



**TRIGON MINING (NAMIBIA) (PTY) LTD
KOMBAT MINE**

**ENVIRONMENTAL MANAGEMENT PLAN
FOR
EXPLORATION ACTIVITIES ON MLS 73B, 73C, 16, 9
AND 21**

SEPTEMBER 2020

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ENVIRONMENTAL MANAGEMENT PLAN for Exploration Activities on MLs 73b, 73c, 16, 9 And 21

1. Introduction

1.1 Background

Trigon Mining (Namibia) (Pty) Ltd (Trigon) (previously Manila Investments (Pty) Ltd) holds Mining Licences (MLs) 73B, 73C, 16, 9 and 21, which are located in the vicinity of Kombat town in the Otjozondjupa Region. The Ministry of Environment and Tourism: Department of Environmental Affairs (MET:DEA) issued an Environmental Clearance Certificate (ECC) to Manila Investments on 24 July 2014, authorising them to conduct exploration activities on the above MLs. This authorisation was issued after an Environmental Impact Assessment (EIA) scoping process (conducted by SLR Environmental Consulting (Namibia) (Pty) Ltd (SLR)) was completed and a Scoping Report, which included an Environmental Management Plan (EMP), was submitted to MET in April 2014.

The 2014 report assessed the exploration programme which mainly included the following activities:

- Geological studies and field mapping.
- Soil surveys.
- Ground geophysical surveys.
- Drilling of holes and collection of drill samples for analysis of trace elements. Clearing of a small area of land to set the rig.

The ECC for the exploration activities had a validity period until 24 July 2017. An ECC renewal application was therefore submitted to the MET (now Ministry of Environment, Forestry and Tourism (MEFT)) in May 2017, after the compilation of an Environmental Performance Report (i.e. Environmental Audit Report). Consequently, the (renewed) ECC was issued on 18 September 2017 with an expiry date of 18 September 2020, hence this ECC renewal process.

MLs 73C, 16, 73B and 9 are located close to Kombat in the Otjozondjupa Region. ML 21 is located approximately half way between Kombat and Tsumeb on the boundary of the Otjozondjupa- and Oshikoto Regions (refer to Figure 1 for the location of the MLs).

The MLs have the following sizes:

- ML 73B – 150 ha
- ML 73C – 262 ha
- ML 16 – 468 ha
- ML 9 – 74 ha
- ML 21 – 264 ha

Trigon has an interest in exploring for base metals on the ML areas on the basis of a valid ECC as issued by MET (now MEFT). The ECC that was issued in 2017 was valid for a period of three years, until 18 September 2020. However, due to the fact that the ML was issued in the name of Manila Investments by MET (now MEFT), Trigon, is therefore also applying for a name change to Trigon Mining (Namibia) (Pty) Ltd as part of this renewal application.



FIGURE 1: LOCALITY MAP INDICATING MLS 73B, 73C, 16, 9 AND 21

1.2 Keeping EMPs current

Section 50 (g) of the Minerals (Mining and Prospecting) Act, 33 of 1992 states that the holder of a mining license shall undertake a periodic review of the EMP(s) should circumstances change.

Should a listed activity(s) as defined in the Environmental Impact Assessment Regulations: Environmental Management Act (EMA), 2007 (Government Gazette No. 4878) be triggered (as a result of future modifications/changes at the mine), this EMP will be required to be updated through another EIA process as stipulated in the EMA and its Regulations.

1.3 Aim of this EMP

With reference to section 1.1, a Scoping Report, which included an EMP was developed in 2014 for the proposed exploration activities on MLs 73B, 73C, 16, 9 and 21 (SLR, 2014). Similar exploration activities (i.e. largely drilling of exploration holes) are being planned by Trigon. Therefore, the (approved) 2014 EMP forms the basis of this revised EMP.

The aim of this EMP is to detail the actions required to effectively implement mitigation and management measures associated with Trigon's proposed exploration activities on the MLs. These actions are required to minimise negative impacts and enhance positive impacts associated with the activities and were left unchanged from the 2014 report (SLR, 2014).

The EMP stipulates commitments, which form the environmental contract between Trigon and the Government of the Republic of Namibia which is represented by the MEFT.

The management and mitigation measures proposed to avoid/minimize the potential impacts are detailed in the action plans as set out in Section 3 of this document.

Once approved by MEFT, this (revised) EMP will supersede the previously approved EMP.

One of the main objectives of the revised EMP is to ensure that the name change (from Manila Investments to Trigon) is incorporated into the EMP (see section 1.1). It is noted that no changes were made to the original (approved) management plan and mitigation measures.

2. Exploration Overview

No exploration activities have taken place in MLs 73C, 16, 9 and 21 since the previous ECC was issued. The only exploration activities over the past 3 years were conducted in ML 73B. Therefore, this section only focuses on the historic activities of ML 73B.

2.1 ML 73B

Trigon used a similar drilling method to drill 24 new holes on ML 73B over the past 3 years, when compared to the 35 drilled holes that were completed during the 2015 drilling programme (SLR, 2017).

Exploration was aimed at extracting and identifying valuable core samples and minerals to identify and investigate the potential of near-surface deposits of copper within ML 73B. The drilling program involved the drilling of holes approximately 70 meters in depth (approximately 2 000m drilled in total).

All of the 24 holes on ML 73B were drilled on land belonging to Trigon. The majority of drill holes were drilled in areas of previously existing ground disturbance or bare rock and thus very little de-bushing was required (approximately 10 m x 10 m for each site). The majority of drilling was undertaken in fenced off areas of the mine where no access by the public was permitted. In areas where public traffic was possible, security and temporary fencing was put in place for the duration of drilling. After the drilling and extraction of the core from the earth, the drilled holes were covered and sealed with metal

cones, making them irremovable without the use of machinery and equipment to prevent direct exposure of the holes to animals and people from the surrounding area. These metal cones are cemented into the ground and they also show the hole identification number.

Five Trigon (Kombat) mine employees conducted the drilling programme with the assistance of approximately 20 contractors.

2.2 Current activities

As mentioned in section 2.1, no exploration activities have taken place in MLs 73C, 16, 9 and 21 over the past 3 years. The only exploration activities over the past 3 years were conducted in ML 73B.

Another (ongoing) drill programme is planned for early 2021, the detail of which is being designed by Trigon and its Technical Team (see section 2.3 for further details). Trigon originally planned to initiate these additional drilling activities earlier in 2020, however, due to COVID-19 they were forced to delay the programme until 2021.

2.3 Planned (future) activities

Trigon plans to carry on with similar exploration and associated activities, as described in the approved EIA Report (SLR, 2014) and section 2.1 of this report for the foreseeable future on MLs 73B, 73C, 16, 9 and 21, dependant on the ECC renewal from MEFT.

Trigon and its Technical Team are busy with the drill programme design for the 2021 drill programme referred to above. This drill programme design is likely to be finalized towards the end of October 2020.

The main aim of the drill programme will be to increase the confidence levels of the 'Inferred Resources' to 'Indicated and Measured Resources', based on the current geological model.

The ongoing drilling activities (i.e. future drilling programme) is planned to focus on ML73B, ML16 and ML9. However, Trigon might also drill a couple of exploratory holes on ML 73C (i.e. Gross Otavi).

No exploration activities are currently planned for ML 21 (i.e. Harasib), but Trigon will keep its options open for possible future exploration activities on this ML.

The planned drilling programme for 2021 will be more extensive than the 2017 programme, where Trigon only drilled 24 holes and $\pm 2\,000$ m (see section 2.1 for further details). The planned drilling programme for 2021 will comprise more than 10,000 m. The number of holes and various locations are yet to be confirmed as Trigon and its Technical Team are still running the statistics on the resource base to determine the exact hole positions.

Trigon will also keep its options open for other future exploration activities on the MLs, including geological studies and field mapping; soil surveys; and ground geophysical surveys.

3. Environmental Action Plans

Action plans to avoid/minimize potential environmental impacts associated with all exploration activities, as identified and assessed in the original EIA (Scoping) process, are listed in tabular format and are classified by activities. The action plans, as developed during the original EIA Process (SLR, 2014), also include the frequency for implementing the mitigation measures as well as identifying a responsible party for each action plan.

TABLE 1: ENVIRONMENTAL MITIGATION MEASURES AND COMMITMENTS – FIELD MAPPING, GEOPHYSICAL SURVEYS AND SOIL SAMPLING

Activity	Potential Impact	Management and Mitigation Measures	Action Plan	
			Frequency	Responsible Parties
Air survey	Noise	<ul style="list-style-type: none"> - Discuss flight plans and schedule with land owners prior to air surveys. - Avoid residences, game and livestock enclosures where possible. 	Prior to air surveys	Project Manager Pilots
Ground survey, mapping and soil sampling	Socio-economic	<ul style="list-style-type: none"> - Honour agreements set out in the site-access contracts - Consult and provide feedback regarding activities on the individual properties - Provide contact details to a designated Trigon person, who will serve as liaison between landowners and the exploration teams - Land owners to be provided with a list of all people working on site - All staff operating on site will be provided with identification and proof that they are working for Trigon - Ensure gates are closed after entry and exit. 	Duration of mapping and surveying	Project Manager Site supervisor
	Biodiversity	<ul style="list-style-type: none"> - The footprint of the area to be disturbed for surveying/mapping and for providing access to survey sites will be minimised as far as is practically possible. - Trigon will implement a zero tolerance policy with regards to the killing or collecting of any biodiversity. This applies to people directly employed by Trigon as well as any contractors working on their behalf. - Employees and contractors will be shown the value of biodiversity and the need to conserve the species and systems that occur within the project area. - No open fires will be permitted on site. - Speed limits will be enforced so as to prevent road kills. - Permits will be required for the removal of protected tree species. 	Duration of mapping and surveying	Project Manager Site supervisor
	Air quality	<ul style="list-style-type: none"> - Vehicle speeds will be limited to 40km/h on access routes to limit dust. 	Duration of mapping and surveying	Project Manager Site supervisor
	Heritage	<ul style="list-style-type: none"> - The following actions need to be implemented regarding the old German workings on ML 73C: <ul style="list-style-type: none"> o The old mining infrastructure shall be left undisturbed where reasonably possible. o No Trigon employee or contractor shall be allowed to move/remove any of the above mentioned infrastructure. 	Duration of mapping and surveying	Project Manager Site supervisor

Activity	Potential Impact	Management and Mitigation Measures	Action Plan	
			Frequency	Responsible Parties
		<ul style="list-style-type: none"> o Employees and contractors will be educated on the possible heritage value of the said structures and the need to conserve this. - In the event that archaeological resources are discovered, a chance find emergency procedure will be implemented which includes the following: <ul style="list-style-type: none"> o All work at the find will be stopped to prevent damage; o An appropriate heritage specialist will be appointed to assess the find and related impacts; and o Permitting applications will be made to the necessary authorities, if required. - In the event that any graves are discovered during the exploration activities, these will be avoided and preserved as a first priority. If damage is unavoidable, prior to damaging or destroying any identified graves, permission for the exhumation and relocation of graves must be obtained from the relevant descendants (if known) and the relevant local and provincial authorities. 		

TABLE 3-1: ENVIRONMENTAL MITIGATION MEASURES AND COMMITMENTS – DRILL SITE ESTABLISHMENT

Activities	Potential Impact	Management and Mitigation Measures	Action Plan	
			Frequency	Responsible Parties
<ul style="list-style-type: none"> - Access the drill site using a new access track where necessary - Set-up drilling machine with drip trays and groundsheets - Strip vegetation and topsoil (up to 300mm where available) 	Air quality – dust and gaseous emissions	<ul style="list-style-type: none"> - The movement of drilling related vehicles on the unpaved access track will be on a small scale - Vehicle speeds will be limited to 30km/h on site - Vehicles and the drilling rig will be maintained in good working order - Minimise new access route development (routes to be approved by land owners prior to development) 	Ongoing	Project Manager Site supervisor
	Noise	<ul style="list-style-type: none"> - Vehicles will travel maximum 30 km/hour near houses/settlements 	Ongoing	Project Manager Site supervisor
	Biodiversity	<ul style="list-style-type: none"> - Refer to biodiversity management measures relating to mapping and sampling (Table 1). 	Ongoing	Project Manager Site supervisor

Activities	Potential Impact	Management and Mitigation Measures	Action Plan	
			Frequency	Responsible Parties
<ul style="list-style-type: none"> - Temporarily store topsoil adjacent to drill site - Set-up ablution facilities - Set-up fuel and lubricants storage area - Waste management 		<ul style="list-style-type: none"> - Honour agreements set out in the site-access contracts, specifically relating to the areas utilised for game and livestock farming. Special consideration should be given to the sensitive hunting season. - Provide appropriate toilet facilities for the exploration workers on the site or agree with landowner to use certain facilities on the farm. 		
	Land use	<ul style="list-style-type: none"> - Access agreements to be prepared and approved prior to drill site establishment. - The footprint of the area to be disturbed will be minimised as far as is practically possible. - Areas used as laydown areas are to be raked and/or ploughed to encourage re-vegetation - Agree on relevant compensation with land-owners where land uses are impacted 	Ongoing	Project Manager Site supervisor
	Heritage	<ul style="list-style-type: none"> - Refer to heritage management measures relating to mapping and sampling (Table 1) 	Ongoing	Project Manager Site supervisor
	Socio-economic	<ul style="list-style-type: none"> - Refer to socio-economic management measures relating to mapping and sampling (Table 1) 	Ongoing	Project Manager Site supervisor

TABLE 3-2: ENVIRONMENTAL MITIGATION MEASURES AND COMMITMENTS – DRILLING

Activities	Potential Impact	Management and Mitigation Measures	Action Plan	
			Frequency	Responsible Parties
<ul style="list-style-type: none"> - Drill borehole - Contain all drilling water in the sump and allow to settle - Log the drill core and place on core trays - Maintain ablution facilities 	Contamination of soil/Hydrocarbon spillages	<ul style="list-style-type: none"> - In all areas where there is storage of hazardous substances (i.e. hydrocarbons), there will be containment of spillages on impermeable floors and bunded trays that can contain 110% of the volume of the hazardous substances. - All refuelling and any maintenance of vehicles will take place on impermeable surfaces. - Pollution will be prevented through basic infrastructure design and through maintenance of equipment. - Spill kits will be readily available on site. Employees and/or contractors will be shown to use the spill kits to enable containment and remediation of pollution incidents. - Environmental awareness training of contractor - Trigon will establish environmental awareness in employees and contractors 	On-going for all drilling activities	Project Manager Site supervisor

Activities	Potential Impact	Management and Mitigation Measures	Action Plan	
			Frequency	Responsible Parties
		<ul style="list-style-type: none"> - A PVC lined sump will be used for collection of oils and silt contained in the drilling water - Any spills will be contained and cleaned up immediately - Non-toxic and biodegradable drilling lubricant will be used 		
	Groundwater contamination	<ul style="list-style-type: none"> - Refer to management measures relating to contamination of soils. - Licenses in terms of the Water Resource Management Act (Act No. 11 of 2013) will be obtained for all drilled holes (not just boreholes). - Provide appropriate toilet facilities for the exploration workers on the site or agree with landowner to use certain facilities on the farm. 	On-going for all drilling activities	Project Manager Site supervisor
	Air quality deterioration	<ul style="list-style-type: none"> - Vehicle speeds will be limited to 40km/h on access routes to limit dust. - The movement of drilling related vehicles on unpaved access track will be on a small scale. - Water sprays can be used around the lay-down area when a drill-site is located near settlements. 	On-going for all drilling activities	Project Manager Site supervisor
	Noise generation	<ul style="list-style-type: none"> - Drilling will only be conducted during the day when drill sites are located close to inhabited homesteads. - Drilling plans and schedules will be discussed and agreed upon with land owners prior to initiation. - Vehicles will travel maximum 30 km/hour near houses/settlements. 	On-going for all drilling activities	Project Manager Site supervisor
	Land use	<ul style="list-style-type: none"> - Refer to land use management measures relating to drill site establishment (Table 3-1) 	On-going for all drilling activities	Project Manager Site supervisor
Water abstraction	Groundwater quantity	<ul style="list-style-type: none"> - Water use licenses in terms of the Water Resource Management Act (Act No. 11 of 2013) will be obtained for all boreholes. - Water levels will be measured prior to abstraction, during abstraction (daily) and after completion. Levels will be reported to land owners. - Should water be reached during drilling the landowners will be informed. Should the landowners wish it; the holes will be cased and left for use by the farmers (liability relating to the boreholes will then be transferred to the landowners). 	On-going for all drilling activities	Project Manager Site supervisor

TABLE 3-3: ENVIRONMENTAL MITIGATION MEASURES AND COMMITMENTS – RELEVANT TO ALL EXPLORATION ACTIVITIES

Activities	Potential Impact	Management and Mitigation Measures	Action Plan	
			Frequency	Responsible Parties
- All exploration activities	Social – provision of toilet facilities	- Provide appropriate toilet facilities for the exploration workers on the site or agree with landowner to use certain facilities on the farm.	On-going for all exploration activities	Project Manager Site supervisor
	Waste Management	- Waste generated will be handled in accordance with the contract signed with the landowner. - Suitable receptacles for waste disposal will be provided at appropriate locations on site. These receptacles will be clearly marked for different waste types. - Employees and contractors will be shown the importance of correct waste disposal as well as waste minimisation and recycling. - Waste will be removed from site and disposed of at a suitable licensed waste disposal facility. - Hazardous waste (including hydrocarbon contaminated material/soil) will be disposed of at a licenced hazardous waste disposal facility.		Project Manager Site supervisor

TABLE 3-4: ENVIRONMENTAL MITIGATION MEASURES AND COMMITMENTS – CLOSURE AND REHABILITATION

Activities	Potential Impact	Management and Mitigation Measures	Action Plan	
			Frequency	Responsible Parties
General closure activities: - Close drill holes (unless otherwise agreed with farmers) - Remove water from the sump and drip trays - Remove oils and silt from drip trays and store until disposal to permitted hazardous landfill site - Backfill the sump once it has dried out (dome to allow for subsidence) and plug borehole (unless an agreement is	Groundwater and surface water contamination	- In all areas where there is storage of hazardous substances (i.e. hydrocarbons), there will be containment of spillages on impermeable floors and bunded trays that can contain 110% of the volume of the hazardous substances. - All refuelling and any maintenance of vehicles will take place on impermeable surfaces. - Pollution will be prevented through basic infrastructure design and through maintenance of equipment. - Spill kits will be readily available on site. Employees and/or contractors will be shown how to use the spill kits to enable containment and remediation of pollution incidents. - Any spills will be contained and cleaned up immediately	Once- Closure of drill site	Project Manager Site supervisor
	Noise pollution	- Vehicles will travel maximum 30 km/hour near houses/settlements.	Ongoing	Project Manager Site supervisor
	Contamination of soils	- Refer to management measures relating to contamination of water	Ongoing and closure	Project Manager Site supervisor

Activities	Potential Impact	Management and Mitigation Measures	Action Plan	
			Frequency	Responsible Parties
in place with landowner for alternative uses) - Move drill core trays, ablution facilities, water bowser, stores and drill rig from the site - Dispose of any general waste to a permitted landfill site - Remove temporary fencing - Rip and plough compacted areas - Replace topsoil over disturbed area - Rehabilitate access track by ripping - GPS marker to identify drill site	Air quality deterioration	- Vehicle speeds will be limited to 60km/h on access routes to limit dust. - The movement of drilling related vehicles on unpaved access track will be on a small scale.	Ongoing	Project Manager Site supervisor
	Soil erosion	- Impacted footprints are to be raked and/or ploughed to encourage re-vegetation - Access routes will be ripped unless the land owners wish for them to remain. - A monitoring program will be implemented to establish re-vegetation progress - Agree on relevant compensation with land-owners where land used for hunting purposes is impacted	Starts at closure, continues for a pre-determined time (as stated in agreements)	Project Manager Site supervisor
	Waste management	- Decommission ablution facilities - Ensure that all waste generated during activities is removed from the site and disposed of appropriately	Once off	Project Manager Site supervisor
	Land use	- Land owners will be invited to carry out site inspections following rehabilitation in order to ensure that it has been carried out suitably.	Post-closure	Project Manager Site supervisor

4. References

SLR. 2014. Scoping Report and EMP for Kombat Copper's (Manila Investments) Exploration Activities on MLs 73B, 73C, 16, 9 and 21.