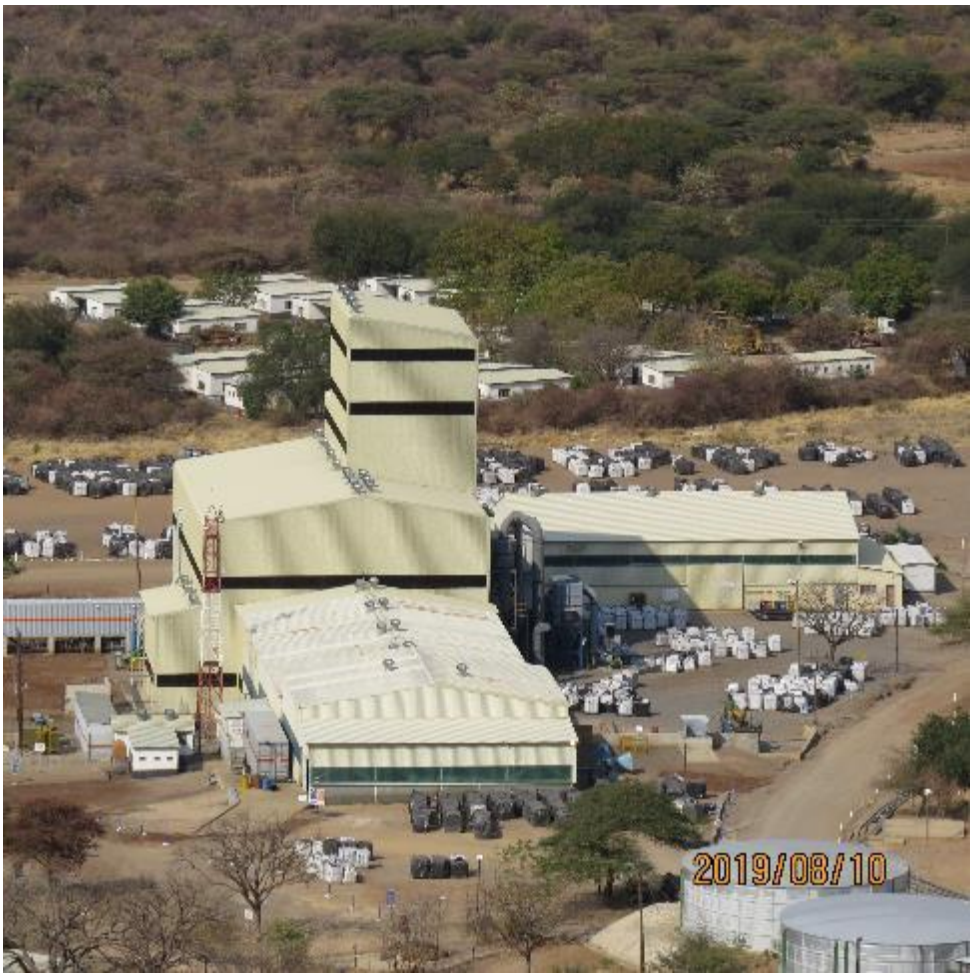
Imerys Gecko Graphite Namibia (Pty) Ltd

Scoping Report (with Assessment) for the Proposed Graphite processing plant at Okorusu Mine



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P. O. Box 81307
Olympia
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DOCUMENT INFORMATION

Title	Final Scoping Report (with Assessment) for an amendment to the Imerys Gecko Graphite processing plant at Okorusu Mine and Draft Environmental Management Plan
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Client	Imerys Gecko Graphite Namibia (Pty) Ltd
Status	Final Scoping Report with assessment and Draft EMP towards an amendment of ECC
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EXECUTIVE SUMMARY

Imerys Gecko Graphite (Namibia) (Pty) Ltd (hereafter referred to as Imerys) is applying for the following specific activities/aspects to be transferred to a standalone clearance certificate in the name of Imerys Gecko Graphite (Namibia) Pty Ltd:

- Whole processing of graphite ore at the Okorusu mine site;
- The storage and use of diesel and heavy fuel oil to be included under the transferred certificate;
- The New Tailings Storage Facility (NTSF) and
- The haulage of graphite ore from Okanjande mine site to Okorusu mine site by truck.

The proponent has commissioned an Environmental Impact Assessment (EIA) process for these changes based on the requirements of the Environmental Management Act (Act. No. 7 of 2007) and associated EIA regulations Government Notice (GN) No. 29 and 30. An Environmental Clearance Certificate (ECC) was issued for the construction and operation of the graphite processing plant as well as the other activities listed above. This Amended Scoping Report with Assessment and Amended Draft Environmental Management Plan is hereby submitted to the Ministry of Mines and Energy (MME) and to the Ministry of Environment, Forestry and Tourism for review and issuance of an ECC.

The processing plant, NTSF and mountain haul road were all constructed after the last amendment was made and the ECC granted. The current amendment deals only with the operational impact assessment. There are no material changes to the activities and the impacts as they were assessed previously, remain unchanged. The measures for mitigating the potential impacts remain the same. The Environmental Assessment Practitioner, responsible for compiling this amendment concludes that provided the conditions for operation and processing plant closure are implemented effectively, then environmental clearance could be granted to the proponent.

SCOPING REPORT (WITH ASSESSMENT) FOR THE PROPOSED GRAPHITE PROCESSING PLANT AT OKORUSU MINE

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ABREVIATIONS

Below a list of acronyms and abbreviations used in this report.

TABLE 1. LIST OF ABREVIATIONS

Acronyms / Abbreviations	**Definition**
BID	Background information document
DEA	Department of Environmental Affairs
EAP	Environmental Assessment Practitioner
EAPAN	Environmental Assessment Professionals' Association of Namibia
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
Ha	Hectare
IAP	Interested and affected party
Km	Kilometre
M	Meter
MEFT	Ministry of Environment, Forestry and Tourism
MET: DEA	Ministry of Environment and Tourism: Department of Environmental Affairs
RWD	Return Water Dam
NTSF	NewTailings Storage Facility

1 INTRODUCTION

1.1 PROJECT BACKGROUND

Imerys Gecko Graphite (Namibia) (Pty) Ltd (hereafter referred to as Imerys) developed the graphite processing plant and associated infrastructure and commissioned the plant in 2016. The environmental clearance was granted as part of the mineral licence ML90 which was granted to Okorusu Fluorspar (Pty) Ltd. The graphite ore was hauled from ML196 which was granted to Imerys Gecko Okanjande Mining (Pty) Ltd. Refer to Figure 1 for the regional setting and Figure 2 for the Imerys infrastructure and responsible areas within ML-90. Since November 2018 graphite production has temporarily stopped at the Okorusu Fluorspar Mine and as it is now under "Care and Maintenance" to ensure that it remains in a safe and stable condition.

Both the Okanjande and Okorusu mines currently hold Environmental Clearance Certificates (ECC) in terms of the Environmental Management Act (No. 7 of 2007) (EMA). Imerys, the owner of the graphite processing plant at Okorusu, intends has applied for an amendment to the conditions of the environmental clearance certificate for this processing plant. Currently the environmental clearance certificate for processing graphite ore, amongst other activities at the Okorusu mine site, is in the name of Okorusu Fluorspar (Pty) Ltd and associated with the mining licences (ML) 90 as already stated. The proponent, Imerys, is applying for the following specific activities/aspects to be transferred to a standalone clearance certificate in the name of Imerys Gecko Graphite (Namibia) Pty Ltd:

- Whole processing of graphite ore at the Okorusu mine site;
- The storage and use of diesel and heavy fuel oil to be included under the transferred certificate;
- The New Tailings Storage Facility (TSF) and
- The haulage of graphite ore from Okanjande mine site to Okorusu mine site by truck.

The proponent has commissioned an Environmental Impact Assessment (EIA) process for these changes based on the requirements of the Environmental Management Act (Act. No. 7 of 2007) and associated EIA regulations Government Notice (GN) No. 29 and 30. An Environmental Clearance Certificate (ECC) was issued for the construction and operation of the graphite processing plant as well as the other activities listed above. This Amended Scoping Report with Assessment and Amended Draft Environmental Management Plan is hereby submitted to the Ministry of Mines and Energy (MME) and to the Ministry of Environment, Forestry and Tourism for review and issuance of an ECC.

The current amended Environmental Management Plan (EMP), will enable MME and MEFT to make an informed decision regarding the proposed amendments to the EMP. The environmental commissioner will

assess whether this is sufficient to issue the new clearance certificate or require an amended scoping report with assessment to accompany the amended EMP.

This report focuses on the above mentioned 4 activities only that have been previously covered in the approved Okorusu EIA Report (SLR, 2016) and EMP (SLR, 2016), that was compiled following an EIA process conducted in 2016 for the expansion of mining activities at the Okorusu Mine. This report is based on the previous amendment and does not change the description of the 4 activities and their assessment in any material way.

For further details regarding the proposed activities and more detailed maps indicating their locations and extents, refer to Section 4.

FIGURE 1. LOCATION OF THE OKORUSU AND OKANJANDE MINES RELATIVE TO OTJIWARONGO

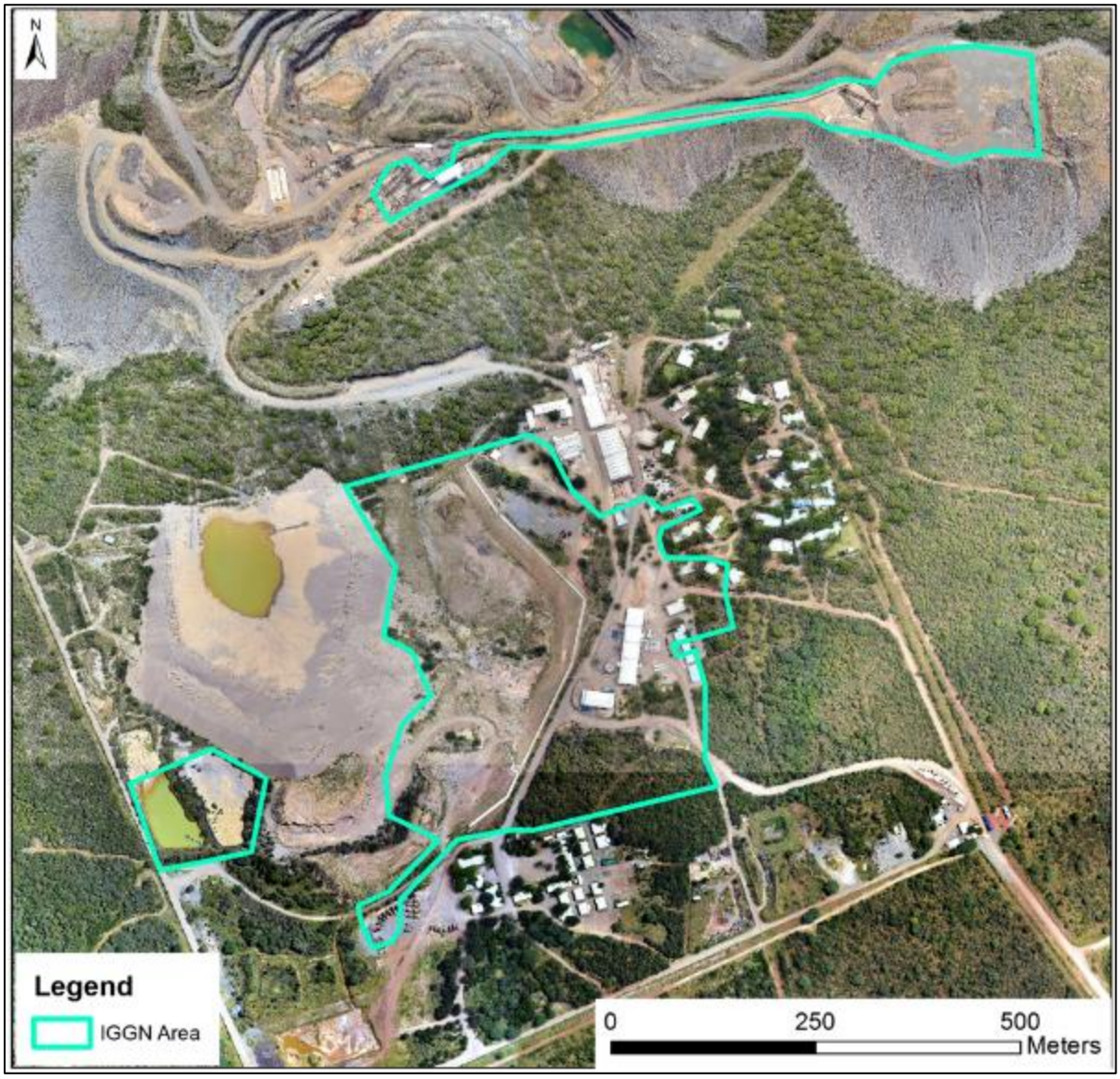


FIGURE 2. IMERYS PROCESSING PLANT AND ASSOCIATED INFRASTRUCTURE AT OKORUSU MINE SITE

1.2 PROJECT MOTIVATION

A high-level trade-off assessment (process and economics) for hauling the graphite ore from the Okanjande mine to the existing plant at the Okorusu site was undertaken in 2015. Establishing the processing facility at Okorusu was found to be preferable from an economic and schedule perspective. It was estimated that graphite production could be achieved about 24 months earlier due to the established and readily available infrastructure and utilities at the Okorusu Mine. This was achieved by 2018. Thus, it was a good decision to locate the processing plant at Okorusu

The current amendment is motivated by the need to have the ECC for the Imerys graphite processing plant and associated infrastructure separated from the ECC of ML90 and Okorusu Mine as the Okorusus Mine activities at the mine have no relation to Imerys.

In order to facilitate ease of access of vehicles transporting graphite to the Okorusu stockpile area and processing facility, the new 2400 m access haul road from the D2869 was constructed in a north-westerly direction up the hill slope (refer to **Figure 3**). This has made safe passage of haul vehicles up to the Run of Mine (ROM) area where the graphite ore is stockpiled.

1.3 INTRODUCTION TO THE ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED ACTIVITIES

Environmental Impact Assessments are regulated by the Ministry of Environment, Forestry and Tourism (MEFT) in terms of the Environmental Management Act, 7 of 2007. This Act was gazetted on 27 December 2007 (Government Gazette No. 3966). The List of Activities that may not be undertaken without an Environmental Clearance Certificate and the Environmental Impact Assessment Regulations: Environmental Management Act, 2007 (Government Gazette No. 4878) were promulgated on 6 February 2012.

The following listed activities are relevant to the proposed project:

TABLE 2. LISTED ACTIVITIES

Listed activity	Applicable project component
2.1 The construction of facilities for waste sites, treatment of waste and disposal of waste.	The construction of the new TSF cell within the existing approved TSF footprint.
3.3 Resource extraction, manipulation, conservation and related activities.	Processing of graphite within the existing processing plant.
8.5 Construction of dams, reservoirs, levees and weirs.	The construction of the new TSF cell within the existing approved TSF footprint.
10.2. The route determination of roads and design of associated physical infrastructure where – (b) the road reserve is wider than 30 meters;	The maintenance of the new access haul road from the D2869 over a distance of approximately 2400m to the ROM mine site.

(c) the road caters for more than one lane of traffic in both directions.	
9.4 The storage and handling of a dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30 cubic meters at any one location. and 9.5 Construction of filling stations or any other facility for the underground and aboveground storage of dangerous goods, including petrol, diesel, liquid, petroleum, gas or paraffin.	The storage and dispensing of diesel and HFO for use by mobile and stationary plant.

1.3.1 EIAS COMPLETED AND APPROVED

A number of environmental approvals have been obtained by Okorusu for their historic operations:

Year	Description
1998	In the year following the purchase of the Okorusu Mine by Solvay an EMP was compiled and submitted to the "Directorate" of Environmental Affairs (DEA), now Department of Environmental Affairs, for approval. Approval was granted in that year.
2003	The EMP was amended in 2003 to reflect various changes at the mine and address any potential additional impacts associated with those changes. Various specialist studies were carried out in order to identify environmental priorities that require management. Approval was granted by the DEA in terms of Namibia's Environmental Assessment Policy of 1995.
2008	A further amendment was compiled and submitted in 2008. Approval was also granted by the DEA in terms of Namibia's Environmental Assessment Policy of 1995.
2012	The 2008 EMP was submitted to the DEA on 31 January 2013 in order to obtain environmental clearance in terms of the Environmental Management Act (Act no. 7 of 2007) which was enacted on 6 February 2012.
2013	An EIA process was undertaken in 2013 for the expansion of mining operations within ML-90 and ML-179. DEA issued an ECC for the expansion on 26 February 2014.
2015	An EIA process was carried out in order to allow for further exploration work to be carried out within EPL 5046.
2016	An Amendment EIA to include the mining of magnetite, processing of graphite, a new haul road and new tailings facility at Okorusu Mine

An EIA was undertaken for the Okanjande Graphite Mine in 2014. DEA issued an ECC for the mine and exploration activities in the Okanjande area on 23 April 2015. The Okorusu Mine 2016 ECC made provision

for a processing plant to be constructed at Okorusu Mine and the transport of graphite ore from the Okanjande Mine to Okorusu Mine. The processing plant that was given clearance for Okanjande Mine has not been contructed yet.

1.3.2 EIA PROCESS FOR THE PROPOSED ACTIVITIES

An ECC was issued by the Ministry of Environment, Forestry and Tourism (MEFT): Department Environmental Affairs (DEA) for the amendment of the previous ECC and EMP in March 2016. The current EIA process is being conducted in terms of the Environmental Management Act, 7 of 2007. This process includes a scoping report with assessment and an amended EMP.

The current approach is the legally required approach in terms of the EMA. The main purpose of this report is to provide information relating to the proposed project components and to indicate which environmental aspects and potential impacts have been identified. This Scoping Report was developed through the review of the EIA documentation for the Okanjande Graphite Mine (dated October 2014), the Okorusu project history, additional specialist studies carried out and consultation with relevant stakeholders, specifically the surrounding landowners. The potential impacts related to the project components were assessed based on the existing specialist studies conducted in the past EIAs. An amended EMP is also included as part of this report (Appendix H).

This report is the Scoping Report with Assessment and Draft EMP. Based on the availability of existing information and the additional studies carried out for the proposed components, it is thought that this report, together with the attached updated EMP, will provide sufficient information for MEFT to make an informed decision regarding the proposed project.

More detailed information on the Scoping Report is provided in Section 2.2.

1.3.3 EIA SCOPING PROCESS

The EIA Scoping process and corresponding activities are outlined in **Table 3** below.

TABLE 3. EIA SCOPING WITH ASSESSMENT PROCESS

Objectives	Corresponding activities
Project initiation (September 2019)	
• Identify environmental aspects and potential impacts internally • Notify the decision-making authority of the proposed activities • Initiate the EIA Scoping process.	• Project initiation discussions with the project proponent. Identify environmental and social issues and determine legal requirements.
Scoping phase (including assessment of impacts) (July 2019 – November 2020)	

Objectives	Corresponding activities
• Identify interested and/or affected parties (IAPs) (specifically relevant landowners) and involve them in the scoping process through information sharing. • Further identify potential environmental issues associated with the proposed project. • Provide a description of the potentially affected environment. • Assessment of potential environmental impacts associated with the proposed project. • Develop management and mitigation measures.	• Identify government authorities and IAPs and notify them of the project and EIA process. • IAP registration and initial comments period. • Site visit and focus group meeting with surrounding landowners • Specialist investigations. • Compilation of Scoping Report and EMP • Distribute Scoping Report to relevant authorities and IAPs for review • Submission of Application form to MEFT. • Forward finalised Scoping Report and EMP with IAPs comments to MEFT for decision making.

More details regarding the public participation process are provided in Section 2.3.

1.3.4 EIA TEAM

Philip Hooks is the Environmental Assessment Practitioner who undertook the amendment EIA process. He has 8 years' experience in EIAs and holds a Masters in Environmental Management. Lovisa, Nangula an environmental management graduate assisted with the report writing. The relevant curriculum vitae documentation is attached in Appendix G. The environmental project team is outlined in **Table 4** below.

Table 4. **The environmental project team and previous specialist studies**

Team	Name	Designation	Tasks and roles	Company
Environmental Assessment	Philip Hooks	Environmental Assessment Practitioner	Responsible for undertaking the amendment EIA	Private
	Lovisa Nangula	Graduate; assistant report writer	Drafted the report and EMP	Private
Specialist, Baseline, and Engineering Studies	Diganta Sarma	Geohydrologist	Baseline report for the New Tailings Storage Facility (NTSF)	Namib Hydrosearch
		Engineer	NTSF Management Plan	Knight Piesold

Team	Name	Designation	Tasks and roles	Company
	Hanlie Liebenberg-Enslin	Air quality specialist	Assessed air quality impacts from graphite ore processing and dust entrainment	Airshed Planning Professionals
	Louis du Toit	Consulting engineer	Traffic assessment	Lithon Project Consultants

2 SCOPING METHODOLOGY

2.1 INFORMATION COLLECTION

Various sources were used to identify the environmental issues associated with the proposed project components. The main sources of information for the preparation of this Scoping Report include:

- Project information provided by the applicant:
    - EIA, EMP and ECC for Okanjande Graphite Mine
    - Layout plans of the Imerys areas at Okorusu
    - Details of processing operations
- Existing Amendment EIA and EMP for the Okorusu Fluorspar Mine including the graphite processing, haul road and NTSF (SLR, 2016b)
- Consultation with Interested and Affected Parties (IAPs)
- Air quality assessment (AIRSHED, 2016)
- Water Assessment (SLR, 2016a) Baseline soil and water study (Namib Hydrosearch, 2017)
- Traffic assessment (Lithon, 2016)
- Engineering Plan for the NTSF (Knight Piesold, 2017)

2.2 SCOPING REPORT

The main purpose of this Scoping Report is to indicate which environmental aspects relating to the proposed new project components might have an impact on the environment, to assess them and to provide management and mitigation measures to avoid or reduce these impacts. As both the Okanjande and Okorusu mines hold valid ECCs, the scope of this EIA process only includes the impacts associated with the proposed project components. **Table 5** outlines the Scoping Report requirements contained in Section 8 of the Environmental Impact Assessment Regulations promulgated in February 2012 under the Environmental Management Act, 7 of 2007. The table includes reference to the relevant sections in the report.

Table 5. Scoping report requirements stipulated in the EIA regulation

Requirements for a Scoping Report in terms of the February 2012 regulations	Reference in report
a) the curriculum vitae of the EAP who prepared the report;	Appendix G
b) a description of the proposed activity;	Sections 1&4

Requirements for a Scoping Report in terms of the February 2012 regulations	Reference in report
c) a description of the site on which the activity is to be undertaken and the location of the activity on the site	Section 5
d) a description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed listed activity;	Sections 5 &7
e) an identification of laws and guidelines that have been considered in the preparation of the Scoping Report;	Section 2.1
f) details of the public consultation process conducted in terms of regulation 7(1) in connection with the application, including - i. the steps that were taken to notify potentially interested and affected parties of the proposed application; ii. proof that advertisements and notices notifying potentially interested and affected parties of the proposed application have been placed or sent by email; iii. a list of all persons, organisations and organs of state that were registered in terms of regulation 22 as interested and affected parties in relation to the application; and iv. a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues;	Section 2, Appendices A,B,C,D, E, F
g) a description of the need and desirability of the proposed listed activity and any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives have on the environment and on the community that may be affected by the activity;	Section 1.2
h) a description and assessment of the significance of any significant effects, including cumulative effects, that may occur as a result of the undertaking of the activity or identified alternatives or as a result of any construction, erection or decommissioning associated with the undertaking of the proposed listed activity;	Section7
i) terms of reference for the assessment; and	
j) a draft management plan, which includes - i. information on any proposed management, mitigation, protection or remedial measures to be undertaken to address the effects on the environment that have been identified including objectives in respect of the rehabilitation of the environment and closure; ii. as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of the activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and iii. a description of the manner in which the applicant intends to modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation remedy the cause of pollution or degradation and migration of pollutants.	**APPENDIX H**

2.3 PUBLIC PARTICIPATION PROCESS

The public participation process aimed to ensure that all persons (i.e. relevant landowners, residents, authorities, etc.) and/or organisations that may be affected by, or interested in, these activities were informed of the project and could register their views and concerns.

Included below is a summary of the people consulted, the process that was followed, and the issues that were identified.

2.3.1 KEY STAKEHOLDERS

The following table (**Table 6**) provides a broad list of stakeholders that are relevant to the proposed project. They were informed about the proposed activities and the public consultation process.

TABLE 6. STAKEHOLDERS

Stakeholder Grouping	Organisation
Government Ministries	• Ministry of Industrialisation Trade & SME Development (MITSD) • Ministry of Environment Forestry and Tourism (MEFT) • Department of Environmental Affairs • Ministry of Mines and Energy (MME) • Ministry of Agriculture, Water and Land Reform (MAWLR) • Ministry of Lands and Resettlement
Local and regional government – councillors and key officers	• Otjozondjupa Regional Council
Government Parastatals	• Roads Authority
Affected landowners	Landowners and residents
Other interested and affected parties	Any other people with an interest in, or who may be affected by, the proposed project.

The full stakeholder database for this project is included in Appendix B of the report.

2.3.2 STEPS IN THE CONSULTATION PROCESS

Table 7 sets out the steps in the consultation process that were conducted during the EIA Scoping process:

Table 7. **Consultation process with IAPs**

TASK	DESCRIPTION	DATE
Notification - regulatory authorities and IAPs		
MITSD	EPZ Certificate received (Appendix I)	7 April 2017
Notification to MEFT	A discussion held with the MEFT in order to confirm the way forward with regard to the required application process.	November 2018
Distribution of background information document (BID)	BIDs with covering letters were distributed via email to relevant authorities and IAPs on Okorusu's stakeholder database Hard copies of the BID were also distributed during the public meeting. The purpose of the BID was to inform IAPs and authorities about the proposed project amendments, the EIA (Scoping) process being followed, possible environmental impacts and means of providing input to the EIA (Scoping) process. Attached to the BID was a registration and response form, which provided IAPs with an opportunity to submit their names, contact details and comments on the project. A copy of the BID is attached in Appendix A.	July 2019
IAP identification	The existing I&AP database was utilised and updated. A list of I&APs is attached in Appendix B.	January 2019
Newspaper Advertisements	Block advertisements were placed as follows: • The Republikein (12 July 2019; 19 July 2019) • The Namibian (12 July 2019; 19 July 2019) Copies of the advertisements are attached in Appendix C.	June/July 2019
Public Meeting and submission of comments		
I&AP meetings	A meeting was held with adjacent landowners at the Okoruso Mine on the 24 July 2019. Please find the Attendance Register attached in Appendix E.	July 2019
Comments and Responses	Public meeting presentation is in Appendix E; Correspondence to and from stakeholders and Interested and Affected Parties is found in Appendix F. One important comment was received from Okorusu Fluorspar (Pty) Ltd as follows. They wish to reserve the right to maintain the activities mentioned in this amendment to dually be kept for the ML90 as well in the event that they would want to operate a similar graphite processing plant on site.	

TASK	DESCRIPTION	DATE
Review of Scoping Report		
IAPs and authorities (excluding MEFT) review of Scoping Report and EMP	Electronic copies of the report were made available on the internet. The Scoping Report and EMP was distributed to all authorities and IAPs that are registered on the IAP database and/or e-mail. Authorities and IAPs were given 20 working days to review the Scoping Report and submit comments in writing to the EAP. The closing date for comments was 26th April 2021.	April 2021
MEFT review of Scoping Report and EMP	A copy of the final Scoping Report, including authority and IAP review comments, will be delivered to MEFT on completion of the public review process.	April 2021

2.3.3 SUMMARY OF ISSUES RAISED

The main issues that were raised to date by authorities and IAPs are provided here. Issues raised relating to existing activities are:

- Employment (Locals from farms and the neighbouring towns hope to receive work at the plant)
- The exclusion of the water pipeline and mine boreholes from the list of Imerys' activities as they must fall under the responsibility of the mine.
- Okorusu Fluorspar (Pty) Ltd wishes to reserve the right to duplicate the graphite related activities mentioned in this amendment in the event that they would want to operate a similar graphite processing plant on site.

Due to the fact that these issues relate to existing approved activities, no further assessment was required *unless* cumulative impacts are likely to occur, taking the existing operations and proposed (expansion) activities and facilities into consideration. However, the mitigation impacts have been addressed in the existing and updated EMP attached in **APPENDIX H**.

3 LEGAL FRAMEWORK

The Republic of Namibia has five tiers of law and a few policies relevant to environmental assessment and protection, which includes:

- The Constitution.
- Statutory law.
- Common law.
- Customary law.
- International law.

As the main source of legislation, the Constitution of the Republic of Namibia (1990) makes provision for the creation and enforcement of applicable legislation. In this context and in accordance with its constitution, Namibia has passed numerous laws intended to protect the natural environment and mitigate against adverse environmental impacts.

The management and regulation of mining activities falls within the jurisdiction of the Ministry of Mines and Energy (MME), with environmental regulations guided and implemented by the Department of Environmental Affairs (DEA) within the Ministry of Environment Forestry and Tourism (MEFT).

3.1 SUMMARY OF APPLICABLE LAWS AND POLICIES

In the context of the proposed activities, there are several laws and policies currently applicable. They are reflected in Table 3-1.

TABLE 8. RELEVANT LEGISLATION AND POLICIES FOR ADDITIONAL ACTIVITIES

YEAR	NAME	Natural Resource Use (energy & water)	Emissions to air (fumes, dust & odours)	Emissions to land (non-hazardous & hazardous	Emissions to water (industrial & domestic)	Noise (remote only)	Visual	Impact on Land use	Impact on biodiversity	Emergency situations	Socio-economic	Safety & Health
1994	Policy for the Conservation of Biotic Diversity and Habitat Protection	X	X	X	X	X	X	X	X	X	X	X
1995	Namibia's Environmental Assessment Policy for Sustainable Development and Environmental Conservation	X	X	X	X	X	X	X	X	X		X
2000	National Water Policy White Paper				X				X			
1990	The Constitution of the Republic of Namibia of 1990	X	X	X	X	X	X	X	X	X	X	X
1997	Namibian Water Corporation Act, 12 of 1997	X									X	
1992	The Minerals (Prospecting and Mining) Act 33 of 1992	X	X	X	X				X			
2001	The Forest Act 12 of 2001	X						X	X			
1956	Water Act 54 of 1956	X			X						X	
2013	Water Resources Management Act 11	X			X						X	

YEAR		NAME	Natural Resource Use (energy & water)	Emissions to air (fumes, dust & odours)	Emissions to land (non-hazardous & hazardous	Emissions to water (industrial & domestic)	Noise (remote only)	Visual	Impact on Land use	Impact on biodiversity	Emergency situations	Socio-economic	Safety & Health
		of 2013 (not yet enforced)											
2004		National Heritage Act 27 of 2004											**X**
2007		Environmental Management, Act 7 of 2007	**C**	**X**	**X**	**X**	**X**	**X**	**X**	**X**		**X**	**X**
2012		Regulations promulgated in terms of the Environmental Management, Act 7 of 2007											
1975		Nature Conservation Ordinance 14 of 1975	**X**			**X**				**X**			

4 DESCRIPTION OF THE PROPOSED PROJECT COMPONENTS

4.1 DESCRIPTION OF EXISTING GRAPHITE FACILITIES AT OKORUSU MINE

4.1.1 BACKGROUND

Imerys Gecko Graphite (Namibia) (Pty) Ltd, a Namibian owned company constructed the graphite processing plant in 2016 and operated the plant up until the first quarter of 2019.

4.1.2 BASIC SERVICES AND INFRASTRUCTURE

Currently, the mine is served by a well-maintained, 20km gravel state road (D2468), branching off about 40km northeast of Otjiwarongo from the B1 National Road to Tsumeb.

Electricity is supplied from the National Grid by a 5MVA line and transformed and distributed from a sub-station. Water is supplied from several boreholes (located within and outside the ML 90).

The new tailings storage facility (NTSF) contains the industrial mineral waste that is left over after the graphite is extracted. The NTSF is drained of its surface water and returned to the return water dam before being clarified for reuse in the processing plant.

The newly constructed haul road up the mountain to the graphite ore storage area provides safe access for haulage trucks that convey the graphite ore from Okanjande Mine, south of Otjiwarongo.

4.1.3 OPERATIONAL DESCRIPTION

Firstly, the graphite ore that was mined at Okanjande Mine is hauled by truck to Okorusu Mine via the new mountain haul road to the rune of mine (ROM) pad. The ore is loaded into the primary crusher and there after passes through a series of smaller crushers and sieves to ensure that a uniformly small sized gravel is conveyed to the ball and rod mills. The milled slurry is pumped downhill to the processing plant. Diesel is added to the slurry as a floatation flocculant. After a process or separation and drying the graphite product is bagged and stored for shipment.

4.1.4 OFFICES, STORE AND LABORATORY

The company has set up 2 mine office blocks alongside the processing plant. There is also a mine store and laboratory adjacent to the processing plant. These are serviced independently from the Okorusu mine and not shared facilities. All the above fall within the company's footprint as per **Figure 2**.

4.1.5 STAFF TRANSPORT

Transport from Otjiwarongo to the mine and back is provided by bus at the beginning and end of each shift.

4.1.6 WASTE MANAGEMENT STRATEGY

The current waste management strategy on site is described below.

Waste on site is currently collected in rubbish bins and then transferred to a non-hazardous waste landfill facility on site. The mine currently produces less than 1 ton a month of domestic waste. This is primarily because the great majority of the mine employees currently reside in Otjiwarongo (>90%) and therefore don't produce large amounts of waste that require disposal on site.

Hazardous waste (primarily used oil and hydrocarbon contaminated materials) is collected in bunded and sealed areas and transferred to the Kupferberg Hazardous Waste Disposal Site in Windhoek for final disposal.

4.1.7 FUEL STORAGE

Diesel and High Energy Fuel (HEF) are stored within an existing diesel storage tank facility and HEF Plant respectively. The current storage facilities have the following capacities:

- Fuel storage facility:
    - 1 x 14 000 *litre* diesel tank situated on the mountain
    - 4 x 23 000 *litre* diesel tanks situated at the bottom of the mountain
    - 1 x 9 000 *litre* petrol tank situated at the bottom of the mountain
    - 2 x 23 000 *litre* HFO tanks situated at the bottom of the mountain

4.2 PROPOSED PROJECT COMPONENTS

The proposed project components are described in further detail in this section and include the following:

- the processing of graphite ore at the existing processing plant at Okorusu;
- The storage and use of petrol, diesel and heavy fuel oil to be included under the transferred certificate.
- the maintenance of the new Tailings Storage Facility (NTSF) for graphite related industrial effluent
- the transport of graphite ore from Okanjande Mine to the Graphite Processing Plant at Okorusu;

4.2.1 TRANSPORT OF GRAPHITE ORE

In order for graphite ore from the Okanjande Mine to be processed at Okorusu, a suitable transport route between the two mines was identified. Access from Otjiwarongo or Windhoek to Okanjande is currently via the B1 main road (**Figure 1**). Approximately 5 km south-east of Otjiwarongo, the former district road D2515 turns westward from the B1. As this is now a de-proclaimed private road, maintained by the local farming community, a guard is stationed at its entrance and controls access and utilization of this road.

From the former D2515 road, the access road and envisaged infrastructure corridor turns onto the Farm Okanjande. It follows the boundary fence line with Osdam farm for approximately 1 km before it the mine site.

From the Okanjande Mine site the graphite ore is transported 86 kilometres north to the Okorusu processing facility. Permits for road trucks and trailers have been issued by the Roads Authority for the transport of 67 tonne payloads via public roads. These will be used for ore haulage, while product haulage by truck will be 56 tonne payloads. Haulage operations are expected to take place 24 hours a day, 5 days per week.

Graphite Ore is transported daily between the mine at Okanjande and the Okorusu Mine processing plant, through the Otjiwarongo CBD. During a 12-hour period, every hour, three full truck loads will leave the mine and three empty trucks will arrive at the mine. This equates to a total of six trips per hour.

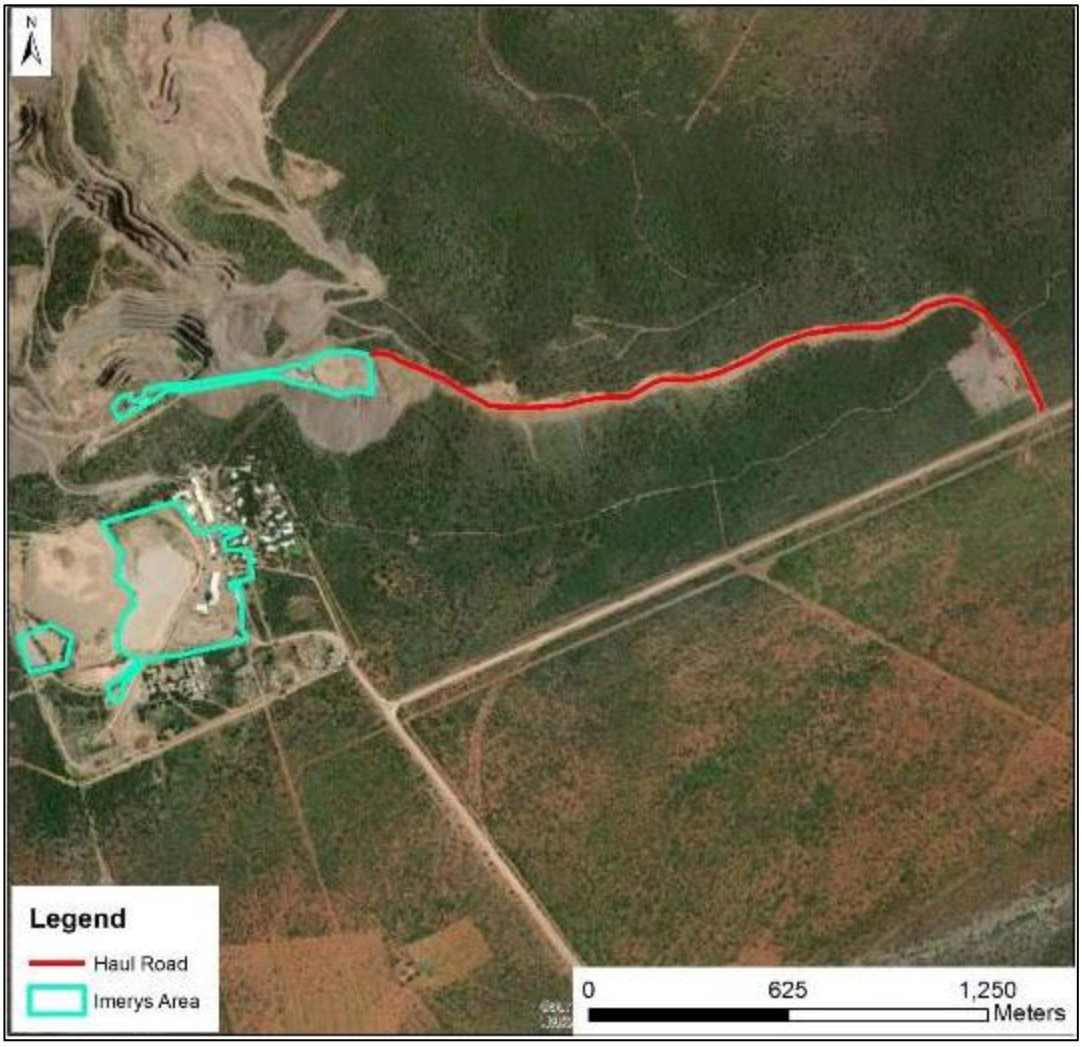


FIGURE 3. THE NEW HAUL ROAD FROM THE DISTRICT ROAD UP THE MOUNTAIN TO THE ROM PAD.

4.2.2 PROCESSING GRAPHITE ORE

Crushing, grinding and beneficiation by flotation is the most recognized method of processing flake graphite (MEGA Graphite Incorporated, 2014). During the flotation process a series of cells is used to obtain a purer graphite concentrate. The process utilises graphite's natural hydrophobic property to selectively separate it from the hydrophilic gang (i.e. materials that are attracted to water).

In the cells, frothing chemicals are added to produce the froth or foam on which the flotation process depends. This enables the graphite particles to attach to an air bubble and rise through the pulp to the surface of the froth. Even if the bubble was to break in the process, the hydrophobic property of graphite allows it to remain on the surface of the froth. Because the graphite flakes are now physically separated from the remaining pulp material, they can be removed for further processing. Collectors are often used in combination with the frothing chemicals to further enhance the hydrophobic properties. This further improves recovery by facilitating attachment to the air bubbles.

Once the flotation process has been completed the dried product can be screened, each with a certain flake distribution and carbon contents. Based on a pilot plant study undertaken by Van Eck and Lurie (1993), the graphite grades as set out in Table 4.1 below are obtainable from the Okanjande Mine.

TABLE 9. GRAPHITE GRADES OBTAINABLE FROM THE OKANJANDE MINE (VAN ECK AND LURIE, 1993)

Grade	% of Total Production	Tons / Annum
Total 30 mesh (+600 µm)	1%	203
Total 50 mesh (+300 µm)	12%	2 404
Total 80 mesh (+180 µm)	32%	6 401
Total 100 mesh (+150 µm)	12%	2 398
Total 150 mesh (+106 µm)	20%	3 999
Total Flake	**77%**	**15 405**
Total <150 mesh (-106 µm)	23%	4 595
Total Powder	**23%**	**4 595**
Total Sales	**100%**	**20 000**

1 mm – 1 000 µm

Although the current processing facility at the Okorusu Mine is largely similar to the processing facility required for graphite and as approved at the Okanjande Mine, some modifications to the processing facility at Okorusu were required. The modifications made for the different processing components are discussed below.

4.2.2.1 Crushing and Conveyance

The processing capacity of the Okorusu facility would suit the Okanjande 20,000 tpa scenario and the process flow is very similar as required for the processing of graphite ore.

In terms of crushing and conveyance, the following modifications were required:

- Dust suppression at the loading area of the crushers was installed to prevent loss of material by wind.

- Conveyer systems were fitted with water sprayers to prevent product loss by wind.
- Creation of space for at least a 72-hour ROM stockpile adjacent to the current ROM tip (refer to Figure 3. The new haul road from the district road up the mountain to the rom pad.)

4.2.2.2 Milling

The Okanjande process is based on a rod mill only. The Okorusu rod mill with the stack-sizer and low intensity magnetic separator (LIMS) will be used as is with the following possible modifications:

- Replacement of the stack-sizer decks with 450 µm panels
- Addition of a holding tank (20 minute capacity) with a pump for the -450 µm material, which would be the feed to the flotation circuit

4.2.2.3 Flotation

For the 20,000 tpa graphite product scenario, the Okanjande flotation circuit requires a total volume of 107.7m^3 when weathered ore is processed. The planned and constructed flotation circuit therefore has sufficient capacity for graphite processing.

4.2.2.4 Concentrate Dewatering

All the installed dewatering and drying equipment was suitable for use with the Okanjande graphite concentrate dewatering, and it was converted to a continuous process, not batch operated and not double handled between the filter press and the drier.

4.2.2.5 Screening and Bagging

The Okanjande designed screening circuit was installed at Okorusu.

The following were required:

- Installation of product screens and individual product bins for each of the product sizes as per Okanjande design.
- Installation of six individual product bins for each size fraction. Bulk bags could be filled from each bin, alternatively each bin outlet could individually be routed to the bagging facility
- Installation of a bagging plant with palletizing and shrink-wrapping facilities. The graphite product would be transported on 1-ton pallets or in 1-ton bulk bags, 36 tons per load. The 20-foot containers would be filled in Walvis Bay
- A detailed design of the screening and bagging plant was required and the storage space requirements in addition to the existing available warehousing at Okorusu was determined.

4.2.2.6 Reagent Handling

The flotation reagents at Okorusu are directly dosed into the rougher and cleaner conditioning tanks. Optionally, reagents could also be directly introduced to the pre-float cells, if required. The Okanjande flotation circuit requires three different reagent dosages (frother, collector and Na_2SiO_3) at every flotation duty, plus additional conditioning tanks for the addition of hydrated lime for pH control, lime for water treatment and flocculent at the thickener. The following modifications were made to accommodate the Okanjande graphite ore requirements:

- Installation of a flocculent make-up and dosing system.
- Installation of a hydrated lime make-up and dosing system.
- Installation of a lime make-up and dosing system at the thickener.
- Using the existing Okorusu reagent dosing system to introduce the frother. The system would, however, need to be expanded for dosing into all the required conditioning tanks as well as directly into some of the floatation stages.
- Installation of a diesel/paraffin holding tank and dosing system. Diesel is the preferred collector and could be supplied to the holding tank from the tank farm.
- Allowing for the installation of a sodium silicate make-up and dosing system, which would be required if fresh ore is processed.

4.2.3 TAILINGS FACILITY

It was proposed that a second cell be added to the existing TSF at Okorusu. The cell was constructed on the eastern side of the existing TSF (**Figure 4**). The Client has indicated that the cell of the New Tailings Storage Facility (NTSF) was unlined as is the existing facility.

Geotechnical studies undertaken within the footprint of the new cell have exposed some calcrete, which would help neutralise any acid mine drainage, however, the areal extent of the calcrete has not been delineated. Additional geotechnical studies / geological mapping were undertaken to further investigate the sub-surface conditions (refer to Appendix K - EMP). The results of this baseline audit were conclusive and it was decided not to line the floor of the NTSF.

The same audit was undertaken on boreholes to identify whether they are suitable for inclusion in the proposed monitoring network (refer to Appendix K - EMP). Boreholes down-gradient of the existing TSF did not exist. Due to the existing TSF and new cell being unlined facilities, the drilling of boreholes were required for monitoring the potential contamination that may emanate from the NTSF.

Figure 4. Layout showing the location of the NTSF cell

4.3 CONSTRUCTION ACTIVITIES

The graphite processing plant, haul road and NTSF were all carried out during the last three years prior to this amendment application. No new construction activities are planned for this amendment application.

4.4 DECOMMISSIONING AND CLOSURE PHASE

Should the graphite processing plant be decommissioned at this site then the infrastructure will all be dismantled and either relocated to the Okanjande Mine site for re-assembly there or sold to another prospective mine operator. Alternatively, the owners of the Okorusu mine could consider purchacing the equipment and infrastructure as is.

The NTSF would need to be maintained and monitored for an agreed period to ensure public safety.

4.4.1 CLOSURE OBJECTIVES

The overall purpose of a Closure Plan for the graphite processing plant will become an integral part of the Okanjande's mine remaining life cycle to ensure that:

- future public health and safety are not compromised;
- the environment and resources are not subject to physical and chemical deterioration;
- the after-use of the site is beneficial and sustainable in the long-term;
- any adverse socio-economic impacts are minimised; and
- all socio-economic benefits are maximised.

To achieve that, the objectives of the plan are as follows:

- To minimise adverse impacts on the environment.
- To prevent potential ground-water contamination.
- To stabilise rehabilitated ground (and residue deposits).
- To minimise erosion by wind and rain.
- To minimise adverse socio-economic impacts on the affected labour force and the population in the mine's environs.
- To provide opportunities for alternative forms of land use and sustainable business development after mine closure.
- To ensure that relevant authorities are kept informed according to the regulatory requirements.

4.4.2 DECOMMISSIONING ACTIVITIES

The table below indicates the impacts identified during the mine closure plan development process as well as the expected targets following decommissioning. Please note that the mine closure planning process is still underway and the targets identified below may shift during the process.

TABLE 10. IDENTIFIED IMPACTS AND EXPECTED RESULTS FROM DECOMMISSIONING

Aspect	Potential impact	Decommissioning targets
Scope – Workforce		
Socio-economic	Job losses Unemployment Early retirement	Skills diversification has been achieved. Accredited training to enable labour force to enter job market with qualifications has been conducted. Assistance has been provided to employees to find employment at other mines. It has been established that pension plans are adequate.
Scope - Otjiwarongo		
Economic	Reduced rates to Municipality and Regional Council and taxes to Receiver of Revenue	Stakeholders have been informed at an early stage to enable them to plan/reset budgets.
	Reduced turnover to local businesses	Stakeholders have been informed of decommissioning progress.
Social	Town population declines as workers and their dependants leave Increased pressure to deal with unemployment, alternative job opportunities, crime	Stakeholders have been informed of decommissioning progress
Scope - Domestic and office infrastructure (buildings, roads, French drain, etc.)		
Safety & Health	Accidents due to lack of maintenance Health risk from un-rehabilitated French drain	All unwanted infrastructure has been demolished and disposed of in a safe manner (Depending on the final option, e.g. use of existing infrastructure)
Visual	Deteriorated buildings (ghost-town effect)	Restoration of original scenic environment has been achieved. (Depending on the final option, e.g. use of existing infrastructure)
Economic	Cost implication for future landowner	All unwanted infrastructure has been removed to increase value of real estate. (Depending on the final option, e.g. use of existing infrastructure)
Scope - Technical mine infrastructure (workshops, laboratory, etc.)		
Biophysical: Soil	Pollution by oil and other chemicals	All potential contamination sources have been removed
Biophysical: Water	Pollution of surface water and groundwater	All potential contamination sources have been removed

Aspect	Potential impact	Decommissioning targets
Safety	Accidents due to lack of maintenance	All infrastructure has been demolished and disposed of in a safe manner (Depending on the final option, e.g. use of existing infrastructure)
Visual	Deteriorated buildings (ghost-mine effect)	Restoration of original scenic environment has been achieved. (Depending on the final option, e.g. use of existing infrastructure)
Economic	Financial gain by selling scrap	All scrap metal has been sold and removed from site
Socio-economic	Infrastructure to remain and be used/ maintained by new owners/users	Infrastructure which will be utilized by new owners/users has been identified. (Depending on the final option, e.g. use of existing infrastructure)
Scope - Disposal facilities (pipes, trenches, return water dams)		
Safety	Accident risk caused by deteriorating pipes on steep slopes	All unwanted infrastructure has been removed. (Depending on the final option, e.g. use of existing infrastructure)
Visual	Eye sore	All unwanted infrastructure has been removed.
Economic	Financial gain by selling scrap	All scrap metal has been sold and removed from site
Scope – Tailings Dam		
Safety	Tailings become waterlogged; surface water collects and becomes a safety issue	Measures have been implemented to ensure controlled run-off from the tailings dams.
Visual	Eye sore	The tailings dams have been landscaped to match surrounding habitat.
Biophysical: Soil	Erosion Medium-term destruction of arable land	Effective rehabilitation of all external slopes and surfaces has been carried out to minimise erosion.
Biophysical: Fauna	Danger to wildlife	Measures have been implemented to ensure that the tailings facilities are no threat to wildlife.

4.4.3 CLOSURE ACTIVITIES

All processing operations will have ceased by the closure phase of the Okanjande mining project. The potential for impacts during this phase will depend on the extent of demolition and rehabilitation efforts during decommissioning and on the features which will remain, such as the NTSF.

5 DESCRIPTION OF THE CURRENT ENVIRONMENT

This section has been compiled by referring extensively to the environmental baseline descriptions contained in the EIA carried out for the proposed graphite processing at Okorusu..

This section provides an overview of the affected environment and local planning context for Okorusu and the proposed process adaptations. The term 'environment', includes the biophysical and socio-economic dimensions. This chapter therefore assists the reader in identifying potential impacts on the environment (positive or negative); and opportunities or constraints which the affected environment may present for the proposed development.

5.1 CLIMATE

The Okorusu Fluorspar Mine is located approximately 300 km inland from the west coast of Namibia. The area is characterised by low rainfall with extreme temperature ranges and unique climatic factors influencing the natural environment and biodiversity.

This section summarises the main climatic parameters within the Okorusu area. The information provided in the 2013 EIA was updated with additional information from the updated air quality assessment (Airshed, 2016). Further detailed climatic information is available in the air quality assessment included in **Error! R eference source not found.**.

5.1.1 WIND FIELD

Period, day-time and night-time wind roses are provided in **Figure 5** with monthly wind roses in **Figure 6**.

The prevailing wind field at the site is from the east and east-southeast with the most frequent winds from the east (15% of the time). During daytime easterly and north-easterly airflow prevails, whereas a shift to easterly and east-south-easterly winds occurs during the night. Day-time reflects higher wind speeds on average than night-time. The strongest winds are associated with east winds occurring during the day with 14% exceeding 5 m/s. Overall, wind speeds exceed 5 m/s for 9% of the time with a total of 11.5% calms The average wind speed is 3.12 m/s with a maximum of 12 m/s for the data period (2011-2012).

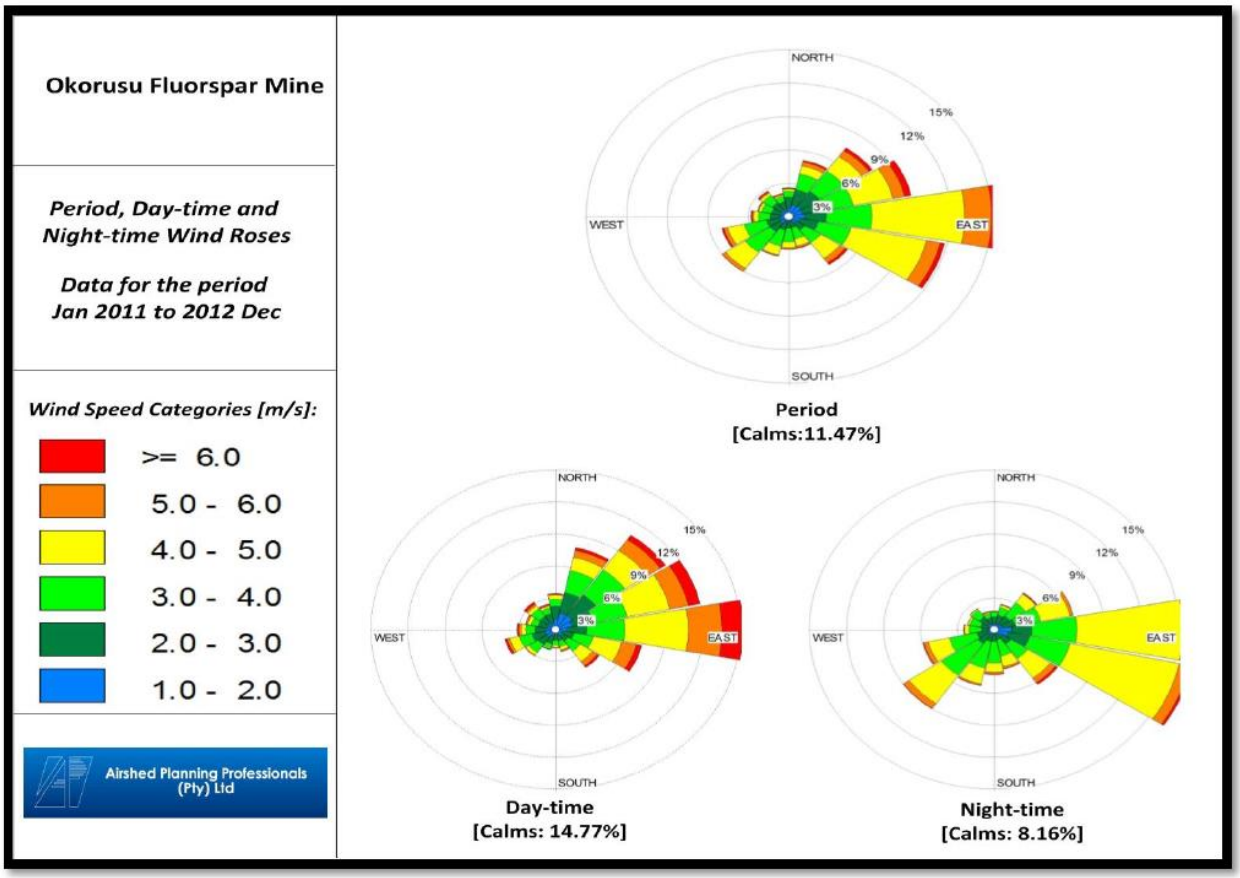


Figure 5. period, day-time and night-time wind roses for the okorusu fluorspar mine for the years 2011 and 2012. (source: AIRSHED, 2016)

Monthly variation in the wind field is evident in **Figure 6**. During January the prevailing wind is from the east and southwest, with a shift to the north-east during February, March and April. During May the wind speeds decrease on average with a more evenly spread between easterly to north-easterly winds. More frequent easterly and east-south-easterly winds prevail during June and become more dominant during July. Frequently strong winds from the north-east to south-east characterise August with a shift to south-south-easterly winds during September. October reflects frequent winds from the east, the south-southwest and the north-west whereas the wind field changes slightly during November to southerly and westerly with a reduction in north-westerly direction. During December winds prevail from the easterly sector but with strong frequent winds from the south-west and west.

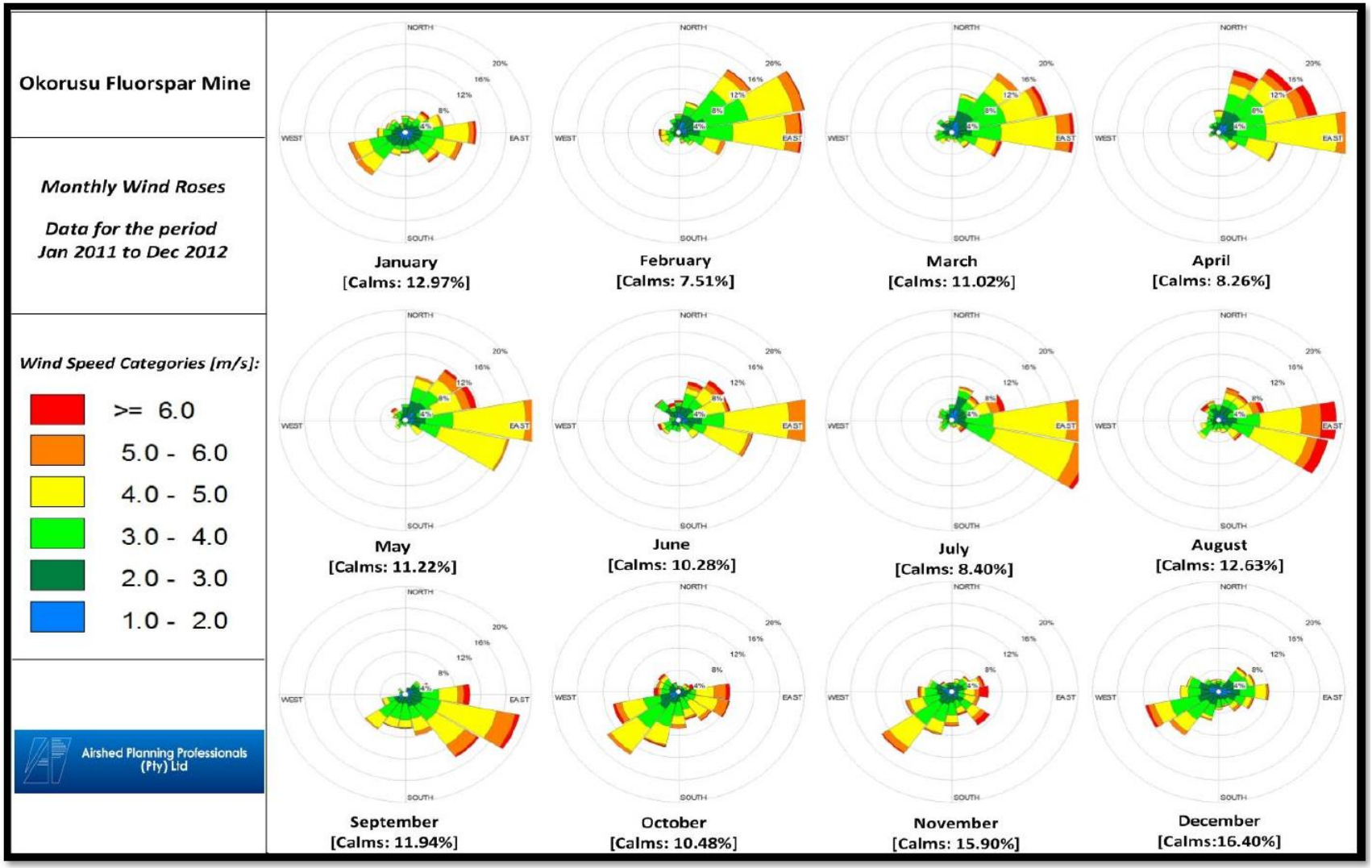
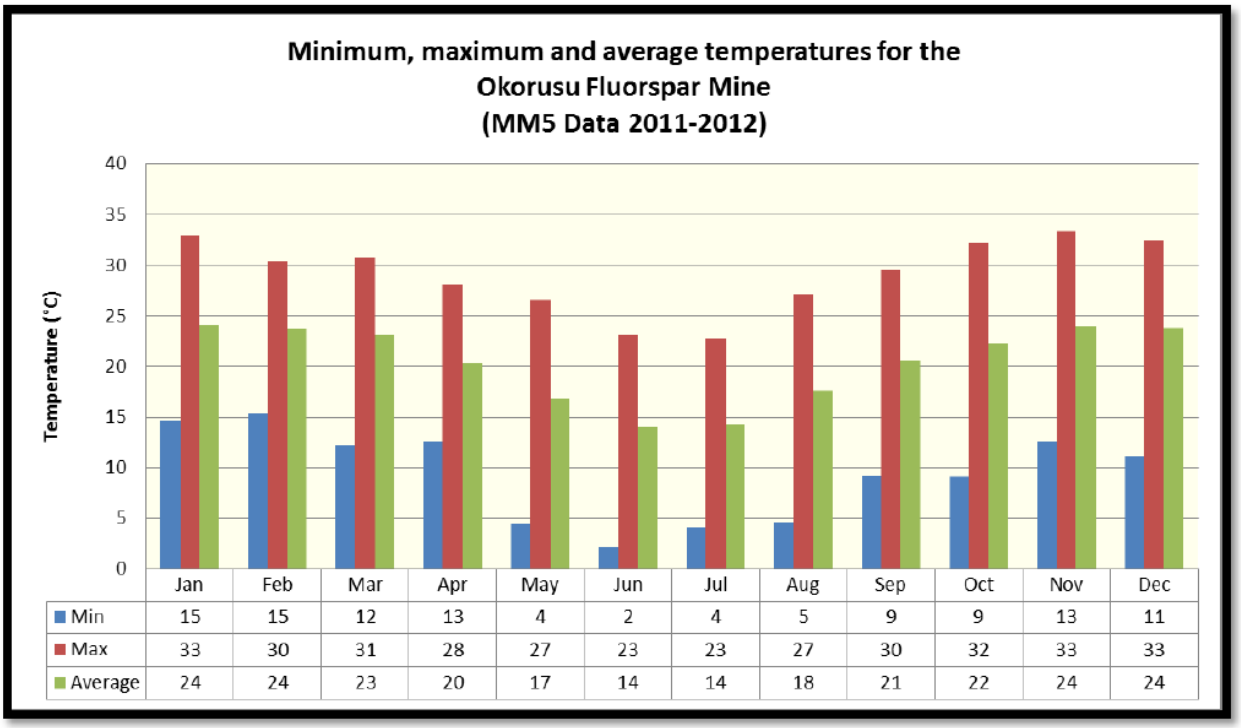


Figure 6. Monthly wind roses for the Okorusu mine for the years 2011 and 2012

5.1.2 TEMPERATURE

Air temperature is an important parameter for the development of the mixing and inversion layers. It also determines the effect of plume buoyancy as the larger the temperature difference between ambient air and the plume, the higher the plume will rise. This in turn will affect the rate of dissipation of pollutants before it reaches ground level. Incoming solar radiation also determines the rate of development and dissipation of the mixing layer. Relative humidity is an inverse function of ambient air temperature, increasing as ambient air temperature decreases.

Minimum, average and maximum temperatures for Okorusu are provided in **Figure 7** for the years 2011 and 2012.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Min	15	15	12	13	4	2	4	5	9	9	13	11
Max	33	30	31	28	27	23	23	27	30	32	33	33
Average	24	24	23	20	17	14	14	18	21	22	24	24

Figure 7. Minimum, maximum and average temperatures for the Okorusu Fluorspar Mine for the period 2011 and 2012(Source: Airshed, 2016)

Maximum, minimum and mean temperatures for the period January to December 2011 are 33°C, 2.1°C and 20.3°C, respectively. Daily maximum temperatures range from 23°C in June to 33°C in November and December, with daily minima ranging from 12°C in June to 15 °C in December.

The Okorusu site falls within the 20 to 22°C average annual temperatures with around 5 to 10 days frost per year (Mendelsohn, Jarvis, Roberts, & Robertson, 2009).

5.1.3 RAINFALL AND EVAPORATION

Precipitation represents an effective removal mechanism of atmospheric pollutants and is therefore frequently considered during air pollution studies. Evaporation is a function of ambient temperature, wind and the saturation deficit of the air. Evaporation rates have important implications for the design and implementation of effective dust control programmes.

The area falls within a summer rainfall belt with the highest rainfall recorded in January of 441 mm and 419 mm in December as shown in **Figure 8**. No rainfall was recorded during the month of July. The total rainfall for the two years is 1437.64.

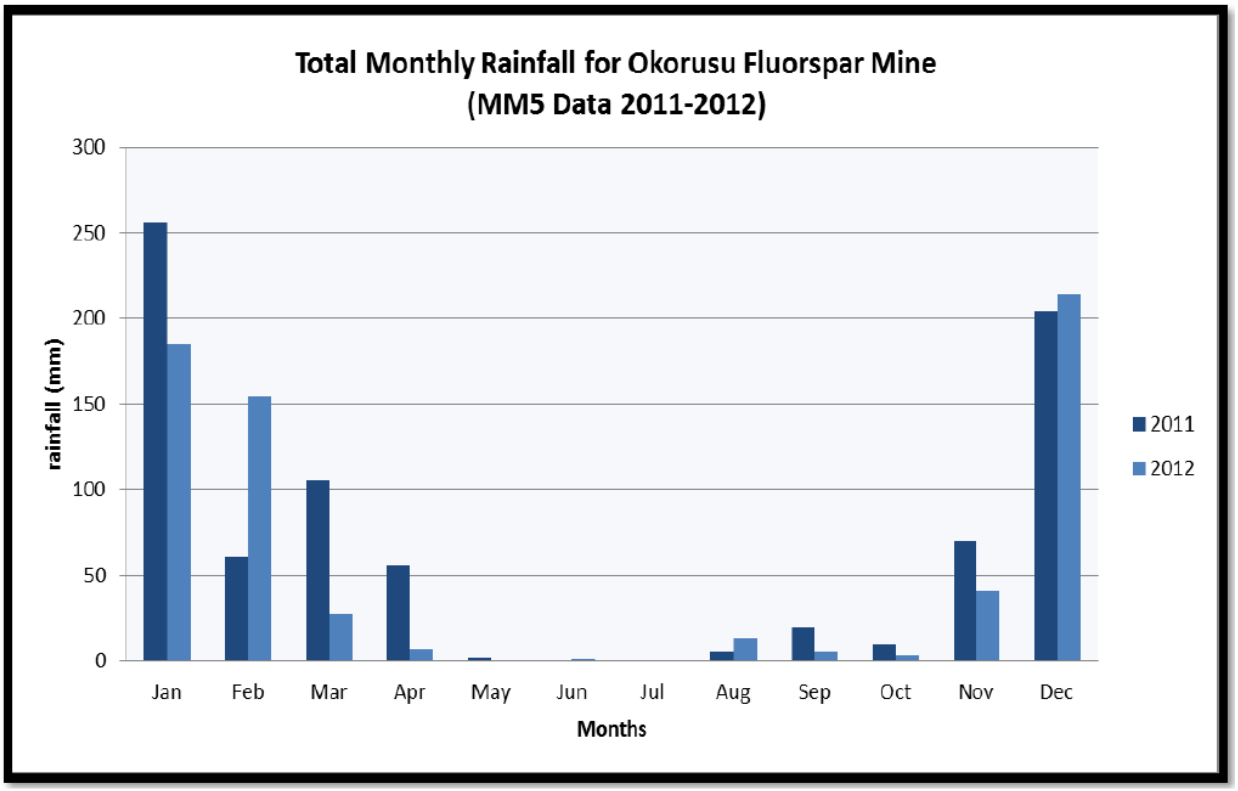


Figure 8. Total monthly rainfall for the okorusu fluorspar mine for the year 2011 and 2012 (source: AIRSHED, 2016)

The rainfall reported is higher than the expected annual average rainfall of between 400 and 450 mm per year (Mendelsohn, Jarvis, Roberts, & Robertson, 2009 in Airshed, 2013). It is understood that 2011 was a year with exceptionally high rainfall.

5.1.4 ATMOSPHERIC STABILITY

Atmospheric stability is dependent on the boundary layer which is normally unstable during the day as a result of the turbulence due to the sun's heating effect on the earth's surface. Night-times are characterised by weak vertical mixing and the predominance of a stable layer. For elevated releases such as stack emissions, the highest ground level concentrations will occur during unstable, daytime conditions. Ground level concentrations depend on a combination of wind speed and plume buoyancy. If the plume is

considerably buoyant (high exit gas velocity and temperature) together with a low wind, the plume will reach the ground relatively far downwind. With stronger wind speeds, on the other hand, the plume may reach the ground closer, but due to the increased ventilation, it will be more diluted. A wind speed between these extremes will therefore be responsible for the highest ground level concentrations. In contrast, the highest concentrations for ground level, or near-ground level releases from non-wind dependent sources will occur during weak wind speeds and stable (night-time) atmospheric conditions.

5.2 AIR QUALITY

Particulates represent the main pollutant of concern at opencast mining operations. Airborne particulate matter comprises a mixture of organic and inorganic substances, ranging in size, shape and density. These can be divided into Total Suspended Particulates (TSP), thoracic particles or PM10 (particulate matter with an aerodynamic diameter of less than 10 µm) and respirable particles or PM2.5 (particulate matter with an aerodynamic diameter of less than 2.5 µm). PM10 and PM2.5 are associated with health impacts with TSP associated with dust fallout.

The main existing sources of particulate emissions in the area are the current opencast mining operations from the Otjikoto Gold project, the B1 road approximately 20 km to the east, the unpaved access road to Okorusu Mine and agricultural livestock activities around the mine.

Gaseous emissions will derive from combustions sources such as mining equipment and vehicles. Sulphur dioxide (SO_2), carbon monoxide (CO), carbon dioxide (CO_2), oxides of nitrogen (NO_x) and hydrocarbons derive from on-site trucks and heavy mining equipment. Vehicles on the B1 will also contribute to these gaseous emissions but the contribution from road is not regarded as significant.

The main contribution from these sources can be summarised as follows:

- Agriculture is a dominant land-use within the surrounding area. The farming activities in the area comprise mainly of cattle and other feedstock farming. Particulate matter is the main pollutant of concern from agricultural activities as particulate emissions are deriving from windblown dust, burning crop residue, and dust entrainment as a result of vehicles travelling along dirt roads. In addition, pollen grains, mould spores and plant and insect parts from agricultural activities all contribute to the particulate load (WHO, 2000). As far as could be ascertained no chemicals are used for crop spraying. These chemicals typically result in odiferous emissions. Crop residue burning is an additional source of particulate emissions and other toxins. Due to the small scale of farming activities these are regarded to have an insignificant cumulative impact.
- Biomass burning results in aerosols, black carbon and hydrocarbons. Biomass burning is also a significant source of greenhouse gases, especially CO_2 and methane (CH_4), black carbon and photochemical gases (NO_x, CO and hydrocarbons) that lead to the production of tropospheric ozone (O_3). The extent of NOx emissions depends on combustion temperatures, with minor sulphur oxides being released. Burning crop residue may be a significant source of atmospheric emissions within the area.

- Vehicle tailpipe emissions can be significant sources of CO_2, CO, hydrocarbons (HCs), SO_2, NOx and particulate matter. The national roads surrounding the Okorusu Mine such as the B1 main road between Otjiwarongo and Otavi and the roads to Outjo are likely to contribute to the ambient air quality in the region. This is likely to increase due to the proposed expansion of mining operations.

The only ambient monitoring data available to inform background air quality of the region are the data from the Otjikoto Gold project air quality impact assessment conducted as part of the EIA (Liebenberg-Enslin *et al*., 2013). It should be noted that Otjikoto Gold mine is located 30 km to the northeast of Okorusu, with agricultural and other dust generating sources in the immediate vicinity of the mine that will contribute to the measured ambient background air quality. Since dust fallout rates are representative of localised dust generating sources, these results are not regarded as representative of the dust fallout in the vicinity of the Okorusu Mine.

Typical background PM_{10} concentrations for Namibia as a country is given as 42.61 µg/m^3, assumed to be presented as an annual average.

As no other ambient monitoring data or dust fallout data are available to inform the background air quality at Okorusu, the baseline was predicted based on information from other sites in the area and general climatic conditions.

5.3 NOISE AND VIBRATIONS

The existing mine site is characterised by noise and vibrations associated with typical mining activities:, processing, hauling etc.

Other noise sources associated with the proposed amendment include amenities mining and associated haulage over the mountain, and vehicles traveling along the proposed new haul road.

The remaining receptors in the area may be exposed to noise generated by haul trucks on haul road and along D2463 and D2869. It is currently proposed to run haul trucks 24 hours a day for 5 days per week.

5.4 ECOLOGY

5.4.1 HABITATS

There are two main habitat types (Mountain and Hills; and Plains), with the latter being divided into the Open Plains and Closed Plains.

Mountain and Hills habitat:

In the study area, the Mountain and Hills habitat consists of the most eastern parts of the Okorusu Mountain in the south and isolated hills in the west and north. This habitat will be affected by the proposed new haul road up the southern mountain slope.

This habitat is characterised by a diverse and tall woody component growing on moderate to steep slopes with rocky, shallow red soils. Some rocky outcrops do occur. The vegetation is vertically well developed with a distinct herbaceous/graminoid layer, a woody shrub layer and a canopy layer. Its vegetation cover is high, and woody cover probably reaches close to 80% in places.

This habitat type regarded as an isolated type of habitat in a sea of dry savanna, therefore likely to harbour sub-populations of a larger metapopulation of a number of species. It contains populations of species that do not occur in the surrounding savanna habitat, this acts as an inselberg habitat, which by definition is sensitive to disturbance.

Although most ecological processes that maintain this habitat are robust, the extent of disturbance on Okorusu Mountain and the threats to similar habitats in the region place it in a declining category, and hence sensitive.

Plains habitat:

The plains habitat falls in the Thornbush Savanna and is dominated by Acacia species, characteristically including *Acacia mellifera* subsp. *detinens*, *A. reficiens*, *A. hebeclada* subsp. *hebeclada, A. erubescens, A. fleckii* and in some places *A. tortilis* subsp. *heteracantha*. More importantly perhaps, many of these species occur at densities higher than expected given the moisture and fire regime here. This phenomenon is known as bush encroachment, which has a hugely negative impact on productivity in the grass layer, resulting in very low carrying capacities for wildlife and domestic stock. Where bush encroachment is less intense, grass cover varies depending on soil type with climax grasses such as *Anthephora pubescens, Brachiaria nigropedata, Digitaria species* and *Urochloa bolbodes* representative.

The Plains habitat is further divided into the Closed Plains – representing the high-density woody areas with little grass, and the unstable Open Plains – representing areas that have been cleared of woody vegetation to varying extents, mostly through artificial means, but often natural.

The Open Plains are widespread, resilient and unstable meaning that without management input, or at least the presence of natural drivers such as herbivores and fire, and assuming an average rainfall regime, this state will always revert to a densely woody thicket or closed woodland.

The Closed Plains are widespread, resilient type of habitat, mostly in fact considered to be one end of a gradient of woody:grass ratios. Many people consider this to be a degraded savanna with too high densities of woody species and therefore low productivity and diversity. It is relatively easy to restore savanna function and structure through well-established management techniques.

These habitats are regarded as “least sensitive” in terms of overall sensitivity. It is not expected that the proposed new project components would impact on the plains habitats.

5.4.2 REPTILES

A desktop study undertaken for the expansion of the Okorusu Mine in 2013 revealed that 87 reptile species have distribution ranges that either overlap with the study area, or are very close (i.e. <10km) to the study

area's boundaries. However, field surveys failed to produce more than a fleeting glimpse of one unidentified gecko in one of the few rocky outcrops on a hill close to the western limit of the study area. This was in spite of dedicated searches covering many sub-habitats, scattered over the study area.

Of the 87 species potentially occurring in the study area, 19 (21.8 %) are considered endemic to Namibia. This is significantly higher than that of the other taxa studied.

5.4.3 AVIFAUNA

A total of 28 bird species were recorded across the various habitats in the bird survey undertaken for the expansion of the Okorusu Mine in 2013. The Open Plains habitat had the highest species richness (15 species) and the Closed Plains habitat the lowest richness and diversity. The Mountain and Hills habitat had intermediate values. The Mountain and Hills habitat, however, had a distinct species assemblage and showed the highest species evenness, meaning that the bird assemblage here was not dominated by a few species (as was the case in especially the Open Plains habitat, where Monteiro's Hornbill, Helmeted Guineafowl and Cape Turtle Dove occurred in several plots).

The desktop study, based on species recorded in quarter-degree squares, indicated that 143 bird species potentially occur in the study area. This list, however, excludes water birds, which may visit ephemeral water bodies such as the pans in the southeast corner of the study area during exceptional rainfall years, or future mining-related water bodies, e.g. accumulated water in pits, etc.

Of the 143 bird species identified, 34 (24%) are considered endemic or near endemic to the southern African subcontinent. Four species (3%) are endemic or near endemic to Namibia, namely Rüppell's Parrot (*Poicephalus rueppellii*), Monteiro's Hornbill (*Tockus monteiri*), Carp's Tit (*Parus carpi*) and White-tailed Shrike (*Lanioturdus torquatus*). Since these four species represent ~31% of Namibia's thirteen (near-) endemic bird species (Jarvis & Robertson 1997), bird endemism in the study area is intermediate, especially in light of the fact that only Monteiro's Hornbill (abundant) was actually observed in the study area during the fieldwork period in 2013.

Of far greater importance is the conservation status of bird species in the study area. Several species, which are considered threatened in the Namibian context, may potentially occur in the study area. These species include:

- Cape Vulture (*Gyps coprotheres*): Critically Endangered in Namibia, because of an estimated 96 % decline in numbers from about 500 birds in 1940s to 11 birds presently. Currently there is only one breeding colony associated with the Waterberg Plateau Park in Namibia. In South Africa the species is classified as Vulnerable, because of its larger, healthier population (Simmons undated). The main threats faced by Cape Vultures in Namibia include poisoning, bush encroachment in the feeding range surrounding the Waterberg, use as medicine by traditional healers, drowning in water reservoirs (Simmons undated). In South Africa, a major threat is electrocution on high voltage power lines, which has not yet been reported for Namibia (Simmons

undated). The study area is situated in the medium density part of its distribution range, because of the proximity to the Waterberg colony and it is therefore important to consider.

- Tawny Eagle *(Aquila rapax*): Endangered in Namibia, because of a steep decline in numbers. The scavenging and hunting behaviour of this species make it particularly vulnerable to persecution by farmers who either poison or directly persecute Tawny Eagles using gin traps and guns. Drowning and a general decline in wildlife due to livestock farming also contribute to their demise (Simmons undated). The study area falls in the low density part of its distribution range.
- Martial Eagle *(Polemaetus bellicosus*): Endangered in Namibia, because of a steep decline (80 % in core parts of distribution range) in the population in recent times. The main threat to Martial Eagles in Namibia is shooting by farmers, drowning in water reservoirs and a drop in its natural prey base due to livestock farming. The study area falls in the medium density part of its distribution range (Simmons undated).
- Bateleur (*Terathopius ecaudatus*): Endangered in Namibia and Vulnerable in South Africa. The main threats faced by Bateleurs include direct persecution through poisoning by farmers, replacement of wildlife by livestock and disturbance at the nesting sites (nests in large trees; Simmons undated). The study area is located in the low density area of its distribution range (Simons undated).
- Lappet-faced Vulture (*Aegypius tracheliotus*): Vulnerable in Namibia. The main threats are drowning in water reservoirs, poisoning and disturbances at nesting sites (nests in large trees). The study area is situated in the low density area of its distribution range (Simmons undated).
- Rüppell's Parrot: Near Threatened in Namibia because of restricted range and a reported decline in local numbers in the Outjo, Okahandja and Windhoek areas (Simmons undated). This species is mainly threatened by captures for the illegal trade in wild parrots (Jarvis & Robertson 1997). This study area falls in the medium density area of its national distribution range, where it is usually associated with large rivers. The study area thus only constitute marginal habitat at best for Rüppell's Parrot.
- White-backed Vulture (*Gyps africanus*) : Near Threatened. The main threats faced by this species include poisoning, drowning in water reservoirs, collisions with overhead lines, disturbances at nesting sites and trade by traditional healers (Simmons undated).
- Marabou Stork (*Leptoptilos crumeniferus*): Near Threatened in Namibia and South Africa. It is usually associated with open water such as rivers, but may occasionally wander into woodlands. The study area falls in the low density part of their distribution range, and because of paucity of open water in the general study area, has a low chance to occur in the study area.

In addition, in South Africa White-backed Vulture and Lappet-faced Vulture are considered to be Vulnerable due to dwindling populations there.

5.4.4 SMALL MAMMALS

Of the 35 small mammal species potentially occurring in the study area, only the dassie rat (*Petromus typicus*), which prefers rocky areas, is endemic to Namibia. However, neither direct sightings nor its distinctive white urine markings on rocks have been observed in either the study area or on other parts of the Okorusu Mountain before. The study area is therefore at best marginal habitat for dassie rats and can be considered as having an overall low mammal endemism (Mendelsohn *et al*. 2002).

5.4.5 LARGE MAMMALS

Damara dik-dik (*Madoqua kirki*), kudu (*Tragelaphus strepsiceros*), steenbok (*Raphicerus campestris*), duiker (*Sylvicapra grimmia*) and gemsbok (*Oryx gazella*) have all been observed in the study area. In addition, the signs of leopard (*Panthera pardus*) (scat with porcupine quill remains), porcupine (*Hystrix africaeaustralis*) (dung), jackals (*Canis mesomelas*) (tracks), baboons (*Papio hamadryas*) (sound) and aardvark (*Orycteropus afer*) (burrows) have been observed on site during previous surveys.

5.5 TOPOGRAPHY

The terrain around the Okorusu Mine is gently undulating, progressively becoming interspersed with hills. The terrain elevation surrounding the site ranges between 1380 and 1550 meters above mean sea level.

The mine area itself is located on the slopes of the Okorusu Mountain which stands out sharply from the surrounding flat plain. The proposed magnetite mining areas are located on the gentler northern slopes of Okorusu mountain.

5.6 GEOLOGY

The oldest lithologic units present in northern Namibia are the Precambrian Damara Rocks (1000–570Ma) and overlying Otavi Dolomites. Two Karoo-age basins flank the Okorusu deposit to the southeast and west. The Okorusu complex is the youngest and most north-eastern intrusion of a series of Jurassic to Cretaceous alkaline ring complexes extending from Cape Cross to Okorusu. This strong linear arrangement correlates with fracture zones (possibly transform faults) associated with Mid-Atlantic rifting.

The Okorusu alkaline ring complex comprises approximately 32km^2 and is between 3 and 4km in diameter. The complex is probably of late Cretaceous age (125Ma). It consists dominantly (>80%) of foyaite and nepheline-bearing foyaite in the centre and syenite at the margin. A particularly coarse-grained (at times pegmatitic) magnetite nepheline syenite is present in the central hills of the complex. The complex intruded into Precambrian Damara metasediments which comprise arkosic sandstones, schists and limestones. At the edge of the complex these rocks have been subjected to two episodes of fenitisation. During the first event the metasediments were completely converted to a green, fine-grained, sodic, aegirine-augite-rich fenite. The second event is characterised by brecciation and the formation of a brown- to tan-coloured, alkali

feldspar, limonite and calcite-rich potassic fenite. During a later event dykes, predominantly tinguate, cut the earlier intrusive rocks and fenites.

Carbonatite is the youngest intrusive rock and occurs sporadically in small outcrops as plug-like bodies and dykes mainly on the southern rim of the complex. It has increasingly been recognised that the fluorite ore bodies at Okorusu were formed by the preferential replacement of the carbonatite rocks. The fenitisation and all of the major fluorite mineralisation are limited to the southern end of the complex, which is demarcated by the Okorusu mountain (1 726m above sea level).

At Okorusu, the fluorite ore-bearing fluids were derived from carbonatite magma at depth and have selectively replaced carbonatite and marbles due to its reactivity with the fluorine-bearing fluids. Several episodes of brecciation have been identified at Okorusu and these breccia zones were important in providing conduits for the mineralising fluids. The ores are characterised by massive replacement fluorite and by large fluorite crystals deposited in vugs. It has been recognised recently that the fluorite ores have replaced pyroxene-rich carbonatite and closely associated pegmatitic carbonatite, which consists of very coarse-grained calcite, magnetite, apatite and platy pyrrhotite-pyrite. Replacement remnants consist of goethite, martite and limonite pseudomorphs after magnetite, aegirine-augite and pyrrhotite-pyrite crystals. In some places, unaltered pegmatitic remnants confirm this replacement process. Ores formed by the replacement of fenitised marbles and schists are characterised by faint-to-distinct, banded ore textures. In addition to fluorite, the Okorusu complex also contains a host of rare earth elements commonly found to occur with carbonatites.

5.7 HYDROGEOLOGY

This section is based on a detailed Hydrogeological and Hydrological Assessment (SLR 2016a) completed for the last amendment where graphite processing was included. A baseline was carried out subsequently by Namib Hydrosearch (2017) as part of the EMP requirement and this is quoted below.

5.7.1 GROUNDWATER QUANTITY

The hydrogeological map of Namibia (van Wyk et al., 2001) classifies the “regional aquifer” as one with “generally low potential, with moderate potential on a local scale”.

The Okorusu site is located within the the Platveld Aquifer area, and forms part of the study undertaken in 2007 to establish the Platveld Aquifer groundwater potential. During this study boreholes were drilled and test pumped on the farm Marburg, located on the southwestern corner of the Okorusu site.

Findings from the Platveld Aquifer Study relevant to this project are:

- The geological rock groups found adjacent to the Okorusu Complex, namely the schist of the Okonguarri Formation, the Chuos Formation (tillite), and schistose rocks of the Ugab Subgroup are regarded as aquitards and/or as low permeable aquifers. However, in combination with conduits such as faults and weathered geological contact zones, they can have enough potential to supply groundwater for livestock watering.

- South of the regional water shed the flow direction is governed mainly by the river system of the Ugab. Therefore, the general groundwater flow is similar to the surface drainage, with groundwater flowing in a generally western direction in the vicinity of Okorusu.

Groundwater level data in the vicinity of the Okorusu mine site have been collected from the Department of Water Affairs, National Groundwater Database (GROWAS). Data were collected from 76 boreholes in the vicinity of the Okorusu Mine site. A review of data shows the following:

- Depth to the water table varies greatly between 13 mbgl and 64 mbgl.
- Local groundwater contours in the vicinity of the Okorusu mine site are presented in **Error! R eference source not found.** and show that inferred groundwater flow direction is towards the west, following the regional flow direction. The steep gradient in the mining area is indication for low permeability of the Okorusu Complex and surrounding formations.
- The majority of boreholes in the area are either dry (yield lower than 1 m^3/h) or are yielding less than 5 m^3/h. The exception are the boreholes associated with the Okorusu Complex (to the east of the site), that have yields exceeding 20 m^3/h, and the Homestead boreholes (to the west of the site), where pump tests have indicated yields between 7 and 15 m^3/h.

A number of boreholes have been monitored in the vicinity of the Okorusu Mine Site. These can be split into three areas; boreholes located to the east of Okorusu, boreholes located near the TSF (Airport, Hostel and Tailings Dam) and boreholes located at the Homestead to the west of Okorusu.

To summarise, overall indications suggest that the groundwater potential of the country rock surrounding the Okorusu Complex is generally low, although locally boreholes with moderate to high potential can be drilled. The Platveld Aquifer Study has clearly indicated that the geological units adjacent to the Complex, the Okonguarri schist, the Chuos Formation, and Ugab Subgroup can be considered as low permeable aquifers. A productive aquifer is associated with the Okorusu Complex itself, towards the south-eastern corner of the ML90 area, (which includes the Okorusu production boreholes).

The groundwater quality varies from potable to brackish (unsuitable for human consumption) with elevated concentrations of fluoride in most of the project area surrounding the Okorusu Complex.

Due to the low permeability of the surrounding country rock it is expected that groundwater abstraction or contamination due to the mining activities associated with the mine layout will therefore have a localised impact only.

A baseline study was carried out subsequent to receiving the ECC for the addition of graphite processing at Okorusu. The baseline sought to assess the effect the mineral waste (industrial effluent) would have on the groundwater. The NTSF and its effects on the groundwater quality was scrutinised. The old TSF and waste rock dumps were used for about 30 years until mining operations ceased in October 2014. The tailings contain fluorite (about 20%), magnetite and apatite. The NTSF was to be generated by the processing of graphite from Okanjande Mine. Additional tailings disposal areas have been identified (SLR, 2016) but these would have required management to avoid continued leachate production. The design of

the NTSF would limit the amount of water available for infiltration. This can be achieved through recycling of water and containing the upstream runoff from entering the NTSF. Any leachate with elevated Fluoride can be allowed to react with a calcium source (e.g. crushed limestone) to reduce the concentration. These were the findings of the baseline which was carried out by Namib Hydrosearch (2017).

5.8 HYDROLOGY

All watercourses in the region are ephemeral rivers and surface water flow occurs only after heavy rainfall. The study area is located in the upper part of the Ugab catchment, with the general drainage being in a north-west direction towards the main Ugab River channel .

The local hydrology is strongly influenced by the Okorusu Mountain, which stands out sharply from the surrounding flat plain. A local watershed runs in an approximately west-east direction from the Okorusu Mountain, with the magnetite deposits being situated on the northern slope of this watershed. The general direction of drainage is in a westerly direction, towards the main catchment area of the Ugab River. It is assumed that during rainfall events, the majority of runoff will be generated on the steep slopes of the mountain, but away from this surface water either infiltrates or flows as overland flow over short distances, often flowing into localised pans.

5.9 SOCIO-ECONOMIC ASPECTS

5.9.1 POPULATION CHARACTERISTICS

The Okorusu Mine is situated in the large, central Otjozondjupa Region. The region is the fifth largest region in Namibia, 105 460 km^2, with a total population of 142 400 people, giving a population density of 1.4 persons/sqkm[1]. 63% of the population is over 15 years of age and there are slightly more males than females.

The main languages spoken at home are Otjiherero (28%), Nama/Damara (22%) and Oshiwambo (20%), Afrikaans (11%), Kavango (8%), San (5.3%), German (1.6%) and English (1%). For the region as a whole, the literacy rate is 75% for all persons over 15 years of age. Many people are literate in more than one language: literacy in English is 52%, 48% in Afrikaans, 24% in Otjiherero, 23% in Oshiwambo and 2% in German.

The Otjozondjupa Region is divided into seven constituencies and the mine is situated 10 km west of the main road between the Otavi and Otjiwarongo Constituencies. The 2011 census shows a decrease in Otavi constituency's population from 12 387 in 2001 to 11 800 in 2011, of which 5 200 live in the municipality of Otavi. By contrast, the more populated and economically active Otjiwarongo Constituency had grown from 23 412 people in 2001 to 30 400 in 2011, of which 28 000 inhabitants lived in the town of Otjiwarongo. Both town councils have greatly overestimated the growth of their towns. 25% of households in Otavi constituency are headed by women whereas in Otjiwarongo 42% are female headed households. The

[1] *NPC. 2012. Namibia 2011 Population and Housing Census Preliminary Results*

average household size in the region has dropped from 4.6 in 2001 to 4.1 in 2011 and in Otavi constituency it has dropped from 4 to 3.7 people per household.

The 2001 Population census found there were 1,351 households in Otjozondjupa Region whose main language is San, equivalent to 5.3% of the region's population.

5.9.2 THE AFFECTED COMMUNITY

5.9.2.1 Neighbouring landowners and farm-workers

The mine is surrounded by commercial farm land which is used primarily for ranching cattle with some game hunting and tourism use in varying combinations. The closest direct neighbouring farms encircling the mine farms clockwise are Brandenburg, Okorusu, Marburg and Belvedere. **Figure 9** indicates the locations of the sensitive receptors in the area.

Figure 9 Sensitive Receptors In The Area (image source: google earth)

5.9.2.2 Otavi

The town of Otavi is situated near the cross roads of the main north-south National Road B1, the road to Grootfontein and the road to Outjo.

5.9.2.3 Otjiwarongo

The majority of the mine staff reside in Otjiwarongo and the town is the main service centre for Okorusu's operations and its personnel.

Otjiwarongo is the regional capital and is 40km south of Okorusu mine, on the main B1 northern highway. The town is six times the size of Otavi, with a population of 30,400 (2011) of which approximately 7,000 own formal plots and are ratepayers[2]. Otjiwarongo's larger population sustains a much larger and diverse economy including many service industries and institutions. Its industries are not large: polystyrene, tyre re-tread, taxidermist, Fabupharm (manufactures a wide range of cosmetic and toiletry preparations as well as registered pharmaceutical products for the private and the Government Tender Market), brick makers, two auction houses, Namaqua Meat for European export, and charcoal production based on a number of nearby farms.

It has several government and private primary and secondary schools and has good medical services including doctors, dentists, pharmacists and a government and private hospital.

5.9.3 LABOUR AND INCOME

The labour force in Otjozondjupa is approximately 55,000 people, of whom about 31,000 are male. The labour force participation rate (LFPR) or the economically active population is the proportion of the working population (both employed and unemployed) over 15 years old. Otjozondjupa has the fifth highest LFPR in the country at 71%, which is above the national average of 55%[3]. As to be expected urban rates are higher than rural rates and they are higher for males in all the constituencies (82% of males compared to 60% of women). The 2008 Namibia Labour Force Survey found that the national unemployment rate was 51.2%. Unemployment rates (using a broad definition) in Otjozondjupa Region are significantly higher among women (65%) compared to 27% male unemployment. Youth unemployment (15-34 years) is below the national average at 50% but young women, have the highest unemployment rate in the region, 73% compared with men 31%[4]. (Ashby, 2012)

Of those employed in the region, approximately 51% are employed in the private sector, 22% are employed by government and parastatals and approximately only 9% are subsistence farmers /farm workers. Agriculture (the data includes forestry) is an important source of employment accounting for almost 30% of employment in Otjozondjupa. The manufacturing sector includes mining, quarrying, electricity, gas and construction and

[2] Otjiwarongo Town engineer at the stakeholder meeting
[3]MoLS. 2010. *Namibia Labour Force Survey 2008, Ministry of Labour and Social Welfare*
[4]NPC. 2005. *2001 Population and Housing Census; Otjozondjupa Region*

accounts for nearly 12% of the workforce. The largest occupational group is elementary occupations which includes labourers and other unskilled occupations and constitute 40% of all those employed.[5]

The main source of income in the region is derived from wages and salaries which make up 54% of a household's total income source. Business and non-farming activities accounts for 5% whilst cash remittances sent home by family members from elsewhere account for 13% and 12%[6]. Over the whole region, 13% of households rely on pensions and only 10% on subsistence agriculture and cattle rearing[7]. Thirty nine commercial farms in the region have been used for the resettlement of 116 farmers[8] which has generally not been economically beneficial to the families concerned or for the land's productivity. The farms Okorusu and Marburg are both such farms.

5.9.4 BASIC INFRASTRUCTURE AND HOUSING

In Otjozondjupa Region in 2001, 39% of households lived in housing which was provided by their employer while 48% lived in their own homes. The proportion of households living in impoverished dwellings (shacks) was only 10% in the region. Nevertheless, in 2001, 40 - 60% of households along the road between Otjiwarongo and Otavi relied on the bush as their only toilet.

5.9.5 HEALTH

Rural households are more likely to be located nearest to a clinic and 59% of households in Otjozondjupa have a clinic as the nearest government health facility. Urban households are more likely to be nearest to a government hospital and 39% of households have a hospital as the closest facility. Overall, 49% of households walked to their nearest health facility which indicates the proximity of health facilities to the population they serve.

Child immunisation rates are good in the region, with over 76% of children fully vaccinated. Incidence of diarrhoea among the under fives was 13% and 86% of mothers knew how to treat diarrhoea.

The biggest concern is that 27% of children under 5 years in Otjozondjupa were found to be stunted (short for their age) while 15% were under weight for the age 9. Both these indicators are used by Namibia's Millennium Development Goals (MDGs) to measure poverty and it show that chronic childhood malnutrition is widespread and worsening. The Ministry of Health and Social Welfare (MHSS) has a detailed implementation plan to reduce malnutrition that includes improved maternal nutrition, breastfeeding and feeding programmes at ECD centres and primary schools.

[5] Ibid
[6]NPC. 2005. *2001 Population and Housing Census; Otjozondjupa Region*
[7]MoLS. 2010. *Namibia Labour Force Survey 2008,* Ministry of Labour and Social Welfare
[8]Otjozondjupa Regional Council. 2011. *Otjozondjupa Regional LED Strategy*
[9]MHSS. 2008. *Namibia Demographic and Health Survey 2006/07*

In 2001, the top killer diseases in Otjozondjupa Region for 5 year olds and older were AIDS (19%), TB (15%) and cancer (9%)[10].

5.9.6 EDUCATION

5.9.6.1 Overview

Largely due to pre independence apartheid policies, by 2001, only 21% of the people living in the Otjozondjupa Region had completed secondary school, of which 5% held some higher tertiary training. 22% of the people had never attended school and a further 35% did not complete primary school. The net result of this is that between 50-60% of households in the mine's area have no member who has higher than primary education and this impacts detrimentally on income levels[11].

The literacy rate in Otjozondjupa in 2001 was 75% of people over 15 years but literacy rates vary tremendously across the region. Urban literacy rates were 88% compared with 64% in the rural areas. Literacy rates in Otavi constituency were 65%[12].

There are 65 schools in Otjozondjupa, 44 primary, 12 combined schools and 9 secondary schools. With the total number of school learners being 33,317 pupils, 30 119 of them attend state schools. Currently, school attendance among girls and boys is 85% and 82% respectively. The Ministry of Education's (MoE) regional office has admitted that they are not able to support and attend to all the needs of the state schools sufficiently[13].

5.10 TRAFFIC

Trunk road T0108 (B1 route) forms the major road link between central and northern Namibia. This road acts as a corridor for all traffic from South Africa and Botswana that travels through Namibia to Angola. It is also the only preferred corridor at the moment for goods from Walvis Bay harbour that is destined for Angola, Zambia and the DRC.

The existing access road to the mine is the D2463. D2463 is a gravel road that leads from the B1 directly to the mine. Daily traffic on D2463, most consist of staff traveling to the Okorusu Mine. At the entrance to the mine, D2869 branches off from D2463 towards the eastern side of the mountain, providing access to the farms Okorusu and Brandenburg.

[10]El Obeid et al. 2001.*Health in Namibia.* RAISON
[11]RAISON. 2011. *An Atlas of Poverty in Namibia.* Central Bureau of Statistics
[12]NPC, 2005, *2001 Population and Housing Census; Otjozondjupa Region.*
[13]MoE, 2011.*Education Statistics 2009.*Education and Management Information System (EMIS)

6 ALTERNATIVES

Production at the Okorusu Mine was stopped in October 2014. The proposal to process graphite ore from the Okanjande Graphite Mine at Okorusu would ensure that the existing facilities are still utilised and not totally decommissioned.

6.1 LOCATION ALTERNATIVE

A graphite ore processing facility was approved as part of the ECC for the Okanjande Graphite Mine. The alternative to operate the processing facility at the Okanjande Mine itself could thus be considered. It would, however, have considerable financial implications. The final location for the NTSF falls within the current approved Okorusu TSF footprint. From an environmental perspective, this was beneficial as the overall footprint has been limited by keeping it within the boundaries of the existing processing facilities.

The straightest and thus shortest route from D2869 was selected for the proposed new mountain ore haul route. This ensured that the new road footprint was limited which minimised the area of natural vegetation to be cleared for road construction. The completed road achieved this goal and ensured the haulage could be done in a very safe manner up the mountainside.

6.2 PROCESSING ALTERNATIVES

The use of the existing processing infrastructure as opposed to developing new infrastructure was opted for in order to minimise development costs. This also minimises footprint growth and therefore the environmental impact of the proposed adapted processing facility.

6.3 NO-GO OPTION

The financial viability of the processing plant relies on the continued use of the existing facilities and the market demand for graphite. The no-go option would likely result in the total closure of the processing plant, which would not be a suitable option for the current staff.

The current care and maintenance phase that the processing plant at Okorusu and mine at Okanjande have been subjected to is an interim measure to prevent the total closure of both sites.

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7 IDENTIFICATION OF ENVIRONMENTAL ASPECTS AND IMPACTS

As discussed in Sections 1 and 4, this amended Scoping report focusses on the potential environmental impacts associated with the components related to graphite ore processing. Environmental aspects and potential impacts were identified during the scoping process, in consultation with authorities, IAPs and specialists.

No construction activities are necessary as all construction activities were completed within the 3 years since the last amendment was applied for.

A summary of the various activities associated with the proposed project and the associated environmental aspects and potential impacts are despised in the sections below.

7.1 ACTIVITIES AND FACILITIES

Tables 11 to 14 provide a breakdown of activities/facilities associated with each of the proposed project components. These activities are further broken down by the project phases.

TABLE 11. TRANSPORT AND HAUL ROADS

Phase	Activity/facility
Operation	• Utilisation of roads • Loading and hauling • The use of hydrocarbons and other hazardous chemical substances • Vehicles / machinery on site • Staff on site • Waste generation
Decommissioning and closure	• Removal of road materials • Rehabilitation (ripping, applying topsoil and landscaping) • The use of hydrocarbons and other hazardous chemical substances • Vehicles / machinery on site • Staff on site • Waste generation

TABLE 12. TABLE CRUSHING, SCREENING AND PROCESSING

Phase	Activity/facility
Operation	• Crusher operation (unloading and crushing) • The use of hydrocarbons and other hazardous chemical substances • Vehicles / machinery on site • Staff on site • Waste generation

Decommissioning	• Removal of crusher infrastructure • Rehabilitation (ripping, applying topsoil and landscaping) • The use of hydrocarbons and other hazardous chemical substances • Vehicles / machinery on site • Staff on site • Waste generation

TABLE 13. TAILINGS STORAGE FACILITY

Phase	Aspects
Operation	• Removal, transport and stockpiling of material • The use of hydrocarbons and other hazardous chemical substances • Vehicles / machinery on site • Staff on site • Waste generation
Decommissioning	• No decommissioning phase

TABLE 14. GENERAL ACTIVITIES, OFFICES AND BUILDINGS, ABLUTION FACILITIES, WASTE GENERATION

Phase	Aspects
Operation	• Operations • The use of hydrocarbons and other hazardous chemical substances • Vehicles / machinery on site • Staff on site • Waste generation
Decommissioning	• Removal of offices and buildings • Rehabilitation (ripping, applying topsoil and landscaping) • The use of hydrocarbons and other hazardous chemical substances • Vehicles / machinery on site • Staff on site • Waste generation

7.2 ASPECT AND IMPACT IDENTIFICATION

Table 15 provides a summary of all the activities/facilities and the aspects and potential impacts associated with the operations phase of the project.

The decommissioning of the proposed adapted processing facilities would be in line with the rest of the (existing) facilities and will essentially be a reverse of the construction phase as the related activities are very similar to those described for the construction phase. No assessment table has therefore been included for the decommissioning phase. A draft Closure Plan has been developed and would be updated once approval is granted for this amendment. The conditions outlined in the amended Closure Plan as well

as the decommissioning management measures outlined in the amended EMP would be implemented as a means of mitigating the potential impacts associated with decommissioning and closure.

The relevance of the potential impacts are also presented in the tables below to determine if certain aspects need to be assessed in further detail (Section 8 of this report). Because of the existing baseline information obtained from the various EIA processes and baseline studies (refer to sections 1.3.1 and 5) and the updated specialist studies; the detailed history of Environmental Applications; the existing EMP; as well as the additional studies carried out, additional potential impacts can also be assessed as part of this process. Also, the relevant management and mitigation measures, to minimise or prevent the potential impacts, will be provided in Section 8 of this report and the details presented in the amended EMP (refer top Appendix H) .

A major advantage relating to the development of the proposed project is that the adapted activities/facilities are essentially the same as the existing (approved) activities/facilities, just adapted for a different product. This aided significantly in the scoping of potential environmental impacts as the potential impacts had already been assessed at the Okanjande Mine.

TABLE 15. ENVIRONMENTAL ASPECTS AND POTENTIAL IMPACTS ASSOCIATES WITH THE OPERATIONAL PHASE OF THE OPERATIONAL PROJECT

ACTIVITY/FACILITY RELATING OPERATIONAL PHASE	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	RELEVANCE (INITIAL SCREENING) OF POTENTIAL IMPACT	Ref
Vehicles and roads (including refuelling location – Fuel storage and dispensing on site)	Noise from vehicles	Increase in disturbing noise levels (nuisance)	Refer to Table 11	2-9
	Dust and other air emissions	Increase in dust levels (nuisance & health impacts)	Refer to Table 11 for comments on the impacts associated with vehicle entrained dust (Ref 1-2) The impact of dust and other air emissions has been addressed in the air quality impact assessment conducted by Airshed. Refer to Section 8 of the Scoping Report for the assessment of the potential impacts on the air quality based on the specialist findings.	2-10
	Oil and diesel spillages	Contamination of surface water and groundwater resources and pollution of soil.	Refer to Table 11 and Table 14 for comments on the impacts associated with oil and diesel spillages (Ref 1-3)	2-11
	Traffic	Increased traffic volumes on public roads	The proposed transport of graphite ore from the Okanjande Mine to Okurusu via the public road network could impact on existing road traffic. Traffic impacts have been addressed in a traffic impact assessment conducted by Lithon Project Consultants (Lithon). Refer to Section 8 of the Scoping Report for the assessment of potential traffic impacts based on the specialist findings.	
Crushing, screening and processing of graphite and tailings	Noise from crushing and screening	Increase in disturbing noise levels (nuisance)	Noise will be generated by the crushing and screening plant. There is only one receptor that may be affected by this noise. Refer to Ref. 2-8 for comments regarding this issue.	2-12
	Dust from crushing, screening	Increase in dust levels (nuisance & health impacts)	Dust impacts from processing of graphite ore and magnetite ore and reprocessing of tailings for the production of metspar were assessed in the air quality impact assessment conducted by Airshed.	2-13

ACTIVITY/FACILITY RELATING OPERATIONAL PHASE	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT	RELEVANCE (INITIAL SCREENING) OF POTENTIAL IMPACT	Ref
	and processing		Refer to Section 8 of the Scoping Report for the assessment of the potential impacts on the air quality based on the specialist findings. The Airshed report is included as **Error! Reference source not found.**.	
NTSF	Seepage from TSF	Impacts on groundwater quality	Refer to Section 8 of the Scoping Report for the assessment of the potential impacts on the groundwater quality based on the specialist findings. The Baseline Water and Soil report is referenced.	
General activities, offices and buildings, ablution facilities, waste generation	Waste disposal	Emissions to land, impact on biodiversity, environmental degradation and nuisance impacts	Refer to Table 14 (Ref 1-8).	2-18
	Ablution facilities	Pollution of surface water resources contamination of groundwater resources and soil contamination	Potential impacts on groundwater and surface water have been addressed in a groundwater and surface water assessment (SLR 2016a) Refer to Section 8 of the Scoping Report for the assessment of the potential impacts on groundwater and surface water.	2-19
	Staff on site	Impacts on biodiversity caused by harvesting of plants and illegal poaching.	The management measures aimed at minimising the risk of illegal harvesting of flora and poaching have been included in the amended EMP in Appendix H. No further assessment of this impact is therefore required.	2-20
		Disturbance of local residents by staff on site	The limited number of additional staff and the existing control of access have minimised the risk of mine employees disturbing local residents. No further assessment of this impact is therefore required. Nevertheless, this potential impact is addressed in the amended EMP included in Appendix H.	2-21

With reference to Table 15 above, and the issues raised during the public consultation process, the following issues were identified to be further assessments.

- Ecology;
- Air quality;
- Groundwater impacts;
- Surface water impacts; and
- Traffic.

Refer to Section 8 below for an assessment of the above mentioned issues.

Management and mitigation measures for all other environmental issues (aspects and potential impacts as identified in and Table 15) which do not require further assessment, are included in more detail in the updated EMP that is included in Appendix H.

8 ASSESSMENT OF RELEVANT ASPECTS & IMPACTS

The environmental aspects that required further assessment (as identified in Section 7 of this Scoping Report) relate to ecology, water (groundwater and surface), air quality, archaeology and traffic.

The discussion and impact assessment for each of these aspects above covers the construction, operational, decommissioning and closure phases where relevant. Management and mitigation measures to address the identified impacts are discussed in this section and are included in more detail in the EMP report that is attached in Appendix H.

Both the criteria used to assess the impacts and the method of determining the significance of the impacts are outlined in **Table 16**. This method complies with the Environmental Impact Assessment Regulations: Environmental Management Act, 2007 (Government Gazette No. 4878) EIA regulations. Part A provides the approach for determining impact consequence (combining severity, spatial scale and duration) and impact significance (the overall rating of the impact). Impact consequence and significance are determined from Part B and C. The interpretation of the impact significance is given in Part D. Both mitigated and unmitigated scenarios are considered for each impact. The same impacts assessment methodology was used in the 2013 EIA.

As previously explained, it is also important to note that the baseline when assessing these impacts is the current situation (*status quo*). Where improvements relating to current operations can be achieved, recommendations have been made, but it is important to note that the current *status quo* has been approved by the MEFT approval of the existing EMP in 2013. Where necessary, the cumulative impacts associated with the proposed expansion have however been addressed.

Table 16. Criteria for assessing impacts

PART A: DEFINITION AND CRITERIA		
Definition of SIGNIFICANCE		**Significance = consequence x probability**
Definition of CONSEQUENCE		**Consequence is a function of severity, spatial extent and duration**
Criteria for ranking of the SEVERITY/NATURE of environmental impacts	**H**	Substantial deterioration (death, illness or injury). Recommended level will often be violated. Vigorous community action. Irreplaceable loss of resources.
	M	Moderate/ measurable deterioration (discomfort). Recommended level will occasionally be violated. Widespread complaints. Noticeable loss of resources.
	L	Minor deterioration (nuisance or minor deterioration). Change not measurable/ will remain in the current range. Recommended level will never be violated. Sporadic complaints. Limited loss of resources.
	L+	Minor improvement. Change not measurable/ will remain in the current range. Recommended level will never be violated. Sporadic complaints.
	M+	Moderate improvement. Will be within or better than the recommended level. No observed reaction.
	H+	Substantial improvement. Will be within or better than the recommended level. Favourable publicity.
Criteria for ranking the DURATION of impacts	**L**	Quickly reversible. Less than the project life. Short term
	M	Reversible over time. Life of the project. Medium term
	H	Permanent. Beyond closure. Long term.
Criteria for ranking the SPATIAL SCALE of impacts	**L**	Localised - Within the site boundary.
	M	Fairly widespread – Beyond the site boundary. Local
	H	Widespread – Far beyond site boundary. Regional/ national

PART B: DETERMINING CONSEQUENCE					
SEVERITY = L					
DURATION	Long term	**H**	**Medium**	**Medium**	**Medium**
	Medium term	**M**	**Low**	**Low**	**Medium**
	Short term	**L**	**Low**	**Low**	**Medium**
SEVERITY = M					
DURATION	Long term	**H**	**Medium**	**High**	**High**
	Medium term	**M**	**Medium**	**Medium**	**High**
	Short term	**L**	**Low**	**Medium**	**Medium**
SEVERITY = H					
DURATION	Long term	**H**	**High**	**High**	**High**
	Medium term	**M**	**Medium**	**Medium**	**High**
	Short term	**L**	**Medium**	**Medium**	**High**
			L	**M**	**H**
			Localised Within site boundary Site	Fairly widespread Beyond site boundary Local	Widespread Far beyond site boundary Regional/ national
			SPATIAL SCALE		

PART C: DETERMINING SIGNIFICANCE					
PROBABILITY (of exposure to impacts)	Definite/ Continuous	**H**	**Medium**	**Medium**	**High**
	Possible/ frequent	**M**	**Medium**	**Medium**	**High**
	Unlikely/ seldom	**L**	**Low**	**Low**	**Medium**
			L	**M**	**H**
			CONSEQUENCE		

PART D: INTERPRETATION OF SIGNIFICANCE	
Significance	**Decision guideline**
High	It would influence the decision regardless of any possible mitigation.
Medium	It should have an influence on the decision unless it is mitigated.
Low	It will not have an influence on the decision.

8.1 AIR QUALITY

8.1.1 ISSUE: AIR POLLUTION

8.1.1.1 Introduction

Air pollution related impacts on biodiversity are discussed in Section 8.3 and therefore this section focuses on the potential for human health impacts. The air quality assessment focused on airborne particulates (PM_{10}, $PM_{2.5}$ and total suspended particles) from mining operations, dust entrainment from haul roads and processing activities. Gaseous pollutants (such as sulphur dioxide, oxides of nitrogen, carbon monoxide etc.) deriving from mine vehicles and equipment and from the graphite driers were regarded by the specialist as potentially negligible in comparison to particulate emissions.

This section addresses the cumulative effects of operational air quality impacts

8.1.1.2 Assessment of impact

Severity

The sources of the emissions (in tpa) in the unmitigated scenario are as follows:

- For PM2.5, the main contributing source from graphite processing operations is vehicle entrained dust from graphite ore and product transport (133 tpa) .
- PM10 emissions are mainly a result from unpaved roads, 1 060 tpa from graphite ore and product transport and 106.
- For TSP emissions, the most significant source is also unpaved roads (3 386 tpa from graphite ore and by graphite crushing and screening operations (443 tpa).

Based on the mitigation options, the source emissions reduce significantly between 73% and 76%. The main sources of emissions in the mitigated scenario can be summarised as follows:

- The main contributing source to PM2.5 emissions, after the application of mitigation measures, is still the transport of graphite ore and product, but at much lower emissions (33 tpa). The second most significant source, after the application of mitigation measures.
- For PM10 emissions, the main sources remain unpaved roads, but also at 75% less emissions (273 tpa for graphite .
- For TSP emissions, the most significant source also remained to be unpaved roads (760 tpa for graphite) followed by crushing and screening operations (164 tpa).

The main emission source from the proposed graphite processing is vehicle entrainment from the unpaved access and haul roads, followed by crushing and screening operations. Impacts from the

access road are likely to be to the western side of the access road due to the prevailing wind field. For windblown dust from the new graphite TSF.

Based on the above, the severity of this impact is medium in the unmitigated scenario and medium to low in the mitigated scenario due to the fact that especially dust from haul roads would add to the cumulative dust in the area.

Duration

In both the unmitigated and mitigated scenarios, if human health impacts occur, these are potentially medium term in nature.

Spatial scale

Air quality impacts will be experienced off site in both the unmitigated and mitigated scenarios so the spatial scale is medium to high for $PM_{2.5}$ and PM_{10} and low for nuisance dust fallout in the unmitigated scenario and medium ($PM_{2.5}$ and PM_{10}) to low (nuisance dust) in the mitigated scenario.

Consequence

The consequence of this potential impact is medium for $PM_{2.5}$ and PM_{10} and low for dust in the unmitigated and mitigated scenarios.

Probability

The probability of this impact occurring is medium in the unmitigated scenario and low in the mitigated scenario.

Significance

In the unmitigated scenario, the significance of this potential impact is medium- high (PM2.5 and PM10) to Medium (nuisance dust), which reduced to medium to low in the mitigated scenario.

Tabulated summary of the assessed impact on air quality

Mitigation	Impact	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	$PM_{2.5}$	**M**	**M**	**M-H**	**M**	**M**	**M-H**
	PM_{10}	**M**	**M**	**M-H**	**M**	**M**	**M-H**
	Dust fallout	**M**	**M**	**L**	**L**	**M**	**M**
Mitigated	$PM_{2.5}$	**M**	**M**	**M**	**M**	**L**	**M**
	PM_{10}	**M**	**M**	**M**	**M**	**L**	**M**
	Dust fallout	**L**	**M**	**L**	**L**	**L**	**L**

8.1.1.3 Conceptual description of mitigation measures

Conceptual discussion of the mitigation measures is provided below and detailed in the Amended EMP (Appendix H).

Objective

The objective is to limit the mine's contribution to air pollution impacts.

Management and Mitigation measures

- Water sprays to be applied at the area to be cleared should significant amounts of dust be generated.
- Moist topsoil will reduce the potential for dust generation when tipped onto stockpiles.
- Ensure travel distance between clearing area and topsoil piles to be at a minimum.
- Ensure exposed areas remain moist through regular water spraying during dry, windy periods.
- Drilling to be controlled through water sprays to ensure 70% control efficiency.
- Drop height from excavator into haul trucks to be kept at a minimum for ore and waste rock.
- Tipping onto ore stockpiles to be controlled through water sprays should significant amounts of dust be generated.
- Water sprays combined with chemicals at the crushers to ensure dust control of 50% if the processes result in significant dust generation. Moist ore can be up to 20 times lower than dry ore.
- Progressive vegetation of side walls of tailings storage facilities to ensure 80% cover up to 1 m from the top.
- Regular water sprays preferably combined with chemical surfactants on unpaved haul roads.
- Speed limit on unpaved haul roads within the mining precinct not to exceed 20 km/hr.
- Product trucks to be covered to minimise spillages on paved road.
- Reshape all disturbed areas to their natural contours.
- Cover disturbed areas with previously collected topsoil and replant native species.
- Ensure full vegetation cover on tailings storage facilities (this should be done throughout the life of mine).
- Dust fallout buckets to be installed at the following locations: northwest and west of the fluorspar TSF, near the primary crusher and ROM pile, upwind of the processing plant, south of the TSF, at the nearby receptor, next to the unpaved access road and at the B1 intersection. Monthly dust fallout rates not to exceed 1 200 mg/m^2/day.

Emergency situations

None identified

8.2 VISUAL

This visual assessment was carried out and is a qualitative assessment, and based on general observations on site.

8.2.1 ISSUE: VISUAL IMPACT

8.2.1.1 Assessment of impact

Severity

Due to the elevated position of a number of the proposed activities, the cumulative visual impact of the activities will be considered to be medium in the unmitigated and mitigated scenarios. The lack of sensitive receptors in the region, and the fact that the proposed new activities are located adjacent to existing mining operations has reduced the visual impact severity from high to medium.

Cumulatively, the visual impacts associated with the existing new facilities/activities would therefore remain medium, as previously assessed.

Duration

The duration is high in the unmitigated scenario because the visual impacts would be experienced after the life of the mine.

Spatial scale

This is a medium spatial scale in both the mitigated and unmitigated scenarios.

Consequence

The consequence of this impact is medium in both the mitigated and unmitigated scenarios.

Probability

The probability of the visual impact occurring is high.

Significance

The significance is medium in the unmitigated and mitigated scenarios. The proposed amendments would therefore not change to significance ratings from the approved (2013 EIA) facilities.

Tabulated summary of the assessed impact on air quality

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**M**	**H**	**M**	**M**	**H**	**M**
Mitigated	**M**	**H**	**M**	**M**	**H**	**M**

8.2.1.2 Conceptual description of mitigation measures

Conceptual discussion of the mitigation measures is provided below and detailed in the Amended EMP (Appendix H).

Objective

The objective of the measures is to limit visual impacts.

Management and Mitigation measures

During operation and decommissioning the following general principles apply:

- All vegetation within the mine site that is not removed needs to be managed and protected,
- In all areas which are to be excavated, topsoil needs to be removed and stockpiled in a suitable location and utilised in rehabilitation.
- The use of face brick should be avoided and glass surfaces should be shielded to avoid glare and reflections.
- All lighting is to be kept to a minimum within the requirements of safety and efficiency. Overly tall light poles are to be avoided and if exposed to the public line of site, low wattage and directional lighting should be used as appropriate. Security and perimeter lighting, where required, must also be shielded so that no light falls outside the area needing to be lit.
- Dust suppression mitigation as recommended in Section 8.1 should be applied;
- Unless utilized in the operation phase, construction structures need to be removed and the area rehabilitated back to open savanna or mountain and hill habitat;
- All painted surfaces should blend into the natural surroundings.
- For the closure phase:
    - Imerys will establish a mechanism to ensure that the rehabilitation of the processing plant, NTSF, mountain haul road and fuel storage facility is properly funded to ensure that sufficient funds are available to implement the rehabilitation and mitigations required for closure.
    - All components of the infrastructure used during operation, apart from the NTSF, must be removed. The site must be visually 'cleaned up' so as to portray an uncluttered landscape.

Emergency situations

None identified

8.3 ECOLOGY

The information in this section was conducted by making reference to the Ecology Impact Assessment conducted as part of the 2013 EIA.

8.3.1 ISSUE: DIRECT DESTRUCTION OF HABITAT AND ORGANISMS

8.3.1.1 Introduction

The completed road and TSF expansion activities may result in the direct destruction of habitat and organisms through:

- Death of especially sessile animals and plants through removal or destruction of individual organisms during construction activities.
- Death of animals as a result of being struck by vehicles and machinery using roads.
- Animals that are likely to be affected include rupicolous (rock living), burrowing species and roosting or nesting birds
- Other plant species of conservation concern that are likely to be affected by maintenance activities.

This impact will be addressed as a direct impact as opposed to a cumulative impact due to the fact that the disturbance/impact created by the existing mine is no longer relevant.

8.3.1.2 Assessment of impact

Severity

Although the majority of the activities will take place within disturbed areas. Impacts that may arise can be reduced to medium through footprint minimisation and rehabilitation as far as possible.

Duration

Direct destruction will be limited to the life of the mine there should be no longer term impacts. The duration is therefore medium in both the unmitigated and mitigated scenarios.

Spatial scale

The spatial extent of this impact is localised and therefore low.

Consequence

In both the unmitigated and mitigated scenarios the consequence is medium.

Probability

Without any mitigation the probability associated with the impacts is definite. With mitigation, the probability of impacts will be reduced because emphasis will be placed on conserving and restoring areas and related biodiversity.

Significance

Due to the high probability of this impact occurring, the significance of this impact is medium in both the unmitigated and mitigated scenarios.

The destruction of habitats and organisms was a certainty for the haul road. and there is very little mitigation possible. The footprint was minimised in the design phase and was exceeded only slightly due to the need to make the road safer. In the current phase, the operations will not impact the ecology significantly. The potential impact realised through the construction phase and with the mitigations implemented was medium. Currently, during the operational phase the damaged areas below the constructed road are rehabilitating well and pioneer weeds are restricted to the verges of the haul road.

Tabulated summary of the assessed impact of the destruction of fauna and habitats

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**H**	**M**	**L**	**M**	**H**	**M**
Mitigated	**M**	**M**	**L**	**M**	**M**	**M**

8.3.1.3 Conceptual description of mitigation measures

Objective

To minimise the direct destruction of fauna and habitats.

Management and Mitigation measures

- As far as possible, avoid areas identified as ecologically or biologically sensitive.
- Design footprints of roads to be as small as is legally and practically possible.
- Mark out all construction footprints and clearly convey the rule of staying inside these boundaries to all construction crews; make environmental management of construction an explicit part of building contracts with non-performance linked to a penalty clause.
- Enforce speed limits.
- Implement a scientifically based ecological restoration plan for all disturbed areas as soon as possible.
- Topsoil stockpiling.
- A permit is required for the removal of protected species.

Emergency situations

None identified

8.3.2 ISSUE: NOISE DISTURBANCE OF WILDLIFE

8.3.2.1 Introduction

Noise from machinery, vehicles and humans may disturb local fauna. Large mammals and birds are displaced from an area far greater than the direct footprint of the project area (refer to Section 5.4).

This is a potentially cumulative impact as it will be combined with the existing impact associated with the existing mine operations.

8.3.2.2 Assessment of cumulative impact

Severity

The severity of this impact is low as the impact is reversible over time. It must be noted that the proposed activities are in line with existing on site and there is therefore already an impact from the current operations. The cumulative impact severity will therefore remain the same.

Duration

The duration of this impact would be medium term and will take place throughout the project lifecycle.

Spatial scale

This impacts will be relatively site specific with limited radius of disturbance.

Consequence

In both the unmitigated and mitigated scenarios the consequence is low.

Probability

The probability of this impact occurring is medium in both the mitigated and unmitigated scenarios.

Significance

The significance of this impact is medium in both the unmitigated and mitigated scenario. This is due to the fact that the duration will extend throughout the life of the project as well as the high probability of occurrence.

Tabulated summary of the assessed impact of noise disturbance on wildlife

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**L**	**M**	**L**	**L**	**M**	**M**
Mitigated	**L**	**M**	**L**	**L**	**M**	**M**

8.3.2.3 Conceptual description of mitigation measures

Objective

To minimise the impacts of noise on local fauna.

Management and Mitigation measures

- Machinery shall be equipped with the necessary measures to minimise the emission of noise.
- Vehicles will be regularly monitored and maintained. Maintenance programmes will be established and implemented.
- Speed limits will be maintained (higher speeds generated higher noise levels).
- Speed limit signs will be visible and legible on site.

Emergency situations

None identified

8.4 SURFACE WATER

The information in this section was sourced from the surface water specialist study contained in this report (SLR, 2016) which was part of the previous amendment. In addition to this the baseline work carried out by Namib Hydrosearch (2017) was also considered. The design of the NTSF by Knight Piesold (2017) offers the design mitigations for this impact.

8.4.1 ISSUE: IMPACT ON SURFACE WATER RUNOFF

8.4.1.1 Introduction

The mined surface will have a minor reducing effect on the runoff generated in the deposit areas, which themselves only have a very small footprint within the identified small catchment along the slopes of Okorusu Mountain. The overall effect will be a small reduction in runoff volumes just downstream of the mining area, but with no identified downstream surface water users this will have a negligible impact. The discussion below is a cumulative assessment including the proposed new magnetite mining areas and the NTSF cell.

8.4.1.2 Assessment of impact

Severity

As the catchment area which is affected is very small, the cumulative impacts downstream will be low in the unmitigated and mitigated scenarios.

Duration

Although the flood events are short term events, the duration is long term as the cumulative effects of the mine (including the proposed new magnetite mining areas and the NTSF cell) on the runoff will last

beyond the life of mine with no mitigation, but are reduced with mitigation. The duration is therefore high without mitigation and medium with mitigation.

Spatial scale

The reduced runoff downstream will be outside of the site boundary. The influence is therefore beyond the site boundary, so the cumulative influence is medium in the unmitigated and mitigated scenarios.

Consequence

Based on the above assessment the determining consequence is medium in the unmitigated case and low with mitigation.

Probability

Limited runoff would mainly occur in extreme events. The probability is considered to be low for the proposed modifications/additions. However, cumulatively, the probability of the cumulative reduced flood runoff affecting the downstream conditions is possible locally, due to this being the uppermost part of the catchment and there being steep slopes, hence medium in the unmitigated case and low in the mitigated case.

Significance

Summarising the above assessment, the overall cumulative significance is rated as medium in the unmitigated scenario and low in the mitigated scenario. The proposed amendments would therefore not change to significance ratings from the approved (2013 EIA) facilities.

Tabulated summary of the assessed impact relating to surface water

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**L**	**H**	**M**	**M**	**M**	**M**
Mitigated	**L**	**M**	**M**	**L**	**L**	**L**

8.4.1.3 Conceptual description of mitigation measures

The conceptual discussion of the mitigation measures is provided below and is detailed in the updated EMP (**APPENDIX H**).

Objective

- Divert clean water around infrastructure and contain dirty water on site.
- Minimise the overall mining footprint, thereby limiting the runoff reduction.

Management and Mitigation measures

- Storm Water Management will make some improvement to surface water flow downstream, as clean water is diverted around the infrastructure.

Emergency situations

None identified.

8.4.2 ISSUE: IMPACT ON SURFACE WATER QUALITY FROM GRAPHITE MINING

8.4.2.1 Introduction

Surface water quality downstream could deteriorate mainly as a result of sediment which could be moved by the storm runoff from the mined waste material which will be replaced and compacted in the previously excavated areas. However, it should be noted that there are few potentially hazardous materials which the magnetite mining activities will generate, mainly lubricants and fuels from machinery. Due to the small and isolated nature of the catchment that will be affected by the proposed mining activities, the impact on runoff quality is not dealt with as a cumulative impact.

8.4.2.2 Assessment of impact

Severity

As there are no identified downstream users, the possible decline in water quality beyond the mining boundary is considered as of low severity in both the unmitigated and mitigated scenarios.

Duration

The potential duration would be beyond the life of the mine and is, therefore, considered high in both the unmitigated and mitigated scenarios.

Spatial scale

The polluted runoff downstream will be outside of the site boundary and therefore has a medium spatial scale. With mitigation, the spatial scale could be reduced to low.

Consequence

Based on the above assessment the determining consequence is medium in both the unmitigated and mitigated scenarios.

Probability

The probability of any polluted flood runoff affecting the downstream conditions is considered medium in the unmitigated scenario and low in the mitigated scenario.

Significance

Summarising the above assessment, the overall significance is rated as medium in the unmitigated case and low in the mitigated case.

Tabulated summary of the assessed impact relating to surface water

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**L**	**H**	**M**	**M**	**M**	**M**
Mitigated	**L**	**H**	**L**	**M**	**L**	**L**

8.4.2.3 Conceptual description of mitigation measures

The conceptual discussion of the mitigation measures is provided below and is detailed in the updated EMP (**APPENDIX H**).

Objective

- Establish baseline values for natural variation of the runoff.
- Monitor possible impact of mining on the runoff quality.
- Capture sediment laden runoff and allow settling, to improve water quality.
- Reduce storm water erosion of mined areas.

Management and Mitigation measures

- Contour and revegetate refilled excavations to reduce the likelihood of runoff causing erosion of the compacted ground.
- Construct a small settlement dam just below the confluence of the two drainage lines below the magnetite deposits, to capture the runoff from the disturbed area which could be carrying an elevated silt load.
- Where possible, undertake surface water sampling after storm events in order to compile a water quality database which would indicate if deterioration occurs due to mining.

Emergency situations

None identified.

8.5 GROUNDWATER

The information in this section was sourced from the groundwater specialist study the previous amendment report (SLR, 2016). In addition to this the baseline work carried out by Namib Hydrosearch (2017) was also considered. The design of the NTSF by Knight Piesold (2017) offers the design mitigations for this impact.

8.5.1 ISSUE: IMPACT OF EXPANDED TSF ON GROUNDWATER QUALITY (CONTAMINATION FROM TSF)

8.5.1.1 Introduction

During the operational phase, groundwater quality could be affected by contamination from tailings at the NTSF. Due to the low permeability of the country rock there is, however, a relatively low likelihood

that migration of any pollution source will occur off the processing area. The cumulative impact of the proposed expanded TSF is addressed in this section.

8.5.1.2 Assessment of cumulative impact

Severity

Due to the low permeability of the country rock there is a relatively low likelihood that migration of pollution plume will reach far down-gradient users. The baseline monitoring of the groundwater around the of the existing TSF and further afield and the geochemical work done of the graphite and fluoride tailings, the Severity is considered medium in the unmitigated case due to the presence of magnesium and calcium in the substrate.

Duration

The duration could extend over the life of the plant and is therefore medium in the unmitigated scenario and can be reduced to low through mitigation.

Spatial scale

Due to the low hydraulic properties of the present rock types, it is unlikely that contaminant migration would be regional or of local extent due to hydrogeological conditions. Spatial scale is considered medium in both the unmitigated and mitigated scenarios.

Consequence

Consequence is medium in the unmitigated scenario and medium in the mitigated scenario.

Probability

As it is possible that groundwater contamination could happen, probability is considered medium in the unmitigated scenario and medium to low in the mitigated scenario.

Significance

Summarising the above assessment, the overall significance is rated as high in the unmitigated scenario and medium to low in the mitigated scenario.

Tabulated summary of the assessed impact of a decrease in groundwater quality (surface infrastructure)

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**M**	**M**	**M**	**M**	**M**	**H**
Mitigated	**M**	**M**	**M**	**M**	**M-L**	**M-L**

8.5.1.3 Conceptual description of mitigation measures

The conceptual discussion of the mitigation measures is provided below and is detailed in the updated EMP (**APPENDIX H**).

Objective

- To monitor groundwater quality and to detect contaminants that might migrate off the processing plant or Imerys responsible area.
- To prevent contamination of groundwater from the NTSF.

Management and Mitigation measures

- Ensure the NTSF is installed with a proper seepage recovery system, including underdrain, toe drain and outlet to the solution trench, which reports to the return water dam.
- Graphite and fluoride tailings samples be geochemically analysed and tested for ARD potential and results be considered in the final NTSF design. (This has been actioned in 2017)
- A groundwater monitoring plan must be designed with dedicated boreholes drilled to monitor water quality at regular intervals. Water supply boreholes on farms surrounding the area should also be monitored on a regular basis (twice a year) in order to assess the possible impact on down-gradient users. (This has been actioned and is ongoing))
- Further geochemical studies should be carried out to determine acid rock drainage potential and the tailings source term, to discover if there may be elevated concentrations of potential pollutants such as heavy metals expected. (This has been actioned in 2017)
- A suitable TSF cover (waste material and suitable top soil) should be installed and vegetated after decommissioning in order to prevent infiltration of rain water and continuous leaching and seepage of tailings liquor.
- Line the refuelling area to prevent any fuel spillages from entering the groundwater system.
- Design the landfill sites according to the standards and specifications required by law for the applicable landfill class.
- Design the ablution facilities with correctly sized design criteria; ensure that effluent discharge meet the requirements set by Department of Water Affairs.

Emergency situations

If groundwater contamination due to the tailings storage is detected in the monitoring boreholes, inform the relevant authorities and affected farmers/parties. Address the clean-up of the contaminating facility, and groundwater treatment techniques i.e. pumping and treatment.

8.6 TRAFFIC

The information in this section was sourced from the traffic impact assessment contained in the previous amendment report (Lithon, 2015).

8.6.1 ISSUE: TRAFFIC VOLUMES ON B1 AND HAULING THROUGH OTJIWARONGO CBD

8.6.1.1 Introduction

A traffic impact assessment was undertaken to determine whether the additional haul vehicles to be generated by the proposed processing of graphite ore from Okanjande at Okorusu would affect current traffic volumes on the B1 national road and through the town of Otjiwarongo. The following additional haul trips are expected:

- Three fully loaded (graphite ore) trucks per hour northwards through Otjiwarongo CBD;
- Three empty trucks per hour southwards through Otjiwarongo CBD;
- Three fully loaded (graphite) trucks per day between Okorusu and Walvis Bay Harbour through the Otjiwarongo CBD;

8.6.1.2 Assessment of cumulative impact

Severity

Based on the peak traffic counts undertaken and as most of the public roads along which the trucks would travel in the vicinity of Otjiwarongo are four lane roads, the additional daily traffic on these roads is considered negligible and will have no significant impact on the level of service. The limited number of trucks travelling through the CBD will have a negligible effect on traffic with the town.

Severity is considered to be low.

Duration

The duration could extent over the life of the mine and is therefore medium.

Spatial scale

As haul vehicles would travel on the B1 national road and through the Otjiwarongo CBD, the spatial scale is considered to be regional and thus of a medium spatial scale.

Consequence

Consequence is low.

Probability

Based on the South African Department of Transport Manual for Traffic Impact Studies (RR 93/635 of 1995), the additional traffic volumes to be generated by the proposed haulage of graphite ore and processed mine products is deemed to be negligible. It is thus improbable that traffic volumes and level of service of intersections in Otjiwarongo would be significantly affected. Probability is considered low.

Significance

Summarising the above assessment, the overall significance is rated as low with no mitigation measures deemed necessary.

Tabulated summary of the assessed impact of a decrease in groundwater quality (surface infrastructure)

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**L**	**M**	**M**	**L**	**L**	**L**
Mitigated	**Not required due to low significance of impact**					

8.6.1.3 Conceptual description of mitigation measures

None required due to the low significance of the unmitigated scenario.

8.6.2 ISSUE: TRAFFIC SAFETY AT INTERSECTIONS

8.6.2.1 Introduction

Analysis of traffic counts showed that all of the intersections along the haul roads will be operating at an acceptable level of service for the proposed new additional haul vehicle volumes. From a capacity point of view, no geometric improvements would be required. The additional haul vehicles could, however, have an impact on safety for other road users and safety improvements at specifically the B1/Okanjande Access Road intersection may be required. Cumulative impact of additional traffic on safety of intersections along the haul route are assessed in this section.

8.6.2.2 Assessment of cumulative impact

Severity

Due to the relatively small number of additional vehicles to be generated, the severity is considered to be low for both the unmitigated and mitigated scenarios.

Duration

The duration could extent over the life of the mine and is therefore medium for both scenarios.

Spatial scale

As haul vehicles would travel on the B1 national road and through the Otjiwarongo CBD, the spatial scale is considered to be regional and thus of a medium spatial scale for both scenarios.

Consequence

Consequence is low for both scenarios.

Probability

It is possible that the increased number of haul vehicles could impact on the safety of intersections along the haul route. The probability is therefore considered medium in the unmitigated scenario and low in the mitigated scenario.

Significance

Summarising the above assessment, the overall significance is rated as medium in the unmitigated scenario and low in the mitigated scenario.

Tabulated summary of the assessed impact of a decrease in groundwater quality (surface infrastructure)

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**L**	**M**	**M**	**M**	**M**	**M**
Mitigated	**L**	**M**	**M**	**L**	**L**	**L**

8.6.2.3 Conceptual description of mitigation measures

The conceptual discussion of the mitigation measures is provided below and is detailed in the updated EMP (Appendix K).

Objective

- To ensure a higher level of road safety at the B1/Okanjande Access Road intersection.

Management and Mitigation measures

- Make provision for an exclusive right-turn lane (storage length of 60 m) on the southbound approach of the B1 national road (typical layout provided in Annexure C of the traffic impact assessment).

Emergency situations

None identified.

8.6.3 ISSUE: IMPACTS ASSOCIATED WITH STRUCTURAL STRENGTH AND SAFETY OF ACCESS ROADS

8.6.3.1 Introduction

Analysis of traffic counts showed that the number of trips generated would not justify the upgrading of the unsurfaced haul roads to surfaced standard and that the current roads would be able to carry the additional haul vehicles. Safety of gravel roads should, however, be taken into consideration. Typical defects which may affect unpaved roads are dustiness, potholes, stoniness, corrugations, ruts, cracks, ravelling (formation of loose material), erosion, slipperiness, impassability and loss of surfacing or wearing course. Many of these have a direct effect on the road roughness and safety. Cumulative impact of additional traffic on the structural strength and safety of unpaved access roads are assessed in this section.

8.6.3.2 Assessment of cumulative impact

Severity

Due to the relatively small number of additional vehicles to be generated, the severity is considered to be medium in the unmitigated scenario and low in the mitigated scenario.

Duration

The duration could extent over the life of the mine and is therefore medium for both scenarios.

Spatial scale

As haul vehicles would travel on the B1 national road and through the Otjiwarongo CBD, the spatial scale is considered to be regional and thus of a medium spatial scale for both scenarios.

Consequence

As road user safety is of concern, the consequence is considered medium in the unmitigated scenario and low in the mitigated scenario.

Probability

As the current access roads are of adequate capacity to accommodate the expected traffic volumes, it is considered unlikely that the relatively small volume of additional vehicles would have significant impact on the structure and safety of unpaved roads. The probability is therefore considered low for both scenarios.

Significance

Summarising the above assessment, the overall significance is rated as low for both scenarios.

Tabulated summary of the assessed impact of a decrease in groundwater quality (surface infrastructure)

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**M**	**M**	**M**	**M**	**L**	**L**
Mitigated	**L**	**M**	**M**	**L**	**L**	**L**

8.6.3.3 Conceptual description of mitigation measures

The conceptual discussion of the mitigation measures is provided below and is detailed in the updated EMP (Appendix H).

Objective

- To prolong the structural integrity of unpaved roads and ensure road user safety.

Management and Mitigation measures

- Apply dust palliatives (surfactants/binders) in order to bind dust particles on unpaved roads in order to prevent dust entrainment.

- Reduce safety risks by undertaking general routine road maintenance on a regular basis.

Emergency situations

None identified.

9 WAY FORWARD

9.1 WAY FORWARD FOR THE SCOPING REPORT

The way forward for the EIA scoping phase is as follows:

- Stakeholder review of Scoping Report and associated documents.
- Submit the final Scoping Report (with comments) and EMP to MEFT.
- MEFT review the amended Scoping Report and EMP and provide record of decision.

10 ENVIRONMENTAL IMPACT STATEMENT AND CONCLUSIONS

The environmental aspects associated with the project components have been successfully identified and assessed as part of this EIA Scoping process. Relevant mitigation measures have been provided and are included in the EMP in **APPENDIX H** of this scoping report.

Thorough assessment of the project components has been achieved and that an environmental clearance certificate could be issued on condition that the management and mitigation measure in the EMP be adhered to.

11 REFERENCES

Google Earth – accessed on multiple occasions between April and July 2015.

Mendelsohn J., A. Jarvis, C Roberts, T. Roberts . (2009). Atlas of Namibia. Sunbird Publishers. Cape Town

EPA, A., 2005. *Separation Distances Between Industrial and Sensitive Land Uses.* Australian Environmental Protection Agency.

SLR 2016a . Specialist Groundwater and Surface Water Study of Okorusu Amendment EIA

SLR 2016b. EIA for the amendment of activities at Okorusu Mine.

Airshed 2016. Specialist Air Quality Study for Okorusu Mine.

Namib Hydrosearch 2017. Soil and Water Baseline for Okorusu Mine

Knight Piesold 2017. New Tailings Storage Facility for the Graphite Operations at Okorusu

APPENDIX A: BACKGROUND INFORMATION DOCUMENT

BACKGROUND INFORMATION DOCUMENT

ENVIRONMENTAL CLEARANCE CERTIFICATE AMENDMENT APPLICATION, OKORUSU, OTJOZONDJUPA REGION

Prepared by Philip Hooks

July 2019

TABLE OF CONTENTS

11.07.19 Imerys Gecko Graphite (Namibia) – Amendment ECC - BID

1 INTRODUCTION

Imerys Gecko Graphite (Namibia) Pty Ltd (hereafter referred to as IGGN), the owner of the graphite processing plant at Okorusu, intends to apply for an amendment to the conditions of the environmental clearance certificate for this processing plant. Currently the environmental clearance certificate for processing graphite ore, amongst other activities at the Okorusu mine site, is in the name of Okorusu Fluorspar (Pty) Ltd and associated with the mining licences (ML) 90 and 179. The proponent, IGGN, is applying for the following specific activities/aspects to be transferred to a stand-alone clearance certificate in the name of Imerys Gecko Graphite (Namibia) Pty Ltd:

- Whole processing of graphite ore at the Okorusu mine site
- The storage and use of diesel and heavy fuel oil to be included under the transferred certificate
- The New Tailings Storage Facility (TSF)
- The haulage of graphite ore from Okanjande mine site to Okorusu mine site by truck

The proponent has commissioned an Environmental Impact Assessment (EIA) process for these changes based on the requirements of the Environmental Management Act (Act. No. 7 of 2007) and associated EIA regulations Government Notice (GN) No. 29 and 30. An Environmental Clearance Certificate (ECC) for the construction and operation of the proposed mining and processing activities is required and thus an EIA application with associated support documents need to be developed for submission to the Ministry of Mines and Energy (MME) and to the Ministry of Environment and Tourism for review.

An amended Environmental Management Plan (EMP), will enable MME and MET to make an informed decision regarding the proposed amendments to the EMP. The environmental commissioner will assess whether this is sufficient to issue the new clearance certificate or require an amended scoping report with assessment to accompany the amended EMP.

The aim of this background information document (BID) is to:

- Inform I&APs about the proposed transfer of the clearance to a different company and the aspects that company will be responsible for;
- Provide Interested and Affected Parties (I&APs) the opportunity to register for the public participation process;
- Explain the EIA process being followed;
- Explain how IA&Ps can share any comments, issues or concerns related to the proposed development. This will provide the consultant with additional information which should be taken into account in the identification of environmental aspects and the assessment of potential impacts.

2 LOCATION

Figure 1 renders a topographical map showing the district roads and national road along which the graphite ore is transported. Figure 2 renders a map of the location of the components that are under the responsibility of IGGN.

11.07.19 Imerys Gecko Graphite (Namibia) – Amendment ECC - BID

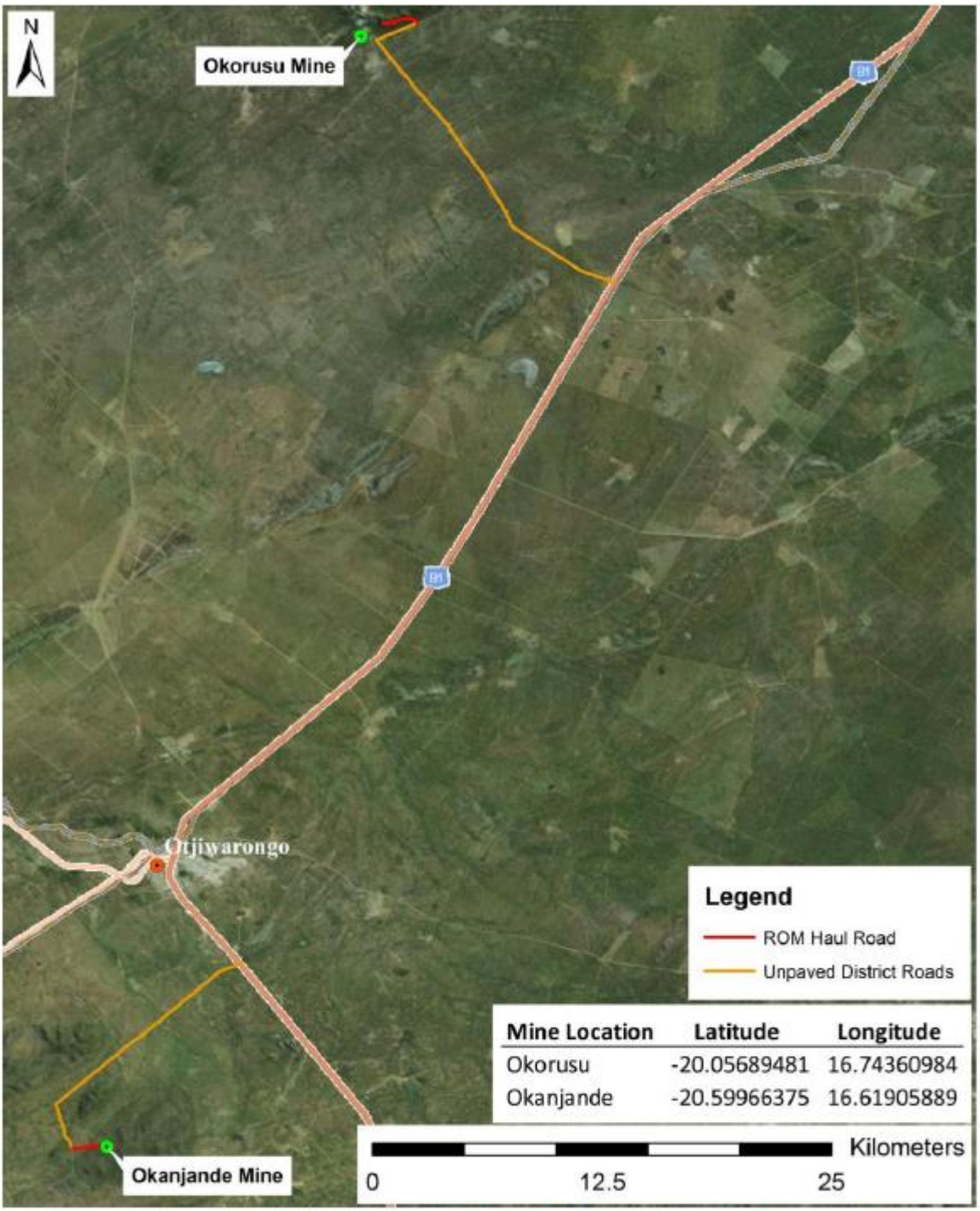

Figure 1. Location of the two mines relative to Otjwarongo showing the route of the graphite ore haulage trucks.

11.07.19 Imerys Gecko Graphite (Namibia) – Amendment ECC - BID

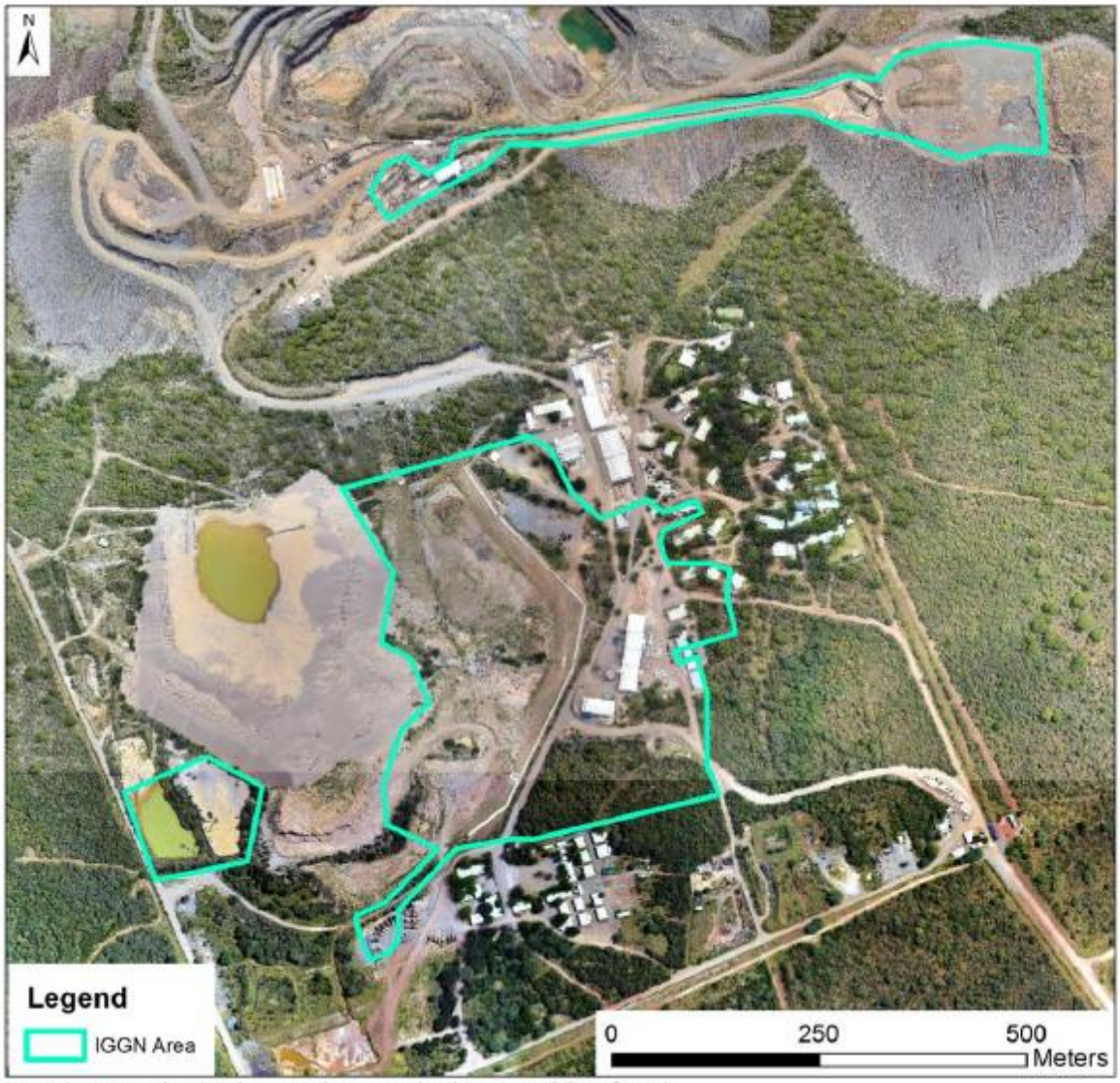

Figure 2. A map showing the areas that are under the responsibility of IGGN.

3 BACKGROUND INFORMATION

The proponent, IGGN, is the same company that has owned the processing plant from the start but the Okorusu Fluorspar (Pty) Ltd was the custodian of the mining licences within which IGGN operated. IGGN has 50% Namibian shareholding.

4 PROJECT MOTIVATION

Though the Okorusu Fluorspar mine is currently under care and maintenance and the graphite processing plant is producing graphite, the project still has the potential to contribute again to the Otjozondjupa region's socio-economic development through local job creation.

5 PROJECT DESCRIPTION

The following is a summary of the ore haulage, graphite ore processing, fuel storage and industrial (TSF) waste storage activities that will continue to be undertaken by IGGN during different project development phases.

CONSTRUCTION PHASE ACTIVITIES

The processing plant construction has been completed and the plant was fully operational up until November 2018 when the processing was stopped for a strategic period of planning, maintenance and a series of plant operational tests.

The only ongoing construction activity is the construction of the new TSF as new tailing waste is deposited and the flood diversion channel is re-constructed.

OPERATIONAL PHASE ACTIVITIES

This amendment of the ECC would include the following operational activities:

- the transport of graphite ore from Okanjande to the Okorusu Mine;
- The storage and use of diesel and heavy fuel oil to be included under the transferred certificate:
- the processing of graphite ore at the new processing plant; and
- the management of the new TSF.

The Okanjande Graphite mine is under care and maintenance so there is currently no haulage of graphite ore to the processing plant at Okorusu. 24 daily trips to transport graphite 86 km from the Okanjande Mine to the Okorusu processing facility is still required. Upon resuming full operations the trucks would operate 24 hours a day with six trucks each undertaking four trips per day hauling 67 tons of graphite ore per trip. This would amount to roughly 19 daily trips and about 6866 trips annually. The Namibian Roads Authority has already granted the required license for the transport of 67 ton payloads. The current clearance certificate approved these volumes. However, the actual period used since the processing plant was commissioned was daylight hours only.

The processing plant and new TSF operate under the management of the approved EMP and new TSF operational manual.

DECOMMISSIONING PHASE ACTIVITIES

The approved EMP stipulates the activities under this phase. A conceptual closure plan was developed for the Okorusu mine. IGGN will develop a full decommissioning plan in conjunction with Okorusu

mine to ensure joint responsibilities are taken care of under their respective clearance certificates for their separate activities.

6 EIA PROCESS

The EIA process will be carried out as follows:

Stakeholders and Interested and Affected Parties (IAPs) have been notified regarding the intended changes to the environmental clearance amendments through the national and local press. A public meeting has been arranged to provide an opportunity for stakeholders and IAPs to receive information about the changes and to give input into the EIA process. This public participation at the meeting and via written correspondence is required under the laws that govern environmental protection. After this public consultation an amended Draft EMP will be submitted for public review and thereafter submitted to MET as part of the application for the amended ECC.

Should the Environmental Commissioner require a more in depth study or report with regards to the required changes to the environmental clearance then this will be actioned in due course. If approved, based on the submission of the amended EMP then that EMP (supported by the previous EIA reports and operational manuals) becomes the legally binding plan to which the company must comply.

We invite all IAPs to provide in writing, any issues and suggestions regarding the proposed development. This correspondence must include:

1. Name & Surname;
2. Organization represented;
3. Position in the organization;
4. Contact details and;
5. Any direct business, financial, personal or other interest which you may have in the approval or refusal of the application.

All initial contributions, comments and concerns must be submitted by **8th August 2019**. Subsequent to the issuing of the amended Draft EMP, all stakeholders and IAPs will be requested to provide comments. A 21 working day review period will be granted for this aspect of the public participation. After the review period, the amended Draft EMP will be submitted to the Environmental Commissioner to apply for the amended ECC.

For further information, or to register as an Interested or Affected Party, please contact:

Mr. Philip Hooks (Environmental Assessment Practitioner/Consultant)

E-Mail: philip.nigel.hooks@gmail.com

Mobile: +264 81 127 9936

APPENDIX B: INTERESTED AND AFFECTED PARTIES DATABASE

Nieghbouring land owners and residents and other IAP		
Farm name	**Owner / Resident**	**Contact**
Farm Brandenberg 87	Mrs U. Mandt (owner)	Dr Antje Pfafferott
Farm Belvedere 198	Mr E. Mieze (resident and owner)	Mr E. Mieze
	Mr. B. Kaonjua (owner)	Mr. B. Kaonjua
Farm Marburg 1	Ministry of Lands & Resettlement (owner)	Mr Samuel S. Amutenya
Farm Okorusu 88	Ministry of Lands & Resettlement (owner)	Mr Samuel S. Amutenya
Farm Okorusu 88	Mr. Damaseb (resident)	N/A
Farm Okorusu 88	Mr. E. Garab (resident)	N/A
Okorusu	Thusnelda Higun	
Okorusu	Petrus Higun	
Marburg No1	Alexia Hanases	
Doorlagte	Geofrey Pietersen	
Doorlagte	Nguriko Handura	
Doorlagte/Naidhaus	Vendsari Kanbimba	
	Almon Hunaegu	
Marburg No1	Hilde Gaweses	
Marburg No2	Matheus Toivo	
Marburg No3	Lazarus Gawaseb	
Marburg No4	M Soroseb	
Marburg No5	H Soroseb	
	Kami Mieze	
Not neighbour but Chief of TA Hai//om San Royal Household Leadership	Past Chief Ananias Soroseb	
Farm Belvedere 198	Kami Mieze	

Local and Regional Government stakeholders		
	Name	**Job Title**
Otjiwarongo Town Council (Details confirmed by John Hinda: Senior Executive for Community Services)	Hilda. M. Jesaya	Mayor
	Archiolous Namaseb	Deputy Mayor
	B. Liebenberg	Acting CEO May 2012
	Julius Neumbo	Councillor
	D. van Niekerk	Councillor
	Anna Nkatana	Councillor
	Samuel /Awaseb	Councillor
	Bernard Haimbonde	Councillor
	Mr Manfred Uxamb	CEO
	Mr Naude Slabert	Town Engineer
	Agatha Mweti	Manager for Economic Development and Community Services
	Ismael Howoseb	SE: HR
	Almuth Goreses	Sec to CEO
	Devlyne Nauses	
	G. Myburgh	Deputy Town Engineer
	K.H. Hanssen	OTC Chief Emergency Services

Otjozondjupa Regional Council	Hon Rapama Kamehozu	Governor
	Janet Kuhanga	Chief Regional Officer (2011)
	S.B Booys	Okahandja Councillor
	Mr Ndapewa Nambili	Otavi Constituency
	Mr B. Matheus	Grootfontein Constituency
		Tsumkwe Constituency
	Hon. V. Kandorozu	Okakarara Constituency
	Hon. I.K. Kaujeua	Omatako
	Otto Ipinge	Chairperson MC & RC
	Roux Sampati	Acting Director
	Wilma Guriras	Chief Development Planner
	Kaverere Komomungorob	Development planner
	Sam Geiseb	Consultant GIZ/PES
	Orlis Gonzalez	Cuban consultant
	Tatiana Cruz Toledo	Cuban consultant
	Mrs G. Diergaardt	Secretary to the CEO
	Mrs Tabitha Hofmeyr	Sec to Planning

Stakeholder Consultation / Communication Management Programme - Sustainable Development

Last Update : baseline Responsible : Philip Hooks

Brench	Division	Site	Country	Category	Stakeholder Grouping	Stakeholder Name	Status
ESS	Imerys Graphite & Carbon (BU)	Gecko JV (OKOROSU)	Namibia	Natural ressources consumption	Farm Belvedere	Ephraim Miese	Owner
				Natural ressources consumption	Farm Belvedere	Mr. B. Kaonjua	Owner
				Natural ressources consumption	Farm Brandenburg	Antje Pfafferott	Owner
				Human resources hiring	Farm Marburg	Fritz Nghishililwa	Resident
				Natural ressources consumption	Farm Marburg	Salomo Hanaseb	Resident
				Natural ressources consumption	Farm Okorusu	Petrus Higun	Resident
				Natural ressources consumption	Farm Okorusu	Johannes Damaseb	Resident
				Natural ressources consumption	Farm Marburg	Ministry of Lands &	Owner
				Natural ressources consumption	Farm Okorusu	Ministry of Lands &	Owner
				Natural ressources consumption	Ministry Agriculture Water Forestry - Directorate Forestry	Taddeus Nakangombe	Chief Regional Forester
				Natural ressources consumption	Ministry Agriculture Water Forestry - Directorate Forestry	Natanael Amadhila	Chief Regional Forester
				Natural ressources consumption	Ministry Agriculture Water Forestry - Directorate Forestry	Ndasilwohenda Indongo	Forestry Technician
				Natural ressources consumption	Farm Wittenburg	Kallie van Flotow	Owner
				Natural ressources consumption	Ministry Agriculture Water Forestry - Directorate Water	Anna David	Geohydologist
				Community image development	Farm Okorusu	Pastor Chief Ananias Soroseb	Resident
				Natural ressources consumption	Marburg No1	Hilde Gaweses	Resident
				Natural ressources consumption	Marburg No2	Matheus Toivo	Resident
				Natural ressources consumption	Marburg No3	Lazarus Gawaseb	Resident
				Natural ressources consumption	Marburg No4	M Soroseb	Resident
				Natural ressources consumption	Marburg No5	H Soroseb	Resident
				Natural ressources consumption	Farm Okorusu 88	Mr. E. Garab (resident)	Resident
				Natural ressources consumption	Doorlagte	Geofrey Pietersen	Resident
				Natural ressources consumption	Doorlagte	Nguriko Handura	Resident
				Natural ressources consumption	Doorlagte / Naidhaus	Vendsari Kanbimba	Resident
				Natural ressources consumption	Namwater		Utility Provider
				Energy consumption	Nampower		Utility Provider
				Community economic development	Regional Council		Regional Authority
				Community economic development	Municipality of Otjiwarongo		Local Authority
				Human resources hiring	Union (employee representatives)		Employee Body
				Community image development	Media	Namibian	Media
				Traffic to and from Imerys plant	B2Gold	Angie-Riitta Kanandjembo	Environmental Manager
				Natural ressources consumption	Traditional Authority	Soriseb	Chief
				Natural ressources consumption	Farm Marburg / Farm Okorusu	Ministry of Lands & Resettlement	
				Natural ressources consumption	Ministry Agriculture Water Forestry - Directorate Forestry	Anna David	Geohydologist
					Ministry of Land Reform	Mr Elifas Gotlieb	Deputy Director
				Natural ressources consumption	Ministry of Land Reform	Soini Kuume & Rosalia Katanga	Department of valuation and estate
				Community image development	Otjozondjupa Regional Council	Vennesa Muukua	PA to CRO
				Community economic development	Otjozondjupa Regional Council	BEO Kasete	Acting Chief Regional Officer
				Natural ressources consumption	Ohorongo Cement	Jansen Junge	HSE Manager

APPENDIX C: NEWSPAPER CORRESPONDENCE & ADVERTISEMENTS

Christiaan Brandt <christo.brandt@imerys.com> Wed, Jul 3, 2019, 3:27 PM
to me

Good afternoon Philip

Trust you are well.

Attached hereto find the proof from the Republikein for approval.

Regards

Christo Brandt
Mob: + 264 81 300 7347
E-mail: Christo.Brandt@imerys.com

---------- Forwarded message ---------
From: **Shareen Van Wyk** <shareen@nmh.com.na>
Date: Wed, Jul 3, 2019 at 4:23 PM
Subject: 20X2
To: Christiaan Brandt <christo.brandt@imerys.com>

Christiaan,

Please find the attached document.

20x2

Booking/Order /Payment /Cancellation Deadline: 2 Working Days prior to publication at 13:00

Shareen van Wyk
Sales Administrator
Tel: +264 61 297 2117 I Fax:+264 61 239638 I

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12 Republikein Sun Allgemeine Zeitung — Market Watch — FRIDAY 19 JULY 2019

REPUBLIC OF NAMIBIA

MINISTRY OF EDUCATION, ARTS AND CULTURE

National Institute for Educational Development (NIED)

INVITATION TO SUBMIT TEACHING AND LEARNING SUPPORT MATERIALS FOR THE NAMIBIA SENIOR SECONDARY CERTIFICATE ADVANCED SUSIDIARY LEVEL (NSSCAS, GRADE 12)

NIED invites suitably qualified publishers to submit learning support materials (textbooks and supplementary materials) for all subjects of the NSSCAS for evaluation and approval.

Registered companies should attach the following documents:

- A valid Certificate of Good Standing from the Receiver of Revenue.
- A valid Certificate of Registration issued by the Ministry of Industrialization, Trade and SME Development.

The Terms of Reference are obtainable from NIED, Voortrekker Road, Okahandja or via email: (psimalumba@nied.edu.na)

The closing date for submissions is **26 March 2020** at **14h00**. The closing time for submissions will be strictly observed.

For further information, please contact:
Dr P. Simalumba, Tel: 062-509 002
Email: **psimalumba@nied.edu.na**

Address of submission venue:
Contact Person: Dr P. Simalumba

PUBLIC MEETING NOTICE

ENVIRONMENTAL IMPACT ASSESSMENT OF THE OLULILWA MANGANESE MINING PROJECT, EPUPA CONSTITUENCY, KUNENE REGION

In terms of the Environmental Management Act (No 7 of 2007) and the Environmental Impact Assessment (EIA) Regulations (Government Notice No. 30 of 2012), notice is hereby given to all potential interested and affected parties that an application will be made to the Environmental Commissioner for environmental clearance for small scale mining 70km north west of Opuwo. The intention is to mine and process manganese on site.

Figure. Project location north west of Opuwo and claim insert with coordinates

Project: Olulilwa Manganese Mining Proponent: Mr. JP Smit
Environmental Consultant: Mr. Philip Hooks

Public Information Meetings:
Thursday, 25[th] July 2019, at K Maundu School, Otjiwero, at 2pm
Friday, 26[th] July 2019, at Ruiters School, Ohandungu, at 2pm

You are hereby invited to attend the meeting and to share any comments, issues or concerns related to the proposed mining activities, for consideration in the EIA Report and Environmental Management Plan. Should you require any additional information please contact Mr. Philip Hooks:

PUBLIC MEETING NOTICE

ENVIRONMENTAL IMPACT ASSESSMENT FOR IMERYS GECKO GRAPHITE (NAMIBIA) (PTY) LTD, OTJOZONDJUPA REGION

In terms of the Environmental Management Act (No 7 of 2007) and the Environmental Impact Assessment (EIA) Regulations (Government Notice No. 30 of 2012), notice is hereby given to all potential interested and affected parties that an amendment application will be made to the Environmental Commissioner for environmental clearance for the ongoing processing of graphite ore at the Okorusu Mine Site.

Project: Imerys Graphite Processing Plant
Location: Okorusu Mine Site
Proponent: Imerys Gecko Graphite (Namibia) (Pty) Ltd
Environmental Consultant: Mr. Philip Hooks

Public Information Meeting:
Wednesday, 24[th] July 2019, at Okorusu Mine Site at 11am.

You are hereby invited to attend the meeting and to share any comments, issues or concerns related to the proposed amendment. Background information is available from the environmental consultant. Please contact Mr. Philip Hooks:

Cell. 081-1279936 E-Mail: philip.nigel.hooks@gmail.com

Myanmar temple city gets heritage status

• SIMON LEWIS

The United Nations Educational, Scientific and Cultural Organisation has inscribed Myanmar's ancient capital of Bagan as a World Heritage Site, nearly a quarter of a century after the complex of Buddhist temples was first nominated for listing.

The decision recognises the importance of the central Myanmar site, which includes more than 3 500 stupas (Buddhist shrines), temples, monasteries and other structures built between the 11th and 13th centuries, and will likely be a boon to Myanmar's tourist industry.

The Myanmar proposal to list the site was approved at a meeting of the UN's cultural body in Baku, Azerbaijan.

The International Council on Monuments and Sites recommended the listing, noting that Myanmar had adopted a new heritage law and had formed plans to reduce the impact of hotels and tourism developments around the temple.

Myanmar had reversed some "inappropriate conservation interventions", the body said, noting that Bagan was important for its historical significance and as a place of continuing Buddhist worship.

Bagan was first nominated as a World Heritage Site in 1995, but the military junta that ruled the country at the time was accused of ignoring experts' advice on restoration efforts and the nomination was rejected.

Earthquakes have also damaged the ancient structures, most recently in 2016 when nearly 200 temples were damaged by a 6,8 magnitude quake.

Myanmar has renewed efforts to list the site since a transition from military rule began in 2011.

"Bagan is living heritage. Having endured all forms of challenges for more than a thousand years," said Myanmar diplomat Kyaw Zeya, speaking on behalf of the Myanmar delegation at the Baku meeting.

"Today we are celebrating the joyous moment of the successful inscription of Bagan in the World Heritage List. Afterwards we will continue our efforts on conservation and management of Bagan so that this treasured heritage will remain for another thousand years." – *Nampa-Reuters*

Nampa-Reuters

TREASURES OF HISTORY ... People wait to see the sunset from the top of Shwesandaw Pagoda, one of the Buddhist temples in the ancient city of Bagan.

LIVE RESTORATION ... A visitor admires Rembrandt van Rijn's masterpiece 'The Night Watch' in Amsterdam's Rijksmuseum, home to the world's finest collection of Golden Age art. The museum embarked on the biggest ever restoration of the painting this week, with a huge glass cage erected around the piece of art so that the public can see the work carried out live. 'The Night Watch', which dates from 1642, was commissioned as a group portrait of an Amsterdam city militia and broke new ground by showing its subjects in action rather than as a static portrait. Experts argue over whether it was intended as a night scene or if it is simply perceived as such because of Rembrandt's use of shadows pierced by light. The painting, which measures 3,6 by 4,3 metres, was most recently restored after a mentally unstable man attacked it with a knife in 1975.

Nampa-AFP

Female dragonflies fake death to avoid males

• SANDRINE CEURSTEMONT

Female dragonflies use an extreme tactic to get rid of unwanted suitors: They drop out the sky and then pretend to be dead.

Ramón Khelifa from the University of Zurich in Switzerland witnessed the behaviour for the first time in the moorland hawker dragonfly (*Aeshna juncea*). While collecting their larvae in the Swiss Alps, he watched a female crash-dive to the ground while being pursued by a male.

The female then lay motionless on her back. Her suitor soon flew away, and the female took off once the coast was clear.

"I was surprised," says Khelifa, who had never previously seen this in 10 years of studying dragonflies.

Female moorland hawkers are vulnerable to harassment when they lay their eggs since, unlike some other dragonflies, they aren't guarded by their male mates. A single sexual encounter with another male is enough to fertilise all eggs and copulating again could damage their reproductive tract.

Khelifa found that the females often retreat to dense vegetation near ponds at this time, probably to hide. And they often act dramatically when they emerge.

He observed 27 out of 31 females plummeting and playing dead to avoid males, with 21 of these ploys successful.

Plunging at high speed is risky though, and according to Adolfo Cordero-Rivera at the University of Vigo in Spain, it may be a strategy that they use only in areas with lots of dragonflies. "Females may only behave in this way if male harassment is intense," he says.

Few animals have been caught feigning death to trick suitors. The behaviour has been seen in a species of spider (the males use it to improve their chances of mating), two species of robberfly and a type of mantis.

Playing dead to avoid predators, however, is more common and has been observed in dragonflies. "It's likely that females expanded its use to overcome male coercion," says Khelifa.

Khelifa is interested in finding out whether the behaviour is unique to species that lay eggs alone or whether it is more widespread.

Using extreme tactics to resolve sexual conflict isn't unique to moorland hawkers: In their damselfly relatives, for example, females eat their partner.

– *New Scientist*

Photo: IUCN Red List

A moorland hawker dragonfly

Nampa-Reuters

BAD HAIR DAY ... Half a kilogram of cocaine stuck on his head left a Colombian man with a conspicuously odd hairpiece and raised the suspicions of the Spanish police when he arrived at an airport in Barcelona.

Cocaine under toupee lands Colombian in Spanish jail

A COLOMBIAN man has been detained at Barcelona's international airport after half a kilogram of cocaine was found hidden under his over-sized toupee, the Spanish police said on Tuesday.

Arriving on a flight from Bogota, the man attracted police attention as he looked nervous and had a disproportionately large hairpiece under his hat. They found a package stuck to his head with cocaine about 30 000 euros (about N$416 000) in the package.

"There is no limit to the inventiveness of drug traffickers trying to smuggle controls," said the police statement.

The statement enclosed a photo of a middle-aged man – apparently still wearing the toupee through with his eyes blacked in the image – but gave no more details of his identity.

The Spanish police seized more than 100 kilograms of cocaine at Barcelona's El Prat airport in 2018.

The Colombian was detained at the end of June.

Spain, with its historic and linguistic links to South America, is an important gateway for cocaine to Europe, mainly from Colombia.

In recent years, the Spanish police have found cocaine inside breast implants, hollowed-out pineapples, a wheelchair cushion, a plaster cast encasing a man's broken leg, and a 42-piece crockery set.

– *Nampa-Reuters-AFP*

APPENDIX D: PUBLIC MEETING ATTENDANCE LIST

Meeting Attendance: at OKORUSU BOARDROOM   Date & Time: 24.07.2019 11am.

Name	Title / Office / Role	Organisation / Ministry	Tel. Contact	Email
OTTO HOWAEB	BOER	Welmoed.	0812894057	
Ronnie DOESEB	NO work/Bouer	—	0812037332	—
ERWIN HARASEB	Builder.	PRIVATE	0814224645	—
WILLIE GASEB	NO WORK	—	0814757336	gasebwilly@gmail.com
LENI E. AUKUMES	NO WORK	—	0816317824	—
SIEGFRIED GURUSEB	No WORK	—	0817567451	—
Elvis GARAB	No WORK	-	0874757336	—
Heinz Pfafferott	Farmer	Farm Ahrensburg	081 129 4430	pfaffer@afol.com.na
Petrus [illegible]	FARMER	OKORUSU	0812286 327	—
Shuuya Shikalepo	FITTER	OKORUSU	0813899011	sshikalepo21@gmail.com
Antonius Ndeipanda	LAB TECH	Okorusu	0813216925	[illegible]
Eliphas Muzanima	Milling operator	Okurusu	0812925867	[illegible]
Philip Hooks	Consultant	Private	0811279936	philip.nigel.hooks@gmail.com
Willem Nependa	Plant Manager	Imerys	081 272 6096	Willem.Nependa@imerys.com

APPENDIX E: PRESENTATION TO NEIGHBOURING RESIDENTS

Imerys Gecko Graphite Namibia

EIA Amendment

AGENDA

- Introduction
- Project Locality
- Public Participation
- Background Information
- Changes
- Scope
- Current Status & Operational Phase
- Impacts & IA&P input
- **Please switch cell phones off**

Introduction

- Imerys Gecko Graphite (Namibia) Pty Ltd (hereafter referred to as IGGN) is the owner of the graphite processing plant at Okorusu mine.
- IGGN intends to apply for an amendment to the conditions of the environmental clearance certificate for this processing plant.

Introduction

- Currently the environmental clearance certificate (ECC) for processing graphite ore, amongst other activities at the Okorusu mine site, is in the name of Okorusu Fluorspar (Pty) Ltd
- This ECC is associated with the mining licences (ML) 90 and 179.

Environmental Impact Assessment

Public Participation:

- Notification of the project – newspapers & notice boards
- The Background Information Document (BID) provided I&APs with the opportunity to take part in the public participation process.
- Copies have been made available to the interested and affected parties to assist them with providing informed inputs
- This presentation extracts information from the BID and other data sources to describe the project to those attending the meeting.

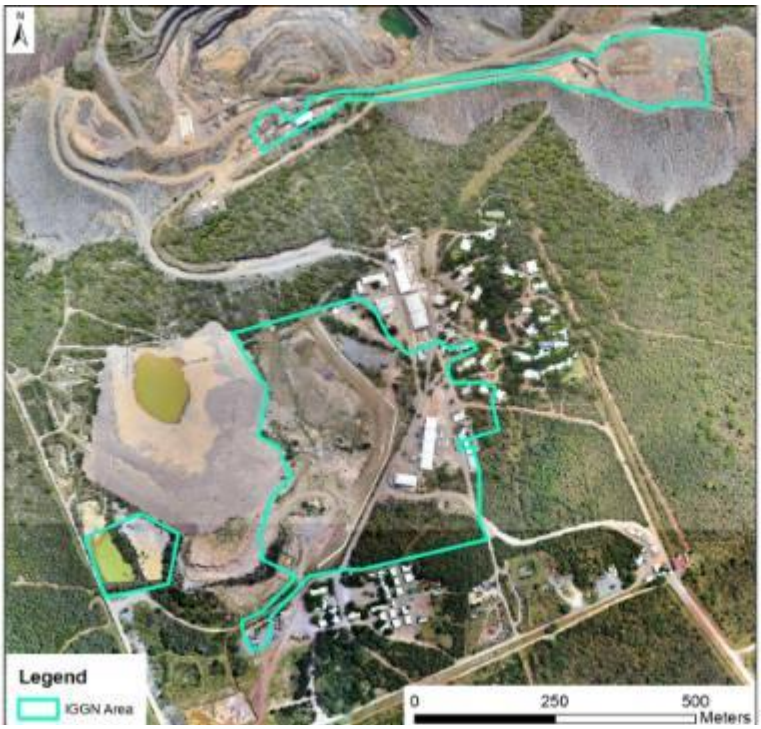
Project Background

- IGGN, is the same company that has owned the processing plant from the start but the Okorusu Fluorspar (Pty) Ltd is the custodian of the mining licences within which IGGN operated.
- IGGN has 100% Namibian shareholding.

Changes

Specific activities/aspects to be transferred to a stand-alone ECC in the name of Imerys Gecko Graphite (Namibia) Pty Ltd.

- Whole processing of graphite ore at the Okorusu mine site
- The storage and use of diesel and heavy fuel oil to be included under the transferred certificate
- The New Tailings Storage Facility (TSF)
- The haulage of graphite ore from Okanjande mine site to Okorusu mine site by truck



EIA Amendment Scope

- Extract the essential components from the existing EMP.
- Draft an amended EMP.
- Submit the new Draft EMP to MET for approval

Current Status

- The Okanjande Graphite mine is under care and maintenance so there is currently no haulage of graphite ore to the processing plant at Okorusu.
- The processing plant and new TSF operate is under the management of the approved EMP and new TSF operational manual.

Operational Phase

- 24 daily trips to transport graphite 86 km from the Okanjande Mine to the Okorusu processing facility is still required.
- Upon resuming full operations the trucks would operate 24 hours a day with six trucks each undertaking four trips per day hauling 67 tons of graphite ore per trip.
- This would amount to roughly 19 daily trips and about 6866 trips annually.
- The current clearance certificate approved these volumes.
- Actual period used was daylight hours only.

Potential Impacts to be assessed

- Should the Environmental Commissioner require a more in depth study or report with regards to the required changes to the environmental clearance then this will be actioned in due course.
- If approved, based on the submission of the amended EMP then that EMP (supported by the previous EIA reports and operational manuals) becomes the legally binding plan to which the company must comply.

What you can do!

- Provide in writing, any issues and suggestions regarding the proposed development. This correspondence must include:
  - 1. Name & Surname;
  - 2. Organization represented;
  - 3. Position in the organization;
  - 4. Contact details and;
  - 5. Any direct business, financial, personal or other interest which you may have in the approval or refusal of the application.
- All contributions, comments and concerns must be submitted by 8th August 2019.
- Send written submissions to philip.nigel.hooks@gmail.com

Questions / Comments / Concerns

Name/Organisation	Comment / Concern

Stakeholder	**Comments**
General discussion	Questions about work opportunities were discussed
Farmers	Air quality at farm entrances had improved

APPENDIX F: CORRESPONDENCE TO AND FROM STAKEHOLDERS AND IAPS

1. **Notice attached:**

Inbox

Philip Hooks <philip.nigel.hooks@gmail.com>
Attachments
Mon, Jul 22, 2019, 6:37 AM
to me, bcc: Natanael.Amadhila, bcc: amadhilan, bcc: DavidA, bcc: Gotlieb.Elifas, bcc: Anastasia, bcc: Soini.Kuume, bcc: Rosalia.Katanga, bcc: vmuukua, bcc: vanvuurenj, bcc: bkaonjua, bcc: pfaffer, bcc: egaoseb, bcc: fsc, bcc: carbofsc, bcc: Oliver
Natanael.Amadhila@mawf.gov.na,
amadhilan@yahoo.com,
DavidA@mawf.gov.na,
Gotlieb.Elifas@mlr.gov.na,
Anastasia Chimwandi <Anastasia.Chimwandi@mlr.gov.na>,
Soini.Kuume@mlr.gov.na,
Rosalia.Katanga@mlr.gov.na,
vmuukua@otjozondjuparc.gov.na,
vanvuurenj@ra.org.na,
bkaonjua@unam.na,
pfaffer@mweb.com.na,
egaoseb@gmail.com,
fsc@carbonamibia.com.na,
carbofsc@iway.na,
Oliver Krappmann <oliver@gecko.na>

Please find attached **the notice and BID** referred to in the previous mail.

--
Regards

Philip Hooks

Environmental Consultant

+264 81 127 9936 (Namibia) +44 7340 238047 (UK)

philip.nigel.hooks@gmail.com

2. **IAP Imerys Gecko Graphite**

Inbox

Helmut von Maltzahn <helmut@industrialeng.com.na>
Mon, Jul 22, 2019, 4:23 PM
to me

Dear Phillip

Regarding the Public Meeting Notice on the Environmental Impact Assessment for Imerys Gecko Graphite (Namibia) (PTY) LTD I would like to register as an interested and affected party as a Namibian citizen having worked on the project and declare my interest in the project.

Looking forward to receive background information to understand the way forward with the processing of graphite ore at the Okorusu Mine Site.

Kind Regards

Helmut

HvM Industrial Engineering

PO Box 7109 Swakopmund

APPENDIX G: CURRICULUM VITAE OF EAP

PHILIP HOOKS

Tel: +264 81 127 9936 (Namibia)
Email: philip.nigel.hooks@gmail.com
LinkedIn: www.linkedin.com/in/philip-hooks-50268156

PROFILE

A highly driven and collaborative **Management Professional** who has successfully completed numerous projects and activities and gained a wealth of exposure across environmental management, having worked in key sectors. A hardworking and reliable individual who has numerous strengths and knowledge including a thorough understanding of regulations and expertise in ensuring compliance as well as highly effective team management skills who would enhance any forward thinking organisation.

KEY SKILLS

- Wealth of environment management experience
- Environmental impact assessments
- Development and implementation of environmental management plans
- Exploration and mining sector experience
- Auditing expertise
- Extensive project management exposure
- Exceptional management and leadership skills
- Complex problem solving skills
- Naturally hardworking and reliable
- Driven by international best practice and compliance
- Stakeholder engagement
- Negotiation and influential skills

EXPERIENCE

2018 – 2020 **Environmental Consultant** – Self-employed

Key Responsibilities:

- I currently lead an EIA for a salt mining clearance application; assist on another EIA for an exploration application; report writing for mining and exploration licences for renewal clearance requirements. I recently completed an EIA for a manganese mine as well as some small mining claims in the Kunene Region in 2020

2015 – 2018 **Environmental Specialist** – Gecko Namibia

Key Responsibilities:

- I oversaw all environmental matters for the group, from compliance and auditing to implementation, monitoring and reporting. My services were outsourced for EIAs

2012 – 2014 **Environmental Scientist** – Geo Pollution Technologies

Key Responsibilities:

- I undertook Environmental Impact Assessments and developed industry specific Environmental Management Plans (EMPs)

2011 **Health Safety Environment and Radiation Training Officer** – Rio Tonto

1997 – 2011 **Teacher and School Principal** – Swakopmund Christian Academy

Key Responsibilities:

- I taught Science and Mathematics for students age 11 to 16 (Grade 6 to 10)

1995 – 1996 **High School Teacher** – Karibib Private School

Key Responsibilities:

- I taught Physical Science, Biology and Mathematics

ENVIRONMENTAL MANAGEMENT SKILLS AND PROJECTS

2015 – 2018

- Air quality monitoring, Forest tree surveys, Water quality monitoring, Performance audits, Coordinate environmental consultants, Plan budgets, Compile biannual environmental reports, Implement EMPs for operational projects, Develop management systems, Conduct awareness training
- at Okorusu Mine, Okanjande Mine, EPL4167 (Cape Cross Salt Project), EPL4346 (Gecko Cobalt Mining)

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- for Etosha Fishing Company, Namibian Ports Authority – Walvis Bay Harbour, Erongo Desalination Plant, Langer Heinrich & Rossing Mine & the Ministry of Fisheries and Marine Resources

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Interests: I have a keen interest in nature and enjoy walking and hiking in the wild. I spend time serving at my church outside of work time.

REFERENCES AVAILABLE UPON REQUEST

APPENDIX H: DRAFT ENVIRONMENTAL MANAGEMENT PLAN

APPENDIX F: CORRESPONDENCE TO AND FROM STAKEHOLDERS AND IAPS

IAP Imerys Gecko Graphite
Inbox

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Jul 22, 2019, 4:23 PM
to me

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13 Philip Hooks <philip.nigel.hooks@gmail.com> Mon, Jul 22, 2019, 6:37 AM

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14 Notice attached:

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from:	**Philip Hooks** <philip.nigel.hooks@gmail.com>
to:	Philip Hooks <philip.nigel.hooks@gmail.com>
bcc:	Natanael.Amadhila@mawf.gov.na, amadhilan@yahoo.com, DavidA@mawf.gov.na, Gotlieb.Elifas@mlr.gov.na, Anastasia Chimwandi <Anastasia.Chimwandi@mlr.gov.na>, Soini.Kuume@mlr.gov.na, Rosalia.Katanga@mlr.gov.na, vmuukua@otjozondjuparc.gov.na, vanvuurenj@ra.org.na, bkaonjua@unam.na, pfaffer@mweb.com.na, egaoseb@gmail.com, fsc@carbonamibia.com.na, carbofsc@iway.na, Oliver Krappmann <oliver@gecko.na>
date:	Jul 22, 2019, 6:37 AM
subject:	Notice attached:
mailed-by:	gmail.com

: Important according to Google magic.

Please find attached the notice and BID referred to in the previous mail.

--
Regards

Philip Hooks
Environmental Consultant
+264 81 127 9936 (Namibia) +44 7340 238047 (UK)
philip.nigel.hooks@gmail.com

2 Attachments

APPENDIX G: CURRICULUM VITAE

PHILIP HOOKS

Tel: +264 81 127 9936 (Namibia)
Email: philip.nigel.hooks@gmail.com
LinkedIn: www.linkedin.com/in/philip-hooks-50268156

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2013 – 2014 Fuel tank farm, Fuel retail facility, Harbour dredging

- for Natura Energy, Tidal Wave Investments, Walvis Bay & Luderitz Namibia Ports Authority

2012 – 2013 Marine impacts of bitterns discharge, Power line re-routing, Fuel Depot Tank Farm

- Rezoning Heavy Fuel Oil Boiler Replacement Fuel Bunkering, Liquid petroleum gas bulk storage facility
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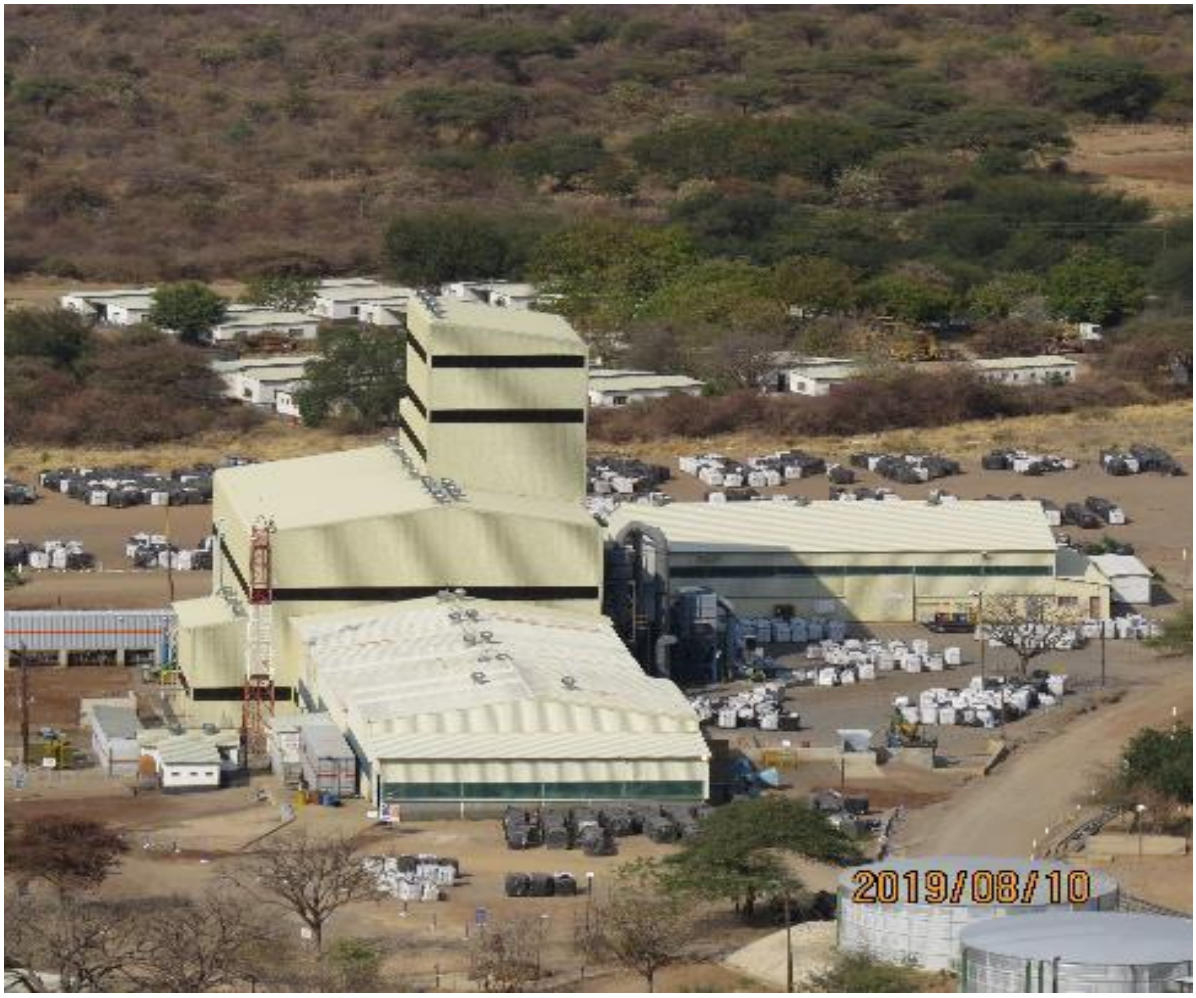
IT Skills: Microsoft Office, GIS software (ArcMap, Manifold, DRN GPS)

Interests: I have a keen interest in nature and enjoy walking and hiking in the wild. I spend time serving at my church outside of work time.

REFERENCES AVAILABLE UPON REQUEST

APPENDIX H: ENVIRONMENTAL MANAGEMENT PLAN

Imerys Gecko Graphite Namibia (Pty) Ltd Environmental Management Plan for the Proposed Graphite processing plant at Okorusu Mine



April 2021

P. O. Box 81307
Olympia
Windhoek
Namibia

DOCUMENT INFORMATION

Title
Amended Environmental Management Plan for the Imerys Gecko Graphite (Namibia) (Pty) Ltd

Title	Amended Environmental Management Plan (EMP) for the Imerys Gecko Graphite processing plant at Okorusu Mine
Environmental Assessment Practitioner	Philip Hooks
Email	philip.nigel.hooks@gmail.com
Author	Lovisa Nangula
Reviewer	Philip Hooks
Client	Imerys Gecko Graphite Namibia (Pty) Ltd
Status	Amended EMP towards an amendment of ECC
Issue Date	April 2021

Consultant's Contact Details:

Environmental Assessment Practitioner	Philip Hooks
Email	philip.nigel.hooks@gmail.com
Postal address	PO Box 4928 Vineta, Swakopmund Namibia
Phone	+264 81 127 9936

AMENDED ENVIRONMENTAL MANAGEMENT PLAN FOR THE OKORUSU FLUORSPAR MINE

CONTENTS

LIST OF FIGURES

LIST OF TABLES

Page

ACRONYMS AND ABBREVIATIONS

Below a list of acronyms and abbreviations used in this report.

Acronyms / Abbreviations	Definition
DWA	Department of Water Affairs and Forestry
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMS	Environmental Management System
EPL	Exclusive Prospecting License
Ha	Hectare
ISO	International Standard Organisation
LoM	Life of Mine
MAWLR	Ministry of Agriculture Water and Land Reform
MC	Mining Commissioner
MEFT	Ministry of Environment, Forestry, and Tourism
MME	Ministry of Mines and Energy
MS	Method Statement
MP	Management Programme
NSD	Noise Sensitive Development
PM10	Particular Matter less than 10 micrometre
RoM	Run of Mine
SANS	South African National Standards
SHE	Safety Health and Environment
SME	Small-Medium Enterprise
STP	Sewerage Treatment Plant
Tpa	Tons per annum
TSF	Tailings Storage Facility
WRD	Waste Rock Dump

16 INTRODUCTION

This Environmental Management Plan (EMP) documents a series of individual management programmes (MPs) which are designed to meet legal requirements and avoid or minimise the impacts associated with the Graphite processing at Okorusu site.

An EIA Scoping process, which included the assessment of proposed amendments to the mining operations and the re-assessment of cumulative impacts associated with the Okorusu Mine, was conducted in 2016. This EMP takes the management and mitigation requirements from the existing (approved) EMP into consideration as well as the findings of the 2016 EIA. It therefore supersedes the previously approved EMP for the four aspects listed in Section 4 below.

This EMP have therefore been compiled based on the existing EMP requirements as well as the EIA Report for the proposed Okorusu Fluorspar Mine amendments (SLR, 2016).

16.1 KEEPING EMPS UP TO DATE

It is the intention that this EMP should be seen as a “living document” which will be amended during the operation, as the activities might change or new ones be introduced.

This is in accordance with Section 50 (g) of the Minerals (Mining and Prospecting) Act, 33 of 1992, which states that the holder of a mining licence shall undertake the periodic review of the EMP(s) should circumstances change. The amendment now under consideration shifts the responsibility of the graphite processing from under the Okorusu Fluorspar Mining Licence to a stand-alone operation.

Should a listed activity(s) as defined in the Environmental Impact Assessment Regulations: Environmental Management Act, 2007 (Government Gazette No. 4878) be triggered (as a result of future modifications related to the project), this EMP will be updated as a result of another EIA process as stipulated in the regulations.

16.2 DETAILS OF THE PERSONS WHO PREPARED THIS EMP

SLR Namibia (Pty) Ltd (SLR), the independent firm of consultants who undertook the previous Amendment EIA and EMP. This EMP has been amended by Lovisa Nangula and Philip Hooks.

Lovisa Nangula, with the assistance of Philip Hooks, who are both Environmental Practitioners, reviewed and updated this amended EMP. Lovisa Nangula, a recent graduate of Environmental Managemental Studies, has had 3 years in EIA preparation and compilation of EMPs. Philip Hooks has

9 years of relevant experience in conducting/managing EIAs, compiling EMPs and implementing EMPs and Environmental Management Systems.

17 SCOPE OF EMP

The components of the EMP are included in table 17-1 below.

TABLE 17-1: CONTENT OF THE EMP

EIA Regulation requirement	**Reference in the EMP**
Details of the persons who prepared the EMP and the expertise of those persons to prepare an environmental management plan.	Section 1.2
Information on any proposed management or mitigation measures to address the environmental impacts that have been identified in a report contemplated by these regulations, including environmental impacts or objectives in respect of – i. Planning and design ii. Construction activities iii. Operation or undertaking of the activity iv. Rehabilitation of the environment v. Closure, where relevant	Section 7
A detailed description of the aspects of the activity that are covered by the EMP.	Sections 4 & 5
An identification of the persons to be responsible for the implementation of the mitigation measures.	Sections 5 & 8
Where appropriate, time frames within which the measures contemplated in the EMP must be implemented.	Section 8
Proposed mechanisms for monitoring compliance with the EMP and reporting on it.	Sections 7 & 9

18 ENVIRONMENTAL LEGISLATION

18.1 INTRODUCTION

The graphite ore processing, ore haulage, fuel storage and dispensing, and the disposal of mineral waste in the New Tailings Storage Facility complies with all Namibian legislation, and where legislation is lacking the company will comply with international best practice procedures. Table 18-1 provides a summary list of the relevant legislation.

TABLE 18-1: LIST OF LEGISLATION RELEVANT TO THE ACTIVITIES IN NAMIBIA

Current Namibian legislation & Bills
1990 - Petroleum Products and Energy Act No. 13 of 1990, as amended
1990 - The Constitution of the Republic of Namibia of 1990
1992 - The Labour Act, No. 6 of 1992
1997 - Regulations relating to the Health and Safety of Employees at Work (promulgated in terms of Section 101 of the Labour Act, No. 6 of 1992 (GN156, GG 1617 of 1 August 1997)
1998 - Affirmative Action (Employment) Act No. 29 of 1998
1997 - Namibian Water Corporation Act, No. 12 of 1997
1998 - The Health Act No. 21 of 1998
1999 - Road Traffic and Transport Act No. 22 of 1999
2000 - Petroleum Products regulations
2000 - Electricity Act No. 2 of 2000
2001 - The Forestry Act No. 12 of 2001
2003 - Pollution control and waste management bill, 2004
2004 - Water Resources Management Act, 2004
2004 - National Heritage Act No. 27 of 2004
2007 - Labour Act No. 11 of 2007
2005 - Atomic Energy and Radiation Protection Act No. 5 of 2005
2007 - Electricity Act, No, 4 of 2007
2007 - Environmental Management Act No. 7 of 2007
Former South African and SWA legislation still applicable in Namibia
1919 - Public Health Act No. 36 of 1919
1956 - Water Act No. 54 of 1956
1969 - Soil Conservation Act No. 76 of 1969
1974 - Hazardous Substances Ordinance No. 14 of 1974
1975 - Nature Conservation Ordinance No. 14 of 1975

Current Namibian legislation & Bills
1976 - Atmospheric Pollution Prevention Ordinance No. 11 of 1976
Namibian policy
1994 - Policy for the Conservation of Biotic Diversity and Habitat Protection
1995 - Namibia's Environmental Assessment Policy for Sustainable Development and Environmental Conservation
1998 - Draft White Paper on the Energy Policy of Namibia
1999 - Policy for Prospecting and Mining in Protected Areas and National Monuments
2000 - National Water Policy White Paper
2004 - Minerals Policy for Namibia
International law to which Namibia is a signatory
1985 - Vienna Convention for the Protection of the Ozone Layer
1987 - Montreal Protocol on substances that deplete the Ozone Layer
1989 - The Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal
1989 - The Rotterdam convention on the Prior Informed Consent Procedure for Certain Hazardous chemicals and Pesticides in International Trade
1992 - The Rio de Janeiro Convention on Biological Diversity
1992 - United Nations Framework Convention on Climate Change

19 PROJECT OVERVIEW

The graphite processing plant, owned by Imerys Gecko Graphite (Namibia) (Pty) Ltd (referred to as IGGN)is located roughly 60 km by road northwest of Otjiwarongo in the Otjozondjupa region. The graphite ore is transported from the Okanjande Graphite Mine, owned by Imerys Gecko Okanjande Mining (Pty) Ltd (referred to as IGOM), approximately 14 km south of Otjiwarongo. The distance between the mine and the processing plant is approximately 86 km by road. These two companies are owned by a Namibian Holding Company with international links to a company called Imerys Ltd.

IGGN, has registered an application for an amendment to the conditions of the environmental clearance certificate for this processing plant and its associated activities. Currently the environmental clearance certificate for processing graphite ore, amongst other activities at the Okorusu mine site, is in the name of Okorusu Fluorspar (Pty) Ltd and associated with the mining licences (ML) 90 and 179. The proponent, IGGN, is applying for the following specific activities/aspects to be transferred to a standalone clearance certificate in the name of Imerys Gecko Graphite (Namibia) Pty Ltd and not associated with the mining licences any longer:

- Whole processing of graphite ore at the Okorusu site;
- The storage and use of diesel and heavy fuel oil to be included under the transferred certificate;
- The construction and maintenance of the New Tailings Storage Facility (NTSF) and
- The haulage of graphite ore from Okanjande mine site to the Okorusu site by truck.

For further details regarding the proposed activities and more detailed maps indicating their locations and extents, refer to the Scoping Report submitted with this EMP.

20 ENVIRONMENTAL MANAGEMENT PLAN (ASPECTS AND IMPACTS)

Table 5.1 provides a description of the environmental aspects that are associated with the project and how they impact the biophysical and human environments.

TABLE 20-1: DESCRIPTION OF ENVIRONMENTAL ASPECTS AND POTENTIAL IMPACTS ASSOCIATED WITH THE PROJECTS OPERATIONAL ACTIVITIES

Aspects associated with consumption of resources	
Energy use	• Energy Resource Depletion, remote impacts
Use of manufactured materials	• Natural Resource Depletion, loss of land (habitat), change in land-use potential, loss of future economic opportunities.
Aspects associated with waste/pollution generation	
Emissions to air: -Fall-out dust -PM_{10} -$PM_{2.5}$	• Reduce visibility. • Nuisance impact and Health impact. • Impact on flora (cover of foliage in dust which reduces growth, health of plant, etc.)
Emission to land (solid and liquid non-hazardous waste)	• Visual pollution (e.g. littering). • Pollution of water. • Alteration of soil chemistry and/or composition. • Safety and health. • Scavenging by animals
Emission to land (solid and liquid hazardous waste)	
Emission to water (domestic)	• Contamination of streams, dams and groundwater. • Alteration of soil chemistry and/or composition. • Impact on fauna and flora living in aquatic environments. • Safety and health. • Impact on surface water flow.
Emission to water (industrial)	
Emissions to land and water (medical waste)	
Sound or visual pollutants	
Noise	• Negative public perception – Nuisance impact. • Change in animal behaviour.

Aspects associated with consumption of resources	
Visual	• Change to the visual landscape • Visual impact (aesthetic quality of environment) - Negative public perception • Alteration in nocturnal activities of fauna and flora to be removed.
Disturbance or alteration of ecosystems	
Disturbance of land	• Visual change in surroundings, scars, loss of biodiversity, damage to ecosystems, altered soil potential, change in land- use potential, loss of future economic opportunities.
Disturbance of biodiversity	• Impact on biodiversity (physical disturbance or general disturbance). • Reduction of water resource as an ecological driver.
Disturbance of water courses or groundwater	• Alteration of drainage patterns. • Surface and groundwater pollution. • Alteration of groundwater levels due to over pumping. • Depletion of community supply boreholes.
Socio-economic aspects	
Economic	• Direct contribution to Gross Namibian Income (GNI) of the Processing Plant • Reducing income inequality, increasing job creation and economic growth.
Inward migration	• Community health & safety and security impacts. • Stimulating the local economy and community organization • Increasing pressure on government services • Informal settlements
Change of land use	• Lowering of the groundwater and consequent long-term threat to sustainable farming • Loss of sense of place and subsequent loss of livelihoods from tourism during operations. • Squatter camps and reduction of safety.
Traffic	• Increased traffic using the road and the potential for road traffic accidents. • Road deterioration due to road use by mine-related vehicles. • Loose gravel can lead to cracked windscreens; and • The presence of animals and the risk of collision.
Other (any aspect not considered to fall into the defined aspect categories)	

Aspects associated with consumption of resources	
Emergency	• There are a number of different situations which could arise, each with its own suite of impacts, e.g. fire will have an impact on air quality, health and safety, property, fauna and flora.

21 OVERALL ENVIRONMENTAL OBJECTIVES FOR THE EMP

The following overall environmental objectives have been set for the operations of the IGGN's project components for the processing plant and associated activities:

- To comply with national legislation and standards for the protection of the environment.
- To limit potential impacts on biodiversity through the minimisation of the footprint and the conservation of residual habitat within the client's footprint.
- To investigate and exploit measures to reduce resource and energy consumption.
- To keep surrounding communities informed of activities through the implementation of forums for communication and constructive dialogue.
- To limit contaminated effluent discharge into the environment through the containment, recycling or removal of contaminated water.
- To protect soils and groundwater resources through the implementation of measures for spill prevention and clean-up.
- To ensure the legal and appropriate management and disposal of general and hazardous waste, through the implementation of a strategy for the minimisation, recycling, management, temporary storage and removal of waste.
- To minimise the potential for dust emissions through the implementation of dust control measures.
- To minimise the potential for noise and vibration disturbance in surrounding areas.
- To undertake rehabilitation wherever possible during the life of the plant.
- To incorporate final closure objectives.
- To develop, implement and manage monitoring systems to ensure good environmental performance in respect of the following: ground and surface water, air quality, noise and vibration, biodiversity and rehabilitation.
- To ensure the health and safety of surrounding communities through access control.
- To support and encourage environmental awareness and responsibility amongst all employees and service providers.
- To provide appropriate environmental education and training for all employees and service providers.
- Prevent and minimise pollution.
- To incorporate the relevant requirements stipulated in this EMP into the design.
- Ensure that all the contractors adhere to the construction related management commitments.
- Ensure compliance to the EMP.

22 MANAGEMENT PROGRAMMES

The management programmes (MPs), listed in the table below, are applicable to all the relevant activities and facilities of the IGGN processing plant. (The MPs follow in the subsequent sections).

TABLE 7-1: VARIOUS MPS AND NUMBERS

Number	Management Programme (MP)
7.1	Stakeholder Consultation/Communication MP
7.2	Safety and Security MP
7.3	Surface water/storm water MP
7.4	Groundwater MP
7.5	Air Quality MP
7.6	Noise & Vibrations MP
7.7	Biodiversity MP
7.8	Visual MP
7.9	Archaeology MP
7.10	Traffic MP
7.11	Socio-Economic MP
7.12	Resource MP
7.13	Soil MP
7.14	Waste Management MP

22.1 STAKEHOLDER CONSULTATION/COMMUNICATION MANAGEMENT PROGRAMME

It is important that channels of communication are maintained over the life of the project for surrounding landowners and other relevant stakeholders. Table 7.1 shows the stakeholder communication management programme.

22.1.1 COMPONENTS

This plan is made up of the following components:

- General Stakeholder communication.

22.1.2 MANAGEMENT AND MITIGATION

22.1.2.1 General Stakeholder communication

Objectives

To ensure that ongoing feedback is provided on the relevant project activities, together with feedback on the environmental management performance of the mine and that opportunity is provided for interested and affected parties to raise comments and concerns (complaints) on the same. Also, to ensure communication/ engagement strategies meet the needs of stakeholders.

TABLE 22-1: ACTIONS RELATING TO STAKEHOLDER COMMUNICATION

No		**Issue**	**Management commitment**
These commitments apply to <u>all phases</u> of the operations			
1	Understanding who the stakeholders are	Maintain and update the stakeholder register, including stakeholders' needs and expectations. Ensure that all relevant stakeholder groups are included.	
2.		A representative database would include government, employees, service providers, contractors, indigenous populations, local communities, NGOs, shareholders, customers, the investment sector, community-based organizations, suppliers and the media	
3		Ensure that marginalised and vulnerable groups are also considered in the stakeholder communication process.	
4		Record partnerships as well as their roles, responsibilities, capacity and contribution to development.	
5	Liaising with interested and affected parties at all phases in the project's life	Devise and implement a stakeholder communication and engagement strategy	

No			Issue	Management commitment
6	Cooperative working relationship with stakeholders	As far as is feasible, fully inform identified stakeholders about the project's activities.		
7		Use appropriate communication channels to consult with and disseminate information to the public, and for this purpose should develop a communication procedure		
8		Communication channels could include: open days, with particular attention being paid to the accessibility of venues, newsletters for both employees and the public, national and local newspapers, television, radio, email, telecommunication (via sms) and the internet, an annual sustainable development report.		
9	Managing perceptions and issues/complaints	Develop and implement a concerns/complaints (grievance) process for the public and publicise the channels through which complaints and comments can be submitted to the company. Respond immediately to all complaints and comments on receipt, introduce a "Third Party" if the grievance / complaint cannot be resolved between IGGN and the affected party and keep complete records of complaints, responses and actions taken. Document all complaints in the external communications register. Investigate and respond to the complainant.		
10	Safety of 3rd parties	Through appropriate communication and inductions, provide information to educate third parties about the dangers associated with hazardous excavations and infrastructure.		
11	Monitoring	Monitor changes in the communities of interest		
12		Develop audit criteria for monitoring the performance of its stakeholder engagement and communication strategies as well as relations between the company and its stakeholders.		

22.2 SAFETY AND SECURITY MANAGEMENT PROGRAMME

It is essential that safety and security measures are defined and implemented to adequately protect the mine site from being accessed by unauthorized people. An emergency response plan for incidents is also essential.

Note that a separate Occupational Health and Safety Plan must be developed by IGGN for the plant activities and does not form part of this EMP.

22.2.1 COMPONENTS

This plan is made up of the following components:

- General (third party) safety and security.
- Occupational Health & Safety.

22.2.2 MANAGEMENT

22.2.2.1 General (third party) safety and security

Objectives

The objective of the management measures is to prevent physical harm to third parties and animals from potentially hazardous excavations and infrastructure.

Actions

TABLE 22-2: ACTIONS RELATING TO GENERAL (THIRD PARTY) SAFETY AND SECURITY

No	Issue	Management commitment
These commitments apply to <u>construction, operation and decommission</u> phases		
1	Access of unauthorised people	Warning signs will be erected and maintained at the site boundary and the working area of the mine will be fenced.
2		Security control points will be in place, to prevent uncontrolled vehicle access to existing and future mining, stockpile and waste facility areas during the construction, operation and decommissioning phases.
3		Any person entering the mine area (pit & plant) will only be allowed after formal induction.
4	Emergency	Develop and implement an emergency response plan for third parties falling into or off hazardous excavations and causing injury.
These commitments apply to <u>operation and decommission</u> phases		

5	Safety Risks	Permanent aboveground waste facilities and stockpiles will be rehabilitated in a manner that they present land forms that will be stable, protected from flood damage, and slopes will be re-vegetated.
6		Any mining voids that remain open will be made safe to ensure that there is no risk to the safety of people and animals.
These commitments apply to <u>design, construction and operation</u> phases		
7	Safety Risks	The permanent above ground waste facilities will be designed, constructed and operated in a manner that stability is a priority, flood protection is provided and the risk of failure is limited to acceptable levels.

22.2.3 OCCUPATIONAL HEALTH & SAFETY

Occupational health and safety aspects of this project do not form part of this EMP. The proponent will adhere to all the relevant Namibian Legislation regarding health and safety and implement a formal health and safety management system. The main components which should be included in such a management system are summarised below.

The objectives of the health and safety management system will be to ensure:

- A healthy and safe work environment.
- Safe systems of work.
- Safe plant and equipment.
- The availability of such information, instruction, and training as required for worker health and safety.

Health and safety induction will be a requirement for all employees and contractors. All visitors will be required to attend a site induction prior to accessing the mine site. Specific training sessions will be developed and provided to employees requiring specific health and safety skill sets.

Health and safety audits will be routinely scheduled. Ad hoc audits will be done more frequently to follow up on concerns and/or non-compliances. Incident reporting and management augments the audits.

All hazardous chemicals used on site will have readily available Material Safety Data Sheets (MSDSs). Chemical hazards training will be an integral part of safety training and induction. Procedures will be developed for the use and handling of all dangerous chemicals. Correct personal protective equipment will be supplied.

22.3 SURFACE WATER MANAGEMENT PROGRAMME

Water is a scarce resource in Namibia, IGGN will undertake its operations to maximise the recycling and reuse of water.

Industrial effluent (from the plant, laboratory, wash bay and storm water drains) will be recycled into the plant if it is suitable for use in the process. The aim is to have a facility that does not discharge effluent into the environment. Treated effluent from the sewage plant and decant water from the tailings disposal facilities will also be re-used in the plant.

Domestic effluent includes grey water from the laundries, shower blocks and kitchens and sewage from the ablution facilities. Sewerage from septic tanks will be disposed of at the existing sewerage facility on site. Sewage water is collected and discharged into septic tanks followed by French drains and evaporation ponds.

Tailings Slurry is another industrial effluent and will be pumped to the NTSF via slurry pipelines. NTSF management is dealt with in the groundwater section and NTSF management plan document.

Hydrocarbons

Hydrocarbons are hazardous liquid wastes and will be disposed of in compliance with Namibian legislation.

There are a number of sources in all project phases that have the potential to pollute surface water, particularly in the unmanaged scenario. In the construction and decommissioning phases these potential pollution sources are temporary in nature, usually existing for a few weeks to a few months. Although these sources may be temporary, the potential pollution may be long term. The operational phase will present more long term potential sources and the closure phase will present final land forms that may have the potential to contaminate surface water through long term seepage and/or run-off.

The commitments derived from the 2021 Amendment Scoping Report, 2016 Scoping Report and 2013 EIA with regards to surface water, form the basis of this MP:

22.3.1 COMPONENTS

This plan is made up of the following components:

- Altering drainage patterns.
- Pollution of surface water – general.
- Industrial effluent.
- Domestic effluent.
- Spills.

22.3.2 MANAGEMENT

22.3.2.1 Altering drainage patterns

Objectives

The objective of the management measures is to minimise mixing of clean and dirty water systems.

Actions

TABLE 22-3: ACTIONS RELATING TO THE ALTERING OF DRAINAGE PATTERNS

No	Issue	Management commitment
These commitments apply to all <u>phases</u>		
1	Natural flow of storm water (clean and dirty) flowing from surrounding areas into and around the operations.	Design all storm water interventions in such a way that storm water can bypass the major structures such as the TSF, pits and the WRD and low-grade stockpiles. Ensure that these facilitates are designed, constructed and operated that flood protection is provided.
2		Minimise the overall mining footprint, thereby limiting the runoff reduction.
These commitments apply to <u>construction and operation</u> only		
3	Flow of dirty storm water (rain water that falls onto and flows across the site)	Construct engineered structures to direct contaminated water from the processing areas, roads and office areas to the return water dam circuit for storage and re-use.
These commitments apply to mine <u>closure and decommissioning</u> only		
4	Natural flow of storm water	The refilled excavations are contoured and vegetated to reduce the likelihood of runoff causing erosion of the compacted ground.

7.3.2.2 Impacts on surface water quality - general

Objectives

The objective of the management measures is to prevent pollution of surface water run-off.

Actions

TABLE 22-4: ACTIONS RELATING TO THE MANAGEMENT OF SURFACE WATER – GENERAL

No	Issue	Management commitment
These commitments apply to <u>design, construction and operation phases</u>		
1	Clean & dirty water separation	Where possible, surface water management facilities will be designed, constructed and operated so that dirty water is kept separate from clean water run-off through a system of berms, channels, trenches, flood protection measures, erosion protection or dams. The need for long term controls around the waste rock dump will be determined as part of closure planning
These commitments apply to <u>construction, operation and decommissioning phases</u>		
2	General surface water pollution/ spills	All hazardous chemicals (new and used), dirty water, mineralised wastes, concrete batching activities and non-mineralised wastes are handled in a manner that they do not contaminate surface water run-off or where this is not possible, demonstrate (through monitoring) that the potential contamination is within acceptable limits from a human health and related risk perspective.
3		Prevent pollution through infrastructure design and through education and training of workers (permanent and temporary)
4		The required steps to enable fast reaction to contain and remediate pollution incidents. In this regard the remediation options include in situ treatment or disposal of contaminated soils as hazardous waste. The former is generally considered to be the preferred option because with successful in situ remediation the soil resource will be retained in the correct place. The *in situ* options include bioremediation at the point of pollution, or removal of soils for washing and/or bio remediation at a designated area after which the soils are replaced
5		Ensure that on-site contractors have all the necessary hazardous protection equipment for people and the environment in the advent of a spill.
6		Verify fuel transport company's spill containment (emergency clean up) plan and spill clean-up agreement is in place. Ensure that fuel transporting companies adhere to the Petroleum Products and Energy Act (13 of 1990) and Regulations
7		Establish and maintain concrete bunded areas around all diesel generators, where required.
8		Maintain and implement spill management procedure, including the clean-up of hydro-carbon spills.

No	Issue	Management commitment
9		Ad hoc spills will be cleaned up/remediated immediately in line with spillage management procedure.
10		Place spill kits in all areas where hazardous substances are dispensed and stored and train staff to use it.
11		Specifications for post rehabilitation audit criteria to ascertain whether the remediation has been successful.
18	Safe disposal and rehabilitation of hydrocarbon contaminated soils and water	Develop and implement a hydrocarbon remediation procedure that explains how to deal with the treatment of contaminated environments (soil and water).
19	Monitoring of hydrocarbon spills	Ensure that checking for hydrocarbon spills is included as part of the regular inspections.
20		Report spillages as per the incident management procedure and Namibian legislation.

7.3.2.3 Industrial effluent

Objectives

The objective of the management measures is to prevent pollution of surface water, etc. due to industrial effluent.

Actions

TABLE 22-5: ACTIONS RELATING TO INDUSTRIAL EFFLUENT

No	Issue	Management commitment
These commitments apply to <u>operation phase only</u>		
1	Discharge	Ensure that no discharge takes place (closed system).
2	Spillage of industrial effluent	Prevent spillages of industrial effluent. Where spillage does occur, ensure it is properly contained.
3		Ensure that checking for industrial effluent spills is included in the daily inspection checklist.
4		Report spillages as per the incident management procedure and clean up spills within 24 hours of the incident occurring.

No	Issue	Management commitment
5	Pollution of soil and / or water when spillage or discharge occurs.	In the event of industrial effluent discharge into the environment, stop the incident as soon as possible and then find the root cause.
6		In the event of soil or water pollution, spills will be cleaned up/remediated immediately (within 24 hours) in line with spillage management procedure.
These commitments apply to <u>construction, operation and decommissioning</u>		
7	Prevent industrial effluent from polluting the environment (return water dam)	Ensure that the various effluent streams (tailings decant, treated effluent dirty storm water, process effluent) are managed to prevent overflow of the return water dam.
8		Ensure that a freeboard is maintained to accommodate run-off during a 1:50 year storm event.
9		Monitor the effectiveness of the mitigation measures (e.g. liner) for damage to ensure that seepage does not occur.
10		Ensure that storage/containment facilities have sufficient capacity to cater for the various sources of water including rainfall.
11	Discharge of industrial effluent to the return water dam and TSF	Ensure that all the industrial effluent is discharged into the return water dam and the TSF (slurry).
12		Install oil separators at all wash bays to separate hydrocarbons from the water. Send the water to the return water dam.
13		Skim separator regularly and dispose of hydrocarbons as per the waste management procedure.
14	Spillage of industrial effluent	Maintain pipes, drains, pumps, valves, etc. to minimise the likelihood of leaks.
These commitments apply to <u>construction and operation</u> only		
15	Prevent industrial effluent from polluting the environment	Recycle all process water from the process dam back into the plant as per design specifications.
16	Storage and disposal of liquid waste (hydrocarbons)	All liquid hydrocarbon waste will be collected, safely stored in sealed drums on impermeable surfaces within bunded areas. These areas will be designed to contain 110% of the volume of one or the largest (in a multi drum setup) drum and will be equipped with traps and oil separators to contain spilled hydrocarbons. The used hydrocarbon liquid waste will be provided to third parties for recycling. Related records will be kept.

7.3.2.4 Domestic effluent

Objectives

The objective of the management measures is to prevent pollution of surface water, etc. due to domestic effluent.

Actions

TABLE 22-6: ACTIONS RELATING TO DOMESTIC EFFLUENT

No	Issue	Management commitment
These commitments apply to <u>construction, operations and decommissioning</u>		
1	Discharge of raw sewerage and grey water	Conduct regular monitoring to ensure that effluent is not being discharged into the environment.
2	Spillage of domestic and treated effluent	Report spillages as per the incident management procedure and clean up spills within 24 hours of the incident occurring in line with the spillage management procedure.
3	Pollution of soil and / or ground water when spillage occurs.	In the event of domestic effluent discharge into the environment, stop the incident as soon as possible and find the root cause.
4		In the event of soil or water pollution, decontaminate the polluted area(s) using an appropriate methodology. Once clean, rehabilitate the area.
5	Awareness and Training	Train operators to understand the legal requirements and how to achieve compliance.
6		Induct Okorusu Employees and Contractors in the use of the spill management procedure.
These commitments apply to the <u>construction</u> phase		
7	Discharge of raw sewerage and grey water into appropriate sewage treatment facilities	Ensure that portable facilities / septic tanks constructed during the construction and decommission phases are managed until such time as they are no longer used and can be decommissioned.

No	Issue	Management commitment
8	Spillage of domestic and treated effluent	Maintain portable facilities, pipes, drains, pumps, valves, etc. to minimise the likelihood of leaks.
9		Ensure that checking for domestic and treated effluent spills is included in the daily inspection checklist.
10	Ablution facilities	Ensure that portable toilets are working properly and are cleaned at least weekly, so they do not pollute the surrounding environment or create hygiene problems.
11		Ensure that sewerage from the portable toilets is disposed of at the nearest sewage works.
These commitments apply to <u>operation and decommissioning</u> only		
12	Treatment of sewerage	Regularly service and maintain sewerage facility to keep it in proper working condition.

7.3.2.5 Spills

Objectives

The objective of the management measures is to prevent pollution of surface water, etc. due to spillages.

Actions

TABLE 22-7: ACTIONS RELATING TO SPILLAGES

No	Issue	Management commitment
These commitments apply to <u>construction, operation and decommissioning</u>		
1	Emergency situations – very large spills	Maintain and implement the emergency response procedure to address large scale hydrocarbon or reagent spills on and off site.
2	Hydrocarbon spills	Ensure that the company is in possession of the relevant licences and can provide reports that both surface and underground storage tanks are in good condition (as per legal requirements).
3		Ensure that hydrocarbon (used and new fuel and oil) tanks and drums are stored inside bunded areas on impermeable floors with traps and separators for containing spillages. These areas are designed to contain 110% of the volume of one or the largest (in a multi tank setup) tank and that pumps and pipes are maintained in good working order.
4		All wash bays will be equipped with oil traps and separators. All collected oil will be stored as above.

No	Issue	Management commitment
5		Ensure that all fuel and oil storage facilities (farms) and transport tankers have spill kits.
6		Ensure that the fuel transport company has a system in place to deal with hydrocarbon spills and subsequent clean-up thereof.
7		Contain the spill and commence with remediation within 24 hours and report as per the incident management procedure. In this regard the remediation options include in situ treatment or disposal of contaminated soils as hazardous waste. The former is generally considered to be the preferred option because with successful in situ remediation the soil resource will be retained in the correct place. The in situ options include bioremediation at the point of pollution, or removal of soils for washing and/or bio remediation at a designated area after which the soils are replaced.
8		If contamination of water occurs separate hydrocarbons from water and treat water before recycling and re-use.
9	Domestic and Industrial effluent	Prevent effluent spills by ensuring that treatment and storage facilities are adequate and pipes in good condition.
10		Ensure that capacities of the various facilities and pipes are not exceeded.
11		All vehicles and equipment will be serviced in workshops and wash bays with contained impermeable, floors, dirty water collection facilities and oil traps.
12		Contain the spill and as clean up within 24 hours and report as per the incident management procedure.
13		Mine processing slurry spilled on the ground is to be picked up and transported, in sealed containers, to the TSF or emergency stockpile for disposal.
14		Contain sewage and industrial effluent spills. The first management priority is to treat the pollution by means of in situ bio-remediation in consultation with an expert.
15		If *in situ* treatment is not possible or acceptable then the pollution must be excavated, classified as waste and treated as per the waste management procedure.
16	Legal Compliance – all spills	Comply with all legal requirements regarding spills and containment structures.
17		Hydrocarbon spills of 200l or more must be reported to MME in terms of Section 49 of the Petroleum Products Regulations 2000 as well as the MAWLR.

No	Issue	Management commitment
18	Monitoring of spills – all spills	Ensure that the monitoring of all tanks, pipelines and bunds are included in the daily inspection programme to develop an early detection system for leaks.
19		Update, maintain and implement a maintenance plan for tanks, tankers, pipelines and bunds.
20		Identify post rehabilitation audit criteria for verifying that remediation has been successful.
21		Conduct periodic audits of facilities to ensure compliance with legal and company standards.
22	Awareness and training – all spills	Induct all Imerys - Gecko employees and contractors in the Environmental Policy, spillage management and incident management procedures.
23		Train selected employees in the containment, and handling of spills and in the de-contamination and rehabilitation of affected environments.
24	Emergency situations – all large or remote spills	Major spillage incidents must be handled in accordance with the emergency response procedure.
25		Identify and contract a service provider/specialist to assist with the handling and clean-up of emergency spills off site.
26		Periodically test the emergency response.
27	Rainfall runoff mobilizes contamination from site and pollutes surface water	Divert clean offsite runoff water around potential contaminant sources with drainage ditches.
28		Collect runoff from potential seepage sources to containment dams for reuse within mine.
29		Design of diversion berms or channels and containment dams to deal with 1:100 year storm.
30		Rehabilitation (concurrent) of waste rock dumps with vegetation
These commitments apply to <u>operation</u> only		
31	Reagent spills	Ensure that the reagent supply and/or transportation company is in possession of the relevant licences (legal requirements) and can provide reports that transport and storage tanks are in good condition.
32		Ensure that reagent tanks are housed inside concrete bunds and that dispensing takes place on an impermeable surface.

No	Issue	Management commitment
33		Ensure that bunds are designed to contain 110% of the volume of one or the largest (in a multi tank setup) tank and that pumps and pipes are maintained in good working order.
34		Ensure that the reagent supply and/or transportation company has a system in place to deal with the variety of spills that might occur and the subsequent clean-up thereof.
35	Process solution spills (unplanned events – release of large volumes of process solution)	Ensure that bunds have been designed to capture any release of solution to the extent of 110 % of the largest tank constructed inside the bunded area.
36		As far as possible keep bunds clean and empty.
37		Ensure that pumps and pipelines are in place to pump solutions from the bunds back into the process.
38		Maintain and implement an emergency procedure for the containment and clean-up of process solutions if bunds are breached and treatment of contaminated areas.
These commitments apply to <u>operation and decommissioning</u> only		
39	Reagent spills	Contain the spill using appropriate spill kits, as far as possible clean up within 24 hours as per the MSDS specification and report as per the incident management procedure.
40		All solid reagents to be picked up and placed in the relevant reagent tank for use in the plant. If the reagent is polluted it must be disposed of in a safe disposal site.
41		Commence with remediation within 24 hours and report as per the incident management procedure. In this regard the remediation options include in situ treatment or disposal of contaminated soils as hazardous waste. The former is generally considered to be the preferred option because with successful in situ remediation the soil resource will be retained in the correct place. The in-situ options include bioremediation at the point of pollution, or removal of soils for washing and/or bio remediation at a designated area after which the soils are replaced.
42		If contamination of water occurs, contain the water and treat it, or direct it into the process dam for use into the process plant.
43		Identify and utilise a service provider to assist with the clean-up of very large reagent spills (emergency situations) as required.
44		All major spills (>200l) will be reported to the MAWLR.

22.4 GROUNDWATER MANAGEMENT PROGRAMME

Potential groundwater quality and quantity impacts are an issue during the construction and operation of the various mine activities and infrastructure unless measures are undertaken to prevent and mitigate such impacts. The purpose of this groundwater management and mitigation plan is to provide for methods to be followed to achieve such mitigation.

The commitments derived from the 2016 Scoping Report and 2013 EIA with regards to groundwater management form the basis of this MP.

22.4.1 COMPONENTS

This plan is made up of the following components:

- Contamination of groundwater.

22.4.2 MANAGEMENT

22.4.2.1 Impacts on Groundwater Quality

Objectives

The objective of the management measures is to prevent unacceptable groundwater pollution related impacts.

Actions

TABLE 22-8: ACTIONS RELATING TO GROUNDWATER CONTAMINATION

No	Issue	Management commitment
These commitments apply to <u>construction phase</u> only		
1	Groundwater contamination from construction activities	Adequate fuel containment facilities to be used during construction phase.
2		The use of all materials, fuels and chemicals which could potentially leach into groundwater must be controlled.
3		All materials, fuels and chemicals must be stored in a specific and secured area to prevent pollution from spillages and leakages.
4		All vehicles and machines must be maintained properly to ensure that oil spillages are kept at a minimum.
5		Spill trays must be provided if refuelling of construction vehicles are done on site.
6		Chemical storage areas should be sufficiently contained, and the use of chemicals should be controlled.
These commitments apply to the <u>operational phase</u> only		

No	Issue	Management commitment
7	Groundwater contamination from the project operation	Line the refueling area to prevent any fuel spillages from entering the groundwater system.
8		The use of all materials, fuels and chemicals which could potentially leach into groundwater must be controlled.
9		All materials, fuels and chemicals must be stored in a bunded and secured area to prevent pollution from spillages and leakages.
10		Mine vehicles and machines must be maintained properly to ensure that oil spillages are kept at a minimum.
11		Spill trays must be provided for refuelling of mine vehicles.
12		Proper sanitary facilities must be provided for mine workers. Frequent maintenance should include the removal without spillages.
13		No uncontrolled discharges resulting in pollution of the receiving environment and aquifer shall be permitted.
14		Chemical storage areas must be sufficiently contained, and the use of chemicals should be controlled.
15		Water seeping into the open pits during mining should be directed into a sump and pumped to surface.
16		Water pumped from the open pit mine during mining should be pumped into a dirty water system and should not be allowed to enter any clean water system, natural drainage line, or the aquifer.
17		Potable water must be made available to neighbours who can prove that their water supply is affected by mine dewatering and/or water abstraction.
18		A groundwater monitoring plan must be designed with dedicated boreholes drilled to monitor water quality at regular intervals. The parameters analysed for, sampling interval and distribution of monitoring boreholes must be agreed on with the Department of Water Affairs.
19		Drill monitoring boreholes at strategic localities and institute a groundwater monitoring plan.
20		All water retention structures, including tailings disposal facilities, return water dams, storm water dams, retention ponds etc. should be constructed to have adequate freeboard to be able to contain water from 1:50 year rain events.
21		When mining is undertaken, the water-table should always be kept lower than the bottom of the pit to prevent direct contact of contaminants with the groundwater.

No	Issue	Management commitment
22	Groundwater contamination from the TSF	It is recommended that a geochemical assessment is undertaken to assess the following: • The acid mine draining (AMD) potential from the new TSF. • The metal leaching potential from the new TSF.
23		Toe-drain water from the existing TSF will be collected and submitted to a laboratory for analysis. The results will allow the current "baseline' seepage concentrations, prior to the disposal of graphite tailings, to be determined. Should toe-drain water be unavailable, geochemical work will need to be conducted.
24		Geochemical work of 'graphite tailings' should be undertaken to geochemically characterise the new tailings.
25		An inventory should be undertaken on the boreholes in the vicinity of the old TSF to assess the suitability of existing boreholes for future monitoring purposes. Additional boreholes may need drilling to ensure an effective monitoring network is created to monitor both the old and new TSFs.
26		A groundwater monitoring plan must should be compiled with dedicated boreholes to monitor groundwater levels and water quality at regular intervals. Boreholes will be located up-gradient and down-gradient of the TSF to monitor any potential groundwater contamination from the TSF. An adequate baseline monitoring (6 months) must be undertaken to understand the current groundwater conditions, prior to disposal of graphite tailings in the new TSF area.
27		Water quality analysis should consider both toe drain water from the existing TSF and the geochemical work to be undertaken on the proposed new tailings material.. Pre-treatment of tailings material will only be necessary should the analysis provide any alarming results that could affect water quality negatively.
28		Numerical groundwater flow and transport modelling must be compiled for the purpose of groundwater management and so determine the time and spatial extent of potential contamination from either of the TSFs. The groundwater model could also provide insight into the potential effects of a mixed plume of fluorspar and graphite waste over time.
29		An abstraction permit must be obtained from the Department of Water Affairs and Forestry for all water used from boreholes.
30		A discharge permit will be required from the Department of Water Affairs and Forestry would it be required to discharge any surplus ground or surface water that the mine cannot consume.

No	Issue	Management commitment
31		A seepage recovery system must be installed at the new TSF cell and the design of a suitable TSF waste rock and top soil cover after decommissioning must take place.
32	Emergency	Major spillage incidents will be handled in accordance with the Okorusu emergency response procedure. The DWA and surrounding farmers (considering the potential of contaminating farm boreholes) will be informed of major spillages.

22.5 AIR QUALITY MANAGEMENT PROGRAMME

There are a number of sources in all project phases that have the potential to pollute the air. In the construction and decommissioning phases these potential pollution sources are temporary in nature, usually existing for a few weeks to a few months. The operational phase will present more long - term potential sources and the closure phase will present final land forms that may have the potential to pollute the air through long term wind erosion.

The air quality assessment focused on airborne particulates (PM_{10} and $PM_{2.5}$ emissions and total suspended particles). Gaseous pollutants (such as sulphur dioxide, oxides of nitrogen, carbon monoxide etc.) deriving from mine vehicles and equipment could not be assessed but were regarded by the specialist as potentially negligible in comparison to particulate emissions.

The commitments derived from the 2021 amendment report, 2016 Scoping Report and 2013 EIA with regards to Air Quality forms the basis of this MP.

22.5.1 COMPONENTS

This plan is made up of the following components:

- Total suspended particles
- PM_{10}
- $PM_{2.5}$

22.5.2 MANAGEMENT

Objectives

The objective of the management measures is to prevent unacceptable air quality related pollution impacts.

Actions

TABLE 22-9: ACTIONS RELATING TO AIR QUALITY

No	Issue	Management commitment
These commitments apply to the <u>construction</u> phase		
1	Dust, PM_{10} and $PM_{2.5}$	Undertake to do the following: • Spray water on the areas to be cleared should significant amounts of dust be generated. The moist topsoil will reduce the potential for dust generation when tipped onto stockpiles. • Ensure travelling distance between clearing area and topsoil stockpiles are minimised. • Ensure exposed areas remain moist through regular water spraying during dry, windy periods.
These commitments apply to <u>operation</u> phase		
2	Dust, PM_{10} and $PM_{2.5}$	Undertake to do the following • Vehicle activity on unpaved haul roads: o Regular water sprays preferably combined with chemicals on unpaved haul roads. o Speed limit on unpaved roads not to exceed 40 km/hr. o Cover product trucks to minimise spillages on paved road. • Materials transfer points: o Keep drop height from excavator into haul trucks at a minimum for ore and waste rock. o Tipping onto ore stockpiles to be controlled through water sprays should significant amounts of dust be generated • Crushing and screening operations: o Water sprays combined with chemicals at the crushers to ensure dust control of 50% if the processes result in significant dust generation. Dust generation from moist ore can be up to 20 times lower than dry ore. • TSF: o Progressive vegetation of side walls of unused tailings storage facilities to ensure 80% cover up to 1 m from the top. • The air quality specialist suggested a number of locations for the dust fallout buckets. Figure 9.1 renders a map with the suggested positions. • The specialist recommended monthly analysis of the dust fallout. The maximum fallout rate of 1200 mg/m²/day should not be exceeded. An inventory of the current conditions prior to activities resuming will provide an ambient air quality for the

No	Issue	Management commitment
		mine and road. The relevance of the limit must be assessed in light of the ambient dry conditions which prevail during winter time.
These commitments apply to the <u>decommission and closure</u> phases		
3	Dust, PM_{10} and $PM_{2.5}$	Undertake to do the following: • Recover the soil from stockpiles for rehabilitation and revegetation of surroundings. • Place topsoil cover onto TSF and vegetate with native grass and tree species as per the rehabilitation plans. • Contour berm at pits and vegetate with native grass and tree species as per the rehabilitation plans. • Reduce significant dust when removing infrastructure at the processing plant site. • Undertake demolition of infrastructure only during daytime hours. • Re-establish any previously removed native plant species in disturbed areas. • Indigenous plant species should be used in the final landscaping of the rehabilitated mine site. • Ensure a dense vegetation cover on WRD and TSF as defined by the final closure and decommissioning plan. • Demolition of infrastructure to have water sprays where a lot of vehicle activity is required. • Ensure full vegetation cover on tailings storage facilities (this should be done throughout the life of mine where possible).

22.6 NOISE AND VIBRATION MANAGEMENT PROGRAMME

There is a range of construction, operation and decommissioning activities that have the potential to generate noise and cause related pollution. Noise pollution will have different impacts on different receptors because some are very sensitive to noise and others are not. For example, mine workers in general do not expect an environment free of mine related noise and so they will not be sensitive to environmental noise pollution at work. In contrast, local residents are likely to be more sensitive to unnatural noises and so any change to ambient noise levels because of mine related noise will have a negative impact on them, although studies have shown that only one residence is likely to be affected.

The commitments derived from the 2016 Scoping Report and 2013 EIA with regards to noise and vibrations forms the basis of this EMP.

22.6.1 COMPONENTS

This plan is made up of the following components:

- Noise pollution

22.6.2 MANAGEMENT

22.6.2.1 Noise Pollution

Objectives

The objective of the management measures is to limit excessive noise pollution

Actions

TABLE 22-10: ACTIONS RELATING TO NOISE POLLUTION

No	Issue	Management Commitment
These commitments apply to <u>construction, operation and decommissioning</u>		
1	Impact of noise on the environment/ sensitive receptors	Document and investigate all registered complaints and make efforts made to address the area of concern where possible.
2		Communication channels are established to ensure prior notice to the sensitive receptor if work is to take place close to them. Information that should be provided to the potential sensitive receptor(s) include: • proposed working times; • how long the activity is anticipated to take place; • what is being done; • contact details of a responsible person where any complaints can be lodged should there be an issue of concern.
3		Ensure that plant and equipment is well-maintained and fitted with the correct and appropriate noise abatement measures.
4		All diesel powered equipment must be regularly maintained and kept at a high level of maintenance. This must particularly include the regular inspection and, if necessary, replacement of intake and exhaust silencers. Any change in the noise emission characteristics of equipment must serve as trigger for withdrawing it for maintenance.
5		By enclosing the tipper discharge and lowering the conveyor drop heights, noise emissions may be reduced. Mechanical and electrical design also influences the amount of noise from stacking and reclaiming operations.
6		Vibrating structures are known to be noisy and good design philosophies should be followed for equipment of this nature. The mentioned equipment must be installed on vibration isolating mountings.

No	Issue	Management Commitment
7	Monitoring	A proposed noise monitoring programme has been developed and is described in Table 4-1. Legal compliance to the Namibian Law is to be the minimum requirement.

22.7 BIODIVERSITY MANAGEMENT PROGRAMME

To understand biodiversity one must appreciate all of its components. It is not just about the species of plants and animals and the different habitats in which they live (biodiversity patterns) but the way that factors, such as wind, water, steepness of slope and presence of pollinators, affect the habitats and the species living in them (ecosystem processes).

The commitments derived from the 2021 amendment report, 2016 Scoping Report and 2013 EIA with regards to Biodiversity forms the basis of this EMP.

22.7.1 COMPONENTS

This plan is made up of the following components:

- Managing the physical destruction of biodiversity.
- Reduction of water resource as an ecological driver.
- Managing general disturbance.

22.7.2 MANAGEMENT

22.7.2.1 Physical destruction of biodiversity

Objectives

The objective of the management measures is to prevent or limit the unacceptable loss of biodiversity and related functionality through physical disturbance.

Actions

TABLE 22-11: ACTIONS RELATING TO THE PHYSICAL DESTRUCTION OF BIODIVERSITY

No	Issue	Management commitment
These commitments apply to <u>design phase</u>		
1	Physical destruction of biodiversity	Design footprints of all facilities as small as possible and generally limit mine infrastructure, activities and related disturbance to those specifically identified and described in this EIA report
These commitments apply to <u>construction phase</u>		
2	Physical destruction of biodiversity	• As far as possible, avoid areas identified as ecologically or biologically sensitive. • Design footprints of roads to be as small as is legally and practically possible.

No	Issue	Management commitment
		• Mark out all construction footprints and clearly convey the rule of staying inside these boundaries to all staff. • Enforce speed limits. • Implement a scientifically based ecological restoration plan for all disturbed areas as soon as possible. • Protect undisturbed areas outside planned mining operations from all forms of disturbance (these must serve as future source areas for re-colonisation after mining). • Prior to construction and in consolation with an environmental control officer, scan proposed construction sites for any more sensitive flora and fauna and implement the recommendations of the specialist – these could include but not be limited to: a search and rescue of dens, crèches, and burrows, relocating/demarcating nests, demarcating flora (protected trees) to either be conserved within the construction site or relocated.
These commitments apply to <u>construction and operation phase</u>		
3		• Clearly demarcate boundaries of the proposed expansion activities; • Where possible avoid cutting or relocating protected trees and develop plans to care for them during the life of mine until their surroundings have been restored • Where disturbance of protected trees is unavoidable, apply for the necessary permits in a timely manner. • As much as possible and as is feasible, evacuate any animals of conservation significance from the mining area before disturbance • Remove and stockpile topsoil, along with its soil fauna and seed banks, and devise plans for its management during stockpiling and redeployment for restoration • Where feasible, remove other organic material, including litter and dead wood, and stockpile separately for future use in restoration. Investigate appropriate stockpiling methods promote the viability of the communities they contain. • Mining staff should be held to the rule of staying inside the demarcated boundaries of the construction and mining site areas • Increase environmental awareness through training of key staff, including their ability to handle animals during evacuation; and • Rigorously police the construction crews' and mining staff's adherence to

No	Issue	Management commitment
		the rules and do not hesitate to invoke penalty clause/s

22.7.2.2 Managing general disturbance

Objectives

The objective of the management measures is to prevent disturbance to biodiversity.

Actions

TABLE 22-12: ACTIONS RELATING TO THE GENERAL DISTURBANCE TO BIODIVERSITY

No	Issue	Management commitment
These commitments apply to <u>construction, operation and decommissioning phases</u>		
1	General disturbance of biodiversity	The working area will be fenced.
2		Develop a policy that limits independent movements by staff into the veld outside the fenced-in mining site. Strictly prevent poaching and harvesting, including of firewood, or possession of any such natural materials. Enforce rules with "zero tolerance"
3		Provide or ensure that there is adequate food for workers on site
4		Allow only mining personnel, service providers and construction staff, as well as registered mine visitors on site
5		Train all mine staff to appreciate the natural non-consumptive values of biodiversity, as well as legislation relating to protected species
6		Raise awareness concerning recognising venomous snakes/invertebrates from non-dangerous ones, and ensure that sufficient personnel are trained to handle snakes/invertebrates so as to move them away from the mine without killing them
7		Compensate farmers for livestock losses, based on valid claims.
8		Train all drivers of vehicles in the necessary procedures for the safe operation of all vehicles and to maintain regulated speed
9		Carry out regular training to instil appropriate vehicle control and a high degree of professional road conduct
10		Enforce speed limits, including using speed-reducing methods and speed-monitoring devices
11		As much as operationally feasible, driving to and from the mining sites should be avoided at night and limited, if possible, only to within the mining area
12		Use yellow outdoor lights (sodium vapour floodlights with orange covers, or yellow bulbs/tubes for incandescent and fluorescent lights) wherever possible as this is less glaring to invertebrates while serving human requirements

No	Issue	Management commitment
13		Reduce the attraction to invertebrates to indoor lights by installing self-closing doors and non-opening windows in night-time operations buildings
14		Ensure that animals have no access to contaminated water sources
15		Fence in TSF and other areas that are regularly artificially wetted and use other proven means to deter birds from reaching them; wetted areas should be kept to a minimum
16		All chemicals, emissions, and leaching products as well as tailings must be strictly contained and regularly timely cleaned or neutralised, adhering to best practises
17		Develop a site waste management policy and actively enforce it.
18		Develop policy for the management of hazardous materials and actively enforce it.
19		Provide temporary waste deposition facilities on site (rubbish bins, skips), which are secure from scavengers, storms, or other disturbance.
20		Provide adequate toilet facilities for all workers at work sites and enforce a strict policy of not defecating in the field.
21		Apply appropriate hydrocarbon-handling principles (storage tanks should have bunding and be regularly inspected, lubricants should be stored in properly designated and appointed facilities, spillages should be cleaned up immediately, adequate control over use of fuels).
22		Contain all contaminated water and purify it to potable quality before reuse, or release into the environment.
23		Where possible, avoid destroying trees or disturbing their proximity, so that animals can continue to use them.
24		Rehabilitate areas around linear infrastructure after installing it such that they minimise habitat fragmentation, allowing populations to be connected across them
25		Implementing strict controls over the movement of materials onto and off the site to minimise the spread of invasive species; if this becomes a problem monitor the occurrence and spread of invasive species so as to instigate steps for their control, following expert advice
26	Emergency	Major spillage incidents will be handled in accordance with the Okorusu emergency response procedure.
27		Certain instances of injury to animals may be considered emergency situations. These will be managed in accordance with the Okorusu emergency response procedure.
These commitments apply to <u>decommissioning & closure phases</u>		
28	Closure planning	As part of closure planning, the designs of any permanent and potentially polluting structures will take consideration of the requirements for long term pollution prevention and confirmatory monitoring.

No	Issue	Management commitment
29		Dispose of re-usable waste (such as power cables, pipelines and building material) in the appropriate manner.
30		Formulate a scientific-based restoration plan.

22.8 VISUAL MANAGEMENT PROGRAMME

Predicted negative visual impacts would result from the construction, operational and decommissioning phases of the proposed Project. During the closure phase, the site will be rehabilitated but the pits, waste dumps and the tailings storage facility will remain and will therefore contribute to the long-term negative visual impact of the Project.

The commitments derived from the EIA Report with regards to visual impacts form the basis of this EMP.

22.8.1 COMPONENTS

This plan is made up of the following components:

- Visual disturbance.

22.8.2 MANAGEMENT

22.8.2.1 Visual disturbance

Objectives

The objective of the management measures is to limit visual impacts.

Actions

TABLE 22-13: ACTIONS RELATING TO VISUAL DISTURBANCE

No	Issue	Management commitment
These commitments apply to <u>construction and only</u>		
1	Earthworks	It is proposed that areas of disturbance be minimized as far as possible during the construction phases.
These commitments apply to <u>design, construction and operation phase</u>		
2	Lighting	Light pollution should be seriously and carefully considered and kept to a minimum.
3		Security lighting should only be used where absolutely necessary and carefully directed.
4		The negative impact of night lighting, glare and spotlight effects, can be mitigated using the following methods: • Install light fixtures that provide precisely directed illumination to reduce light "spillage" beyond the immediate surrounds of the project. • Avoid using bright, white colour lights where possible. Preferably use lights emitting a yellow light which travels less that white coloured lights.

No	Issue	Management commitment
		• Light public movement areas (pathways and roads) with low level 'bollard' type lights and avoid post top lighting. • Avoid high pole top security lighting where possible.
5	Materials	Buildings and structures can be painted with a mat finish in a shade of grey or green that would best blend in with the colours of the environment, to reduce the colour contrast between the structures and the receiving landscape. Avoid the use of bright colours and shiny finishes, especially on roofs and taller structures.
6	Project Area Development and General	Retain as much as possible of the existing vegetation within the study area and along the Project boundaries and roads in aid of screening the Project.
These commitments apply to <u>construction, operation and decommissioning phases</u>		
7	Access	Dust suppression techniques should be in place at all times during the construction, operational, the decommissioning and closure phases.
8		Keep the speed limit as low as possible in order to minimise the creation of dust.
9		Ensure that, when trucks are transporting materials, the material is covered so that the finer particles do not get airborne and create dust pollution.
10	Managing vegetation and soils	All vegetation within the mine site that is not removed needs to be managed and protected
11	General	Rehabilitate / restore exposed areas as soon as possible after construction activities are complete.
12		Only indigenous vegetation should be used for rehabilitation / landscaping purposes.
These commitments apply to <u>decommissioning & closure phases</u>		
13	Rehabilitation	Rehabilitation of all the faces of the WRD to grass / scrub bushes and some trees; Reduce the angle of the WRD slope if not suitable for rehabilitation; There will be continuous rehabilitation of the new TSF dam walls as they are raised;
14	Closure	For the closure phase: • IGGN will establish a mechanism to ensure that the rehabilitation of the mine is properly funded to ensure that sufficient funds are available to implement the rehabilitation and mitigations required for closure.

No	Issue	Management commitment
		• All components of the infrastructure used during operation must be removed. The site must be visually 'cleaned up' so as to portray an uncluttered landscape. • The ground where processing plants were located must be decontaminated and then covered by the earth used for the berm and landscaped into a natural form in alignment with the natural hydrological patterns.

22.9 ARCHAEOLOGY MANAGEMENT PROGRAMME

No archaeological sites have been identified in the project area. The archaeological assessment concluded that the Okorusu project will have a negligible impact on the archaeology of the project area and that the project is therefore not expected to have any implications in terms of the National Heritage Act.

The commitments are derived from the 2016 Scoping Report and 2013 EIA with regards to archaeology, form the basis of this EMP.

22.9.1 COMPONENTS

This plan is made up of the following components:

- Chance heritage finds.

22.9.1.1 Chance archaeological finds

Objectives

To ensure that the correct actions are taken to preserve or document chance archaeological finds.

Actions

TABLE 22-14: ACTIONS RELATING CHANCE ARCHAEOLOGICAL FINDS

No	Issue	Management commitment
These commitments apply to <u>construction and operation phases</u>		
1	Chance Finds Procedure	Areas of proposed mining and related activity have undergone a heritage survey and assessment. It is possible that sites or items of heritage significance will be found in the course of development work. The personnel and contractor heritage induction process is intended to sensitize people so that they may recognize heritage "chance finds" in the course of their work. The procedure set out here covers the reporting and management of such finds.

No	Issue	Management commitment
		The "chance finds procedure covers the actions to be taken from the discovery of a heritage site or item, to its investigation and assessment by a trained archaeologist or other appropriately qualified person. Operator - To exercise due caution if archaeological remains are found Foreman - To secure site and advise management timeously Superintendent -To determine safe working boundary and request inspection Archaeologist -To inspect, identify, advise management, and recover remains <u>Action by person identifying archaeological or heritage material:</u> If operating machinery or equipment stop work Identify the site with flag tape Determine GPS position if possible Report findings to foreman <u>Action by foreman:</u> Report findings, site location and actions taken to superintendent Cease any works in immediate vicinity <u>Action by superintendent:</u> Visit site and determine whether work can proceed without damage to findings Determine and mark exclusion boundary Site location and details to be added to project GIS for field confirmation by archaeologist <u>Action by archaeologist:</u> Inspect site and confirm addition to project GIS Advise NHC and request written permission to remove findings from work area. Recovery, packaging and labelling of findings for transfer to National Museum <u>In the event of discovering human remains:</u> Actions as above; and Field inspection by archaeologist to confirm that remains are human Advise and liaise with NHC and Police Recovery of remains and removal to National Museum or National Forensic Laboratory, as directed.
2	Legal requirements	The "chance finds procedure is intended to ensure compliance with the relevant provisions of the National Heritage Act (27 of 2004), especially Section 55 (4): *" a person who discovers any archaeological object must as soon as practicable report the discovery to the Council".* The procedure of reporting set out below must be observed so that heritage remains reported to the NHC are correctly identified in the field.

22.10 TRAFFIC MANAGEMENT PROGRAMME

The activities associated with the mine have traffic impacts. This MP aims to provide measures to limits the negatives impacts.

The commitments are derived from the 2016 Scoping Report and the 2013 EIA with regards to traffic issues form the basis of this MP.

22.10.1 COMPONENTS

This plan is made up of the following components:

- Infrastructure – road use.

22.10.2 MANAGEMENT

Objectives

The objective of the management measures is to reduce the potential for safety and vehicle related impacts on road users.

Actions

TABLE 22-15: ACTIONS RELATING TO ROAD USE

No	Issue	Management commitment
These commitments apply to <u>construction, operation and decommissioning</u> phases		
1	Future road use related impacts	Company policies apply to employees who operate haul trucks.
2		Contractors will be required to comply with Namibian Roads Authority regulations.
3		Apply dust palliatives (surfactants/binders) in order to bind dust particles on unpaved roads in order to prevent dust entrainment.
4	Road safety	Reduce safety risks by undertaking general routine road maintenance on a regular basis.
5	Emergency	Any mine related road accident must be handled in accordance with the emergency response procedure.

22.11 SOCIAL AND ECONOMIC MANAGEMENT PROGRAMME

The activities associated with the mine have socio-economic impacts in all mine phases – some positive and some negative. These impacts related to amongst others employment/job creation, inward migration, local- and regional economies, land use and surrounding landowners and community safety and security.

This MP aims to provide measures to enhance the positive impacts and limits the negatives impacts.

The commitments derived from the 2016 Scoping Report and 2013 EIA with regards to socio-economic issues form the basis of this EMP:

22.11.1 COMPONENTS

This plan is made up of the following components:

- Economic Impact.
- Inward migration and community health/safety and security.
- Change of land-use and neighboring communities.

22.11.2 MANAGEMENT

22.11.2.1 Economic Impact

Objectives

The objective of the management measures is to enhance the positive impacts associated with job creation and investment.

Actions

TABLE 7-22-16: ACTIONS RELATING TO ECONOMIC IMPACT

No	Issue	Management commitment
These commitments apply to <u>construction, operation and decommissioning</u> phases		
1	Employment opportunities and development benefits.	• Weighting tender selection is weighted in favour of suppliers of goods and services which use local suppliers down the supply chain (assuming that the vendor is qualified and that they can deliver the requested product of the required standard in the requested time with their quested quality); • Mine procurement policies that promote the use of small and medium enterprises; • A human resources policy which prioritises the selection of women for training and recruitment and which supports women to perform well in the workplace; • Skills development strategies and programmes are in place prior to construction to maximise use of the local labour force.
These commitments apply to <u>operation</u> phase		
2	Employment opportunities and development benefits.	• Support employees and community members to continue learning and developing skills so they too benefit from being able to offer labour flexibility and productivity, throughout the LoM and on mine closure; • Promote continuous learning programmes to diversify and upgrade skills; • Ensure skills upgrading during employment at mine is documented and accredited where possible so skills are recognised with future employers;

No	Issue	Management commitment
		• Maximise the permanent workforce; • Provide training on personal financial management; • Assist Otavi and Otjiwarongo town councils to diversify their economic activities.

22.11.2.2 Inward migration and community health/safety and security

Objectives

The objective of the management measures is to limit the impacts associated with inward migration.

Actions

TABLE 7-22-17: ACTIONS RELATING TO INWARD MIGRATION AND COMMUNITY HEALTH/SAFETY AND SECURITY

No	Issue	Management commitment
These commitments apply to <u>construction, operation and decommissioning</u> phases		
1	Perceived job opportunities causing inward migration	• Build up local skills before operations begin by working with local training establishments, providing bursaries for key skills. • Actively recruit women for training and employment into the mining sector. • Give preferential recruitment first to mine neighbours and then to Otjozondjupa residents. • Support the town councils to have enlightened town plans which enable affordable land tenure and business development. • Fence in the working area of the ML and employ strict security. IGGN must ensure that the security of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the neighbouring community. • Have zero tolerance to drugs and alcohol in the workplace and on site. • Establish a comprehensive HIV / AIDS / TB workplace policy and wellness programme.

22.11.2.3 Change of land use and neighboring communities

Objectives

The objective of the management measures is to reduce negative impacts on land use and neighbouring communities.

Actions

TABLE 7-22-18: ACTIONS RELATING TO CHANGE OF LAND USE AND NEIGHBORING COMMUNITIES

No	Issue	Management commitment
These commitments apply to <u>construction, operation and decommissioning</u> phases		
1	Issues relating to change of land use and neighbouring residents	• Establish a platform for on-going dialogue with neighbouring farmers, as a special interest group and provide a named point of contact. • Enforce strict rules of no walking except along roads. • Any person conducting work for/on behalf of IGGN on neighbouring farms shall first liaise with farm owner(s) and obtain the necessary authorization before entering these properties.

22.12 RESOURCE MANAGEMENT PROGRAMME

This EMP provides management actions regarding scares sources like water and provides means of reducing consumption of resources.

22.12.1 COMPONENTS

This plan is made up of the following components:

- Consumption of energy.
- Consumption of water.
- Use of manufactured materials.
- Consumption of fuel.

22.12.2 MANAGEMENT

22.12.2.1 Consumption of Energy (electricity)

Objectives

The objective of the management measures is to monitor the energy (electricity) consumption and to find ways to minimise consumption.

Actions

TABLE 22-19: ACTIONS RELATING TO ENERGY CONSUMPTION

No	Issue	Management commitment
These commitments apply to <u>all phases</u>		
1	Understanding IGGN's electricity consumption and demand	Maintain the electricity consumption monitoring system.
2		Total consumption to be monitored and recorded and compared with NamPower readings.
3		Maintain the energy management plan that optimises electricity consumption whilst meeting efficiencies as far as practically possible.
4	High consumption of electricity	Maintain the energy management plan that optimises electricity consumption whilst meeting efficiencies.
5	Monitoring of the energy management plan	Review energy consumption in relation to the energy management plan.

No	Issue	Management commitment
6	Awareness and training	Implement an awareness programme pertaining to energy usage.
7	Maintenance of electrical equipment	Maintain a maintenance schedule for all electrical equipment used on site.

22.12.2.2 Consumption of water

Objectives

The objective of the management measures is to monitor the water consumption and to find ways to optimise water usage.

Actions

TABLE 22-20: ACTIONS RELATING TO WATER CONSUMPTION

No	Issue	Management commitment
These commitments apply to <u>all phases</u>		
1	Water usage and control	Install and calibrate water flow meters on pipes at selected locations (including tailings lines and dewatering boreholes).
2		Monitor monthly abstraction volumes to ensure that the permitted annual volumes are not exceeded.
3	Maintenance of equipment	Further develop, maintain and implement a comprehensive maintenance programme for tanks, tankers, pumps and pipes.
4	Monitoring of water leaks	Ensure that checking for water spills is included in the daily inspections.
5		Report spillages as per the incident management procedure.
6	Training and awareness	Maintain and implement water awareness programme for Okorusu employees and contractors.
7	Reporting to Society	Reporting to stakeholders on water management.
These commitments apply to <u>operation and decommissioning</u> only		
8	Water usage and control	Ensure that storm water falling inside the processing area is captured and directed via drains and pipes to the return water dam and re-used.
These commitments apply to <u>operation</u> only		

No	Issue	Management commitment
9	Water usage and control	Ensure that the design of the relevant clean and dirty water systems are sufficient to cater for the water volumes associated with the infrequent flood events and that unacceptable discharges of polluted water are prevented.
10		Optimise the recycling of process water in the process plant to reduce the demand for fresh water.
11		Recycle tailings decant water back to the return water dam in closed pipes for reuse in the process plant.
12		Groundwater encountered in the pits is dewatered and used (e.g. in the process plant).

22.12.2.3 Use of manufactured materials

Objectives

The objective of the management measures is to monitor the use of manufactured materials and to ensure efficient usage.

Actions

TABLE 22-21: ACTIONS RELATING TO THE USE OF MANUFACTURED MATERIALS

No	Issue	Management commitment
These commitments apply to <u>construction, operation and decommissioning</u>		
1	Transport of hazardous materials	Conduct routine inspections of the supply companies transporting hazardous materials to and from site.
2		Ensure companies compliance to legal and Okorusu requirements and that the contractor has all the necessary hazardous protection equipment for people and environment in the advent of a spill.
3	Consumption of reagents and chemicals	Monitor reagent consumption monthly.
4		Review and implement best practices for use by cleaning contractors. Monitor compliance.
5		Identify consumables that might qualify to be replaced by more environmentally friendly products and conduct market research on such products.
6	Consumption of consumables (e.g. PPE, paper)	Calculate the volumes of consumables used and determine ways of reducing consumption.

No	Issue	Management commitment
These commitments apply to <u>operation</u> only		
8	Consumption of reagents and chemicals	Monitor and update the process flow balance regularly to ensure optimum use of reagents.

22.12.2.4 Consumption of fuel

Objectives

The objective of the management measures is to monitor the fuel consumption and to find ways to optimise fuel usage.

Actions

TABLE 22-22: ACTIONS RELATING TO FUEL CONSUMPTION

No	Issue	Management commitment
These commitments apply to <u>construction, operation and decommissioning</u>		
1	Fuel consumption	Maintain and implement the preventive maintenance plan for all equipment and mine vehicles using diesel, petrol and gas on site to avoid wastage and leakages.
2		Monitor fuel consumption in all departments.

22.13 SOIL MANAGEMENT PROGRAMME

Management of soils is important as mining is a temporary land use where-after rehabilitation is the key to re-establishing post closure land capability that will support conservation, agricultural and tourism type land uses. Soil is a key part of rehabilitation.

The commitments derived from the 2016 Scoping Report and 2013 EIA with regards to soil form the basis of this EMP.

22.13.1 COMPONENTS

This plan is made up of the following components:

- Topsoil stockpiling/management.

22.13.2 MANAGEMENT

22.13.2.1 Topsoil stockpiling/management

Objectives

The objective of the management measures is to ensure that all topsoil stripping, stockpiling and replacement operations will be undertaken in a manner that limits impacts on the soil functionality and to ensure it can be used for rehabilitation as and when required.

Actions

TABLE 22-23: ACTIONS RELATING TO TOPSOIL STOCKPILING/MANAGEMENT

No	Issue	Management commitment
These commitments apply to <u>construction and operation phases</u>		
1	Delineation of stockpiling areas and stockpile management	Limit the disturbance of soils to what is absolutely necessary. Stripping will only occur where soils are to be disturbed by activities described in the 2016 Scoping Report and 2013 EIA.
2		Soil stockpiles will be demarcated, and clearly marked to identify both the soil type and the intended area of rehabilitation.
3		Investigate the possibility of establishing storm water diversion berms to prevent run off erosion around stockpiles.
4		Stockpiles will be benched to a maximum height of 2 m. Design the benches to ensure maximum security of topsoil and to minimize erosion.
5		For storage periods greater than 3 years, erosion control in the form of vegetation will be established and the stockpile sides should as far as practically possible be stabilised as a slope of 1 in 6 or less.
6		No waste material will be placed on the soil stockpiles.
7		Equipment movement on top of the soil stockpiles will be limited.
8	Stripping and handling of soils	Handle soils in dry weather conditions so as to cause as little compaction as possible.
9		Utilizable soil is considered to be the top 300mm of soil (or deeper if applicable) or until hard rock is encountered where soil depths are <300mm. The utilizable soil will be stripped and stockpiled together with any vegetation cover present.

22.14 WASTE MANAGEMENT PROGRAMME

Waste is generated during all phases of the mine. This MP deals with solid waste management.

22.14.1 COMPONENTS

This plan is made up of the following components:

- Non-hazardous solid waste (non-mineralised).
- Hazardous solid waste (non-mineralised).

- Medical waste.

Waste Inventory list:

Waste type

Waste type	Waste specifics (example of waste types)	Source
Non-hazardous solid waste (non-mineralised)	Metal Cut offs, rubber, wood, product packaging, organic materials, glass, plastics, food scraps, cardboard/paper, used PPE, etc.	Across site
Hazardous solid waste (non-mineralised).	Printer cartridges, sewerage, batteries, hydrocarbons (oils, grease), fluorescent bulbs, etc.	Admin building, workshops, plant
Medical waste	Syringes, material with blood stains, bandages, etc.	First Aid Centre

22.14.2 MANAGEMENT

22.14.2.1 Non-hazardous solid waste (non-mineralised)

Objectives

The objective of the management measures is to ensure proper storage, recycling, re-using, removal, transportation and disposal of non-hazardous solid waste.

Actions

TABLE 22-24: ACTIONS RELATING TO NON-HAZARDOUS SOLID WASTE (NON-MINERALISED)

No	Issue	Management commitment
These commitments apply <u>construction, operation and decommissioning</u> phases		
1	General	The waste management procedure for Okorusu must cover the recycling, re-use, storage, handling, transportation and disposal. Ensure that the contractors responsible are made aware of these procedures.
2	Collection of waste	Designated waste collection points will be established on site. Care will be taken to ensure that there will be sufficient collection points with adequate capacity.
3	Disposal of waste	Waste will be disposed of at the existing waste disposal facility on site.
4		A waste disposal facility management procedure will be written up and implemented.

No	Issue	Management commitment
5	Waste storage/separation – domestic waste	Collect general domestic and recyclable waste from all offices, tearooms, ablutions, security office, laboratory, workshop and stores and place into wheely or luggar bins and skips.
		Segregate the discarded domestic general and recyclable waste **before** placement into the correct wheely or luggar bins and skips.
6		Provide the recyclable materials to qualified companies that either directly or indirectly recycle the materials themselves or through third party companies.
7		Ensure that waste storage areas and/or containers meet the risk needs for that specific waste (e.g. impervious floor, bunded areas with drainage/containment systems, lids to prevent light material from blowing away or sealed containers for hazardous material).
8	Waste classification (domestic and industrial)	The waste inventory will be kept up to date.

22.14.2.2 Hazardous solid waste (non-mineralised)

Objectives

The objective of the management measures is to ensure proper storage, removal, transportation and disposal of hazardous solid waste

Actions

TABLE 22-25: ACTIONS RELATING TO HAZARDOUS SOLID WASTE (NON-MINERALISED)

No	Issue	Management commitment
These commitments apply <u>construction, operation and decommissioning</u> phases		
1	General	The waste management procedure for Okorusu will cover the storage, biodegrading and or neutralising if possible, handling, and transportation of waste. Ensure that the contractors responsible are made aware of these procedures.
2	Collection of waste	Designated waste collection points will be established on site. Care will be taken to ensure that there will be sufficient collection points with adequate capacity.
3	Waste storage	Hazardous waste will not be stored in skips but in designated suitable containers.
		Store empty print cartridges in a designated box at the office assistant's desk until removal from site.

No	Issue	Management commitment
4		Store fluorescent tubes in a specially labelled steel drum at the engineering workshop.
5		Collect and accumulate other hazardous waste i.e. car batteries, miscellaneous batteries, oil filters, etc. at the engineering workshop until such time that the amounts can be removed from site.
6		Explosives packaging shall be safely burnt at the magazine site according to permit conditions and procedures.
7		Place oil and greasy cloths and rags into a steel drum and when full transported off site to the hazardous waste site.
8		Keep empty reagent bags (for a short period of time) at the reagents store until removed by the reagent contractor for refills.
9		Ensure that waste storage areas and/or containers meet the risk needs for that specific waste (e.g. impervious floor, bunded areas with drainage/containment systems, lids to prevent light material from blowing away or sealed containers for hazardous material).
10	Waste classification	An inventory of wastes will be compiled and will include estimated quantities of waste. The inventory will be kept up to date.
11	Hazardous waste biodegradation and neutralisation	Where possible if natural means are available on site as will be practiced for remediating polluted soils, some hazardous waste or reagents can be neutralised and or biodegraded on site before transportation. Eg, grease or mixed collector (fatty acid)
12	Waste transport	An approved waste management subcontractor will undertake the waste transport.
13	Disposal	Disposal of waste at appropriate permitted waste disposal facilities as follows: o Hazardous waste that cannot biodegrade by natural means shall be removed from site and may be recycled or disposed of at the nearest hazardous site (i.e. Walvis Bay) o Dispose of spoiled reagents offsite at the reagents facility in Walvis Bay. o Damaged reagent bags shall also be removed by the reagent contractor for repairs or disposal.
14	Disposal records	Written evidence of safe disposal of waste will be kept.

22.14.2.3 Medical waste

Objectives

The objective of the management measures is to ensure proper storage, removal, transportation and disposal of medical waste

Actions

TABLE 22-26: ACTIONS RELATING TO MEDICAL WASTE

No	Issue	Management commitment
These commitments apply <u>construction, operation and decommissioning</u> phases		
1	General	The medical waste handling procedure for Okorusu will cover the storage, handling, and transportation of all medical waste. Ensure that the contractor's responsible are made aware of these procedures.
2	Disposal	Incinerate the medical waste offsite at an approved medical facility. Receive written evidence as proof of safe disposal and / or destruction

23 PARTIES RESPONSIBLE FOR THE IMPLEMENTATION OF THE EMP

This section describes the roles and responsibilities for implementing the various management plans.

23.1 MANAGING DIRECTOR

The IGGN General Manager has overall accountability for environmental management on the mine and for ensuring this EMP is implemented. This General Manager, will delegate the EMP responsibilities to various personnel across the mine which form part of the SHE (Safety, Health, Environment) Management Structure. As part of this department's responsibilities, the EMP will be implemented and an environmental management system will be developed.

23.2 SHE DEPARTMENT

The IGGN SHE Department will be responsible for assisting the Managing Director and various other managers across the mine. The Environmental Control Officer (ECO) will coordinate all environmental and community issues on site, and together with the Environmental Manager for the Gecko Group (off site) specifically ensure that the commitments as set out in this EMP are implemented during the design, operations, decommissioning and closure phases. The Health and Safety Coordinator will assist with their areas of expertise as they relate to the EMP.

In addition to the above, the SHE Department is responsible for ensuring that all persons involved with IGGN plant comply with this EMP.

The SHE Department will be responsible for the following aspects related to compliance of this EMP:

- Regular inspections and auditing compliance to this EMP and any other relevant legal requirements e.g. permits and authorisations.
- Conduct environmental awareness training during induction training and on an ad hoc basis thereafter.
- Conduct scheduled monitoring as outlined in section 9 as well as any additional monitoring required by permit and authorisations issued to IGGN by relevant authorities.
- Ensure compliance to this EMP and permits and authorisations issued to IGGN by relevant authorities. Ensure responsibilities and target dates are developed for each one of the commitments in this EMP. This will be through one of the following mechanisms:
    - Design requirements; or
    - Construction tender documents and contracts.
- Submit required information to relevant authorities such as reporting related to monitoring and with regard to compliance with the EMP, permit and relevant authorisations.

- Liaise with IGGN Management and various external stakeholders such as authorities and interested and affected parties on environmental management (where required).

23.3 EXTERNAL SPECIALISTS

IGGN may appoint external environmental specialists, as and when required, to assist with the implementation of certain commitments made in the various management plans.

An independent auditor will also assess compliance against the EMP on an Annual basis.

24 MONITORING AND AUDITING

24.1 MONITORING

The management programmes in Section 7 have covered various aspects of the proposed monitoring. This section both augments those requirements and sets further detail where relevant. IGGN will develop detailed monitoring procedures including the relevant monitoring commitments spelled out in this EMP.

As a general approach, the monitoring procedures will comprise the following:

- A formal procedure.
- Appropriately calibrated equipment – regular inspections and calibration of equipment will be undertaken in line with the equipment calibration/validation procedure.
- Where samples require analysis, they will be preserved according to laboratory specifications.
- Parameters to be monitored can be identified in consultation with a specialist in the field and/or the relevant authority.
- If necessary, following the initial monitoring results, certain parameters may be removed from the monitoring programme in consultation with a specialist and/or the relevant authority.
- Monitoring data will be stored in a structured database.
- Data will be interpreted and reports on trends in the data will be compiled on a biannual basis.
- Both the data and the reports will be kept on record for the life of mine.

As a general comment, if monitoring points become damaged or redundant then they can be replaced with new points.

24.1.1 WATER MONITORING

24.1.1.1 Groundwater

Groundwater levels, metered abstraction and pumped yield must be recorded at monthly intervals from all boreholes that are used for groundwater abstraction and/or mine dewatering purposes. This is important for the purpose of establishing baseline values, but also to monitor any impacts as a result of abstraction.

A groundwater monitoring plan must be compiled with dedicated boreholes drilled to monitor water quality at regular intervals. The monitoring plan must take into account the kind of contaminants/major ions/metals that potentially can be dissolved in the groundwater system due to the mining activities. The number of boreholes, the parameters that are analysed for, and the intervals of water sampling must be communicated with the Department of Water Affairs.

The monitoring boreholes should be located in such a manner as to target any contamination coming from the mine operations.

24.1.1.2 Surface water

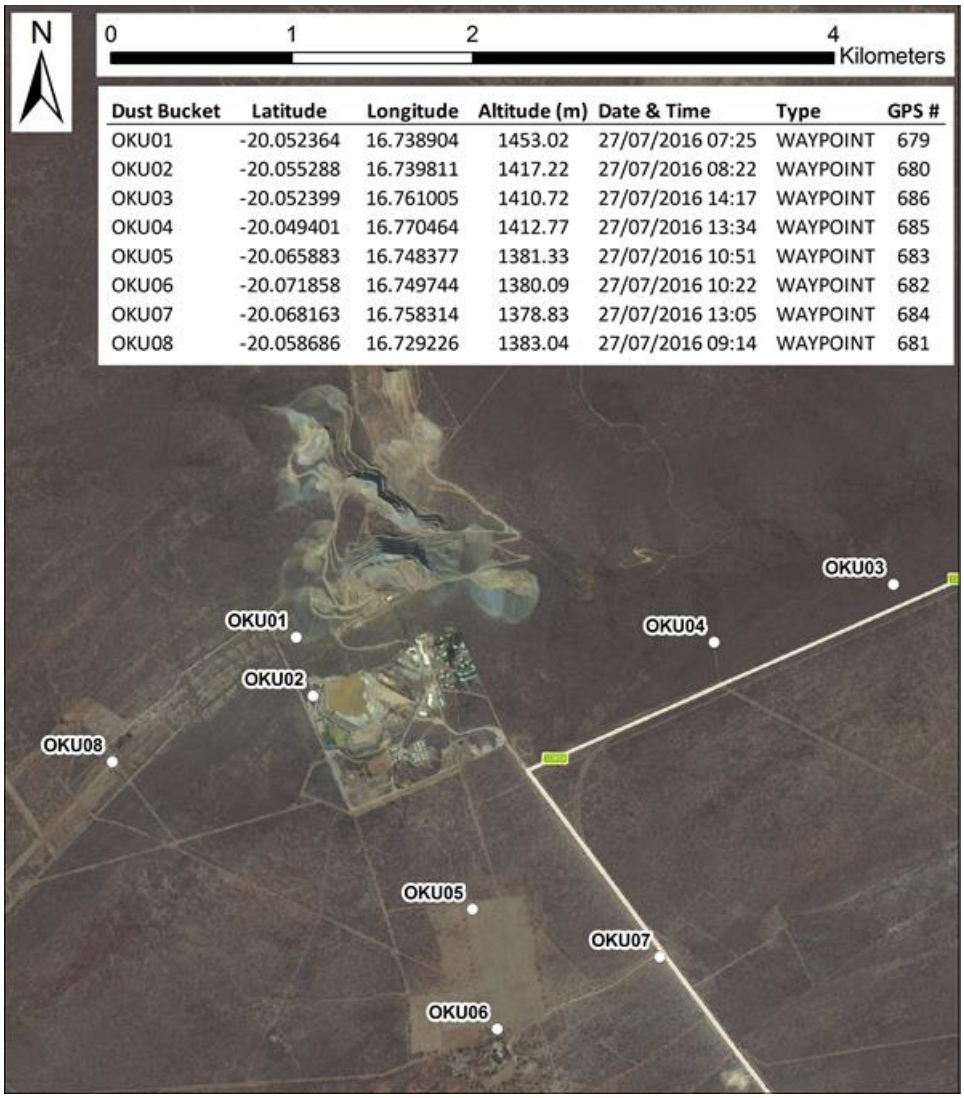
Due to fact that no natural surface water resources exist on site, no regular surface water quality monitoring is required. However, stormwater management is essential for the prevent of contamination spreading beyond the mine's operation boundaries and it is important that the stormwater management structures be monitoring during the daily inspections.

Surface water sampling after storm events should also be undertaken where possible, to enable a database to be compiled of water quality, which would indicate if a deterioration occurs during the mining.

24.1.2 AIR MONITORING

A dust monitoring network, comprising of single dust fallout units following the following the American Society for Testing and Materials standard method for collection and analysis of dust fall (ASTM D1739), should be implemented at the mine. A total of 10 locations have been identified for dust monitoring (refer to Figure 24.1). Dust bucket 09 and 10 are to be located at the new plant and primary crushers. Dust fallout should not exceed 1 200 mg/m^2/day for any three months in a calendar year or for two consecutive months.

IGGN will establish a dust monitoring system which enables the continued operations, including dust generated from the graphite processing and magnetite mining and process to be assessed. In addition to the dust sampling network, a continuous sampler will be placed to the west of the plant samplers will be placed to the west of the operations in order to monitor PM_{10} and $PM_{2.5}$. Figure 9.1 provides the suggested locations for the dust sampling network. As each activity is initiated the necessary additional locations will be monitored for air quality.



Dust Bucket	Latitude	Longitude	Altitude (m)	Date & Time	Type	GPS #
OKU01	-20.052364	16.738904	1453.02	27/07/2016 07:25	WAYPOINT	679
OKU02	-20.055288	16.739811	1417.22	27/07/2016 08:22	WAYPOINT	680
OKU03	-20.052399	16.761005	1410.72	27/07/2016 14:17	WAYPOINT	686
OKU04	-20.049401	16.770464	1412.77	27/07/2016 13:34	WAYPOINT	685
OKU05	-20.065883	16.748377	1381.33	27/07/2016 10:51	WAYPOINT	683
OKU06	-20.071858	16.749744	1380.09	27/07/2016 10:22	WAYPOINT	682
OKU07	-20.068163	16.758314	1378.83	27/07/2016 13:05	WAYPOINT	684
OKU08	-20.058686	16.729226	1383.04	27/07/2016 09:14	WAYPOINT	681

FIGURE 24.1: AIR QUALITY MONITORING SAMPLING LOCATIONS

24.1.3 NOISE MONITORING

The frequency of noise monitoring as well as the parameters that should be determined are summarised in Table 4-1. In addition to the measurement of sound pressure levels, the 3rd octave band frequency spectra should also be recorded. Frequency spectrum data can provide useful insight into the nature of recorded sound pressure levels and assist with distinguishing between potential sources of noise that contribute to noise levels at a certain location. Source noise measurements could be conducted to confirm equipment manufacturer sound power data and assumed sound power data used in the current study.

TABLE 4-1: NOISE MONITORING PROGRAMME

Proposed Monitoring Plan	
Parameters to be Measured	**Frequency**
L_{Aeq}(1 hour) between 07:00 and 22:00	One campaign during construction

	One campaign every two years of operation
L_{Aeq}(1 hour) between 22:00 and 07:00	One campaign during construction One campaign every two years of operation
3rd Octave band frequency spectrum	During every noise monitoring campaign

24.1.4 BIODIVERSITY MONITORING

The biodiversity monitoring will include the following:

- An ecological management plan that includes recommendations on best rangeland management practises including a fire management plan.
- Monitor the occurrence and spread of invasive species so as to instigate steps for their control, following expert advice.
- Enforce speed limits, including using speed-reducing methods and speed-monitoring devices.

24.1.5 SOIL MANAGEMENT MONITORING

Regular inspections of soil stockpiles and rehabilitated areas will be undertaken to ensure that the soil conservation procedure is being implemented.

24.1.6 MINERALISED WASTE FACILITIES

The following issues will, where relevant, be monitored on a quarterly basis and reported as required by relevant permits and authorisations issued to the Okorusu Fluorspar Mine by the authorities:

- Slope stability, integrity of walls and liner in the tailings facility, presence of seepage, capacity of dirty water system, and functioning of drains.
- The volume of mineralised waste generated as well as the disposal area, height and footprint of mineralised waste disposal/storage facilities will be monitored and recorded as required. The results will be reported bi-annually.

24.1.7 NON-MINERALISED SOLID AND LIQUID WASTE

Weekly inspections of non-mineralised waste handling and management facilities will be undertaken to ensure that the waste management procedures are being implemented. The volume and type of non-mineralised waste, and the disposal destination, will be monitored and recorded as required. The results will be reported annually.

24.2 AUDITING COMPLIANCE OF THE EMP

The commitments contained in this EMP will, once an environmental clearance has been obtained, be IGGN's contractual agreement with the Namibian authorities for sound environmental management. All employees, contractors and sub-contractors and any visitors to site will be expected to comply with the commitments contained herein.

24.3 AUDITS AND INSPECTIONS

The ECO and Gecko Group Environmental Manager shall conduct internal environmental management audits against the commitments in the EMP. During the construction phases, these audits will be conducted every month. In the operational phase, these audits will be conducted on a quarterly basis. The audit findings will be documented for both record keeping purposes and for informing continual improvement.

In addition, an independent professional will conduct an EMP performance assessment at least once a year. The mine's compliance with the provisions of the EMP and the adequacy of the EMP relative to the on-site activities will be assessed and documented in an independent report. This report will be submitted to the MEFT in support of ECC renewal applications.

Furthermore, the ECO and designated mine personnel will conduct inspections during construction phases and during mining and processing operations at a frequency commensurate with the intensity of the activities and risks associated therewith.

24.3.1 SUBMISSION OF INFORMATION

As a minimum, the following documents will be submitted to the relevant authorities on an ongoing basis:

- The bi-annual report required by the MEFT will be submitted every six months.
- Other monitoring reports will be provided to the relevant authorities as per the permit and other agreements.

APPENDIX I: EPZ ENTERPRISE CERTIFICATE

REPUBLIC OF NAMIBIA

MINISTRY OF INDUSTRIALISATION TRADE AND SME DEVELOPMENT

EXPORT PROCESSING ZONE ENTERPRISE

CERTIFICATE

In accordance with the provisions of the Export Processing Zones Act (No 9 of 1995) and in consultation with the Minister of Finance and the Governor of the Bank of Namibia, the Minister of Industrialisation, Trade and SME Development hereby issues this

SINGLE FACTORY EXPORT PROCESSING ZONE ENTERPRISE CERTIFICATE

No. 142

To

IMERYS GECKO GRAPHITE (NAMIBIA) (PTY) LTD
(Reg.No 2015/1199)

Thereby entitling the holder to the incentives provided for under the Export Processing Zones Act, subject to the following conditions:

1. The applicant will engage in the **processing of natural graphite.**
2. The business operations will be located at **Okorusu Fluorspar Mine, near Otjiwarongo.**
3. The applicant undertakes to establish to the satisfaction of the Minister of Industrialisation, Trade and SME Development and of the Minister of Finance adequate fencing, walls, enclosures, demarcations or verification procedures to guarantee proper control by Customs authorities of the goods entering or leaving the EPZ enterprise, as indicated in the physical plan of the installation submitted with the application, or as may otherwise be required in the future.
4. The applicant shall not be permitted to sell goods within the territories of the Southern African Customs Union member States without the prior written consent of the Minister.
5. The applicant shall establish the enterprise fully operational on the said premises, in accordance with the Particular as set out in your application, within **twenty four (24) months** of being issued with the EPZ certificate **failure which the EPZ status is automatically revoked.**
6. The applicant will provide the Minister, within the said period; with prove of having employed at least 60 Namibian citizens on a permanent basis in the categories of employment and at the rates of remuneration as contemplated in your application.
7. The applicant shall not claim any refund from the government for any expense or portion thereof expected on the training of Namibia citizens.
8. The period for which the applicant shall enjoy EPZ enterprise status shall be **limited to a period of ten (10) years** from the date of the issue of an EPZ certificate to the applicant and shall not be renewable and such certificate shall lapse automatically:
   8.1 Should the applicant fail to comply with any provision of the EPZ Act or these conditions;
   8.2 Should the applicant experience a change of control, without the prior consent of the Minister.
9. The applicant may not engage in activities which may affect the national security of Namibia. The applicant shall comply with all legal provisions and regulations pertaining to construction standards, health and safety norms, transport, communications , labour, foreign exchange and any other such legal requirements, unless otherwise indicated in the Export Processing Zones Act or subsequent legislation.

MINISTER
07 APR 2017
Republic of Namibia
MINISTRY OF INDUSTRIALISATION, TRADE AND SME DEVELOPMENT

DATED AND SIGNED ON THIS 27th DAY OF FEBRUARY 2017

.....

MINISTER OF INDUSTRIALISATION TRADE AND SME DEVELOPMENT