagement Plan • Social Impact Management Plan o Workforce Management Plan o Housing and Accommodation Plan o Local Business and Industry Procurement Plan o Health and Community Wellbeing Plan o Stakeholder and Community engagement Plan
			• Increased demand on local, short-term accommodation and accessibility	Low		Nil	
			• Potential increase in labour draw and competition for local industries • Potential impacts on amenity and overall community values	Medium		Low	
			• Increased demand for health and emergency services	Medium		Low	
Hazards, occupational health and safety	• Storage and handling of chemicals, waste and hazardous goods • On-site work and equipment handling	All phases	• Impacts from difficulty disposing waste materials and hazardous waste • Accidents from improper handling of fuel, lubricants and other hazardous goods	High	• All substances will be stored and handled in accordance with the relevant standards, label instructions and material safety data sheets • Fatigue management for site personnel will be in place • Training for safe operation of all equipment	Low	• Safety and Health Management System • Staff training • Emergency Response Plan

Environmental value	Aspect	Phase	Potential impact	Risk rating (without additional controls)	Management measures	Risk rating (with additional controls)	Environmental Management Plans or other controls
	• Operation of the Tailings Storage Facility (TSF)		• Injuries to site workers • Potential seepage from the TSF leading to contamination of soils and groundwater		• Close monitoring of occupational health and safety performance • Critical controls for blast management • Design and management of appropriate TSF to minimise environmental impacts		

30.3.4 Environmental Management Plans

The EMPs developed, or to be developed for the Project are described throughout this EIS. A summary of the proposed EMPs and their relevance to the TOR is provided in the following sections. As the Project progresses, additional EMPs will be prepared to measure and manage impacts of varying significance, Plans addressing risks with potential higher consequences will be prioritised and developed first, prior to construction. The higher level EMPs are outlined in Table 30-4.

Other Plans or management controls described in the EIS include;

- Community and Stakeholder Engagement Plan;
- Cultural Heritage Management Plan;
- Greenhouse Gas Abatement Plan;
- Health and Community and Wellbeing Plan;
- Housing and Accommodation Plan;
- Irrigation Management Plan;
- Flora and Fauna Management Plan;
- Local Business and Industry Procurement Plan;
- Water Monitoring Program;
- Environmental Offset Strategy;
- Noise Management Plan;
- Non-mineral Waste Management Plan;
- Mineral Waste Management Plan;
- Offset Delivery Plan;
- Recycling Program;
- Safety and Health Management System;
- Social Impact Management Plan;
- Road Use Management Plan; and
- Workforce Management Plan.

Table 30-4: EMP Summary

Plan and TOR element	Treatment	Reference
Cultural Heritage Management Plan		Chapter 11
Environmental objectives and performance outcomes	An agreement of how matters of Aboriginal cultural heritage are enhanced, avoided or, if impacts occur, are appropriately mitigated or managed	
Impact avoidance, mitigation of identified impacts	Identification of CH matters prior to any disturbance. Where possible CH matters to be relocated of disturbance activities avoid the location Archaeological finds plan to provide instructions on the management of CH matters and related records	
Inputs to development of management measures	Tagalaka traditional owners, their representatives and Graphinex	
Future scopes/hold points for implementation of measures	The plan is to be developed prior to construction and will be reviewed as agreed with the Tagalaka people and Graphinex. CHMP executed with the Tagalaka people, cultural heritage surveys before disturbance	
Monitoring, compliance and continual improvement	Periodic review of plan to ensure fit for purpose	
Reporting and auditing	Reporting and auditing of the plan against requirements	
Erosion and sediment control plan		Chapter 10
Environmental objectives and performance outcomes	Manage potential land erosion and mobilisation of sediment for all stages of mining activities on site to minimise erosion and release of sediment to receiving waters.	
Impact avoidance, mitigation of identified impacts	Ensuring all hazardous chemicals, corrosive substances, toxic substances, gases and dangerous goods are stored and handled in accordance Minimising the potential for contamination of land and waters by diverting stormwater around contaminated areas and facilities	

Plan and TOR element	Treatment	Reference
	Transporting paints and miscellaneous chemicals off-site Treating and disposing hydrocarbon contaminated material off-site	
Inputs to development of management measures	Graphinex personnel with diverse skills and work experience	
Future scopes/hold points for implementation of measures	To be developed prior to construction. Site-specific soil dispersibility and erosion data, erosion and sediment control design by a suitably qualified person, staging plan matched to clearing.	
Monitoring, compliance and continual improvement	Periodic review of plan to ensure fit for purpose	
Reporting and auditing	Reporting and auditing of the plan against requirements	
Dust Management Plan		Chapter 23
Environmental objectives and performance outcomes	Management controls to ensure adequate monitoring of routine mitigation measures and potential changes to operations to mitigate dust impacts under adverse meteorological conditions	
Impact avoidance, mitigation of identified impacts	Air quality monitoring to identify impacts for adaptive management controls; Water of all ROM, overburden and backfill haulage roads; Water sprays on ROM feed to the process plant; Water sprays on transfers within crushing and screening operation; Vegetation establishment of topsoil stockpiles and waste rock dumps; Cyclones on drills; and Cyclone on graphite concentrates flash dryer dust collector in process plant.	
Inputs to development of management measures	Graphinex personnel with diverse skills and work experience	

Plan and TOR element	Treatment	Reference
Future scopes/hold points for implementation of measures	To be developed prior to construction.	
Monitoring, compliance and continual improvement	Periodic review of plan to ensure fit for purpose	
Reporting and auditing	Reporting and auditing of the plan against requirements	
Water Management Plan		Chapter 14
Environmental objectives and performance outcomes	To examine and address all issues relevant to the importation, generation, use, and management of water on a mining project in order to minimise the quantity of water that is contaminated and released by and from the project	
Impact avoidance, mitigation of identified impacts	Water monitoring program to track the ongoing performance of the site water management system and identification of potential impacts; Receiving environment monitoring program to monitor, identify, and assess any impacts to the EVs, water quality and flows within the receiving environment over the Project life; and Groundwater monitoring program to confirm groundwater model predictions of groundwater levels and draw down resulting from Project mining activities to identify impacts to apply adaptive management controls.	
Inputs to development of management measures	Graphinex personnel with diverse skills and work experience, groundwater technical experts	
Future scopes/hold points for implementation of measures	To be developed prior to construction. Complete groundwater and surface water baseline monitoring, detailed design of levee, diversion and storages with consequence category assessments, receiving environment monitoring locations agreed.	
Monitoring, compliance and continual improvement	Periodic review of plan at least every 5 years during operations	
Reporting and auditing	Reporting and auditing of the plan against requirements	

Plan and TOR element	Treatment	Reference
Irrigation Management Plan		Chapter 17
Environmental objectives and performance outcomes	To manage sewage irrigation in a manner that reduces impacts to land and water values.	
Impact avoidance, mitigation of identified impacts	• periodic soil and groundwater monitoring for nutrients, salinity and sodicity; • regular reviews of irrigation performance, monitoring results, and operational practices; and • updates to relevant management measures to ensure ongoing compliance with licensing requirements and environmental objectives.	
Inputs to development of management measures	MEDLI modelling	
Future scopes/hold points for implementation of measures	The Plan will be developed prior to construction. Final STP design and MEDLI run on final effluent quality; soil and groundwater baseline in irrigation area.	
Monitoring, compliance and continual improvement	Key controls will be reviewed on a regular basis in accordance with a risk review audit schedule.	
Reporting and auditing	Reporting and auditing of the plan against requirements	
Progressive Rehabilitation and Closure Plan (PRCP)		Appendix T, Chapter 13
Environmental objectives and performance outcomes	To describe the progressive rehabilitation that will be carried out during and after the Project's operational life. The objective of rehabilitation is to ensure; • the land is safe and structurally stable; • there is no environmental harm being caused by anything on or in the land; and • the land can sustain a post-mining land use.	
Impact avoidance, mitigation of identified impacts	Infrastructure decommissioning and removal	

Plan and TOR element	Treatment	Reference
	Determination or management of contaminated land status Landform development or reshaping Surface preparation (topdressing, contour ripping, soil amelioration) Capping or cover installation Revegetation (seeding and/or planting) Achievement of designated post mine land use or Non-use management area milestone criteria	
Inputs to development of management measures	Graphinex engagement with stakeholders, including the underlying landholder, local government, and state government.	
Future scopes/hold points for implementation of measures	Draft submitted as part of EIS for approval	
Monitoring, compliance and continual improvement	Monitoring and compliance schedule is included in PRCP	
Reporting and auditing	Reporting and auditing requirements set out in PRCP approval	
Emergency Response Plan		Chapter 22
Environmental objectives and performance outcomes	Compliance with *Work Health and Safety Regulation 2011* (section 24) and to manage; • the risk of, and the adverse impacts from, natural and man-made hazards so the are avoided, minimised or mitigated to protect people and property; • the community's resilience to natural hazards is maintained or enhanced; • storage and handling of hazardous materials are appropriately located, designed and constructed to minimise health and safety risks to communities and individuals and adverse effects on the environment; • that any risk associated with explosives use, transportation, storage or manufacturer is within an acceptable level, in accordance with the *Explosives Act* 1999 and codes and standards, including the Australian Standard AS2187 Explosives Storage, transport and use;	

Plan and TOR element	Treatment	Reference
	• the proposed Project prevents or minimises the production of hazardous contaminants and waste; and • if the production of hazardous contaminants and waste is unavoidable, how the proposed project treats and/or contains hazardous contaminants until their disposal at an approved facility.	
Impact avoidance, mitigation of identified impacts	Inherent mitigation measures that consider efficient access to resource, minimising potential impacts to environmental values and consider environmental risks Emergency response procedures to prepare for and manage environmental emergencies Bushfire management plan outlining specific measures in the event of a bushfire	
Inputs to development of management measures	Risks are identified through a structured evidence based process that draws upon mine planning, technical studies, stakeholder engagement and known risks within the mining industry	
Future scopes/hold points for implementation of measures	The Plan will be developed prior to construction. Certified bushfire hazard assessment and asset protection zone calculations; consultation with QPS, QFD, QAS, Resources Safety and Health Queensland and the Croydon disaster management group; flood-isolation scenario	
Monitoring, compliance and continual improvement	Key controls will be reviewed on a regular basis in accordance with a risk review audit schedule.	
Reporting and auditing	Reporting and auditing of the plan against requirements	
Road Use Management Plan		Chapter 25
Environmental objectives and performance outcomes	Manage potential traffic and transport impacts for all stages of Project life.	

Impact avoidance, mitigation of identified impacts	• monitoring of:
	  o workforce hours;
	  o driver behaviours;
	• implementing standard operating procedures;
	• limit transit during and immediately following wet weather;	

Plan and TOR element	Treatment	Reference
	• assess the condition of the route prior to commencement of permit vehicles; • use of vehicles on public roads to consider vehicle noise and movement at night; • wide loads to have pilot and escort vehicles; • traffic control at property entrances when load is in transit along the route; and • selective tree and vegetation management to provide load clearance.	
Inputs to development of management measures	Risk assessment and transport impact assessment.	
Future scopes/hold points for implementation of measures	The Plan will be developed prior to construction. Road use agreements with Croydon Shire Council and Department of Transport and Main Roads; trip and route limits; dangerous goods and explosives carrier requirements	
Monitoring, compliance and continual improvement	Key controls will be reviewed on a regular basis in accordance with a risk review audit schedule.	
Reporting and auditing	Reporting and auditing of the plan against requirements	
Flora and Fauna Management Plan		Chapter 18
Environmental objectives and performance outcomes	Minimise harm to fauna, mitigate unnecessary vegetation clearing.	
Impact avoidance, mitigation of identified impacts	Procedures for handling injured wildlife Inspections prior to vegetation clearing to identify fauna at direct risk from clearing activities	
Inputs to development of management measures	Terrestrial and aquatic ecology surveys.	
Future scopes/hold points for implementation of measures	The Plan will be developed prior to construction. Pre-clearance surveys (seasonal where needed); species management program if required; permit-to-disturb procedure in place; offset requirement confirmed.	

Plan and TOR element	Treatment	Reference
Monitoring, compliance and continual improvement	Implementation and outcomes to be reviewed regularly to ensure fit for purpose	
Reporting and auditing	Reporting and auditing of the plan against requirements	
Topsoil Management Plan		Chapter 10
Environmental objectives and performance outcomes	To ensure that planning mine disturbance areas to recover valuable topsoil resource for rehabilitation purposes, ensuring the removal of the maximum volume of viable topsoil and waste reduction.	
Impact avoidance, mitigation of identified impacts	• stockpile locations to be in areas outside the mining activities, close to proposed rehabilitation areas and away from watercourse and tributaries; • any known overland flow, to be diverted or have appropriate measures in place to prevent erosion; • no access to stockpile areas by stock, machinery or vehicles; • stockpile locations should be placed against existing vegetated areas to function as a buffer to provide protection from wind erosion, where possible; • ripping, seeding and/or adding amelioration treatments to occur during operation to minimise compaction and surface structure degradation; • adequate erosion and sediment control including but not limited to sediment fencing, shall be placed on the down slope area of stockpiles; • stockpiles to be a maximum height of 3.0 m, with a batter no steeper than 3 h : 1 v (horizontal run to vertical rise). Stockpiles required to be more than 3.0 m in height shall require additional erosion and sediment controls and ideally be temporary stored;	
Inputs to development of management measures	Risks are identified through a structured evidence based process that draws upon mine planning, technical studies, stakeholder engagement and known risks within the mining industry	
Future scopes/hold points for implementation of measures	The Plan will be developed prior to construction. Stripping depths by soil unit from the soil survey; approved stockpile locations.	

Plan and TOR element	Treatment	Reference
Monitoring, compliance and continual improvement	Monitoring and reporting to be conducted in compliance with EA conditions	
Reporting and auditing	Inspections of stockpiles to occur they are completed with scheduled ongoing maintenance either as required, or recommended every six months if no scheduling has been considered	
Weed and Pest Management Plan		Chapter 19
Environmental objectives and performance outcomes	To ensure that Project activities; • avoid, minimise and/or mitigate the spread of terrestrial and aquatic weeds, terrestrial and aquatic pest animals, animal and plant pests and disease, pathogens and contaminants; • control and manage existing terrestrial and aquatic weeds, terrestrial and aquatic pest animals and diseases; and • comply with relevant provisions of the *Biosecurity Act 2014* (Biosecurity Act), biosecurity plans, weeds of national significance (WoNS) and designated pests under the *Public Health Act 2005* (Public Health Act) and relevant policies, legislation and guidelines.	
Impact avoidance, mitigation of identified impacts	• Monitoring programs will be detailed for the introduced flora species cognisant of staged clearing and progressive rehabilitation programs; • Weed species introductions or substantial increases in weed populations will be addressed through applicable management measures • Fauna pest surveys will be conducted by site personnel to identify pests or weeds of concern and apply adequate control measures • Records of new fauna pests or substantial increase in fauna pest populations will be addressed through applicable management • Biosecurity facilities, including vehicle wash and non-mineral waste storage facilities/area will be constructed • maintenance of a clean, rubbish-free environment will be required of all staff to discourage pest fauna from scavenging and colonising the Project area.	

Plan and TOR element	Treatment	Reference
Inputs to development of management measures	Risks are identified through a structured evidence-based process that draws upon experience of local landholders, mine workers, technical studies, stakeholder engagement and known risks of the region	
Future scopes/hold points for implementation of measures	The Plan will be developed prior to construction. Baseline weed and pest mapping; biosecurity facilities (vehicle wash) built.	
Monitoring, compliance and continual improvement	Monitoring and reporting to be conducted in compliance with EA conditions	
Reporting and auditing	Review of the plan and its effectiveness will be conducted on a periodic basis in accordance with an EMP review schedule.	

30.3.5 Roles and responsibilities

This section outlines the high-level roles and responsibilities in the EM Strategy to ensure risks are effectively managed throughout the Project phases. Graphinex will be responsible for all environmental management activities and compliance throughout the lifecycle of the Project. A skilled workforce, including a combination of company personnel and specialised contractors, will be essential for efficient operation. There will be separate teams responsible for different activities on site.

The designated Site Senior Executive (SSE) will be responsible for the implementation of the EMS, holding statutory responsibility, ensuring regulatory compliance and operational integrity. The SSE will be responsible for:

- overall site management and all works on-site;
- ensuring that that all personnel employed or sub-contracted during construction, operation, decommissioning and rehabilitation phases are trained in environmental responsibilities; and
- day-to-day management and compliance with the EMS and associated EMPs.

The senior leadership will hold overall responsibility for the operational readiness of the Project. Operational readiness will be jointly delivered by the Project delivery team and the operations team, ensuring that all systems, processes, and environmental management requirements will be in place prior to the commencement of operations. The SSE will delegate specific operational readiness tasks to appropriate personnel to support this process as part of the Strategy. The Strategy supports operational readiness through the establishment of documented procedures, environmental controls, performance monitoring and continual improvement processes to ensure operations are undertaken in a safe, compliant and environmentally sustainable manner throughout the Project lifecycle.

The Project operations team will:

- manage and operate all processes for the Project, ensuring compliance with the EM Strategy;
- ensure compliance with all EMPs, site procedures, monitoring and reporting requirements under the EM Strategy;
- develop and maintain site-level environmental procedures and work instructions; and
- provide technical oversight and environmental performance expectations to the workforce, contractors and sub-contractors.

The Health, Safety and Environment (HSE) Manager on-site will be responsible for risk assessment and mitigation of hazards, developing, delivering HSE inductions and promoting a safety-first work culture including along with reporting on the implementation of the EM Strategy towards management and mitigation of environmental impacts.

Overall, the proponent's organisational structure will define key environmental roles and responsibilities, including approval of EMPs, implementation of controls, monitoring and reporting obligations and engagement with regulators and stakeholders.

30.3.6 Monitoring, reporting and improvement

Continuous improvement processes that ensure the Strategy remains effective and compliant over time will be established.

Monitoring programs linked to the EMPs will guide routine data collection, internal reporting and incident notification, ensuring timely response and corrective actions. Auditing and review processes - including internal and external audits, compliance checks, and continuous evaluation of performance of the Strategy will drive improvement of environmental objectives and support sustainable decision-making.

To ensure ongoing environmental performance and compliance with the Strategy, annual external environmental audits of the system and associated EMPs will be conducted during construction and operations.

30.4 TOR Reconciliation table

Terms of reference - Content requirements of the EIS		EIS Section
Section 30 - Environmental management plans		
30.1	Provide a project environmental management strategy (EMS) that includes sufficiently detailed environmental management plans (EMPs) to demonstrate that project impacts from the construction, operation, decommissioning and rehabilitation phases of the project will be appropriately managed. The EMS should: (a) provide a strategic framework for project environmental management and compliance with relevant legislation (b) include a document hierarchy for the implementation of EMPs, sub-plans, programs, processes and procedures (c) detail the project's environmental management system, which should include key objectives, principles and commitments (d) describe the environmental risk assessment process to identify and manage ongoing risks (e) outline high-level roles and responsibilities for environmental management.	Section 30.2 Section 30.3.1 Section 30.3.3 Section 30.3.3.2
30.2	EMPs should be developed from, and be consistent with, the impact avoidance and mitigation strategies proposed in the EIS. Mitigation measures and commitments should be SMART and should align with best practice environmental management to protect identified environmental values. The EMPs are to be presented as stand-alone documents (appendices to the EIS).	Section 30.3.4
30.3	EMPs must: (a) summarise relevant project activities and potential impacts on environmental values (b) set out the environmental objectives and performance outcomes the proponent has committed to achieving for the project (i.e. expected levels of environmental harm, performance standards and associated measurable indicators, including progressive and final rehabilitation) (c) clearly describe impact avoidance and mitigation strategies, including measures to avoid, minimise and rehabilitate all impacts identified in the EIS (d) identify management measures that have been developed in consultation with, or based on feedback from relevant stakeholders, and provide for ongoing stakeholder engagement as the project proceeds (e) identify future scopes of work and relevant hold points required before the EMP can be implemented (f) outline monitoring and compliance programs to detect potential impacts and confirm the effectiveness of management measures in achieving environmental objectives and performance outcomes (g) include a process for implementation of preventative and corrective actions (including use of trigger action response plans where suitable) as well as documentation, notification and response obligations following identified non-compliance (h) include a program for regular reporting and auditing on EMP compliance and implementation, as well as EMP reviews and updates to ensure continual improvement.	Section 30.3.4