



**WEATHERLY**  
MINING NAMIBIA

# MATCHLESS – ENVIRONMENTAL COMPLIANCE REPORT

October 2019 – September 2022

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# **1. INTRODUCTION**

## **1.1. PROJECT SUMMARY**

Weatherly Mining Namibia Limited (Weatherly) owns all of the assets of its subsidiary company Ongopolo Mining Limited (Ongopolo), in turn, owns and operates the Matchless Mine, which together with Otjihase Mine, form part of its Central Operations. Matchless mine is located approximately 45km southwest of Windhoek in the Khomas Region on Farm Friedenau 16.

Environmental Clearance for the operation of Matchless Mine was issued by the Ministry of Environment and Tourism (MET) on 29th October 2019 Appendix 1 and the mining licence was issued by the Ministry of Mines and Energy (MME) on 6/2/1968 licence number ML3 which is currently still active.

Production at both Otjihase and Matchless mines (known as the Central Operations) was suspended on 15 September 2015 due to very low copper prices. Both operations were placed on care and maintenance and a small team of 17 people was employed across both sites to preserve the assets. Their main task is to keep the underground infrastructure dry by pumping all groundwater ingress to the surface.

Restart plans were compiled for both operations but the capital necessary to implement the plans was not available within the company. Towards the end of 2018, a decision was made to try to sell the mines and a sales process commenced. They considering conducting a feasibility study within the next year or year and a half to assess the medium to long-term development of matchless, nevertheless, there are due diligence studies currently underway for parties who are interested in purchasing the Central Operations.

During this reporting period, no physical work was carried out at the site, the small team maintains the site in a safe and stable condition and only conducts basic tasks. As a result, some elements of the Environmental Management Plan (EMP – Appendix 2) such as environmental induction training etc have not occurred during this phase, therefore these elements of the EMP that are not applicable to the care and maintenance phase and been indicated in the report as “NA in the care and maintenance phase”.

All currently disturbed areas are considered on hold in this phase, with no rehabilitation work undertaken during the reporting period This report summarizes the environmental aspects of the project against the EMP for the project.

## **1.2. TENEMENTS**

The project is located on Mining Licence ML 3 held by Ongopolo mining. There were no changes to the tenement boundaries during the reporting period.

## **1.3. ENVIRONMENTAL COMPLIANCE CONSULTANCY**

Environmental Compliance Consultancy (ECC), a Namibian consultancy registration number 2013/11401, has prepared this report on behalf of the proponent. ECC operates exclusively in the environmental, social, health and safety fields for clients in Namibia in the public and private sector. ECC

is independent of the proponent and has no vested or financial interest in the proposed project except for fair remuneration of professional services rendered.

ECC has been engaged to conduct the findings of an environmental compliance audit, which accompanies the renewal application for the Environmental Clearance Certificate.

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

Environmental Compliance Consultancy  
 PO BOX 9193  
 Klein Windhoek, Namibia  
 Tel: +264 81 669 7608  
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## 2. COMPLIANCE

### 2.1. ANNUAL AUDIT OF COMPLIANCE

As requested by MET an audit of compliance was completed for the project as detailed on the following pages.

### 2.2. WATER ABSTRACTION

As mentioned above the key activity occurring on site is the abstraction of groundwater from the underground workings in order to ensure the site remains safe and stable. During the reporting period the following volumes were abstracted and evaporated on site, Table 1. Two rounds of sampling were conducted during the reporting period and is provided as Appendix 3.

Table 1 - Abstraction volumes at the Matchless Mine

	VOLUME (M <sup>3</sup> ) - Matchless						
	2016	2017	2018	2019	2020	2021	2022
<b>January</b>	-	990	1,996.00	533	1063.00	39.00	682.00
<b>February</b>	-	551	1,070.00	1,073.00	99.00	117.00	121.00
<b>March</b>	-	776	878	1,216.00	323.00	2,184.00	632.00
<b>April</b>	-	2,013.00	491	426	649.00	1,702.00	121.00
<b>May</b>	-	1,467.00	1,165.00	1,088.00	507.00	1,910.00	632.00
<b>June</b>	-	2,485.00	1,202.00	296	1320.00	942.00	442.00
<b>July</b>	-	1,703.00	1,513.00	364	354.00	1,330.00	-
<b>August</b>	-	2,388.00	1,472.00	-	624.00	422.00	-
<b>September</b>	-	1,854.00	1,741.00	-	669.00	1,054.00	-
<b>October</b>	1,121.00	1,685.00	1,928.00	-	102.00	502.00	-
<b>November</b>	1,026.00	1,950.00	719	-	45.00	752.00	-
<b>December</b>	1,354.00	1,091.00	661	-	89.00	448.00	-

	<b>VOLUME (M<sup>3</sup>) - Matchless Western Extension</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>January</b>	-	990.00	1,996.00	533.00	56.00	56.00	56.00
<b>February</b>	-	551.00	1,070.00	1,073.00	56.00	56.00	56.00
<b>March</b>	-	776.00	878.00	1,216.00	56.00	56.00	56.00
<b>April</b>	-	2,013.00	491.00	426.00	56.00	56.00	56.00
<b>May</b>	-	1,467.00	1,165.00	1,088.00	56.00	56.00	-
<b>June</b>	-	2,485.00	1,202.00	296.00	56.00	56.00	-
<b>July</b>	-	1,703.00	1,513.00	364.00	56.00	56.00	-
<b>August</b>	-	2,388.00	1,472.00	-	56.00	56.00	-
<b>September</b>	-	1,854.00	1,741.00	56.00	56.00	56.00	-
<b>October</b>	1,121.00	1,685.00	1,928.00	56.00	56.00	56.00	
<b>November</b>	1,026.00	1,950.00	719.00	56.00	56.00	56.00	-
<b>December</b>	1,354.00	1,091.00	661.00	56.00	56.00	56.00	-

## 2.3. INTERESTED & AFFECTED PARTIES

Issues or concerns raise:

- Nil

**TABLE 2 - MATCHLESS EMP AUDIT**

<b>Commitment / Permit No.</b>	<b>Commitment / Condition</b>	<b>Source</b>	<b>Role / Position Responsibility</b>	<b>Compliance Information</b>	<b>Compliant YES/NO Partial NA</b>	<b>Details/Proof to sight as evidence</b>	<b>Findings / Observations</b>	<b>Recommended Actions</b>
<i>Reference Number</i>	<i>Details</i>	<i>Parent Document</i>	<i>Who is responsibility for this condition</i>	<i>Evidence of Compliance</i>	<i>Level of Compliance</i>	<i>Details</i>	<i>Notes</i>	<i>Actions to rectify</i>
<b>1.1</b>	Environmental induction training is to be undertaken by all persons undertaking work at the mine (to be incorporated into normal induction training) including permanent workers, contractors and consultants.	EMP	EO	Immediate & ongoing	NA in the care and maintenance phase	Environmental induction training material Environmental awareness	No inductions during the reporting period	When site operations recommence ensure inductions are carried out in line with the EMP.
<b>1.2</b>	On the job environmental training to be undertaken by each person working at the mine.	EMP	EO & Sup	Immediate & ongoing	NA in the care and maintenance phase	General Environmental Training/Training of supervisors Environmental awareness	No training undertaken during the reporting period	When site operations recommence ensure inductions are carried out in line with the EMP
<b>1.3</b>	An environmental awareness programme to be implemented for mine work force addressing pertinent topics as required.	EMP	EO	Immediate & ongoing	NA in the care and maintenance phase	Programme for implementation of awareness topics Environment to be an agenda item in SHE meetings Environmental awareness	Ad hoc during care and maintenance predominate focus on safety.	When operations recommence ensure a maintenance programme is in place

Commitment / Permit No.	Commitment / Condition	Source	Role / Position Responsibility	Compliance Information	Compliant YES/NO Partial NA	Details/Proof to sight as evidence	Findings / Observations	Recommended Actions
2.1	Environmental Forum to be established which includes the owners and tenants of the mine property and surrounding properties.	EMP	CM	Immediate	NA in the care and maintenance phase	Environmental forum constitution	No invitations for environmental forums were sent out during the reporting periods	Nil
2.2	Monitoring information to be made available to the affected community.	EMP	CM	Ongoing	NA in the care and maintenance phase	Public reports (quarterly reports) Public meetings (as required but at least once every year)	No reports were made available during the reporting period.  The company website has been closed with no annual reports available.	Nil
3.1	Vehicles and fuel-driven machinery will be regularly monitored and maintained. Maintenance programmes will be established and implemented.	EMP	EO & EM	Ongoing	Partial	As there is limited staff available for vehicle maintenance programmes, the limited equipment is services on an as needs bases.	Ad hoc servicing is required and undertaken during the care and maintenance phase.	When operations recommence ensure a full maintenance programme is in place
4.1	As far as is practically possible, restrict mining activities to the planned abstraction areas.	EMP	GM & UM	Ongoing	NA in the care and maintenance phase	Detailed mine planning	No mining took place during the reporting period. The C&M team ensured the	Nil

Commitment / Permit No.	Commitment / Condition	Source	Role / Position Responsibility	Compliance Information	Compliant YES/NO Partial NA	Details/Proof to sight as evidence	Findings / Observations	Recommended Actions
							working areas around the pump faces were safe and accessible. No other work conducted.	
5.1	Where possible, landscaping will follow the natural contours of the land.	EMP	GM	Ongoing	Partial	No landscaping occurred during the reporting period due to the limited equipment and budget in the care and maintenance phase.	Mine plans in place	Pending the future of the operations some progressive rehabilitation could have occurred during the reporting period. It is encouraged to commence with progressive rehabilitation and if unbudgeted funds should be sourced from a closure or rehabilitation fund, if available.
5.2	During mine closure the topography of the site will be restored to its natural state where reasonably practicable.	EMP	CM & GM	Closure phase	Yes	Detailed mine planning	Mine plans in place	Ongoing mine closure and rehabilitation plans to be refined on an annual basis



Commitment / Permit No.	Commitment / Condition	Source	Role / Position Responsibility	Compliance Information	Compliant YES/NO Partial NA	Details/Proof to sight as evidence	Findings / Observations	Recommended Actions
6.1	Topsoil is to be stripped from the footprint areas required for any development.	EMP	GM & UM	Prior to extension of sites.	NA in the care and maintenance phase	Land Clearing Permit system in place if required	No new land clearing undertaken during the reporting period	Ensure land clearing system in reactivated when sites recommence
6.2	Footprint areas are to be delineated and soil is to be stripped from these areas.	EMP	GM & UM	Prior to stripping	NA in the care and maintenance phase	Land Clearing Permit system in place if required	No new land clearing undertaken during the reporting period	Nil
6.3	Soils are to be stripped until the subsoil horizon is encountered.	EMP	GM & UM	Ongoing prior to development	NA in the care and maintenance phase	Land Clearing Permit system in place if required	No new land clearing undertaken during the reporting period	Nil
6.4	Soil is to be placed at delineated operation soil stockpile areas are to be less than 1.5 m high with a slope of 1 in 3.	EMP	GM & UM	Ongoing prior to development	NA in the care and maintenance phase	Delineated soil stockpile areas	No new land clearing undertaken during the reporting period	Nil
6.5	The natural succession of vegetation on topsoil stockpiles is to be encouraged to reduce the potential for erosion.	EMP	GM & EO		NA in the care and maintenance phase	Vegetation programme	No new land clearing undertaken during the reporting period	Nil
6.6	Soils contaminated with hydrocarbons are to be bio remediated.	EMP	EO & EM	Ongoing	NA in the care and maintenance phase	Soil bioremediation facility	No bio remediation undertaken during the reporting period	Construct bio-remediation facility once operations recommence

Commitment / Permit No.	Commitment / Condition	Source	Role / Position Responsibility	Compliance Information	Compliant YES/NO Partial NA	Details/Proof to sight as evidence	Findings / Observations	Recommended Actions
7.1	Completed areas of the waste rock dumps not to be used in further operations are to be vegetated.	EMP	EO & GM	When site becomes inactive	NA in the care and maintenance phase	Detailed mine planning	-	Ensure budgets for progressive rehabilitation is established.
7.2	Slopes are to be re-shaped to a ensure stability, vegetation establishment and erosion control.	EMP	EO & GM	When site becomes inactive	NA in the care and maintenance phase	Determination of final slope requirements (trials).	Draft mine closure and rehab plans in place	Mine closure plans should be updated.
7.3	Soil is to be placed over exposed surfaces at a minimum thickness of 300 mm.	EMP	EO & GM	When site becomes inactive	NA in the care and maintenance phase	-	NA	Nil
7.4	The natural succession of vegetation on topsoil stockpiles is to be encouraged to reduce the potential for erosion. Should natural succession not be successful, reseeded options are to be investigated.	EMP	EO & GM	When site becomes inactive	NA in the care and maintenance phase	Suitable indigenous seed mix.	-	Nil
7.5	Vegetation establishment and erosion is to be monitored to ensure that vegetation cover resembles that of the surrounding natural landscape.	EMP	EO	Rainy season following rehabilitation	NA in the care and maintenance phase	-	-	Nil
7.6	Erosion of vegetated slopes is to be repaired.	EMP	EO & GM	As required	NA in the care and maintenance phase	-	-	Nil

Commitment / Permit No.	Commitment / Condition	Source	Role / Position Responsibility	Compliance Information	Compliant YES/NO Partial NA	Details/Proof to sight as evidence	Findings / Observations	Recommended Actions
8.1	Where practically possible, clean storm water is to be diverted from all areas that may be contaminated.	EMP	GM & EO	Immediate	NA in the care and maintenance phase	Stormwater management measures in place.	-	Ensure compliance to EMP
8.2	Water from potentially contaminated areas to be contained in pollution control facilities.	EMP	GM & EO	Ongoing	Partial	Stormwater measures in place.	Water sampling and monitoring was carried out in September 2021 and 2022.	Ensure water monitoring is conducted in line with the EMP.
8.3	Monitor water quality near potential pollution sources and the surrounding farm boreholes.	EMP	EO	Ongoing	NA in the care and maintenance phase	Groundwater monitoring programme	Water sampling and monitoring was done in September 2021 and 2022..	Ensure to monitor boreholes when operations recommence or include monitoring of boreholes in care and maintenance budget – if none are located on site identify neighbours to utilise or install.
8.4	Ground water levels are to be monitored.	EMP	EO	Ongoing	NA in the care and maintenance phase	Groundwater monitoring programme	No bores on site	Nil

Commitment / Permit No.	Commitment / Condition	Source	Role / Position Responsibility	Compliance Information	Compliant YES/NO Partial NA	Details/Proof to sight as evidence	Findings / Observations	Recommended Actions
8.5	Should monitoring indicate that farmer boreholes do not provide sufficient water as a result of the lowering of the water table caused by mining activities, an alternate water supply is to be made available.	EMP	EO & GM	As required, but prior to the drying up of the water supply point.	NA in the care and maintenance phase	Alternative supply options	No water was needed as there were no operations undertaken during the reporting period	Nil
9.1	Where practically possible, clean storm water is to be diverted from all areas that may be contaminated.	EMP	GM & EO	Immediate	NA in the care and maintenance phase	Stormwater Management Plan	Where possible stormwater is diverted	Nil
9.2	Stormwater management plan to be established to minimise the retention of water on the site.	EMP	GM, CM & EO	Immediate	NA in the care and maintenance phase	Stormwater management measures in place.	Where possible stormwater is diverted however a site assessment during the rainy season is recommended.	Conduct a stormwater assessment during the rainy season to determine stormwater flow paths and sample potential contamination pathways.
9.3	Water from potentially contaminated areas to be contained in pollution control facilities.	EMP	Mining Manager	Ongoing	Partial	Stormwater management measures in place.	Water is evaporated on site on top of the old TSF	Ensure monitoring is conducted to determine potential impacts.

Commitment / Permit No.	Commitment / Condition	Source	Role / Position Responsibility	Compliance Information	Compliant YES/NO Partial NA	Details/Proof to sight as evidence	Findings / Observations	Recommended Actions
9.4	Sewage effluent, wash bay water and other effluent produced on site is to be contained, recycled and re-used.	EMP	EM & PM	Ongoing	NA in the care and maintenance phase	-	Limited amounts of sewage produced during the reporting period due to the skeleton staff, sewerage treated on site	Nil
9.5	Monitoring programme to be designed and recommendations made.	EMP	CM & EO	Immediate	Partially	Monitoring programme	Water sampling done in September 2021 and 2022. Ad hoc monitoring is undertaken of the water that is pumped from the underground workings to the surface prior to distribution to the farmers.	Ensure monitoring programme is revised and in place during care and maintenance and prior to restart of operations. A care and maintenance monitoring plan should be established.
9.6	Develop a Stormwater Management Plan aimed at separating clean and dirty water and preventing contaminated discharge from leaving the site.	EMP	CM, GM & EO	Immediate	NA in the care and maintenance phase	Stormwater Management measures in place	Stormwater management during care and maintenance should be revised to ensure its practical and suitable for the site in preventing potential harm.	Nil

Commitment / Permit No.	Commitment / Condition	Source	Role / Position Responsibility	Compliance Information	Compliant YES/NO Partial NA	Details/Proof to sight as evidence	Findings / Observations	Recommended Actions
9.7	Pollution sources are to be addressed as a matter of urgency. It is anticipated that once the pollution sources have been addressed, contamination within the riverbeds will be alleviated within a few rainy seasons. The effectiveness of this will however need to be monitored.	EMP	CM, GM & EO	Immediate	Partial	Monitoring programme	Air quality monitoring has commenced since August 2022. The site manager does visual inspections to ensure pumps and recovery system are operational on a daily and weekly basis.	Formalise monitoring and revise monitoring when operations recommence.
10.1	Limit the mine footprint to the areas required for operations. No access will be permitted outside of these areas.	EMP	CM	Immediate	NA in the care and maintenance phase	Mine plan	Access is limited to the limited staff on site	Nil
10.2	Rehabilitation and end-use planning are to allow for the re-establishment of vegetation as far as practicable to allow for the restoration of biodiversity.	EMP	CM	Ongoing	NA in the care and maintenance phase	Mine closure plan	Level 2 Mine closure plan drafted.	Review the mine closure plan and ensure a care and maintenance plan is in place
10.3	The staff residing on site will be limited to supervisor / management level staff.	EMP	CM	Ongoing	NA in the care and maintenance phase	This requirement will be included in all induction and awareness training material.	Limited personnel on site for the care and maintenance	Ensure staff do not access prohibited areas in accordance to the EMP
10.4	Staff will not be permitted access to the areas outside of the mine operational area.	EMP	CM	Ongoing	NA in the care and maintenance phase	This requirement will be included in all induction and awareness training material.		

Commitment / Permit No.	Commitment / Condition	Source	Role / Position Responsibility	Compliance Information	Compliant YES/NO Partial NA	Details/Proof to sight as evidence	Findings / Observations	Recommended Actions
10.5	Wet suppression will be utilised in order to manage fugitive dust emissions. Should wet suppression not be sufficient, soil binding agents will be utilised. Fugitive dust generated by mine related activities must be maintained at acceptable levels.	EMP	GM & UM	Immediate	NA in the care and maintenance phase	Wet suppression systems.	No dust suppression measures have been applied during the reporting period.	Ensure dust suppression measures are utilized once operations recommences
10.6	Implement alien invasive species management.	EMP	EO	Immediate and ongoing	NA in the care and maintenance phase	Alien Invasive Species Management Programme	No alien species management was undertaken during the reporting period	
11.1	Monitor downstream flows to ensure impact is minimal.	EMP	EO	Ongoing	Partial	Surface water monitoring plan	Monitoring when water is available. Water monitoring was carried out in September 2021 and has since commenced since September 2022	Monitor downstream flows to ensure impact is minimal as operations recommence
12.1	Wet suppression will be utilised in order to manage fugitive dust emissions. Should wet suppression not be sufficient, soil binding agents will be utilised.	EMP	GM & UM	Immediate	NA in the care and maintenance phase	Wet suppression systems.	No dust suppression measures have been applied during the reporting period.	Ensure dust suppression measures are utilized once operations recommences

Commitment / Permit No.	Commitment / Condition	Source	Role / Position Responsibility	Compliance Information	Compliant YES/NO Partial NA	Details/Proof to sight as evidence	Findings / Observations	Recommended Actions
12.2	Vegetate inactive areas on site.	EMP	GM & UM	Immediate and ongoing	NA in the care and maintenance phase	Rehabilitation Programme	No areas were vegetated during the reporting period	Ensure inactive sites are vegetated
12.3	Monitoring of PM10 and dust fallout.	EMP	EO	Ongoing	Partial	Air quality monitoring	Dust fallout monitoring commenced in August 2022	When operations recommence start dust fallout and PM 10 monitoring
13.1	Due to the limited nature of the operations limited noise is generated. The major sources of noise are vehicular movement and the genset. All noise-related complaints must be kept in a complaint register.	EMP	EO	Ongoing	NA in the care and maintenance phase	Complaints register	None received due to mine location	Ensure a complaints register is in place
13.2	Machinery that creates noise disturbance to human receptors at levels exceeding those permitted for a rural area at night according to the World Health Organisation will not be operated at night.	EMP	GM & UM	Ongoing	NA in the care and maintenance phase	Noise monitoring conducted but not able to obtain any relevant data. Noise consultant deemed results not useful	Mine location not close to any neighbours	Nil
14.1	Where possible, lights are to be directed towards areas of work and provided with hoods to reduce light spill, should any (relevant) receptors be negatively impacted.	EMP	EO & EM	Throughout operations	NA in the care and maintenance phase	-	Mine location not close to any neighbours	Nil



Commitment / Permit No.	Commitment / Condition	Source	Role / Position Responsibility	Compliance Information	Compliant YES/NO Partial NA	Details/Proof to sight as evidence	Findings / Observations	Recommended Actions
14.2	Preference should be made for “softer” lights such as sodium vapour lights.	EMP	EO & EM	Throughout operations	NA in the care and maintenance phase	-	Mine location not close to any neighbours	Nil
14.3	Inactive areas of waste rock dump are to be vegetated using naturally occurring species.	EMP	EO	Immediate and ongoing	NA in the care and maintenance phase	-	Ongoing mine closure and rehab plans	Commence planning for progressive rehabilitation
15.1	No expansion of the footprint of the Matchless Mine without prior archaeological survey and approval. No archaeological sites are known from the operational area. If artefacts are unearthed, then an investigation will be commissioned.	EMP	EM & PM	Ongoing	NA in the care and maintenance phase	-	No expansion conducted during the reporting period	Nil
15.2	Heritage sites falling within the mine license area are to be demarcated and fenced.		GM & EO	Immediate	Yes	-	-	Nil
16.1	Hazardous chemicals are to be stored in bunded areas.	EMP	EM & PM	Immediate and ongoing	NA in the care and maintenance phase	Bunded areas	No new chemicals were brought onto site during the reporting period and chemicals that were on site remain bunded.	When in operation all chemicals to be bunded

Commitment / Permit No.	Commitment / Condition	Source	Role / Position Responsibility	Compliance Information	Compliant YES/NO Partial NA	Details/Proof to sight as evidence	Findings / Observations	Recommended Actions
16.2	Hazardous chemicals (such as fuels and acids) are to be handled over areas provided with impervious surfaces or drip trays.	EMP	EM & PM	Immediate and ongoing	Yes	Impervious surfaces in chemical and hydrocarbon handling areas.	Refuelling of vehicles are conducted at the workshop on site. All used oil is collected and stored in drums, which are then removed from site by one of the local oil recycling companies.	Nil
16.3	Spills of hazardous chemicals are to be contained and cleaned-up to ensure protection of the environment.	EMP	EM & PM	Immediate and ongoing	NA in the care and maintenance phase	Spill procedures for hazardous substances. Spill kits as appropriate to areas of work. Training on clean-up	No spills were reported during the reporting period	Ensure monitoring in compliance to the EMP
17.1	Waste generated is to be separated at source into recyclable and non-recyclable waste.	EMP	All	Immediate	NA in the care and maintenance phase	Containers for the separation of waste management guideline	No formal recycling on site however the site reused materials wherever possible	Consider a recycling programme when operations recommence.
17.2	Recyclable waste is to be re-used on site or removed for re-use elsewhere.	EMP	EO	Ongoing	NA in the care and maintenance phase	Identify recycling and re-use options Waste management guideline	No formal recycling on site however the site reused materials wherever possible	Consider a recycling programme when operations recommence.
17.3	Hazardous and general waste is to be separated at source where practically possible.	EMP	EO	Ongoing	NA in the care and maintenance phase	Containers for the separation of waste. Waste management guideline	No formal recycling on site however the site reused materials wherever possible	Consider a recycling programme when operations recommence.

Commitment / Permit No.	Commitment / Condition	Source	Role / Position Responsibility	Compliance Information	Compliant YES/NO Partial NA	Details/Proof to sight as evidence	Findings / Observations	Recommended Actions
17.4	Soils contaminated with hydrocarbons are to be bio-remediated.	EMP	EM & EO	Ongoing	Partial	Bio-remediation facility not available on site	No bioremediation facility on site	Create a bioremediation facility and bioremediation method statement and implement when operations recommence
17.5	Hazardous waste is to be disposed at the hazardous waste disposal site.	EMP	EO	Ongoing	NA in the care and maintenance phase	Identification of hazardous waste disposal site, hazardous waste transport company. Disposal agreements to be put in place with the hazardous waste disposal site operators.	No waste produced during the reporting period	Ensure all hazardous waste is accounted for and disposed of in accordance with the EMP
17.6	General waste is to be disposed of at the general waste disposal site.	EMP	EO	Ongoing	NA in the care and maintenance phase	General waste disposal site Waste management guideline	General waste disposed of in the on-site landfill.	Ensure good management practices of the onsite landfill
18.1	Vehicles will be regularly monitored and maintained. Maintenance programmes will be established and implemented.	EMP	EM	Ongoing	NA in the care and maintenance phase	Maintenance programme	Ad hoc during care and maintenance	When operations recommence ensure a maintenance programme is in place
18.2	Off-limit areas will be fenced off or made inaccessible to vehicles.	EMP	CM, EM & EO	Ongoing	NA in the care and	Induction and awareness training	No induction undertaken as no operations during	Nil

Commitment / Permit No.	Commitment / Condition	Source	Role / Position Responsibility	Compliance Information	Compliant YES/NO Partial NA	Details/Proof to sight as evidence	Findings / Observations	Recommended Actions
					maintenance phase		the reporting period. No new vehicle movements on site.	
18.3	Vehicular movements on site will be restricted to operational areas.	EMP	EO	Ongoing	NA in the care and maintenance phase	Induction and awareness training	No induction undertaken as no operations during the reporting period. No new vehicle movements on site.	When site operations recommence ensure inductions are carried out in line with the EMP.
18.4	Drivers will receive induction and awareness training informing them of the rules related to travelling in designated areas and the importance of conserving the local fauna and flora.	EMP	GM	Immediate and ongoing	NA in the care and maintenance phase	Signs Induction and awareness training	No induction undertaken as no operations during the reporting period. No new vehicle movements on site.	When site operations recommence ensure inductions are carried out in line with the EMP.
18.5	Speed limits will be maintained. Speed limit signs will be visible and legible on site.	EMP	GM & UM	Ongoing	Yes	Dust suppression plan	Sign present but no induction as no operations were undertaken during the reporting period	Nil
18.6	Wet suppression will be utilised in order to manage fugitive dust emissions. Should wet suppression not be sufficient, soil-binding agents will be utilised.	EMP	GM & UM	Ongoing	NA in the care and maintenance phase	Dust suppression plan	No dust suppression measures in place as there are no operations during the reporting period	Ensure suppression methods are in place when operation recommences

Commitment / Permit No.	Commitment / Condition	Source	Role / Position Responsibility	Compliance Information	Compliant YES/NO Partial NA	Details/Proof to sight as evidence	Findings / Observations	Recommended Actions
19.1	All employees will be educated on the procedures to follow and the environmental restrictions regarding all environmental parameters. This will form part of the environmental awareness.	EMP	EO	Ongoing	NA in the care and maintenance phase	Induction and awareness training	No induction has taken place as no operations were undertaken during the reporting period	Nil
19.2	Access on site will be restricted to construction and operational areas where practically possible.	EMP	GM & UM	Immediate	NA in the care and maintenance phase	Fencing and fence maintenance Induction and awareness training	Limited care and maintenance personnel on site. Site remains fenced.	Ensure compliance to EMP when operations recommence
19.3	Workers will be restricted to construction / operational areas.	EMP	CM & GM	Ongoing	NA in the care and maintenance phase	Induction and awareness training	Limited care and maintenance personnel on site. Site remains fenced.	Ensure compliance to EMP when operations recommence
19.4	The mine will establish and implement a monitoring programme to regulate the harvesting of plant material and fuel-wood from the natural vegetation surrounding the mine.	EMP	CM, GM & EO	Immediate and ongoing	NA in the care and maintenance phase	Monitoring programme	Nil	Ensure compliance to EMP when operations recommence
19.5	The poaching and hunting of animals will be strictly forbidden.	EMP	CM & GM	Ongoing	NA in the care and maintenance phase	Induction and awareness training	Limited care and maintenance personnel on site no reported poaching cases.	Ensure compliance to EMP when operations recommence

Commitment / Permit No.	Commitment / Condition	Source	Role / Position Responsibility	Compliance Information	Compliant YES/NO Partial NA	Details/Proof to sight as evidence	Findings / Observations	Recommended Actions
20.1	Monthly internal audits of EMP compliance	EMP	EO	Immediate	NA in the care and maintenance phase	Performance assessment requirements	No audits were undertaken during the reporting period	Ensure compliance to EMP when operations recommence
20.2	Annual external audit of EMP compliance	EMP	Independent Consultant	Annual	NA in the care and maintenance phase	Performance assessment requirements	No audits were undertaken during the reporting period	-
20.3	Submission of external annual report to environmental authorities	EMP	CM	Annual	Yes	Performance assessment requirements	Submitted to authorities	This report to be submitted to authorities.
21.1	Implementation of awareness programme on risks associated with STIs and HIV/AIDS for workforce.	EMP	CM & SHE Officer	Immediate and ongoing	NA in the care and maintenance phase	HIV/AIDS Construction Workforce Awareness Programme	No inductions were undertaken during the reporting period	When site operations recommence ensure inductions are carried out in line with the EMP.
21.2	Recruitment of local persons as far as practicable.	EMP	Com	As required	NA in the care and maintenance phase	Affirmative active	No induction was undertaken during the reporting period	When site operations recommence ensure inductions are carried out in line with the EMP.
21.3	Identify training needs and provide such training to local persons as far as practicable.	EMP	Com	As required	NA in the care and maintenance phase	Training	No training system records during the reporting period	When site operations recommence ensure inductions

Commitment / Permit No.	Commitment / Condition	Source	Role / Position Responsibility	Compliance Information	Compliant YES/NO Partial NA	Details/Proof to sight as evidence	Findings / Observations	Recommended Actions
								are carried out in line with the EMP.
21.4	Local procurement of goods and services where available and where commercially and technically practicable to the project.	EMP	Com	As required	NA in the care and maintenance phase	Database of local service providers	Limited procurement needs due to no operations.	Local providers will be used when operations recommence
21.5	Ore haulage trucks will not be permitted to travel in convoy along the access road. Ore haulage trucks will only be permitted to leave the site at 10-minute intervals.		CM	Ongoing	NA in the care and maintenance phase	Security must be informed of this requirement.	No operations were undertaken during the reporting period	Nil
21.6	Speed limits will be adhered to at all times.	EMP	All	Ongoing	NA in the care and maintenance phase	Road traffic safety requirements will be included in induction material. All drivers, including contractors, will receive induction and awareness training.	Not applicable as no operations have been undertaken	Nil
21.7	Signage in place along access road to promote traffic safety.	EMP	CM	Immediate	NA in the care and maintenance phase	Maintenance of signage	No inductions were undertaken during the reporting period	When site operations recommence ensure inductions are carried out in line with the EMP.

Commitment / Permit No.	Commitment / Condition	Source	Role / Position Responsibility	Compliance Information	Compliant YES/NO Partial NA	Details/Proof to sight as evidence	Findings / Observations	Recommended Actions
21.8	Drivers servicing the mine to be subjected to public safety awareness.	EMP	CM	Incorporated into safety induction programme	NA in the care and maintenance phase	All drivers, including contractors, will receive induction and awareness training.	Company policy states drivers should have valid Namibian drivers' licences.	Nil
21.9	Wet suppression will be utilised in order to manage fugitive dust emissions. Should wet suppression not be sufficient, soil binding agents will be utilised.	EMP	GM & UM	Ongoing	NA in the care and maintenance phase	Dust suppression plan	No dust suppression measures in place as there are no operations during the reporting period	Ensure suppression methods are in place when operation recommences



## **3. CONCLUSION**

### **3.1. RECOMMENDATIONS**

It is well understood that an operation in a care and maintenance phase has financial restriction, and the fate and future of an operation in care and maintenance is uncertain. Often resulting in a state of limbo between possible restart or closure and rehabilitation, this uncertain state influences what work is feasible and what work can be conducted during this period. Therefore, it should be noted that the company may only be able to implement some of the proposed recommendations below, however an action plan on how the company intends to address them could be prepared.

- The draft mine closure plan should be reviewed and updated since its last review 6 years ago
- A progressive closure and rehabilitation strategy should be drafted to reduce the Company's and State liability of the operation while in the care and maintenance phase, this strategy should take into account areas that can be rehabilitated without being re-disturbed if operations were to recommence.
- A monitoring plan for care and maintenance should be established, implemented and submitted to MET.
- The stormwater management plan with appropriate mitigation measures should be revised for the care and maintenance phase.
- When the operations recommence all EMP requirements should be adhered to and the potential for installing groundwater monitoring boreholes should be investigated.

### **3.2. CLOSE-OUT SUMMARY**

Ongopolo Mining Limited notes that when operations recommence at Matchless Mine that environmental monitoring will recommence in accordance with the EMP. Furthermore, external audits will be conducted along with biannual reporting as required by MME and MET.

The mine continues to work towards improving the conditions associated with the historic mine. The abstraction of groundwater from the underground workings is ongoing in order to ensure the site remains safe and stable, the ad hoc monitoring approach could be improved with a care and maintenance monitoring plan.

It is recommended that Matchless Mine continues to adhere to all environmental legislation and company standards.

## 4. APPENDICES

### APPENDIX 1 – MATCHLESS ENVIRONMENTAL CLEARANCE CERTIFICATE

ECC – 00292 Serial No: RvXY7Y292



**REPUBLIC OF NAMIBIA**  
**MINISTRY OF ENVIRONMENT AND TOURISM**  
OFFICE OF THE ENVIRONMENTAL COMMISSIONER

**ENVIRONMENTAL CLEARANCE CERTIFICATE**  
ISSUED

In accordance with Section 37(2) of the Environmental  
Management Act (Act No. 7 of 2007)

TO

Ongopolo Mining Ltd  
P.O. Box 40791 Ausspannplatz, Windhoek, Namibia.

TO UNDERTAKE THE FOLLOWING LISTED ACTIVITY

**The Operation of Matchless mine on mining License 3, farm friedenau 16,  
Khomas Region.**



DEPUTY ENVIRONMENTAL COMMISSIONER

Issued on the date: 2019-10-29  
Expires on this date: 2022-10-29

*(See conditions printed over leaf)*

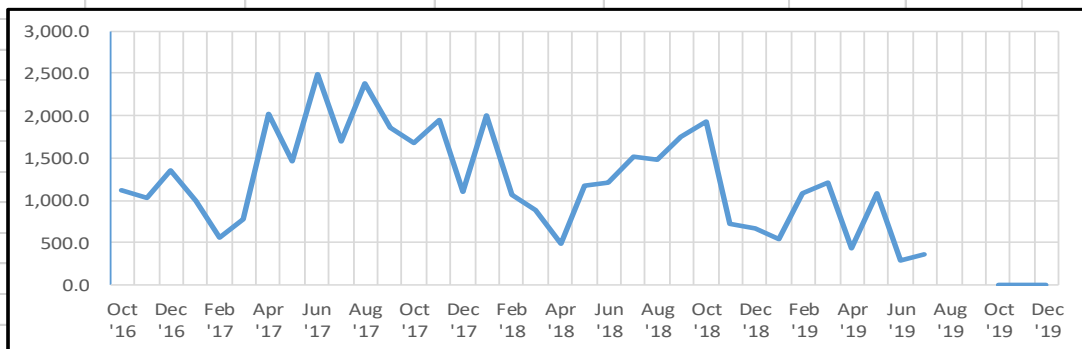
This certificate is printed without erasures or alterations



## **APPENDIX 2 – MATCHLESS ENVIRONMENTAL MANAGEMENT PLAN**

## APPENDIX 3 – MATCHLESS WATER ABSTRACTION VOLUMES

<b>Old Matchless Mine</b>					
Date:	Meter Reading	Volume (m <sup>3</sup> )	Accumalative		
Sep '16	25,340.0				
Oct '16	26,461.0	1,121.0	1,121.0		
Nov '16	27,487.0	1,026.0	2,147.0		
<b>Dec '16</b>	<b>28,841.0</b>	<b>1,354.0</b>	<b>3,501.0</b>	<b>Year end total :</b>	<b>3,501.0</b>
Jan '17	29,831.0	990.0	4,491.0		
Feb '17	30,382.0	551.0	5,042.0		
Mar '17	31,158.0	776.0	5,818.0		
Apr '17	33,171.0	2,013.0	7,831.0		
May '17	34,638.0	1,467.0	9,298.0		
Jun '17	37,123.0	2,485.0	11,783.0		
Jul '17	38,826.0	1,703.0	13,486.0		
Aug '17	41,214.0	2,388.0	15,874.0		
Sep '17	43,068.0	1,854.0	17,728.0		
Oct '17	44,753.0	1,685.0	19,413.0		
Nov '17	46,703.0	1,950.0	21,363.0		
<b>Dec '17</b>	<b>47,794.0</b>	<b>1,091.0</b>	<b>22,454.0</b>	<b>Year end total :</b>	<b>18,953.0</b>
Jan '18	49,790.0	1,996.0	24,450.0		
Feb '18	50,860.0	1,070.0	25,520.0		
Mar '18	51,738.0	878.0	26,398.0		
Apr '18	52,229.0	491.0	26,889.0		
May '18	53,394.0	1,165.0	28,054.0		
Jun '18	54,596.0	1,202.0	29,256.0		
Jul '18	56,109.0	1,513.0	30,769.0		
Aug '18	57,581.0	1,472.0	32,241.0		
Sep '18	59,322.0	1,741.0	33,982.0		
Oct '18	61,250.0	1,928.0	35,910.0		
Nov '18	61,969.0	719.0	36,629.0		
<b>Dec '18</b>	<b>62,630.0</b>	<b>661.0</b>	<b>37,290.0</b>	<b>Year end total :</b>	<b>14,836.0</b>
Jan '19	63,163.0	533.0	37,823.0		
Feb '19	64,236.0	1,073.0	38,896.0		
Mar '19	65,452.0	1,216.0	40,112.0		
Apr '19	65,878.0	426.0	40,538.0		
May '19	66,966.0	1,088.0	41,626.0		
Jun '19	67,262.0	296.0	41,922.0		
Jul '19	67,626.0	364.0	42,286.0		
Aug '19	67,626.0		42,286.0		
Sep '19			42,286.0		
Oct '19		0.0	42,286.0		
Nov '19		0.0	42,286.0		
<b>Dec '19</b>		<b>0.0</b>	<b>42,286.0</b>	<b>Year end total :</b>	<b>4,996.0</b>



<b>Matchless Western Extention</b>			
<b>Date:</b>	<b>Meter Reading</b>	<b>Volume (m³)</b>	<b>Accumalative</b>
Sep '16			
Oct '16			
Nov '16			
Dec '16			
Jan '17			
Feb '17			
Mar '17			
Apr '17			
May '17			
Jun '17			
Jul '17			
Aug '17			
Sep '17			
Oct '17			
Nov '17			
Dec '17			
Jan '18	0.0	0.0	0.0
Feb '18	50.0	50.0	50.0
Mar '18	93.0	43.0	93.0
Apr '18	117.0	24.0	117.0
May '18	202.0	85.0	202.0
Jun '18	209.0	7.0	209.0
Jul '18	281.0	72.0	281.0
Aug '18	358.0	77.0	358.0
Sep '18	426.0	68.0	426.0
Oct '18	482.0	56.0	482.0
Nov '18	564.0	82.0	564.0
<b>Dec '18</b>	<b>674.0</b>	<b>110.0</b>	<b>674.0</b>
Jan '19	732.0	58.0	732.0
Feb '19	814.0	82.0	814.0
Mar '19	884.0	70.0	884.0
Apr '19	927.0	43.0	927.0
May '19	985.0	58.0	985.0
Jun '19	1,030.0	45.0	1,030.0
Jul '19	1,070.0	40.0	1,070.0
Aug '19	1,112.0	42.0	1,112.0
Sep '19			1,112.0
Oct '19		0.0	1,112.0
Nov '19		0.0	1,112.0
<b>Dec '19</b>		<b>0.0</b>	<b>1,112.0</b>

<b>Year end total :</b>	<b>674.0</b>
<b>Year end total :</b>	<b>438.0</b>

Oct Dec Feb Apr Jun Aug Oct Dec Feb Apr Jun Aug Oct Dec Feb Apr Jun Aug Oct Dec  
'16 '16 '17 '17 '17 '17 '17 '17 '18 '18 '18 '18 '18 '18 '19 '19 '19 '19 '19 '19





**REPUBLIC OF NAMIBIA**

**MINISTRY OF ENVIRONMENT AND TOURISM**

OFFICE OF THE ENVIRONMENTAL COMMISSIONER

**ENVIRONMENTAL CLEARANCE CERTIFICATE**

**ISSUED**

In accordance with Section 37(2) of the Environmental Management Act (Act No. 7 of 2007)

**TO**

Ongopolo Mining Ltd  
P.O. Box 40791 Ausspannplatz, Windhoek, Namibia.

TO UNDERTAKE THE FOLLOWING LISTED ACTIVITY

The Operation of Matchless mine on mining License 3, farm friedenau 16, Khomas Region.



DEPUTY ENVIRONMENTAL COMMISSIONER

Issued on the date: 2019-10-29

Expires on this date: 2022-10-29

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**CONDITIONS OF APPROVAL**

1. This environmental clearance is valid for a period of 3 (three) years, from the date of issue unless withdrawn by this office
2. This certificate does not in any way hold the Ministry of Environment and Tourism accountable for misleading information, nor any adverse effects that may arise from these activities. Instead, full accountability rests with the proponent and its consultants
3. This Ministry reserves the right to attach further legislative and regulatory conditions during the operational phase of the project
- 4.



Proponent: **Weatherly Mining Namibia**

Operation: **Matchless Western Extension Copper Mine**

Report Name: **Environmental Assessment of the Matchless Copper Mine**

**Environmental Management Plan**

Report Status: **FINAL**

Revision No: **1**

Report Date: **January 2013**

Report Number: **N0575/REP03**

Prepared by: **Simon Charter**



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## REPORT DISTRIBUTION

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## INFORMATION SHEET

### **MINING OPERATION:**

**MATCHLESS WESTERN EXTENSION COPPER MINE**

### **REPORT DETAILS**

Report Name: Environmental Assessment of the Matchless Western Extension Copper Mine  
Environmental Management Plan

Report Number: N0575/REP03

Report Status: Final

Revision Number: 01

Date: January 2013

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**APPENDICES**

APPENDIX 1: Stormwater Management Plan

**LIST OF TERMS, ACRONYMS AND ABBREVIATIONS**

<b>BID</b>	Background Information Document
<b>DWA</b>	Department of Water Affairs
<b>DEA</b>	Department of Environmental Affairs
<b>EIA</b>	Environmental Impact Assessment
<b>EMA</b>	Environmental Management Act
<b>EMP</b>	Environmental Management Plan
<b>IAP</b>	Interested and Affected Party

<b>masl</b>	Metres above sea level
<b>MAWF</b>	Ministry of Agriculture, Water and Forestry
<b>MET</b>	Ministry of Environment and Tourism
<b>OMPL</b>	Ongopolo Mining & Processing (Pty) Ltd.
<b>PM10</b>	Particulate matter with a diameter smaller than 10 micro meters
<b>TCL</b>	Tsumeb Corporation Limited

# **WEATHERLY MINING NAMIBIA**

## **ENVIRONMENTAL ASSESSMENT OF THE MATCHLESS WESTERN EXTENSION COPPER MINE**

### **Environmental Management Plan**

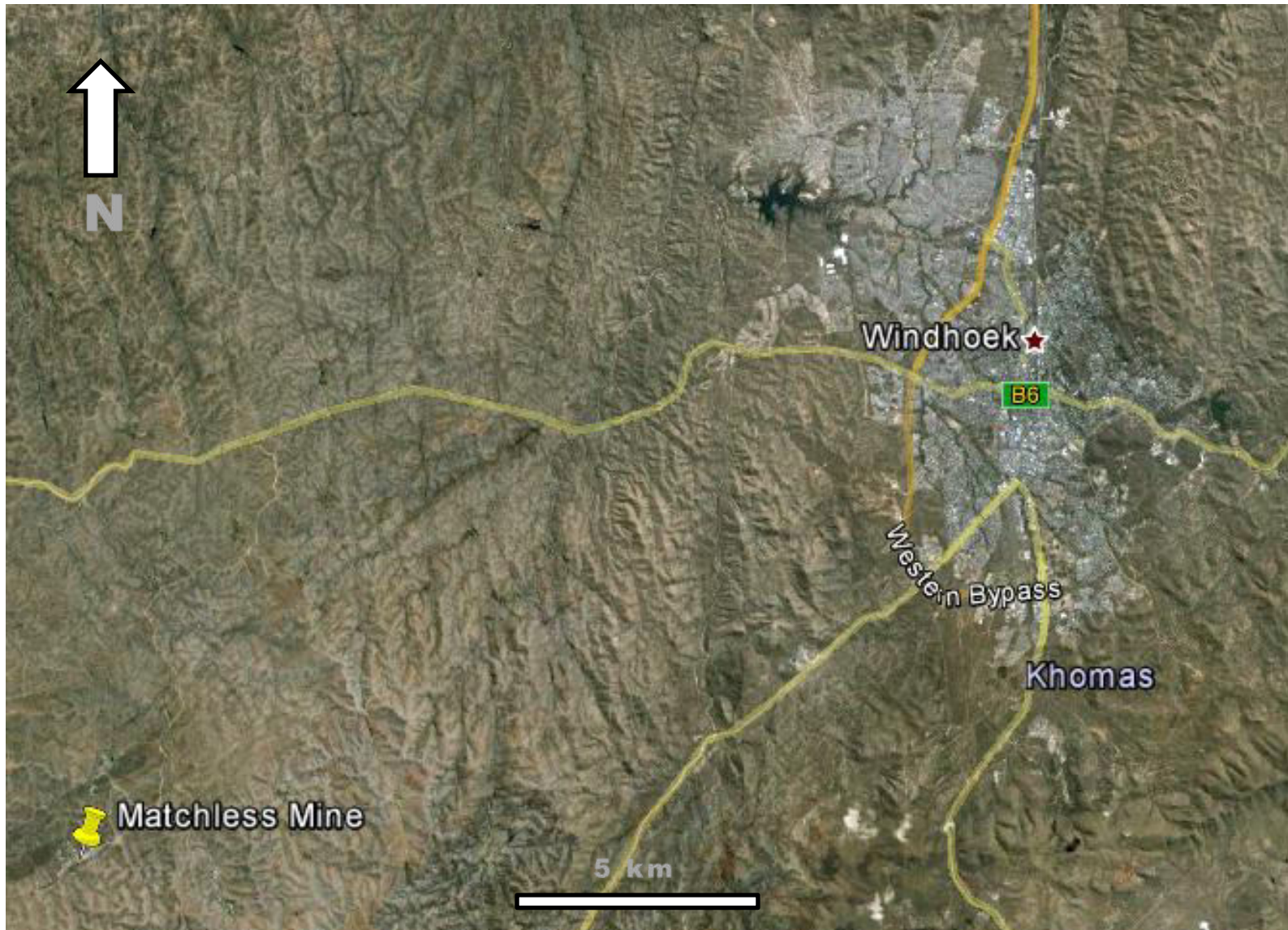
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#### **1. INTRODUCTION**

Weatherly Mining Namibia (Weatherly) owns and operates the Matchless Mine, located on Farm Friedenau 16, approximately 45 km by road south west of Windhoek in the Khomas Region. Figure 1-1 indicates the location of the Matchless Mine in relation to Windhoek, the Namibian capital.

The original Matchless Mine, located roughly 2 km east of the current operations, was operated by Tsumeb Corporation Limited (TCL) until December 1983. The current mining operations were opened by Ongopolo Mining & Processing (Pty) Ltd (OMPL) in July 2005. It is important to note that the historic mining operations, including the old access shaft, ventilation shaft, tailings dam and other historic structures are not included in the current mining operations, which are referred to as the Western Extension. The “original” Matchless Mine has therefore not been included in this Environmental application process.

Figure 1-1 indicates the location of the project and Figure 1-2 indicates the location of the Matchless Western Extension Copper Mine in relation to the historic mining site.



**Figure 1-1: Location of the Matchless Mine**

Figure 1-2: Matchless Western Extension position



## 2. OVERVIEW OF OPERATIONS

### 2.1 Historical Background

The Matchless Mine is located approximately 30 km south west of Windhoek. The original Matchless Mine was operated by TCL until December 1983. The MME issued a closure certificate for Matchless Mine. The mining license for Matchless was re-issued to OMPL when the company took over the former TCL operations in 2000.

OMPL opened a new incline shaft, the Western Extension, approximately 2 km to the west of the original mine and mining commenced at the new section of Matchless Mine in July 2005. Figure 1-2 indicates the location of the Matchless Western Extension in relation to the historical mine operations. The mine was taken over by Weatherly in July 2006 and is run together with Otjihase Mine as part of the "Central Operations".

### 2.2 Ore Reserves

Production at Matchless until 2017 will be from the Main Western Extension and it is anticipated that the original "River Shoot" area will be reopened in order to extract the remaining reserves still available from previous mining. This is expected to extend the life of Matchless Mine by a further 7 years. The extension into the River Shoot area is not included as part of this EA and would need to be addressed as an amendment to this EA.

Recoverable reserves for the Otjihase and Matchless operations are estimated at 3.9 million tonnes (Mt) grading 1.7% copper and 0.25 g/t gold and production is expected to average more than 7 000 tpa of contained copper metal until 2015.

### 2.3 Current operations

Figure 2-1 provides an indication of the layout of the Matchless Western Extension.

**Figure 2-1: Matchless Western Extension layout**

### **2.3.1 Mining**

An ore shoot called Matchless Western Extension, some 1,800m west of the old Matchless mine, is being mined by means of a decline that has reached 17 Level. The shoot has a steep plunge to the northwest and the deposit dips at 35° to 45°, which requires the decline to progress rapidly down dip. The Levels are 21m apart, with the relative short distance between levels explained by the need to access ore quickly as historically the decline advance struggled to keep up with the rate of ore extraction.

Mining is by means of cuts of 3m in height. After completion of a cut, waste from development is placed mechanically as fill to allow machinery and workers a platform on which they can remove the next cut. After six cuts a crown pillar of 3m is left in place. An 86% extraction rate is planned based on the 3m crown pillar, however Weatherly is looking to increase the extraction percentage to 92% by only leaving a crown pillar every second Level.

The deposit rapidly increases in size at depth with the reserves based on only the massive sulfide portion amounting to more than 3,500 tonnes per metre over a vertical section of almost 160m. This section constitutes two thirds of the reserve.

At the current Level of mining the strike length has reached 120m and at a width of approximately 6m which provides 8,000t of ore for each lift. This is a dramatic improvement on the amount mined per lift in the upper Levels and will relieve pressure on waste development. However, as the deposit widens it will be necessary to source waste from the surface waste dump which would be back hauled by the trucks tramping ore to surface.

### **2.3.2 Infrastructure and surface structures**

Matchless Western Extension is located some 1.8km from the now defunct Matchless Central operations (River, West, and East Shoots) which were closed in 1983. NamPower is supplied to this point. A 1000 kVA generator provides power to the mining operations. A cost estimate of N\$5 million will be required to supply power to Matchless Western Extension from the national power grid. The new power line should be considered, as generated power is significantly more expensive than NamPower.

One NamWater tank is located on the hill north of the old shaft and metallurgical plant. Water is supplied by NamWater with Matchless purifying some of the water for drinking purposes.

The shaft headgear and loading bin foundation exists along with the foundations of the metallurgical plant. It is doubtful that the shaft infrastructure would be used in future.

Weatherly uses a contractor to transport the ore to the Otjihase concentrator over a distance of some 84km. Inclusive in the transportation duties is the loading of the ore from the surface stockpile, maintenance of mechanical equipment, and the maintenance of the gravel road.

In addition, the following structures are also located on site: a workshop utilised by the mining contractors, management level staff accommodation (mobile homes), water storage tanks and ablution facilities.

### **2.3.3 Waste Management**

General waste produced as part of the on-going operations at the mine is deposited at the waste rock dump and is covered with waste rock.

Explosive bags removed from underground are also burned at a designated site on the waste rock dump.

### 3. ENVIRONMENTAL MANAGEMENT PLAN

#### 3.1 Aims

The aim of the environmental management plan (EMP) is to detail the actions required to effectively implement the mitigation measures identified in the scoping report. These actions are required to minimise negative impacts and enhance positive impacts associated with the operations.

The EMP gives the commitments, which form the environmental contract between Weatherly and the Government of the Republic of Namibia, represented by the Ministry of Environment and Tourism.

It is important to note that an EMP is a living document in that it will be updated and amended as new information (e.g. environmental data), policies, authority guidelines and technologies develop.

#### 3.2 Objectives

Specific objectives are given for each of the actions described in the EMP. These objectives relate directly to addressing the impacts identified in the EIA.

#### 3.3 Management Actions

The various actions that need to be implemented in order to ensure that environmental objectives are met are described in the EMP. Each action is given a reference number. The actions are measurable and are therefore easy to monitor. Compliance with the EMP can thus also be audited.

#### 3.4 Roles and Responsibilities

It is the responsibility of Weatherly to implement the EMP and to make sure that all the actions are carried out. The successful implementation of the EMP is however dependent on clearly defined roles and responsibilities for each of the management actions given.

Roles have been ascribed to the following parties:

Country Manager & Technical Director (CM):	<p>Overall responsibility for the management of environmental matters at all Weatherly operations.</p> <p>Directs the Implementation of the EMPs for all WMN operations.</p> <p>Is the designated person to deal with all public issues,</p>
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	communications and legal matters.
General Manager (GM):	Overall responsibility for the Management of Weatherly's Central Operations which comprises Otjihase and Matchless Mines.  Takes overall responsibility for the implementation of the EMPs for both Otjihase and Matchless Mines.
Underground Manager (UM):	Responsible for the proper management of the Matchless Mine.  Responsible for the implementation of the EMP in mining areas.
Environmental Officer (EO):	Appointed to provide support to the Weatherly staff with regard to the implementation of environmental management measures.
Engineering Manager (EM):	Appointed to manage the engineering function at WMN's Central Operations.
Commercial Manager (Com):	Overall responsibility for WMN administration function, including the employment of staff and the procurement of goods and services.
Supervisors (Sup):	Persons responsible for work teams.

### 3.5 Schedule

The schedule serves to give the time-frame for the environmental action to commence. It is not always possible to implement an action immediately as some actions require planning and the availability of financial and/or human resources before they can be implemented. The successful commencement of the committed action within the specified time-frame is to be monitored.

### 3.6 Requirements for Implementation

This component of the EMP details what is required for the action to be implemented successfully. This includes equipment, supplementary documentation, protocols and additional actions that may need to be put into place.

### 3.7 Operations

Ref.	Objective	Responsibility	Schedule	Requirements for Implementation
<b>1</b>	<b>Environmental Awareness and Training</b>			
<b>Objective: To ensure that all persons working at the mine are aware of the objectives of the EMP as well as the consequences of their individual actions</b>				
1.1	Environmental induction training is to be undertaken by all persons undertaking work at the mine (to be incorporated into normal induction training) including permanent workers, contractors and consultants.	EO	Immediate & ongoing	Environmental induction training material Environmental awareness is addressed in section 5
1.2	On the job environmental training to be undertaken by each person working at the mine.	EO & Sup	Immediate & ongoing	General Environmental Training/Training of supervisors Environmental awareness is addressed in section 5
1.3	An environmental awareness programme to be implemented for mine work force addressing pertinent topics as required.	EO	Immediate & ongoing	Programme for implementation of awareness topics Environment to be an agenda item in SHE meetings Environmental awareness is addressed in section 5
<b>2</b>	<b>Public Relations</b>			
<b>Objective: To promote transparency and facilitate communication of the affected public</b>				
2.1	Environmental Forum to be established which includes the owners and tenants of the mine property and surrounding properties.	CM	Immediate	Environmental forum constitution
2.2	Monitoring information to be made available to the affected community.	CM	Immediate	Public reports (quarterly reports)

				Public meetings (as required but at least once every)
<b>3.</b>	<b>Climate</b>			
<b>Objective: To reduce climatic impacts caused by emissions</b>				
<b>3.1</b>	Vehicles and fuel-driven machinery will be regularly monitored and maintained. Maintenance programmes will be established and implemented.	EO & EM	Ongoing	Vehicle maintenance and inspection programmes.
<b>4.</b>	<b>Geology</b>			
<b>Objective: To minimise geological impacts</b>				
<b>4.1</b>	As far as is practically possible, restrict mining activities to the planned extraction areas	GM & UM	Ongoing	Detailed mine planning
<b>5.</b>	<b>Topography</b>			
<b>Objective: To minimise topographical alterations</b>				
<b>5.1</b>	Where possible, landscaping will follow the natural contours of the land.	GM	Ongoing	Detailed mine planning
<b>5.2</b>	During mine closure the topography of the site will be restored to its natural state where reasonably possibly / practicable.	CM & GM	Ongoing	Detailed mine planning
<b>6.</b>	<b>Soils</b>			
<b>Objective: To salvage and protect available soil resources.</b>				
<b>6.1</b>	Topsoil is to be stripped from the footprint areas required for any	GM & UM	Prior to	



	future development.		extension of sites.	
6.2	Footprint areas are to be delineated and soil is to be stripped from these areas.	GM & UM	Prior to stripping	
6.3	Soils are to be stripped until the subsoil horizon is encountered.	GM & UM	Ongoing prior to development	
6.4	Soil is to be placed at delineated operation soil stockpile areas are to be less than 1.5 m high with slope of 1 in 3.	GM & UM	Ongoing prior to development	Delineated soil stockpile areas
6.5	The natural succession of vegetation on topsoil stockpiles is to be encouraged to reduce the potential for erosion.	GM & EO		Vegetation programme
<b>Objective: To salvage soils contaminated with hydrocarbons.</b>				
6.6	Soils contaminated with hydrocarbons are to be bioremediated.	EM & EO	Ongoing	Soil bioremediation facility.
7.	<b>Land use and rehabilitation</b>			
<b>Objective: To minimum impacts on air quality and landscape character.</b>				
7.1	Completed areas of the waste rock dumps not to be used in further operations are to be vegetated.	EO & GM	When site becomes inactive	Detailed mine planning
<b>Objective: To prevent erosion and promote successful vegetation establishment.</b>				

7.2	Slopes are to be re-shaped to ensure stability, vegetation establishment and erosion control.	EO & GM	When site becomes inactive	Determination of final slope requirements (trials).
7.3	Soil is to be placed over exposed surfaces at a minimum thickness of 300 mm.	EO & GM	When site becomes inactive	
7.4	The natural succession of vegetation on topsoil stockpiles is to be encouraged to reduce the potential for erosion. Should natural succession not be successful, reseeding options are to be investigated.	EO & GM	When site becomes inactive	Suitable indigenous seed mix.
7.5	Vegetation establishment and erosion is to be monitored to ensure that vegetation cover resembles that of the surrounding natural landscape.	EO	Rainy season following rehabilitation	
7.6	Erosion of vegetated slopes is to be repaired.	EO & GM	As required	
<b>8.</b>	<b>Groundwater resources</b>			
<b>Objective: To protect groundwater resources from potential seepage from potential contaminant sources</b>				
8.1	Where practically possible, clean storm water is to be diverted from all areas that may be contaminated.	GM & EO	Immediate	Stormwater Management Plan – Appendix A
8.2	Water from potentially contaminated areas is to be contained in pollution control facilities.	GM & EO	Ongoing	Stormwater Management Plan – Appendix A
<b>Objective: To assess the effectiveness of pollution control measures.</b>				

8.3	Monitor water quality near potential pollution sources and the surrounding farm boreholes.	EO	Ongoing	Groundwater monitoring programme (section 3.1)
<b>Objective: To monitor impact on groundwater availability.</b>				
8.4	Ground water levels are to be monitored.	EO	Ongoing	Groundwater monitoring programme (section 3.1)
<b>Objective: To ensure access of farmers to potable water.</b>				
8.5	Should monitoring indicate that farmer boreholes do not provide sufficient water as a result of the lowering of the water table caused by mining activities, an alternate water supply is to be made available.	EO & GM	As required, but prior to the drying up of the water supply point.	Alternative supply options.
9.	<b>Surface water resources</b>			
<b>Objective: To prevent the contamination of clean storm water run-off</b>				
9.1	Where practically possible, clean storm water is to be diverted from all areas that may be contaminated.	GM & EO	Immediate	Stormwater Management Plan (included in Appendix A)
<b>Objective: To minimise the loss of surface water from catchment</b>				
9.2	Stormwater management plan to be established to minimise the retention of water on the site.	GM, CM & EO	Immediate	Stormwater Management Plan (included in Appendix A)
<b>Objective: To contain potentially contaminated water preventing release into the environment.</b>				
9.3	Water from potentially contaminated areas to be contained in pollution control facilities.	GM & EO	Ongoing	Stormwater Management Plan (included in Appendix A)

9.4	Sewage effluent, wash bay water and other effluent produced on site is to be contained, recycled and re-used.	EM & PM	Ongoing	
<b>Objective: To minimise health risks to surrounding communities, livestock and natural fauna and flora.</b>				
9.5	Monitoring programme to be designed and recommendations made.	CM & EO	Immediate	Monitoring programme
9.6	Develop a Stormwater Management Plan aimed at separating clean and dirty water and preventing contaminated discharge from leaving the site.	CM, GM & EO	Immediate	Stormwater Management Plan (included in Appendix A)
9.7	Pollution sources are to be addressed as a matter of urgency. It is anticipated that once the pollution sources have been addressed, contamination within the riverbeds will be alleviated within a few rainy seasons. The effectiveness of this will however need to be monitored.	CM, GM & EO	Immediate	Monitoring programme
<b>10.</b>	<b>Terrestrial ecosystems</b>			
<b>Objective: To limit the loss of biodiversity through the clearance of natural vegetation to allow for the development of mining infrastructure and mining activities.</b>				
10.1	Limit the mine footprint to the areas required for operations. No access will be permitted outside of these areas.	CM	Immediate	Mine plan
10.2	Rehabilitation and end-use planning is to allow for the re-establishment of vegetation as far as practicable to allow for the restoration of biodiversity.	CM	Ongoing	Mine closure plan
<b>Objective: To prevent the harvesting of vegetation and the poaching of animals.</b>				
10.3	The staff residing on site will be limited to supervisor / management	CM	Ongoing	

	level staff. .			
10.4	Staff will not be permitted access to the areas outside of the mine operational area.	CM	Ongoing	This requirement will be included in all induction and awareness training material.
<b>Objective: To limit the impact of fugitive dust emissions from road on vegetation in the area.</b>				
10.5	Wet suppression will be utilised in order to manage fugitive dust emissions. Should wet suppression not be sufficient, soil-binding agents will be utilised. Fugitive dust generated by mine related activities must be maintained at acceptable levels.	GM & UM	Immediate	Wet suppression systems.
<b>Objective: To limit the spread of alien invasive vegetation.</b>				
10.6	Implement alien invasive species management.	EO	Immediate and ongoing	Alien Invasive Species Management Programme
11.	<b>Aquatic ecosystems</b>			
<b>Objective: To protect users and aquatic life downstream of the mine.</b>				
11.1	Monitor downstream flows to ensure impact is minimal.	EO	Ongoing	Surface water monitoring plan
12.	<b>Air quality</b>			
<b>Objective: To reduce dust levels produced during mine operations.</b>				
12.1	Wet suppression will be utilised in order to reduce fugitive dust emissions. Should wet suppression not be sufficient, soil binding agents will be utilised.	GM & UM	Immediate	Wet suppression systems.
12.2	Vegetate inactive areas on site.	GM & UM	Immediate	Rehabilitation Programme

			and ongoing	
<b>Objective:</b> To monitor the effectiveness of dust management during operations and implement improvements as required.				
12.3	Monitoring of PM10 and dust fallout.	EO	Ongoing	Air quality monitoring is addressed in section 3.2
13.	<b>Noise</b>			
<b>Objective:</b> To minimise noise disturbance to surrounding communities.				
13.1	Due to the limited nature of the operations limited noise is generated. The major sources of noise are vehicular movement and the genset. All noise-related complaints must be kept in a complaints register.	EO	Ongoing	Complaints register
13.2	Machinery that emits noise at levels exceeding those permitted for (relevant) human receptors in rural areas at night, according to the World Health Organisation, will not be operated at night.	GM & UM	Ongoing	Noise monitoring is addressed in section 3.3
14.	<b>Visual environment</b>			
<b>Objective:</b> To minimise the disturbance caused by light.				
14.1	Where possible, lights are to be directed towards areas of work and provided with hoods to reduce light spill, should any (relevant) receptors be negatively impacted.	EO & EM	Throughout operations	
14.2	Preference should be made for “softer” lights such as sodium vapour lights.	EO & EM	Throughout operations	
<b>Objective:</b> To minimise disturbance caused by mine infrastructure.				
14.3	Inactive areas of waste rock dump are to be vegetated using naturally	EO	Immediate	

	occurring species.		and ongoing	
<b>15.</b>	<b>Cultural resources</b>			
<b>Objective: To protect graves, cemeteries, archaeological and historic sites from damage.</b>				
<b>15.1</b>	No expansion of the footprint of the Matchless Mine without prior archaeological survey and approval. No archaeological sites are known from the operational area. If artefacts are unearthed then an investigation will be commissioned.	EM & PM	Ongoing	Heritage study has been carried out.
<b>15.2</b>	Heritage sites falling within the mine license area are to be demarcated and fenced.	GM & EO	Immediate	Fence maintenance
<b>16.</b>	<b>Storage and management of dangerous chemicals</b>			
<b>Objective: To ensure effective implementation of the EMP</b>				
<b>16.1</b>	Hazardous chemicals are to be stored in bunded areas.	EM & PM	Immediate and ongoing	Bunded areas
<b>16.2</b>	Hazardous chemicals (such as fuels and acids) are to be handled over areas provided with impervious surfaces or drip trays.	EM & PM	Immediate and ongoing	Impervious surfaces in chemical and hydrocarbon handling areas.
<b>16.3</b>	Spills of hazardous chemicals are to be contained and cleaned-up to ensure protection of the environment.	EM & PM	Immediate and ongoing	Spill procedures for hazardous substances. Spill kits as appropriate to areas of work. Training on clean-up
<b>17.</b>	<b>Waste Management</b>			
<b>Objective: To prevent the contamination of soils and water resources due to inappropriate management and disposal of waste.</b>				

17.1	Waste generated is to be separated at source into recyclable and non-recyclable waste.	All	Immediate	Containers for the separation of waste Waste management guideline tables are included in section 2.11
17.2	Recyclable waste is to be re-used on site or removed for re-use elsewhere.	EO	Ongoing	Identify recycling and re-use options Waste management guideline tables are included in section 2.11
17.3	Hazardous and general waste is to be separated at source where practically possible.	EO	Ongoing	Containers for the separation of waste. Waste management guideline tables are included in section 2.11
17.4	Soils contaminated with hydrocarbons are to be bio-remediated.	EM & EO	Ongoing	Bio-remediation facility.
17.5	Hazardous waste is to be disposed at the hazardous waste disposal site.	EO	Ongoing	Identification of hazardous waste disposal site, hazardous waste transport company. Disposal agreements to be put in place with the hazardous waste disposal site operators.
17.6	General waste is to be disposed of at the general waste disposal site.	EO	Ongoing	General waste disposal site Waste management guideline tables are included in section 2.11
<b>18.</b>	<b>Vehicles / machinery on site</b>			
<b>Objective: To minimise the impacts of vehicles and machinery.</b>				
18.1	Vehicles will be regularly monitored and maintained. Maintenance programmes will be established and implemented.	EM	Ongoing	Maintenance programme
18.2	Off-limit areas will be fenced off or made inaccessible to vehicles.	EM	Immediate	Fencing and fence maintenance
18.3	Vehicular movements on site will be restricted to operational areas.	CM, EM & EO	Ongoing	Induction and awareness training
18.4	Drivers will receive induction and awareness training informing them of	EO	Ongoing	Induction and awareness training



	the rules related to travelling in designated areas and the importance of conserving the local fauna and flora.			
18.5	Speed limits will be maintained. Speed limit signs will be visible and legible on site.	GM	Immediate and ongoing	Signs Induction and awareness training
18.6	Wet suppression will be utilised in order to manage fugitive dust emissions. Should wet suppression not be sufficient, soil-binding agents will be utilised.	GM & UM	Ongoing	Dust suppression plan
19.	<b>Staff on site</b>			
<b>Objective: To minimise the impacts of staff on site.</b>				
19.1	All employees will be educated on the procedures to follow and the environmental restrictions regarding all environmental parameters. This will form part of the environmental awareness.	EO	Ongoing	Induction and awareness training
19.2	Access on site will be restricted to construction and operational areas where practically possible.	GM & UM	Immediate	Fencing and fence maintenance Induction and awareness training
19.3	Workers will be restricted to construction / operational areas.	CM & GM	Ongoing	Induction and awareness training
19.5	The mine will establish and implement a monitoring programme to regulate the harvesting of plant material and fuel-wood from the natural vegetation surrounding the mine.	CM, GM & EO	Immediate and ongoing	Monitoring programme
19.6	The poaching and hunting of animals will be strictly forbidden.	CM & GM	Ongoing	Induction and awareness training
20.	<b>EMP implementation</b>			

<b>Objective: To ensure effective implementation of the EMP</b>				
20.1	Monthly internal audits of EMP compliance	EO	Immediate	Performance assessment requirements are addressed in section 4
20.2	Annual external audit of EMP compliance	Independent Consultant	Annual	Performance assessment requirements are addressed in section 4
20.3	Submission of external annual report to environmental authorities	CM	Annual	Performance assessment requirements are addressed in section 4
21.	<b>Socio-economics</b>			
<b>Objective: To promote awareness on issues related to STIs and HIV/AIDS.</b>				
21.1	Implementation of awareness programme on risks associated with STIs and HIV/AIDS for workforce.	CM & SHE Officer	Immediate and ongoing	HIV/AIDS Construction Workforce Awareness Programme
<b>Objective: To promote economic development of local communities.</b>				
21.2	Recruitment of local persons as far as practicable.	Com	As required	Affirmative action
21.3	Identify training needs and provide such training to local persons as far as practicable.	Com	As required	Training
21.4	Local procurement of goods and services where available and where commercially and technically practicable to the project.	Com	As required	Database of local service providers
<b>Objective: To promote road traffic safety.</b>				
21.5	Ore haulage trucks will not be permitted to travel in convoy along the	CM	Ongoing	Security must be informed of this requirement.

	access road. Ore haulage trucks will only be permitted to leave the site at 10-minute intervals.			
21.6	Speed limits will be adhered to at all times.	CM	Ongoing	Road traffic safety requirements will be included in induction material. All drivers, including contractors, will receive induction and awareness training.
21.7	Signage in place along access road to promote traffic safety.	CM	Immediate	Maintenance of signage
21.8	Drivers servicing the mine to be subjected to public safety awareness.	SHE Officer & GM	Incorporated into safety induction programme	All drivers, including contractors, will receive induction and awareness training.
21.9	Wet suppression will be utilised in order to manage fugitive dust emissions. Should wet suppression not be sufficient, soil-binding agents will be utilised.	GM & UM	Ongoing	Dust suppression plan

### 3.8 Decommissioning

Ref.	Objective	Responsibility	Schedule	Requirements for Implementation
1.	Planning			
<b>Objective: To promote the success of land restoration and minimise community risks</b>				
1.1	An environmental risk assessment is to be completed.	CM & EO	Prior to commencement of	Risk Assessment

			rehabilitation	
1.2	A detailed closure and rehabilitation plan is to be completed aimed at minimising identified environmental risks.	CM & EO	Prior to commencement of rehabilitation	Closure and Rehabilitation
<b>2.</b>	<b>Pollution control</b>			
<b>Objective: To ensure protection of soils, ground and surface water.</b>				
2.1	Handling of hydrocarbons and other contaminants used in decommissioning and rehabilitation must occur at designated areas on impervious surfaces.	CM, EO & EM	During decommissioning	
<b>3.</b>	<b>Dust and noise</b>			
<b>Objective: To minimise the generation of noise during decommissioning.</b>				
3.1	Demolition activities are to be limited to day-time to minimise noise impacts.	Contractor		
<b>Objective: To minimise the generation of dust during decommissioning.</b>				
3.2	Surface wetting to take place on roads and material handling points.	Contractor	Decommissioning	Dust suppression plan
<b>4.</b>	<b>Waste management</b>			
<b>Objective: To ensure the safe and appropriate disposal of waste generated during decommissioning.</b>				
4.1	Waste materials are to be separated into salvageable (scrap metal) and non-salvageable materials.	Contractor		
4.2	Salvageable waste is to be removed from site for recycling.	Contractor		

4.3	General waste (not contaminated with hazardous substances) is to be disposed at a general waste disposal facility.	Contractor		
4.4	Hazardous waste is to be disposed of at a hazardous waste facility.	Contractor		
<b>5.</b>	<b>Rehabilitation</b>			
<b>Objective: To facilitate successful restoration of land capability of infrastructure areas.</b>				
5.1	All infrastructure is to be demolished and removed.	GM & EM	Decommissioning phase	
5.2	All hard standing is to be broken apart and removed.	GM & EM	Decommissioning phase	
5.3	All demolished material and footprint areas are to be checked for contamination with hazardous substances and hazardous material to be removed and disposed of as hazardous waste.	GM & EM	Decommissioning phase	
5.4	Footprint areas are to be shaped and excavated areas backfilled to ensure that they resemble the surrounding landscape.	GM & EM	Decommissioning phase	
5.5	Topsoil is to be placed over disturbed areas	GM & EM	Decommissioning phase	Soil balance to check availability of soils
5.6	Topsoil is to be fertilised to replace nutrients if required.	GM & EM	Decommissioning phase	Appropriate fertiliser
5.7	In the event of a lack of natural succession following the next rainy season, topsoil areas are to be seeded with a naturally occurring	GM & EM	After next rainy season	Monitoring Appropriate indigenous seed mix

	seed mix.			
<b>Objective: To facilitate the restoration of the land capability of waste areas.</b>				
5.8	Slopes are to be landscaped to ensure that they are stable in the long term.	UM		
5.9	Exposed surfaces are to be covered with soil.	GM & EM	Decommissioning phase	Soil balance to check availability of soils
5.10	In the event of a lack of natural succession following the next rainy season, topsoils areas are to be seeded with a naturally occurring seed mix.	GM & EM	After next rainy season	Monitoring Appropriate indigenous seed mix

### 3.9 Post Closure

Ref.	Objective	Responsibility	Schedule	Requirements for Implementation
1.	<b>Vegetation establishment</b>			
<b>Objective: To promote successful rehabilitation.</b>				
1.1	Rehabilitated areas are to be monitored in terms of vegetation establishment and erosion. The associated costs must be included in mine closure provisions.	CM	After the first rain season following rehabilitation	
1.2	Vegetation establishment is to be augmented where required by re	CM	Prior to the following	

	seeding.		rainy season	
1.3`	Eroded areas are to be repaired	CM	Prior to the following rainy season	
<b>2.</b>	<b>Protection of water resources</b>			
<b>Objective: To monitor risks to surrounding communities associated with contaminants emanating from site.</b>				
2.1	Ground and surface water monitoring should continue to be monitored post-closure. The associated costs must be included in mine closure provisions.	CM	Continued from operational phase for 5 years after mine closure.	

### 3.10 Rehabilitation and Closure Objectives

Weatherly needs to plan for sustainable closure by ensuring that every reasonable effort has been made to achieve rehabilitation closure objectives that will give effect to the following principles:

- Safety and health of people, flora and faunas are safeguarded from hazards resulting from the decommissioned mining operations.
- Environmental damage or residual environmental impacts are minimised to the extent that they are acceptable to all parties involved.
- The land is rehabilitated to achieve a condition approximating its natural state, or so that the envisaged end use of agricultural land (grazing).
- The physical and chemical stability of the remaining structures must be such that risk to the environment through naturally occurring forces is eliminated.
- Mine closure is achieved efficiently, cost effectively, and in compliance with the law.
- The social impacts resulting from mine closure are managed in such a way that establishment of a socially stable community in line with the principles of sustainable development is facilitated.

### 3.11 Guideline tables

**Table 3-1: Disposal of Waste**

Items to be considered		Intentions
General	Specific	
Procedures	General	A waste management procedure will be developed. This will cover the storage, handling and transportation of waste.
	Waste minimization and recycling	Opportunities to minimize waste production will be identified and taken where possible. Where possible, waste will be recycled.
Waste disposal facilities	Collection points	Waste collection points will be established on site. Care will be taken to ensure that there will be sufficient collection points with adequate capacity and that these are serviced frequently.  Different skips shall be provided for wood, scrap metal, and hazardous waste.
	On site waste disposal facilities	No waste disposal facility will be developed without the relevant legal authorisation.



Items to be considered		Intentions
General	Specific	
	Off-site waste disposal facilities	Waste will be disposed of at appropriate permitted waste disposal facilities. An agreement will be put in place to ensure that the facility is capable of handling the waste.
Waste transport	Contractor	An approved subcontractor, working to local authority standards, will undertake the waste transport.
Disposal of different types of waste	Hazardous wastes	Hazardous waste will be collected by a contractor with the relevant permits and will be removed to a permitted hazardous waste disposal facility.  Hazardous waste may only be stored on site, in a fenced off area with access control, for up to 90 days.
	Non-hazardous waste	Waste will be collected and disposed of at the Municipal waste disposal site.
	Any soil polluted by a spill of chemicals	If remediation of the soil in situ is not possible, the soils will be classified as hazardous waste s and will be disposed of at an appropriate permitted waste facility.
	Scrap metal	Care will be taken to ensure that scrap metal does not become polluted or mixed with any other waste.  The scrap metal will be collected in a designated area for scrap metal (scrap yard). It will be sold to scrap dealers.
	Oil	Oil will be collected in suitable containers at designated collection points. The collection points will be bunded and underlain by impervious materials to ensure that any spills are contained. Notices will be erected at each waste oil point giving instructions on the procedure for waste oil discharge and collection.  An approved subcontractor will remove oil from site.

**Table 3-2: Storage of hazardous chemical substances**

Product	Storage
<b>Oils</b>	Stored in sealed drums. The containers will be stored in bunded facilities that will have the capacity contain all potential spills. Bunded areas must be capable of containing 110% of the capacity of maximum capacity of the storage containers within the storage areas.
<b>Diesoline</b>	Diesoline will be stored in tanks within bunded areas with smooth, impermeable surfaces. Bunded areas must be capable of containing 110% of the capacity of maximum capacity of the storage containers within the storage areas.  Diesoline may be stored in externally clean drums. These drums may only

	be stored on smooth, impervious surfaces in facilities that will contain spills.
<b>Herbicides &amp; pesticides</b>	<p>These substances will be stored under lock and key and away from food and water sources.</p> <p>Sub-contractors who require such substances for the execution of their duties will also be expected to store these hazardous substances in an appropriate storage area or they will be required to keep the substances off site at their usual business premises.</p> <p>Such sub-contractors will be liable for control over the issuing of the herbicides to their staff, and thus are required by law to maintain records. Material Safety Data Sheets are required to be kept by the competent person, and these will be submitted when a specific substance is brought to site for use/application.</p>
<b>Other: Paint, thinners, varnish, turpentine, detergents etc.</b>	<p>These substances must be stored in clearly marked containers.</p> <p>These containers must be sealable and must not leak.</p> <p>They may only be stored within the workshops and storerooms.</p>

**Table 3-3: Handling of hazardous chemical substances**

<b>Product</b>	<b>Handling</b>
<b>Oils</b>	All oils will be handled according to their specific Material Safety Data Sheets.
<b>Diesoline</b>	<p>Diesel will be handled according to its Material Safety Data Sheet.</p> <p>Where possible, diesel transferrals must take place in the designated refuelling areas on smooth, impervious surfaces.</p> <p>Drip trays will be positioned at each machine whilst being refilled. Drip trays will be drained into suitable containers. Smaller plant and tyre wheeled equipment will also re-fuel at the main storage areas.</p>
<b>Herbicides &amp; pesticides</b>	Herbicides, pesticides and other potentially poisonous substances, will be used according to the manufacturers specifications. Care will be taken to avoid spills and unnecessary contact with any part of the environment for which they were not intended e.g. soil, water bodies and vegetation or animals. Mixed herbicide/ pesticide or other poison shall be kept in clearly marked, closed containers and decanting will occur over a drip tray to prevent contamination due to spillage, and this will not take place within forty meters of any watercourse.
<b>Other: Paint, thinners, varnish, turpentine, detergents etc.</b>	These substances must be used in accordance with their respective MSDS's.

**Table 3-4: Disposal of hazardous chemical substances**

<b>Product</b>	<b>Disposal</b>
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<b>Hydrocarbons</b>	Old/used hydrocarbons will be stored in drums and weatherproof waste collection containers. Receipts /proof of their final disposal must be received and kept on file.
<b>Other: Paint, thinners, varnish, turpentine, detergents etc.</b>	These substances must be used in accordance with their respective MSDS's.

## 4. ENVIRONMENTAL MONITORING

### 4.1 Water Monitoring Programme

The aim of the water monitoring programme is to assess the impact and legacy issues of contaminants on ground and surface water quality. The programme will also serve to monitor the impact of dewatering on surrounding groundwater users.

Weatherly personnel will be trained to carry out the monitoring programme.

Water monitoring at Matchless Mine is to be managed by Weatherly is to be based on the following protocol:

- Analysis frequency:
  - Groundwater bi-annual (January and July);
  - Surface water quarterly (when rivers are flowing);
  - Point source discharges (excluding water from underground workings) will be monitored monthly.
- Sampling positions:
  - Surface water sampling:
    - Upstream of the mine operations (for baseline information for comparison with downstream sample results);
    - Drainage line downstream of the mine;
    - All point source discharges.
  - Geohydrological sampling:
    - Dewatering discharged from underground workings;
    - Borehole located at the Friedenau farm house;

- Appropriate other specific boreholes recommended by the local farm owners.
- Parameters:
  - The parameters selected for laboratory analysis were standard major ions, plus a limited metals suite selected based on results of the more extensive metals suite analysed in the past.

Parameter	Units	Limits*
pH		5,5 – 9,5
EC	mS/m	<150
TDS*	mg/l	<1000
Total Hardness	mg/l	N/A
Ca-Hardness	mg/l	N/A
Mg-Hardness	mg/l	N/A
Chloride	mg/l	<1500
Fluoride	mg/l	<2
Sulphate	mg/l	<1000
Suspended solids	mg/l	N/A
Sodium	mg/l	<2000
Potassium	mg/l	<50?
Magnesium	mg/l	<500
Calcium	mg/l	<1000
Manganese	mg/l	<10
Iron	mg/l	<10
Chromium	mg/l	<1
Cadmium	mg/l	<10
Copper	mg/l	<0.5
Zinc	mg/l	<20
Cobalt	mg/l	<1

Nickel	mg/l	<1
Uranium	mg/l	<0.5
Aluminium	mg/l	<5

All water released from the operational area must comply with the recommended maximum limits for livestock watering in accordance with the South African Guidelines for Livestock Watering included in the table above. These limits are recognised as a minimum requirement by the Namibian Ministry of Agriculture, Water and Forestry.

## 4.2 Air Quality Monitoring

In order to prevent excessive emissions of air pollutants and to determine the effectiveness of emissions management strategies, an emissions and air quality monitoring programme must be implemented.

Air emission monitoring must take place for:

- All generators.
- Engines (including vehicles).

The air quality monitoring program must consider the following elements:

- Monitoring parameters.
- Baseline calculations.
- Monitoring type and frequency.

The following parameters must be monitored annually by entities permitted or certified for this purpose:

**Table 4-1: Air emission monitoring parameters**

Emission	Monitoring	Limits
NOx	Continuous monitoring of either NOx emissions or indicative NOx emissions using combustion parameters.	500 tpy per unit

PM	Continuous monitoring of either PM emissions or indicative PM emissions using operating parameters.	PM10: 50 tons per year (tpy)
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Source: World Health Organisation Guidelines.

The emission monitoring and analysis must be conducted by entities permitted or certified for this purpose.

**Table 4-2: Monitoring Strategy Criteria / Dustfall Monitoring**

Monitoring Strategy Criteria	Dustfall Monitoring
<i>Monitoring objectives</i>	<p>Obtain baseline dust measurements.</p> <p>Assessment of compliance with dustfall limits within the main impact zone of the operation.</p> <p>Facilitate the measurement of progress against environmental targets within the main impact zone of the operation.</p> <p>Temporal trend analysis to determine the potential for nuisance impacts within the main impact zone of the operation.</p> <p>Tracking of progress due to pollution control measure implementation within the main impact zone of the operation.</p>
<i>Monitoring location(s)</i>	<p>Dustfall to be recorded by dustfall monitoring network comprising 4 single bucket monitors. These will be placed around the mine site based on the prevailing wind directions (east to south-east). These buckets will therefore be placed south-east, north east, south west and north west of the mine site. The dust measurements data will be recorded along with daily wind data in order to determine the windblown dust generated from the mine.</p>
<i>Sampling techniques</i>	<p><i>Single Bucket Dust Fallout Monitors</i></p> <p>Dust fallout sampling measures the fallout of windblown settleable dust. Single bucket fallout monitors to be deployed following the American Society for Testing and Materials standard method for collection and analysis of dustfall (ASTM D1739). This method employs a simple device consisting of a cylindrical container half-filled with de-ionised water exposed for one calendar month (13</p>

	days). The water is treated with an inorganic biocide to prevent algae growth in the buckets. The bucket stand comprises a ring that is raised above the rim of the bucket to prevent contamination from perching birds. The content of the bucket are filtered and the residue dried before the insoluble dust is weighed.
<i>Accuracy of sampling technique</i>	Margin of accuracy given as $\pm 200$ mg/m <sup>2</sup> /day.
<i>Sampling frequency and duration</i>	On-going, continuous monitoring to be implemented facilitating data collection over 1-month averaging period.
<i>Commitment to QA/QC protocol</i>	Comprehensive QA/QC protocol implemented.
<i>Interim environmental targets (i.e. receptor-based performance indicator)</i>	Maximum total daily dustfall (calculated from total monthly dustfall) of not greater than 600 mg/m <sup>2</sup> /day for residential areas. Maximum annual average dustfall to be less than 1,200 mg/m <sup>2</sup> /day on-site. This will be updated once baseline data for the area has been obtained.
<i>Frequency of reviewing environmental targets</i>	Annually (or may be triggered by changes in air quality regulations).
<i>Action to be taken if targets are not met</i>	Source contribution quantification. Determine whether the source of the dust is mine-related or natural. Review of current control measures for significant sources (implementation of contingency measures where applicable).
<b>Monitoring Strategy Criteria</b>	<b>Dustfall Monitoring</b>
<i>Procedure to be followed in reviewing environmental targets and other elements of the monitoring strategy (e.g. sampling technique, duration, procedure)</i>	Procedure to be drafted in liaison with I&APs through the proposed community liaison forum. Points to be taken into account will include, for example: (i) trends in local and international ambient particulate guidelines and standards and/or compliance monitoring requirements, (ii) best practice with regard to monitoring methods, (iii) current trends in local air quality, i.e. is there an improvement or deterioration,
<i>Progress reporting</i>	Annually to the necessary authorities and community forum.



### 4.3 Noise Monitoring

Annual noise assessments will be carried out by accredited noise monitoring specialists. These assessments will monitor the mine-generated noise levels at the Friedenau, Keres and Apies/Baumgartsbrunn Farm residences. Baseline noise measurements will also be taken in order to determine the actual impact of mine generated noise.

Where noise levels exceed acceptable/legal occupational health levels, hearing protection PPE must be provided to staff operating within the area at risk.

Noise reduction options that should be considered include:

**Table 4-3: Noise reduction options**

Noise reduction options
<ul style="list-style-type: none"> <li>• Selecting equipment with lower sound power levels (when new equipment is required)</li> <li>• Installing silencers for fans</li> <li>• Installing suitable mufflers on engine exhausts and compressor components</li> <li>• Installing acoustic enclosures for equipment casing radiating noise</li> <li>• Improving the acoustic performance of constructed buildings, apply sound insulation</li> <li>• Installing acoustic barriers without gaps and with a continuous minimum surface density of 10 kg/m<sup>2</sup> in order to minimize the transmission of sound through the barrier. Barriers should be located as close to the source or to the receptor location to be effective</li> <li>• Installing vibration isolation for mechanical equipment</li> <li>• Limiting the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas</li> <li>• Re-locating noise sources to less sensitive areas to take advantage of distance and shielding</li> <li>• Siting permanent facilities away from community areas if possible</li> <li>• Taking advantage of the natural topography as a noise buffer during facility design</li> <li>• Reducing project traffic routing through community areas wherever possible</li> <li>• Developing a mechanism to record and respond to complaints</li> </ul>

## 5. ENVIRONMENTAL PERFORMANCE ASSESSMENT

An environmental auditing programme to be implemented on site is provided in the table below. The programme is to be implemented to assess the level of compliance with environmental legislative requirements and the commitments made in the EMP. Environmental auditing is aimed at ensuring continual improvement in environmental performance.

**Table 5-1: Environmental Performance Assessment Programme for Matchless Mine**

Frequency of Monitoring	Performance Assessment	Responsibility	Reporting Requirements
<b>OPERATION</b>			
<b>Monthly</b>	Environmental compliance audit.	Environmental Manager	Internal report submitted to managers for discussion.
<b>Annually</b>	External Compliance audit	External Environmental Consultant	Report to be submitted to environmental authorities.

## 6. ENVIRONMENTAL AWARENESS

### 6.1 Environmental Induction Training

The purpose of the induction training is to promote a general awareness of the sensitivity of the environment, the legal commitments and the aspirations of Weatherly in terms of environmental management and the environmental consequences of individual actions. Induction is applicable to all employees, contractors and service providers that will be working within the mining area.

#### 6.1.1 Environmental Induction for Employees and Service Providers

The induction training for employees, contractors and service providers is to take the form of a presentation including:

- A description of environmental sensitivities in the Matchless Mine environment.
- A description of environmental legal requirements and Weatherly's commitment to comply with these requirements;
- A description of broad-based objectives of environmental management for the Matchless Mine;
- A discussion of how individual actions can impact on the environment;

- A discussion of how individual actions can assist in the successful implementation of the EMPR;
- The Code of Conduct (included in company Code of Conduct).

All employees are to sign that they have understood and will comply with the Code of Conduct. Employees are to be re-inducted on an annual basis (after returning from their annual leave).

## Requirements

- Environmental induction material (posters, power point presentations etc.);
- Code of Conduct;
- Register of inducted employees, service providers and contractors.

### 6.1.2 Environmental Awareness Programme

The purpose of the general environmental awareness programme is to promote ongoing environmental awareness amongst the workforce. It will focus on addressing particular environmental issues which have been identified as problematic through the Performance Assessment Programme and EMPR compliance monitoring. All members of the project workforce and contractors are to be incorporated into the general environmental awareness programme.

### Monthly Environmental Topics

A monthly environmental awareness topic is to be chosen by management based on the outcomes of internal audits as well as topics of general environmental interest. The topic is to be communicated to the workforce through:

- Discussions at all SHE meetings (to be itemised on the agenda).
- Posters on notice boards.

Monthly environmental topics could include:

- |                                      |                                      |
|--------------------------------------|--------------------------------------|
| • What is the environment;           | • Preventing and cleaning up spills; |
| • The project environment;           | • Reduce, reuse and recycle;         |
| • You and the environment;           | • General versus hazardous waste;    |
| • The Code of Conduct;               | • Alien vegetation control;          |
| • Reporting environmental incidents; | • Saving water;                      |
| • Environmental risks;               | • Saving energy;                     |
| • Environmental emergency training;  | • Heritage sites.                    |

## Requirements

- Environmental topics to be included on the agenda of relevant meetings;

- Environmental awareness material to be produced and posted.

### **6.1.3 Job Specific Environmental Awareness Training**

The purpose of the job specific environmental awareness training is to ensure that employees within the specific management units are equipped to implement the actions committed to in the EMPR. All members of the workforce are to be subject to job specific environmental training. This training is to be undertaken by the managers of each of the management units. Supervisors will be trained to assist with the implementation and training of the work force.

### **6.1.4 Environmental Risk Identification**

The environmental risks associated with each management area are to be identified by the manager and supervisors together with the technical services manager. The risks are to be documented and actions to reduce these risks should be developed. The actions are to ensure overall compliance with the commitments of the EMPR. The findings of the performance assessment audits and EMPR compliance monitoring will assist in identifying risks.

### **6.1.5 Training**

All members of the workforce (mining, plant workers, administration etc.) are to be subject to job specific training. This may include but not be limited to:

- Preventing pollution;
- Spill prevention and clean-up procedures;
- The location and purpose of material safety data sheets (MSDSs)
- Managing waste;
- No-go areas;
- Incident reporting.

The aspects to be covered however are dependent on the findings of the individual risk assessments. This is to be undertaken for each management area initially. Thereafter all new members of the workforce are to undergo environmental training as part of the training required to do their particular job.

### **Corrective Action**

- Any actions undertaken by a worker that pose a risk to the environment are to be stopped immediately.
- The worker is to be instructed in how to correct the action.
- Non-compliance is to be incorporated into the standard disciplinary procedure applicable to the project.

## Requirements

- Risk assessment and action plan for each area at the mine.
- Training of the workforce within each management area.
- Training of new members of the workforce.
- Records of appropriate training conducted.

## 7. COMPLAINTS REGISTER

A complaints register is to be kept at an agreed point and members of the public are to be encouraged to register their compliments and complaints through the register. The Country Manager is to manage the complaints by presenting the issue raised to the relevant manager. Feedback is to be given to the complainant as to how the complaint is being addressed within 21 days of the complaint being lodged.

## 8. ENVIRONMENTAL EMERGENCY PROCEDURES

### 8.1.1 Pollution Incidents

Should substances pollute or have the potential to pollute a water resource; or have, or are likely to have, a detrimental effect on a water resource, the spillage event is to be regarded as a pollution incident.

In the case of a pollution incident, the following additional actions should be taken:

- Water quality samples are to be taken downstream of the pollution source (or in the affected pans), to determine the magnitude and extent of the contamination.

The incident is to be reported and investigated through the incident reporting procedure.

- The cause of the incident is to be investigated.
- Measures to prevent a repeat of the incident in the future are to be identified.

### 8.1.2 Hydrocarbon or Chemical Spills

The objective is to contain and remediate spillages of hydrocarbons (petrol, diesel, oil, lubricants) or chemicals (flocculants, solvents).

### Actions

- Procedure dealing with various types of spills will be drawn up.
- Contact the supervisor in the event of a spill.

- The supervisor or manager should organise a team (of an appropriate size in relation to the spill) to assist with the clean-up.
- Labour is to be employed to construct earth berms/trenches or place absorbent booms to contain large volumes of spilled oil / chemicals to prevent it from entering any watercourse, pan or storm water drain.
- Demarcate the spilled area where practicable.
- Choose appropriate Personal Protective Equipment (PPE) for employees responding to the spill.
- Consult the relevant Material Safety Data Sheet (MSDS) for recommendations regarding PPE and method of disposal.
- Move the spill kits to the area.
- If the spill is beyond the control of the designated staff, a predetermined emergency spill response company should assist with containment and clean-up.
- Scoop up the spilled substance along with contaminated soil or any absorbent material using the spill kit shovel. Place the scooped up substance into the plastic bags from the spill kit.
- Neutralise the residue with a solution recommended by the MSDS sheet.
- The waste bags must be marked as hazardous waste and disposed of as hazardous waste.

## 9. FINANCIAL PROVISION AND CLOSURE COSTING

A Mine Closure Plan is required to plan for the closure of the mine and to quantify the financial provision needed for closure. It is recommended that Weatherly commission the development of a Mine Closure Plan within 1 year of gaining environmental clearance. This Mine Closure Plan will require written approval from both the MET and the MME.

## 10. CONCLUSION

This Environmental Management Programme highlights the management measures that will be implemented in order to mitigate the environmental impacts of the proposed activities. In addition to these management measures, this report also highlights the requirements for the Environmental Awareness Plan and the Emergency Procedures and Responses.

The primary potential environmental impact of the mine is on the surface water in the area. In order to mitigate this impact, it is essential that the Stormwater Management Plan included in Appendix 1 be implemented.

The EMP is a legal document, which commits the applicant to comply with all management measures, monitoring programmes and other plans as presented herein. As part of the EMP, detailed monitoring programmes have been provided to manage and control areas including surface water, groundwater, air quality and soils. In addition to this, the requirements for a comprehensive Environmental Awareness Plan and Emergency Response Plan have been included to ensure the effective management and associated environmental awareness within the mine.