



山金国际
SHANJIN INTERNATIONAL

OSINO
RESOURCES

Submitted to: Osino Gold Exploration and Mining (Pty) Ltd.

Attention: Mr Ralf Schommarz

13 Feld Street

P O Box 3489

Windhoek

Namibia

REPORT:

TWIN HILLS GOLD PROJECT OPERATIONAL ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

PROJECT NUMBER: ECC-103-442-REP-02-D

REPORT VERSION: REV 01

DATE: 31 MARCH 2025

TITLE AND APPROVAL PAGE

Project Name: Twin Hills Gold Project operational environmental and social
management plan

Client Company Name: Osino Gold Exploration and Mining (Pty) Ltd.

Client Name: Mr Ralf Schommarz

Ministry Reference: APP-25032605553

Authors: Environmental Compliance Consultancy

Status of Report: Updated to an operational environmental and social management
plan

Project Number: ECC-103-442-REP-02-D

Date of issue: 31 March 2025

Review Period 31 March 2025 - 7 April 2025

ENVIRONMENTAL COMPLIANCE CONSULTANCY CONTACT DETAILS:

We welcome any enquiries regarding this document and its content. Please contact:



Environmental Compliance Consultancy
PO Box 91193, Klein Windhoek, Namibia
Tel: +264 81 669 7608
Email: info@eccenvironmental.com

Quality Assurance

Authors:



Carlene Baufeldt and Monique Jarrett
Environmental Compliance Consultancy

Checked By:



Luke Towers
Environmental Compliance Consultancy

Approved By:



Jessica Bezuidenhout
Environmental Compliance Consultancy

DISCLAIMER

The report has been prepared by Environmental Compliance Consultancy (Pty) Ltd (ECC) (Reg. No. 2022/0593) on behalf of the Proponent. Authored by ECC employees with no material interest in the report's outcome, ECC maintains independence from the Proponent and has no financial interest in the Project apart from fair remuneration for professional fees. Payment of fees is not contingent on the report's results or any government decision. ECC members or employees are not, and do not intend to be, employed by the Proponent, nor do they hold any shareholding in the Project. Personal views expressed by the writer may not reflect ECC or its client's views. The environmental report's information is based on the best available data and professional judgment at the time of writing. However, please note that environmental conditions can change rapidly, and the accuracy, completeness, or currency of the information cannot be guaranteed.

TABLE OF CONTENTS

1	Introduction	11
1.1	Changes triggering the amendment	13
1.2	Purpose of the OESMP	15
1.3	Environmental regulatory requirements	15
1.4	Scope of this operational environmental and social management plan	15
1.5	Environmental and social assessment practitioner and consultant	16
1.6	Management of the approved OESMP.....	17
1.7	Structure of this OESMP.....	17
1.8	Assumptions, limitations and uncertainties	18
2	Operational environmental and social management framework.....	19
2.1	Organisational structure, roles and responsibilities	19
2.2	Contractors	20
2.3	Employment	21
2.4	Register of environmental aspects and impacts.....	21
2.5	Compliance, inspections and enforcement.....	21
2.6	Non-compliance	22
3	Domains and environmental schedules.....	23
4	Environmental monitoring.....	25
4.1	Water quality monitoring program.....	26
4.1.1	surface water monitoring.....	26
4.1.2	groundwater monitoring.....	27
4.1.3	groundwater level monitoring.....	27
4.1.4	groundwater quality monitoring.....	28
4.1.5	potable water quality monitoring	30
4.1.6	effluent/wastewater quality monitoring	30
4.1.7	pit water abstraction monitoring	31
4.2	Air quality monitoring	31
4.3	Noise monitoring	34
4.4	Biodiversity monitoring.....	37
4.5	Archaeological monitoring.....	37
4.6	Soil monitoring.....	40
4.7	Continual improvement.....	40
5	Overarching environmental management principles	41
5.1	Introduction.....	41

5.2	Best practice management measures	41
5.3	Environmental objectives and targets.....	42
5.4	Document control and records management	43
5.5	Non-routine operations	43
5.6	Accidents and emergencies.....	43
5.7	Change management.....	44
6	Domain 1 – Surface infrastructure.....	46
7	Domain 2 – Explosives magazine	55
8	Domain 3 – Open pit and mining areas	61
9	Domain 4 – Waste rock dump, low and medium grade mineral stockpiles	75
10	Domain 5 – ROM pad and crusher	83
11	Domain 6 – Process plant and tailings pipeline	87
12	Domain 7 – Tailings storage facility	96
13	Domain 8 – Bioremediation site	103
14	Domain 9 – Sewage treatment plant and water storage facilities.....	109
15	Domain 10 – Engineering workshops	116
16	Domain 11 – Equipment, parts and material supply.....	129
17	Domain 12 – Admin Area	134
18	Domain 13 – Management camp	139
19	Domain 14 – Non-mineralised waste (solid waste) and recycling facility	146
20	Domain 15 – Topsoil stockpiles.....	150
21	Domain 16 - Freshwater supply – production and monitoring of boreholes	153
	Appendix Pages.....	158

LIST OF TABLES

Table 1 – Report structure	17
Table 2 – Roles and responsibilities.....	20
Table 3 - Twin Hills Gold Project domain schedule of areas within the operational control of Osino and addressed within the scope of this OESMP	23
Table 4 - Identified heritage sites.....	38
Table 5 – Best practice environmental management.....	41
Table 6 – Emergency contact details	44
Table 7 – Domain 1: Surface infrastructure domain schedule	48
Table 8 - Domain 2: Explosives magazine	55
Table 9 – Domain 3: Open pit and mining areas domain schedule.....	62
Table 10 – Domain 4: Waste rock dump, low and medium grade stockpiles.....	76
Table 11 - Domain 5: ROM Pad and crusher.....	83
Table 12 – Domain 6: Process plant domain schedule.....	88
Table 13 – Domain 7: Tailings storage facility domain schedule.....	96

Table 14 - Domain 8: Bioremediation site.....	103
Table 15 - Domain 9: Sewage treatment plant and water storage facilities	109
Table 16 - Domain 10: Workshops domain schedule	117
Table 17 - Domain 10: Engineering workshop (fuel depot) domain schedule	125
Table 18 - Domain 11: Equipment, parts and material supply	129
Table 19 - Domain 12: Admin area	134
Table 20 - Domain 13: Management camp.....	139
Table 21 - Domain 14: Waste management and recycling facility domain schedule.....	147
Table 22 - Domain 15: Topsoil stockpiles site domain schedule	150
Table 23 - Domain 16: Freshwater supply – production and monitoring of boreholes.	153
Table 24 - Twin Hills Gold Project monitoring plan.....	159
Table 25 - SANS (1929:2011) ambient air quality evaluation criteria for dust deposition	164
Table 26 - The target, action and alert threshold values from the SANS 1929:2011 Ambient Air Quality Monitoring Standard	164
Table 27 - Standards/guidelines derived from the WHO Interim target-3 (IT-3) for PM 10/2.5	165
Table 28 - Air quality criteria for particulate matter and passive gases.....	165
Table 29 - General standards for waste/effluent water discharge	169
Table 30 - Recommended allowable ambient sound (rating) levels for various land use type districts.....	170
Table 30 - Characteristics of obstacle lights.....	171
Table 31 - Light distribution for low-intensity obstacle lights.....	172
Table 32 - Light distribution for medium and high intensity obstacle lights according to benchmark intensities in Table 23	172
Table 33 - Installation setting angles for high-intensity obstacle lights	173

LIST OF FIGURES

Figure 1 – Project location.....	12
Figure 2 - Infrastructure layout	14
Figure 3 – Ground water quality monitoring locations per aquifer type	29
Figure 4 - Air quality fall out dust bucket monitoring locations at Twin Hills	33
Figure 5 - Noise monitoring locations	36
Figure 6 - The location of the Osino project, showing the known distribution of archaeological sites (red dots) in the adjacent area and regions. Also indicated are archaeological and historical sites located during the present survey, concerning existing and proposed mine works.	38
Figure 7 - Domain 1: Surface infrastructure with monitoring locations.....	47
Figure 8 - Domain 3: Open pits and mining areas with monitoring locations.....	61
Figure 9 - Domain 4: Waste rock dump, low and medium grade stockpiles with monitoring locations.....	75
Figure 10 – Domain 5: Processing plant housing ROM pad and crusher.....	83

Figure 11 - Domain 6: Processing plant with monitoring locations	87
Figure 12 - Domain 7: Tailings storage facility and waste rock dumps with monitoring locations	96
Figure 13 - Domain 9: Sewage treatment plant and water storage facilities.....	109
Figure 14 - Domain 10: Workshops with monitoring locations	116
Figure 15: Domain 10 - Fuel depot with monitoring locations	124
Figure 16 - Domain 11: Equipment, parts and material supply	129
Figure 17 - Domain 14: Non-mineralised waste and recycling facility.....	146

APPENDICES

Appendix A – Environmental monitoring programme and trigger values based on Namibian or South African standards.....	159
Appendix B – Standard operating procedure - Rest water level monitoring.....	174
Appendix C – Standard operating procedure – Ground water quality monitoring	175
Appendix D – Standard operating procedure – Surface water quality monitoring	176
Appendix E – Standard operating procedure – Potable water quality monitoring.....	177
Appendix F – Standard operating procedure – Effluent and wastewater monitoring	178
Appendix G – Standard operating procedure – Ambient noise monitoring.....	179
Appendix H – Standard operating procedure – Air quality monitoring	180
Appendix I – Standard Operating Procedure – Soil Sampling	181
Appendix J – Land clearing permit	182
Appendix K – Domain sign-off	183

ABBREVIATIONS AND TERMS

Abbreviation and terms	Description
%	percentage
AMD	acid mine drainage
AQ(OX)	air quality monitoring sites
ASTM	American Society for Testing and Materials Standard - method for collection and analysis of dust fall
dB	Decibel - a unit of measurement for sound
DoF	Department of Forestry
DWA	Department of Water Affairs
ECC	Environmental Compliance Consultancy (Pty) Ltd
EIA	environmental impact assessment
EM	environmental manager
EMA	environmental management act
EMS	environmental management system
EPL	exploration prospecting licence
ESIA	environmental social impact assessment
GHG	greenhouse gas
GIS	geographical information system
GW	groundwater
HME	heavy mobile equipment
HOD	head of department
ID	identification
IPCC	Intergovernmental Panel on Climate Change
ISO 14001	Helps an organization achieve the intended outcomes of its environmental management system, which provides value for the environment, the organization itself and interested parties.
kV	kilovolt
MAFWLR	Ministry of Agriculture, Fisheries, Water and Land Reform
MET	Ministry of Environment and Tourism
mg/l	milligrams per liter - a measure of the concentration by weight of a substance per unit volume in water or wastewater. In reporting the results of water and wastewater analysis.
mg/m ² /day	milligram per meter squared per day - a unit of concentration (biological activity)
ML	mining licence
mm	millimetre - a small unit of displacement (length/distance) in the metric system
mm/s	millimetre per second - a unit in the category of velocity
MoHSS	Ministry of Health and Social Services
MSDS	material safety data sheet
mS/m	milli Siemens/meter - this is the unit generally used in electrical geophysics

Abbreviation and terms	Description
NAMCATs	Namibian Civil Aviation Technical Standards
NCAA	National Civil Aviation authority
NHC	National Heritage Council
NO ₃	nitrates
NSR	noise-sensitive receptor
NTU	Nephelometric Turbidity Units - a measure of the cloudiness of a fluid
OEM	original equipment manufacturer
OESMP	operational environmental and social management plan
OGEM	Osino Gold Exploration and Mining (Pty) Ltd
pH	positive hydrogens - It is a scale used to specify the acidity or basicity of an aqueous solution.
PM _{2.5}	particulate matter - particles that are 2.5 microns or less in diameter
PM ₁₀	particulate matter - particles that are 10 microns or less in diameter
PMS	plant mixed slurry
POI	point of interest
ppm	parts per million - A weight to weight ratio used to describe concentration. The number of units of mass of a contaminant per million units of total mass.
Pty	Propriety
PV	photovoltaic
QKR Navachab	QKR Namibia Navachab Gold Mine PTY Ltd
ROM	run of mine
RWL	rest water level
SANS	South African National Standard
SHEQ	safety, health, environment and quality
SO ₂	sulphur dioxide
SOP	standard operating procedure
TCEQ	Texas Commission on Environmental Quality
TCEQ Short-term ESL	Texas Commission on Environmental Quality about Effects Screening Levels
ToR	terms of reference
TPH	tonnes per hour
TSF	tailings storage facility
TSP	total suspended particles - an air-suspended mixture of both solid and liquid particles
µg/m ³	one-millionth of a gram per cubic meter air (micro gram) - a measure of concentration in terms of mass per unit volume
VOCs	volatile organic compound - organic compounds that have a high vapor pressure at room temperature.
(WAD) cyanide	weak acid dissociable cyanide - an operationally defined group of cyanide species that undergo dissociation and liberate free cyanide when refluxed under weakly acidic conditions (pH 4.5-6)

Abbreviation and terms	Description
WHO	World Health Organisation
WHO AQG	World Health Organisation Air Quality Guidelines
WRD	waste rock dump

1 INTRODUCTION

Environmental Compliance Consultancy (ECC) has been contracted by Osino Gold Exploration and Mining (Pty) Ltd (OGEM), a Namibian company and subsidiary of Osino Resources Corp to compile the operational environmental and social management plan (OESMP) for the Osino Twin Hills Gold Mine Project. Shanjin International Gold Corporation solely owns OGEM and manages operations in Namibia. ECC conducted an environmental and social impact assessment (ESIA) and relevant amendment for the proposed mining of precious metals on mining licence 238 (ML 238), located near the town of Karibib, Erongo Region, Namibia, see Figure 1.

The Proponent has focused on the acquisition and development of potential gold projects in Namibia through extensive exploration programmes. The advanced and successful exploration programme has resulted in the discovery and decision to develop the Twin Hills Gold Project. The proposed Project will be a conventional open pit mine with a gold extraction process like existing gold mines in Namibia, for example, the Otjikoto and Navachab mines. The proposed project will be referred to herein as the “Twin Hills Gold Project” or the “Project”.

ECC has compiled this OESMP in compliance with the Environmental Management Act (EMA) No. 7 of 2007 and its regulations of 2012. The purpose of this OESMP is to support the full ESIA amendment report and to support the operation as it moves into the operational phase of the Project.

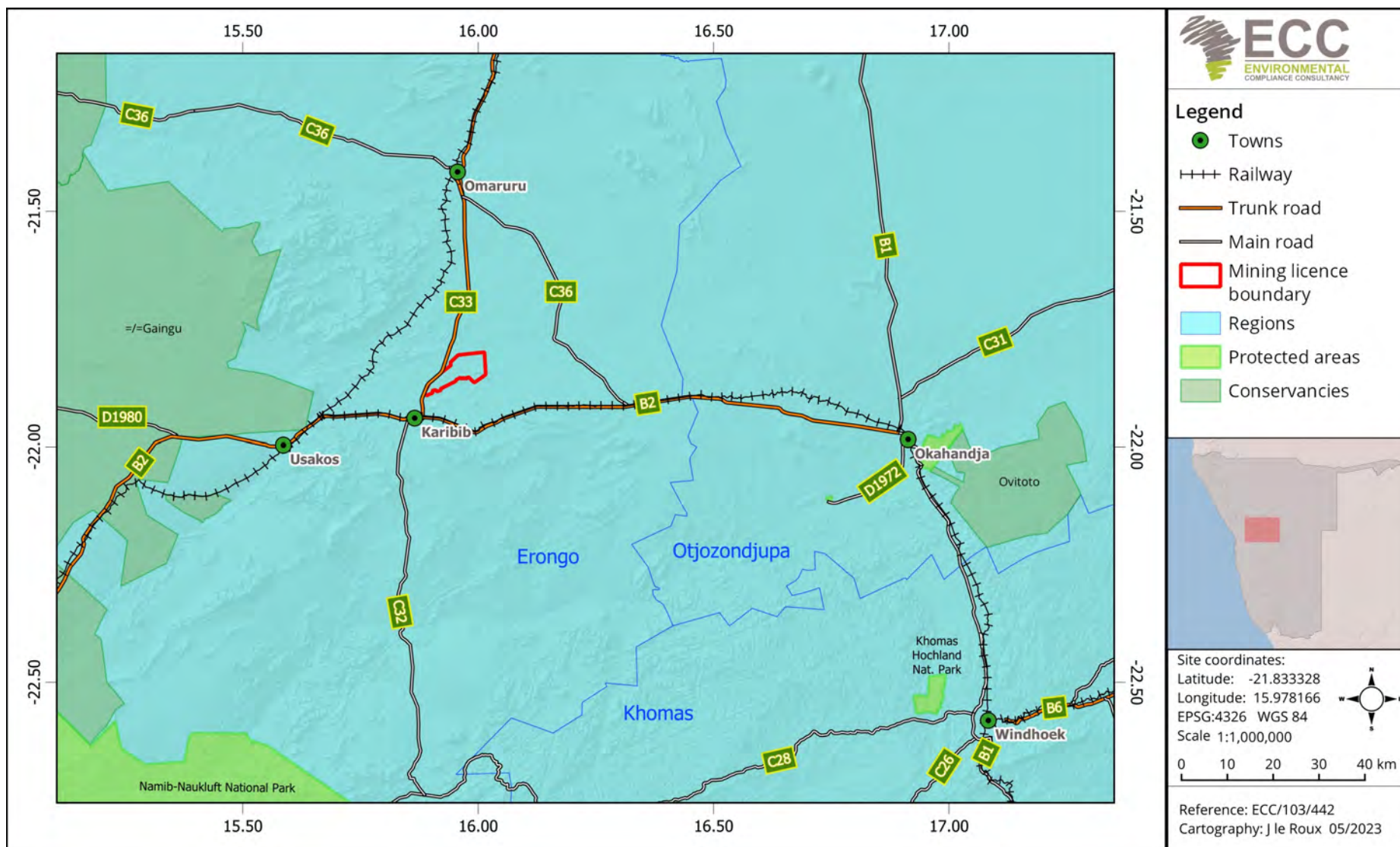


Figure 1 – Project location

1.1 CHANGES TRIGGERING THE AMENDMENT

The environmental clearance certificate for the Project was approved and issued on 9 November 2022 by the Ministry of Environment and Tourism (MET). After this approval, the Proponent has reviewed their operational requirements, and an amendment to the original ESIA is required, as updates and changes to the site layout and proposed infrastructure have been finalised. Therefore, these noted changes and potential related impacts have been re-assessed in the ESIA amendment and will be submitted to MET and the component authority, the Ministry of Mines, Energy and Industry (MMEI), for approval.

The Proponent intends to implement the proposed upgrades, as well as on-site supporting infrastructure, to be able to sustain and support the planned Project shown in Figure 2. The additional changes and upgrades include the following:

- The 11 kV powerline route assessment and associated infrastructure
- The new Twin Hills West pit
- Addition of the tailing storage facility (TSF) lined facility
- The general site layout updates
- The new D1941 road diversion
- The Okawayo River diversion
- The solar (photovoltaic) PV plant
- The airstrip

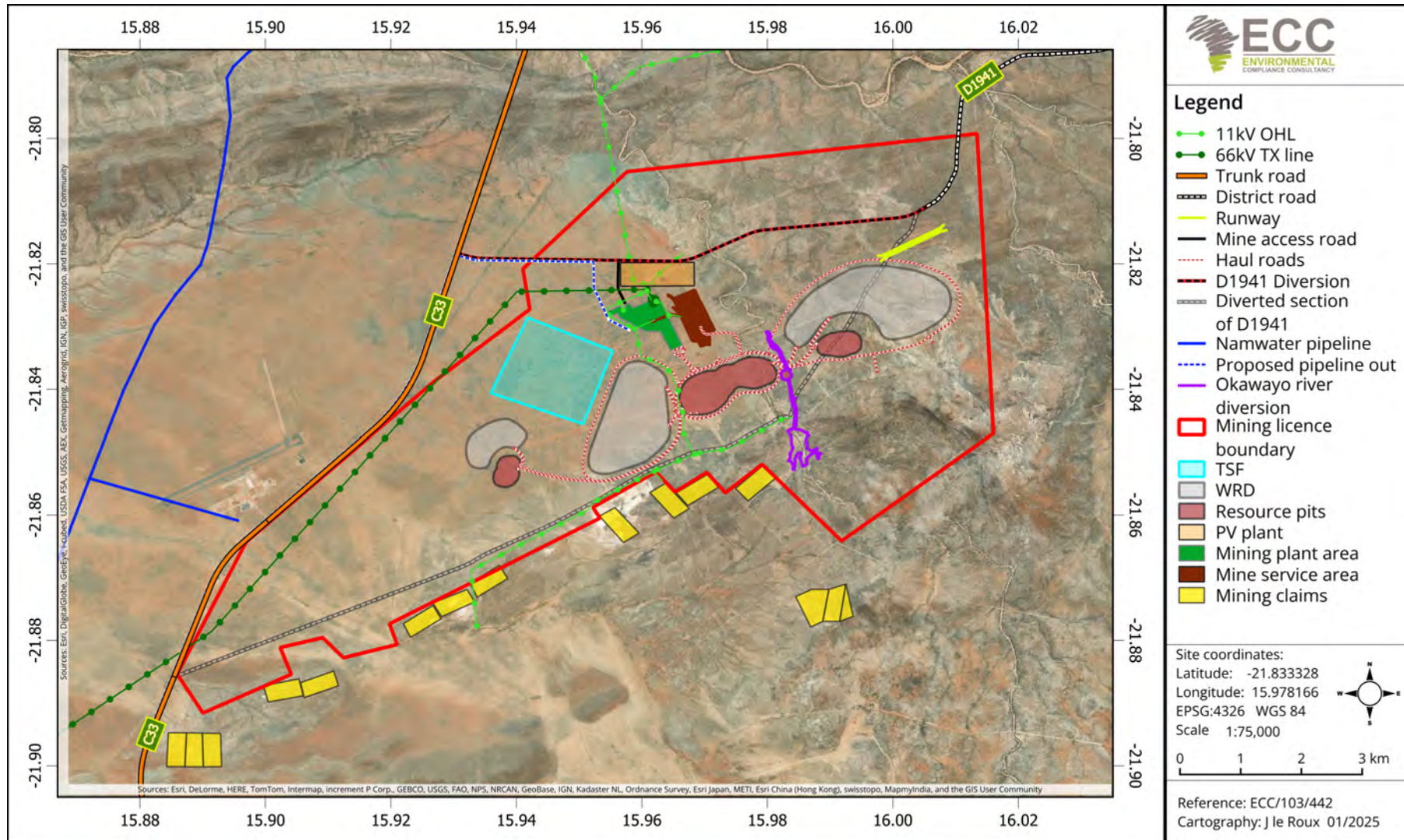


Figure 2 - Infrastructure layout

1.2 PURPOSE OF THE OESMP

This amended operational environmental and social management plan (OESMP) provides a logical framework, mitigation measures and management strategies for the mining activities associated with the proposed Project, in this way ensuring that the potential environmental and social impacts are curbed and minimised as far as practically possible and that statutory and other legal obligations are adhered to and fulfilled. Outlined in the OESMP are the protocols, procedures and roles and responsibilities to ensure the management arrangements are effectively and appropriately implemented.

The OESMP forms an appendix to the ESIA amendment report and is based on the findings of the assessments carried out to date. The ESIA amendment report should be referred to for further information on the proposed Project, baseline information on the Project area, assessment methodology and terms of reference (ToR), applicable legislation, and assessment findings.

This OESMP is a 'live' document, which shall be reviewed annually and periodically updated to reflect material changes to the operations and to allow continual improvement for environment and community-related management aspects on the Osino Twin Hills Gold Project.

This OESMP has been approved by the site's mine manager and, therefore, it can be implemented across all activities at the Twin Hills site. ECC has compiled this operational environmental and social management plan (OESMP) in terms of the Environmental Management Act (EMA), No.7 of 2007 and its regulations of 2012.

1.3 ENVIRONMENTAL REGULATORY REQUIREMENTS

The site has an approved and valid environmental clearance certificate to undertake listed activities in accordance with the Environmental Management Act, 2007. The environmental clearance certificate is currently being amended as part of the ESIA amendment application, as indicated in section 1.1.

This OESMP supports the Twin Hills Gold Project's environmental clearance certificate and will be submitted to the Department of Environmental Affairs, in the Ministry of Environment and Tourism, for endorsement as part of this update.

1.4 SCOPE OF THIS OPERATIONAL ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

This OESMP has been developed by adopting a collaborative and integrated approach to environmental and social management. It is based on the findings from the 2024 ESIA conducted for the proposed changes to the Project site.

Obligations and commitments made in the superseded plan have been incorporated into this OESMP; where commitments are no longer applicable or are redundant, they have been removed. The site's updated 2024 ESIA, as well as the experience and knowledge of the authors, have been

used to compile this OESMP. This OESMP aims to avoid repeating information, procedures or guidance that are available in other sites and company reports and has been written in line with the Namibian Government guidance document titled “Draft Procedures and Guidelines for Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP), 2008”.

This OESMP has been prepared to reflect the entire mine’s life cycle. The mine is currently in the pre-construction phase and intends to move into construction in quarter 2 of 2025, and operations by 2026 and beyond. The OESMP ties into the decommissioning and closure plan framework for the site. The geographical scope of this OESMP includes all operations and activities within the boundary of mining licence (ML) 238 and includes monitoring requirements for the mining licence area. These activities are categorised into work areas, termed “domains”, which are separated by operational activities, with the long-term view of integrating the OESMP into the decommissioning and closure plan for the Twin Hills Gold Project.

Standard operating procedures (SOPs) feed into this OESMP, allowing a holistic environmental management approach to be adopted across the site. Health and safety management measures are not included in this OESMP and will be managed by the site under a specific health and safety management plan.

1.5 ENVIRONMENTAL AND SOCIAL ASSESSMENT PRACTITIONER AND CONSULTANT

Environmental Compliance Consultancy (Pty) Ltd (ECC), a Namibian consultancy (registration number Pty Ltd 2022/0593), has prepared this OESMP on behalf of the Proponent. This report has been authored by employees of ECC, who have no material interest in the outcome of this report, nor do any of the ECC team have any interest that could be reasonably regarded as being capable of affecting their independence in the preparation of this report. ECC is independent from the proponent and has no vested or financial interest in the project, except for fair remuneration for professional fees rendered, which are based upon agreed commercial rates. Payment of these fees is in no way contingent on the results of this report or the assessment, or a record of decision issued by Government. No member or employee of ECC is, or is intending to be, a director, officer, or any other direct employee of Osino. No member or employee of ECC has, or has had, any shareholding in Osino.

All compliance and regulatory requirements regarding this report should be forwarded by email or posted to the following address:

Environmental Compliance Consultancy
PO Box 91193, Klein Windhoek, Namibia
Tel: +264 81 669 7608
Email: info@eccenvironmental.com

1.6 MANAGEMENT OF THE APPROVED OESMP

The Proponent holds the environmental clearance certificate for the proposed Project and shall be responsible for the implementation and management of the approved OESMP. Before the mining activities commence, the approved OESMP will be reviewed, amended as required and reapproved on a three-year cycle (on renewal of the clearance certificate). The implementation and management of the approved or final OESMP is also carried out through monitoring compliance with the requirements thereof. Various aspects are monitored daily, weekly, monthly, and annually. Reporting to the Department of Environmental Affairs is carried out biannually, and renewal of the environmental clearance certificate requires an additional audit report upon application for reapproval of the current OESMP.

The final approved OESMP must be circulated and or communicated to all relevant employees and contractors and be made available on public platforms.

1.7 STRUCTURE OF THIS OESMP

As this is an operational environmental and social management plan, it is assumed that the reader is familiar with the site. If the reader requires further details on the site and its operations, the 2024 environmental and social impact assessment report for the Twin Hills Gold Project should be referred to (ECC, 2024).

The layout of this OESMP has been set up to provide site-specific and relevant information in the main sections of the report and provides supporting or supplementary information in the appendices, thereby providing the end user with an operational document for ease of use.

The targeted users of this OESMP are heads of the departments (HODs), contractors, the site environmental team and the authorities or stakeholders with a vested interest in how the Twin Hills Gold Project manages its environment and social responsibilities. The OESMP structure is summarised in Table 1.

Table 1 – Report structure

Chapter	What this chapter addresses
Chapter 1	Broad overview of the site and the purpose of the OESMP
Chapter 2	Sets out the company's integrated management system and how this OESMP is managed and enforced
Chapter 3	Sets out the OESMP and the various domains and domain schedules
Chapter 4	Sets out the site's environmental schedules and provides a customised OESMP for each domain (work area), setting out the responsibilities; the activities in the work area and potential impacts; operational management measures; environmental pollution control measures; monitoring requirements; and reporting expectations.

Appendices to support the OESMP and the implementation thereof are as follows:

- Appendix A – Environmental monitoring programme and trigger values
- Appendix B – Standard operating procedure - Rest water levels monitoring
- Appendix C – Standard operating procedure – Groundwater quality monitoring
- Appendix D – Standard operating procedure – Surface water quality monitoring
- Appendix E – Standard operating procedure – Potable water quality monitoring
- Appendix F – Standard operating procedure – Effluent and wastewater monitoring
- Appendix G – Standard operating procedure – Ambient noise monitoring
- Appendix H – Standard operating procedure – Air quality monitoring
- Appendix I – Standard operating procedure – Soil Sampling Protocol
- Appendix J – Land clearing permit
- Appendix K – Domain sign-off

1.8 ASSUMPTIONS, LIMITATIONS AND UNCERTAINTIES

During the development of this OESMP, assumptions have been made based on the scope and scale of the Project and limitations and uncertainties have been identified. The assumptions, limitations and uncertainties are as follows:

- This OESMP does not include measures for compliance with statutory occupational health and safety requirements. This will be provided in the safety management plan to be developed by the Proponent; and
- The OESMP does not encompass the comprehensive social and community engagement management plan for the mine. A separate development process will be undertaken by the Proponent for this purpose.

Where there is any conflict between the provisions of this OESMP and any contractor's obligations under their respective contracts, including statutory requirements (such as licences, Project approval conditions, permits, standards, guidelines, and relevant laws), the contract should be amended, and statutory requirements are to take precedence.

The information contained in this OESMP has been based on the Project description as provided in the ESIA report (chapter 4). Where the design or operational methods are different, this OESMP may require updating, and potential further assessment may be undertaken.

2 OPERATIONAL ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

This OESMP provides measures, guidelines and procedures for managing and mitigating potential environmental issues during the operations of the site. It also indicates monitoring and reporting guidelines and sets responsibilities for those carrying out management and mitigation measures. One of the aims of this OESMP is to act as an umbrella document that drives a holistic iterative approach to environmental management across the Twin Hills Gold Project.

2.1 ORGANISATIONAL STRUCTURE, ROLES AND RESPONSIBILITIES

The Proponent shall provide a Project team to oversee and undertake the site preparation and mining activities, which will be composed of the Proponent's personnel and contractors. A nominated role shall be identified to ensure the management and implementation of this OESMP is carried out throughout the Project LoM. The Proponent shall be responsible for:

- Ensuring all members of the Project team, including contractors, comply with the procedures set out in this OESMP;
- Ensuring that all persons are provided with sufficient training, supervision, and instruction to fulfil this requirement;
- Ensuring that any persons allocated specific environmental responsibilities are notified of their appointment and confirm that their responsibilities are clearly understood; and
- Contractors (and sub-contractors) shall be responsible for ensuring and demonstrating that all personnel employed by them are compliant with this OESMP, and meet the responsibilities listed above

The key personnel and environmental responsibilities of each role throughout the Project life are presented in Table 2.

Table 2 – Roles and responsibilities

Role	Responsibilities and duties
Proponent	– Responsible for the management and implementation of the OESMP. – Ensure environmental policies are communicated to all personnel throughout the proposed Project and that employees understand the guidelines of the OESMP. – Responsible for providing the resources required to complete the Project tasks. – Appoint a site manager and project manager. – Ensure all workers are inducted on safety measures.
Mining management	– Oversee mining activities. – Monitor daily operations and ensure adherence by personnel to the OESMP. – Maintain the community issues and concerns register and keep records of complaints. – Maintain an up-to-date register of employees who have completed site induction.
Site manager	– Ensure that all contract workers, sub-contractors and visitors to the site are aware of the requirements of this OESMP, relevant to their roles and always adhere to this OESMP. – Report any non-compliance or accidents to management. – Receive, record and respond to complaints. – Ensure adequate resources are available for the implementation of the OESMP. – Ensure safe and environmentally sound operations. – Responsible for the management, maintenance, and revisions of this OESMP.
Employees	– Adhere to measures set out in the OESMP. – Ensure they have undertaken a site induction. – Report any operations or conditions that deviate from the OESMP as well as any non-compliant issues or accidents to the environmental manager.

2.2 CONTRACTORS

Any contractors hired during operational activities for the Project duration shall be compliant with this OESMP and shall be responsible for the following:

- Undertaking activities in accordance with this OESMP as well as relevant policies, procedures, management plans, statutory requirements, and contract requirements;
- Implementing appropriate environmental and safety management measures;
- Reporting of environmental issues, including actual or potential environmental incidents and potential impacts/impacts, to the site manager and or management;
- Ensuring appropriate corrective or remedial action is taken to address all environmental impacts and incidents reported by employees and subcontractors.

2.3 EMPLOYMENT

The Proponent and all contractors shall comply with the requirements of the Republic of Namibia Regulations for Labour, Health and Safety, and any amendments to these regulations. The following shall be complied with:

- In liaison with local government and community authorities, the Proponent shall ensure that local people have access to information about job opportunities and are considered first for construction/maintenance contract employment positions.
- The number of job opportunities shall be made known together with the associated skills and qualifications.
- The maximum length of time the job is likely to last shall be indicated.
- Foreign workers with no proof of permanent legal residence shall not be hired.
- Every effort shall be made to recruit from the group of unemployed workers living in the surrounding area.

2.4 REGISTER OF ENVIRONMENTAL ASPECTS AND IMPACTS

An environmental review of the proposed Project has been completed to identify all the commitments and agreements made. A list of environmental aspects, impacts and commitments has been produced, which details deliverables including measures identified for the prevention of pollution or damage to the environment during the mining phase.

2.5 COMPLIANCE, INSPECTIONS AND ENFORCEMENT

The environmental aspects and impacts associated with the operations and activities of the Twin Hills Gold Project are detailed in each environmental schedule, along with specific mitigation and operational management arrangements.

A copy of this OESMP will be available to all personnel, and hard copies shall be available across the site. All personnel shall comply with this OESMP through their daily roles and any activities undertaken.

The appointed environmental Manager shall undertake regular inspections; the type and frequency will be determined based on the level of impact associated with the activities and operations performed in each domain. For the higher impact areas, inspections shall be no less than weekly, and supervisors shall inspect their area of responsibility no less than monthly. The purpose of these inspections is to ensure that this OESMP is being complied with.

Work areas and work tasks shall be inspected by the domain manager, who will be an experienced and qualified person. Conditions, controls and practices in and around the work area shall be inspected, and inspections shall be both visual examinations and discussions with personnel. Specialised inspection programs shall be implemented to ensure that equipment and processes with a high risk of causing harm are inspected routinely or (where applicable) to meet either internal and/or statutory requirements. The inspection schedules for each domain shall be maintained, and

the appointed EM shall produce a record of each inspection. Any corrective or preventative actions shall be communicated to the environmental team after the inspection.

2.6 NON-COMPLIANCE

The Proponent and all personnel working on the Project shall ensure that this OESMP is fully complied with. All non-compliance events shall be reported via the incident reporting system and the standard reporting process that includes ensuring preventative action, reporting, and, where required, taking disciplinary action.

Non-compliance events can be considered as:

- Evidence of contravention of this OESMP and associated indicators;
- Failure of personnel to comply with corrective action or other instructions given by the operational manager; and
- Failure to address and respond to community complaints.

3 DOMAINS AND ENVIRONMENTAL SCHEDULES

Twin Hills Gold Project operates in distinct operating zones/work areas that are defined as domains. Through defining these domains, clear operating areas are established. Each domain has a concise environmental management plan, known as a domain schedule.

Within each domain, a domain manager is assigned and is responsible and accountable for the management of the environment within the domain and shall ensure that the domain schedule is reviewed to ensure no additional environmental risks or impacts are occurring.

The appointed EM shall ensure that all measures are implemented to mitigate and manage environmental impacts, e.g., ensuring pollution control measures, and that monitoring and reporting associated with the domain are in place. The domains for the Twin Hills Gold Project have been set out in Table 3.

Table 3 - Twin Hills Gold Project domain schedule of areas within the operational control of Osino and addressed within the scope of this OESMP

Description		Includes	Domain manager
Domain 1	Surface infrastructure	– Access roads – Service roads – Power lines and associated sub-stations/infrastructure – Pipelines – Quarry – Attenuation dam – River diversion wall/dam – Solar PV plant – Airstrip	General manager or Mine manager
Domain 2	Explosives magazine	– Explosives magazine	Mine manager
Domain 3	Open pit mining area	– Twin Hills Pit – Clouds Pit – Bulge Pit – Western Pit – Mine haul roads – Mining ponds	Mine manager
Domain 4	Waste rock dump, low- and medium-grade mineral stockpiles	– Waste rock dump – Low- and medium-grade stockpiles	Mine manager
Domain 5	ROM pad and crusher	– ROM – Primary crusher	Technical Services manager
Domain 6	Process plant and tailings pipeline	– Processing plant – Plant lab – Tailings pipeline, return water pipeline and pipeline bund	Process manager

Description		Includes	Domain manager
		- Diesel tank - Reagent store - Processing, raw water and freshwater ponds	
Domain 7	Tailings storage facility (TSF)	- TSF - Return water dam (RWD) - TSF fence - TSF roads	Process manager
Domain 8	Bioremediation site	- Bioremediation site	Environmental manager
Domain 9	Sewerage treatment plants and water storage facilities	- Site sewerage treatment plant - Management camp sewerage treatment plant - Evaporation ponds - Septic tanks	Engineering manager
Domain 10	Engineering workshops	- Heavy vehicle workshops - Drill rig workshop - Component, mechanical and rebuild workshop - Boiler maker workshop - Ancillary and light vehicle workshop - Wash bays - Refueling stations	Engineering manager
Domain 11	Equipment, parts and material supply	- Main warehouse - Reagent store - Plant warehouse	Supply manager
Domain 12	Admin area	- Security building - Low security area - Personnel transport drop-off zone - Access gate - Site offices	Security manager
Domain 13	Management camp	- Self-catering camp area	Supply manager
Domain 14	Non-mineralised waste (solid waste)	- Waste storage area - Sorting and recycling area - Incinerator	Environment manager
Domain 15	Topsoil stockpiles	- Topsoil stockpiles	Environment manager
Domain 16	Freshwater supply – production and monitoring boreholes	- Abstraction boreholes - Dewatering boreholes - Monitoring boreholes - Water tanks/reservoirs - Water pipelines	Environment manager

4 ENVIRONMENTAL MONITORING

Environmental monitoring involves collecting and analysing data to assess the state of natural resources and the environment. It helps track changes, identify potential impacts from human activities, and guide decision-making for management and mitigation controls. In open-pit gold mining, environmental monitoring ensures compliance with strict environmental regulations and permits/licences. Monitoring helps quantify various environmental impacts and allows for the adjustment of on-site activities or the implementation of mitigation measures before extensive damage can occur.

Effective monitoring is essential for responsible and sustainable mining, balancing economic benefits with environmental protection and community well-being.

Monitoring also supports environmental management on-site to evaluate how effective the environmental management has been over an extended period. A consolidated environmental monitoring schedule is provided in Appendix A. Standard operating procedures (SOPs) were developed to provide further detail of the monitoring programme and specific requirements (Appendix B - Appendix G).

The appointed EM is responsible for the implementation of the site-approved environmental monitoring programme. The monitoring programme comprises of:

- Air quality monitoring (using depositional dust gauges and PM 10/2.5 monitors at locations within the site boundary and nearest to sensitive receptors).
- Noise and vibration monitoring;
- Water quality and quantity monitoring (e.g., surface water, groundwater levels and quality, potable water and effluent discharge water);
- Biodiversity monitoring (e.g., fauna, vegetation);
- Archaeological monitoring;
- Meteorological data monitoring (e.g., rainfall and evaporation); and
- Carbon emissions monitoring (as required).

The domain schedules state the specific monitoring requirements and SOPs. The appointed EM is tasked with conducting the monitoring within each domain with the support of the domain manager and in line with the monitoring plan as discussed above. The domain manager must ensure the following:

- Monitoring is conducted on a regular basis as required;
- Demarcating monitoring stations appropriately;
- Informing all staff of the locations of monitoring stations per domain;
- Including monitoring stations on the site-specific layout plans (e.g. mine plan);
- The area is safe to allow monitoring personnel access;
- Access to the area is granted upon request; and
- Review of the monitoring information related to their domain.

4.1 WATER QUALITY MONITORING PROGRAM

This water quality management plan has been prepared to minimise the potential negative impacts on surface water (SW) and groundwater (GW) from mining activities. It is important to report any contact with or contamination of surface water and groundwater to the environmental manager as soon as possible.

The surface and groundwater management measures are designed to minimise the runoff of sediment-laden or polluted water/effluent (dirty water) into the surrounding environment. Mining activities that could potentially alter natural surface water and groundwater quality include:

- Chemical, process and hydrocarbon spills;
- Refuelling;
- Seepage of wastewater into surface water and groundwater;
- Trenching, pitting and open cast mining;
- Mine waste and tailings slurry residue; and
- Poor resource stewardship practices.

The following requirements are to be met to ensure that surface water and groundwater (clean water) is not contaminated:

- Fuel, hydrocarbons and hazardous chemicals must be safely stored and when chemicals are finished they should be removed and disposed of at the waste storage and sorting facility..
- Any contact with surface or groundwater must be treated with exceptional care and reported immediately, to minimise the potential for contamination of a local water course and/or aquifer.
- Investigate, assess, design, operate, maintain, and monitor mine and mineral materials planned for storage within tailings and waste rock facilities to prevent and manage potential mine drainage contamination.

The Proponent shall notify the DWA of any changes to the wastewater management system, production process or increase in labour complement that may alter the quality or quantity of wastewater produced on site.

4.1.1 SURFACE WATER MONITORING

The objective of surface water monitoring is to establish the surface water quality within the operational area of the mine and to continue to build the operational dataset to compare against the baseline water quality data. This information is then used to assess any impacts the mining activities may have on water quality.

Surface water monitoring will be required at the toe of the waste rock dumps after heavy rains as stated in Chapter 9 – Domain: 4 and it is recommended that sampling or water quality monitoring

points are placed at suitable locations for recycled process water. The SOP is outlined in Appendix D – Standard operating procedure – surface water monitoring.

Additional surface water and river water monitoring sites may be added to this programme as the site develops and evolves, and as the need arises.

4.1.2 GROUNDWATER MONITORING

Groundwater levels are to be measured monthly to assess the water levels of the underlying aquifers and to assess any possible impact abstraction may have on the underground water systems. Groundwater monitoring is required to understand the quality of groundwater prior to, and during mining operations to determine any impacts that may arise from mining operations, in comparison to baseline information.

Several monitoring locations have been established for the Project site based on groundwater quality assessments and modelling on farms Okawayo and Klein Okawayo (SLR Environmental Consulting (Namibia) (Pty) Ltd, 2023). This data serves as baseline information for operations. Monitoring of groundwater within the mining area, upstream and downstream of mining infrastructure is required. The locations of the current monitoring boreholes are shown in Figure 3.

Water quality should be assessed according to the general standards of the Water Resource Management Regulations of 2023, Water Resources Management Act, Act No. 11 of 2013 (Appendix A) (Addendum 1). The Proponent is required to comply with the conditions stipulated in their wastewater and abstraction licences.

Groundwater samples should be analysed by an external (third party) accredited laboratory, as per ISO 14001:2015 standards and as per Appendix C – Standard operating procedure - groundwater monitoring. Groundwater monitoring results should be reported monthly internally and be included in the bi-annual environmental performance report to MET. Additionally reporting requirements to the Department of Water Affairs should be in line with issued licence conditions.

4.1.3 GROUNDWATER LEVEL MONITORING

Groundwater rest water levels (RWL) should be measured frequently (monthly), to understand GW dynamics, i.e., to track groundwater movement in the aquifer. Over time, continuous water level measurements can be used to track the effects of recharge and discharge events e.g., pumping (abstraction/discharge), infiltration (recharge) and/or possible contamination. If there is any water abstraction occurring, RWL measurements will indicate the impact that it might have on the environment. Rest water levels monitoring will be conducted per the guidelines outlined in Appendix B – Standard operating procedure - rest water levels monitoring. The goal is to assess the water levels and performance of the aquifers, the possible impacts of abstraction and the influence of seasonal changes on the aquifer systems. For quality assurance, boreholes rest water levels should be measured quarterly by a third party.

4.1.4 GROUNDWATER QUALITY MONITORING

Groundwater quality monitoring is crucial for early detection and prevention of groundwater contamination, allowing for prompt responses to changes in water quality. Contaminated groundwater poses health risks if used for drinking or irrigation by neighbouring farmers, underscoring the importance of vigilance. Use of long-term groundwater data can improve operations and aid in the adoption of sustainable practices. Demonstrating commitment to environmental management through surveillance enhances the Proponents' reputation. Groundwater quality monitoring will be conducted following the guidelines outlined in Appendix C – Standard operating procedure – Groundwater Quality Monitoring SOP. Parameters that are required to be monitored are listed in the wastewater discharge licence requirements from DWA.

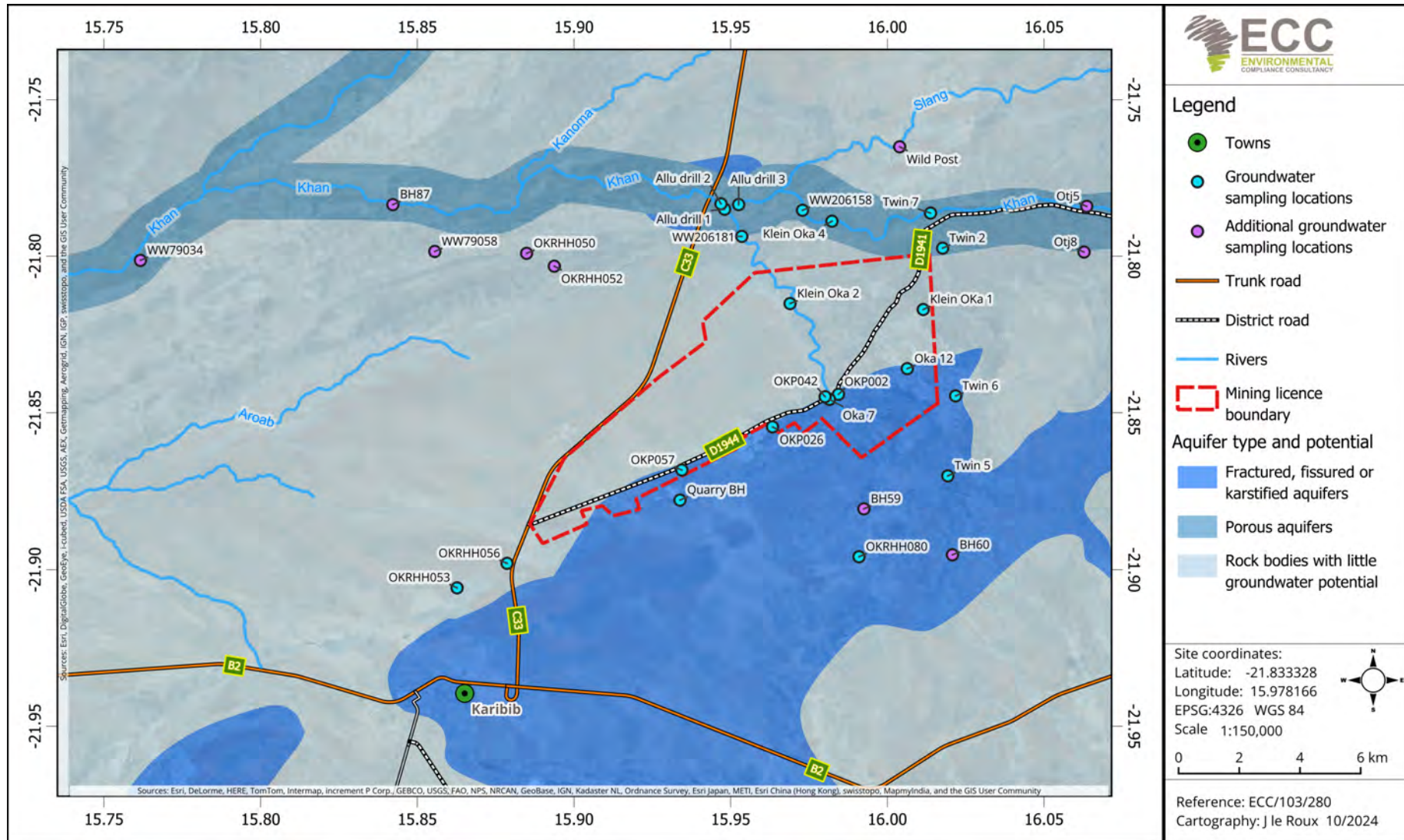


Figure 3 – Ground water quality monitoring locations per aquifer type

4.1.5 POTABLE WATER QUALITY MONITORING

Ensuring clean and safe drinking water is crucial for the health of personnel. Regulatory guidelines must be followed to operate legally. A robust monitoring system allows for a quick response to water quality problems, protecting personnel safety.

Potable water samples taken are to be compared against the DWA Namibian Guidelines for Water intended for human consumption from the source and piped water supply as per the Water Resource Management Regulations of 2023, Water Resources Management Act, Act No. 11 of 2013 (Addendum 1). Samples should be taken on a monthly or quarterly basis as per the site monitoring programme, if required in line with conditions stipulated in respective licence(s) should be analysed by an external (third party) accredited laboratory as per ISO 14001:2015 standards. Potable water monitoring should be conducted per the guidelines outlined in Appendix E – Standard operating procedure - potable water quality monitoring.

Potable water monitoring results are currently being reported quarterly but should be reported monthly internally or as per licence conditions, once operations commence and be included in the bi-annual environmental performance report to MET.

4.1.6 EFFLUENT/WASTEWATER QUALITY MONITORING

Monitoring effluent wastewater ensures adherence to regulatory standards, while monitoring allows for early detection of elevated pollutant levels, enabling prompt corrective action.

The Proponent must adhere to the general standards for industrial effluents outlined in the Water Resource Management Regulations of 2023, under the Water Resources Management Act, Act No. 11 of 2013 (Appendix A) (Addendum 11), as well as all conditions outlined in their wastewater and effluent disposal licences. This is particularly crucial for effluents released into the environment, whether for dust suppression or direct discharge into streams/channels.

Reporting of wastewater and effluent monitoring outcomes must occur at intervals specified by the wastewater licence. This information is mandated to be submitted to the Department of Water Affairs (DWA) per licence conditions and must be included in the bi-annual environmental performance report to the Ministry of Environment and Tourism (MET).

Furthermore, as stated in the wastewater and effluent disposal licence, the Proponent shall:

- Monitor boreholes agreed upon between the Proponent and MAFWLR;
- The parameters monitored should be listed in the wastewater and effluent discharge permit;
- Ensure that all water and effluent meters are always in a satisfactory operational state;
- Ensure enough water meters to allow for an accurate compilation of water balance records showing accurate water use and effluent production;

- Keep monthly records of incoming flow to the mining operations, abstraction boreholes, TSF, channel diversion embankment dam, and domestic wastewater treatment facilities to be submitted to MAFWLR-DWA biannually;
- Attend a sampling and analysis programme for the monitoring of boreholes, sewage and effluents;
- Analysed bi-annually the final effluent samples from the domestic wastewater treatment system based on the parameters listed in the permit, and the results shall be sent to MAFWLR DWA;
- Prepare an annual report to be submitted to MAFWLR at the end of February annually, stating water utilisation and water pollution management measures, along with the conditions of the abstraction boreholes, wastewater treatment system, septic tanks, industrial effluents, diesel refueling stations, channel diversion and embankment dam and TSF; and
- Record on-site water usage and submit it to the DWA quarterly.

Effluent wastewater monitoring will be conducted per the guidelines outlined in Appendix F – Standard operating procedure - effluent and wastewater quality monitoring.

4.1.7 PIT WATER ABSTRACTION MONITORING

Climatic stations have been installed at secure locations within the catchment area. The data received from the weather station should be coupled with the ongoing monitoring of flood line stations after rainfall events during the 2024/2025 rainy season. This effort will be complemented by a more precise survey of the Okawayo hydrologic basin. Monitoring activities should be scheduled monthly, and meticulous records of flow meter volumes will be consistently maintained. Reporting to the Department of Water Affairs is slated to occur monthly or quarterly, per the permit conditions.

4.2 AIR QUALITY MONITORING

Maintaining good air quality on the Project site is crucial for the well-being of workers, nearby communities and the surrounding environment. Vigilant monitoring helps identify potential impacts and allows for timely implementation of protective measures. It also ensures compliance with regulations, as non-compliances can result in penalties or even suspension of operations, by revoking issued licences/permits and/or the environmental clearance certificate. Monitoring serves as an early warning system for potential issues, allowing for timely adjustments to control measures.

Air quality monitoring locations were established before the onset of mining operations, as shown in Figure 4. In addition to this, there is constant meteorological monitoring taking place on-site in the form of a weather station (e.g., air pressure, wind speed, wind direction, etc). These sites are to be updated as required as the mine moves into the advanced operational phase. A depositional dust fall out monitoring network has been set up following the American Society for Testing and

Materials Standard (ASTM D1739-98) method for the collection and analysis of dust fall at each of the illustrated sites and as shown in the monitoring plan (Appendix H).

There are eight current sites set up (AQ01 – AQ08) in the ML area, which are exchanged monthly. Due to a lack of guidelines on ambient air quality standards in Namibia, the depositional dust monitoring results will be compared to the fall-out dust limits as provided by the South African National Standard (SANS) limit of 1200 mg/m²/day as an average value over a 28 – 32-day period, being the limit value for industrial areas outlined in Appendix A.

Due to the absence of guidelines on ambient air quality standards in Namibia, the Proponent should follow the Air Quality Standards for South Africa, specifically adhering to the WHO Interim Target-3 (IT-3) for PM 10/2.5 listed in Appendix A. According to this standard, the target for PM concentrations within 24 hours is PM₁₀ ≤ 75 µg/m³, and for PM_{2.5} ≤ 37.5 µg/m³ shown in Appendix A.

A permanent PM₁₀ & PM_{2.5} station will need to be set up on site, however in the interim, the Aeroqual Series 500 Portable Air Quality handheld monitor can be used. It is configured to assess PM₁₀ & PM_{2.5} with a logging frequency set at 30-minute intervals for 1 minute. This involves the monitor capturing measurements every minute over 30 minutes. The recorded data is stored in the monitor's memory and subsequently extracted/downloaded onto a computer. The data is then averaged and converted to micrograms per cubic meter (µg/m³) since the monitor initially records measurements in parts per million (ppm). The analysed data is then compared to standards in µg/m³.

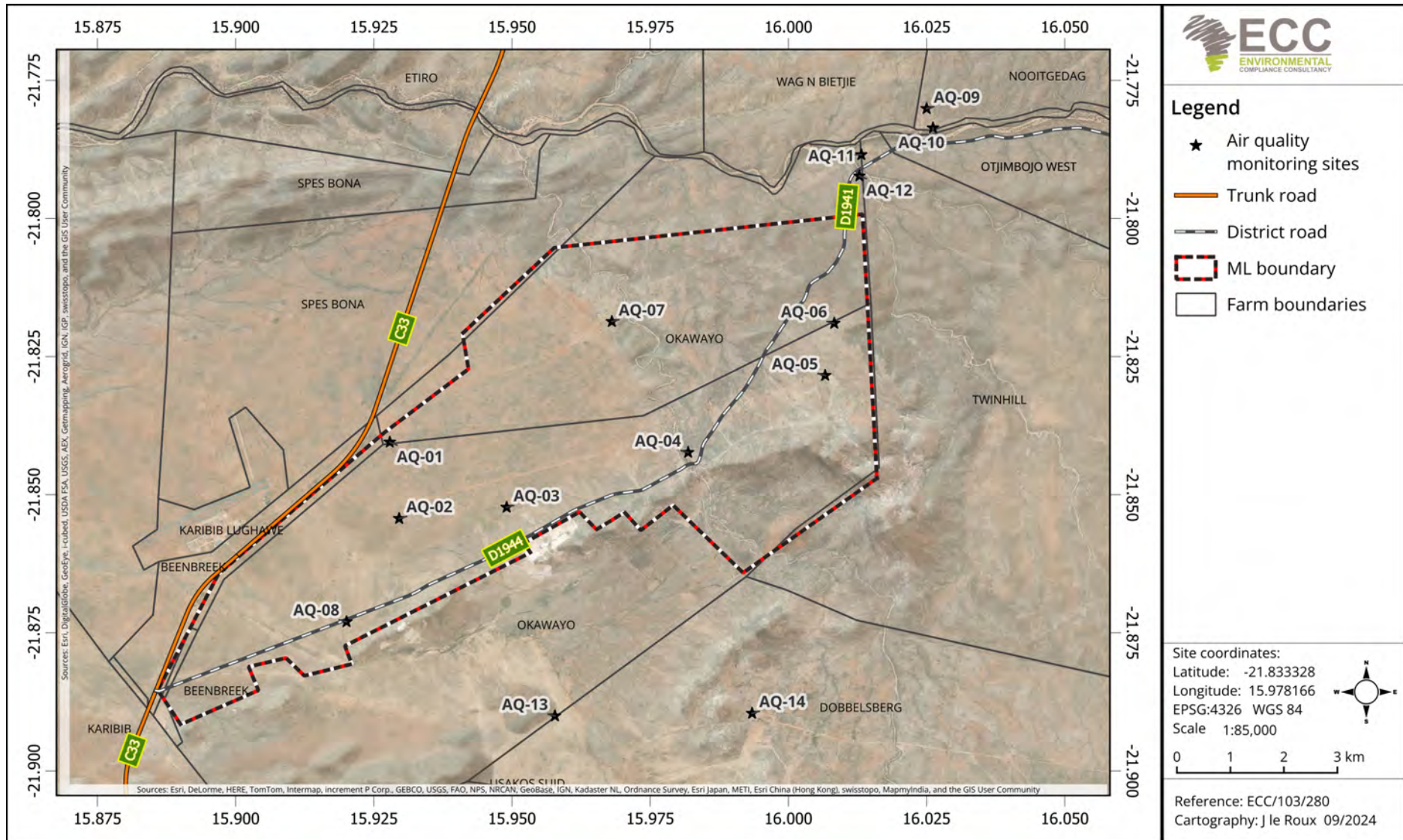


Figure 4 - Air quality fall out dust bucket monitoring locations at Twin Hills

The following additions to the monitoring network are recommended for mining operations:

- Passive sampling, which includes exposing and collecting SO₂, NO₂, VOCs and hydrogen fluoride (HF). These sites will coincide with the dust bucket locations, and it is recommended do be conducted three times a year.
- PM₁₀ and PM_{2.5} monitoring of particulate matter, a station should be set up on the northwestern boundary of the mine property, to measure pollutants moving from the mine to Karibib (e.g. mine offices, near the main gate).
- Greenhouse gas emissions (GHGs) to be determined and recorded and related inventory to be developed.

Due to a lack of standards in Namibia, the best practice standards for mining operations in Namibia to be complied with are provided in Appendix A. Air quality monitoring results should be reported monthly internally and be included in the bi-annual environmental performance report to MET.

4.3 NOISE MONITORING

Prolonged exposure to high noise levels can harm workers' well-being, leading to issues like hearing loss, sleep disruptions, and increased stress. Monitoring noise levels ensures worker safety and helps implement necessary mitigation measures. By regulating noise levels, mining operations can minimise their impact on the surrounding community. Additionally, noise can negatively affect wildlife and disrupt habitats. Monitoring helps identify environmental impacts and enables mitigation measures. Elevated noise levels can signal equipment problems, prompting timely maintenance to prevent more significant issues and downtime. It also serves as an indicator of process efficiency, leading to potential cost savings. Monitoring noise levels can identify safety hazards, such as equipment malfunctions. Keeping a record of noise levels aids in long-term planning, predicting impacts for future projects or expansions.

Ambient noise levels have been monitored in locations in proximity to nearby sensitive receptors to determine the noise levels in the area before the onset of mining operations. The locations of the noise monitoring stations are shown in Figure 5. According to the South African guideline for a mandatory code of practice for minimum standards on ground vibrations, noise, air-blast, and fly rock near-surface structures and communities are to be protected. Ground vibrations measured should be less than 75 mm/s peak particle velocity near electrical lines, 50mm/s near water wells and 25mm/s near houses or proper construction. Air blasts measured should be less than 134 dB. The equipment used for this monitoring must be calibrated on an annual basis as per ISO 14001:2015 standards and the operating manual conditions of the equipment. Locations and structures in and around the mine can also be monitored, however, the velocity and sound measurements will differ depending on the distance from blasting operations.

Noise and vibration monitoring results should be reported monthly internally and be included in the bi-annual environmental performance report to MET.

Ambient noise monitoring will be conducted in accordance with the guidelines outlined in Appendix A and Appendix F – Standard operating procedure - ambient noise monitoring.

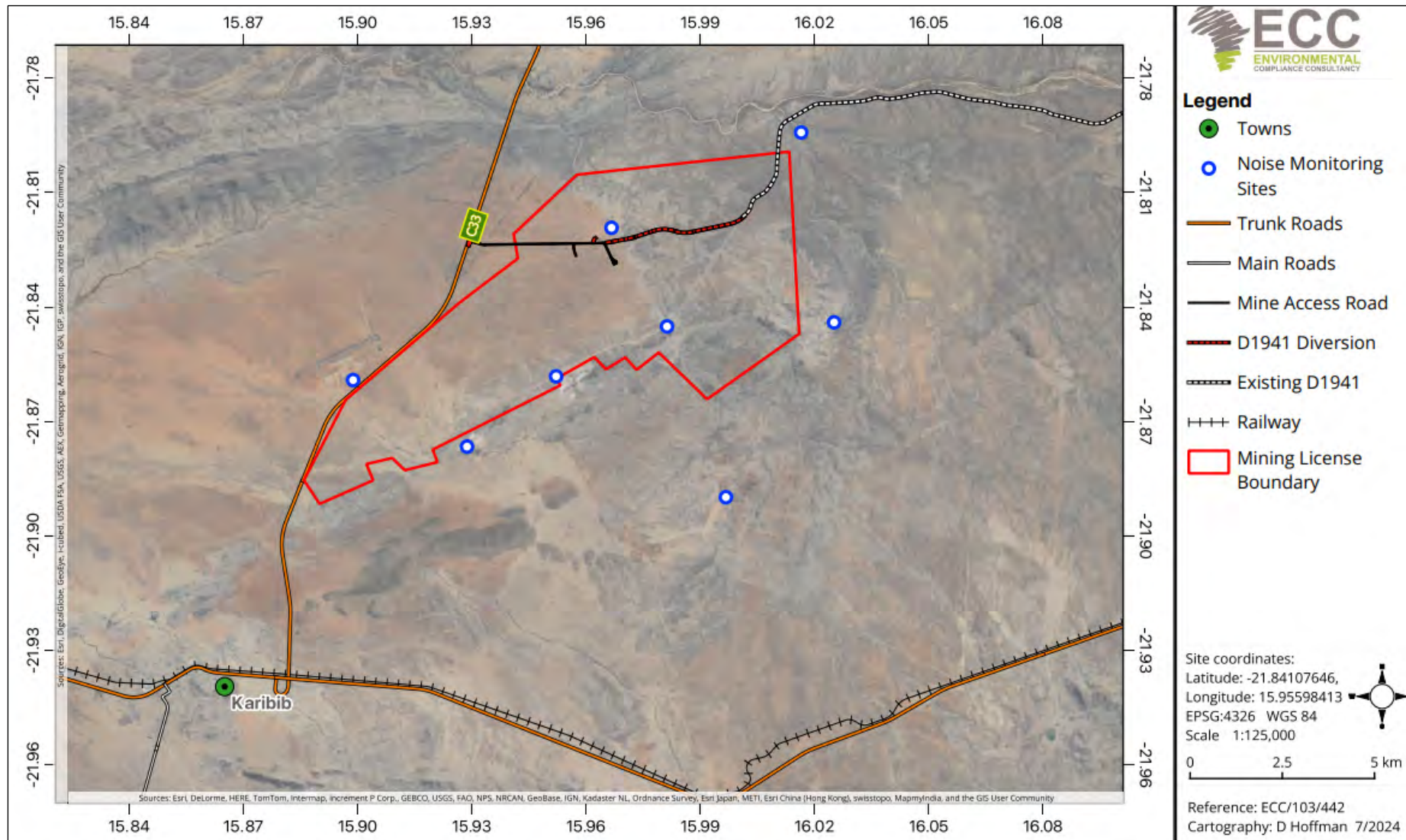


Figure 5 - Noise monitoring locations

4.4 BIODIVERSITY MONITORING

Biodiversity monitoring requirements are related to the various ESIA outcomes and studies conducted for the Project and will be amended as required when new information becomes available.

Some of the basic monitoring requirements are listed below:

- Monitor animal movement at strategic locations and points throughout the life of mine.
- Monitor the plant health of pre-selected vegetation and riparian trees.
- Implement strategies to contain animals seen as pests (e.g. rats, cockroaches, baboons).
- Monitor the use of drainage lines, tributaries and rivers by fauna.
- Record and investigate fauna injuries and mortalities.
- Implement strategies to reduce the fauna and avifauna that are attracted to ponds and tailing storage facilities.
- Monitor power line structures for avifauna activity, injuries and/or mortalities.
- Implement and maintain an on-site nursery for restoration and rehabilitation trials and purposes, in line with mine closure objectives.
- Identified protected trees to be visibly demarcated/marked and monitored.
- Where trees are removed for pit development or the river diversion, seeds and cuttings to be collected for nursery planting.
- Monitor invasive and alien invasive species and remove when required (e.g. *Prosopis sp*, *Leucaena leucocephala* (Wonderboom)).
- Investigation offsetting, as and when required.

Biodiversity monitoring results should be reported monthly internally and be included in the bi-annual environmental performance report to MET.

4.5 ARCHAEOLOGICAL MONITORING

Known archaeological sites on the ML shown in Figure 6 and Table 4 that have the potential to be damaged by operational activities should be monitored regularly. Where damages have been observed, the incident is to be recorded and reported on the environmental management system (EMS) database. Where a chance find has been found, the chance find procedure is to be implemented and where necessary a specialist is to be contacted to assess the site. However, an archaeological /heritage monitoring standard operating procedure needs to be developed to monitor known archaeological/heritage sites as shown in the map in Figure 6.

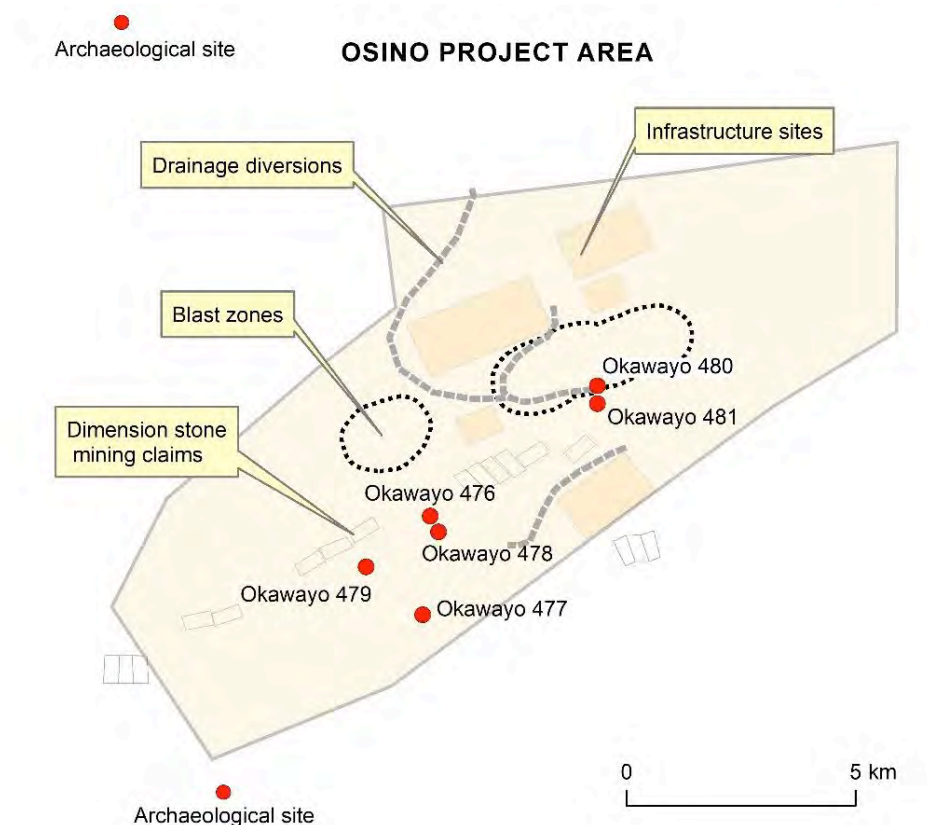


Figure 6 - The location of the Osino project, showing the known distribution of archaeological sites (red dots) in the adjacent area and regions. Also indicated are archaeological and historical sites located during the present survey, concerning existing and proposed mine works.

Table 4 - Identified heritage sites

Identification No.	GPS coordinates	Description	Image
Okawayo 476	-21.8691030 S, 15.9494110 E	Flat silty sand deposit on south side of marble ridge, about 300m wide with marble manuports anchorstones in arcuate arrangements	
Okawayo 477	-21.8873610 S, 15.9469160 E	Isolated quartzite schist outcrop with dispersed surface scatters of hydrothermal vein	

Identification No.	GPS coordinates	Description	Image
		quartz flaking debris.	
Okawayo 478	-21.8704570 S, 15.9496370 E	Three suspected grave cairns in a cluster approximately 5m in diameter	
Okawayo 479	-21.8780680 S, 15.9357920 E	Isolated marble quern stone	
Okawayo 480	-21.8425910 S, 15.9814370 E	Ruined colonial farm building of unknown date or purpose	 
Okawayo 481	-21.8451760 S, 15.9818120 E	Okawayo farmhouse	

Archaeological monitoring results should be reported regularly internally and be included in the bi-annual environmental performance report to MET. Reports to be provided to the National Heritage Council, as per issued heritage consent conditions.

4.6 SOIL MONITORING

Soil monitoring at the mine will focus on areas around the periphery and near rivers, excluding mining pits and infrastructure. Baseline assessments will be conducted prior to construction to establish natural soil conditions. Bi-annual monitoring during operations will assess potential contamination from mining activities, enabling early detection and mitigation of impacts. Post-closure monitoring will evaluate the effectiveness of rehabilitation efforts and ensure long-term environmental stability. This program will support regulatory compliance, protect surrounding ecosystems, and promote responsible land management throughout the mine's lifecycle. The soil sampling SOP is attached in Appendix I. However, a soil monitoring protocol is still to be developed prior to construction.

4.7 CONTINUAL IMPROVEMENT

The appointed EM of the Project is responsible for reviewing and updating this OESMP. Obsolete documents are to be promptly removed from circulation and relevant personnel made aware, thereby preventing unintended use.

As part of this review process, the monthly reports from each domain will be reviewed, identifying any trends or significant areas of concern, as well as measures implemented to manage/resolve the environment or social issues. Compliance and legislative changes shall be reviewed, and lessons learnt shall be captured. This OESMP shall be amended as required, and follow-up training, awareness or updates shall be provided in the domain(s) and across the site.

This OESMP shall be circulated to all domain-responsible positions and stakeholders as required. It will be made available to all those inducted on-site and presented in the environmental awareness training and site induction.

Ongoing aspect identification through the review of this OESMP and supporting management plans and SOPs shall ensure environmental impacts are avoided or minimised as low as reasonably practicable.

5 OVERARCHING ENVIRONMENTAL MANAGEMENT PRINCIPLES

5.1 INTRODUCTION

This section sets out the overarching environmental principles that are applicable across all domains and environmental schedules of the Project. Environmental schedules set out the site-specific environmental management requirements for the site. The environmental schedules have been separated per domain and include potential issues or impacts that the specific work area may create. It provides the management measures or mitigation measures in place to manage the impacts, it sets the targets and objectives for the domain, outlines the monitoring and reporting requirements and provides clear roles and responsibilities for those managing the domains.

In accordance with best practice, the following information is provided in each domain schedule: roles and activities in the domain, environmental aspects; objectives and targets for managing the impacts; management measures; environmental protection equipment; monitoring requirements; and reporting requirements.

5.2 BEST PRACTICE MANAGEMENT MEASURES

The overarching general best practice management measures that shall be complied with across sites are listed in Table 5. The domain manager for each domain is responsible for complying with the measures set out in Table 3 where applicable.

Table 5 – Best practice environmental management

Environmental aspect	Best practice requirement
Pollution prevention control	– Plant and equipment to be maintained and serviced regularly. – Refuelling at designated locations. – Spill kits available where the risk of loss of containment is identified. – Bunds to be at least 110% of the container. – Good housekeeping (no littering and adequate waste bins). – Ensure lights are downward facing to reduce light pollution at night.
Solid waste management	– Good housekeeping (no littering and adequate waste bins). – Designated waste collection areas around the site and one central disposal location. – Bins labelled and colour coded. – Waste to be separated and kept clean and tidy. – Waste bins to be emptied regularly.
Ground contamination	– Refuelling shall be undertaken in designated areas with spill kits available. – Hydrocarbon spills to be promptly cleaned and disposed of correctly .

Environmental aspect	Best practice requirement
	- Chemical management enforced on site. - Good housekeeping.
Soil management	- Topsoil is to be recovered in all cases of land clearing. - Topsoil to be stockpiled upstream of potential contamination areas.
Storage of fuels, oils, chemicals and other hazardous liquids	- Storage tanks shall be suitable and labelled for the liquid being stored. - Storage tanks to be stored in an appropriate area with adequate ventilation and not to be stored with any flammable materials. - Bunds to be at least 110% of the container. - Daily inspections of tanks.
Energy efficiency	- Plant and equipment to be maintained and serviced regularly. - Turn off plant and equipment when not in use. - Lights in and around the plant to be turned off during daylight hours.
Air quality and dust suppression	- Maintenance of internal roads, including dust suppression. - Turn off plant and equipment when not in use. - Plant and equipment to be maintained and serviced regularly.
Landscape and biodiversity	- Control the spread of weeds through weed and seed inspections before equipment is used on site. - Relocation of any protected plant species that need to be removed for land-clearing purposes. - Ensure lights are downward facing to reduce light pollution at night.
Noise and vibration	Work hours should be restricted to between dusk and dawn where mining involving the use of heavy equipment, power tools, and the movement of heavy vehicles is within 500 m of sensitive receptors.
Water	- Water use hierarchy – use recycled water as far as possible in the plant. - Minimise water discharge from the process into the environment. - Responsible water uses in the workplace (e.g. no hosepipes left running). - Identify and fix all water leaks timeously. - Track water consumption/use from all areas through installed flowmeters with the aim of a closed circuit.

5.3 ENVIRONMENTAL OBJECTIVES AND TARGETS

Environmental objectives and targets have been developed so that activities on the site can minimise potential impacts on the environment, as far as reasonably practicable. These objectives align with bio-physical environmental and biodiversity performance standards and apply to all domains on site. They also form a foundation for developing specific objectives for each domain:

- Zero pollution incidents;
- Sustainable resource use;
- Application of the waste management hierarchy;
- Sustainable use of water;
- Responsible disposal of waste;
- Minimise aerial discharges and dust being generated;
- Minimise noise and vibration levels; and
- Biodiversity protection and enhancement.

Procedures for monitoring site activities against these environmental objectives are detailed in supporting management plans under this OESMP.

5.4 DOCUMENT CONTROL AND RECORDS MANAGEMENT

Document control and records management set out requirements to ensure that the necessary documentation, records, data and information exist to support the functionality and effectiveness of the Project.

5.5 NON-ROUTINE OPERATIONS

For all new and non-routine activities that occur on-site, a specific risk assessment should be conducted. Risk assessments must capture environmental and social impacts and must be reported in the monthly report to the appointed EM, who will then ensure that the relevant documents are updated to reflect the new activity.

5.6 ACCIDENTS AND EMERGENCIES

All incidents, near misses, complaints or concerns from members of the local community or other stakeholders shall be reported in a timely and factual manner; accurately classified; effectively investigated; corrected and prevented from reoccurring through the implementation of additional or more effective controls. All incidents are to be reported in accordance with site incident reporting procedures.

An emergency is any abnormal event, which demands immediate attention, usually by adopting a team approach to line management within the affected part of the site or operation. It is any unplanned event, resulting in the temporary loss of management control at the site, but where functional resources can manage the response. The site's emergency response plan document manages the response concerning emergencies including environmental emergencies. Emergency response and management falls outside the scope of this OESMP and therefore is not further discussed within the OESMP. Emergency contact details are provided in Table 6.

Table 6 – Emergency contact details

Town	Ambulance	Police	Fire brigade	Onsite emergency contact
Karibib	+264 (64) 55 00 73/ +264 81 156 2665	+264 (64) 550 008	+264 81 422 1805	The environmental manager
Omaruru	+264 (64) 570 037	+264 (64) 570 010	+264 (64) 57 0028	

For large-scale spills (>200 Litres) and other significant environmental incidents, the fire services should be contacted as required and the office of the Ministry of Environment and Tourism (MET) informed of the incident (telephone +264 61 284 2111). All correspondence with MET should be undertaken by the general manager.

Irrespective of the conditions set out in the wastewater and effluent discharge licence, the Proponent shall be responsible for and should take immediate remedial action should there be any occurrence of surface or groundwater pollution, whether within or outside the ML area, related to the activities at the mine. In the case of any large-scale spills the Department of Water Affairs (DWA) at the office of the Ministry of Agriculture, Fisheries, Water and Land Reform (MAFWLR) (telephone +264 61 208 7333) should also be notified should a spill occur, that could potentially pollute a nearby surface water or groundwater body.

For the clean-up of smaller spills, the relevant material safety data sheet (MSDS) should be consulted to determine the appropriate clean-up procedure. Basic spill response training will be provided (and regularly tested) as part of the site environmental induction, spill response equipment, including relevant MSDS copies, will be provided in areas where potentially environmentally hazardous chemicals may be used.

The appointed environmental manager will be the primary contact person in the event of an environmental emergency.

The appointed environmental manager has the authority and independence to request reasonable steps to be taken to avoid or minimise unintended or adverse environmental impacts. If preventative steps appear to be ineffective the officer can cease the process immediately, should an adverse environmental impact be anticipated.

5.7 CHANGE MANAGEMENT

Any changes on site, such as mining and management of waste rock or mineral processing methods and tailings management, are subject to the change management process. The change management process ensures that identified modifications or newly introduced equipment, systems, processes, etc. are effectively assessed to determine their associated hazards and level of

risk to employees and the environment. The extent of the assessment shall be appropriate to the nature of the change and the level of potential risk.

Recommendations or improvements for the site as identified in the environmental improvements plan shall be reviewed and may be subject to the change management process. This OESMP shall be revised annually taking into consideration changes and associated risks and impacts.

6 DOMAIN 1 – SURFACE INFRASTRUCTURE

This domain includes tasks for miscellaneous surface infrastructure and activities, which are mapped below Figure 7 and set out in Table 7. The solar farm will be constructed, owned and operated by an independent power producer, with the sale of renewable energy taking place via a private power purchase agreement. The solar plant will be capable of generating between 25.5 – 27.1 MWac at peak production and is expected to offset approximately 37% of the mine's total energy. The renewable energy plant will be embedded within the mine's electrical network and will couple to the 11 kV mine consumer substation.

All surface infrastructure

- Access roads
- Service roads
- Power lines and associated sub-stations/infrastructure
- Pipelines
- Quarry
- Attenuation dam
- River diversion wall/dam
- Solar PV plant
- Airstrip

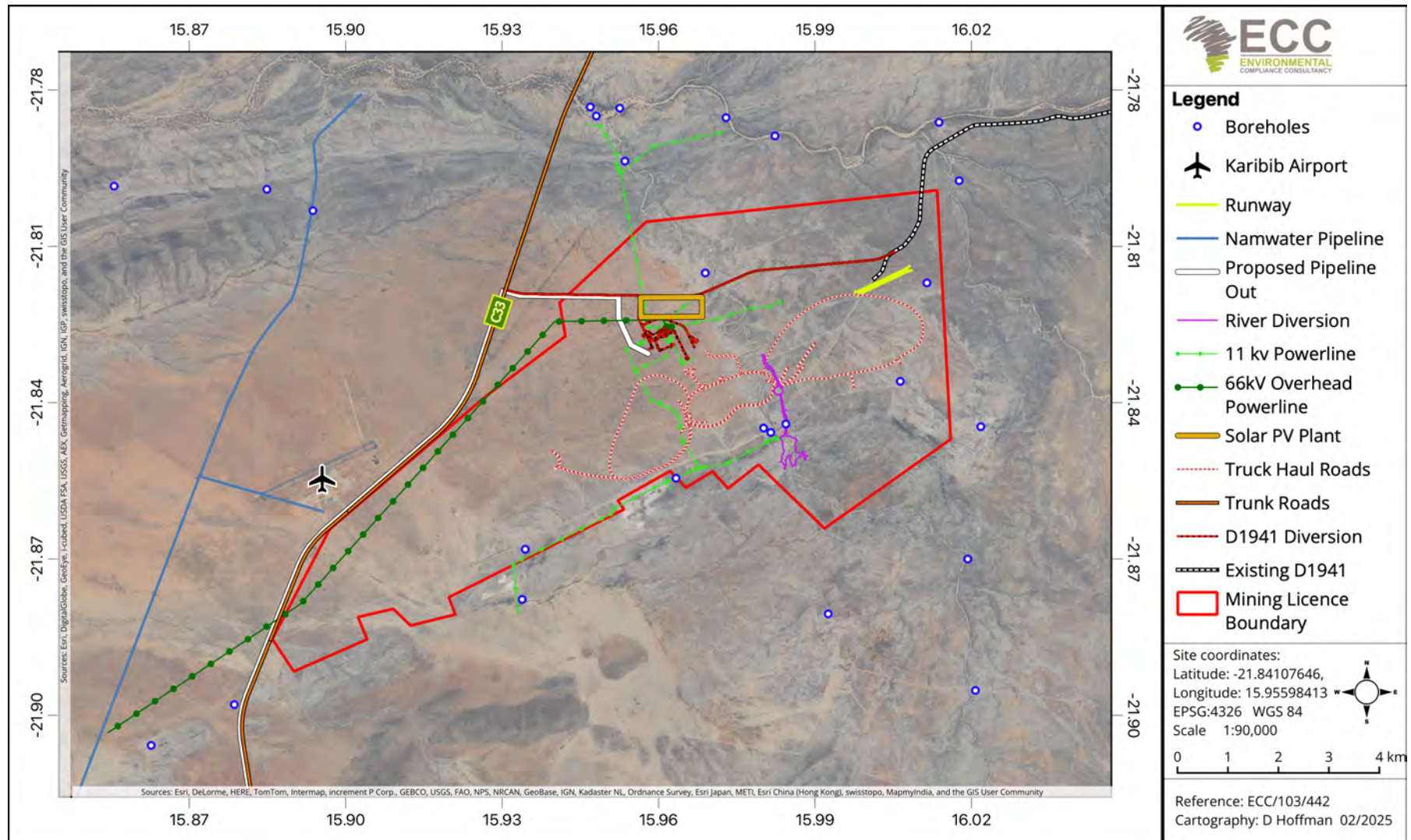


Figure 7 - Domain 1: Surface infrastructure with monitoring locations

Table 7 – Domain 1: Surface infrastructure domain schedule

Domain 1: Surface infrastructure		
Domain manager	Mine manager supported by the environmental manager	
Statutory requirements	Permit / Licence name	Environmental permit / licence condition
	Accessory works permit	A. Renewed every 5 years or when a material change occurs.
	B. River diversion licence – obtained from MAFWLR	B. As per permit conditions.
	C. A valid environmental clearance certificate for the powerline.	C. Compliance with the approved EMP and environmental clearance certificate permit conditions.
	D. Land clearing permit	D. Compliance with the permit conditions. The permit is to be renewed every three months (if required).
	E. Permit for the D1941 road diversion	E. Compliance with all permit conditions.
	F. NCCA consent for erecting obstacles within the Karibib Air Force Base aerodrome	F. Compliance with the conditions as set out in the consent.
	G. Generation licence	G. As per permit conditions

Domain 1: Surface infrastructure		
	H. Power purchase agreement	H. As per permit conditions
Potential issues or impacts	Water – Water leaks from unchecked pipelines, leaking valves and flowmeters – Groundwater contamination from hydrocarbon spills and leaks from hydraulic pipe bursts etc. – Manufacturing of solar panels involves the use of various chemicals. If not managed properly, or the disposal of waste materials could introduce pollutants into nearby water sources. – Operation of solar PV plants may involve drilling or disturbance of the ground, potentially affecting local groundwater quality. Air quality – Dust generated from open roads. Noise – Noise and nuisance factor to neighbouring communities from roads. – Impacts of noise on employees. – Noise from operations and blasting could affect Karibib Air Force Base air traffic operations. Biodiversity – Death of birds from power line collisions. – Wildlife injury from users of roads. – Vegetation damage from road users not using demarcated roads. Soil – Soil erosion. Visual – Incorrect use of lighting could confuse air traffic during take-off and landing. – Visual markers not present on powerlines and other tall infrastructure could impact the safety of air traffic during take-off and landing. Social – Potential traffic issues during operational phases. – Nuisance dust or noise impacting neighbours such as the Karibib Air Force Base. Mine infrastructure	

Domain 1: Surface infrastructure		
		– Placement of mining infrastructure could pose a risk to air traffic during emergency landings.
Targets		– Zero community complaints relating to dust or noise. – Dis-used roads and tracks are rehabilitated within 6 months of being deemed uneconomical or viable for future use. – Water loss prevented as much as possible. – No soil or water contamination or soil erosion.
To minimise the effects the above-mentioned impacts may have on the environment and community, the domain manager will ensure the following measures are implemented.		
Operational management measures	Biodiversity	– Suitable deterrent measures to be investigated with the assistance of a qualified high-voltage electrician where there are repeat collision or electrocution events with avifauna. – Stay wires to be appropriately marked. – If high voltage power line infrastructure is property of NamPower on the mine site, annual inductions are to be arranged and NamPower is to be informed of planned surveys. – Minimising individual vehicle engine, transmission, and body noise/vibration by implementing a preventative maintenance program. – Diversions to be constructed in road surfaces where water is prone to pool to be released into the natural environment, except in the case of contact (dirty)water, whereby this should either be allowed to evaporate or pumped for reuse where feasible. – Chemicals should be used judiciously if/when used for transmission line and other access route maintenance. – Remove individual trees that pose a threat to the infrastructure only (not clear fell routes). – No off-road driving. – Limited nocturnal driving, etc. – Speed humps and vehicle calming devices should be incorporated along the route. – Speed limits are enforced on-site to reduce dust and prevent collisions. – Existing tracks should always be used to prevent biodiversity loss. – Track discipline should be maintained. – Tarmac access routes would result in less dust pollution – Where the death of birds is due to power line collisions suitable preventative measures such as bird deterrents

Domain 1: Surface infrastructure		
		will be placed on overhead lines by suitably qualified high-voltage electrician. ○ BFDs (Bird Flight Diverters – e.g., coils, flappers, etc.) are installed along the most important portions of the transmission line to minimise/prevent mortalities. ○ Covering conductors with LDPE (Low-Density Polyethylene) pipe would further minimise risk to a variety of raptors on 11kV lines. ○ Dummy poles, placed adjacent to problem areas, could be used to attract nesting birds. – Grass, on the air strip runway shoulders, should be maintained and kept short so as not to act as a habitat and/or attract various birds.
	Air quality	– Open roads within the ML are managed using suitable dust suppression measures to prevent visible dust from leaving the site – Surface haul roads (to the WRDs and ROM SP) – use chemical suppressants such as dust-a-side to ensure a control efficiency of 90%, as indicated by literature to be achievable. The application frequency of the chemical suppressants would depend on the road conditions, which in turn is affected by traffic and climate. The road conditions should therefore be closely monitored to determine the frequency of the application to ensure minimal dust generation from the unpaved road surfaces.
	Water quality	– Maintain pipelines to ensure no water is lost through pipeline breaks and failures – Ensure a leak detection system is in place on the water abstraction pipeline – Ensure all flowmeters are operational through a daily/weekly check and if not, operational abstraction is stopped until the flowmeter is replaced. – Contractor management will be in place to ensure heavy delivery vehicles are kept in good mechanical condition to minimise noise associated with their operation and to prevent hydrocarbon spills – Chemicals should be used judiciously if/when used for transmission line and other access route maintenance

Domain 1: Surface infrastructure		
	Soil management	- No soils to be collected from the rivers; and - The river should not be used as a general access route
	Traffic	- Provide large visible road signage indicating the presence of heavy vehicle traffic at least 500 m before, on either side of the mine site access road. - The needs of pedestrians should be taken into consideration in the planning and design of the access to the proposed site, as well as the design of the road infrastructure. - Install street lighting at the C33 turnoff to the mine entrance as a safety measure, and - Install speed reduction signage (80km/hr) at least a kilometre away from the C33 turnoff to the mine entrance on either side of the turnoff. - Drivers to adhere to speed limits; - Drivers to drive to the conditions of the road; - Animals have right of way; - Incidents involving wildlife and staff, visitors and/or contractors to be immediately reported to the environmental department; and - All incidents to be investigated and recorded as per the incident management procedure.
	ML infrastructure requirements from the nearby Karibib Airbase	- Visual markers are markers displayed on an overhead wire, cable, etc. must be spherical and have a diameter of not less than 60 cm, - Visual markers must be placed on the highest infrastructure on the ML. - Spacing must be appropriate to the diameter of the marker used and the use of colour as per the specifications. - Markers must be of one colour only, which must contrast with the natural environmental background. - When installed, white and red or white and orange markers are to be displayed alternately. - If the infrastructure cannot have a marker installed, then a high-intensity obstacle light, Type B, must be provided on the supporting tower structure. - o These lights are intended for use during the day and night. When these lights are used, they must be located at three levels: top of the tower, lowest level of the catenary of the wires or cables and midway between the two levels.

Domain 1: Surface infrastructure					
		○ These lights must flash sequentially, first the middle, then the top light and last the bottom light. ○ Intervals between flashes must adhere to the required ratios. Middle and top light (1/13), top and bottom light (2/13) and bottom and middle lights (10/13). ○ These lights must be installed at the required angles (see Appendix A). ○ If high or medium-intensity light causes dazzling effects to the aircraft or aerodrome operator, then dual obstacle lighting may be preferred.			
	Quarry	- Use dust suppression systems on roads, stockpiles, and processing areas. - Maintain and service machinery to reduce excessive noise. - Restrict blasting operations to daytime hours and notify nearby communities in advance. - Implement controlled blasting techniques to minimize vibrations.			
Environmental pollution control measures (PCM)	Function and performance		Maintenance frequency		
	Used dust suppression methods daily during the dry season to wet ground to reduce dust		Monthly maintenance as per planned maintenance schedule		
Environmental monitoring	Environmental monitoring				
	Site code	Name	Monitoring purpose	Frequency	Threshold
	Air quality - depositional dust monitoring	As shown in the domain map	Monitoring dust impacts on sensitive receptors	Monthly	Industrial receptors 1200 mg/m ² /day /Residential receptors 600 mg/m ² /day
	Abstraction volumes - flowmeter readings	Site flow meters on abstraction points	Required to report the monthly abstraction	Monthly	As per licence conditions.

Domain 1: Surface infrastructure					
			volumes to DWA.		
	Groundwater levels	As shown in the domain map	Required to monitor aquifer groundwater levels	Monthly	Borehole specific
	Groundwater quality	As shown in the domain map	To monitor the change and trends in groundwater quality for the site	Quarterly	As per licence conditions
Environmental reporting	Domain manager to report to appointed EM (monthly) Any flowmeter leaks or breakages on a weekly basis.				
	Appointed EM to report to domain manager (monthly) - Complaints from neighbours to be directed to community relations manager in accordance with the grievance procedure. - Any complaints made from neighbours regarding noise from operations will be reported in the monthly report. The reports are to include a description of actions taken and response times. - Any biodiversity loss including bird collisions with powerlines and wildlife injury and/or fatalities.				
Environmental inspection	Daily	Weekly	Monthly	Other	
	NA	Check for water leaks or breakages of pipes.	Incidents or injury to biodiversity due to mining operations.	NA	
Supporting documents	- Environmental monitoring plan Appendix A - Domain sign-off Appendix J				

7 DOMAIN 2 – EXPLOSIVES MAGAZINE

This domain schedule includes infrastructure and activities within the operational control of the domain outlined, including the explosive magazine, detailed in Table 8 .

Table 8 - Domain 2: Explosives magazine

Domain 2: Explosives magazine		
Domain manager	Mine manager	
Statutory requirements	Permit / Permit name	Environmental permit conditions
	A. Blasting certificate B. Permit for storage & use of explosives, plus the burning of packaging	A. As per permit conditions. B. As per permit conditions.
Potential issues or impacts	Soil contamination – Leaks or spills of explosive materials (e.g., ammonium nitrate) can contaminate the soil. – Improper disposal of damaged or expired explosives can result in toxic residues. Surface and groundwater pollution – Runoff from the magazine area may carry explosive residues into nearby water bodies, contaminating surface and groundwater. – Nitrate compounds from explosives can lead to eutrophication in water bodies, harming aquatic ecosystems. Air quality – Accidental detonations or explosions can release harmful gases and particulate matter. – Dust emissions during the handling and transport of explosives. Noise and vibration – Regular handling of explosives can cause noise disturbances. – Detonations or accidental explosions can generate vibrations that affect nearby structures and residents.	

	Fire and explosion hazards – Risk of wildfires if explosions occur, impacting vegetation and animal life. – Thermal radiation and shockwaves from an explosion can damage ecosystems Community safety and health – Accidental explosions can pose severe safety risks to nearby communities. – Exposure to chemicals from explosives can affect human health.		
Targets	Zero uncontrolled releases No spills or leaks of explosive materials into soil or water. Noise and vibration control No complaints regarding noise and vibration from the community. Emergency preparedness Conduct at least one emergency drill annually involving local emergency services. Training Train 100% of employees involved with explosive handling on safety and environmental procedures.		
To minimise the effects of the above-mentioned impacts pose to the environment and community, the domain manager will ensure the following measures are implemented			
Operational management measures	<table><tr><td>Storage and handling</td><td> – The Blasting Chief Inspector from MMEI to conduct an initial inspection and from thereon annually, to ensure compliance with the Explosives Act, Act 26 of 1956, for the correct storage, handling and management of explosives; – Explosives to be stored at a safe predetermined distance from any emulsion; – Personnel handling explosives will be competent and trained to do so and know what to do in the case of accidental spillage – Monthly inspections with a 100% compliance rate on containment integrity. – Maintain appropriate ventilation to prevent the build-up of explosive gases. </td></tr></table>	Storage and handling	– The Blasting Chief Inspector from MMEI to conduct an initial inspection and from thereon annually, to ensure compliance with the Explosives Act, Act 26 of 1956, for the correct storage, handling and management of explosives; – Explosives to be stored at a safe predetermined distance from any emulsion; – Personnel handling explosives will be competent and trained to do so and know what to do in the case of accidental spillage – Monthly inspections with a 100% compliance rate on containment integrity. – Maintain appropriate ventilation to prevent the build-up of explosive gases.
Storage and handling	– The Blasting Chief Inspector from MMEI to conduct an initial inspection and from thereon annually, to ensure compliance with the Explosives Act, Act 26 of 1956, for the correct storage, handling and management of explosives; – Explosives to be stored at a safe predetermined distance from any emulsion; – Personnel handling explosives will be competent and trained to do so and know what to do in the case of accidental spillage – Monthly inspections with a 100% compliance rate on containment integrity. – Maintain appropriate ventilation to prevent the build-up of explosive gases.		

		– Maintain an inventory logbook recording all movements of explosives in and out of the magazine. – Ensure transport routes are pre-approved and avoid sensitive areas (e.g., water sources). – Implement no-smoking and fire-free zones during handling operations. – Ensure that adequate safety signage has been placed inside and outside the building.
	Training and awareness	– Train personnel in proper handling techniques and emergency procedures. – Train employees on spill response, fire safety, and first aid specific to explosive incidents. – Maintain training records and conduct refresher courses annually. – Encourage employee reporting of unsafe practices and environmental hazards through an anonymous system
	Access control and operations	– Restrict access to authorised, trained personnel only and escort visitors at all times, following a site-specific area induction. – The preparation of charges shall be carried out by or under the personal supervision of a blaster – No person shall be authorized to carry out blasting operations without a valid blasting certificate. – A blaster shall only use tools or appliances provided by the mine manager.
	Soil and groundwater protection	– Conduct regular soil and groundwater quality monitoring near the magazine site. – Keep spill kits readily available with absorbent materials suitable for explosive chemicals (e.g., ammonium nitrate).
	Waste management	– Segregate waste into hazardous (explosive residues, damaged explosives) and non-hazardous waste. – Any old or damaged explosives and explosives recovered in the workings from misfired holes or broken rock shall be kept in containers provided for the purpose by the mine manager at suitable places

		as per Section 10.13 (1) and (2), Part X explosives and blasting the Explosives Act No. 26 of 1956. – Engage licensed hazardous waste contractors for the safe disposal of expired explosives. – Implement a policy of minimising waste generation through improved inventory management to prevent overstocking
	Explosion and fire prevention	– Use non-sparking tools and equipment in the magazine area – Implement a 'No Hot Work' policy near the magazine (e.g., no welding or grinding). – Conduct routine inspections for any signs of deterioration or hazards within and around the magazine. – Develop and maintain a fire suppression system (e.g., dry powder extinguishers) suitable for explosives. – No cell phones or electronic devices to be used around explosives unless authorized by a competent blaster
	Emergency preparedness	– Develop and regularly update an Emergency Response Plan specific to the explosives magazine. – Conduct emergency drills (e.g., fire, explosion, evacuation) with all personnel at least annually. – Equip emergency response teams with protective gear and communication tools. – Coordinate emergency response plans with local emergency services and neighbouring communities.
	Community and stakeholder engagement	– Establish a grievance mechanism to allow communities to raise safety or environmental concerns. – Engage local suppliers and workforce where possible to enhance community support and economic benefit.
Environmental pollution control measures (PCM)	Function and performance	Maintenance frequency
	Conduct safety and environmental	Monthly

	inspections of the magazine.				
Environmental monitoring	Site code	Name	Monitoring purpose	Frequency	Threshold
	Noise monitoring	Noise and vibration	To monitor noise and vibration levels during blasting to ensure they don't exceed the standards	Bi-annual	45 dB daytime 35 dB nighttime
	Groundwater quality	As shown in the domain map	To monitor the change and trends in groundwater quality for the site	Quarterly	As per licence conditions
Environmental reporting	Domain manager to report to appointed environmental control officer (EM) (monthly) - The EM shall conduct routine daily, weekly and monthly inspections to determine the level of compliance with the OESMP. - The domain manager must complete the weekly compliance checklist. - Any complaints received from the community. - Any incidents reported during the month involving flora, fauna or employees. Appointed EM to report to the Domain Manager and Environmental Officer (monthly) - Report on the level of compliance with the requirements of the OESMP. - Provide written feedback on the environmental monitoring program. - Advise on action items to be implemented to address complaints received from the community.				
Environmental inspection/s	Daily	Weekly	Monthly	Other	
	NA	Noise monitoring	OESMP compliance audit	Biannual compliance audit and reporting to DEA (as required)	

				in the approved ESMP for the Project).
Supporting documents	– Environmental monitoring plan Appendix A – Domain sign-off Appendix J			

8 DOMAIN 3 – OPEN PIT AND MINING AREAS

The mining methods utilised will consist of conventional drilling and blasting, load and haul operations, with the initial mining area focusing on exposed ore zones located within the existing mining footprint. Four pits have been identified on ML 238, where mining activities are planned; namely the Clouds, Twin Hills Central, Bulge and Twin Hills West pits as shown in Figure 8 and set out in Table 9.

This domain schedule includes all infrastructure and activities within the operational control of the domain outlined and mapped below:

- Twin Hills Pit
- Clouds Pit
- Bulge Pit
- Western Pit
- Mine haul roads

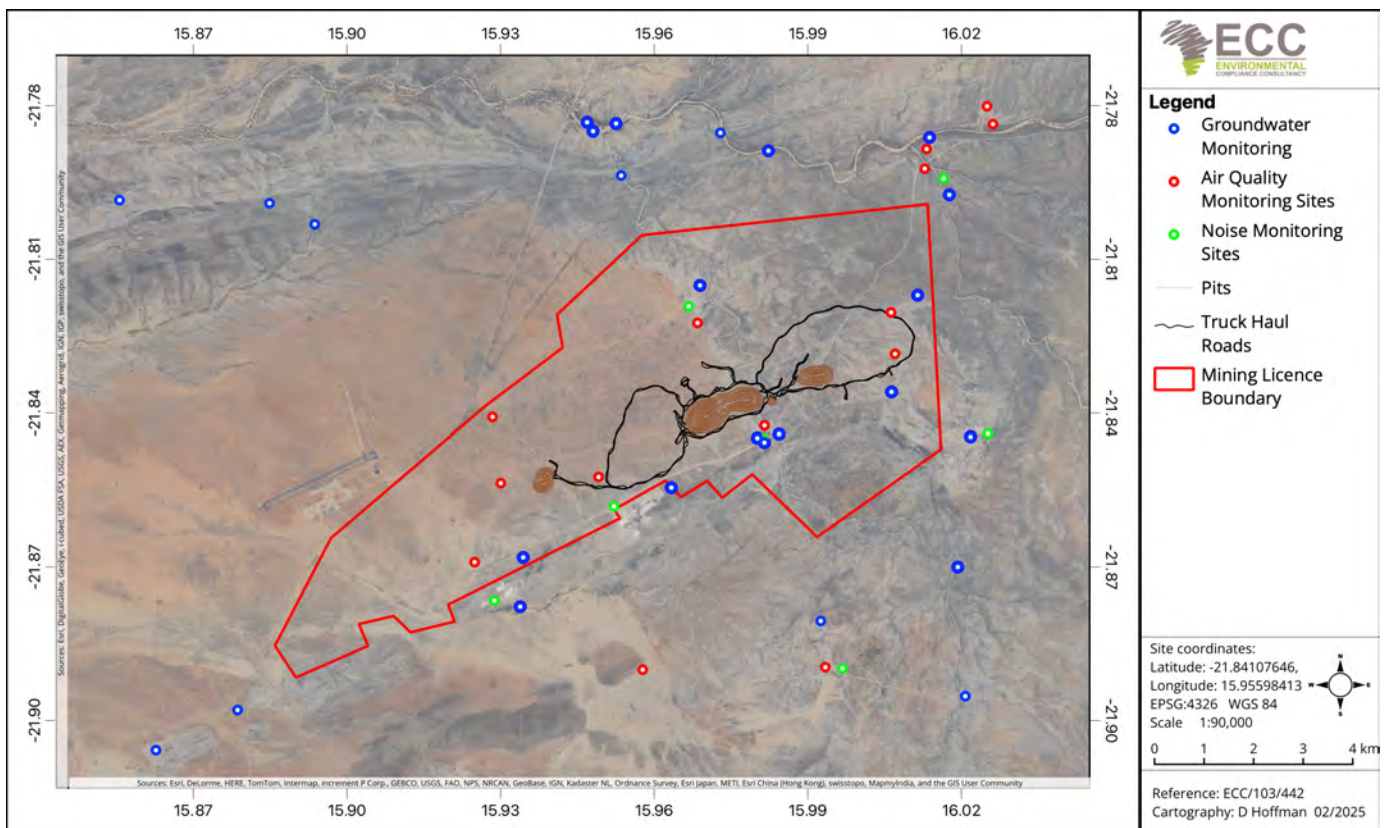


Figure 8 - Domain 3: Open pits and mining areas with monitoring locations

Table 9 – Domain 3: Open pit and mining areas domain schedule

Domain 3: Open pit and mining areas		
Domain manager	Mine manager	
Statutory requirements	Permit / licence name	Environmental permit/licence conditions
	A. Environmental clearance certificate (ECC) B. Mining licence 238 C. Water abstraction/dewatering permit - water abstraction licence for mining purposes should be obtained from Ministry of Agriculture, Fisheries, Water and Land Reform D. Accessory works permit	A. Compliance with this OESMP and clearance certificate conditions. B. A mine closure plan will be in place and the mining operation will work towards concurrent mine closure through progressive rehabilitation. Integrate progressive rehab into the operational mining plan C. Ensure the water abstraction volume is not exceeded D. Renewed every 5 years or when a material change occurs.
Potential issues or impacts	Water – Increase levels of nutrients and potential contamination of groundwater from excessive explosive use due to incorrect charging – Potential hydrocarbon contamination of surface water and groundwater from heavy equipment failures or spills, or incorrect servicing procedures – Decreased groundwater levels around the site that were impacted from mine dewatering boreholes may affect the groundwater levels in neighbouring boreholes – Impacts to the catchment area due to stormwater diversions incorrectly installed or water diverted away from the catchment – Contamination of an aquifer by the rebounding water table of potentially polluted water in the open pit workings after closure. – Potential for inrush into the open pit mine workings during development and operations – Over-abstraction for mining activities Air quality – Dust generated from blasting activities	

Domain 3: Open pit and mining areas	
	– Dust generated from drilling, hauling, loading and tipping of material – Dust from mining equipment during maintenance activities Biodiversity – Excessive land clearing outside of approved areas – Fatalities and injury to wildlife from heavy equipment using haul roads or falling into the pit – Disturbance and stress to wildlife from blasting vibration and noise Social – Noise to neighbours from mining activities including blasting and vibration – Nuisance dust to neighbours from mining activities – Selective mining and poor resource stewardship – Potential structural damage to hydrocensus borehole (OKP045) within the pit area due to ground vibrations – Noise from operations and blasting could affect Karibib Air Force Base air traffic operations – Nuisance dust or noise impacting neighbours such as the Karibib Air Force Base. Visual – Incorrect use of lighting could confuse air traffic during take-off and landing. – Visual markers not present on powerlines and other tall infrastructure could impact the safety of air traffic during take-off and landing. Mine infrastructure – Placement of mining infrastructure could pose a risk to air traffic during emergency landings.
Targets	– Zero complaints from neighbours relating to mining activities including blasting, dust or noise – Maintain abstraction of water at a rate as stipulated in the abstraction licence – Ensure that production is not affected by the accumulation of water in the open pits through the use of ad hoc dewatering of rainwater – Technical services manager to report to the mining department in advance of potentially acid-forming (PAF) material, so material can be handled correctly.

Domain 3: Open pit and mining areas		
To minimise the effects the above-mentioned impacts may have on the environment and community, the domain manager will ensure the following measures are implemented		
Operational management measures	– General	– Ensure equipment is made available for servicing to prevent equipment-associated impacts (spills, noise etc.) – Ensure the mining area complies with the mining plan and does not exceed the permitted area (i.e. prevent excessive clearing) – Stick to designated access routes and roads.
	– Training and awareness	– Environmental department to provide weekly information regarding environmental issues of concern; – Line management to discuss topics with teams; – Daily site inspections to ensure OEMP requirements are adhered to; – Incident reports covering the environment to be included, including lessons learned and corrective actions – Prevent domestic pets – e.g., cats and dogs – accompanying the workers to the site
	– Soils management	– Only designated surface roads, haul roads or paved areas will be utilised. ; – Boundary berms to be constructed, where required; Before any disturbance is allowed and push backs are to be cleared in the mining area, an environmental land clearance inspection to take place; – Topsoil to be removed, where feasible – Contaminated soils to be treated <i>in situ</i> and where this is not possible, soils to be removed to a bioremediation facility for further treatment.
	– Blasting	– Maintain a noise buffer zone with vegetation or acoustic barriers around the magazine and loading areas. – Monitor noise and vibration levels periodically and ensure compliance with permissible limits. – Notify nearby communities in advance of any scheduled large deliveries or movement of explosives. – Ensure emergency response procedures are in place in the event of an inrush. – Conduct a blast design that considers the actual blasting, and the ground vibration levels to be adhered to.

Domain 3: Open pit and mining areas		
		- Only apply electronic initiation systems to facilitate single-hole firing. - Design for smaller diameter blast holes that will use fewer explosives per blast hole. - Blast designs should always minimise air emissions and noise, and control fly rock and vibration. - Blasthole liners and emulsion explosives should be used in wet holes. - Blast areas should be restricted to authorised personnel only. - Remain within specified occupational health and safety noise limits. - Photographic survey of all structures up to 1500 m from the pit areas. - Avoid the destruction of graves and other historic features - Prevent affecting water sources - Avoid the destruction of important habitats - Always ensure correct charging and use of explosives in accordance with site procedures - Chemicals should be used judiciously if/when used for transmission line and other access route maintenance. - Implement erosion control, especially in erosion-prone areas or through/adjacent water sources and other important habitats - Ensure the most effective and efficient blast pattern and explosive are used to limit the noise and vibration impacts to neighbours and wildlife. - Air blasts and fly rock can be mitigated by increasing the stemming length ratio to blasthole diameter – either changing to a smaller diameter blasthole or increasing the actual stemming length and the use of aggregate stemming material of correct size ratio – 10% of the blasthole diameter. - Change to bench heights with smaller diameter blastholes can be considered. - Multiple charge decks in a blastholes initiated separately to reduce the charge mass per delay can be considered. - Only apply electronic initiation systems to facilitate single-hole firing.

Domain 3: Open pit and mining areas		
		– The minimum safe distance for blasting and evacuation is 356 m. – The final blast designs that may be used will determine the final decision on a safe distance to evacuate people and animals. This distance may be greater pending the final code of practice of the mine and the responsible blaster's decision on a safe distance. The blaster has a legal obligation concerning the safe distance and he needs to determine this distance. – Photographic records at third-party monitoring sites/sensitive receptors, when required. – Blast notices to be placed 24 hours (if possible) of the blast time and date at strategic locations, the Karibib Airforce Base and local neighbouring farmers to be informed of planned blasting times. A time and date to be agreed with the Karibib Airforce Base before proceeding with blast notices. – The blast zone to be evacuated 30 min before the blast with a siren and physical barriers. – Once the blast site is confirmed to be clear for personnel to return to the blast zone, the barriers to be removed. – During blasting activities, the radio to be silent except for the blaster. – Blasting only to occur during day light hours and preferably not on weekends, especially on Sundays and on public holidays. – Complaints register to maintained for blasting related concerns from the community. – Blasting not to take place during bad weather conditions.
	– Geotechnical	– The open pits will continue to be regularly inspected by geotechnical engineers and geologists; – Pore pressures will be monitored on an ongoing basis utilising a series of piezometers located around the pit; and – The need to install an active dewatering system to depressurize the pit walls will be considered as the pit deepens.

Domain 3: Open pit and mining areas		
	– Air quality	– In-pit haul roads – apply water (at an application rate >2 litre/m²/hour) to ensure a minimum control efficiency of 50%. Due to the changing nature of the in-pit roads, the application of chemical suppressants is not regarded as feasible. – Minimising dust from materials transfer points, excluding the dried concentrate, could be done using water sprays at the tip points. – In minimising windblown dust from stockpile areas, water sprays should be used to keep surface material moist. – Minimise dust from crushing and screening operation by spaying water on ore and keeping it wet. – Dust can be minimized between transfer points by wetting material (excluding dried concrete). – Minimise dust from stockpiles by water sprays and keeping surface material moist. – Ensure the roads are wet to prevent dust – Fall out dust, PM_{10/2.5} and passive gases monitoring campaigns to be conducted in and around the open pits; – Adherence to speed limits on unpaved roads and surfaces; – Diesel exhaust fumes/emissions from heavy machinery on site (excavators, front-end loaders and haul trucks) must be controlled and minimized by regular checks and servicing of vehicles; – Any mining vehicle found to be emitting excessive smoke or hydrocarbon spillage will be stopped from operating until found to be mechanically sound;
	– Water quality	– The mine design may allow for the groundwater level to be intersected. The mine will act as a sink of potentially contaminated water from various sources, including the rebounding water table in the open pit workings; – Pit dewatering water is either used for dust suppression or released to an ephemeral watercourse, in line with permit conditions – Ensure the dewatering plan is followed and monitoring and reporting on the dewatering plan is undertaken internally and to DWA;

Domain 3: Open pit and mining areas		
		- Pit water management system be put in place during the detailed design of the stormwater management plan - Sumps to collect stormwater that collects in the pits. - Ensure all operations are undertaken following the mine and site water management plans; - Ensure all water-bearing features are mapped and included in survey plans - Ensure known structures, and water-bearing features are mapped and surveyed and are incorporated into the mine plans and programmes; - Ensure monitoring systems are in place to detect potential inflows; - Bulk fuel facilities to be kept adjacent to the mine site at a location with sealed surfaces and a spill collection sump; - Refuelling of drills and equipment working at the pit wall faces will be done in a controlled manner following standard open pit refuelling procedures. - Fuel bowsers are to have drip trays for each refuelling event - Ensure equipment is made available for servicing to prevent equipment-associated impacts (spills) - Volumes of water abstracted are recorded and reported to DWA, in line with permit conditions; - Update of groundwater model every two years recommended. - Create an optimised network of monitoring boreholes around the pits - Water balance study for the pits to be conducted including the impact of evaporation with a sensitivity analysis to determine pit lake volumes post closure - Pit lake modelling to be used to determine the water quality of the pit lake after mine closure including a detailed geochemistry assessment of the pit wall rocks.

Domain 3: Open pit and mining areas		
	– Domestic effluent water management	– Only approved ablution facilities to be utilized; – If additional ablution facilities are required, the DWA is to be informed; – Ablution facilities must be easily accessible for employees, onsite security and contractors to use in remote working areas; – No employee or contractor on-site may relieve themselves in the surrounding environment and work area; – Ablution facilities to be cleaned and maintained on a regular basis; – Effluent water to be contained and spills to be cleaned up within 24 hours of the incident occurring; – Sewage facilities to be permitted with DWA; – Septic tanks to be operated in a manner that no hazardous, nuisances or pollution of surface or groundwater occurs; – Septic tanks to be pumped out regularly to avoid overflows; – No intractable or toxic waste should be allowed into the septic tanks; – No boreholes shall be allowed within 500m of the nearest septic tank; – If the use of the septic tank is discontinued the tank is to be filled up with soil or other suitable material or as the site engineer directs or permits; – No wastewater may be discharged into a river or water course; – Grey water to be separated from effluent water and be reused; and – Regular effluent water quality samples to be taken by the Environmental department.

Domain 3: Open pit and mining areas		
	– Waste management (non-mineralised)	– Litter generated during the shift must be collected and/or stored directly in the waste receptacles provided; – Waste must be separated at source as per the waste management procedure in the correct colour-coded bins and/or skips; – Waste receptacles can be supplied on request to the DEA; – Bins and skips must have lids that can seal and are scavenger/baboon-proof; – No waste may be burnt or buried on site, except for explosives packaging and waste, where there will be a dedicated burn pit located within the mining area; – No fires will be allowed on site, unless in approved designated areas allowed by the environmental manager; – Domestic waste is disposed of weekly at the non-mineralised waste site/waste handling facility; – Scrap metal is to be collected in dedicated bunded areas and shall be removed by a contractor; – Hazardous waste created including empty containers, hydraulic pipes, oil filters (etc.) should be removed from the site and disposed of at a suitable registered hazardous waste facility; and – A copy of the safe disposal certificate of these wastes is to be maintained as a record on file and provided to the DEA on request. – The pit areas and surrounds to be kept clean and maintained in a clean, orderly and presentable condition always; and – The various pits to be inspected monthly by the relevant supervisor line manager and/or manager
	– Noise	– Minimising individual vehicle engine, transmission, and body noise/vibration. This is achieved through the implementation of an equipment maintenance program. – All diesel-powered equipment and plant vehicles should be kept at a high level of maintenance. This should particularly include the regular inspection and, if necessary, replacement of intake and exhaust silencers. Any change in the noise emission characteristics of

Domain 3: Open pit and mining areas		
		equipment should serve as a trigger for withdrawing it for maintenance. – Minimising the need for trucks/equipment to reverse. This will reduce the frequency at which disturbing but necessary reverse warnings will occur. Alternatives to the traditional reverse ‘beeper’ alarm, such as a ‘self-adjusting’ or ‘smart’ alarm, could be considered. These alarms include a mechanism to detect the local noise level and automatically adjust the output of the alarm so that it is 5 to 10 dB above the noise level near the moving equipment. The promotional material for some smart alarms does state that the ability to adjust the level of the alarm is of advantage to those sites with low ambient noise levels. Also, when reversing, vehicles should travel in a direction away from NSRs if possible. – Where possible, other non-routine noisy activities such as decommissioning, start-up and maintenance should be limited to daytime hours. – Keep all roads well maintained and avoid steep inclines or declines to reduce acceleration/brake noise. – Ensure equipment is made available for servicing to prevent equipment-associated impacts (noise, etc.) – Avoid unnecessary equipment always idling – A noise complaints register must be kept
	– Biodiversity	– The 11kV transmission line must maintain a minimum clearance of 5 700 mm to accommodate giraffes. – BFDs (Bird Flight Diverters – e.g., coils, flappers, etc.) are to be installed along the most important portions of the transmission line to minimise/prevent avifauna collision/mortalities. – Conductors should be covered with LDPE (Low-Density Polyethylene) pipe to minimise risk to a variety of raptors on the 11kV powerline. – An electric fence should be installed around the substation to deter vandalism by baboons. – Protected tree species to be identified clearly and uprooting of trees to be avoided, where possible; – Seed and sample collection to be done for future rehabilitation purposes; – No firewood collection is allowed;

Domain 3: Open pit and mining areas		
		– Wherever large trees are encountered that are in the way, the road should be designed around them although limited trimming of branches with a chainsaw can be done; – Permits to be acquired from MET if protected trees are to be removed and/or relocated; – No hunting or poaching is allowed – No authorised removal of vegetation is allowed; – Baboons are pests and therefore require specific management, no feeding should be allowed; – Fauna and flora incidents to be reported and recorded as per the incident management procedure; – Leopard, cheetah and hyena occur in the area and can be discouraged by making loud noises, such as hooting; – Briefings on snakes and snake bite first aid treatments will be conducted; – Non-venomous snakes like mole snakes and egg eaters should be captured into a container and removed from site – The killing of venomous snakes is not encouraged (e.g. mamba, puff adder and zebra snakes); – Boa constrictors should under no circumstances be harmed or killed as they are protected by law; and – Contact the Environmental department to remove the snake should it be within the mining area – Any animal fatalities will be immediately reported to the Environmental department and an incident recorded, as per the incident management procedure.
	– Traffic	– Maintain road surfaces regularly to repair potholes and manage dust, wear and tear to equipment/vehicles etc.
	– Power generation	– All generators and diesel storage tanks must be contained within bund walls with a sufficient capacity (110%) contained volume; and – Records of diesel supplied to be maintained
Decommissioning and closure management measures	During closure and post-closure, the open exposed areas prone to wind erosion should be either covered with surface material and rehabilitated (vegetated or compacted) to ensure the surfaces form a hard crust and/or gladded with waste rock.	
	Function and performance	Maintenance frequency

Domain 3: Open pit and mining areas					
Environmental pollution control measures (PCM)	Used daily to wet roads and stockpiles to reduce dust		Monthly maintenance as per planned maintenance schedule		
Environmental monitoring	Site Code	Name	Monitoring purpose	Frequency	Threshold
	Noise – Ambient Noise	N 01	Residential	Monthly	45 dB daytime 35 dB nighttime
		N 02	Residential		
		N 03	Residential		
		N 04	Residential		
		N 05	Residential		
		N 06	Marble Quarry		
		N 07	Marble Quarry		
		N 08	Karibib Air Force Base		
	Air quality - depositional dust monitoring (dust fallout, PM ₁₀ and PM _{2.5})	As shown in the domain map	Monitoring dust impacts on sensitive receptors	Monthly	Industrial receptors 1200 mg/m ² /day Residential receptors 600 mg/m ² /day
	Groundwater levels	As shown in the domain map	Required to monitor aquifer groundwater levels	Monthly	NA
	Groundwater quality	As shown in the domain map	To monitor the change and trends in groundwater quality for the site	Quarterly	As per permit conditions
	Vibration monitoring	As require	To measure impact of mine blasting on community	Annually	NA
Environmental reporting	Domain manager to report to appointed EM (monthly) - Volume of waste removed to waste rock dump - Volume of ore mined - Topsoil volumes stripped - Any rehabilitated areas				

Domain 3: Open pit and mining areas				
	– Environmental aspects of concern Appointed EM to report to domain manager (monthly) – Appointed EM to report to the domain manager water quality results and levels monthly. – Appointed EM to interpret results and signatures relevant to the open pit i.e. nutrients, sulphides, hydrocarbons etc.) and report these to the domain manager against trigger values. – Report air quality results to the domain manager, – Volume of water abstracted from boreholes (flow meter readings) – Environmental aspects of concern			
Environmental inspection/s	Daily	Weekly	Monthly	Other
	NA	Domain manager to complete	To be inspected by the domain manager and appointed EM	Annual compliance audit
Supporting documents	– Environmental monitoring plan Appendix A – Domain sign-off Appendix J			

9 DOMAIN 4 – WASTE ROCK DUMP, LOW AND MEDIUM GRADE MINERAL STOCKPILES

The schedule includes all infrastructure and activities within the operational control of the domain outlined and mapped below:

- Hauling and dumping of mineral waste rock/material from the open pit;
- Landform sloping and design; and
- Bulldozing and levelling of waste rock.

The existing waste rock dumps will be used during mining operations as shown in Figure 12 and set out in Table 10. Mineral waste from the open pit mine is placed on the waste rock dump at a suitable angle, which allows for future rehabilitation.

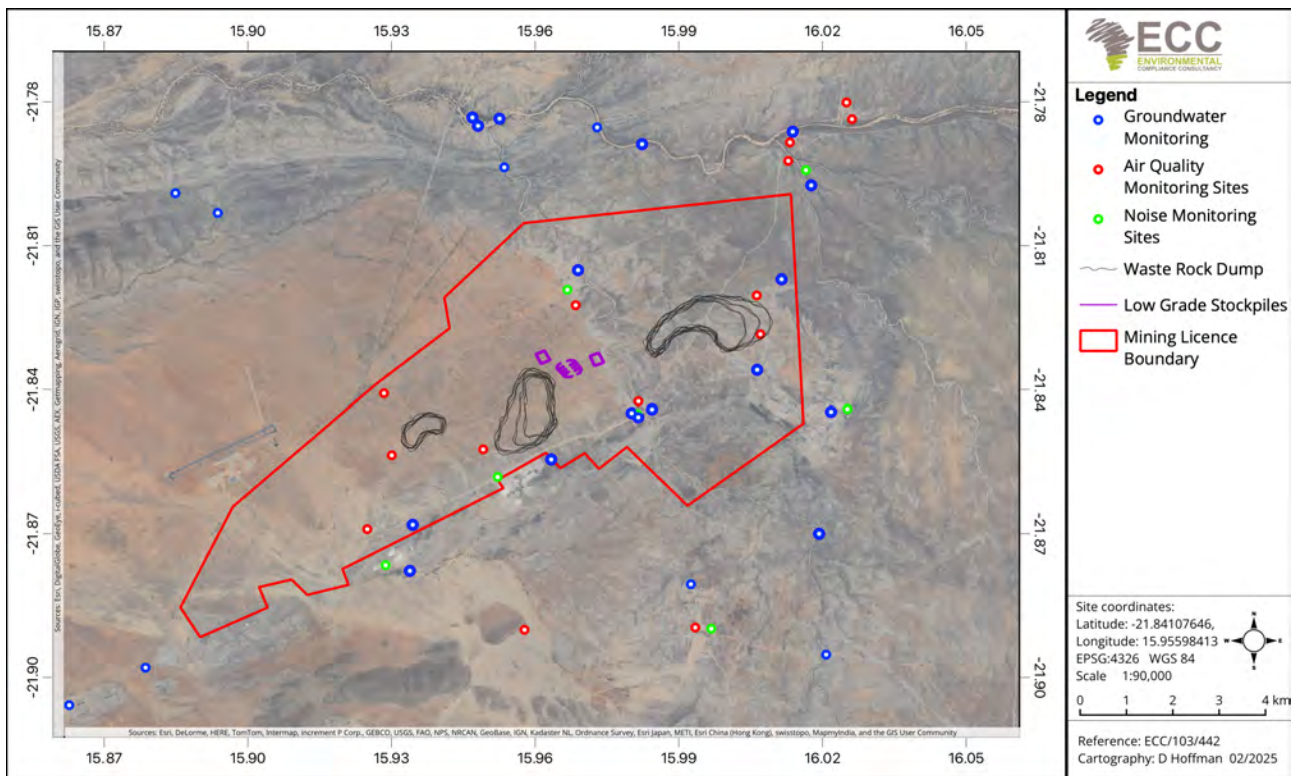


Figure 9 - Domain 4: Waste rock dump, low and medium grade stockpiles with monitoring locations

The mining department is responsible for:

- Shaping the landform to comply with the mine design and the site rehabilitation design requirements, and
- To ensure slopes are provided to the remediation specification as determined by the appointed EM and mine closure requirements.

The technical services team in conjunction with the mining department are responsible for managing potentially acid-forming (PAF) waste. A proactive approach to PAF identification should

be in place on the site. The mine surveyors are responsible for ensuring that all PAF cells are identified and included in the site plans for future use and consideration in the mine closure plan.

Table 10 – Domain 4: Waste rock dump, low and medium grade stockpiles

Domain 4: Waste rock dump, low and medium grade stockpiles		
Domain manager	Mine manager	
Statutory requirements	Permit / Permit name	Environmental permit conditions
	If an area needs to be cleared for a preplanned and approved WRD a land clearing permit from the Ministry of Agriculture, Fisheries, Water and Land Reform (MAFWLR) needs to be obtained. (only valid for 3 months therefore must be applied for in advance of clearing works)	<u>Land clearing permit – harvesting licence conditions as per Reg. 12:</u> – Trees harvested for sawn timber must have a diameter at breast height (130 cm above ground) of at least 4 0cm. – Trees must be felled no higher than 15 cm above ground. – All logs with a minimum length of 0.9 m and thin end diameter obtained from branch wood must be utilised for timber. – Waste from exploited trees must be left on the stumps or against the trunk of any other living tree. – Where two or more stems grow from the ground, no more than half of the stems may be felled. – No tree or part of trees may be felled to fell another tree of suitable size or process the felled tree. – All logs harvested for timber production must be marked by a Forest Officer before they are removed from the place of harvesting and the process where they occur. – The licence must be made available at any time to the Forest Officer for inspection purposes. – No live tree or logs suitable for fencing poles may be felled/cut for firewood.
Potential issues or impacts	Water	
	– Potential for groundwater and surface water contamination from acid rock drainage (ARD) Air Quality	

Domain 4: Waste rock dump, low and medium grade stockpiles		
	- Dust generated from the truck movements on dump, hauling, loading and dumping/stockpiling - Dust generated off unrehabilitated waste surfaces Biodiversity - Excessive clearing of vegetation for waste rock dump and stockpiles footprint - Barrier to wildlife movement - Loss of habitat Social - Nuisance noise and dust	
Targets	- Zero noise and dust complaints from the neighbouring community - 100% encapsulation of PAF material - No clearing for the waste rock dump or stockpiles footprint without land clearing permits where recovery of topsoil or substrate material for rehabilitation is possible (10 days' notices to be given) - Air quality monitoring reflects that the waste rock dump running surfaces must be kept moist with a 90% compliance commitment applied to the dust thresholds	
To minimise the effects the above-mentioned impacts may have on the environment and community, the domain manager will ensure the following measures are implemented.		
Operational management measures	- Air quality	- Ensure a proactive approach to weather monitoring and when high winds are predicted, ensure an operational water cart is deployed to the WRD/stockpiles to prevent excess dust from being generated off the running surface of the WRD/stockpiles. - Surface haul roads (to the WRDs and ROM stockpile– use chemical suppressants such as dust-a-side to ensure a control efficiency of 90%, as indicated by literature to be achievable. The application frequency of the chemical suppressants would depend on the road conditions which in turn is affected by traffic and climate. The road conditions should therefore be closely monitored to determine the frequency of the application to ensure minimal dust generation from the unpaved road surfaces. - Dust can be minimised between transfer points by wetting material (excluding dried concrete). - A fallout dust (TSP) monitoring network is established around the mine to monitor the effects of fallout dust from operations; - Fallout dust units to be exchanged every 28-32 days and results reported monthly to management;

Domain 4: Waste rock dump, low and medium grade stockpiles

		- Where results from the monitoring campaign warrant it, consider paving roads; - Dust masks to be issued for dusty areas in the mine; - Roads to be maintained regularly, weekly where these surfaces are very active and prone to corrugation.
	Hydrology, hydrogeology and water quality	- A robust monitoring system is in place to predict and prevent ARD from mineral waste. - In the event PAF is identified, the SOP for PAF is triggered and PAF material is encapsulated, surveyed, and signed off according to the procedure - All potential contact/dirty water from WRDs and ore stockpiles should be controlled and directed away from the natural environment, especially drainage lines, towards the respective pits; - Bunds should be erected around stockpiles, where feasible, to contain contact water run-off; - Groundwater monitoring of boreholes as per the borehole monitoring programme, this includes rest water levels and water quality; - Surface water monitoring when applicable, especially during and after rainfall events; - Regular reporting to management if concerns are noted from borehole monitoring or surface water monitoring results that could be related to acid rock drainage; - Where potential acid-forming material is identified, this rock should be treated and/or encapsulated and recorded as such - Waste facilities should be underlain by a thick unit of calcrete that should be subjected to kinetic column testing to determine the long-term neutralising potential of the in-situ subsurface. - Geochemical testing of suitable materials as sub-drainages for the WRD, for neutralisation potential. - Unaltered and unmineralised waste rock that is non-acid generating can be used to encapsulate the altered and mineralised PAG waste rocks. - Encapsulating or mix marble in with the waste rock from mined zones with higher mineralisation. - Consider seepage capture to prevent solute from entering the Okawayo baseflow in case of a contamination leak from the Cloud WRD into the unsaturated zone

Domain 4: Waste rock dump, low and medium grade stockpiles

	– Biodiversity	– Land clearing permits are applied for from the appointed EM in advance (10 days' notice). The domain manager should ensure that the land clearing permit process is triggered at the mine planning stage and, therefore must include environmental consideration for future works. This is important in areas where recovery of topsoil or substrate material for rehabilitation is possible – Avoid clearing areas not directly associated with the mining operations and infrastructure – Before preparation and stockpiling activities commence, the area must be assessed to determine if there are any species required to be relocated; – Thereafter, topsoil should be stripped (300 mm) and placed in the designated topsoil stockpile; – Berms to be constructed around the perimeter of the stockpile to prevent overtipping and disturbance outside of the approved footprint; – Any animal fatalities will be immediately reported to the DEA and an incident recorded, as per the incident management procedure; and – Wildlife of concern is to be reported to the Environmental department.
	– Noise	– All diesel-powered equipment (lighting plants, etc) and vehicles should be kept at a high level of maintenance. This should particularly include the regular inspection and, if necessary, replacement of intake and exhaust silencers. Any change in the noise emission characteristics of equipment should serve as a trigger for withdrawing it for maintenance. – Minimising individual vehicle engine, transmission, and body noise/vibration. This is achieved through the implementation of an equipment maintenance program. – Maintain road surfaces regularly to repair potholes etc. – Keep all roads well maintained and avoid steep inclines or declines to reduce acceleration/brake noise. – Avoid unnecessary equipment always idling. – Minimising the need for trucks/equipment to reverse. This will reduce the frequency at which disturbing but necessary reverse warnings will occur. Alternatives to the traditional reverse 'beeper' alarm such as a 'self-adjusting' or 'smart' alarm could be considered. These alarms include a mechanism to detect the local noise level and

Domain 4: Waste rock dump, low and medium grade stockpiles

		automatically adjust the output of the alarm so that it is 5 to 10 dB above the noise level near the moving equipment. The promotional material for some smart alarms does state that the ability to adjust the level of the alarm is of advantage to those sites 'with low ambient noise level'. Also, when reversing, vehicles should travel in a direction away from NSRs if possible. – Implement measures to reduce noise from the WRDs/stockpiles if monitoring/community feedback detects noise breaches (especially at night) from tipping or dumping activities. This might include a night-time tipping location that is below the highest level of the waste dump, so the dump can act as a noise barrier for neighbouring properties – Where possible, other non-routine noisy activities such as decommissioning, start-up and maintenance, should be limited to daytime hours. – Employees to be issued with ear protection, where required; – Pre-start checks to be conducted daily on vehicles and equipment; and – Equipment, vehicles and HME to be serviced and maintained regularly – A noise complaints register must be kept			
	– Geotechnical	– Erosion controls to be implemented on stockpiles, especially those that will remain for a long period; and – Regular inspections to be conducted on stockpiles.			
	– Non-mineralised waste	– No waste may be disposed of on the WRD's – Litter and any waste observed will be collected and disposed of at the correct waste cell or in a waste receptacle provided			
	– Visual	– Ensure the mining plan includes provisions for rehabilitation and that the mining schedule is adhered to prevent visual impacts from unrehabilitated waste dumps.			
	– Heritage	– Avoid the destruction of graves and other historic features			
Environmental monitoring	Site code	Name	Monitoring purpose	Frequency	Threshold

Domain 4: Waste rock dump, low and medium grade stockpiles					
	Acid rock drainage (ARD)	ARD monitoring	Visual monitoring around WRD/stockpiles after rains for ARD evidence	Within 24 – 48 hours rainfall	If field pH is <5 send the sample to the laboratory
	Water	Surface water sample to be taken at the toe of dump	Impacts of waste dump site on water quality in the area	Within 24 – 48 hours rainfall	Appendix A
		Surface water quality - Surface water sample to be taken	Impacts on surface water quality	Monthly or when present	
		Groundwater levels	Impacts on groundwater from abstraction	Monthly	
		Groundwater quality - monitoring boreholes	Impacts on groundwater quality	Quarterly	
	Depositional dust and PM ₁₀ and PM _{2.5}	As shown on the domain map	Impacts of dust from waste dumps on receptors	Monthly	PM ₁₀ is 75 µg/m ³ and PM _{2.5} is 37.5 µg/m ³ (daily averages)
Environmental reporting	Domain manager to report to appointed EM (monthly) - Volume of PAF material identified and survey locations, if applicable. - Any areas that required vegetation removal for the month ahead and volumes of topsoil stockpiled. - Areas rehabilitated. Appointed EM to report to the domain manager. - Notify the domain manager in advance when high winds are predicted (daily). - Notify the domain manager if monitoring detects contamination from WRD/stockpiles (monthly).				
	Daily	Weekly	Monthly	Other	

Domain 4: Waste rock dump, low and medium grade stockpiles				
Environmental inspection/s	On-shift geologist to inspect waste mined in the pit before dumping to confirm no evidence of PAF material	Domain manager to complete a weekly inspection of the domain	The domain manager and appointed EM to complete	Bi-annual compliance audit
Supporting documents	Environmental monitoring plan Appendix A Waste rock dump inspection form, Domain sign off Appendix J,			

10 DOMAIN 5 – ROM PAD AND CRUSHER

The Twin Hills Gold Project site's processing plant shown in Figure 10 – Domain 5: Processing plant housing ROM pad and crusher in Figure 10 and set out in Table 11 improved design to process up to 650 TPH of concentrate.

- ROM Pad
- Crusher

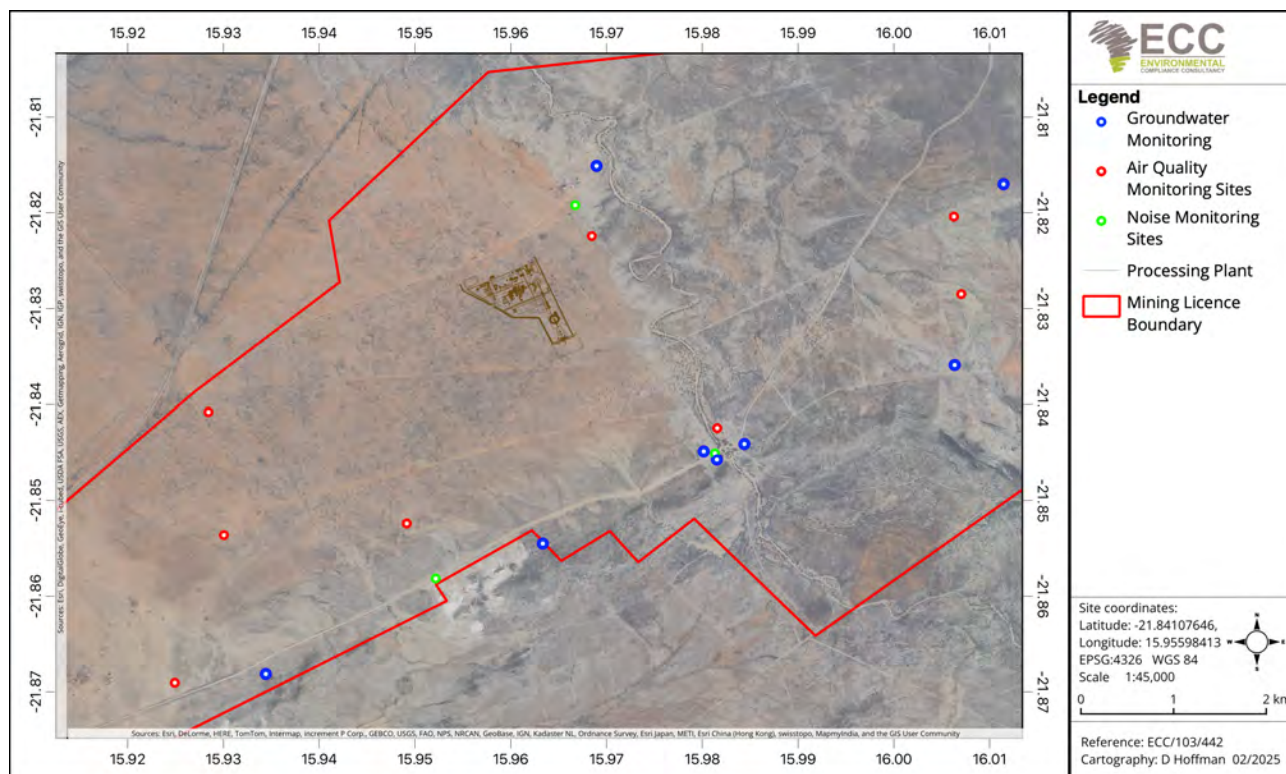


Figure 10 – Domain 5: Processing plant housing ROM pad and crusher

Table 11 - Domain 5: ROM Pad and crusher

Domain 5: ROM Pad and crusher		
Domain manager	Technical services manager	
Statutory requirements	Permit / Permit name	Environmental permit conditions
	Environmental clearance certificate	As per the permit conditions
Potential issues or impacts	Water – Contamination of soil and water from plant and equipment Biodiversity – Light pollution at night disorientating birds and bats Noise – Noise from operations Social – Nuisance dust or noise impacting neighbours such as the Karibib Air Force Base	

	Mine infrastructure - Placement of mining infrastructure could pose a risk to air traffic during emergency landings.	
Targets	- Zero spills from the plant - Zero noise or dust complaints from activities	
To minimise the effects the above-mentioned impacts may have on the environment and community, the domain manager will ensure the following measures are implemented.		
Operational management measures	- Training and awareness	- Area-specific induction is required before entering and working in the plant; - Visitors are to be accompanied and always supervised; - Environmental department to provide weekly information regarding environmental issues of concern; - Line management to discuss topics with teams; - Daily site inspections to ensure SHEQ requirements are adhered to; - SHEQ files to be maintained per shift - Staff involved in the transport, handling and storage of hazardous chemicals to be competent and trained therein and know how to handle accidental releases; and - Incident reports covering the environment to be included, including lessons learned and corrective actions
	- Air quality	- Surface haul roads (to the ROM stockpile– use chemical suppressants such as dust-a-side to ensure a control efficiency of 90%, as indicated by literature to be achievable. The application frequency of the chemical suppressants would depend on the road conditions which in turn is affected by traffic and climate. The road conditions should therefore be closely monitored to determine the frequency of the application to ensure minimal dust generation from the unpaved road surfaces - Main areas include the loading point at the crusher and tip point at the secondary crusher silo; and - Dust can also be minimised by placing windbreakers around the crushers. Alternatively hooding with cyclones, scrubbers or fabric filters could also be utilised. - Dust suppression to continue access utilising water or chemical binding agents; - Dust suppression controls are required during material handling; crushing and transfer points; - Emissions can be reduced by water sprays (50 – 70% control efficiency) or enclosure with bag filters (90% control efficiency) - Dust suppression controls are required during the operation of conveyors and at the ROM; and

		- Where possible this should be with water sprays, chemical binding agents or covered. - Fallout dust (TSP) and PM will continue to be monitored monthly; - Air quality controls to be implemented to reduce dust plume			
	- Noise	- Occupational noise monitoring campaigns to be conducted on an annual basis by the environmental department; - Employees to be issued with ear protection, where required; - Pre-start checks to be conducted daily on equipment; and - Equipment to be serviced and maintained regularly.			
Environmental pollution control measures (PCM)	Function and performance			Maintenance frequency	
	Used daily during the dry season to wet ground to reduce dust			Monthly maintenance as per planned maintenance schedule	
Environmental management	Environmental management				
	Site code	Name	Monitoring purpose	Frequency	Threshold
	Noise – Ambient Noise	N 01	Residential	Monthly	45 dB daytime 35 dB nighttime
		N 02	Residential		
		N 03	Residential		
		N 04	Residential		
		N 05	Residential		
		N 06	Marble Quarry		
		N 07	Marble Quarry		
		N 08	Karibib Air Force Base		
	Groundwater quality	As shown in the domain map	To monitor the change and trends in groundwater quality for the site	Quarterly	As per permit conditions
	Air quality - depositional dust monitoring	As shown in the domain map	Monitoring dust impacts on sensitive receptors	Monthly	Industrial receptors 1200 mg/m ² /day /Residential

					receptors 600 mg/m ² /day
Environmental reporting	Domain manager to report to appointed EM (monthly) - The EM shall conduct routine daily, weekly and monthly inspections to determine the level of compliance to the OESMP. - The domain manager must complete the weekly compliance checklist. - Any complaints received from the community. - Any incidents reported during the month involving employees. Appointed EM to report to the domain manager (monthly) - Complaints from neighbours to be directed to the community relations manager in accordance with the grievance procedure. - Any complaints made from neighbours regarding noise from operations will be reported in the monthly report. The reports are to include a description of actions taken and response times.				
Supporting documents	Environmental monitoring plan Appendix A Domain sign off Appendix J,				

11 DOMAIN 6 – PROCESS PLANT AND TAILINGS PIPELINE

The schedule includes all infrastructure and activities within the operational control of the domain outlined in Table 12 and mapped in Figure 11 - Domain 6: Processing plant with monitoring locations Figure 11. This domain includes the following:

- Processing plant
- Tailings pipeline

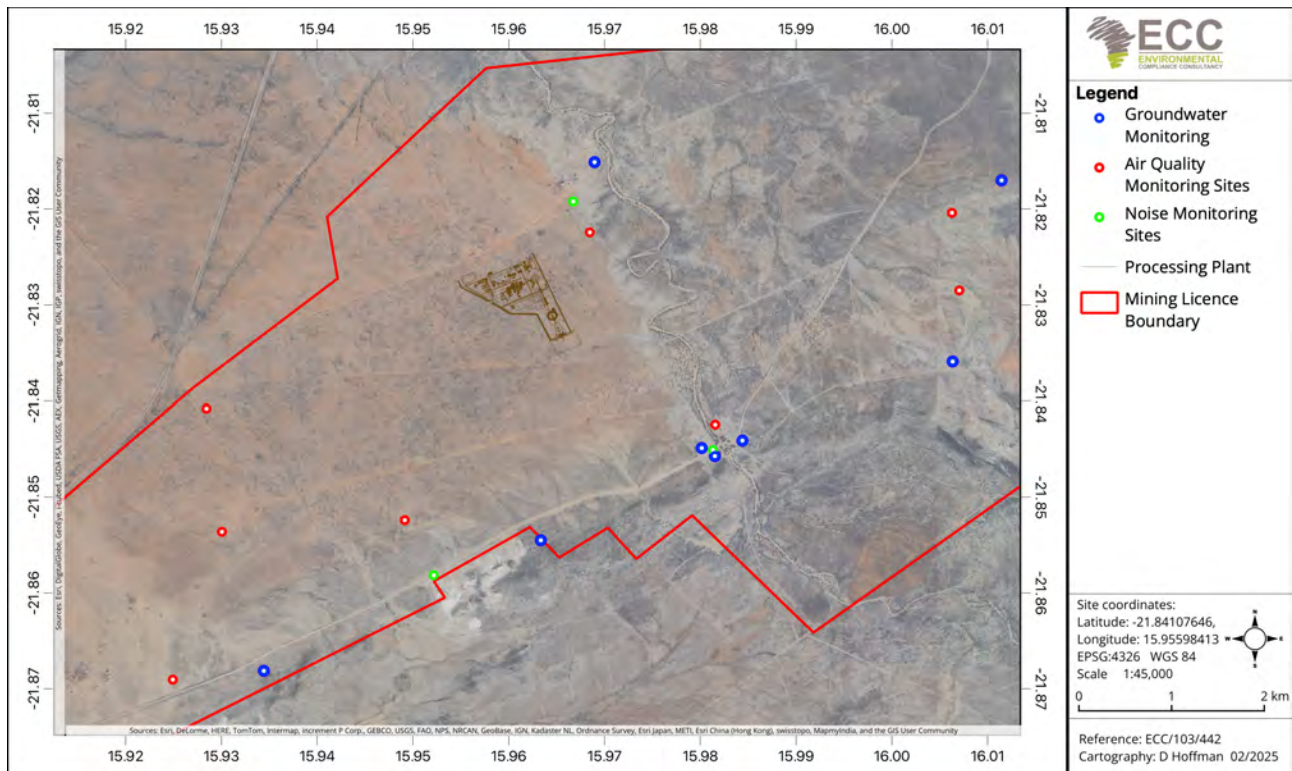


Figure 11 - Domain 6: Processing plant with monitoring locations

Table 12 – Domain 6: Process plant domain schedule

Domain 6: Process plant		
Domain manager	Processing manager	
Statutory requirements	Permit / Licence name	Environmental permit conditions
	A. Water abstraction licence B. National Aviation Authority Consent	A. As per licence conditions B. Ensure all equipment and infrastructure during operations whether temporary or permanent remain within the limits specified in the original application and ensure that they are marked and/or lighted as per NAMCARs 139.13
Potential issues or impacts	Water - Contamination of soil and water from plant and equipment - Contamination from spillage of process material from pipeline breaks/failures - Chemical spills from reagent mixing Air quality - Dust generated from process areas - Release of chemical gases from process operations Biodiversity - Fauna injury and/or deaths from chemical ingestion - Light pollution at night disorientating birds and bats - Further reduction in the water table could affect riparian (deep-rooted) tree survival during droughts Noise - Noise from operations could affect Karibib Air Force Base air traffic operations Visual - Incorrect use of lighting could confuse air traffic during take-off and landing. - Visual markers not present on powerlines and other tall infrastructure could impact the safety of air traffic during take-off and landing. Social - Noise from processing operations - Light pollution at night - Nuisance dust or noise impacting neighbours, such as the Karibib Air Force Base Processing infrastructure - Placement of infrastructure could pose a risk to air traffic during emergency landings.	
Targets	Zero process spills from the plant	

		- Zero noise or dust complaints from processing activities
To minimise the effects the above-mentioned impacts may have on the environment and community, the domain manager will ensure the following measures are implemented		
Operational management measures	Training and awareness	- Area-specific induction is required before entering and working in the plant; - Visitors are to be accompanied and always supervised; - Environmental department to provide weekly information regarding environmental issues of concern; - Line management to discuss topics with teams; - Daily site inspections to ensure SHEQ requirements are adhered to; - SHEQ files to be maintained per shift - Staff involved in the transport, handling and storage of hazardous chemicals to be competent and trained therein and know how to handle accidental releases; and - Incident reports covering the environment to be included, including lessons learned and corrective actions
	Hydrology, hydrogeology and water quality	- The water quality requirements of the plant will need to be defined as soon as possible, or the establishment of a water treatment plant could be considered; - Ensure wastewater produced from open pit mining activities is sent to the processing plant for reuse; - If the volume of water is too large and cannot be handled by the processing plant for reuse, ensure an adequately sized sedimentation pond is constructed for handling the wastewater from the open pit mining operations. Reuse of the water back into the open pit mine can be investigated during operations for water quality. - Ensure all process bunds are kept empty and free of rainwater or process material - Ensure correct chemical use and clean-up procedures are in place and followed; - Ensure chemical spills are cleaned up; - In the event of heavy rainfall prevent spills from entering the dewatering system that would be transferred to the surface. - Ensure the plant is maintained according to the planned maintenance schedule (PMS) - Ensure that pipes and flanges are contained within a bund - Ensure mixing of reagents is conducted according to site procedures and MSDS of the product

		- All lined ponds must have fauna egress mats at required intervals and not more than 50 m apart - Ensure water bodies that could contain chemicals that could poison fauna, or birds are either fitted with bird deterrents or water body is of such a quality that mass fatalities do not occur - By checking for cracks in the lining, vegetation growing in the pond or green areas around water facilities, you can find potential leaks. - Integrate the groundwater outcomes into the site water balance to assist with the efficient management of water resources on-site and identify and minimise water losses from the system; - Implement the monitoring, operational and maintenance requirements as outlined in the water management plan - Locate or drill alternative boreholes to replace the existing boreholes if yields cannot be improved or maintained or to supplement water supply during borehole maintenance periods - Maximise water reuse on-site through water recycling initiatives with a focus on the process plant water reuse through filtration systems throughout the processing plant - Continue to investigate and implement all possible areas of water saving and water use where possible. - Tailings discharge will be suspended during extreme flood events to minimize risk of tailings spillage if the pipeline breaches. - The Khan River sand river dams with groundwater recharge sites to increase the sustainability of groundwater abstraction on-site with excess seasonal water to be used directly in the plant process.
	Biodiversity	- Ponds should be fenced to prevent larger wildlife from gaining access; - Bird deterrent measures should be investigated to keep avifauna away from ponds; - Ponds should have freeboards to prevent overflows into the natural environment (1:100-year flood event), which can attract wildlife, causing pooling water or even erosion concerns; - Animals of concern that are active around the pond should be reported to the DEA; and

		- All animal-related injuries or mortalities should be reported immediately to the Environmental department and an incident report compiled.
	Noise	- Occupational noise monitoring campaigns to be conducted on an annual basis by the environmental department; - Employees to be issued with ear protection, where required; - Pre-start checks to be conducted daily on equipment; and - Equipment to be serviced and maintained regularly.
	Light	- All night lighting where possible should be directed downwards to reduce the impact on nocturnal bird movements; - Use lighting that is less likely to attract insects at night - Visual markers displayed on overhead wires, cables, etc. must be spherical and have a diameter of not less than 60 cm, - Spacing must be appropriate to the diameter of the marker used and the use of colour as per the NCAA NAMCATs specifications. - Markers must be of one colour only, which must contrast with the natural environmental background. - When installed, white and red or white and orange markers are to be displayed alternately. - If a marker cannot be installed, then a high-intensity obstacle light, Type B, must be provided on the supporting tower structure. - Lights erected on the processing plant and power lines intended for use during the day and night must be located at three levels: - o Top of the tower, the lowest level of the catenary of the wires or cables and midway between the two levels. - o These lights must flash sequentially, first the middle, then the top light and last the bottom light. - o Intervals between flashes must adhere to the required ratios. Middle and top light (1/13), top and bottom light (2/13) and bottom and middle lights (10/13). - o These lights must be installed at the required angles (see Appendix A).

		○ If high or medium-intensity light causes dazzling effects to the aircraft or aerodrome operator, then dual obstacle lighting may be preferred.
	Housekeeping	– Work areas to be maintained in a clean, orderly and presentable condition always; – Stacking and storage to prevent trip, slip and fall hazards and from animals nesting; – Housekeeping to be conducted throughout and at the end of each shift; – Items that can become easily windblown to be tied down/contained; and – Regular inspections by supervisor, line manager and/or manager
	Waste management (non-mineralised) hazardous and non-hazardous waste	– Litter generated during the shift must be collected in the waste receptacles provided; – Waste must be separated at source as per the waste management procedure in the correct colour-coded bins and/or skips; – Bins and skips must have lids that can seal and are scavenger/baboon-proof; – No waste may be burnt or buried on site – No fires will be allowed on site, unless in approved designated areas; – Domestic waste should be removed and stored at the non-mineralized waste site/waste handling site weekly; – Hazardous solid waste created, including empty containers, hydraulic pipes, oil filters (etc.), should be removed from the site and disposed of at a suitable registered hazardous waste facility; – A copy of the safe disposal certificate of all waste is to be maintained as a record on file and provided to the Environmental department on request; – Cyanide waste is burnt at the cyanide burning area in the processing plant under the Ministry of Health and Social Services (MoHSS) exemption permit; – Used oil to be stored either in a bunded area or in drip trays with sufficient capacity to contain a leak (110%) of volume; and – Small and redundant items that have been scrapped (e.g. wood, conveyor belt etc.) to be sold on tender to employees and Karibib residents, if deemed feasible.
	Chemical and process effluent handling,	– A chemical file is kept by each area supervisor and/or environmental manager.

	storage and management	- All chemicals used on-site, including their MSDS, are to be available in these files; - Copies of MSDSs to be provided to the Environmental department; - The nature of the industrial process shall not be changed to alter the quality of effluent or waste material originating from the operations without prior notification to the DWA; - Environmentally friendly chemical products should be considered over hazardous chemicals, where feasible; - Sufficient drip trays should be made available to capture leaks and prevent pollution; - Chemical containers either to be stored in impermeable bunds, drip trays or other secondary containment devices (110% of the largest volume); - If 1-ton bags are used for reagent storage, consider storing bags under a roof or cover to prevent sun damage and rainfall infiltration, which in turn can result in cross-contamination or spills; - Spill kits and spill absorbent treatment material to be present in the various processing work areas; - Incident reports to be compiled for each spill event as per the incident management procedure; - If surface and near surface-related discharges occur from the processing plant, the mine will monitor the water discharge quality; - Ensure that bunds are designed to contain 110% of the volume of the largest processing tank constructed therein and that pumps and pipes are maintained in good working order; - Major spillage incidents will be handled in accordance with the emergency response procedure; - Monthly groundwater monitoring of rest water levels and water quality for early pollution detection; - Report areas of concern with the groundwater network to management timely for corrective action to be taken, if required; - Daily inspections of work areas; - Monitor the effectiveness and stability of structures (e.g. concrete) and liners for leaks; and - Process effluent water to be reused in the process circuit, where feasible.
--	------------------------	---

	- Domestic effluent water management	- No employee or contractor on site may relieve themselves in the surrounding environment and work area; - Ablution facilities to be cleaned and maintained on a regular basis; - Effluent water to be contained and spills to be cleaned up within 24 hours of the incident occurring; - Sewage facilities to be permitted with DWA; - Septic tanks to be pumped out regularly to avoid overflows; - No chemicals, fat-grease-oil or other hydrocarbons shall be disposed of in any way that may result in the pollution of any watercourse; - Grey water to be separated from effluent water and be reused; and - Regular effluent water quality samples to be taken by the Environmental department.			
Environmental pollution control measures (PCM)	Function and performance			Maintenance frequency	
	Visual inspection to detect major spills or leaks from the Plant			Daily inspection	
Environmental monitoring	Site code	Name	Monitoring purpose	Frequency	Threshold
	Air quality - dust monitoring and PM ₁₀ and PM _{2.5}	As shown in the domain map	Monitoring dust impacts on sensitive receptors and employees	Passive sampling	PM ₁₀ is 75µg/m ³ and PM _{2.5} is 37.5 µg/m ³ a
	Dust fallout	As shown in the domain map	Monitoring fall out dust impacts on sensitive receptors and employees	Monthly	Industrial receptors 1200 mg/m ² /day /Residential receptors 600 mg/m ² /day
	Noise – ambient	As shown on the domain map	To determine the impacts of noise on the nearest sensitive	Monthly	45 dB daytime 35 dB nighttime

			receptor and employees		
	Groundwater levels	As shown in the domain map	Required to monitor aquifer groundwater levels	Monthly	Borehole specific
	Groundwater quality	As shown in the domain map	To monitor the change and trends in groundwater quality for the site	Quarterly	As per licence conditions
Environmental reporting	Domain manager to report to appointed EM (monthly) – Report monthly process water volumes to the appointed EM – Report wildlife concerns, injuries and/or fatalities straight away to the appointed EM Appointed ECO to report to the domain manager (monthly) – EM to report on water quality results monthly. – EM to interpret results and signatures relevant to the process plant, i.e. heavy metals, etc. and report these to the DM against trigger values.				
Environmental inspection/s	Daily	Weekly	Monthly	Other	
	Shift supervisor to complete the daily visual inspection	Domain manager to complete a weekly process plant and tailings pipeline line inspection	Domain manager and appointed EM to complete monthly inspection	Bi-annual compliance audit	
Supporting Documents	Environmental monitoring plan Appendix A Area inspection form, Domain sign off Appendix J, and Spill prevention and management.				

12 DOMAIN 7 – TAILINGS STORAGE FACILITY

The schedule includes all infrastructure and activities within the operational control of the domain outlined and mapped below detailed in Table 13:

- Tailings storage facility; and
- Landform sloping and design;

The detailed cover design for the TSF shown in Figure 12 will be developed and suitable material will be stockpiled for its rehabilitation.

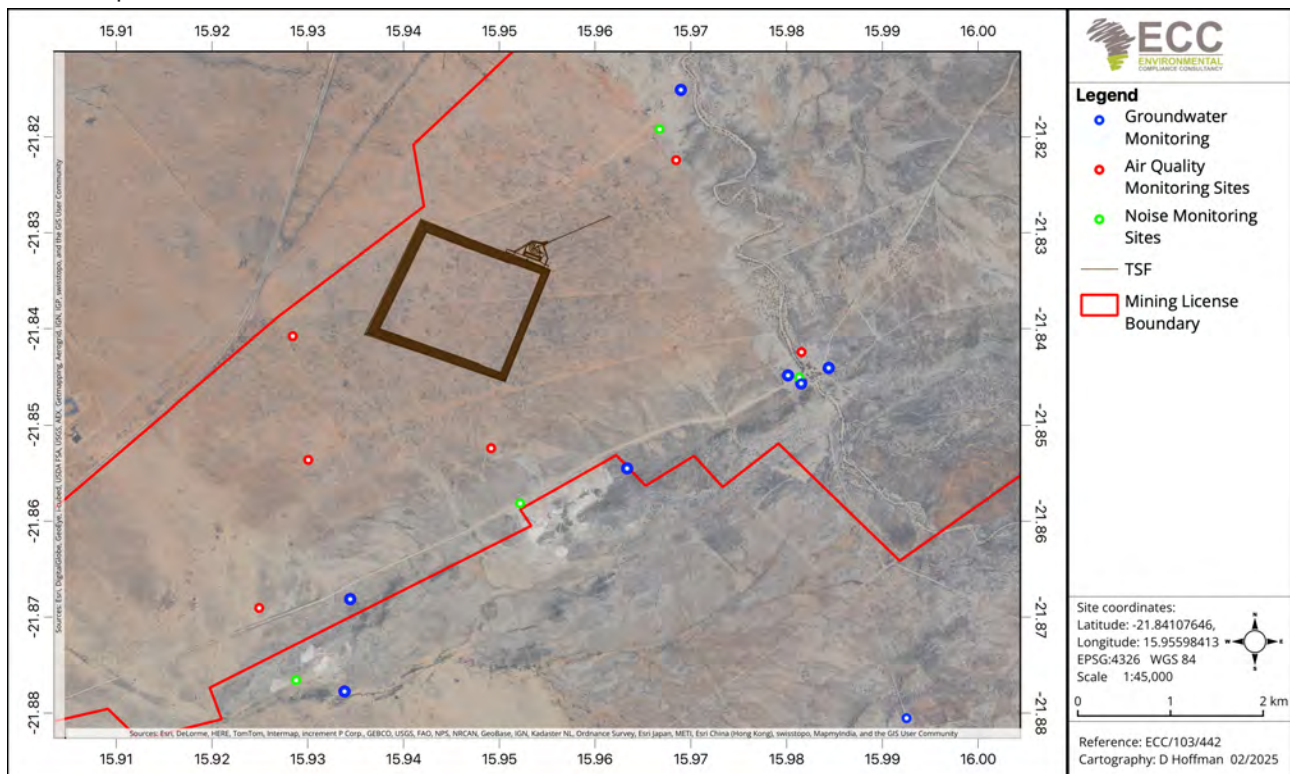


Figure 12 - Domain 7: Tailings storage facility and waste rock dumps with monitoring locations

Table 13 – Domain 7: Tailings storage facility domain schedule

Domain 7: Tailings storage facility		
Domain manager	Process manager	
Statutory requirements	Permit / licence name	Environmental permit conditions
	A. If a new TSF section needs to be established: Where practical and required obtain a land clearing permit from the Ministry of Agriculture, Fisheries, Water and Land Reform (MAFWLR)	A. <u>Land clearing permit – Harvesting licence conditions as per Reg. 12:</u> – Trees harvested for sawn timber must have a diameter at breast height (130 cm above ground) of at least 40 cm. – Trees must be felled no higher than 15 cm above ground.

Domain 7: Tailings storage facility		
	(Only valid for 3 months, therefore must be applied for in advance of clearing works) B. Wastewater and effluent discharge licence	- All logs with a minimum length of 0.9 m and a thin end diameter obtained from branch wood must be utilised for timber. - Waste from exploited trees must be left on the stump or against the trunk of any other living tree. - Where two or more stems grow from the ground, no more than half of the stems may be felled. - No tree or part of tree may be felled to fell another tree of suitable size or process the felled tree. - All logs harvested for timber production must be marked by a Forest Officer before they are removed from the place of harvesting and the process where they occur. - The licence must be made available at any time to the Forest Officer for inspection purposes. - No live tree or logs suitable for fencing poles may be felled/cut for firewood. B. As per permit conditions
Potential issues or impacts	Water - Potential for groundwater and surface water contamination from acid rock drainage (ARD) Air quality - Dust generated off TSF Biodiversity - Excessive clearing of vegetation for TSF - Loss of habitat Social - Nuisance noise and dust	
Targets	- Zero noise and dust complaints from the neighbouring community - 100% encapsulation of PAF material	

Domain 7: Tailings storage facility		
	No clearing for the TSF footprint without land clearing permits where recovery of topsoil or substrate material for rehabilitation is possible (10 days' notices to be given)	
To minimise the effects the above-mentioned impacts may have on the environment and community, the domain manager will ensure the following measures are implemented.		
Construction management measures	- Stormwater will need to be diverted around the starter walls to minimise the potential for erosion and sediment mobilisation, particularly in disturbed areas - No mineral, tailings storage facility, waste rock dump, or evaporation ponds to be situated on water-logged ground or ground liable to become waterlogged, unstable or cracked ground, where the slope could occasion a landslide. - The TSF must be enclosed with a 2.5 m high jackal-proof mesh fence. - The gates of the TSF shall always be kept locked when an operator does not attend to the facility. - Weatherproof warning notices indicating the TSF site is out of bounds shall be prominently displayed at the access roads on all sides of the enclosure.	
Operational management measures	Air quality	- Ensure a proactive approach to weather monitoring and when high winds are predicted and ensure that operational water spray trucks are deployed when such activities are undertaken. - Trucks carrying excavated loads should be covered, where possible. - Dust suppression to continue on access roads utilizing water or chemical binding agents; - A fallout dust (TSP) monitoring network is established around the TSF to monitor the effects of fallout dust from operations; - Fallout dust units to be exchanged every 28-32 days and results reported monthly to management; - Where results from the monitoring campaign warrant it, consider paving roads; - Dust masks to be issued for dusty areas around the TSF; - Roads to be maintained regularly, weekly, where these surfaces are very active and prone to corrugation;
	Hydrology, hydrogeology and water quality	- Dirty stormwater shall be contained in the tailings storage facility and used in the ore processing plant; - Prevent affecting water sources; - Cyanide levels in the decant pond will be maintained below 50 ppm WAD; - Cyanide concentrations in the decant pond will be monitored daily; - The existing onsite laboratory facilities will be upgraded to analyse for WAD cyanide;

Domain 7: Tailings storage facility		
		- A sample of decanting water will be submitted for a full suite of inorganic analysis monthly; - Tailings discharge will be suspended during extreme flood events to minimise the risk of tailings spillage if the pipeline breaches; - Decant water to be returned to the process and may not be released into the environment - Volumes of water held in the TSF are to be minimised; - Groundwater levels and water quality testing to be conducted regularly, as per the groundwater monitoring programme - Groundwater monitoring of boreholes as per the borehole monitoring programme, which includes rest water levels and water quality; - Surface water monitoring when applicable, especially during and after rainfall events; - Regular reporting to management if concerns are noted from borehole monitoring or surface water monitoring results that could be related to acid rock drainage; - Where potential acid-forming material is identified, this rock should be treated and/or encapsulated and recorded as such - The TSF will be lined, and subsurface drainage materials to neutralise any leakage or breach from the tailings will be investigated - Geochemical testing of suitable materials as sub-drainages for the TSF, for neutralisation potential. - ~77% of the water contained in the tailings materials will be recycled in the plant before tailings materials are disposed of at the TSF. - Stormwater to be diverted around the starter walls to minimise erosion and sediment mobilization; - Erosion protection measures may be required on stream diversion channels
	- Biodiversity	- The domain manager should ensure that the land clearing permit is renewed before the construction of the next stage of the TSF, this is important in areas where recovery of topsoil or substrate material for rehabilitation is possible; - Any animal fatalities will be immediately reported to the DEA and an incident recorded, as per the incident management procedure;

Domain 7: Tailings storage facility		
		– Wildlife of concern to be reported to the Environmental department. – Bird deterrent measures to be investigated and implemented, as required.
	– Noise	– All diesel-powered equipment and plant vehicles should be kept at a high level of maintenance. This should particularly include the regular inspection and, if necessary, replacement of intake and exhaust silencers. Any change in the noise emission characteristics of equipment should serve as a trigger for withdrawing it for maintenance. – Minimising individual vehicle engine, transmission, and body noise/vibration. This is achieved through the implementation of an equipment maintenance program. – Maintain road surfaces regularly to repair potholes etc. – Keep all roads well maintained and avoid steep inclines or declines to reduce acceleration/brake noise. – Avoid unnecessary equipment always idling. – Minimising the need for trucks/equipment to reverse. This will reduce the frequency at which disturbing but necessary reverse warnings will occur. Alternatives to the traditional reverse 'beeper' alarm such as a 'self-adjusting' or 'smart' alarm could be considered. These alarms include a mechanism to detect the local noise level and automatically adjust the output of the alarm so that it is 5 to 10 dB above the noise level near the moving equipment. The promotional material for some smart alarms does state that the ability to adjust the level of the alarm is of advantage to those sites 'with low ambient noise level'. Also, when reversing, vehicles should travel in a direction away from NSRs if possible. – Where possible, other non-routine noisy activities such as construction, decommissioning, start-up and maintenance, should be limited to daytime hours. – Employees to be issued with ear protection, where required; – Pre-start checks to be conducted daily on vehicles and equipment; – Equipment and vehicles to be serviced and maintained regularly – A noise complaints register must be kept

Domain 7: Tailings storage facility					
	– Heritage	– Avoid the destruction of graves and other historic features – Where a chance find has been found, the chance find procedure is to be implemented and where necessary a specialist is to be contacted to assess the site			
	– Resource use	– These measures will include maximising the volume of water returned from the TSF for use in the plant; and – Water balance to be developed and implemented.			
Environmental monitoring	Water quality				
	Site code	Name	Monitoring purpose	Frequency	Threshold
	TSF toe	Potential seepage monitoring	Visual monitoring around TSF after rains – any signs of ARD	Within 24-48 hours of rainfall	@ field pH <5 sample to the laboratory
	Water	Surface and groundwater sampling	Impacts of TSF on water quality in the area	Within 24 – 48 hours of rainfall	As per the monitoring plan
			Impacts on surface quality	As per the monitoring plan	
			Impacts on groundwater quality		
	Air quality				
	Site code	Name	Monitoring purpose	Frequency	Threshold
	Depositional dust	New sites to be installed	Impacts of dust from tailings on workers/farms	Monthly	Industrial receptors 1200 mg/m ² /day /Residential receptors 600 mg/m ² /day
	Environmental reporting	Domain manager to report to appointed EM (monthly) – Volume of tailings deposited into TSF monthly. – Record and incidents of high CN results and report to management. – High sulphate seepages from TSF. – Any areas that required vegetation removal for the month ahead.			
Appointed EM to report to domain manager – Notify domain manager in advance when high winds are predicated (daily).					

Domain 7: Tailings storage facility				
	– Notify the domain manager if contamination from TSF is detected (as per OEMP).			
Environmental inspection/s	Daily Daily informal inspection of TSF	Weekly Domain manager to complete a weekly inspection of the domain	Monthly The domain manager and appointed EM to complete	Other Annual or bi-annual compliance audit incorporated into the TSF engineer on records report.
Supporting documents	Environmental monitoring plan Appendix A TSF inspection form, Domain sign off Appendix J, Land clearing permit Appendix I.			

13 DOMAIN 8 – BIOREMEDIATION SITE

The bioremediation site is made up of four (4) cells. The domain consists of this facility and its association infrastructure detailed in Table 14. A SOP will need to be developed for the site-specific management of this facility.

Table 14 - Domain 8: Bioremediation site

Domain 8: Bioremediation site		
Domain manager	Engineering manager	
Statutory requirements	Permit / Permit name	Environmental permit conditions
	A. Land clearing permit from the Ministry of Environment and Tourism) (only valid for 3 months). B. Accessory work permit	A. Compliance with the permit conditions, and the permit shall be renewed every three months. B. Renewed every 5 years or when material changes occur.
Potential issues or impacts	Soil - Residual contamination could lead to soil toxicity, affecting future land use and plant growth. - Microbial activity may alter the pH, organic matter, and nutrient balance of the soil. - Phytoremediation (plant-based cleanup) may cause plants to absorb heavy metals, making them toxic. Water pollution & groundwater contamination - Leachate or runoff from a bioremediation site can carry contaminants into surface water or groundwater. Nuisance odours & community complaints - Bioremediation of organic contaminants (e.g., oil spills, sewage sludge) may produce strong odours.	
Targets	Soil remediation and land rehabilitation	

– Achieve $\geq 90\%$ contaminant degradation in treated soil within 12-24 months. – Restore at least 80% of remediated land with native vegetation within 6 months post-treatment. Water quality protection – Prevent 100% of leachate and runoff from contaminating groundwater and surface water. Air quality and odour control – Reduce volatile organic compound (VOC) emissions by at least 85% using aeration and biofilters. – Achieve zero odour complaints. Waste and sludge management – Ensure 100% of bioremediation by-products (e.g., contaminated plants, bio sludge) are disposed of safely or repurposed. Biodiversity and ecosystem protection – Reintroduce native plant species in remediated areas.		
To minimise the effects of the above-mentioned impacts pose to the environment and community, the domain manager will ensure the following measures are implemented		
Operational management measures	Bioremediation process optimisation	– The bioremediation facility will utilise a basic composting technique and a staged remediation strategy – The depth of each cell should not exceed 2m to allow adequate sunlight penetration to expedite bioremediation – Adjust pH levels and add necessary nutrients (e.g., nitrogen, phosphorus) to enhance microbial activity. – Material at the bioremediation site should be watered and turned weekly; – If required, additional bioremediation product to be applied; and – Maintenance of the bioremediation site to be conducted monthly – Regularly monitor microbial populations to ensure optimal degradation rates. – Regular testing of soils at required intervals to meet standard operating procedure requirements.
	Soil containment and protection	– Use windbreaks or cover systems (e.g., biodegradable mats, plastic sheeting) to minimise soil erosion and dust generation.

		– Maintain buffer zones around the bioremediation area to prevent contamination spread. – Any incidental water resulting from rainfall will remain within the bioremediation facility to assist with microbial growth and is expected to evaporate over short periods; and – If rainfall exceeds evaporation, and the facility is approaching capacity, any water from within the facility will be pumped from the facility and put through the site's oily water separator (if available) or removed from site by a licenced contractor.
	Post-treatment soil rehabilitation	– Implement soil stabilisation techniques (e.g., adding organic matter, biochar) to restore soil health. – Replant native vegetation to prevent erosion and support ecological restoration. – required; – Soils can only be returned to the natural environment for reuse after test work is done and the soils meet the required standard, in line with the SOP
	Groundwater and surface water contamination prevention	– Install leachate collection systems to capture and treat any liquid runoff from the bioremediation site. – Leachate may be treated, recycled into the bioremediation area or disposed of at an appropriate off-site location. – Implement stormwater diversion channels to prevent rainwater from washing contaminants into surrounding areas. – Conduct monthly water quality testing in nearby boreholes and surface water sources.
	Volatile organic compounds (VOCs) and dust management	– Use aeration techniques such as bioventing to minimise VOC accumulation. – Maintain moisture content at optimal levels (40-60%) to reduce dust emissions. – VOCs to remain within acceptable limits per the World Health Organisation standards.
	Solid waste handling and disposal	– Segregate contaminated and non-contaminated waste for proper disposal. – Dispose of contaminated biomass (plants, sludge, etc.) in hazardous waste facilities or incinerate at regulated sites. – Recycle or repurpose organic matter as compost where safe and applicable.

	Hazardous waste containment	– Access should be provided to either side of each cell to allow safety in the placement of contaminated material – Each cell should have an access point at one end to allow for equipment to drive into the cell to place material, till soil, water and remove material upon completion of bioremediation; – Each cell will have the capacity to allow the storage of approximately 100 m³ hydrocarbon hydrocarbon-contaminated material. – Store hazardous bioremediation by-products in sealed, labelled drums to prevent leakage. – Develop spill response protocols to address accidental releases. – Conduct quarterly hazardous waste audits to ensure compliance.
	Biodiversity conservation and habitat restoration	– Conduct annual biodiversity assessments to monitor species impact. – Replant native tree and shrub species in decommissioned areas to restore habitats. – Use biochar or composted material from the site to enhance soil fertility.
	Emergency preparedness and spill response	– Maintain emergency spill kits at key locations. – If new pollutants are detected, conduct immediate re-evaluation of bioremediation methods.
	Community awareness and grievance handling	– Establish a 24/7 grievance mechanism for community complaints related to noise, air quality, or water contamination. – Provide public access to monitoring reports to ensure transparency.
	Local employment and skills development	– Provide bioremediation training programs for local workers and environmental officers. – Support local businesses by sourcing materials and services from the surrounding area where feasible.
Environmental pollution control measures (PCM)	Function and performance	Maintenance frequency
	Environmental monitoring	
	Weekly monitoring: the domain manager must conduct weekly compliance audits across all work areas within the domain.	

	Monthly monitoring: The environmental monitoring program and compliance audit must be conducted monthly by the contracted third-party company (independent EM).				
Environmental monitoring program	Site code	Name	Monitoring purpose	Frequency	Threshold
	A. Depositional dust fallout monitoring B. PM ₁₀ and PM _{2.5} C. SO ₂ D. NO ₂ E VOC	Baseline dust fallout monitoring network	Monitoring dust impacts on sensitive receptors	A. Monthly B. Quarterly	A. Industrial processes need to adhere to 1200 mg/m ² /day, whereby third parties should only be exposed to 600 mg/m ² /day B. PM ₁₀ is 75 µg/m ³ and PM _{2.5} is 37.5 µg/m ³ C. WHO limit: 40 µg/m ³ D. WHO limit: 25 µg/m ³ E. As per WHO standards.
	Groundwater levels	Baseline groundwater monitoring network	Required to monitor aquifer groundwater levels	Monthly	NA
	Groundwater quality	Baseline groundwater monitoring network	To monitor the change and trends in groundwater quality for the site	Quarterly	As per permit conditions
	Soil monitoring	Baseline soil monitoring network	Monitor changes in soil	Bi-annually	Soil monitoring protocol to be developed

			characteristic s before, during and after mining		before construction and should then be used thereafter
Environmental reporting	Domain manager to report to appointed Environmental Manager (EM) (monthly) – Progress on microbial activity and biodegradation rate; – Adjustments made to nutrient amendments, aeration, moisture, and pH levels; – Status of containment structures (e.g., liners, berms, covers); – Leak detection from containment areas; – Status of drainage and stormwater management system; – Types and quantities of solid waste generated; and – Disposal methods and records (landfill, incineration, recycling) Appointed EM to report back to the domain manager – Report on the level of compliance with the requirements of the OEMP; – Provide written feedback on environmental monitoring programs; and – Provide guidance on the appropriate response and action items to be implemented in order to effectively address and resolve any non-compliance.				
Environmental inspection/s	Daily	Weekly	Monthly	Other Daily	
	Dust suppression requirement	Hydrocarbon spills, waste management soil management	OESMP compliance audit	Biannual compliance audit and reporting to DEA (as required in the approved OEMP for the Project).	
Supporting documents	– Environmental monitoring plan Appendix A – Land clearing permit, – Waste Management Plan, – Spill Response and Management Plan, – Domain sign off Appendix J.				

14 DOMAIN 9 – SEWAGE TREATMENT PLANT AND WATER STORAGE FACILITIES

This domain consists of the following:

- Site sewage treatment plant,
- septic tanks shown in Figure 13 and detailed in Table 15.
- French drain system will be utilized for remote areas.



Figure 13 - Domain 9: Sewage treatment plant and water storage facilities

Table 15 - Domain 9: Sewage treatment plant and water storage facilities

Domain 9: Sewage treatment plants and water storage facilities		
Domain manager	Engineering manager	
Statutory requirements	Permit/licence name	Environmental permit/licence conditions
	A. Wastewater and effluent discharge licence	As per licence conditions in line with the Water Resources Management Act, No. 11 of 2013 conditions and Annexure 11
Potential issues or impacts	Water – Leakage from treatment plant, pipelines, septic tank(s) or overflow of untreated/partially treated sewage can contaminate nearby surface water bodies, dry riverbeds (ephemeral rivers) or groundwater.	

	– Seepage of domestic effluent can pollute aquifers with nitrates, ammonia, and pathogens, affecting drinking water sources for nearby communities. – Improper handling or accidental spillage of chlorine, disinfectants, or other treatment chemicals can contaminate soil and groundwater. Soil – Improper disposal of sewage sludge and screens can degrade soil quality, leading to accumulation of heavy metals and toxic substances from industrial processes mixed in the sewage. Odour – Poorly managed STPs and septic tanks can emit strong odors (hydrogen sulfide, ammonia), reducing air quality and causing discomfort to both workers and nearby residents. Social – Leakage or overflow can lead to contaminated water supplies, increasing the risk of waterborne diseases (e.g., cholera, dysentery) among mine workers. – Persistent odor nuisances from the sewage treatment plant and septic tanks can negatively affect mine workers' morale and residents in nearby settlements.
Targets	Water quality & pollution control – Zero discharge of untreated or partially treated effluent into natural water bodies. – Maintain effluent quality within Namibia's water discharge standards (e.g., pH, BOD, COD, TSS, ammonia, and pathogen levels) as per general standards (Annexure 11). – Regular monitoring of groundwater and surface water quality near STP, septic tanks and evaporation ponds to detect potential contamination. – No seepage or leakage from evaporation ponds into groundwater aquifers. Wastewater treatment efficiency – ≥ 95% treatment efficiency in reducing contaminants (e.g., organic matter, nutrients, heavy metals, and pathogens) in the STP. Groundwater and surface water protection – No contamination of groundwater aquifers from seepage of treated or untreated effluent.

- Implement lined evaporation ponds to prevent seepage and ensure proper hydraulic containment.
- Maintain buffer zones around natural water sources to minimise contamination risks.

Sludge and solid waste management

- 100% safe handling, storage, and disposal of sewage sludge and screens following environmental best practices
- ≥ 80% of non-hazardous waste from STPs, French soak-away drains and evaporation ponds to be recycled or treated safely.
- No open dumping or uncontrolled disposal of sewage sludge or wastewater solids.

Air quality & odour control

- Zero complaints related to odour from STPs and evaporation ponds through proper treatment, aeration, and maintenance as per OEM.

Biodiversity & ecosystem protection

- Zero impact on local biodiversity from wastewater discharge, seepage, or pond overflow.

Water use efficiency & conservation

- Reduction in water consumption per capita in the management camp through water-saving technologies (low-flow fixtures, re-use systems).

Health & safety of workers and communities

- Zero incidents of waterborne diseases among workers and surrounding communities due to contamination from STPs, manholes, septic tanks or evaporation ponds.
- 100% of workers trained in hygiene, wastewater handling, and emergency response procedures.
- Ensure that all potable water sources meet national drinking water standards (Annexure 1) for workers at the management camp and site employees, contractors, sub-contractors and visitors.
- Maintain emergency response plans for spills, leaks, and overflows with quarterly drills for workers.

Community relations & grievance management

	– Ensure all wastewater-related operations comply with licence(s) issued by DWA. Monitoring & compliance targets – Regular effluent monitoring for BOD, COD, TSS, pH, and microbial contamination and groundwater monitoring around STPs and evaporation ponds as per monitoring schedule and in line with parameters and standard required to be monitored as per the licence conditions. – Bi-annual third-party environmental audits to ensure compliance with regulatory standards. – Immediate reporting and mitigation of any leaks, spills, or non-compliance events within 24 hours.	
To minimise the effects of the above-mentioned impacts, pose to the environment and community, the domain manager will ensure the following measures are implemented		
Operational management measures	Domestic effluent water management	– Only approved ablution facilities to be utilised, connected to the main onsite STP; – If additional ablution facilities are required, the Environmental department and Engineering to be informed; – No employee or contractor on site may relieve themselves in the surrounding environment and work area; – Ablution facilities to be cleaned and maintained on a regular basis, separate facilities required for mrn and women; – Effluent water to be contained and spills to be cleaned up within 24 hours of the incident occurring; – Sewage facilities to be permitted with DWA; – Septic tanks to be pumped out on a regular basis to avoid overflows (if required); – No chemicals, fat-grease-oil or other hydrocarbons shall be disposed of in any way that may result in the pollution of any watercourse; – Grey water to be separated from effluent water and be reused; and – To be maintained by the operators and regular effluent water quality samples to

		be taken by the environmental team as part of their quarterly audits.
	Effluent treatment and quality control	– Ensure STPs operate at peak efficiency, treating wastewater to meet Namibia's water discharge general standards (Annexure 11). – Conduct quarterly monitoring of effluent parameters to ensure compliance with discharge limits. – Use biological treatment methods (e.g., activated sludge, biofilters) to minimise organic load as per OEM.
	Discharge and overflow prevention	– Regularly inspect and maintain sewer pipelines, storage tanks, and treatment units to prevent leaks and overflows
	Effluent reuse and water recycling	– Maximise wastewater reuse for dust suppression, and for reuse in the process plant.
	Prevention of groundwater contamination	– Conduct monthly groundwater monitoring at strategic boreholes to detect potential nitrate, ammonia, and pathogen contamination.
	Surface water protection	– Prohibit discharge into dry riverbeds or ephemeral streams to prevent contamination during flash floods.
	Sludge treatment and disposal	– Dispose of sludge and screens following Namibia's waste management regulations, Osino waste management SOP and licence conditions.
	Hazardous and non-hazardous waste handling	– Train personnel in proper waste handling and spill response procedures. – Prohibit burning of sludge or solid waste, which can release harmful air pollutants.
	Wildlife and public safety	– Use bird deterrent systems (e.g., floating barriers, sound deterrents) to prevent bird deaths from contaminated water. – Post clear warning signs around ponds to restrict unauthorised entry and jackal proof 2 m fencing to be installed around the STP

		– The STP to be locked at all times and only athorused personnel to enter or visitors to be escorted			
	Worker safety and hygiene	– Provide personal protective equipment (PPE) (e.g., gloves, masks, goggles) for workers handling sewage and chemicals. – Ensure 100% of workers receive training on safe handling of wastewater, emergency response, and first aid.			
Environmental pollution control measures (PCM)	Function and performance	Maintenance frequency			
	Check daily/weekly for spills and sources of contamination	Monthly maintenance as per the planned maintenance schedule per OEMP. This will be carried out by the contractors hired to maintain the STP.			
Environmental management	Environmental management				
	Site code	Name	Monitoring purpose	Frequency	Threshold
	Groundwater quality	As shown in the domain map	To monitor the change and trends in groundwater quality for the site	Quarterly	As per licence conditions
	Groundwater levels	As shown in the domain map	Required to monitor aquifer groundwater levels	Monthly	NA
	Effluent quality	As shown in the domain map	Required to monitor effluent quality	Quarterly	As per licence conditions
	Flow meter recordings	As shown in the domain map	Monitor and report inflow and outflow volumes. Exceeding permitted discharge limits (volumes and concentrations)	Quarterly	As per licence conditions

			should be avoided		
Environmental reporting	Domain manager to report to appointed Environmental manager (EM) (monthly) – Report any community complaints received from the community. F – Any incidents reported during the month involving employees. – Any other aspects worth reporting (e.g. spills and contaminations). Appointed environmental manager to report back to the domain manager (monthly) – Report on the level of compliance with the requirements of the OEMP. – Provide written feedback on environmental monitoring programs (groundwater levels and quality, flow volumes as well as effluent results). – Provide guidance on the appropriate response and action items to be implemented in order to effectively address and resolve any non-compliance.				
Environmental inspections	Daily	Weekly		Monthly	
	Nil	Nil		Groundwater levels, and flow meter recordings	
Supporting documents	– Environmental monitoring plan Appendix A – Domain sign-off Appendix J				

15 DOMAIN 10 – ENGINEERING WORKSHOPS

Light and heavy-duty vehicles and equipment are serviced and maintained on-site at the Twin Hills Gold Project engineering workshops. This domain schedule includes all infrastructure and activities within the operational control of the domain outlined and mapped below Figure 14 and set out in Table 16:

- HME workshops;
- Engineering workshops;
- Processing workshops;
- Heavy and light vehicle workshops;
- Contractors workshops;
- Washbay;
- Offices associated with workshops;
- All mobile maintenance activities for infield emergency repairs, maintenance or servicing of equipment; and
- Bulk fuel storage and refuelling facilities.

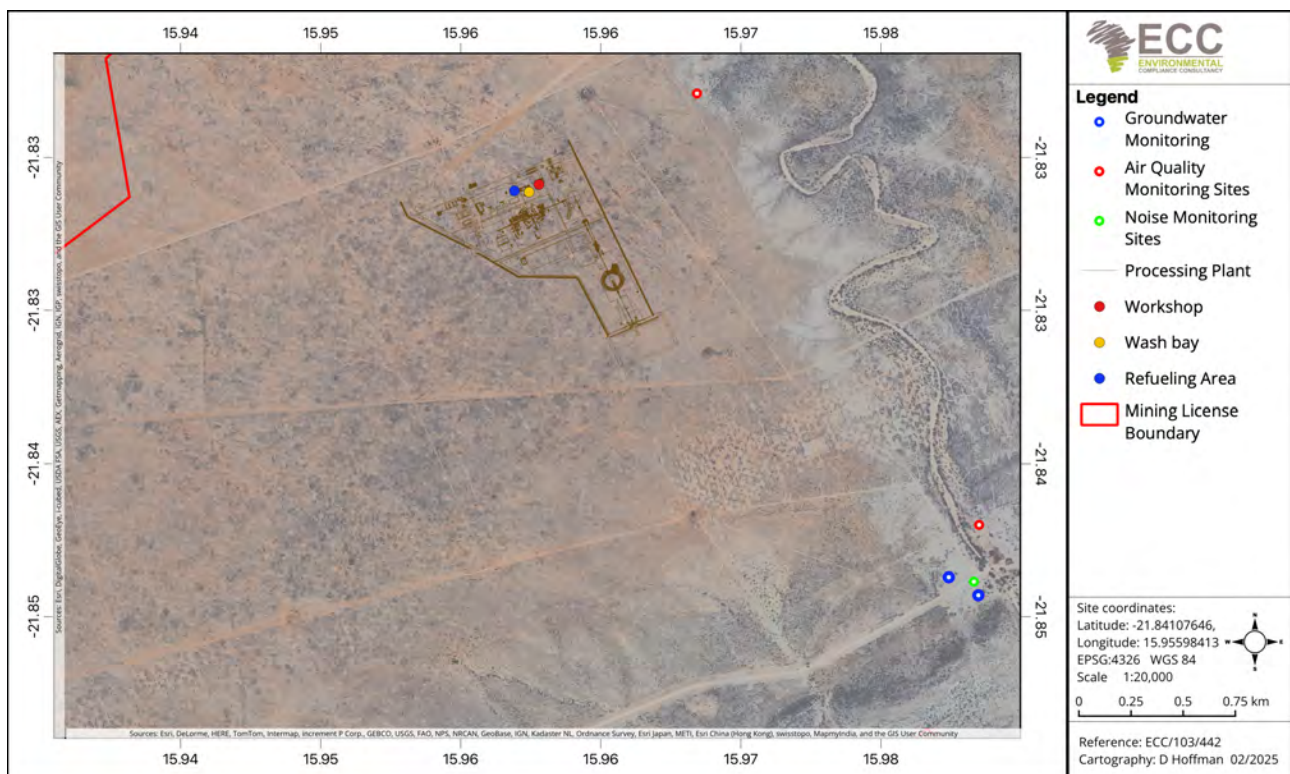


Figure 14 - Domain 10: Workshops with monitoring locations

Table 16 – Domain 10: Workshops domain schedule

Domain 10: Workshops		
Domain manager	Engineering manager	
Statutory requirements	Permit / licence name	Environmental permit/licence conditions
	A. Wastewater discharge licence	A. As per Licence conditions once issued
	B. Consumer installation certificate	B. As per Licence conditions once issued
	C. Wholesale licence	C. As per Licence conditions once issued
	D. Used oil permit	D. As per Licence conditions once issue
Potential issues or impacts	Water – Contamination of soil and water from plant and equipment, – Contamination from spillage of chemicals and hydrocarbons, – Chemical spills from infield refuelling, reloading or mechanical breakdowns, – Contamination to surface water from a poorly functioning/designed wash bay and workshop sumps. Air quality – Dust generated from workshop loading bays, – Increased PM emissions and passive gases such as CO, SO_x and NO_x from poorly maintained equipment. Biodiversity – Fauna deaths from drowning in ponds, – Fauna deaths from chemical and hydrocarbon ingestion, – Light pollution at night disorients birds and bats. Waste Management – Improper handling can expose workers to toxic substances and pose fire or explosion risks. – Spills and leaks of oil, diesel, hydraulic fluids, greases, solvents, and coolants can seep into the soil. – Runoff from improperly stored waste (e.g., oil drums, scrap metals, or chemicals) can enter nearby stormwater drains, rivers, or groundwater. Social – Noise from workshop operations especially at night	
Targets	– Ensure all chemicals and hydrocarbons are always stored correctly and in impervious bunded areas.	

Domain 10: Workshops

- Services and maintenance to be conducted on workshops floors and limited infield services.
- Ensure the wash bay is always operational and compliant.

To minimise the effects of the above-mentioned impacts, pose to the environment and community, the domain manager will ensure the following measures are implemented

**Operational
management
measures**

Groundwater and
soil management

- Wash bays must be constructed on a high-lying area and not in a drainage line;
- Wash bays must be able to accommodate all equipment and vehicles required to access the area, considering weight and track plant;
- Wash bays should have a silt and oil trap to collect these during the wash-down process;
- Trenches should be constructed to capture any run-off and fines and divert this to the silt and oil traps;
- Silt trap to be maintained, removed and cleaned regularly, to prevent a build-up and blockage of the system;
- If the silt trap has traces of hydrocarbons in it, then to be removed for treatment at the bioremediation facility before being reused on site;
- Before water can be reused in the processing circuit or for dust suppression from the oil trap, it should be tested to ensure the water is of a suitable and safe standard to be released back into the environment for dust suppression;
- Ensure staff report leaking pipes, joins or flanges to prevent failure;
- Ensure the handling of chemicals, oils and greases is conducted according to specific site procedures;
- Ensure that all waste oil tanks are pumped out at 80% full capacity;
- Ensure that pipes and flanges are contained within a bund;
- Ensure all staff are trained on how to respond to chemical and hydrocarbon spills and emergencies;
- Ensure all bunds are kept empty and free of rainwater;

Domain 10: Workshops

- Ensure that the wash bay is maintained according to PMS and sludge regularly cleaned and disposed of correctly;
- Hydrocarbon materials and containers must be stored correctly, in drip trays or in bunded areas that are impermeable and can contain 110% of the largest volume;
- All hydrocarbon containers when transported must be stored in a drip tray and secure from falling over;
- Spill kits and spill absorbent treatment material to be present in the workshops and laydown areas;
- Teams must be trained on how to use spill kits and how to implement correct spill management controls;
- All vehicles, HME and equipment must be serviced on an impermeable surface, such as a workshop concrete floor or liner;
- When servicing occurs in the field, all spill preventative measures, including the use of drip trays, to be used;
- All spills to be cleaned up within the same shift and an incident to be recorded, where required;
- Contaminated soil to either be treated *in situ* or removed to the bioremediation site for further treatment.
- Waste receptacles for hydrocarbon waste to be provided, leakproof and sufficient in quantity; and
- Sumps should be installed in workshops with an oil and water separator.
- Traces and spills of hydrocarbons to be removed immediately to prevent build-ups and overflows into the surrounding environment;
- Oil traps to be managed and maintained as per the original equipment manufacturer (OEM) specification;
- Oil traps should be cleaned regularly by removing excess hydrocarbons observed floating on the surface;

Domain 10: Workshops

		- If a three-cell oil trap is used, the last cell must not have an outlet, but a valve installed for emergencies; - The hydrocarbon waste is to be collected and removed as used oil; - Oil traps should be banded; - The silt trap must be constructed up gradient of the oil trap; and - Leak proof drums for the disposal of oils and grease must be placed at a suitable location where such hazardous material can likely be generated, - All hydrocarbons must be always stored in a bund, - The bund needs to hold 110% of the largest unit stored in the bund. - Sludge from the period cleaning of the oil separator facilities and any other hydrocarbon spillages shall be removed and either treated or disposed of at a licenced hazardous landfill site; - Any hydrocarbon bioremediation sites and containment areas must be lined to prevent seepage into the ground and environment.
	Domestic effluent water management	- Only approved ablution facilities to be utilised; - If additional ablution facilities are required, the Environmental Department to be informed; - No employee or contractor on-site may relieve themselves in the surrounding environment and work area; - Ablution facilities to be cleaned and maintained regularly; - Effluent water to be contained and spills to be cleaned up within 24 hours of the incident occurring; - Sewage facilities to be permitted by the DWA; - Septic tanks to be pumped out on a regular basis to avoid overflows; - Grey water to be separated from effluent water and be reused; and - Regular effluent water quality samples to be taken by the Environmental department.

Domain 10: Workshops		
	Chemical handling, storage and management	- A chemical file is kept by each workshop and laydown area supervisor and/or contractor SHEQ representative; - All chemicals used on-site, including their MSDS, are to be available in these files; - MSDS should be valid, up to date and not older than 5 years; - Copies of MSDSs to be provided to the DEA and DWA, on request or as per reporting conditions; - Environmentally friendly chemical products should be considered over hazardous chemicals; - Sufficient drip trays should be made available to capture leaks and prevent pollution; - Chemical and hydrocarbon containers either to be stored in impermeable bunds, drips trays or other secondary containment devices; - Spill kits and spill absorbent treatment material to be present in the workshops and laydown areas; and - Incident reports are to be compiled for each spill event as per the incident management procedure.
	Waste management (non-mineralised) hazardous and nonhazardous waste	- Litter generated during the shift must be collected and/or stored directly in the waste receptors provided; - Waste must be separated at source as per the waste management procedure in the correct colour-coded bins and/or skips; - Bins and skips must have lids, that can seal and are scavenger/baboon-proof; - No waste may be burnt or buried on site, - No fires will be allowed on site, unless in approved designated areas allowed by the environmental manager; - Domestic waste is temporarily stored at the non-mineralised waste site weekly; and - Hazardous solid waste created including empty containers, hydraulic pipes, oil filters (etc.) should be removed from the site and disposed of at a suitable registered hazardous waste facility;

Domain 10: Workshops

		- A copy of the safe disposal certificate of these wastes to be maintained as a record on file and are to be provided to the DEA on request; - Medical waste is taken to the Walvis Bay hospital site for incineration; and - Scrap metal to be collected in dedicated bunded areas and the Environmental department informed when collection is required; - Vehicle batteries to be collected and removed to scrap dealers; - Tyres to be collected and removed to scrap dealers; - Bulk plastic drilling bags to be collected and removed to plastic recycling companies; - Used oil to be collected in oil drums and brought to the dedicated used oil recycling facility when full by Osino staff or a registered contractor; - Used oil to be stored either in a bunded area or in drip trays with sufficient capacity to contain a leak (110%) of volume; - Permit to be acquired from MMEI for the storage and selling of used oil on site; and - Small and redundant items that have been scrapped (e.g. wood, furniture, conveyor belt etc.) to be sold on tender to employees and Karibib residents, if deemed feasible.			
	Housekeeping	- Workshop and laydown areas to be maintained in a clean, orderly and presentable condition always; - Stacking and storage to be to prevent trip, slip and fall hazards and from animals nesting; - Housekeeping to be conducted throughout and at the end of each shift; - Items that can become easily windblown to be tied down/contained; - No pooling water; and - Regular inspections by supervisor, line manager and/or manager.			
Environmental monitoring	Environmental monitoring				
	Site Code	Name	Monitoring Purpose	Frequency	Threshold
		N 01	Residential	Monthly	

Domain 10: Workshops					
	Noise - Ambient	N 02	Residential		45 dB daytime 35 dB nighttime
		N 03	Residential		
		N 04	Residential		
		N 05	Residential		
		N 06	Marble Quarry		
		N 07	Marble Quarry		
		N 08	Karibib Air Force Base		
	Groundwater quality	As shown in the domain map	To monitor the change and trends in groundwater quality for the site	Quarterly	As per permit conditions
	Effluent quality	As shown in the domain map	To monitor the change and trends in effluent quality at workshops and wash bays	Quarterly	As per licence conditions
	Air quality - passive gasses (CO, SOx and NOx)	As shown in the domain map	To Monitor the change in air quality as a result of an increase in passive gasses	Daily	PM ₁₀ is 75 µg/m ³ and PM _{2.5} is 37.5 µg/m ³ (daily averages)
	Air quality – fallout dust	As shown in the domain map	To Monitor the change in air quality as a result of increase in dust	Monthly	Industrial receptors 1200 mg/m ² /day /Residential receptors 600 mg/m ² /day
Environmental reporting	Domain manager to report to appointed environmental manager (monthly) - Quantities of fuels and oils used. - Wash bay water volumes reused or released as dust suppression. - Wash bay sludge disposal. - New chemical or hydrocarbon product required to be used on site. Appointed environmental manager to report to the domain manager (monthly)				

Domain 10: Workshops				
	- Water quality results - Air quality results			
Environmental inspection/s	Daily	Weekly	Monthly	Other
	To be completed by the shift supervisor	To be completed by the foreman on shift	To be completed with the appointed EO and the HOD	Bi-annual compliance audit
Supporting documents	- Area inspection form, - Domain sign off Appendix J, and - Spill prevention and management.			

Twin Hills Gold Project will be constructing a fuel depot on site, which will supply fuel for all activities on site as required.

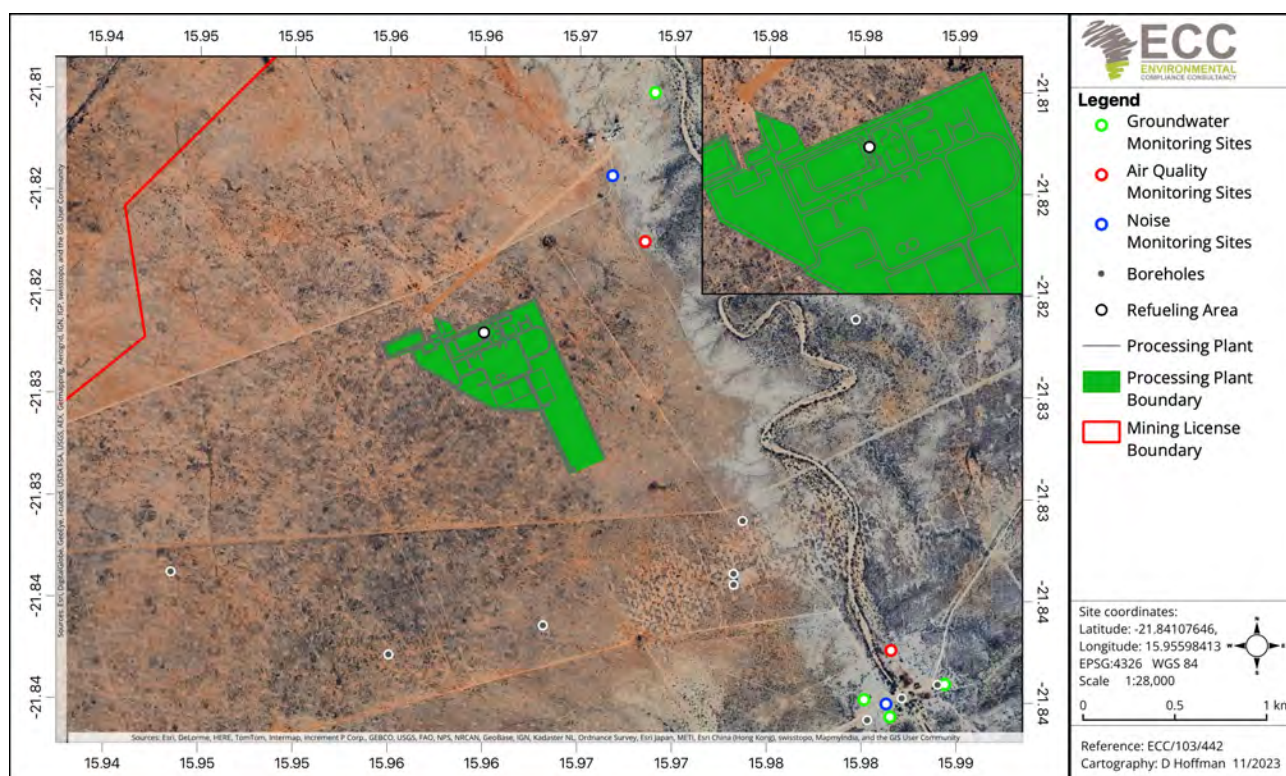


Figure 15: Domain 10 - Fuel depot with monitoring locations

Table 17 - Domain 10: Engineering workshop (fuel depot) domain schedule

Domain 10 – Engineering workshop (fuel depot)		
Domain manager	Fuel dispensing supervisor	
Statutory requirements	Permit / Permit Name	Environmental permit conditions
	A. Consumer Installation certificate B. Wholesale licence permit	A. Still to be approved
Potential issues or impacts	Water and soils – Potential contamination from breach of fuel containment – Biodiversity – Spills can lead to detrimental damage to soil Social – Fire hazard	
Targets	– Ensure the safe handling, transportation and containment of bulk fuel	
To minimise the effects the above-mentioned impacts may have on the environment and community, the domain manager will ensure the following measures are implemented		
Operational management measures	– Permitting	– The bulk fuel user must be issued with a wholesale licence permit from MMEI to be able to supply and trade with their fuel; – If fuels are stored on-site, a consumer installation permit must be applied for from MMEI; and – Permits and volume of fuel stored to be displayed on all fuel structures.
	– Soil and groundwater	– All spill incidents to be immediately reported, cleaned; – The appointed bulk fuel supplier will manage the fuel depot on site; – Only trained staff to handle the bulk fuel and refueling activities; – Fencing off fuel depot to avoid unauthorised entrance – Bulk fuel when offloaded on site should take place during the daylight hours; – Fuel tankers will be double banded and stored on imperial concrete surfaces with an additional bund, that can contain 110% of the volume of the largest tanker; – Small banded containments need to be sheltered from the rain;

Domain 10 – Engineering workshop (fuel depot)

		– Pipelines must be regularly inspected and maintained in good order; – Pipelines must have release and air valves to contain the pressure, especially during extreme environmental heat conditions; – The MSDS to be displayed on the outside of the tanker; – Warning signs to be displayed on the outside of the tanker; – Spill kits and absorbent material to always be readily available during offloading, refueling and storage; – Daily inspections of facilities; – Staff to switch off vehicle, equipment, plant and HME when refueling; – Do not leave area unattended when refueling; – All spills to be immediately contained, reported and an incident recorded; and – Large spills of >200 L to be reported to MMEI within 48 hours. Reporting to DWA when containment extends into the Okawayo and/or Khan river(s). – Any suspected leaks and spills should be reported to the domain manager, – Any leaks from tanks or pipelines must be checked and attended to immediately, the leak should be isolated, and the general area should be treated with an absorbing agent immediately. – Any leakages and spills must be reported to the domain manager.
	– Air quality	– Storage areas require adequate ventilation; and – Storage area to be kept clean and tidy and free of combustibles.
	– Fire prevention and control	– Ensure fire extinguishers are kept in proximity and attended to regularly; – No fires or smoking in these areas allowed; – Training should be provided in the use of the appropriate firefighting equipment; – Smoking should be prohibited in the vicinity of flammable substances;

Domain 10 – Engineering workshop (fuel depot)					
		– No smoking should be allowed in the fuel depot area, especially during fuel handling; and – Tyre storage and handling facilities not to be adjacent to the bulk storage and refuelling facility.			
	– Housekeeping	– Fencing off fuel depot(s) to avoid unauthorised entrance; – Small bunded containments need to be sheltered from the rain; – Storage area to be kept clean and tidy and free of combustibles; – Equipment at the depot must be kept in a good state; and – In the event of a spill, hazardous material may be generated. This material must be disposed of in a suitable manner			
	– Biodiversity	– Ensure equipment that is clearing vegetation is free of weeds and seeds prior to clearing vegetation,			
Environment Monitoring	Environmental monitoring				
	Site Code	Name	Monitoring purpose	Frequency	Threshold
	Biodiversity	Visual	Inspect tanks for leakages and any breach of containment within this domain that may have detrimental impacts on fauna and flora. Any fauna that may be found nesting in the workshop.	Daily	NA
	Groundwater quality	As shown in the domain map	To monitor the change and trends in groundwater quality for the site	Quarterly	As per permit conditions
Environmental reporting	Domain manager to report to appointed EM (monthly) – Monthly fuel volumes used to be reported				

Domain 10 – Engineering workshop (fuel depot)				
	– Any spills that may have occurred – Any fauna that have been sighted or found in the workshop Appointed EM to report to the domain manager (monthly) – Corrective actions if required to be taken			
Environmental inspection/s	Daily	Weekly	Monthly	Other
	To be completed by the shift supervisor	Inspection by domain manager	To be completed with the appointed EO	6 monthly bi-annual audits
Supporting documents	– Land clearing permit Appendix J, – Area inspection form, and – Domain sign off Appendix J.			

16 DOMAIN 11 – EQUIPMENT, PARTS AND MATERIAL SUPPLY

This domain comprises the following:

- Main warehouse;
- Reagent store; and
- Plant warehouse.

This domain is shown in Figure 16 and detailed in Table 18.

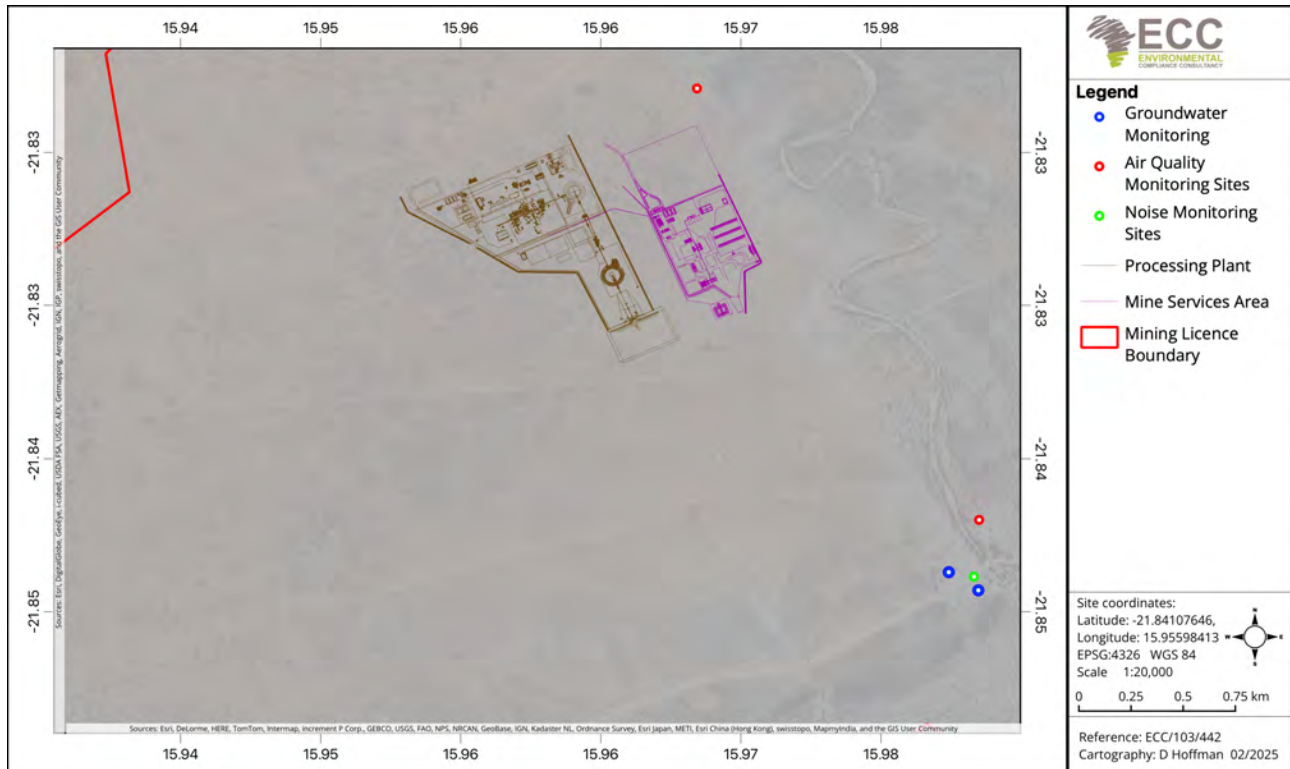


Figure 16 - Domain 11: Equipment, parts and material supply

Table 18 - Domain 11: Equipment, parts and material supply

Domain 11: Equipment, parts and material supply		
Domain manager	Supply chain manager	
Statutory requirements	Permit / Licence Name	Environmental permit/licence conditions
	A. Environmental Clearance Certificate	A. Compliance with permit conditions
Potential issues or impacts	Groundwater – Soil and groundwater contamination from chemicals, reagent and/or hydrocarbon spills.	

	Surface water – Potential for sediment runoff and erosion. – The use of chemicals (e.g. fuels, oils and lubricants) can leak or wash into surface water.	
Targets	Soil, surface/groundwater contamination – Protect soils and preserve water resources by implementing measures to prevent contamination. ○ This will be achieved through the correct spill preventative management and storage, and reporting of contamination/spill incidents. – Ensure zero improper wastewater discharge from warehouses or salvage yards. Air quality – Reduce fugitive dust emissions by through proper ventilation and air filtration systems. – Lods to be covered and supply trucks to use paved roads during delivery and offloading. Worker health and safety – Achieve zero workplace injuries or illnesses through improved safety protocols and PPE compliance. – Ensure of warehouse workers receive training in hazardous material handling, fire safety, and emergency response.	
To minimise the effects of the above-mentioned impacts, pose to the environment and community, the domain manager will ensure the following measures are implemented		
Operational management measures	Pollution prevention, spill management and emergency response	– Ensure 100% of chemical, reagent and/or hydrocarbon storage containers are properly labelled, sealed, and stored in well ventilated, caged bunded areas. – MSDS to always be present and displayed with the chemical, reagent and/or hydrocarbon. – Implement automated leak detection systems for high-risk chemical storage. – Equip warehouses with automatic fire suppression systems (sprinklers, foam or CO₂ extinguishers). – Maintain clearly marked and unobstructed emergency exits and evacuation routes. – Conduct monthly inspections of spill kits and secondary containment system

		- Install spill containment bunds around reagent storage areas and drum storage zones. - All staff to be trained in spill management, storage and control. - Train staff on how to use spill kits. - Conduct bi-annual fire drills and ensure all employees know fire suppression and emergency response procedures.
	Waste management and resource efficiency	- Reduce warehouse-generated waste (e.g., packaging, damaged materials) by 30% annually through recycling and reuse initiatives. - Transition to LED lighting within warehouses - Ensure segregation of hazardous and non-hazardous waste in the correct waste receptacles.
	Energy efficiency and carbon footprint reduction	- Reduce electricity consumption by at least 15% over three years by using energy-efficient lighting and automated systems. - Conduct annual energy audits to identify and implement efficiency improvements.
	Water conservation and management	- Ensure zero direct discharge of liquid waste into the environment—treat and recycle wastewater where possible. - Use low-water cleaning methods, such as high-pressure air cleaning for dry warehouses.
	General warehouse operations	- Maintain an organized and labelled inventory system to prevent mix-ups and misplacement of hazardous and non-hazardous materials. - Establish bunded areas for liquid and hazardous material storage to prevent spills and contamination. - Use mechanised handling equipment (e.g., forklifts, pallet jacks) to minimise manual lifting and improve worker safety. Forklifts and associated equipment to be regularly maintained and serviced by the dedicated engineering workshops and checked daily before operation (pre-start checklist).
	Hazardous materials and reagent handling	- Store all hazardous materials in compliance with MSDS, ensuring: - o Proper segregation of incompatible chemicals.

		○ Use of fireproof storage for flammable substances. ○ Clearly labeled material safety data sheets (MSDS). - Implement restricted access to reagent storage areas, allowing only trained personnel to handle hazardous materials. - Ensure secondary containment systems (e.g., spill trays, double-walled containers) are in place for all liquid reagents. - Store cyanide and other highly toxic chemicals in ventilated, locked storage away from direct sunlight and water sources. - Conduct daily inspections of chemical containers for leaks, corrosion, or damage. - Maintain an emergency cyanide response plan, including antidote availability, decontamination stations, and trained first responders on-site			
	Hazardous waste disposal	- Collect and dispose of expired, damaged, or unused reagents through certified hazardous waste disposal contractors. - Store hazardous waste in properly labelled and sealed drums to prevent leaks and cross-contamination. - Maintain a waste tracking system to document hazardous waste disposal volumes			
	Recycling and reuse initiatives	- Implement a recycling program for warehouse and salvage/storage yards generated waste (cardboard, plastics, pallets). - Reuse or return chemical containers to suppliers where applicable.			
	Worker health and safety	- Provide mandatory PPE (gloves, goggles, chemical-resistant suits, steel-toe boots) for all warehouse workers. - Conduct monthly safety training covering material handling, emergency response, and fire safety. - Ensure all new employees undergo hazardous material handling certification before working with chemicals.			
Environmental monitoring	Site Code	Name	Monitoring Purpose	Frequency	Threshold
	Groundwater quality	As shown in the domain map	To monitor the change and trends in groundwater	Quarterly	As per permit conditions

			quality for the site		
	Air quality – fall out dust	As shown in the domain map	To monitor the change and trends in air quality for the site	Monthly	600 mg/m ² /day
Environmental reporting	Domain manager to report to appointed EM (monthly) – Report the acquisition of new chemicals and reagents. – Report on any major spills that may be of environmental concern. Appointed EM to report to the domain manager (monthly) – Provide the MSDS database. – Report on items returned to suppliers.				
Environmental inspection/s	Daily	Weekly	Monthly	Other	
	To be completed by the shift supervisor	To be completed by shift supervisor	To be completed with the appointed EO	Bi-annual compliance audit	
Supporting documents	– Area inspection form, – Domain sign off Appendix J, and – Spill prevention and management.				

17 DOMAIN 12 – ADMIN AREA

This domain includes tasks for general and administrative services, which are mapped below (where possible):

- Security building;
- Main parking area;
- Bus parking/terminal;
- Low security area;
- Site clinic;
- Change houses;
- Personnel transport drop-off zone; and
- Access gate.

The overall domain manager is the security manager.

Table 19 - Domain 12: Admin area

Domain 12: Admin Area		
Domain manager	Security manager	
Statutory requirements	Permit / Permit Name	Environmental permit conditions
	A. Wastewater and effluent discharge licence	As per permit conditions for the management of septic tanks.
Potential issues or impacts	– Lack of environmental knowledge on OESMP requirements leads to environmental incidents. – Lack of appropriate ablution facilities can result in soil contamination and pollution. – Littering and pollution of soils/groundwater. – Hazardous and general waste incorrectly managed and disposed of. – Lack of appropriate and clean facilities for hand washing, showering and basic amenities. – No smoking areas available at strategic locations leading to littering and soil contamination.	
Targets	– Achieve zero littering – 100% segregation of waste into general, recyclable, and hazardous waste streams. – Reduce water consumption annually through efficiency measures. – Reduction in energy consumption through efficiency measures (e.g., LED lighting).	

To minimise the effects of the above-mentioned impacts, pose to the environment and community, the domain manager will ensure the following measures are implemented		
Operational management measures	Training and awareness	– All employees, visitors and contractors are required to go through a general site induction when entering the mine site; – Environmental department to provide monthly information regarding environmental issues of concern; – Awareness will be distributed by various channels as deemed appropriate; – Notice/awareness boards to be kept up to date with the latest information shared; and – All vehicles to reverse park on the mine site.
	Staff wellness	– Conduct regular health screenings (e.g., respiratory health, hearing tests, fatigue management). – Ensure access to clean drinking water and sanitary, well-ventilated restrooms. – Implement fair shift rotations to prevent burnout – Encourage regular physical activity wellness programs – Promote adequate water intake through hydration awareness programs. – Provide access to prenatal care, including routine checkups with a qualified healthcare provider for expecting mothers.
	Domestic effluent water management	– Only approved ablution facilities to be utilised; – No employee, visitor or contractor may relieve themselves in the surrounding environment and work area; – Ablution facilities to be cleaned and maintained on a regular basis; – Effluent water to be contained and spills to be cleaned up within 24 hours of the incident occurring; – Sewage facilities to be permitted with DWA; – Septic tanks to be pumped out on a regular basis to avoid overflows, if required; – Grey water to be separated from effluent water and be reused; – Regular effluent water quality samples to be taken by the Environmental department;

		– Environmentally friendly products to be used in the kitchens; and – Sanitary bins to be provided for female employees to discard of sanitary waste correctly.
	Waste management (non-mineralised)	– Waste must be disposed of in the waste receptors provided, no litter, especially in the parking areas where these receptacles might be scarce; – Waste must be separated at source as per the waste management procedure in the correct colour coded bins and/or skips; – Waste receptacles can be supplied on request to the Environmental department; and – Bins and skips must have lids, that can seal and are scavenger/baboon proof.
		– Smoking occurs in designated areas, clearly marked and only designated ash trays to be used; – Chemicals used in the office environment must have an accompanying MSDS and be registered with the Environmental department and the onsite clinic; – Medicine at the site clinic must be appropriately handled and stored, with accompanying MSDS, where required; – Medical waste and expired medicines must be disposed of off-site at the incinerator at the Walvis Bay landfill site; – Sanitary waste to be collected by a Smoking to occur in designated areas, clearly marked and only designated ash trays to be used; – Chemicals used in the office environment must have an accompanying MSDS and be registered with the Environmental department and the onsite clinic; – Medicine at the site clinic must be appropriately handled and stored, with accompanying MSDS, where required; – Medical waste and expired medicines must be disposed of offsite at the incinerator at the Walvis Bay landfill site or hospital; – Sanitary waste to be collected by a registered company that can appropriately handle and dispose of this biohazard waste;

		- All biohazard waste associated with entry into the mine (e.g. masks, straws used for breathalyzing) must be handled correctly and disposed of as hazardous waste at a registered hazardous waste facility; - Records to be maintained of the disposal of hazardous waste; - All hydrocarbon spills from vehicles to be cleaned up by the responsible person.
	Housekeeping	- Each employee or contractor is responsible for housekeeping in their work areas, which includes the offices and general areas; and - These areas are to be kept clean and maintained in a clean, orderly and presentable condition always, no littering is allowed
	Hygiene	- Bathrooms, change houses, offices, kitchens and boardrooms to be cleaned on a daily to weekly basis; - Food scraps to be disposed of as general waste; - Where pests persist, pest control programmes are to be implemented to remove the pest, after consultation with the Environmental department; - Basic amenities to be provided such as hand soap, wash clothes, toilet paper, microwaves, kettles, dishwashing liquid etc., and - Sanitizers to be available for all staff at points of entry and exit from buildings.
Environmental monitoring	Environmental monitoring	
	Weekly monitoring: The domain manager must conduct weekly compliance audits across all work areas within the domain. The weekly checklist (provided in Appendix D) must be completed. Monthly monitoring: Monitoring should be conducted as per the monitoring programme. The domain manager shall conduct routine daily, weekly and monthly inspections to determine the level of compliance to the OESMP.	
Environmental reporting	Domain manager to report to appointed environmental manager (EM) (monthly) - The domain manager must complete the weekly compliance checklist.	

	– Report to the appointed EM any incidents reported during the month involving employees. – Report to EM any incidents regarding wildlife on any access roads. – Any complaints received from the community. Appointed EO to report back to the domain manager – Advise on action items to be implemented to address complaints received from the community. – Report the level of compliance to the OESMP. – Provide monthly written reports on the environmental monitoring program.			
Environmental Inspection	Daily	Weekly	Monthly	Other
	Housekeeping Biodiversity	Housekeeping, biodiversity and waste management	OESMP compliance audit	Biannual compliance audit and reporting to DEA (as required in the approved OEMP for the Project).
Supporting documents	– Area inspection form, and – Domain sign off Appendix J			

18 DOMAIN 13 – MANAGEMENT CAMP

This domain comprises the management camp to accommodate contractors and the Project-specific construction team during the operational phase. The domain includes all accommodation facilities associated with infrastructure, detailed in Table 20.

Table 20 - Domain 13: Management camp

Domain 13: Management camp		
Domain manager	Supply chain manager	
Statutory requirements	Permit/licence name	Environmental permit conditions
	A. Wastewater and effluent discharge licence B. Land Clearing Permit	A. As per licence conditions B. As per permit conditions
Potential issues or impacts	Waste generation and pollution – Improper disposal of domestic solid waste (food packaging, plastics, cans, bottles) can cause littering, pollution, and attract scavengers (e.g., baboons, rodents). – Cleaning chemicals, cooking oils, or gas canisters can contaminate soil and water if not disposed of properly. Wastewater and sewage discharge – Discharge from washing and cooking areas can contaminate nearby water bodies if untreated. – Poor sanitation facilities or faulty septic systems can lead to leakage, contaminating soil and groundwater. – Improperly maintained toilets and drains can cause unpleasant odours affecting camp residents and nearby communities. – No oil and fat trap can cause malfunctioning of the STP and influence water quality parameters and results. Water usage and depletion – High water demand for cooking, cleaning, and sanitation can put pressure on local water resources Soil contamination – Accidental leaks from wastewater tanks or kitchen drains can degrade soil quality.	

	– Incorrect waste disposal leading to windblown litter. Fire risks – Cooking activities, especially using open flames or gas, can pose fire hazards, leading to wildfire or camp destruction. – Improper storage of flammable materials like gas cylinders increases the risk of explosions. Biodiversity – Food waste and improper waste disposal can attract wildlife, leading to displacement, habituation, or harm to animals. – Organic waste can lead to odour problems and attract wildlife, increasing the risk of human-wildlife conflict. Health and hygiene – Poor sanitation, standing water and waste disposal can lead to the spread of diseases (e.g., cholera, diarrhea) among workers and nearby communities and introduce pests. – Food safety issues from improper storage or handling can cause foodborne illnesses. – Transmission of sexually transmitted diseases/ infections (STDs/STIs)
Targets	Waste management – Achieve zero littering within the camp and surrounding areas – 100% segregation of waste into general, recyclable, and hazardous waste streams. – Zero incidents of improper hazardous waste disposal (e.g., oils, gas cylinders, cleaning chemicals). Water conservation – Reduce water consumption annually through efficiency measures. – Zero discharge of untreated greywater or sewage into the environment. Pollution prevention – Zero oil, chemical, or greywater spills impacting soil or water bodies. Biodiversity and wildlife protection – Zero incidents of wildlife attraction or harm due to food waste or litter. Energy efficiency – Reduction in energy consumption through efficiency measures (e.g., LED lighting, efficient stoves).

	Health and hygiene – Zero cases of foodborne illnesses from camp kitchen operations. – 100% functional sanitation and waste systems always. Worker welfare and safety – Zero work-related injuries associated with self-catering operations (e.g., kitchen burns, gas leaks, fire incidents). – 100% of employees trained annually on kitchen safety, fire response, and hygiene. – Potable water supplied in compliance with water quality parameters for drinking water as per Annexure 1 of the Water Resources Management Act, No. 11 of 2013. Community relations – Zero complaints from nearby communities related to noise, waste, or pollution.	
	To minimise the effects of the above-mentioned impacts pose to the environment and community, the domain manager will ensure the following measures are implemented	
Operational management measures	Staff wellness	– Regular STD and HIV/AIDS wellness programmes – Free access to condoms – Conduct regular health screenings (e.g., STD testing, respiratory health, hearing tests, fatigue management). – Ensure access to clean drinking water and sanitary, well-ventilated restrooms. – Implement fair shift rotations to prevent burnout – Encourage regular physical activity and wellness programs – Promote adequate water intake through hydration awareness programs.
	Solid waste management	– Provide clearly labeled waste bins for general, recyclable, and organic waste at all key points. – Daily waste collection and segregation to prevent littering and wildlife attraction. – Implement a waste separation policy and train all employees on proper segregation and disposal. – Set up a dedicated storage area for recyclable materials and partner with recycling companies. – Ensure secure waste storage containers with covers to prevent scavengers and wind-blown litter. – Conduct weekly waste audits to ensure compliance and monitor volumes generated.

		– Monthly inspections to ensure 100% compliance with waste disposal procedures. – Record and audit waste segregation and disposal practices quarterly. – Quarterly hazardous waste audits with corrective actions taken within agreed-upon time frame.
	Hazardous waste management	– Store cooking oils, cleaning chemicals, and gas cylinders in a dedicated hazardous waste area. – Provide spill kits and train employees on spill response procedures. – Investigate waste storage for oils, fats and greases and liquid kitchen waste (e.g. molok). – Fats, oils and grease traps be cleaned weekly and waste correctly disposed of. – Contract licensed waste contractors for the disposal of hazardous and special waste. – Maintain material safety data sheets (MSDS) for all chemicals on-site.
	Surface and groundwater	– Use bunded storage areas for fuel and chemical storage to contain potential leaks. – Prohibit vehicle washing in unpaved areas to avoid soil and water contamination – Regularly inspect leaks and repair faulty plumbing within 24 hours. – Educate residents on water conservation practices through signage and induction briefings. – Monthly water meter readings to track consumption and detect leaks. – Routine inspection and maintenance of sewage and septic systems and greywater treatment.
	Biodiversity	– Prohibit feeding wildlife and educate residents on the risks of human-wildlife interaction. – Enforce waste management practices to prevent wildlife attraction, particularly baboons and rodents. – Monthly inspections and records of wildlife sightings and interventions.
	Energy and resource efficiency	– Track monthly electricity and fuel usage. – Encourage use of energy-efficient appliances (e.g., refrigerators, microwaves, and induction cookers). – Encourage residents to turn off appliances when not in use.

	Training and awareness	- Incident reporting system with monthly safety audits. - Monthly hygiene audits and staff training sessions on food safety. - Weekly inspections of toilets, showers, and wastewater systems - Training logs maintained and refresher courses conducted.
	Community and employee engagement	- Grievance mechanism in place; all complaints addressed within 7 days. - Engagement sessions per year on camp management. - Meeting minutes and feedback records. - Support local suppliers for food and cleaning products where feasible to promote local economic development.
	Wastewater and sewage	- Regular servicing and desludging of septic systems (e.g., quarterly or as per load requirements). - Treat greywater before discharge or reuse it for dust suppression or irrigation where permitted. - Establish a monitoring system for effluent quality to ensure compliance with discharge standards. - Implement emergency containment procedures in case of overflows or system failures
	Air quality	- Maintain gas stoves, generators, and other fuel-burning appliances to reduce emissions - Encourage energy-efficient cooking practices, such as using induction stoves where possible - Prohibit open burning of waste and ensure proper waste disposal
	Fire safety and emergency response	- Conduct monthly fire inspections and ensure all gas cylinders are stored upright in ventilated, secured areas - Implement a no open-fire policy, except in designated braai/barbecue areas. - Conduct fire drills every six months and train all camp residents on emergency response. - Ensure clear evacuation routes and assembly points are marked throughout the camp.
	Noise and light management	- Implement a quiet policy.

		- Place noisy equipment away from sleeping quarters and residential areas.			
	Worker health, hygiene, and welfare	- Daily cleaning of communal areas, including kitchens, showers, and toilets. - Regular deep cleaning schedules for shared kitchens and sanitary facilities. - Ensure potable drinking water supply and install water dispensers. - Provide designated food storage areas (fridges, freezers) with temperature control. - Routine pest control program to manage insects and rodents. - First-aid kits readily available in common areas, with staff trained in basic first aid. - Conduct monthly health and hygiene inspections and food safety checks.			
Environmental monitoring	Environmental monitoring				
	Site code	Name	Monitoring purpose	Frequency	Threshold
	Groundwater monitoring	As shown in the domain map	Monitoring water quality impacts	Monthly	NA
	Air quality	As shown in the domain map	Monitor air quality impacts	Monthly	Industrial receptors 1200 mg/m ² /day /Residential receptors 600 mg/m ² /day
	Waste management	As shown in the domain map	Monitor improper waste management impacts	Weekly	N/A
	Effluent quality	As shown in the domain map	Monitor effluent quality impacts	Quarterly	As per licence conditions

	Biodiversity monitoring	As shown in the domain map	Monitor biodiversity impacts	Weekly	N/A
Environmental reporting	Domain manager to report to appointed Environmental Manager (EM) (monthly) – The domain manager shall conduct routine weekly inspections to determine the level of compliance to the OESMP. – The domain manager must complete the weekly compliance checklist. – Report to the appointed EO any incidents reported during the month involving employees. – Any complaints received from the community. – Chemicals used in the camp, with associated MSDS. – Volumes of general, recyclable and hazardous waste removed from the camp monthly. – Any fuels used in the camp. – Potable water consumption. – Raw water consumption as part of water balance. – Pesticide campaigns. Appointed EO to report back to the domain manager and Environmental Officer (monthly) – Advise on action items to be implemented to address complaints received from the community. – Report the level of compliance to the OESMP. – Provide monthly written reports on the environmental monitoring program.				
Environmental inspection	Daily	Weekly	Monthly	Other	
	Housekeeping, waste management, effluent management	Check for water leaks or breakages of pipes.	OESMP compliance audit	Biannual compliance audit and reporting to DEA (as required in the approved OEMP for the Project).	
Supporting documents	– Environmental monitoring plan Appendix A – Area inspection form, and – Domain sign off Appendix J				

19 DOMAIN 14 – NON-MINERALISED WASTE (SOLID WASTE) AND RECYCLING FACILITY

The first option for the handling of non-mineralised waste is to reduce, reuse, recycle and recover, all waste should be disposed of at the waste storage facility. Twin Hills Gold Project should consider other alternatives for the non-mineralised waste and recycling facility, such as on-site waste removal options, such as waste incineration.

This domain schedule includes all infrastructure and activities within the operational control of the domain, outlined and mapped below Figure 17 and set out in Table 21:

- A waste management/handling area.

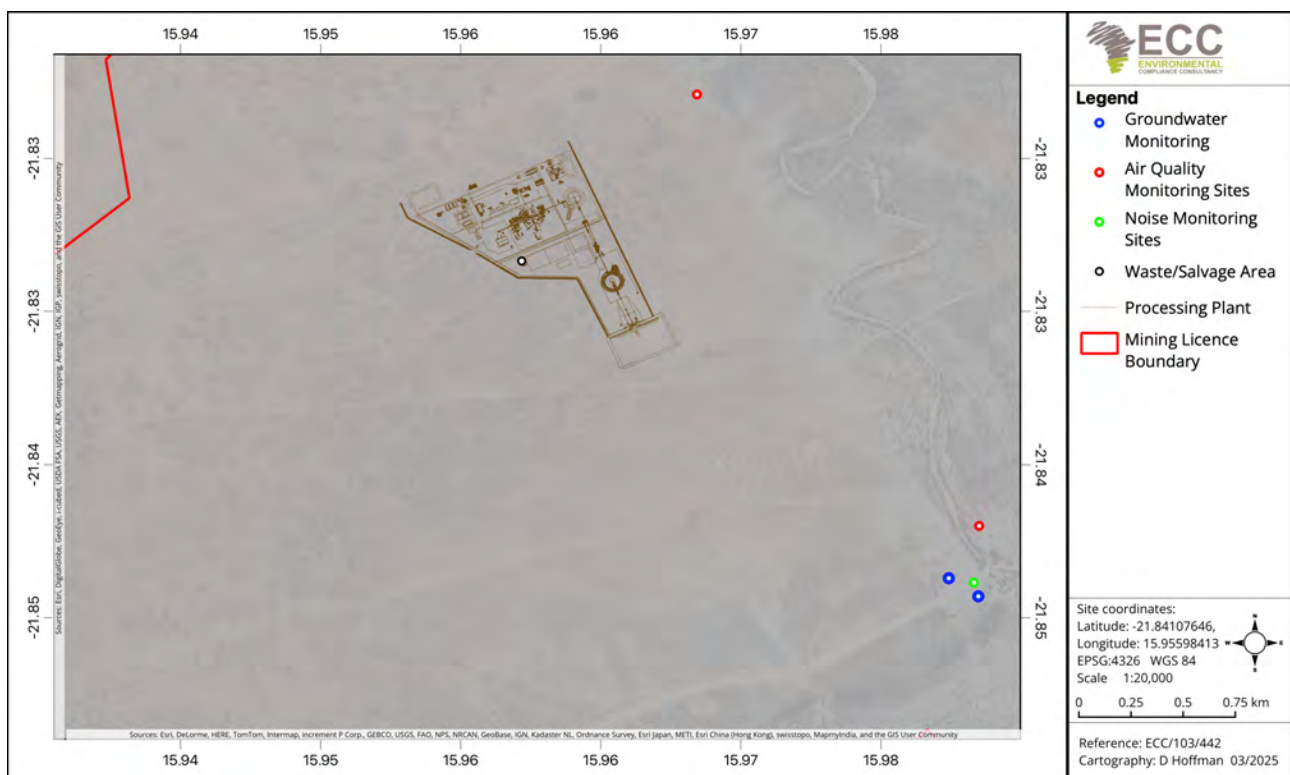


Figure 17 - Domain 14: Non-mineralised waste and recycling facility

Table 21 – Domain 14: Waste management and recycling facility domain schedule

Domain 14: Non-mineralised waste facility (waste facility and recycling site)		
Domain manager	Environmental manager and site waste supervisor	
Statutory requirements	Permit / Permit name	Environmental permit conditions
	A. Environmental clearance certificate	A. Compliance with the ESIA that supports the clearance certificate
Potential issues or impacts	Water - Contamination of groundwater from incorrect handling and temporary storage of waste in the waste management/handling area. - Contamination from uncleared drums or containers from the hazardous and hydrocarbon waste used in the operation arriving at the waste site. Air quality - Dust from the waste facility operations. Biodiversity - Loss of topsoil and remediation material from hydrocarbon and chemical pollution, - Potential poaching incidents from waste management and recycling facility operators, - Injury to wildlife from scavenging in the waste facility site. - Nesting of avifauna. Social - Nuisance odour from waste management and recycling facility	
Targets	- Demonstrate an increase in the throughput of recycled materials annually, - Demonstrate a reduction in volumes of waste going into the waste management and recycling facility annually.	
Operational management measures	Waste management	To minimise the effects the above-mentioned impacts may have on the environment and community, the domain manager will ensure the following measures are implemented: - A SOP has been developed for the management of the non-mineralized waste storage facility in compliance with required legislation and must be adhered to accordingly. - A register of waste entering and exiting the facility to be maintained - A vegetation clearing permit is obtained through the appointed EO prior to land clearing activities where

Domain 14: Non-mineralised waste facility (waste facility and recycling site)

		recovery of topsoil or substrate material for rehabilitation is possible; – Waste storage facility to provide proper segregation of waste, by waste type: ○ general domestic waste e.g. food waste, paper and cardboard, plastics, glass and textiles (these can be further segregated for recycling); ○ industrial and hazardous waste e.g. Used oil and lubricants, batteries, solvents and chemicals, E-waste and medical waste ○ rubble e.g. scrap metal, wood and pallets, concrete and rubble; and – packaging and miscellaneous waste e.g. tyres and rubber waste, insulation and wiring material.			
Environment monitoring	Water quality				
	Site Code	Name	Monitoring purpose	Frequency	Threshold
	Ground- and surface water quality	To be confirmed upon suitable location selection	To detect contamination	Monthly	Appendix A
	Biodiversity				
	Site code	Name	Monitoring purpose	Frequency	Threshold
	Biodiversity conservation	Visual	– Inspect tanks for leakages and any breach of containment within this domain. – Inspect for animal activity and nesting	Daily	NA
Environmental reporting	Appointed EM to report to domain manager (monthly) Volumes of waste sent to waste facility,				

Domain 14: Non-mineralised waste facility (waste facility and recycling site)				
	– Volumes of recycled materials. – Animals nesting or animal activity of concern. – Results from water quality monitoring relating to potential contamination. – Animals of concern or requiring relocation.			
Environmental inspection/s	Daily	Weekly	Monthly	Other
	Waste facility operator supervisor to inspect the facility	Inspection by domain manager	Appointed EM and domain manager to complete	Bi-annual compliance audit
Supporting documents	– Area inspection form – Domain sign-off Appendix J			

20 DOMAIN 15 – TOPSOIL STOCKPILES

This domain includes the topsoil stockpiles, the revegetation material stockpile and all associated activities and structures. Topsoil will be stripped to a depth of 300 mm and paddock dumped in piles not higher than 2 m. The stockpiles will be strategically positioned so that they are suitable for rehabilitation and not subject to erosion. It is expected that a total volume of 1 045 512 m³ of material will be stockpiled as topsoil, with a footprint of 25 ha. Topsoil stockpiles play a crucial role in mining operations, especially in promoting environmental sustainability and facilitating successful rehabilitation efforts.

This domain schedule and set out in Table 22 includes all infrastructure and activities within the operational control of the domain outlined.

Table 22 – Domain 15: Topsoil stockpiles site domain schedule

Domain 15: Topsoil stockpiles		
Domain manager	Environmental manager	
Statutory requirements	Permit / Permit name	Environmental permit conditions
	A. Accessory works permit	A. Renewed every 5 years or when a material change occurs.
Potential issues or impacts	Water – The placement of topsoil stockpiles can alter natural drainage patterns and water flow, potentially affecting the hydrology of the area. This can lead to changes in groundwater levels and impact surrounding ecosystems. Air quality – Unprotected topsoil stockpiles can generate dust, which may contribute to air pollution. Dust emissions can have negative effects on air quality and human health. Biodiversity – The creation and management of topsoil stockpiles can temporarily disturb local habitats, displacing flora and fauna. Visual – Large topsoil stockpiles can alter the visual landscape, potentially impacting the aesthetic appeal of the area. Climate change – Improper handling and storage of topsoil may lead to the decomposition of organic matter and the release of stored carbon, contributing to greenhouse gas emissions and climate change.	

Domain 15: Topsoil stockpiles		
Targets	Adhere to best practices in topsoil management, including proper storage, screening, and treatment of topsoil to ensure its quality. Additionally, implementing effective erosion control measures and monitoring the site during and after reclamation is crucial for mitigating negative environmental effects.	
To minimise the effects the above-mentioned impacts may have on the environment and community, the domain manager will ensure the following measures are implemented.		
Operational management measures	Soil management	– Limit disturbance to soils to what is necessary; – Suitable topsoil will be identified by the production geologist and retained in burgundy stockpiles for future rehabilitation activities; – Topsoil stockpile areas will be identified as far as practically possible to the source of the soil; – Stockpiles to be demarcated; – Soil erosion measures to be investigated and applied as soon as practically possible; – Soil stockpile heights to be restricted where possible to 20 m; – Storage periods not to exceed three years, where this is not possible for erosion controls to be implemented; – No waste or other material to be mixed with topsoil; – Movement of equipment on stockpiles to be restricted; – Soils to be stripped to a depth of 300 mm where feasible; – Handle soils in dry weather conditions as far as possible to reduce compaction; – Reoccurring rehabilitation to be encouraged to ensure fresh topsoil is used to restore/rehabilitate areas and reduce stockpile sizes; – If soil becomes contaminated/polluted, the soil must first be treated <i>in situ</i> by applying bioremediation products; and – If not possible then the soils must be removed to the bioremediation site for further treatment.
Environmental reporting	Appointed EM to report on the following: – Volumes of topsoil sent to stockpile and from which location – Encroachment of alien species.	

Domain 15: Topsoil stockpiles				
	- Erosion and required erosion controls.			
Environmental inspection/s	Daily	Weekly	Monthly	Other
	Nil	Nil	Environmental Officer with the domain manager	Bi-annual compliance audit
Supporting documents	– Area inspection form, – Domain sign-off Appendix J, and – Spill prevention and management.			

21 DOMAIN 16 - FRESHWATER SUPPLY – PRODUCTION AND MONITORING OF BOREHOLES

This domain consists of the freshwater supply and associated infrastructure, including abstraction boreholes, dewatering boreholes, monitoring boreholes, water tanks and reservoirs, detailed in Figure 3 and the management measures are detailed in Table 23.

Table 23 – Domain 16: Freshwater supply – production and monitoring of boreholes.

Domain 16: Freshwater supply – production and monitoring of boreholes		
Domain manager	Engineering Manager	
Statutory requirements	Permit / Licence name	Environmental permit conditions
	A. Water abstraction and/or pit dewatering licence B. Drilling licence	A. Compliance with abstraction volumes as stipulated in the approved licence. B. As per licence conditions
Potential issues or impacts	– Water resource depletion (aquifers) – Groundwater contamination – Soil erosion and land degradation	
Targets	Sustainable water abstraction and use – Ensure groundwater abstraction does not exceed the sustainable yield or volumes depicted on licence per annum. – Maintain a zero net loss of regional water resources through sustainable abstraction and recharge management. – Reduce mine water consumption through efficiency improvements, water recycling, and reuse. – Track water consumption with the required flow meters and report to DWA monthly, as required. Groundwater protection and contamination prevention – Maintain zero contamination incidents from fuel spills, chemicals, or wastewater leakage into groundwater. – Ensure all boreholes and pipelines are lined, sealed, and regularly inspected to prevent leaks and seepage.	

	Efficient storage and distribution – Maintain zero leaks in water storage tanks, reservoirs, and pipelines through regular inspections and maintenance.	
To minimise the effects of the above-mentioned impacts, pose to the environment and community, the domain manager will ensure the following measures are implemented		
Operational management measures	– Groundwater protection and quality control	– Seal and cement casing for all boreholes to prevent surface contaminants from entering groundwater. – Conduct monthly inspections to detect leaks, cracks, or signs of corrosion – Investigate the alternative water supply from NamWater, Karibib Town wastewater treatment works and an augmentation scheme on the Khan River. – Analyse future trends and aquifer performances and other associated impacts triggered by mining operations. – The Khan River and river dams with groundwater recharge sites to increase the sustainability of groundwater abstraction on-site with excess seasonal water to be used directly in the plant process. – Track water consumption with the required flow meters and report to DWA monthly, as required.
	– Water quality monitoring	– Conduct monthly groundwater sampling as per the requirements of the Water Resources Management Act, No. 11 of 2013 and internal monitoring programme. – Implement emergency response procedures for any contamination incidents (e.g., immediate shutdown, alternative water supply, remediation). – Samples to be collected during the dry season from groundwater and surface water for stable isotopes and tritium to refine the recharge estimates to groundwater. Additional rainfall samples to be collected throughout the season to characterise the rainfall isotope signature better – The observation boreholes close to the river (e.g. OKP045, OKP042 and OKP049) must be monitored seasonally during operation for any solute transport being in the capture zone of the wells.

		- Flood monitoring should be conducted for the Okawayo River.
	- Tank and reservoir maintenance	- Conduct weekly inspections for leaks, structural integrity, and signs of contamination. - Ensure tanks are covered to prevent evaporation losses and contamination from dust and wildlife. - Ensure tanks are covered to prevent evaporation losses and contamination from dust and wildlife. - All animal-related injuries or mortalities should be reported immediately to the Environmental department and an incident report compiled.
	- Water level and pressure monitoring	- Fit all tanks with automated level sensors and alarms to detect overflows or low water levels. - Regularly test pumps, valves, and distribution systems to ensure consistent pressure and flow rates. - The numerical model can be refined in future updates to simulate climate change responses to the expected rainfall volumes over the life of mine. The IPCC report indicates that drought events in Southern Africa (caused by the El Nino oscillation) are predicted to become more frequent and intense, which could affect the recharge potential to aquifers in the region. - Monitoring groundwater levels and physiological stress levels in trees to assess any correlation.
	- Pipeline infrastructure management	- Conduct daily visual inspections and monthly pressure tests on all pipelines to detect leaks. - Repair pipeline leaks within the same shift of detection to prevent water loss. - Conduct internal pipeline flushing every six months to remove sediment and biofilm buildup.
	- Water use efficiency and conservation	- Reuse dewatered water for dust suppression, ore processing, or irrigation. - Reduce evaporation losses from reservoirs - Monitor water consumption per ton of ore processed and set annual reduction targets.
	- Emergency response and contingency planning	- Maintain spill kits and containment booms at key water infrastructure points. - Conduct annual emergency response drills for borehole contamination or pipeline failure.

		– Establish a rapid response team for immediate action in case of contamination incidents. – Develop a drought management plan to ensure sustainable water use during dry periods.			
Environmental pollution control measures (PCM)	Function and performance	Maintenance frequency			
	Used daily to wet roads and stockpiles to reduce dust and provide water to site for overall operational activities	Monthly maintenance as per planned maintenance schedule.			
Environmental Monitoring	Site code	Name	Monitoring purpose	Frequency	Threshold
	Groundwater levels	As shown in the domain map	Required to monitor aquifer groundwater levels	Monthly	Borehole and aquifer specific.
	Groundwater quality	As shown in the domain map	To monitor the change and trends in groundwater quality for the site	Quarterly	As per licence conditions
	Abstraction volumes - flowmeter readings	Site flow meters on abstraction points	Required to report the monthly abstraction volumes to DWA.	Monthly	As per licence conditions.
Environmental reporting	Domain manager to report to appointed environmental manager (E) (monthly) – The domain manager must complete the weekly compliance checklist. – Report monthly abstraction volumes or water use to the appointed EO. – Report any hydrocarbon spills, contamination of soil, surface or groundwater resources. – Any complaints received from the community.				
	Appointed EM to report back to the domain manager (monthly)				

	– Advise on action items to be implemented to address complaints received from the community. – Report the level of compliance to the OESMP. – Provide monthly written reports on the environmental monitoring program, including the groundwater monitoring program. – Appointed EO to interpret results and report these to the domain manager against trigger values. – Volume of water abstracted from boreholes (flow meter readings).			
Environmental Inspection	Daily	Weekly	Monthly	Other
	Check for water leaks and potential contamination of surface or groundwater	Inspect water leaks or pipe breakages in pipes.	To be inspected by the domain manager and appointed EO and OESMP compliance audit.	Biannual compliance audit and reporting to DEA (as required in the approved OESMP for the Project).
Supporting documents	– Environmental monitoring plan Appendix A – Domain sign-off Appendix J and water abstraction licence			

APPENDIX PAGES

APPENDIX A – ENVIRONMENTAL MONITORING PROGRAMME AND TRIGGER VALUES BASED ON NAMIBIAN OR SOUTH AFRICAN STANDARDS

Table 24 - Twin Hills Gold Project monitoring plan

Type	Rationale	Monitoring area/site description/details	Frequency	Phase (construction, operations, decommissioning, or all)	Parameters	Quality control point
Air quality - dust fallout collection	Potential impacts on air quality can arise from mine development and operations. Air quality monitoring is done to monitor the potential impacts on surrounding neighbours. Potential to generate dust during access track development, blasting and use of haul roads.	Sites surrounding the mine – in line with predominant wind direction. The co-ordinates for the selected sites are: AQ 01 (-21.840772, 15.92844) AQ 02 (-21.853609, 15.930052) AQ 03 (-21.852389, 15.949146) AQ 04 (-21.842434, 15.981554) AQ 05 (-21.828485, 16.007031) AQ 06 (-21.820387, 16.006268) AQ 07 (-21.822429, 15.968463) AQ 08	Before mine operations to determine the baseline air quality - monthly Monitoring should then also continue on a monthly basis to monitor dust generation during construction	All	Total suspended particulates (TSP)	Yes
						Yes

Type	Rationale	Monitoring area/site description/details	Frequency	Phase (construction, operations, decommissioning, or all)	Parameters	Quality control point
		(-21.869037, 15.924930) AQ 09 (-21.780108, 16.025002) AQ 10 (-21.783596, 16.026158) AQ 11 (-21.788446, 16.013193) AQ 12 (-21.792297, 16.012843) AQ 13 (-21.890037, 15.95768) AQ 14 (-21.889564, 16.993434) AQ 15 (-21.880555, 15.491944)	and operations			
Air quality-passive sampling	Equipment used during operations generates SO ₂ , NO ₂ , and VOCs/HF	As per depositional dust gauge locations	Exposed quarterly, exposure synced to depositional dust exchange period	Operations	SO ₂ , NO _x - (NO ₂ & NO) and VOCs/HF	Yes

Type	Rationale	Monitoring area/site description/details	Frequency	Phase (construction, operations, decommissioning, or all)	Parameters	Quality control point
Air quality-particulate matter monitoring	Dust-generating activities such as road construction, mining activities such as drilling and blasting, excavation and land clearing Wind erosion on TSF	Fixed onsite Praxis Cube	24 hours a day – real time Annual calibration	Operations	PM ₁₀ and PM _{2.5}	Yes
Water quality	To monitor the water quality (both surface and groundwater). Monitoring before the onset of mining operations - to determine baseline. Monitoring after mining commences to determine the impacts of mining operations on water quality.	Existing aquifer domains, the coordinates are as follows: <u>Groundwater Sites</u> WW 206133 (Allu drill 1) (-21.78497, 15.948063) WW 206114 (OKP002) (-21.844089, 15.984394) WW 206662 (Oka 7) (-21.845704, 15.981518) WW 206666 (OKP026) (-21.854493, 15.963347) Twin 2 (-21.797399, 16.017638) WW 206665 (OKP057) (-21.868119, 15.934433) Twin 7	Quarterly and/or bi-annually	All	Listed major ions and total metals	Yes

Type	Rationale	Monitoring area/site description/details	Frequency	Phase (construction, operations, decommissioning, or all)	Parameters	Quality control point
		(-21.786202, 16.013777) Twin 6 (-21.844601, 16.021784) WW 206664 (OKP042) (-21.844864, 15.980147) WW 206663 (Quarry BH) (-21.877744, 15.933837) Twin 5 (-21.870001, 16.019284) WW 206134 (Allu drill 2) (-21.783247, 15.946901) WW 206135 (Allu drill 3) (-21.783486, 15.952551) WW 205787 (Oka 12) (-21.835897, 16.006347) WW 206163 (Klein Oka 2) (-21.815099, 15.968955) WW 206161 (Klein Oka 4) (-21.788804, 15.98232) Klein Oka 1 (-21.817004, 16.011449) OKRHH053 (-21.90576669, 15.86270212) OKRHH056				

Type	Rationale	Monitoring area/site description/details	Frequency	Phase (construction, operations, decommissioning, or all)	Parameters	Quality control point
		(-21.897931, 15.878647) WW206181 (-21.793643, 15.953557) OKRHH080 (-21.89583, 15.990951)				
Noise	Noise monitoring to determine the impact of development on residents and surrounding areas	Specific locations selected to conduct noise monitoring: N 01 (-21.819200, 15.966730) N 02 (-21.8450700, 15.981310) N 03 (-21.794220, 16.016541) N 04 (-21.844000, 16.025190) N 05 (-21.889820, 15.996770) N 06 (-21.858140, 15.952170) N 07 (-21.8765600, 15.928780) N 08 (Karibib Airforce base) (-21.8543, 15.8961)	During the construction phase of the mine – quarterly During the mine’s operational phase – annually	Before construction commences and during construction	dB	No

THRESHOLDS FOR AIR QUALITY

The Namibian Atmospheric Pollution Prevention Ordinance, No. 11 of 1976, does not make provision for any standards for individuals and institutions to comply with, concerning fallout dust. The South African National Dust Control Regulations (NDCR) state the limits in Table 25 for dust fall rates in residential and non-residential areas.

Table 25 - SANS (1929:2011) ambient air quality evaluation criteria for dust deposition

Band Number	Band description	Dust rate (d) Mg/m ² /day	Comment
1	Residential	D < 600	Permissible for residential and light commercial.
2	Industrial	600 < D < 1200	Permissible for heavy commercial and industrial.
3	Action	1200 < D < 2400	Requires investigation and remediation if two sequential months lie in this band, or more than three occur in a year.
4	Alert	2400 < D	Immediate action and remediation are required following the first incidence of the dust fallout rate being exceeded. Incident report to be submitted to the relevant authority.

Table 26 - The target, action and alert threshold values from the SANS 1929:2011 Ambient Air Quality Monitoring Standard

Level	Dust rate (d) Mg/m ² /day	Averaging period	Permitted frequency of exceeding dust fall rate.
Action residential	D < 600	30 Days	Three within any year, no two sequential months
Action industrial	D < 1200	30 Days	Three within any year, not sequential months
Alert threshold	2400 < D	30 Days	None. The first incidence of dust fall rate exceeded, requires remediation and compulsory report to relevant authorities.

The most widely referenced international criteria are those published by the World Bank Group (WB), World Health Organization (WHO), and the European Union (EU) as shown in Table 27. Additionally, South African legislation (the Air Quality Act No. 39 of 2004) stipulates air quality standards for the mining sector, which can be regarded as representative indicators of Namibia

because of the similarity in social, environmental, and economic features. Osino will use the Air quality standards for SA - WHO Interim target-3 (IT-3) for PM 10/2.5.

Table 27 - Standards/guidelines derived from the WHO Interim target-3 (IT-3) for PM 10/2.5

WHO air quality guidelines and interim targets for particulate matter: 24-hour concentrations^a			
	PM₁₀ (µg/m³)	PM_{2.5} (µg/m³)	Basis for the selected level
Interim target-1 (IT-1)	150	75	Based on published risk coefficients from multi-centre studies and meta-analyses (about 5% increase of short-term mortality over the AQG value).
Interim target-2 (IT-2)	100	50	Based on published risk coefficients from multi-centre studies and meta-analyses (about 2.5% increase of short-term mortality over the AQG value).
Interim target-3 (IT-3)*	75	37.5	Based on published risk coefficients from multi-centre studies and meta-analyses (about 1.2% increase in short-term mortality over the AQG value).
Air quality guideline (AQG)	50	25	Based on relationship between 24-hour and annual PM levels.

Table 28 - Air quality criteria for particulate matter and passive gases

Parameter	Average	Criteria	Origin
PM2.5	24-hour mean (µg/m ³)	37.5 (1)	WHO IT3 & SA Standard
	Annual mean (µg/m ³)	15	WHO IT3
PM10	24-hour mean (µg/m ³)	75 (1)	WHO IT3 & SA Standard
	Annual mean (µg/m ³)	30	WHO IT3
SO ₂	1-hour mean (µg/m ³)	350 (1)	EC Limit & SA Standard (no WHO guideline)
	24-hour mean (µg/m ³)	50 (2)	WHO IT2 (seen as a per 40% of the SA and EC limits)
	Annual mean (µg/m ³)	50	SA Standard (no WHO guideline)
NO ₂	1-hour mean (µg/m ³)	200	WHO AQG & EC & SA Standard
	Annual mean (µg/m ³)	40	WHO AQG & EC & SA Standard
VOC (benzene)	Hourly mean (µg/m ³)	5	SA Standard (no WHO guideline)
VOC (toluene)	Hourly mean (µg/m ³)	640	TCEQ Short-term ESL
VOC (ethyl benzene)	Hourly mean (µg/m ³)	2560	TCEQ Short-term ESL
VOC (xylene)	Hourly mean (µg/m ³)	350	TCEQ Short-term ESL
HF (hydrogen fluoride)	1-hour mean (µg/m ³)	18	TCEQ Short-term ESL

Parameter	Average	Criteria	Origin
	Annual mean ($\mu\text{g}/\text{m}^3$)	8.7	TCEQ Short-term ESL

***Notes: (1) Not to be exceeded more than 4 times per year (SA); (2) Not to be exceeded more than 3 times per year.**

THRESHOLDS FOR GROUNDWATER QUALITY

It is required that all water in Namibia is adequately monitored and analysed to ensure compliance to regulatory standards, according to the requirements in the Water Resource Management Regulations of 2023, Water Resources Management Act, Act No. 11 of 2013 (Addendum 1) and associated licences.

Water Quality Guidelines and Standards for Potable Water

Specifications for water quality intended for human consumption from the source and piped water supply					
Status				Ranges and upper limits	
Interpretation				(Ideal guideline)	(Acceptable Standard)
DETERMINANTS	Unit	Format	Concern	95 Percentile Requirement	
PHYSICAL AND ORGANOLEPTIC REQUIREMENTS					
Temperature	° C		E	Ambient temperature	
Colour	PTU	or mg/litre	E	10	<15
Taste			O,E	No objectionable taste	
Odour			O,E	No objectionable odour	
Turbidity (treated surface water)	NTU	or TU	H,I	< 0,3	< 0,5
Turbidity (groundwater)	NTU	or TU	H,I	< 0,5	<2
pH @ 20 °C	pH		I	6.0 to 8,5	6 to 9
Electric Conductivity @ 25 °C	mS/m***	E.C.	H,I	< 80	< 300
Total Dissolved Solids	mg/litre		H,I	< 500	< 2 000
INORGANIC MACRO DETERMINANTS					
Ammonia	mg/litre	N	H	< 0,2	< 0,5
Calcium	mg/litre	Ca	I	< 80	< 150
Chloride	mg/litre	Cl	H,I	< 100	< 300
Fluoride	mg/litre	F	H	< 0,7	< 2,0
Magnesium	mg/litre	Mg	H	< 30	< 70
Nitrate	mg/litre	N	H	< 6	< 11
Nitrite	mg/litre	NO ₂	H	< 0,2	< 0,5
Potassium	mg/litre	K	H	< 25	< 100
Sodium	mg/litre	Na	H,I	< 100	< 300
Sulphate	mg/litre	SO ₄	H,O	100	< 300
Asbestos (fibres longer than 10 µm)	Fibres/litre		H	<500 000	< 1000 000
INORGANIC MICRO DETERMINANTS					
Aluminium	µg/litre	Al	H	< 25	< 100
Antimony	µg/litre	Sb	H	< 5	< 50
Arsenic	µg/litre	As	H	<10	< 50
Barium	µg/litre	Ba	H	0,5	< 2
Beryllium	µg/litre	Be	H	< 2	< 5
Bismuth	µg/litre	Bi	H	< 250	< 500
Boron	µg/litre	B	H	< 300	< 500
Bromide	µg/litre	Br	H	< 500	< 1 000
Cadmium	µg/litre	Cd	H	< 5	< 10
Cerium	µg/litre	Ce	H	<1 000	<2 000
Cesium	µg/litre	Cs	H	< 1 000	< 2 000
Chromium Total	µg/litre	Cr	H	< 50	< 100
Cobalt	µg/litre	Co	H	< 250	< 500
Copper	µg/litre	Cu	H	< 500	< 2 000

Specifications for water quality intended for human consumption from the source and piped water supply					
Status				Ranges and upper limits	
Interpretation				(Ideal guideline)	(Acceptable Standard)
DETERMINANTS	Unit	Format	Concern	95 Percentile Requirement	
INORGANIC MICRO DETERMINANTS					
Cyanide (free)	µg/litre	CN ⁻	H	< 20	< 50
Cyanide (recoverable)	µg/litre	CN ⁻	H	< 70	< 200
Iron	µg/litre	Fe	H,E	< 200	< 300
Lead	µg/litre	Pb	H	<10	< 50
Manganese	µg/litre	Mn	H	< 50	< 100
Mercury	µg/litre	Hg	H	< 1	<2
Nickel	µg/litre	Ni	H	< 50	< 150
Selenium	µg/litre	Se	H	< 10	< 50
Thallium	µg/litre	Ti	H	< 5	< 10
Tin	µg/litre	Sn	H	<100	<200
Titanium	µg/litre	Ti	H	< 100	< 300
Uranium	µg/litre	U	H	< 3	< 15
Vanadium	µg/litre	V	H	< 100	< 500
Zinc	µg/litre	Zn	H	< 1 000	< 5 000
Organo-metallic compounds	µg/litre	-	H	below detection limit	below detection limit
ORGANIC DETERMINANTS					
Dissolved Organic Carbon	mg/litre	DOC-C	H	< 5	<10
Phenol compounds	µg/litre	phenol	H	< 5	< 10
DISINFECTION AND DISINFECTION BY-PRODUCTS					
Bromodichloromethane (Part of THM)	µg/litre		H	< 20	< 50
Bromoform (Part of THM)	µg/litre		H	< 40	< 40
Chloroform (Part of THM)	µg/litre		H	< 20	< 100
Dibromomonochloro-methane (Part of THM)	µg/litre		H	< 20	< 100
Trihalomethanes (Total)	µg/litre	THM	H	< 100	< 150
Bromate	µg/litre		H	< 5	< 10
Chloramines	µg/litre	Cl ₂	H	< 2	< 4
Chlorine dioxide	µg/litre		H	< 400	< 800
Chlorite	µg/litre		H	< 400	< 4000
Chlorate	µg/litre		H	< 200	< 700
Haloacetic acids	µg/litre		H	not detected	< 60
Chlorine, free, after 30 min; GENERAL	mg/litre	Cl ₂	H,I	0,1 – 0,5	0,1 – 3,0
Chlorine, free, after 30 min; SPECIFIC	mg/litre	Cl ₂	Turbidity: < 0,3 NTU	0,1	0,1 – 3,0
Chlorine, free, after 30 min; SPECIFIC	mg/litre	Cl ₂	Turbidity: > 0,3 NTU	0,5	0,1 – 3,0
Chlorine, free, after 60 min; SPECIFIC	mg/litre	Cl ₂	Turbidity: >1,0 NTU	1,0	0,1 – 3,0

Specifications for water quality intended for human consumption from the source and piped water supply					
Status				Ranges and upper limits	
Interpretation				(Ideal guideline)	(Acceptable Standard)
DETERMINANTS	Unit	Format	Concer n	95 Percentile Requirement	
BIOLOGICAL REQUIREMENTS					
Algae					
Chlorophyll α	µg/litre		E,O	< 1	< 2
Blue-green algae	cells	/ml	H,O	< 200	<2 000
Mycrocystin	µg/litre		H	< 0.1	< 1
Geosmin	ng/litre		E, H	< 15	< 30
2-Methyl Iso Borneal (2 MIB)	ng/litre		E, H	< 15	< 30
OTHER DETERMINANTS					
Agricultural chemical compounds			H	Any organic compound recognized as an agro-chemical should be in accordance with the WHO and EPA requirements.	
Industrial chemical compounds			H	Any organic compound recognized as an industrial chemical should be in accordance with the WHO and EPA requirements.	
Endocrine disruptive chemicals			H	Any chemical compound that is suspected of having endocrine disruptive effects shall be in accordance with the WHO and EPA requirements.	
RADIOACTIVITY				95 Percentile Requirement	
Gross alpha activity	Bq/litre		H	< 0.2	< 0.5
Gross beta activity	Bq/litre		H	< 0.4	< 1.0
If Gross alpha and beta is above specification calculate Dose based on individual radionuclide concentrations	mSv/a		H	≤ 0.04	≤ 0.1
ANALYSIS QUALITY CHECK***					
Ion balance: Total anions			-	< 3 -Tolerance = 0.2 m equivalent 3-10 – Tolerance 2% on +- balance 10-800 – Tolerance 5% on +- balance	
TDS Balance: determined / calculated	ratio		-	~ 1	~ 1
Ratio TDS / EC (EC as □S/cm)	ratio		-	~ 0,66	0,55 – 0,7

"Concern" refers to impact if the limit is transgressed: H = health concern; O = organoleptic effect; I = effect on infrastructure, structural; E = aesthetic effect

* Based on a viral cell culture-dependent method and not on cell culture-independent methods (e.g. PCR)

** Indicative of faecal pollution having occurred, even when the residual disinfectant levels are safe.

*** Comply with SANAS Guidelines

THRESHOLDS FOR WASTEWATER QUALITY

It is required that all mine and process water in Namibia is adequately monitored and analysed to ensure compliance to regulatory standards, according to the obligatory industrial and domestic effluent discharge licence under section 21(5) and 22(2) of the Water Resource Management Regulations of 2023, Water Resources Management Act, Act No. 11 of 2013 (effluents) (Addendum 11).

Table 29 - General standards for waste/effluent water discharge

Table 2: Microbiological and Biological Requirements

MICROBIOLOGICAL REQUIREMENTS APPLICABLE TO ALL POTABLE WATER					
Microbiology	cfu			95 percentile	1 of samples maximum
Heterotrophic bacteria HPC or TCC	counts	/ml		100 at 37° C	1 000 at 37° C
Total Coliform	counts	/100 ml	H	0	5
E.Coli	counts	/100 ml	H	0	1
Enterococci	counts	/100 ml	H	0	1
Somatic Coliphage	counts	/100 ml	H	0	1
Clostridium perfringens inclusive spores	counts	/100 ml	H	0	1
Enteric viruses	viral count*	/10 L	H	0	1
Parasites (Protozoa) applicable to all potable water				95 percentile	99 percentile
Giardia lamblia	cysts	/100 litre	H	0	1
Cryptosporidium	oocysts	/100 litre	H	0	1
Giardia lamblia and Giardia lamblia (Grab sample)	cysts or oocysts	/10 L	H	0	0

Table 3: Special Requirements for the Protection of Infrastructure

Table 3. Special Requirements for the Protection of Infrastructure					
Specifications for water quality intended for human consumption from the source and piped water supply for the protection of infrastructure against corrosion					
Status				Ranges and upper limits	
Interpretation				(Ideal guideline)	(Acceptable Standard)
DETERMINANTS	Unit	Format	Concentration	95 Percentile requirement	
CORROSIVE AND SCALING PROPERTIES					
Calcium Carbonate Precipitation Potential	mg/litre	CCPP	I	4 - 5	3 - 6
Alkalinity/Sulphate/ Chloride Ratio	Equivalents	Corrosivity Ratio	I	With SO ₄ and Cl above 50 mg/litre Ratio=(Alk/50)/(SO ₄ /48+Cl/35.5) > 5.0 Water is Stable Ratio= (SO ₄ /48+Cl/35.5)/(Alk/50) > 0.2 Water is Corrosive	
Total Hardness (Ca & Mg)	mg/litre	CaCO ₃	I	<200	< 400

Table 4: Frequency of Microbiological Monitoring for Bulk Water Supply

Size of population served	Turbidity 95%**	Frequency of sampling
> 250 000	< 0,5 NTU	Thrice weekly ***
100 001 – 250 000	< 1,0 NTU	Twice weekly
50 001 – 100 000	< 1,0 NTU	Once weekly
10 001 – 50 000	< 1,0 NTU	Three times every month
< 10 000 reticulated	< 1,0 NTU	Once every 1 month*
< 10 000 non-reticulated	1 – 2 NTU	Once every 1 month*

* Upon complaints by the consumers or of medical practitioners and after incidents such as pipe breaks, the frequency should be increased until the situation has returned to original counts and been declared safe;

** Average or 95 percentile turbidity of the water supplied

*** The frequency should be stepped up by one extra sampling per week for every 100 000 residents (including the estimated number of visitors residing within the area at any time) in the area served, over and above 250 000.

Table 30 - Recommended allowable ambient sound (rating) levels for various land use type districts

THRESHOLD FOR NOISE

The South African Noise Level Criteria, SANS 10103: 2003 (SABS 0103) is frequently used in Namibia to determine the maximum allowable ambient noise levels Table 22 which should not be exceeded.

Type of District	Maximum Allowable Ambient Noise Levels L_{eq} (Hourly) in dB (A)					
	Outdoors			Indoors with Windows Closed		
	Day- night ($L_{R, dn}$)	Daytime ($L_{Req, d}$)	Night – time ($L_{Req, n}$)	Day - night ($L_{R, dn}$)	Daytime ($L_{R, d}$)	Night – time ($L_{R, n}$)
RESIDENTIAL DISTRICTS						
a) Rural Districts	45	45	35	35	35	25
b) Suburban districts (little road traffic)	50	50	40	40	40	40
c) Urban districts	55	55	45	45	45	35
NON- RESIDENTIAL DISTRICTS						
d) Urban districts (some workshops, business premises and main roads)	60	60	50	50	50	40
e) Central business districts	65	65	55	55	55	45
f) Industrial districts	70	70	60	60	60	50

Note: Residential buildings such as dormitories, hotel accommodation, residences, etc. should only be allowed in non- residential districts on condition that the calculated anticipated indoor maximum equivalent continuous rating levels ($L_{Req, T}$)

LIGHTING REQUIREMENTS SPECIFICATION FOR AS PER NAMCATS PART 139 FOR OBSTACLES OPERATING IN THE VICINITY OF AERODROMES

Table 31 - Characteristics of obstacle lights

1	2	3	4	5	6	7
Light Type	Colour	Signal type/ (flash rate)	Peak intensity (cd) at given Background Luminance (b)			Light Distribution Table
			Day (Above 500 cd/m ²)	Twilight (50-500 cd/m ²)	Night (Below 50 cd/m ²)	
Low-intensity, Type A (fixed obstacle)	Red	Fixed	N/A	N/A	10	Table 13.2
Low-intensity, Type B (fixed obstacle)	Red	Fixed	N/A	N/A	32	Table 13.2
Low-intensity, Type C (mobile obstacle)	Yellow/Blue (a)	Flashing (60-90 fpm)	N/A	40	40	Table 13.2
Low-intensity, Type D (follow-me vehicle)	Yellow	Flashing (60-90 fpm)	N/A	200	200	Table 13.2
Low-intensity, Type E	Red	Flashing (c)	N/A	N/A	32	Table 13.2 (Type B)
Medium-intensity, Type A	White	Flashing (20-60 fpm)	200,00	20,000	2,000	Table 13.3
Medium-intensity, Type B	Red	Flashing (20-60 fpm)	N/A	N/A	2,000	Table 13.3
Medium-intensity, Type C	Red	Fixed	N/A	N/A	2,000	Table 13.3
High-intensity, Type A	White	Flashing (40-60 fpm)	200,000	200,00	2,000	Table 13.3
High-intensity, Type B	White	Flashing (40-60 fpm)	100,000	20,000	2,000	Table 13.3
a. See 2.6 b. For wind turbine application, to flash at the same rate as the lighting on the nacelle.						

Table 32 - Light distribution for low-intensity obstacle lights

	Minimum intensity (a)	Maximum intensity (a)	Vertical beam spread (f)	
			Minimum beam spread	Intensity
Type A	10 cd (b)	N/A	10°	5 cd
Type B	32 cd (b)	N/A	10°	16 cd
Type C	40 cd (b)	400 cd	12° (d)	20 cd
Type D	200 cd (c)	400 cd	N/A (e)	N/A

Table 33 - Light distribution for medium and high intensity obstacle lights according to benchmark intensities in Table 23

Benchmark intensity	Minimum requirements					Recommendations				
	Vertical elevation angle (b)			Vertical beam spread (c)		Vertical elevation angle (b)			Vertical beam spread (c)	
	0°		-1°			0°	-1°	-10°		
	Minimum average intensity (a)	Minimum intensity (a)	Minimum intensity (a)	Minimum beam spread	Intensity (a)	Maximum intensity (a)	Maximum intensity (a)	Maximum intensity (a)	Maximum beam spread	Intensity (a)
200 000	200 000	150 000	75 000	3°	75 000	250 000	112 500	7 500	7°	75 000
100 000	100 000	75 000	37 500	3°	37 500	125 000	56 250	3 750	7°	37 500
20 000	20 000	15 000	7 500	3°	7 500	25 000	11 250	750	N/A	N/A
2 000	2 000	1 500	750	3°	750	2 500	1 125	75	N/A	N/A

Table 34 - Installation setting angles for high-intensity obstacle lights

Height of light unit above terrain (AGL)		Angle of the peak of the beam above the horizontal
Greater than	Not exceeding	
151 m		0°
122 m	151 m	1°
92 m	122 m	2°
	92 m	3°

APPENDIX B – STANDARD OPERATING PROCEDURE - REST WATER LEVEL MONITORING

APPENDIX C – STANDARD OPERATING PROCEDURE – GROUND WATER QUALITY MONITORING

APPENDIX D – STANDARD OPERATING PROCEDURE – SURFACE WATER QUALITY MONITORING

APPENDIX E – STANDARD OPERATING PROCEDURE – POTABLE WATER QUALITY MONITORING

APPENDIX F – STANDARD OPERATING PROCEDURE – EFFLUENT AND WASTEWATER MONITORING

APPENDIX G – STANDARD OPERATING PROCEDURE – AMBIENT NOISE MONITORING

APPENDIX H – STANDARD OPERATING PROCEDURE – AIR QUALITY MONITORING

APPENDIX I – STANDARD OPERATING PROCEDURE – SOIL SAMPLING

APPENDIX J – LAND CLEARING PERMIT

APPENDIX K – DOMAIN SIGN-OFF