

ENVIRONMENTAL MANAGEMENT PLAN

Erongo Desalination Plant



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DOCUMENT COMPILED / **REVISED** AND APPROVED BY:

Werner Petrick and Sandra Müller
Namisun Environmental Projects and Development
PO Box 8127
Swakopmund, Namibia

Kaarina Thomas, QHSE Specialist
Orano Mining Namibia
25 Mandume ya Ndemufayo Street
P O Box 585, Swakopmund, Namibia

Acronyms

ECC	Environmental Clearance Certificate
EDP	Erongo Desalination Plant
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
HSE	Health, Safety and Environment
km	Kilometre
km/h	Kilometre per hour
km ²	Square kilometre
m	Metre
mm	Millimetre
Mm ³	Million cubic metres
MEFT	Ministry of Environment, Forestry and Tourism
DEA	Directorate of Environmental Assessment
Orano	Orano Mining Namibia
PPE	Personal Protection Equipment
STP	Sewage Treatment Plant

1 Introduction

1.1 AIM OF THE EMP

The purpose of this Environmental Management Plan (EMP) for the Erongo Desalination Plant and water pipeline to the Trekkopje Mine is to list the actions that will both mitigate and monitor the impacts relating to the operation and closure phases of the plant. Currently, the company Nafasi Water Treatment runs the desalination plant on behalf of Orano Mining Namibia (Pty) Ltd (i.e. OMN). While OMN carries the overall legal responsibility for EMP compliance, Nafasi is contractually obliged to meet all the requirements.

This EMP has been developed within the framework of an Environment Policy and is based on the original approved EMP of 2008, and the later, partially amended, versions of 2013, 2016 and 2019. The amendments were approved by the Ministry of Environment, Forestry and Tourism: Directorate of Environmental Assessment (MEFT:DEA). Once approved, this fifth version of the EMP will supersede the 2019 EMP that was approved by MEFT in May 2020, as part of the previous ECC renewal application, which will expire in May 2023.

The main objective of the 2019 amendment was to incorporate additional management and mitigation measures associated with a proposed new on-site sewage treatment plant (STP), while some new mitigation measures were added in the spirit of continuous improvement to ensure key issues assessed during the original ESIA were better addressed. Some of these additional measures now have to be revised again as explained in the accompanying cover letter and highlighted in the mitigation tables for ease of reference.

1.2 BACKGROUND

The French nuclear energy concern Orano owns the Trekkopje uranium project through its local subsidiary Orano Mining Namibia (Pty) Ltd. The Trekkopje project site is located within the Erongo region of Namibia, 70 km north-east of Swakopmund (Figure 1). Once in operation, the mine will exploit a large, low-grade uranium resource using an alkaline heap leaching process. To supply the necessary volumes of water for the heap leach process, Orano decided to construct a seawater desalination plant.

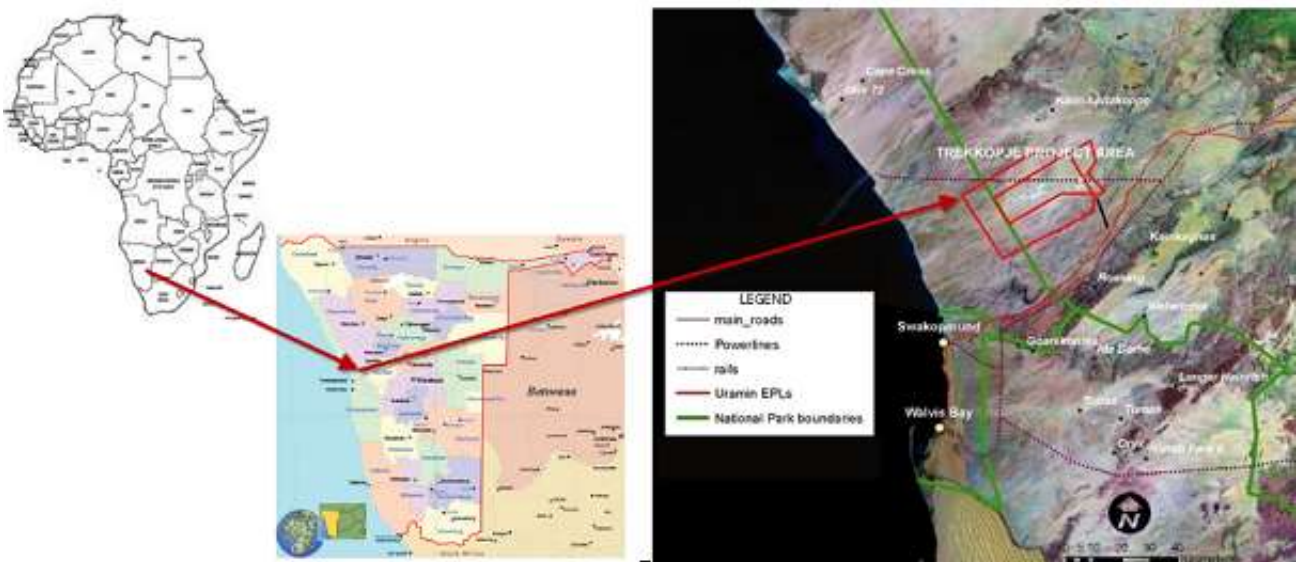


Figure 1 - Location of the Trekkopje project

The Erongo desalination plant (EDP) is situated at Wlotzkasbaken, 35 km north of Swakopmund (Figure 2). It can produce up to 20 million cubic metres (Mm³) of potable water per year at current capacity and could be

upgraded to 26 Mm³ within the existing buildings. There is a second seawater intake pipe and sufficient space to build another 20 Mm³-desalination plant on the same premises.

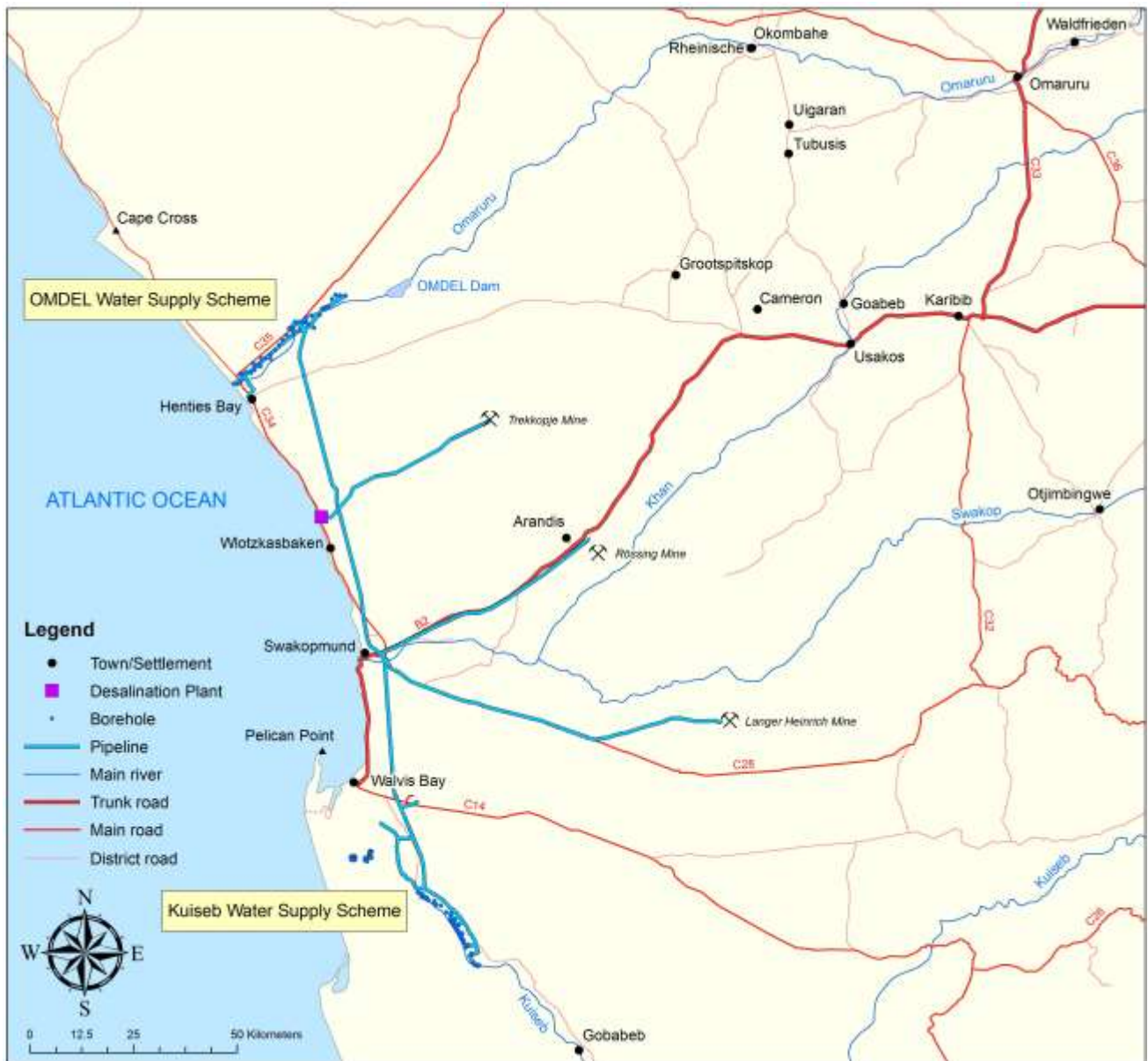


Figure 2 - Location of the Erongo Desalination Plant and Related NamWater Infrastructure

In July 2013, Orano placed the Trekkopje project under care and maintenance. Since then, the already constructed facilities have been kept in operating condition so that the 80% completed mine infrastructure can be started up as soon as there is an upswing in the uranium market.

To put the EDP to good use, Orano concluded an agreement with NamWater in August 2013 and has been producing up to 12 Mm³ per annum to augment the water supply to the other uranium mines and central coastal towns of Namibia, as there is a shortage of groundwater in the region.

1.3 ENVIRONMENTAL APPROVALS

In 2008, an Environmental and Social Impact Assessment (ESIA)¹ was completed for the construction, operation and ultimately decommissioning of the Erongo Desalination Plant (EDP). The ESIA, including an EMP, was approved by the MEFT:DEA and a clearance certificate was issued on 13 June 2008. During the same month, the environmental clearance certificate for the Trekkopje Mine was issued by the MEFT:DEA based on an approved EIA and EMP. The 2008 EMP for the EDP was amended and a new clearance certificate was issued in April 2013. The next amended EMP was approved with an ECC issued on 12 September 2016, while the currently valid ECC, dated 13 May 2020, approved the proposed 2019 amendments (see Appendix A) and the previous (November 2019) renewal application, which included an application for a name change.

Seeing that the current ECC will expire in May 2023, OMN will submit a renewal application together with this EMP. As part of this renewal application, minor changes have been made to the approved (2019) EMP commitments. These changes are highlighted in red in this document (i.e. 2023 EMP). The proposed changes to the relevant commitments have been reviewed by the marine biologist who conducted the Marine Ecology Specialist Study as part of the Original ESIA (in 2008), to ensure the original assessments are still taken into account and the revised commitments adhere to good practice in terms of seawater desalination (please refer to the cover letter).

2 Project Overview

When it was inaugurated on 16 April 2010, the EDP was the largest reverse-osmosis seawater desalination plant in Southern Africa. The plant owned by OMN is operated and maintained by Nafasi Water Treatment. At full capacity the EDP can produce 20 million cubic metres of potable water per year. This is made possible through the adoption of state-of-the-art technology including screen filtration, ultrafiltration, reverse osmosis, limestone contact and chlorination.

The pipeline to Trekkopje mine is 40 km long, with a diameter of 800 mm, and supported by three pump stations. This pipeline has been connected with NamWater's pipeline from Henties Bay to Swakopmund, so that Omaruru River groundwater and desalinated water are mixed while being pumped to the Swakopmund reservoirs, resulting in a lower salinity and hardness of the water supplied to all NamWater consumers. The volume to be produced by the EDP is determined in consultation with NamWater according to the day-to-day water demand.

Desalinated seawater is more expensive than groundwater, which has affected the water tariffs of coastal users. The major cost items are electricity consumption for reverse osmosis and replacement of ultrafiltration and reverse osmosis membranes. The membranes are prone to clogging during sulphur outbreaks, meaning that the plant has to be stopped under these conditions and NamWater has to increase production from its groundwater sources to meet the water demand.

2.1 CARE AND MAINTENANCE

From the middle of 2013, the Trekkopje project has been under care and maintenance. The mine's infrastructure is being maintained in good working order so that the mine will be able to start production when economic conditions become more favourable. The EDP continues to supply the mine with water, albeit at a reduced amount of approximately 20 000 cubic metres per annum. When Trekkopje Mine begins full-scale operations in the future, it will consume most of the water produced at the EDP. It is anticipated that by

¹ Environmental and Social Impact Assessment Plan for the proposed Trekkopje Uranium Project Desalination Plant, Turgis Consulting, 2008

this stage NamWater would have built their own desalination plant or the current plant has been extended to meet the expected demand.

2.2 OPERATIONS

Two seawater intake pipelines are anchored in a caisson, which is positioned 1100 m off the coast, and end at a pumping station on the beach. The intake openings are fitted with steel screens to keep out fish and other marine life larger than 40 mm. Smaller creatures such as immature shells and jelly fish, as well as coarse debris that may be sucked into the pipelines are separated through rotating screens with 60 micrometre openings and returned to the sea.

In the next step, ultrafiltration membranes filter out even the finest particles and plankton before the reverse osmosis process separates the seawater into pure, mineral-enriched potable water and a brine stream, which gravitates through an outfall pipeline 600 m into the ocean where a specially designed dispersion system ensures quick mixing and a return to the ambient seawater quality within ~20 m of the outlet. The ESIA predicted no major effects of the brine on marine life around the outlet. This has since been confirmed by monitoring.

The reverse osmosis process forces the water through semi-permeable membranes under high pressure. These membranes allow only water molecules to pass through, thus producing clean water, while the salts remain in the brine. After the reverse osmosis step the brine is still at very high pressure. This pressure is exchanged with the incoming seawater, directly recovering 98% of the energy that would otherwise be lost and thereby reducing the plant's electricity consumption by approximately 40%.

The final steps in the desalination process are limestone contact and chlorination. Water produced at the EDP is replenished with all the minerals the human body needs and is safe for consumption. Regular independent tests are conducted on site and at an external laboratory to ensure that the water complies with the Namibian quality standards.

2.3 CLOSURE

Desalination plants typically have a life span of about 30 years, while Trekkopje Mine is only expected to operate for a maximum of 10 years. Depending on the start of operation, the plant may still be in use after the mine has closed. When the EDP has to be closed, Orano Mining Namibia will follow the usual closure process for factories and consult its stakeholder to define post-closure environmental and social targets to work towards. The closure strategy for the Erongo Desalination Plant includes the following goals:

- To return the land as close as possible to its original condition;
- To have no liabilities at the end of operations; and
- To achieve cost estimates for closure within $\pm 15\%$ accuracy two years before closure.

The EDP is situated on land that falls within the Wlotzkasbaken peri-urban area. The plant infrastructure, i.e. buildings, pipeline, pump stations and service track belong to Orano Mining Namibia, while NamPower owns the 132-kV power line from the mine to the desalination plant and the two substations.

The objective of the closure programme will be to ensure the long-term safety of the former plant site by demolishing all the infrastructure that will not be required by a future land owner. Before commencement of the closure programme, key stakeholders will be consulted and a closure impact assessment will be carried out. Rehabilitation and clean-up activities will be completed and followed up by ongoing monitoring activities until the land has been relinquished.

3 Environmental Management

3.1 ENVIRONMENTAL POLICY

Environmental management at the Erongo Desalination Plant is guided by the Orano Mining Namibia environmental policy for 2021-2023 shown in the box below.

Orano Mining Namibia is committed to sustainable development and protection of the biophysical and social environment. Continuous improvement will be achieved through hands-on management and the impact of our operations will be controlled according to the mitigation hierarchy. The policy for the next three years will focus on four key objectives:

Maintain our facilities at a high level of safety to minimize impacts on the environment.

- Avoid, minimize or offset environmental impacts, including those on biodiversity, by implementing the environmental management plan (EMP).
- Carry out environmental impact assessment for any new projects and compile reports as required by the Namibian regulators.
- Rehabilitate the mine site at closure to meet the defined closure objectives and ensure that final site conditions are compatible with future land use.

Reduce the environmental footprint of our operation and minimize its impact on the biosphere.

- Set targets to lower our water and energy consumption and greenhouse gas emissions.
- Monitor the effect of our operations on air, soil, groundwater and surface water quality, and take steps to control emissions.
- Maintain an appropriate waste management system and reduce the volume of waste that is not recycled

Apply risk management systems and implement standards and safe work procedures to operate safely.

- Review the site safety assessment and management system regularly and when conditions change.
- Pay attention to contractors' environmental performance at the purchasing stage and while working on site.
- Share experience from incident investigations as part of standard practice and implement identified improvement programmes.

Maintain a dialogue with our regulators and comply with international standards.

- Use opportunities to engage with the authorities and comment on proposed new legislation.
- Contribute to mining industry organisations such as the Namibian Uranium Association and the Chamber of Mines.
- Follow the International Atomic Energy Agency guidance on uranium mine operation and closure.

3.2 ENVIRONMENTAL ASPECTS AND IMPACTS

The aspects and impacts of the EDP are summarised in Table 1 including significance ratings with and without mitigation. OMN has reviewed and revised the ratings originally identified in the ESIA's based on research findings and experience gained since 2008. The highest impact is positive, i.e. assuring the water supply for socio-economic development of the Erongo region. On the negative side, a previously not identified impact only appeared after the power line to the desalination plant was constructed: collisions of migrating birds such as flamingos with power cables. NamPower has addressed this impact by installing mitigation measures on

the Trekkopje bypass line in 2020. The most obvious negative impact arising from seawater desalination is the effect of brine salinity and process chemicals on marine life. Monitoring has confirmed the original ESIA's low significance rating of this aspect.

Table 1: Environmental Impacts and Significance Ratings for the EDP

Aspect	Impact	Significance without mitig.	Significance with mitigation
Atmosphere	Dust generation from site maintenance and traffic	L	VL
Atmosphere	Fume emission from transport and commuting	L	VL
Atmosphere	Air emissions from hazardous materials (e.g. chlorine)	L	VL
Soils	Pollution by sewage, hazardous materials or waste	M	L
Water	Water pollution from accidental spills	L	VL
Fauna	Impacts from noise or pollution	M	VL
Fauna	Bird collision with power lines (not in 2008 ESIA)	H	M
Flora	Habitat destruction through plant construction	H	L
Marine life	Water quality impacts caused by brine salinity	L	L
Marine life	Impact of chemicals discharged with brine	M	L
Marine life	Entrainment of organisms at the intake structure	M	L
Marine life	Flow distortion at discharge, effects of pipeline on natural sediment dynamics	L	L
Land use	Preclusion of other land use	L	L
Visual	Visual intrusion of plant infrastructure	M-H	L
Noise	Sound transmission to Wlotzkasbaken or tourists	M	VL
Social	Change of lifestyle at Wlotzkasbaken	H	L
Social	Alteration of tourists' desert heritage experience	H	L
Social	Increased traffic from commuting and deliveries	M	VL
Social	Positive impact of plant on water availability	+M	+H

Key: H = high, M = moderate, L = low, VL = very low, + = positive impact

The mitigation tables in chapter 5 of this EMP show the actions in place or to be implemented to achieve the least possible negative impact on the environment and maximise the positive economic impact of the project. More details on the current state of the environment, including EMP audits and monitoring results, can be found in the company's biannual reports to MEFT.

3.2 OBJECTIVES AND TARGETS

The Orano head office sets environmental objectives and targets for its Mining business unit that have been included in this EMP in addition to the mitigation measures identified in the ESIA where relevant. The objectives and targets are also documented in the OMN Environmental Strategy.

3.3 ENVIRONMENTAL MANAGEMENT SYSTEM

A set of policies, strategies and procedures have been developed to facilitate the on-site implementation of the environmental policy. Nafasi Water Treatment is ISO 9002-certified and has its own policies, strategies and procedures related to health, safety and environmental management, though the Orano requirements take precedence. The documents were drawn up based on the ESIA for the proposed Trekkopje Uranium Project Desalination Plant (Turgis, 2008).

They were updated and improved based on revised company guidelines and experience gained from the operation of the plant. Remedial actions and monitoring are agreed between the OMN and Nafasi. The main environmental aspects monitored are land surface impacts, including soil pollution and land use and water quality impacts on the marine environment. OMN reports the results biannually to MEFT.

No further monitoring of the social impacts aspects identified in the ESIA is required during the operational phase because: 1) traffic safety has been taken into account in the recent upgrading of the Henties Bay road to bitumen standard by constructing turning lanes to the desalination plant; 2) noise from the plant cannot be heard from the road which passes close-by and has no effect on the residents of Wlotzkasbaken; and 3) visual impact has been avoided by designing the buildings to blend well into the desert landscape. All the environmental mitigation and monitoring actions as described in the ESIA and this updated EMP will continue to be carried out in accordance with the applicable procedures.

3.4 COMMUNITY ENGAGEMENT

OMN has a community relations and corporate social investment programme that continues funding and supporting its community initiatives according to the commitments outlined in the social policy for 2021-2023 shown in the box below.

Orano Mining Namibia recognizes that the social and economic impact of its mining operations should result in tangible and sustainable benefits to neighbouring communities. Having mined the Trekkopje deposit the company aims to leave behind a legacy of physical, human and intellectual capital to the benefit of the nation.

Orano Mining Namibia will invest in community projects that are compliant with Orano's code of ethics and with Orano Mining's standard on community investments in four main focus areas:

- Economic development
- Access to energy and safe drinking water
- Health-related infrastructure, equipment and training
- Access to education infrastructure and training

The company will support community projects that have the potential to become self-sustainable to avoid creating dependence on the mine.

We promote active partnerships based on mutual commitment, trust and openness at local and national levels, while respecting cultural and customary practices.

Decisions on projects will be taken in consultation with our partner organisations and respond to their priority needs.

We will interact with communities in a socially responsible manner and keep them informed of new developments on the mine and plans for mine closure.

The company will comply with national and international legislation, regulations and standards (including the International Council on Mining and Metals sustainable development principles).

We recognize the limits of our community engagement with regard to political and social structures, and will identify marginalised members of the community for inclusion in development initiatives.

Our corporate social responsibility plan will be implemented to the extent possible during the care and maintenance phase, focussing on the development of small and medium enterprises to create employment in the Erongo region.

We will promote economic growth by preferentially employing local residents and local suppliers of goods and services, especially those from disadvantaged groups.

4 Mitigation Measures

The following tables describe the mitigation and monitoring measures implemented to address the expected environmental and social impacts during operation, closure and aftercare.

Table 4.1 General mitigation measures to be applied throughout the operational phase

ID	Activity / facility	Aspect	Impact	Mitigation	Responsibility	Frequency
01	Operating the plant	Environmental awareness	Various impacts on the environment and third parties	All new employees expected to work on site will be inducted and sign acknowledgement of the induction. In addition to health and safety the induction will include the main points of this EMP to ensure that all workers are trained in good environmental practices and made aware that the plant is located close to the Dorob National Park. Therefore, all activities are confined to within the fenced plant area and along the pipeline service track.	Nafasi Plant Manager	Ongoing (prior to new employees starting to work)
02				All employees are familiar with the emergency response plans and trained in emergency response through formal training sessions, toolbox talks, and regular drills.		Once off training, Ad hoc drills
03				Third party access		Strict access control is maintained and no visitors are allowed on site without the express permission of the Plant Manager.
04	Water use	Resource use	Wasting water	Ensure that the 'reduce, reuse and recycle' philosophy is applied to minimise wastage of water resources.		
05	Product water	Final product water quality	Impact on third party water users and human health	Conduct regular water quality tests to confirm that the plant continues to operate at its design specification. Undertake routine monitoring with in-line probes to ensure that water exiting the plant is fit for human consumption in accordance with the Namibian drinking water standards. Nafasi Management shall notify NamWater immediately of any water quality deviations, discontinue distribution and institute measures to correct the problem.		
06	Maintenance			Routine maintenance and repairs to be carried out to ensure that the desalination plant continues to operate in accordance with the approved design and visual impact mitigation measures.	Nafasi Plant Manager	Ongoing
07	Handling, storage and disposal of waste	Waste management (solid and liquid)	Incorrect management of waste and effluent causing visual impact (littering), soil and water pollution	Apply the waste hierarchy in order of preference, i.e. waste avoidance, waste reuse, waste recycling or reclamation, waste treatment and waste disposal.		
08				Littering, burying or burning of waste on site is prohibited. Waste disposal bins are emptied at appropriate intervals and waste is taken to the Swakopmund landfill. Any use of the Wlotzkasbaken landfill is prohibited.		
09	Treatment and discharge			The new sewage treatment plant to be operated in accordance with the user manual, EMP and DWA permit conditions. The required domestic and industrial effluent disposal exemption permit will be amended and kept up to date.		Ongoing

ID	Activity / facility	Aspect	Impact	Mitigation	Responsibility	Frequency
10	of domestic effluent			Route the treated effluent to the outlet stream for maximum mixing and dilution with the brine before being discharged into the sea.		Ongoing
11				Monitor STP effluent quality to ensure it meets Namibian standards for discharge to the environment.		As per permit
12				Pollution will be prevented through appropriate design and regular maintenance of the STP, apply constant monitoring to detect and contain any spills or leaks , clean up immediately.		Ongoing
13	Handling, storage and disposal of chemicals	Hazardous substances management, pollution	Contamination of soil, surface water due to spills, leakages, inadequately operating plant etc.	Store hydrocarbons in bunded areas and check tanks for leaks. Vehicles to be regularly serviced to reduce oil leaks. Used solvents, oils and grease to be kept in sealed containers and recycled or disposed of at the Walvis Bay hazardous waste site. Spill kits will be readily available on site. Employees and contractors will be shown how to use the spill kits to enable containment and remediation of hydrocarbon pollution incidents. Contaminated soil or absorbent must be taken to a registered hazardous waste site and disposal certificates must be kept on file.	Nafasi Plant Manager	Ongoing
14				Chemicals used to condition seawater for membrane treatment and for cleaning the membranes (e. g. antiscalant Vitec SR, hydrochloric acid, sulphuric acid, chlorine gas, caustic soda, sodium hypochlorite and sodium metabisulphite) must be stored securely in dedicated areas and handled in accordance with the relevant MSDS , standards and legislation. Pollution will be prevented through basic infrastructure design (e.g. bunding) and maintenance of equipment. MSDS are readily available and employees are aware of their content, especially first aid and spill response measures. Periodic checks for leaks from storage tanks or containers are carried out.	Nafasi Plant Manager	Ongoing
15				Dispose of empty containers as per the MSDS. Empty hazardous substances containers must either be taken to a registered hazardous waste site; disposal certificates must be kept on file.	Nafasi Plant Manager	Ongoing
16	Plant infrastructure	Visual management	Visual intrusion	Keep buildings well maintained to ensure that visual intrusion is kept to a minimum. Fencing will be inspected and maintained to ensure that it remains intact. Lighting to be maintained so that directionality is not affected by wear and tear and that adequate lighting is available at all times.	Nafasi Plant Manager	Ongoing
17				New STP to blend in with the existing desalination plant infrastructure.		
18				All materials should be stockpiled in a neat and orderly fashion in designated areas. Remove waste and obsolete equipment as soon as possible. Identify reuse or recycle options for used membrane assemblies to avoid disposal to landfill, e. g. return to the supplier.		
19	Operation, vehicles, general site activities	Air quality – dust	Soil, flora and fauna impacts	In the event of dust or noise-related complaints received from third parties, carry out further dust and/or noise monitoring and compare results with those obtained from monitoring in 2009-2018 (refer to 'complaints register' in Table 4.2)	Orano QHSE Specialist	When complaints are received
20		Noise	Public nuisance			

ID	Activity / facility	Aspect	Impact	Mitigation	Responsibility	Frequency
21	Seawater intake	Biodiversity (fauna and flora)	Impact on marine fauna and flora	Screens are fitted at the intake to block entry of fish and other self-propelled organisms; the intake flow velocity should not significantly exceed the peak ambient flow velocities of the Benguela current, longshore drift and wave action to ensure that self-propelled creatures can escape the intake current.	Orano / Nafasi Management	Design and operation phase
22				Continue using Vitec SR antiscalant because it has been specially developed for sea water application where biodegradability is important.	Nafasi Plant Manager	Ongoing
23				Ensure a water abstraction permit is in place and comply with its conditions.	Orano / Nafasi Management	Ongoing
24				To reduce the consumption of chlorine as a marine growth inhibitor, pigging of intake and discharge pipelines should be regularly undertaken.	Nafasi Plant Manager	At least annually
25	Brine discharge			Ensure that a discharge permit is in place and comply with its conditions.	Orano QHSE Specialist	Ongoing
26				Discharge brine into an open tank to ensure aeration when sodium metabisulphite is used as a neutralizing agent for chlorine.	Nafasi Plant Manager / QHSE Specialist	Ongoing
27				Reduce the dosage of treatment chemicals per cubic metre of water treated to the minimum necessary to maintain the optimal performance of the RO system. Discharge all used chemicals into the brine tank for neutralisation and dilution. Any significant increase in dosage or introduction of a new chemical to be approved by the QHSE Specialist and OMN Management.		
28				Maintain the diffusers on the brine discharge system to dilute the brine concentration to the seawater background concentration within 30 metres from the discharge point.		
29	Effluent quality monitoring	Seawater quality	Deterioration of quality due to brine salinity and discharged pollutants	Real-time-monitoring: Where possible, probes are positioned on the seawater intake and the brine discharge streams to provide real-time data. Otherwise samples are taken and analysed on site on every shift to gather data on volumes, electrical conductivity, dissolved oxygen and other relevant parameters. Where anomalous readings are detected in these indicator readings, an investigation is initiated, and additional water samples are taken for laboratory testing to determine the underlying cause and identify corrective actions.	Nafasi Plant Manager	Ongoing
30				Physiochemical monitoring of the brine: Collect brine discharge samples every six months for analysis at an external laboratory to confirm that the plant is operating within its expected design parameters and monitor the concentration of key parameters such as nutrients and heavy metals after dilution of the brine annually at a distance of 30 m from the outfall to ensure it does not exceed the average annual background range of values measured in the seawater intake.		Six-monthly, annually

ID	Activity / facility	Aspect	Impact	Mitigation	Responsibility	Frequency
31	Marine environment monitoring	Biodiversity (fauna and flora)	Impact on marine fauna and flora	Monitor the salinity of seawater at the edge of the mixing zone (i.e. 30 m from the discharge point). In the absence of Namibian seawater quality standards comply with the ANZECC 2000 limit for salinity: <i>“Low-risk trigger concentrations for salinity are that the median (or mean) salinity should lie within the 20%ile and 80%ile of the ambient salinity distribution in the reference system(s).”</i> <i>Iron: “Keep the ferric chloride dosage below the 2008 EMP limit of 8 mg/L, evaluate performance against actual concentrations measured in monthly brine samples.”</i>	Orano QHSE Specialist	Annually throughout operations
32				The oceanic water quality monitoring programme will include ad hoc monitoring of the marine environment for changes whenever divers inspect the intake and outfall facilities. Results will be reported to Orano immediately after an inspection and action taken if negative impacts are detected.		
33	Operation of plant and pipeline		Impact on terrestrial fauna and flora	Avoid the presence of open water as this could attract wildlife and insects. Fix water leaks (including leaks from the water pipeline to the mine) promptly.	Nafasi Plant Manager	Ongoing
34	Employees, contractors and visitors			Poaching and setting of traps is strictly prohibited and anyone found poaching will be prosecuted.		
35				Snakes, scorpions and bees are not to be killed, unless they pose an immediate danger to human safety, rather vacate the area and remove wildlife to a safe place.		
36	Driving on the pipeline track to the mine	Traffic management	Impact on land, fauna and flora	Only the designated service track along the pipeline may be used for inspection of the pipe and power lines. Enforce the speed limit of 70 km/h.		
37			Traffic safety and access control	Signage to be inspected periodically and maintained to ensure that it is visible and legible.		

Table 4.2 Mitigation measures relating to socio-economic activities to be applied throughout the operational phase

ID	Activity	Aspect	Impact	Mitigation	Responsibility	Frequency
01	Local employment and economic development	Local employment, sustainability of the local economy	Benefits for local communities and suppliers	<p>When employing an operator for the EDP, include the following contract conditions:</p> <ul style="list-style-type: none"> - Give preference to locals when filling vacancies. - Abide by the conditions of the Labour Act (No. 6 of 1992) and the Affirmative Action (Employment) Act No. 29 of 1998 and later versions. - Promote development and career progression of the workforce through training. - Mitigate the economic, psychological and social impacts of retrenchment on the workforce. - Promote local procurement and give preference to local service providers 	OMN Management	When employing a new operating contractor
02	Community relations	Promote transparency and build relationships	Stakeholder concerns and misperceptions about EDP impacts	Implement a system to share information, keep in regular contact with all stakeholder groups and record feedback.	Orano Communication Consultant	Ongoing
03				Keep a register of public complaints at the OMN office in Swakopmund, promptly address and follow up complaints and give feedback to members of the public.		

Table 4.3 Mitigation measures to be applied during closure

ID	Activity	Aspect	Impact	Mitigation	Responsibility	Frequency
01	Closure vision	Sustainable operation	Socio-economic impact	The preferred option at mine closure is for the desalination plant to be handed over to another operator who will continue using it to supply water to the region. If that is not possible the plant will be decommissioned and the land rehabilitated as close as possible to its original condition.	Orano Managing Director	5 years before mine closure
02	Infrastructure removal and site rehabilitation	Land surface disturbance	Habitat loss	All infrastructure i.e. desalination plant, desalinated water pipeline, booster pump stations and service track will be removed unless an alternative use has been identified. On the marine biologist's advice, the inlet and outfall pipelines will be left in place as they are already covered with a stable fouling community and ripping them up would cause impacts that are best avoided. The presence of the pipelines themselves underwater should not be a significant issue.	Orano QHSE Specialist	During closure plan preparation
03				Cut-and-fill areas must be backfilled and graded to resemble the original landscape forms. Compacted areas and roads are to be ripped before smoothing out the surface. Restore the hydrological drainage pattern as far as possible.		
04		Air quality – dust	Soil, flora, fauna impact	Dust control measures must be applied during demolition and restoration work.		
05		Non-hazardous waste management	Pollution	Steel and reusable non-hazardous materials to be salvaged and sold. Non-hazardous waste that cannot be recycled to be taken to municipal landfills. Concrete foundations and buried pipes to be removed. Building rubble may be backfilled into the excavation to restore the original site profile.		
06		Hazardous waste management	Pollution	Demolition sites to be inspected for hydrocarbons and chemicals. Any hazardous materials and chemicals to be returned to suppliers or taken to the hazardous waste facility in Walvis Bay. Remediate all soil pollution.	Demolition contractor	During closure
07	Aftercare	Land surface and biodiversity	Effective restoration	Monitor site stability and effectiveness of restoration measures, as well as ecological functioning over several years after closure.	Orano QHSE Specialist	3 years after closure

Appendix A –Environmental Clearance Certificate

ECC – 00564 Serial No: v8PoGg564



REPUBLIC OF NAMIBIA
MINISTRY OF ENVIRONMENT, FORESTRY 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

Orano Mining Namibia (Pty) Ltd
P.O. Box 585, Swakopmund

TO UNDERTAKE THE FOLLOWING LISTED ACTIVITY

Operations of Orano Desalination Plant in Swakopmund, Erongo Region

Issued on the date: **2020-05-13**
Expires on this date: **2023-05-13**

(See conditions printed over leaf)

This certificate is printed without watermark or alterations



ENVIRONMENTAL COMMISSIONER

