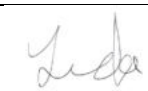
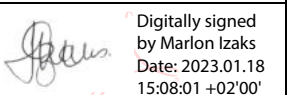
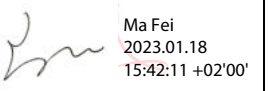
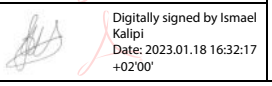
Husab Mine

Bi-annual Environmental Report for Swakop Uranium's Husab Mine and Associated Linear Infrastructure

Period of: January - July 2022

DOCUMENT INFORMATION

Subject:	Bi-annual Environmental Report for Swakop Uranium's Husab Mine and Associated Linear Infrastructure for the Period of January - July 2022				
Ref. No.:	SU NO. 2023 – 011				
Sent to:	Ministry of Environment, Forestry and Tourism : Directorate of Environmental Affairs				
Drafted by:	James Mutenda	**Signature**		**Date**	18/01/2023
Environmental Superintendent:	Marlon Izaks				18/01/2023
Head of Department, SSHER:	Ma Fei				18/01/2023
Approved by:	Ismael Kalipi				18/01/2023

LIST OF CONTENTS

1. INTRODUCTION

Swakop Uranium (Pty) Ltd (SU) holds ML171 for the Husab Uranium Mine. The mine is situated in the northern most part of the Namib Naukluft National Park (NNNP), about 12 km south-east of Arandis. The Husab Mine will potentially be the second largest “uranium only” mine in the world. Some 15M tonnes of ore will be mined per annum and will be processed on site to produce uranium oxide powder (U_3O_8) for export from Walvis Bay.

Taurus Mineral Ltd (Taurus) of China owns 90% of Swakop Uranium, with Epangelo Mining Company Limited, a Namibian-state owned mining company, having a 10% interest in Swakop Uranium.

This bi-annual environmental report covers environmental aspects of activities conducted by Swakop Uranium on ML 171 and associated linear infrastructure for the period January until end of July 2022. It reports on Swakop Uranium’s general environmental management and reflects operational and contractors’ environmental performance.

This report also describes progress regarding the construction, exploration and mining operational activities associated with the Husab Mine and process plant as well as the linear infrastructure. The information in this document is based on data received from the relevant Swakop Uranium departments and stakeholders.

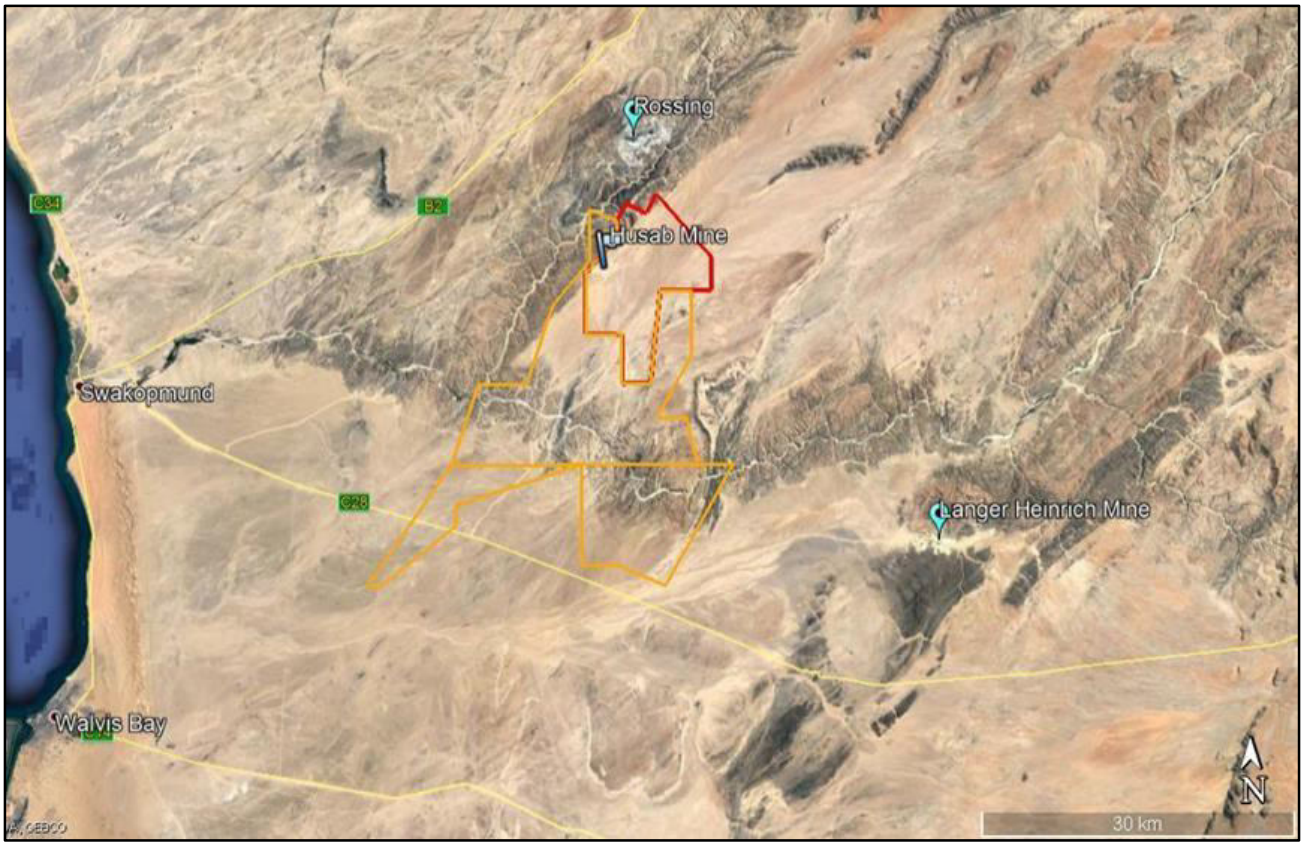


Figure 01: Locality map indicating the Husab Mine Site in correlation with surrounding infrastructure and neighboring mine sites and towns.

2. LOCAL SETTING

The Husab Mine is situated within a unique area of the Namib Naukluft National Park (NNNP) and in close proximity to the Dorob National Park (DNP), about 40 km east of the town of Swakopmund in the Erongo Region of western Namibia.

The mining license (ML 171) covers an area that lies between the ephemeral Swakop and Khan rivers (Figure 2). The Khan River is the main tributary to the Swakop River and their confluence is situated approx. 13 km southwest of the site. A surface water divide splits the area so that part of the site drains towards the Khan River and part drains via a number of small natural water channels (washes) towards the Swakop River.

The site is located on sand and gravel plains comprising alluvium that has variably cemented through calcretisation, although this cover falls away along a northeast-southwest trending scarp line, as the terrain drops down to the Khan River. To the northwest of the scarp and to the very south of the site (where the plain drops down to the ephemeral rivers), water erosion has formed a Badlands environment showing elements of extreme topography, cut by deep river valleys. Several dolerite dykes are intruded that form ridges (some rising 70m above the gravel plains). The slope of the catchment area is generally 1:125 (0.8%). The slope steepens within the mine site area to 1:110 (0.9%) (AQUA TERRA, 2010).

3. PROGRESS OF ACTIVITIES

1. PLANNING & PROJECTS

See below information for the projects implemented for the reporting period: **Table 01: Major projects list**

No.	Project Name	Project Description (brief)
1	River Diversion Channel	Construction completed
2	New water pond	Construction completed
3	Construction of a Skyway	Still ongoing

2. OPERATIONS

Environmental Clearance Certificate (ECC) and Environmental Management Plan (EMP) Status

During the reporting period, all Environmental Clearance Certificates were valid, no renewals required. The construction of the river diversion channel due to the waste rock expansion and new water pond took place during the reporting period while the construction of a Skyway is still ongoing.

Processing Plant

1. **Production**

Total tones mined for January – July 2022 was at 51,762,630t for both pit zone 1 and 2 inclusively. After struggling to meet production targets in Q1 and Q2. Low Lights/ challenges which are referred to as areas of concern which need improvement immediately, even though 84 Injury free days were recorded, the Mining department needs to improve on equipment damages. The water and electricity consumption are detailed below.

Water inflow to site for the reporting period was 4,659,456m^3 which is slightly more than that of the previous year which was 3,644,011m^3. Power consumption was 144,735,122.51kWh.

2. Tailings Storage Facility General Operational Feedback

A large operational focus currently is on the tailings storage facility for the Processing Department, particularly on the seepage system, decant return system, wall slope stability and improvement projects. This involves involvement and guidance from an external engineering specialists from SLR Environmental Consulting. Containment and rehabilitation of spillages from the seepage system is ongoing. Weekly Emergency Plan updates are sent out to key personnel involved with the operations and compliance of the facility.

The following key actions were raised for Husab Mine to execute to minimize the solution seepage of the main starter wall, particularly on the western wall in the vicinity of SP-004:

- Cycle the deposition to deposit in thin layers (~ 250mm±50mm) which has been Implemented and is maintained.
- Improve availability and reliability of the booster station pumps, currently all spare parts were procured.
- Deposit slurry along the causeway using one of the decant lines to push the solution pool towards the decant towers which has been successfully implemented, mill waste materials also used to construct East and West wings to concentrate the decant pool in the center of the dam.
- Unblock all blocked or clogged underdrains, which has been successfully implemented except Manhole MH06.

- Drill a series of dewatering boreholes on the TSF Wall and discharge to the nearest drain, 27 seepage boreholes successfully drilled to keep the edge of the starter wall embankment dry.
- Procure additional pumps for seepage and upgrade seepage return system. Seepage Redundancy System 71% complete as follows:

    - 2020-SP-002A Complete.
    - 2020-SP-002B Ongoing.
    - 2020-SP-003A Complete.
    - 2020-SP-003B Complete.
    - 2020-SP-004A Complete.
    - 2020-SP-004B Complete.
    - 2020-SP-004C Ongoing.

The following actions are assisting to improve the water balance across the plant and particularly for the TSF:

- Commissioned the 3rd line from return water dam to the decant tank, this will improve decant return from 750 to 1 200m^3/hr which is completed. Average decant return currently at 1 200m^3/hr.
- Fast track liner repair jobs to allow for deposition flexibility and optimization. All liner repairs completed. All deposition points are available on TSF Line 1 except W2, W3 & W4 which are next to the naked liner. All deposition points are available on TSF Line 2 except E3, E4, E5 & E6 which are next to the naked liner. Deposition on the naked liner will occur hydraulically from within the dam and not from these deposition points.
- The plant to be operated at high throughput rate as much as possible to minimize solution losses to the TSF and reduce Raw Water intake. Solution losses to TSF reduced from 1900 m^3/hr to 1600 m^3/hr.

- Review solution measurement points and install flowmeters in identified areas. This should help in improving the water accountability and will lead to better solution management. 50% of the flowmeters has been installed.

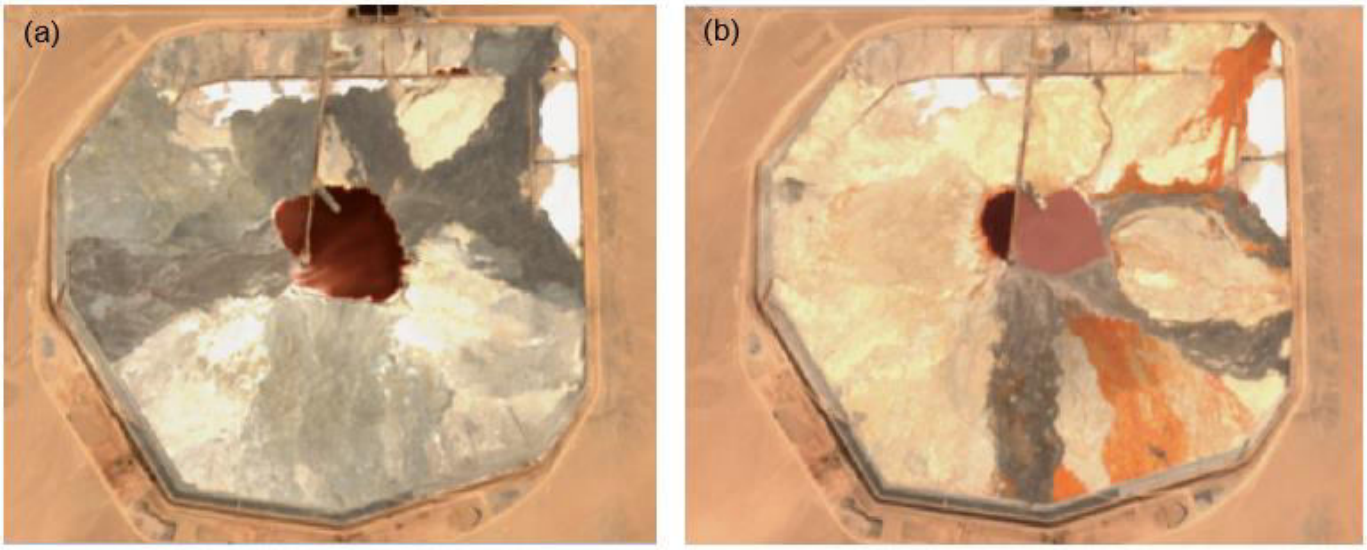


Figure 02: Tailings Storage Dam Pool Control (a) Quarter 1 2022 & (b) Quarter 2 2022

Decant pool size decreased from 35 to 25 Hectare during this period, target is less than 5 Hectare

Telecommunication Tower(s) and Power Line Infrastructure(s)

The Telecommunications infrastructure and Power line at the Husab Mine has been maintained well according to the ECC and EMP requirements. Various measures are continually enforced to ensure there are no animal fatalities or negative impacts on the environment. Routine monitoring surveys and/or inspections within each quarter are conducted by SU Environmental staff personnel of these sites. No incidents were recorded for the Telecommunication Tower(s) and the Husab – Lithops Sub-Station power line for the period under review. Various earmarked 33kV power line structures on site were rerouted underground, particularly at crossings. This improvement project is still ongoing.

3. MINING

Mining Operations performance was affected in the first half of 2022 by continuous operations (CONTOPS) stoppage in April and May. Total production was 4% lower than budget, however mined ore tons was 2% higher, which was achieved by the concerted effort in June to increase the stockpiles and de-risk ore feed to the processing plant.

Emulsion Manufacturing Plant

Like many other mines, SU's emulsion manufacturing plant at Husab Mine stores and then mixes relatively inert chemicals (ammonium nitrate and sodium nitrate) and oils (used diesel and machine oil) to produce an emulsified product for use in blasting. The product from the plant is a non-explosive yellowish paste. It was projected that during the initial three years of operation the Husab Mine will require 66 325 t of bulk explosives and 622 568 units of explosives accessories. At peak production the project will consume 52 262 t of bulk and 488 063 units of explosives accessories per annum.

The emulsion plant is used by our blasting contractor, Beifang Mining, which is used to manufacture emulsion for our open pit blasting activities. Drill and Blasting activities continued as per normal during the reporting period.

Pit Dewatering

The abstraction permit No.11 523 for pit dewatering and dust suppression purposes was issued on the 14 October 2020. Quarterly reporting is conducted as required. During the first half of 2022 the operations dewatered/abstracted 472 Kiloliters (472 Cubes) from the pit and the water was mainly utilized for dust suppression.

River diversion project

Swakop Uranium (SU)'s mining department embarked on the redesign the Waste Dump facility at which required extending the footprint area on the eastern side of the waste dump. The existing Waste Dump facility with a footprint of 6.5km^2 was approved following the 2013 Environmental Impact Assessment (EIA). The extended footprint will cover across a 5km reach of the Husab River (an ephemeral drainage line) which will reduce the dump height from 270m to 150m. the benefits of these are:

1. Ensuring geotechnical stability increasing the waste dump footprint and reducing the height.
2. Improving equipment productivity, production & fuel usage (reduce carbon footprint).
3. Reducing visual & dust pollution and surface washing.

Figure 1: The Husab Waste Dump Amendments

In June 2021 the Husab operations Environmental Management Plan was amendment to allow for the existing river to be diverted to accommodate the expansion of the waste dump footprint. The Construction of river diversion commenced in June 2022 and continued into the second half of the year.

Trolley Project - Trial

The trolley line project was initiated with the aim to reduce diesel costs by reducing diesel consumption and reducing the operations carbon footprint by switching the Haul trucks engines from diesel to electric power when going up the ramps installed with Trolley assist infrastructure.

For the period January - July 2022 the project was still in phase 1 (one) of commissioning which involved identification and installation of 4 trucks to install the hardware, training of the relevant stakeholders and all preparatory work. The second phase of the commissioning scheduled for the second half of 2022 involves the actual commissioning of the trucks on the trolley assist.

4. WORKFORCE, HOUSING & TRAINING

1. CURRENT WORKFORCE

Swakop Uranium is the second largest employer in the Namibian mining industry, closely aligned with the job creation target as per the Namibian Government National Agenda. The company has under 2000 contractor related staff, however not all of this workforce is on the mine site on a daily basis. The permanent contractor staff amounts to approximately 400 employees.

2. HOUSING

SU business partner, Welwitschia Catering Services, has been assigned to manage and maintain the Construction Camp. This includes meal preparations which all employees have access to during lunch periods.

SU acquired approval from the Minister of Environment, Forestry and Tourism, for an extension to operate Husab Village for until March 2023.

3. TRAINING & AWARENESS

Swakop Uranium continues to maintain a weekly training schedule, which includes training for both SU and Contractor employees. The Training Section trained in total 1796 SU and 1592 Contractor employees received full induction and 1570 refreshers in 2022.

All staff are required to undergo annual SSHER Refresher inductions, which was conducted in January 2022.

Staff who do not attend the SSHER Refresher inductions training access to site will be blocked.

For each month in the year, an Environmental Slogan was sent out mine wide and to all contractors. All slogans are shared at all safety platforms and training records are kept as proof of details shared.

5. GENERAL ENVIRONMENTAL MANAGEMENT

1. ENVIRONMENTAL SECTION

At the end of the reporting period, the Environmental Section had 6 day-shift workers on permanent employment and three vacancies. The Senior Environmental Officer, Environmental Field Assistant as well as the Environmental Superintendent. The Section has two main functions, being; Compliance Monitoring and Management, and Biophysical & Biodiversity Monitoring and Management.

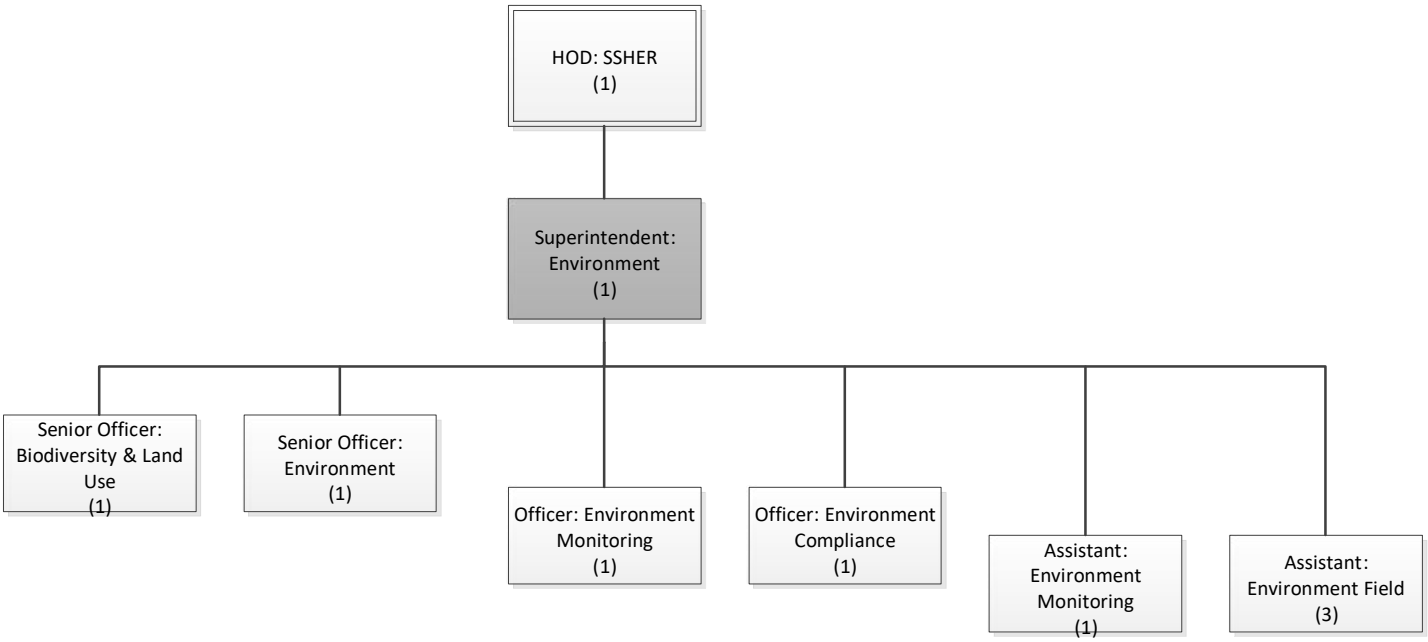


Figure 04: Organogram depicting the structure of the SU Environmental Section under SSHER

2. ENVIRONMENTAL MANAGEMENT SYSTEM

- Swakop Uranium has successfully implemented the certified Integrated Management System (IMS) to ensure that the quality of our products, company performance, personnel health and safety, environmental protection are in line with the Company's strategic objectives.
- Swakop Uranium is ISO 14001:2015 (Environment), ISO 9001:2015 (Quality) and ISO 45001:2018 (Health & Safety) certified.
- Concluded surveillance audits for ISO 9001:2015 (Quality) and ISO 14001:2015 (Environment) standards. Have also successfully transitioned from OHSAS 18001:2007 to ISO 45001:2018 (Occupational Health and Safety) and received ISO 45001:2018 certification during the month of May 2021 amidst these trying times.
- Due to the COVID-19 pandemic situation continuing in the country, no systems related or ICAM training was provided during the reporting period.

3. AUDITS & INSPECTIONS

In accordance to the SU Environmental procedures, a total of 3 internal environmental audits per quarter and 12 internal environmental inspections per month, are to be conducted. These are distributed amongst the section and also used as a tool to develop the skills with regards to environmental compliance of the junior positions within the Environmental Section at Swakop Uranium. Visible Felt Leadership inspections with End User Departments are another tool that is used to check compliance in the field to the EMP(s). Daily informal site inspections are also carried out. Corrective actions for deviations are implemented by the respective departments and contractors, with the Environmental Section facilitating the process. The formal inspections planned for 2022 as per the schedule for the reporting period was influenced by the, staff distribution and vacancy within the Environmental Section team.

Due to the potential risks associated with the Tailings Storage Facility, weekly inspections and site visits are conducted between the SSHER and operational teams however, the frequency of the inspections has decreased due to the controls in place. Areas of concern, recommendations and follow ups on actions are reviewed. There continues to be a large focus on the TSF, with constant engagement regarding the areas of improvement to be implemented as per the emergency action plans developed for the high risk areas of concern. The Engineering Consultant, SLR Environmental Consulting is also readily involved. Some of the repeat findings for the reporting period pertains to the following aspects; spill management and resource wastage.

6. ENVIRONMENTAL MANAGEMENT PERFORMANCE

1. ENVIRONMENTAL INCIDENT SUMMARY (INTERNAL & EXTERNAL REPORTING)

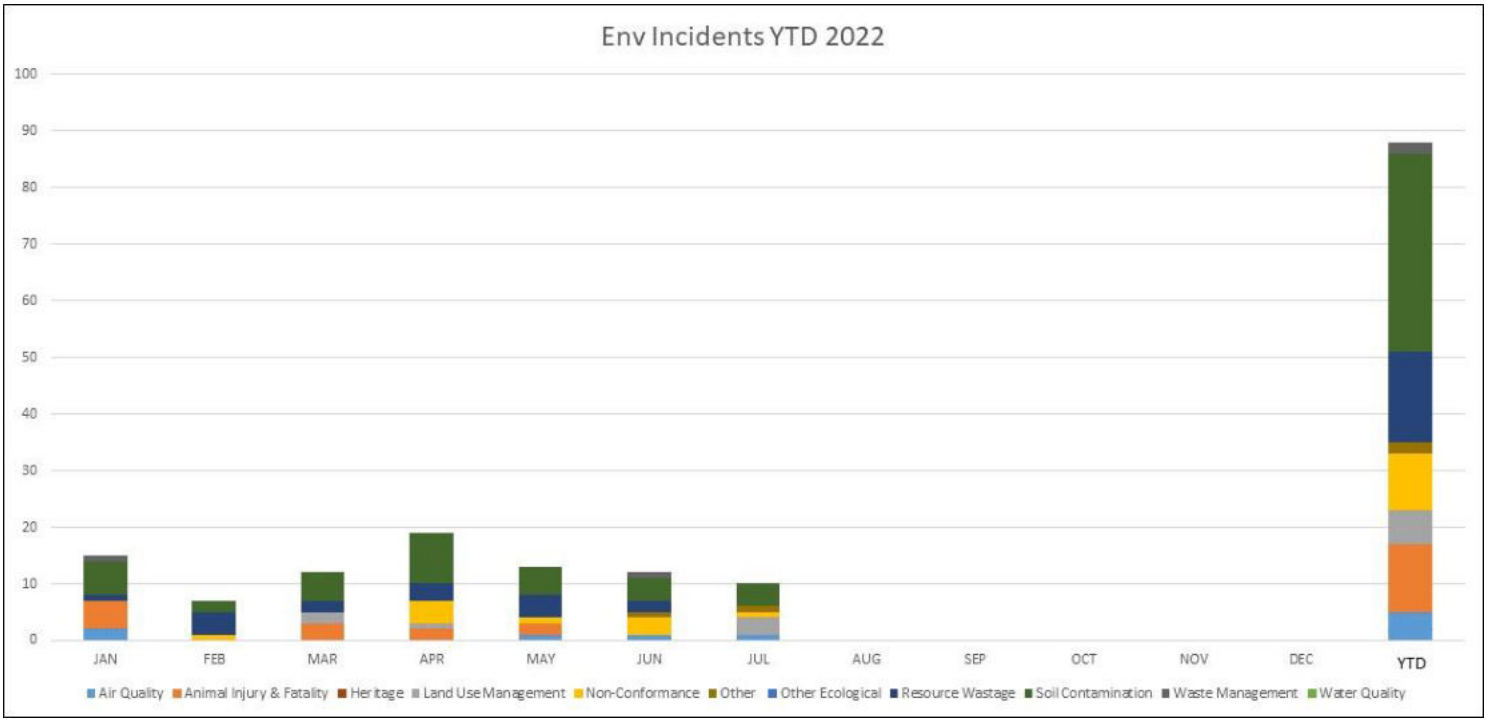


Figure 05: Incident Summary for all incident levels per Category/Type for January – July 2022

Most of the internal environmental incidents recorded year to date (YTD) in Figure 5 above pertain to lower level incidents that are contained to the local incident site (Level 1). At the end of July 2022, 88 incidents were recorded. The majority of internal incidents relate to soil contamination events, followed by Resource Wastage. Soil Contamination incidents mostly relate to unexpected equipment failure/damages, pipe bursts and infrastructure overflows. The majority of the animal deaths occurred on the permanent access road. All fauna related incidents are reported directly to the Namib Naukluft National Park and Dorob National Park Wardens in a quarterly animal summary report and immediately for all larger fauna incidents. All reportable incidents to government are further elaborated on in the section below.

2. FEEDBACK ON EXTERNAL REPORTABLE INCIDENTS (LEVEL 2 OR 3)

The following Level 2 environmental incidents were recorded during the reporting period.

14/06/2022 Drone found operating over PAR

1. level 2 - Illegal drone operation (OOC) on PAR

7. RESOURCE USAGE

Table 02: Total Consumption per Resource listed for January – July 2022

Diesel	31,318,264.81	liters
Water	4,659,456	m^3
Electricity	144,735,122.51	kWh

Resource usage calculations are indicative of total consumption for all activities under Swakop Uranium. The water and electricity figures indicates an increase in consumption compared to last year.

8. ENVIRONMENTAL MONITORING

1. AIR QUALITY

Swakop Uranium conducts dust and passive gaseous monitoring which is analyzed and interpreted by Airshed Planning Professionals (Pty) Ltd & Skyside. This section reports on dust fall, thoracic particulate matter (PM10/2.5), passive gases (VOCs, HF, NO_2, SO_2) and acid mist concentrations.

Dust fall is measured through the collection of fallout dust buckets and reported on a monthly basis as mg/m²/day. The monitoring network comprises of 35 single dust fall units, with an internal investigation ongoing for the area around the Primary Crusher and ROM. The dust fallout rates are screened against the South African National Dust Control Regulations (NDCR) of 600 mg/m²/day for residential areas and 1 200 mg/m²/day for non-residential areas. Containers of a standard size and shape are prepared and sealed in the laboratory and then opened and set up at appropriately chosen sites so that particulate matter can settle into them for periods of 30 ± 2 days.

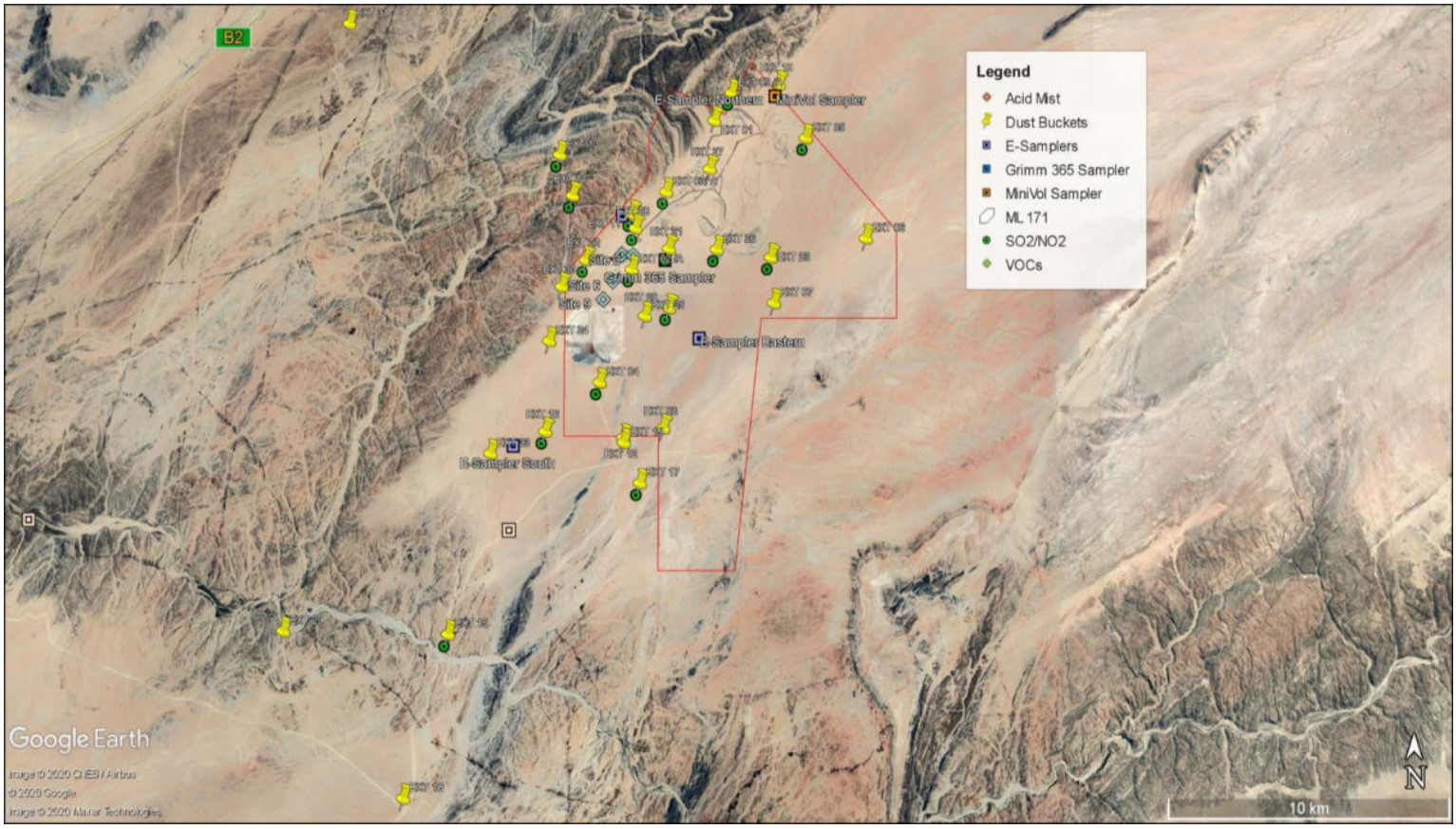
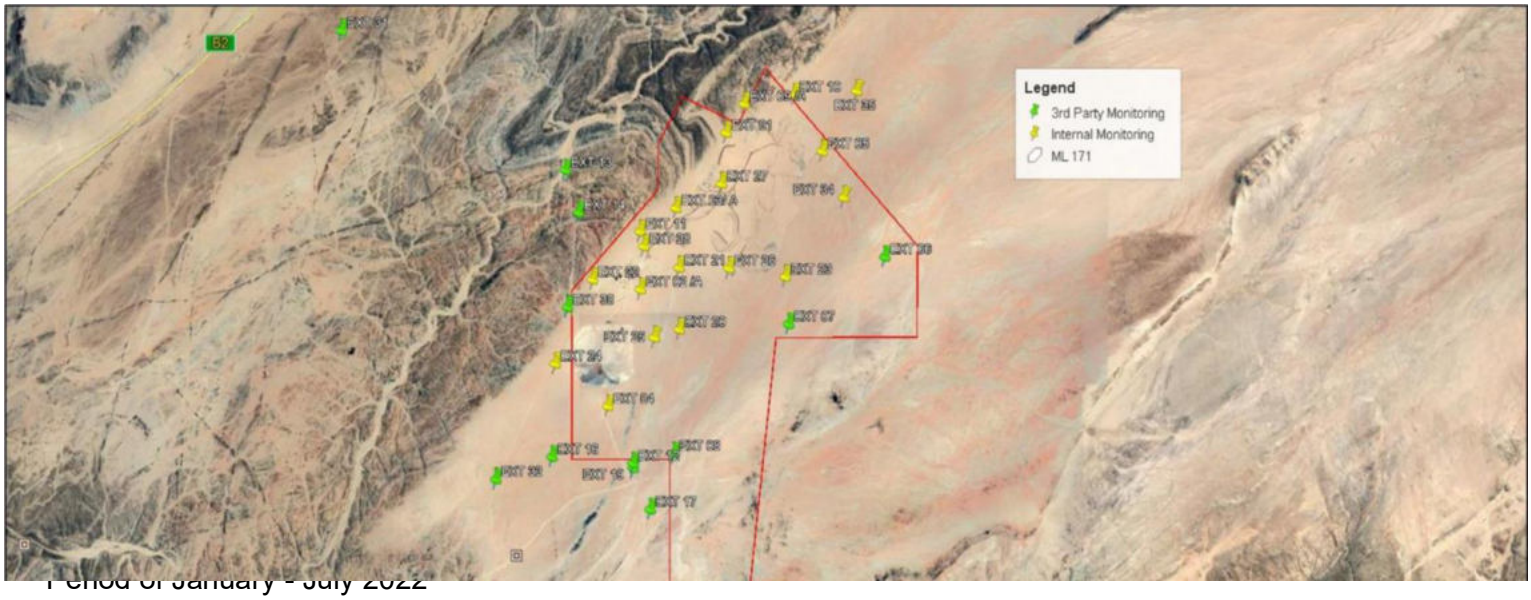


Figure 06: Air Quality Monitoring Network/Points and Type of Monitoring

Figure 07: Dust Fall out Internal Monitoring and Third Part Compliance Monitoring locations



PM10 Concentrations

Data availability on PM10 from the three E-Samplers 100% for all the months where PM_{10} was available (April to June 2022). It should be noted that data from west E-Sampler showed unrealistically low concentrations from the 1st of June 2022, which are potential erroneous records. PM10 concentrations from the E-samplers were adjusted by multiplying the calculated K-factors.

Table 03: Compliance summary of E-sampler data

E-Sampler Location	Data Availability	Maximum Daily Average (µg/m³)	6-Month Average (µg/m³)	No of recorded daily exceedances over 6-months
AQO	%	N.A.	75 µg/m³	4 days per year
North	90	167	40	14
East	100	176	45	22
South	10	4 858	1 095	12
West	91	147	51	37

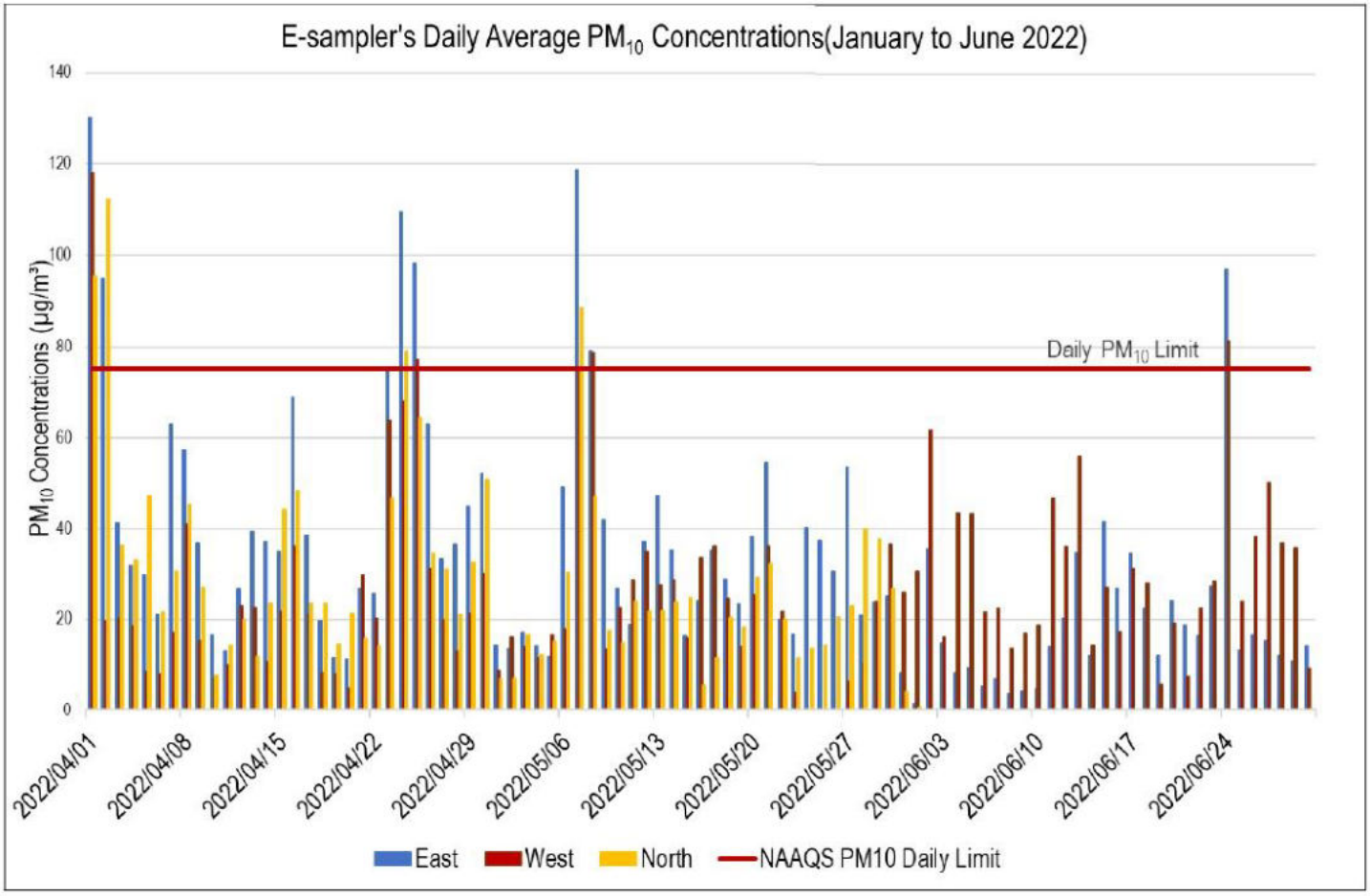


Figure 06: Daily averages of PM10 concentrations as recorded by the E-samplers

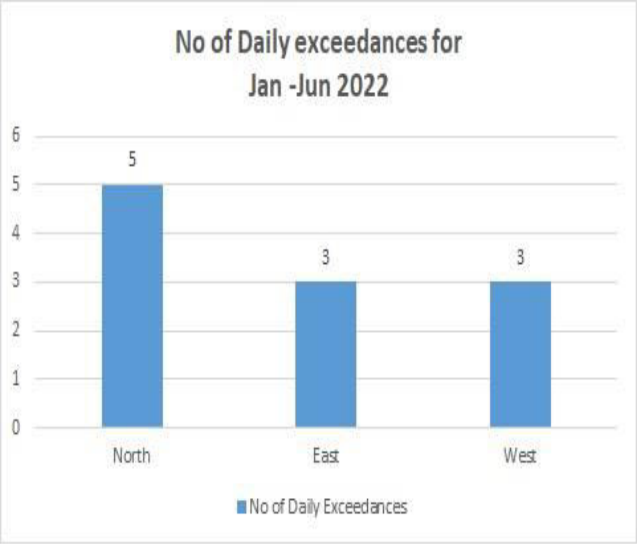


Figure 07: No of daily PM10 Exceedances for 2022

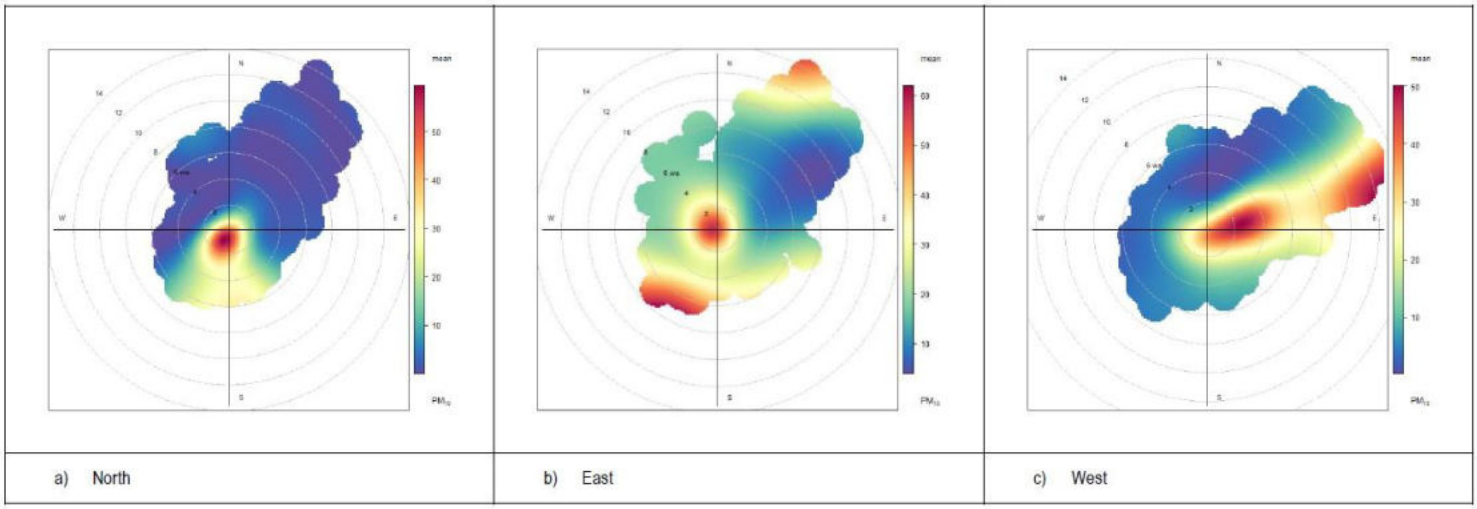


Figure 08: Polar plots of daily average PM10 concentrations as a function of wind speed and direction

- North E-Sampler, higher concentrations are recorded at low wind speeds around the location of the E-sampler and to the south.

- East E-Sampler indicates a significant source of PM10 that is influenced by high wind speeds to the north of the sampler (Mining – Waste Rock Dump).

• West E-Sampler has the highest PM contribution from the easterly sector under low wind speed conditions. The wind independent sources are likely the processing operations (crushing and screening and off-loading) to the east of the station, with the contribution from the wind dependent sources likely the Husab mining operations to the north-east.

Dust fallout Rates

The Husab Mine January to June 2022 monitoring results indicate low dustfall rates at most sampling sites except for EXT 27 and EXT 28.

Ext 27 exceeded the industrial limit (2 400 mg/m²/day) and the non-residential limit (1 200 mg/m²/day) for three non-consecutive months, and EXT 28 exceeded the non-residential limit in February and March 2022. Dustfall rates on average decreased at all locations when compared to the same period (January to June) in 2021

The highest dustfall rate (2 473 mg/m²/day) was sampled at EXT 27 in June 2022, which is also the month with the highest average from all the dustfall units. June 2022 had “east wind” conditions which is likely the cause of these higher dustfall rates.

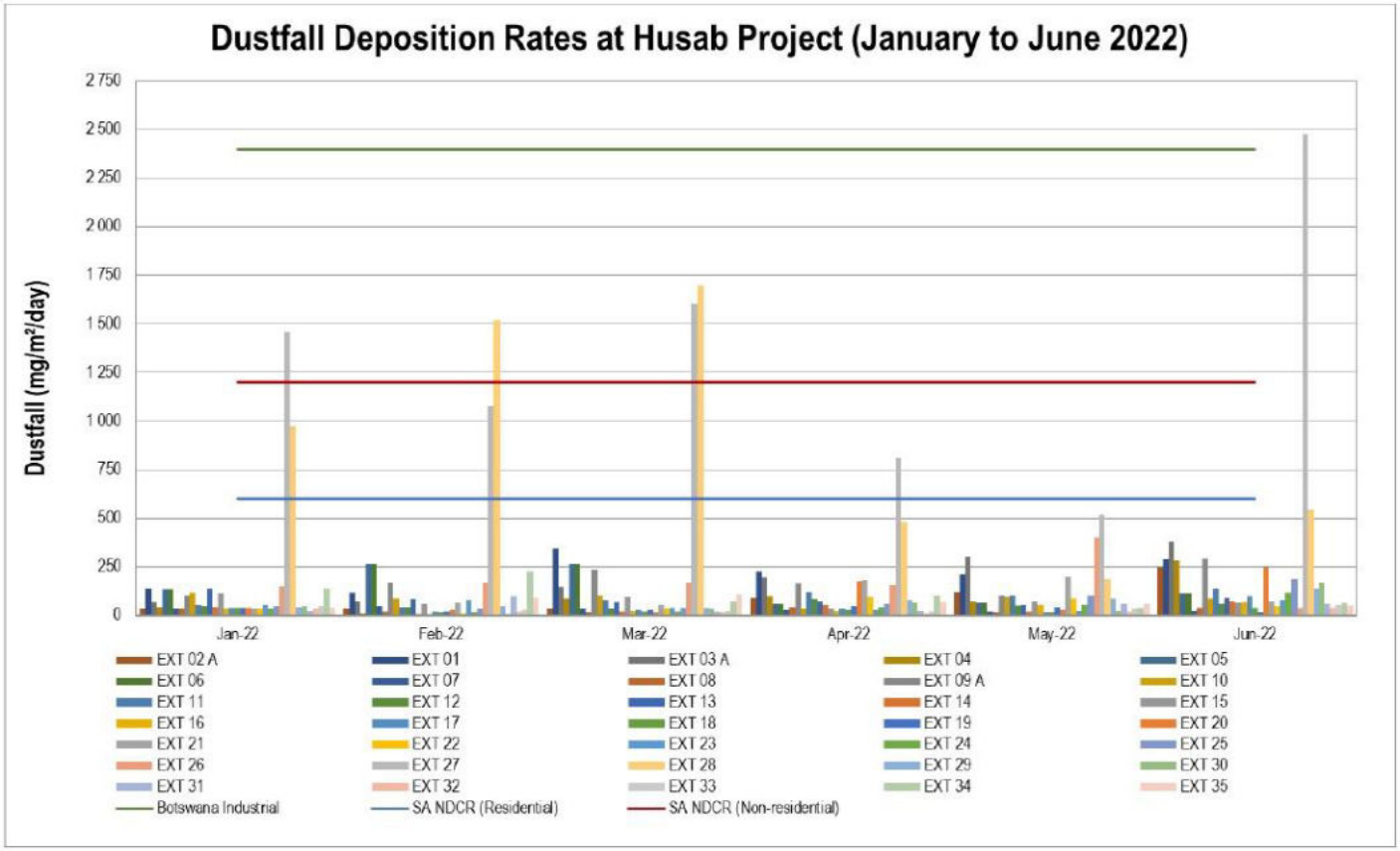


Figure 09: Dust deposition rates for the reporting period

Median dust fallout per month (mg/m2/day)			
	Whole Network	Compliance	Internal
Month	(35 sites)	(16 sites)	(19 sites)
Jan-22	45	40	56
Feb-22	44	26	77
Mar-22	36	26	87
Apr-22	63	34	101
May-22	61	28	101
Jun-22	75	60	140
Jul-22	53	33	96

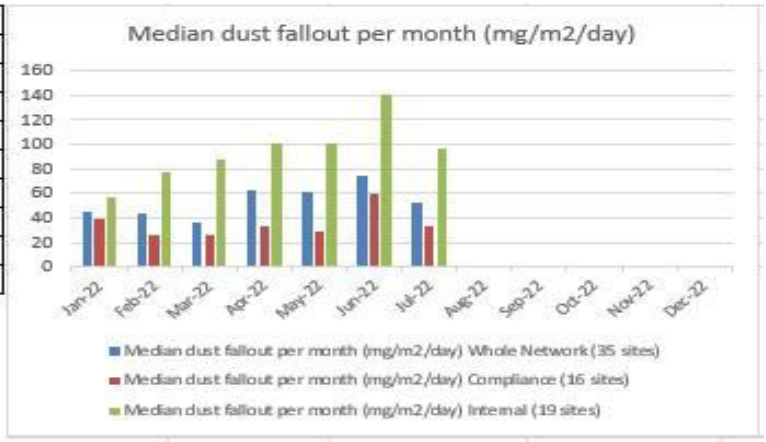


Figure 10: Median dust fallout per month for 2021

Passive Sampling Results

NO2 and SO2 concentrations are sampled onto passive samplers and are reported as a concentration per volume (µg/m³). A passive sampling campaign was conducted 17 May 17 June 2022, a period of 30 days. Extrapolated NO2 and SO2 concentrations were very low, with no exceedance of the adopted limits. Passive sampling results for NO2 and SO2 are presented in the table below.

Table 04: Gasses sampling values for 18 May to 17 June 2022

Sampling Location	NO_2 (µg/m³)	SO_2 (µg/m³)	HF (µg/m³) [a]
AQ Limit	NO_2 40 µg/m³	SO_2 50 µg/m³	N/A
PSD02A	2.87	0.13	0.01
PSD03A	3.33	0.15	0.01
PSD04	2.02	0.08	0.01
PSD05	0.88	0.08	0.01
PSD09A	1.12	0.20	0.01
PSD10	1.23	0.07	0.01
PSD11	2.53	0.11	0.01
PSD13	0.53	0.03	0.01
PSD14	1.40	0.04	0.01
PSD15	0.75	0.04	0.01
PSD16	1.82	0.04	0.01
PSD17	0.27	0.04	0.01
PSD20	1.71	0.05	0.01
PSD21	4.34	0.25	0.01
PSD22	2.17	0.29	0.01
PSD23	0.38	0.05	0.01
PSD26	3.13	0.05	0.01
PSD28	3.31	0.25	0.01

Table 05: Acid Mists monitoring values for 18 May to 17 June 2022

Pollutant	Benzene (µg/m³)	Toluene (µg/m³)	Ethylbenzene (µg/m³)	m+p-Xylene (µg/m³)
Adopted Annual Limit	5	640	2560	350
PSD02A	0.05	0.06	0.04	0.04
PSD04	0.05	0.06	0.04	0.04
PSD05	0.05	0.06	0.04	0.04
PSD09A	0.05	0.06	0.04	0.04
PSD10	0.05	0.06	0.04	0.04
PSD11	0.05	0.06	0.04	0.04
PSD13	0.05	0.06	0.04	0.04
PSD14	0.05	0.06	0.04	0.04
PSD15	0.05	0.06	0.04	0.04
PSD16	0.05	0.06	0.04	0.04
PSD17	0.05	0.06	0.04	0.04
PSD20	0.05	0.06	0.04	0.04
PSD23	0.05	0.06	0.04	0.04
PSD26	0.05	0.06	0.04	0.04

Volatile and Non-Volatile Acids Results

Volatile acids (HCl, HBr, and HNO_3) and non-volatile acids (H_2SO_4 and H_3PO_4) samples were collected on the 17th of May 2022. Results showed low concentrations at all monitoring sites and for all pollutants measured. Measured concentrations are insignificant when compared to their respective exposure limits.

Table 06: Summary of results for the gasses monitored for 17 May 2022

Volatile acids and	Campaign 1				Exposure Limits (mg/m³)		
non-volatile acids	Site 3	Site 5	Site 6	Site 9	OSHA OEL	NIOSH OEL	NIOSH STEL
HCl	0.0392	0.0394	0.0405	0.0861	7	7	–
HBr	0.0145	0.0146	0.0149	0.0145	10	10	–
HNO_3	0.1699	0.1560	0.1624	0.1049	5	5	10
H_3PO_4	0.0197	0.0198	0.0203	0.0197	1	1	3
H_2SO_4	0.2355	0.4548	0.1559	0.1425	1	1	3

Table 07: Adopted Air Quality Standards and Evaluation Criteria for the Husab Mine

Adopted evaluation criteria for the Husab Project (subject to change)			
Pollutant	**Averaging Period**	**Selected Criteria**	**Origin**
$PM_{2.5}$	24-hour Mean (µg/m³)	37.5 (a)	WHO IT3 & SA Standard
	Annual Mean (µg/m³)	15	WHO IT3
PM_{10}	24-hour Mean (µg/m³)	75 (a)	WHO IT3 & SA Standard
	Annual Mean (µg/m³)	30	WHO IT3
Dustfall	30-day average	600 (c)	SA NDCR & Botswana Residential limit

	($mg/m^2/day$)	1200 (c)	SA NDCR & Botswana Non-residential limit
		2400	Botswana
SO_2	1-hour Mean ($\mu g/m^3$)	350 (a)	EC Limit & SA Standard (no WHO guideline)
	24-hour Mean ($\mu g/m^3$)	50 (b)	WHO IT2 (seen as a per 40% of the SA and EC limits)
	Annual Mean ($\mu g/m^3$)	50	SA Standard (no WHO guideline)
NO_2	1-hour Mean ($\mu g/m^3$)	200 (b)	WHO AQG & EC & SA Standard
	Annual Mean ($\mu g/m^3$)	40	WHO AQG & EC & SA Standard
VOC (Benzene)	Annual Mean ($\mu g/m^3$)	5	SA Standard (no WHO guideline)
VOC (Toluene)	Hourly Mean ($\mu g/m^3$)	640	TCEQ Short-term ELS
VOC (Ethyl Benzene)	Hourly Mean ($\mu g/m^3$)	2560	TCEQ Short-term ELS
VOC (Xylene)	Hourly Mean ($\mu g/m^3$)	350	TCEQ Short-term ELS
HF (Hydrogen fluoride)	1-hour Mean ($\mu g/m^3$)	18	TCEQ Short-term ELS
	Annual Mean ($\mu g/m^3$)	8.7	TCEQ Short-term ELS

Notes: (a) Not to be exceeded more than 4 times per year (SA). (b) Not to be exceeded more than 3 times per year. (c) Not to be exceeded more than 3 times per year or 2 consecutive months.

Conclusions and Recommendations

- Meteorological Data
    - Wind roses for all hours throughout the monitoring period show that the predominant wind field is from the north-easterly, and westerly to south-westerly sector, with the strongest winds from the northeast. Little to no winds were recorded from the north, east, and south. The daytime wind field is comparable to the periodic wind field, with the night-time wind rose reflecting an overall decrease in wind speeds and airflow. “True east wind” conditions occurred 15% of the time in May and 25% of the time in June 2022.
    - The lowest temperature of 8°C were recorded in May and June 2022 and the highest temperature of 39°C was recorded in January followed by 37°C in April 2022.
    - The highest rainfall recorded was in January (25.9 mm), followed by March 2022 (18.3 mm). February and June recorded low rainfall (1.8 mm and 2.2 mm respectively) while April and May 2022 had no rain.
- PM10 Concentrations
    - The highest daily PM10 concentrations were 130 µg/m³ at the east E-Sampler, 112 µg/m³ at the north E-sampler, and 118 µg/m³ at the west E-Sampler. These high concentrations were not associated with high windspeeds and occurred on the 1st and 2nd of April, suggesting a once-off event. The adopted annual limit (75 µg/m³) was exceeded for 8 days at the east E-Sampler, 4 days at the north E-Sampler, and 5 days at the west E-Sampler over the period of six months. The average PM10 concentrations were 33 µg/m³ at east, 20 µg/m3 at north (including the unrealistically low concentrations recorded since June 2022), and 27 µg/m3 at west.
- Dustfall Rates
    - The Husab Mine January to June 2022 monitoring results indicate low dustfall rates at most sampling sites except for EXT 27 and EXT 28. Ext 27 exceeded the industrial limit (2 400 mg/m²/day) and the non-residential limit (1 200 mg/m²/day) for three non-consecutive months, and EXT 28 exceeded the non-residential limit in February and March 2022. Dustfall rates on average decreased at all locations when compared to the same period (January to June) in 2021. The highest dustfall rate (2 473 mg/m²/day) was sampled at EXT 27 in June 2022, which is also the month with the highest average from all the dustfall units. June 2022 had “east wind” conditions which is likely the cause of these higher dustfall rates.
- Passive Sampling Results
    - The passive sampling results indicated below detection level VOC concentrations and very low concentrations for SO_2 and NO_2.
- Volatile and Non-Volatile Acids Results

- The passive sampling results indicated below detection level VOC and HF concentrations during the 18 May to 17 June sampling campaign. Extrapolated SO2 concentrations were very low, with the highest concentration of 4.34 sampled at EXT 21. NO2 concentrations were very low and maintained concentrations below 1 µg/m³ at all locations.

- Metals
  - The thorium and uranium deposition rates were very low, with most locations measuring below detection concentrations while others have insignificantly low rates.

- Recommendations:
  - Further control of vehicle entrained PM is recommended, particularly near EXT 28 and EXT 27 using binding agents and water to further reduce PM emissions, and the surfaces need to be kept free of loose material.
  - The bi-annual 34 element ICP analysis does not seem to provide reasonable results on thorium and uranium content. Also, the main elements indicated are those associated with sand and clay. It is thus recommended that the ICP analysis be stopped, with only the SkySide quarterly analysis for uranium and thorium be continued

2. GROUNDWATER

The Husab Mine groundwater monitoring network is divided into 4 domains, as seen in the table below. During the course of 2021, eleven (11) monitoring boreholes were drilled around the extension of the Waste Rock Dump (WRD) and west of the Processing Plant:

• Nine (9) were shallow boreholes drilled, where eight (8) is in the Husab drainage channel alluvium and one downstream of GW30, while

• Two (2) were deep boreholes that intersected the regional bedrock aquifer. These were added to the biannual sampling campaigns (SLR, 2022)

The below section covers the groundwater monitoring results from the period November 2021 to May 2022. The external third party monitoring is conducted by SLR Environmental Consulting and the results with interpretation was not available in the previous bi-annual report. It thus reports on groundwater level and quality results for the period above, as well as comparing these to the full time-series data that has been collected since 2010 when monitoring commenced within the four domains (Khan Dome Domain, Welwitschia Husab Domain, Grey Granite Domain, Alluvial Aquifer Domain) defined at Husab Mine.

Table 08: Hydrological Setting of each Domain

Domain	Hydrogeological Unit	Infrastructure
Khan Dome	Anticline exposing gneiss of the Abbabis Metamorphic Complex locally covered with Quaternary Sediments as well as Damara Supergroup calc-silicate rock from the Khan Formation: Very low permeability	Tailings Storage Facility and western side of Processing Plant
Welwitschia / Husab	Syncline/Anticline comprising mainly Damara age schist, marble, limestone and dolomite of the Karibib, Chuos and Rössing Formations. Low to medium permeability	Main mining areas with ore deposits (alaskite intrusions), as well as the eastern side of the Processing Plant.
Grey Granite	Damara age granite and gneiss: Very low permeability	Waste Rock Dump
Alluvial Domain	Alluvial sediment, sand and gravel: medium to high permeability	Abstraction boreholes

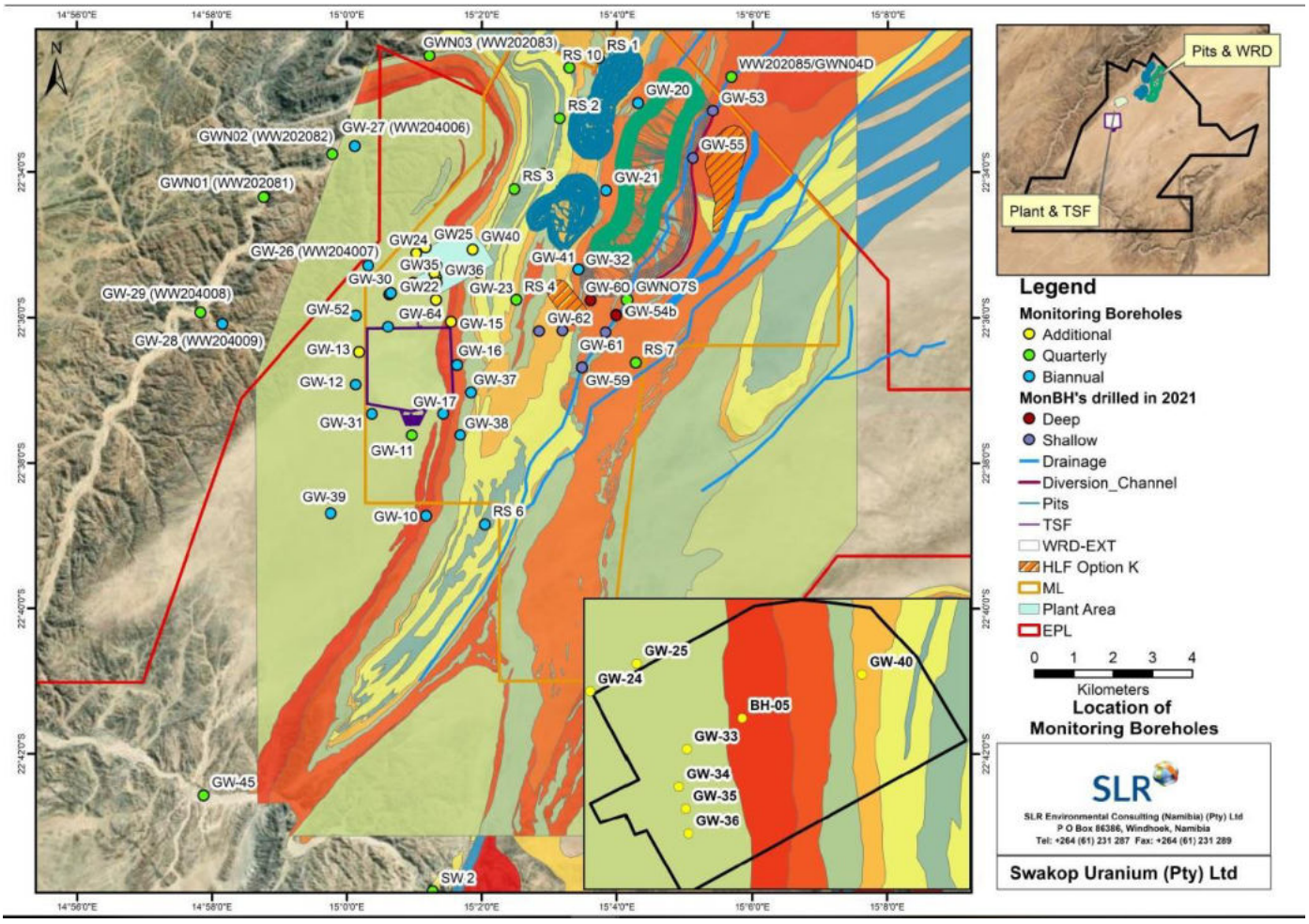
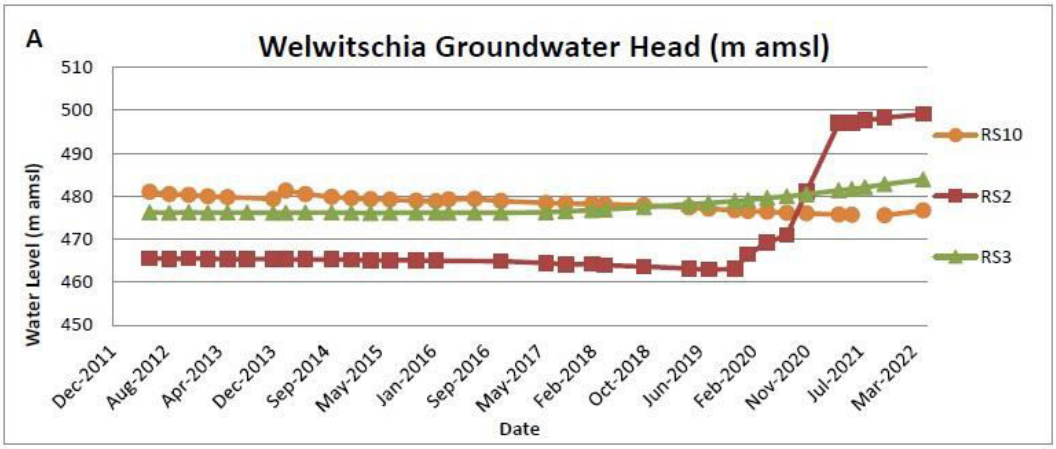
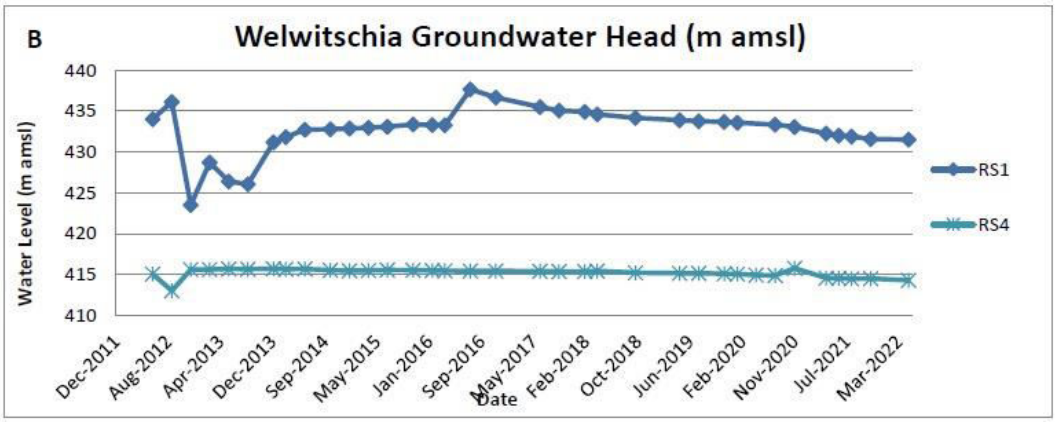


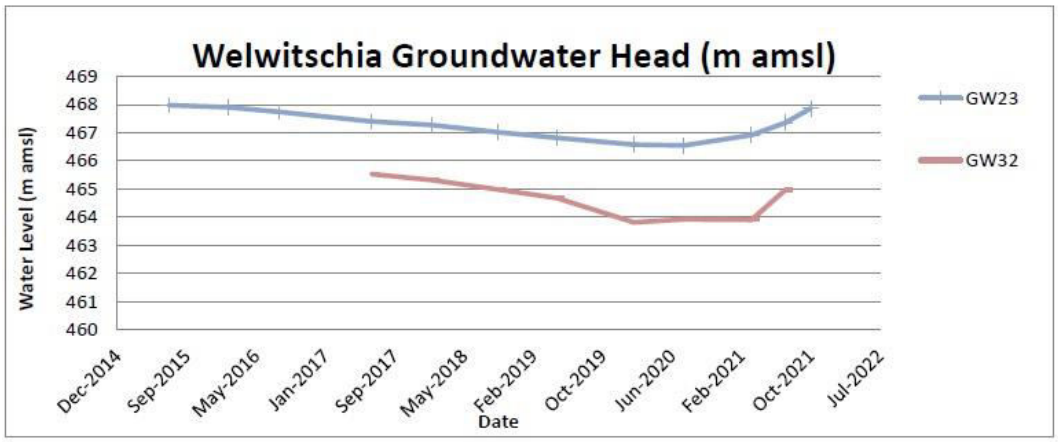
Figure 11: Groundwater Monitoring Network at Husab Mine (ML171 & EPL3138)

8.2.1. Welwitschia Husab Domain

- Sharp groundwater level rise was observed from 2020 in RS2 and RS3, west of Pit Zone 1; the trend continues slightly by May 2022. From December 2019 to May 2022, RS2 levels rose significantly by 36m while RS3 rose by 5m. Further, water level rise of 1m amsl was observed in RS10 from November 2021.
- RS1 and RS4 maintained a slight decline in groundwater levels
- Relevant Major-ions levels fluctuated within the limits (indicated in green) determined for the boreholes. Relevant Metals were observed to be within limits.


A
Welwitschia Groundwater Head (m amsl)
Water Level (m amsl)
510
500
490
480
470
460
450
Dec-2011
Aug-2012
Apr-2013
Dec-2013
Sep-2014
May-2015
Jan-2016
Sep-2016
May-2017
Feb-2018
Oct-2018
Jun-2019
Feb-2020
Nov-2020
Jul-2021
Mar-2022
Date
RS10
RS2
RS3


B
Welwitschia Groundwater Head (m amsl)
Water Level (m amsl)
440
435
430
425
420
415
410
Dec-2011
Aug-2012
Apr-2013
Dec-2013
Sep-2014
May-2015
Jan-2016
Sep-2016
May-2017
Feb-2018
Oct-2018
Jun-2019
Feb-2020
Nov-2020
Jul-2021
Mar-2022
Date
RS1
RS4


Welwitschia Groundwater Head (m amsl)
Water Level (m amsl)
469
468
467
466
465
464
463
462
461
460
Dec-2014
Sep-2015
May-2016
Jan-2017
Sep-2017
May-2018
Feb-2019
Oct-2019
Jun-2020
Feb-2021
Oct-2021
Jul-2022
Date
GW23
GW32

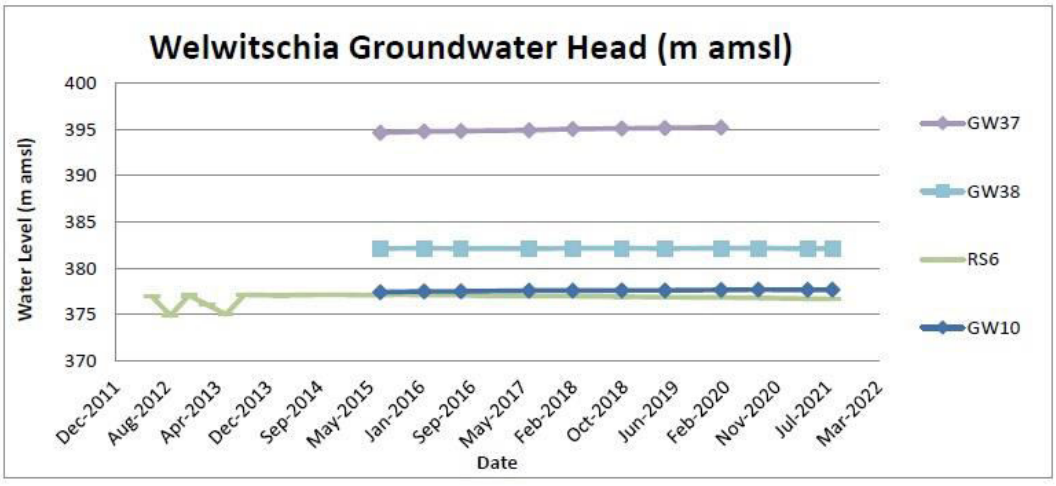
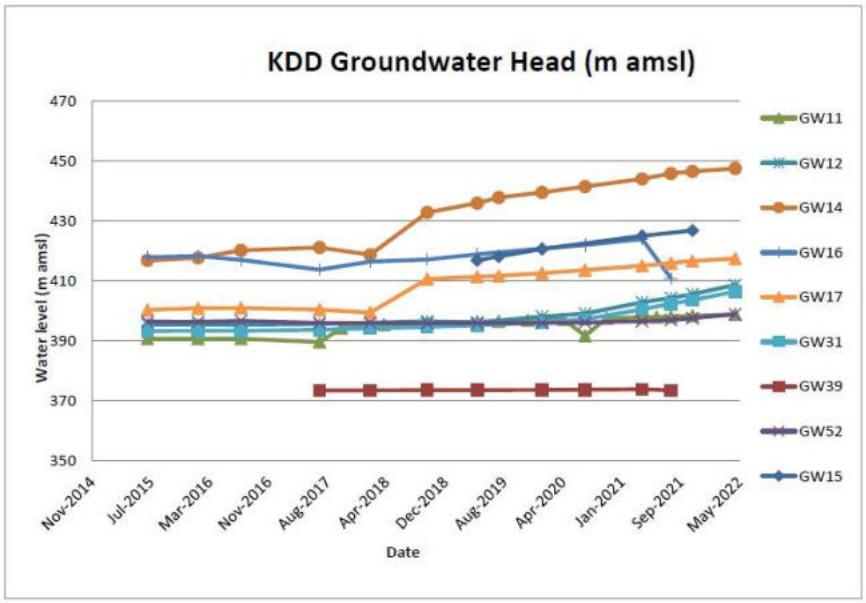

Welwitschia Groundwater Head (m amsl)
Water Level (m amsl)
400
395
390
385
380
375
370
Dec-2011
Aug-2012
Apr-2013
Dec-2013
Sep-2014
May-2015
Jan-2016
Sep-2016
May-2017
Feb-2018
Oct-2018
Jun-2019
Feb-2020
Nov-2020
Jul-2021
Mar-2022
Date
GW37
GW38
RS6
GW10

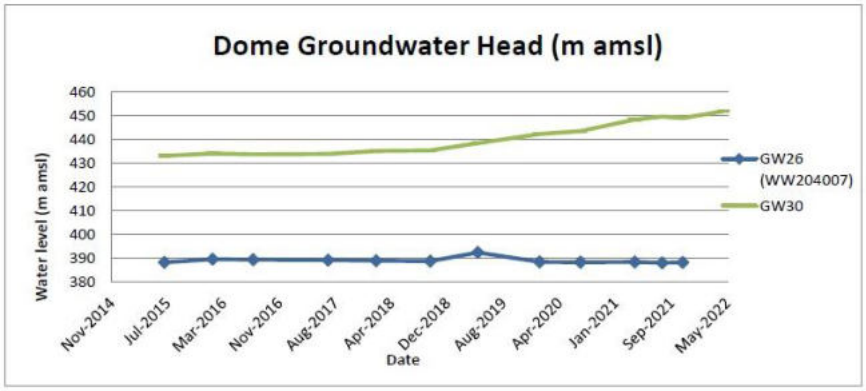
Figure 12: Welwitschia Husab Domain groundwater head at different sites Table 09: Welwitschia Husab Domain groundwater quality summary

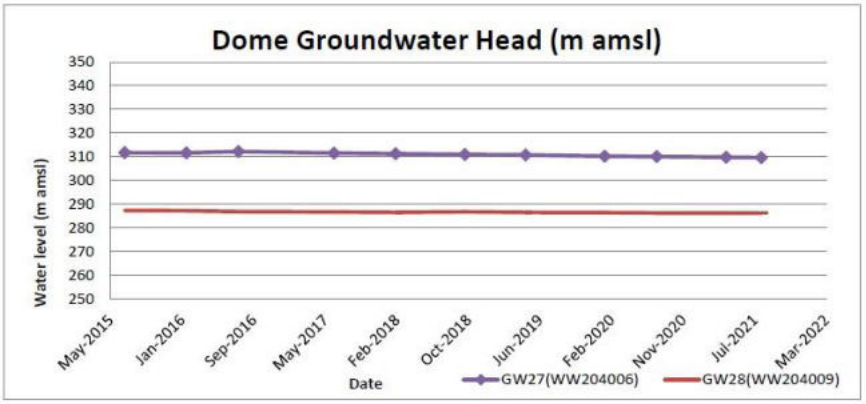
Date	Site	Domain	p H	Total Dissolved Solids (det.)	Sulphate as SO_4^{2-}	Uranium
Nov-2021	GW23	Welwitschia Husab	6,6	18995	1451	33
Nov-2021	GW40	Welwitschia Husab	6,5	26356	5644	324
Nov-2021	RS1	Welwitschia Husab	6,5	12727	3203	4 951
May-2022	RS1	Welwitschia Husab	7,3	12878	3051	4 333
Nov-2021	RS10	Welwitschia Husab	6,7	2621	453	23
May-2022	RS10	Welwitschia Husab	7,4	1348	268	17
Nov-2021	RS2	Welwitschia Husab	6,4	39737	2262	28
May-2022	RS2	Welwitschia Husab	7,3	41150	2747	21
Nov-2021	RS3	Welwitschia Husab	6,4	22087	3391	112
May-2022	RS3	Welwitschia Husab	7,4	23025	3540	89
Nov-2021	RS4	Welwitschia Husab	6,6	3673	703	147
May-2022	RS4	Welwitschia Husab	7,9	3904	924	130

8.2.2. Khan Dome Domain

- During the period under review, groundwater levels in the KDD were observed to maintain a rise in most boreholes at the TSF, a trend that started in 2018. Over this period the highest water level rise has been observed in GW14, up by 29m amsl, followed by GW17 up by 7m amsl, while GW11, GW12, GW15, and GW31 have seen relatively lower water level rise. To the northwest of the TSF, groundwater level rise was observed in GW52, where levels have risen by 2m amsl. Within the plant area, where GW35 and GW33 are situated, upstream of GW30, fluctuations in groundwater levels were observed.
- Boreholes GW35 and GW36, located in the plant area, are assumed to be polluted from various sources within the mine. This has to be further investigated and monitored.


KDD Groundwater Head (m amsl)
Water level (m amsl)
470
450
430
410
390
370
350
Nov-2014
Jul-2015
Mar-2016
Nov-2016
Aug-2017
Apr-2018
Dec-2018
Aug-2019
Apr-2020
Jan-2021
Sep-2021
May-2022
Date
GW11
GW12
GW14
GW16
GW17
GW31
GW39
GW52
GW15


Dome Groundwater Head (m amsl)
Water level (m amsl)
460
450
440
430
420
410
400
390
380
Nov-2014
Jul-2015
Mar-2016
Nov-2016
Aug-2017
Apr-2018
Dec-2018
Aug-2019
Apr-2020
Jan-2021
Sep-2021
May-2022
Date
GW26 (WW204007)
GW30


Dome Groundwater Head (m amsl)
Water level (m amsl)
350
340
330
320
310
300
290
280
270
260
250
May-2015
Jan-2016
Sep-2016
May-2017
Feb-2018
Oct-2018
Jun-2019
Feb-2020
Nov-2020
Jul-2021
Mar-2022
Date
GW27(WW204006)
GW28(WW204009)

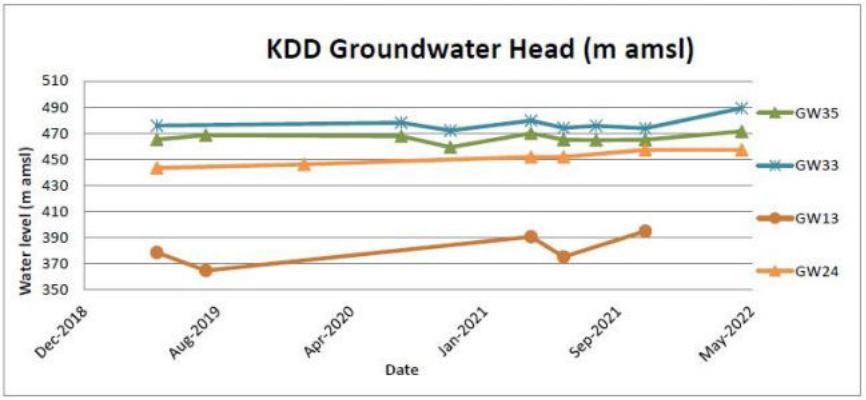

KDD Groundwater Head (m amsl)
Water level (m amsl)
510
490
470
450
430
410
390
370
350
Dec-2018
Aug-2019
Apr-2020
Jan-2021
Sep-2021
May-2022
Date
GW35
GW33
GW13
GW24

Figure 13: Khan Domain groundwater head at different sites

Table 10: Khan Domain groundwater quality at different sites

Date	Site	Domain	p H	Total Dissolved Solids (det.)	Sulphate as SO_4^{2-}	Uranium
Nov-2021	GW11	Khan Dome	6,7	13741	3688	457
May-2022	GW11	Khan Dome	7,4	13552	3338	383
Nov-2021	GW12	Khan Dome	6,5	7280	963	135
May-2022	GW12	Khan Dome	7,6	7634	1189	120
Nov-2021	GW14	Khan Dome	6,4	22164	1628	484
May-2022	GW14	Khan Dome	6,9	24086	2264	471
Nov-2021	GW15	Khan Dome	6,5	16171	2584	20
Nov-2021	GW17	Khan Dome	6,5	23786	3152	421
May-2022	GW17	Khan Dome	7,1	23233	3131	361
Nov-2021	GW26 (WW204007)	Khan Dome	6,6	10031	835	454
Nov-2021	GW30	Khan Dome	6,8	9370	2822	85
May-2022	GW30	Khan Dome	7,2	6576	2724	41
Nov-2021	GW31	Khan Dome	6,9	7432	1358	321
May-2022	GW31	Khan Dome	7,6	8484	1620	311
Nov-2021	GW52	Khan Dome	7	3250	502	64
May-2022	GW52	Khan Dome	7,2	2482	455	43

Table 11: Water quality in the additional Khan domain boreholes

Date	Site	Domain	p H	Total Dissolved Solids (det.)	Sulphate as SO_4^{2-}	Uranium
Nov-2021	GW13	Khan Dome	6,7	19178	1482	125
Nov-2021	GW24	Khan Dome	6,7	14540	1295	162
May-2022	GW24	Khan Dome	7,4	10699	3310	174
Nov-2021	GW33	Khan Dome	6,9	4401	1143	30
May-2022	GW33	Khan Dome	7,5	6260	2792	18
Nov-2021	GW34	Khan Dome	6,5	33308	4674	65
Nov-2021	GW35	Khan Dome	6,8	11105	2666	2 830
May-2022	GW35	Khan Dome	7,2	16553	3649	4 432
Nov-2021	GW36	Khan Dome	6,8	13580	4260	3 862
May-2022	GW36	Khan Dome	7,5	13230	3542	2 313
Nov-2021	GW63	Khan Dome	7	14385	2518	373
May-2022	GW63	Khan Dome	7,2	13611	2820	261

8.2.3. Grey Granite Domain

- During the period under review, groundwater levels fluctuation was insignificant in monitoring boreholes GWN07S, RS7 and GW202085 to north and south of WRD. The sharp decline in GW202085, recorded in April 2021 is seen as an error in records because levels returned to general position by June 2021.
- Between the pits and the WRD, groundwater levels in GW20 were observed to increase slightly while GW41 and GW21 showed a relatively stable water level, with GW21 showing a relatively stable groundwater water level trends.
- Uranium concentrations were within limits (indicated in green) determined for the boreholes, except for GW41 and WW202085/GWN04D which had concentrations above the set limits in November 2021.

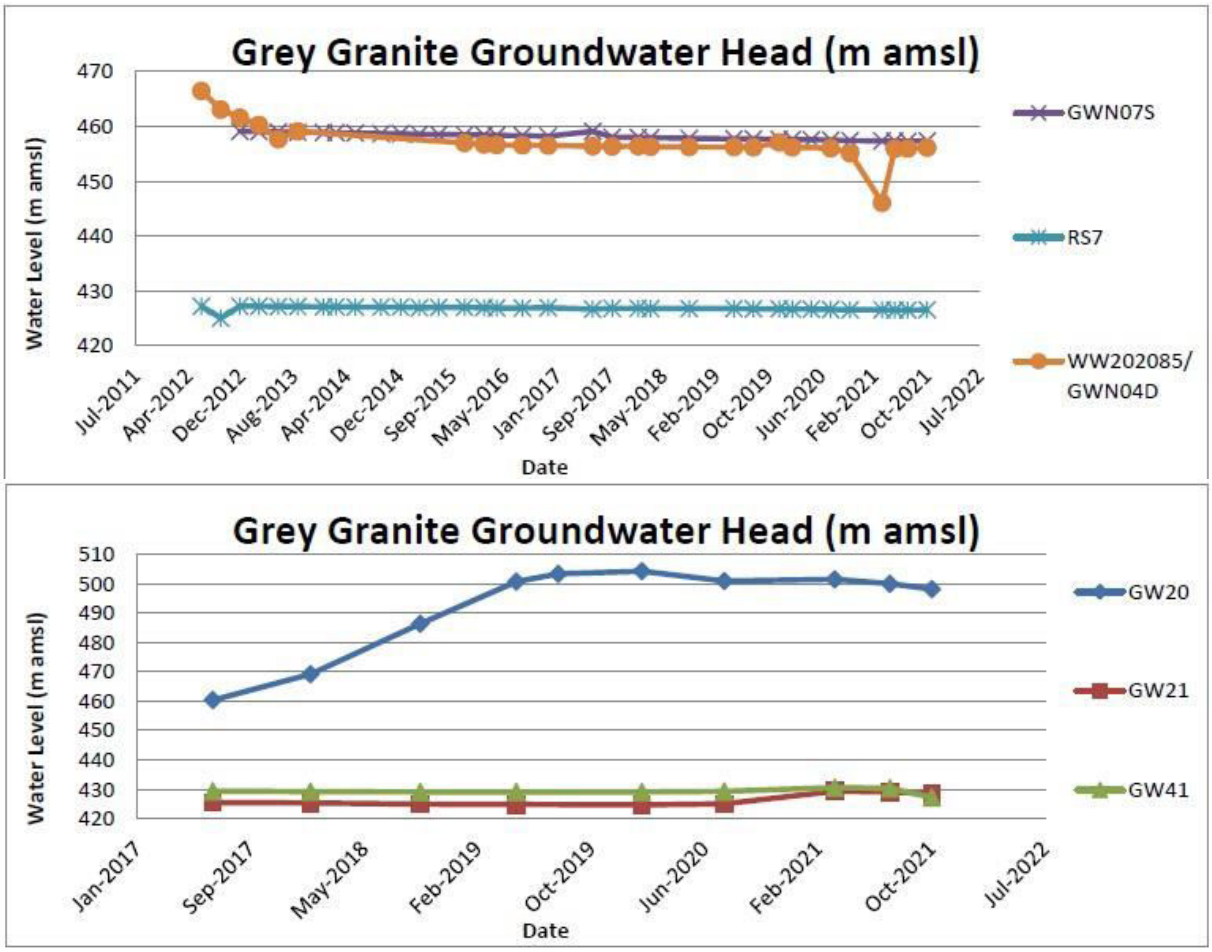


Figure 14: Grey Granite groundwater head at different sites

Table 13: Grey Granite Domain groundwater quality at different sites

Date	Site	Domain	p H	Total Dissolved Solids (det.)	Sulphate as SO_4^{2-}	Uranium
Nov-2021	GW20	GreyGranite	6,6	21521	2785	255
May-2022	GW20	GreyGranite	7,3	21551	2921	276
Nov-2021	GW21	GreyGranite	6,7	11077	3272	169
May-2022	GW21	GreyGranite	7,6	11085	2847	145
Nov-2021	GW41	GreyGranite	6,8	10192	3151	152
May-2022	GW41	GreyGranite	7,5	10163	2765	135
Nov-2021	GWN07S	GreyGranite	6,8	6267	1938	151
May-2022	GWN07S	GreyGranite	7,5	6340	1815	156
Nov-2021	RS7	GreyGranite	6,4	32620	2438	72
May-2022	RS7	GreyGranite	7,2	32302	2638	62
Nov-2021	WW202185/ GWN04D	GreyGranite	6,8	5000	1503	103
May-2022	WW202185/ GWN04D	GreyGranite	7,4	4780	1788	24

8.2.4. Alluvial Aquifer Domain

- Groundwater levels in the Swakop River boreholes have been on a declining trend, with the last good recharge event during the floods in the 2010/2011 rainy season, when the groundwater level rose between 5 and 8m.
- Groundwater levels in the Khan River alluvial continue to be stable with slight fluctuations during the period under review. The run off events recorded during 2020 and 2021 are yet to show in the water table.
- Relevant Major-ions levels are within the limits (indicated in green) determined for the boreholes, except the Sulphate concentration for GWN03/WW202083 which had concentrations below its set limits. Relevant Metals were observed to be within limits.

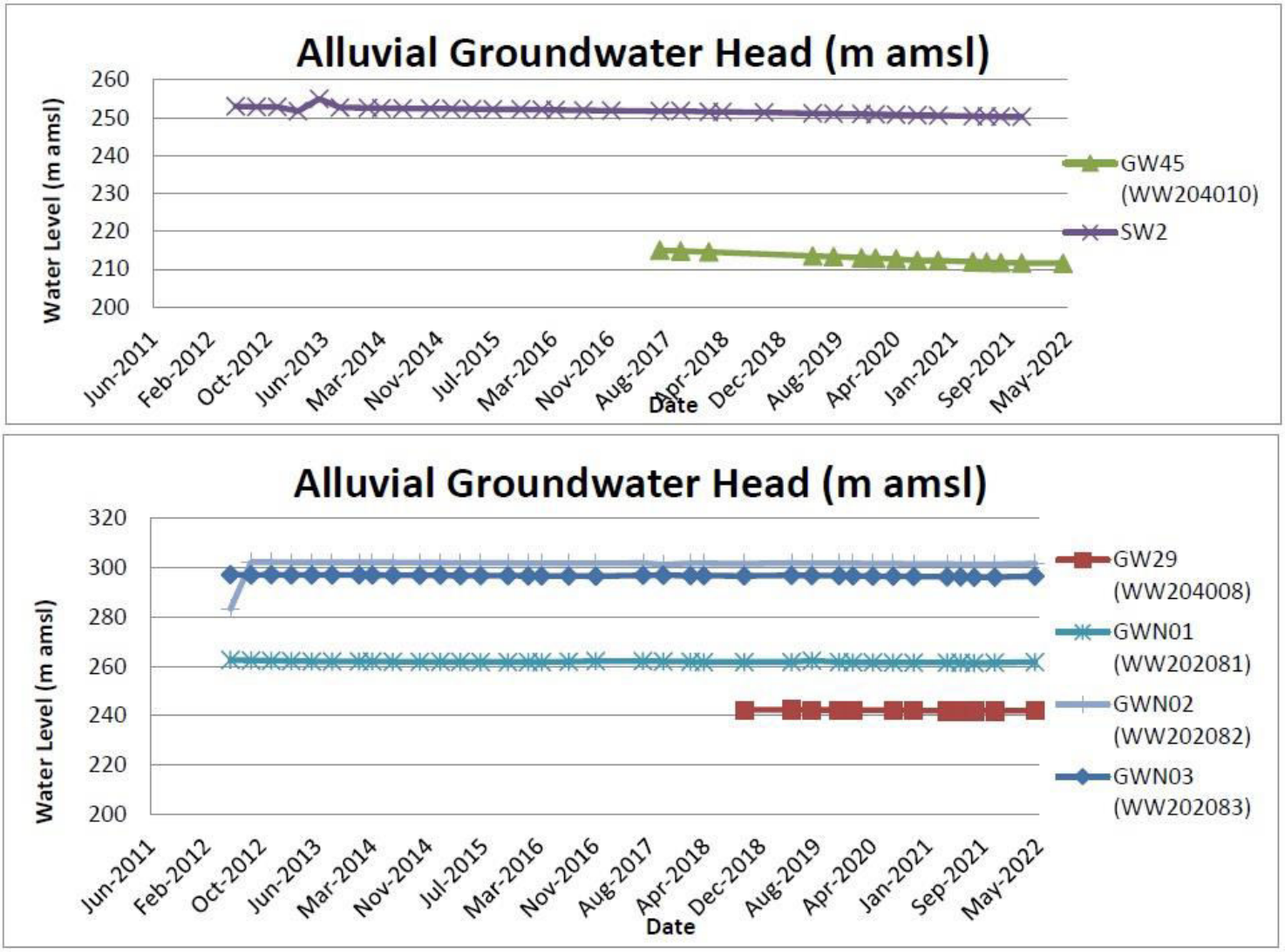


Figure 15: Alluvial Domain groundwater head at different sites

Table 14: Alluvial Domain groundwater quality at different sites

Date	Site	Domain	p H	Total Dissolved Solids (det.)	Sulphate as SO_4^{2-}	Uranium
Nov-2021	GW29 (WW204008)	KhanAlluv	6,8	6620	748	277
May-2022	GW29 (WW204008)	KhanAlluv	7,2	6640	899	250
Nov-2021	GW45 (WW204010)	SwakopAlluv	6,6	3206	440	43
May-2022	GW45 (WW204010)	SwakopAlluv	7,4	3253	417	36
Nov-2021	SW2	SwakopAlluv	6,6	4408	531	81
Nov-2021	GWN01 (WW202081)	KhanAlluv	6,6	6511	753	316
May-2022	GWN01 (WW202081)	KhanAlluv	7,1	6949	888	239
Nov-2021	GWN02 (WW202082)	KhanAlluvial	6,7	6263	724	258
May-2022	GWN02 (WW202082)	KhanAlluvial	7,2	6405	839	231
Nov-2021	GWN03 (WW202083)	KhanAlluv	6,7	6130	533	287
May-2022	GWN03 (WW202083)	KhanAlluv	7,2	6320	735	235

8.2.5 Recommendations

- Groundwater levels continue to rise at the plant area, TSF as well as between the pits and the WRD. However, decline is still observed west of the pit zone. The fact that these changes are being picked up are an indication that these boreholes are serving their purpose as an early warning system.
    - These groundwater level changes at the Pit and TSF are not yet linked to mining activities. This trend is likely due to continued water level recovery in rock formations of very low permeability and natural groundwater recharge as groundwater level decline and increase appears natural, especially as no pollution is observed in the respective boreholes.
    - At the plant area, however, possible artificial sources of recharge may be responsible for fluctuations of the water table in the boreholes. This is due to high uranium concentration in the groundwater and the fluctuating nature of the water levels (GW35 and GW36). The water level assessment report by SLR (2021 indicated that all four boreholes in the plant area are reacting to a similar “recharge event” from a likely artificial source within the plant. This seepage can emanate from banded walls, ponds and associated infrastructure.
- Groundwater quality in the various domains remains within baseline limits.
    - Sulphate concentration that was observed still randomly elevated in many boreholes across domains in the first biannual report of 2021, is no longer considered an issue to investigate after parameter limits were revised.

- Uranium concentration was observed to be generally within baseline values for most boreholes in all four domains. This is not the case at the Plant area, where high uranium concentration is still observed. The high concentrations of uranium in some plant boreholes (e.g., GW35 and GW36), in combination with fluctuating water levels, are an indication of potential groundwater pollution.

- Recommendations:

  - An investigation into the local situation in the plant area needs to be intensified and if the area is found to be polluted, rehabilitation measures to be recommended should be implemented. A report with the findings of the November 2021 inspection in the plant area is in preparation.
  - Baseline ranges can be considered for the following additional boreholes: GW13, GW24, GW25, GW33 and GW36. These baselines can be used in the quarterly and biannual reporting and will be finalized in 2022

Table 15: Parameters analyzed by laboratories from samples collected (Major Ions & Metals)

Analytical Laboratory		DDScience		HYDROISOTOP	
MAJOR IONS	UNIT	TOTAL + DISSOLVED METALS	UNIT	RADIONUCLIDES	UNIT
pH		Aluminium as Al	µg/l	^{234}U Uranium	mBq/l
Electrical Conductivity	mS/m	Antimony as Sb	µg/l	^{235}U Uranium	mBq/l
Turbidity	NTU	Arsenic as As	µg/l	^{238}U Uranium	mBq/l
Total Dissolved Solids (calc.)	mg/l	Barium as Ba	µg/l	^{230}Th Thorium	mBq/l
P-Alkalinity as CaCO3	mg/l	Beryllium as Be	µg/l	^{232}Th Thorium	mBq/l
Total Alkalinity as CaCO3	mg/l	Bismuth Bi	µg/l	^{210} Po Polonium	mBq/l
Total Hardness as CaCO3	mg/l	Boron as B	µg/l	^{210} Pb Lead	mBq/l
Ca-Hardness as CaCO3	mg/l	Cadmium as Cd	µg/l	^{226}Ra Radium	mBq/l
Mg-Hardness as CaCO3	mg/l	Chromium as Cr	µg/l	^{228}Ra Radium	mBq/l
Chloride as Cl	mg/l	Cobalt as Co	µg/l		
Fluoride as F	mg/l	Copper as Cu	µg/l		
Sulphate as SO_4	mg/l	Iron as Fe	µg/l		
Nitrate as N	mg/l	Lead as Pb	µg/l		
Nitrite as N	mg/l	Lithium as Li	µg/l		
Sodium as Na	mg/l	Manganese as Mn	µg/l		
Potassium as K	mg/l	Mercury Hg	µg/l		
Magnesium as Mg	mg/l	Molybdenum as Mo	µg/l		
Calcium as Ca	mg/l	Nickel as Ni	µg/l		
Free and saline ammonium	mg/l	Selenium as Se	µg/l		
Stability pH, at 25°C		Strontium as Sr	µg/l		
Langelier Index		Tellerium as Te	µg/l		
Ryznar Index		Tin as Sn	µg/l		
Corrosivity ratio		Titanium as Ti	µg/l		
		Uranium as U	µg/l		
		Vanadium as V	µg/l		
		Zinc as Zn	µg/l		

9. WASTE MANAGEMENT

Rent-a-Drum disposes waste from site at permitted landfill facilities and recycling facilities. Radioactive contaminated waste is managed and disposed of on site, either in the Waste Rock Dump or in the Tailings Storage Facility. Concrete rubble is also disposed of on site at a designated area.

Waste is separated into general waste, hazardous/hydrocarbon waste, recycled waste, radioactive and building rubble at source. Signage is both in English and Chinese and the bins are colour coded according to waste recyclable material/type. Both wheelie bins and skips are used as waste containers. General waste is disposed of at the Swakopmund Landfill site, hazardous/hydrocarbon waste is disposed of at the Walvis Bay Hazardous Landfill Site and medical/sanitary waste is burned at the Cottage Hospital incinerator in Swakopmund. Recyclable material is separated before disposal and recorded separately in 1 Cube bags. We also donate woven packaging bags to the Ohorongo RDF Power Plant.

The following were improvements that occurred during the reporting period:

1. Cleaning of the ‘’ Old Wood Yard ‘’ adjacent to the SU Shovel Yard. Off-site disposal of general waste, wood and steel waste was at about 85% done by the end of July 2022.
2. Repacking of loose Sulphur bags into big bulk bags started and about 50 bulk bags was filled with loose Sulphur bags. One load loose Sulphur bags was disposed of at the SU Waste Rock Dump as a test for future disposal of the Sulphur bags.
3. Radiation cleaning of wear plates of the SU Mills started and a total weight of was disposed of and sold as scrap steel.
4. Shovel cables was cut into short pieces, 3m long, and a total weight off was disposed of as scrap steel.
5. Oil, acid and water mixed in 1000lt IBC’S was pumped out by a new service provider and a total quantity of 9900lt was disposed and treated off site correctly.
6. About 2500 empty oil drums was disposed of site during the named period.
7. Fluorescent tubes of 9 years were crushed in one month and is now safely stored in lockable drums on site, awaiting a disposal permit to be granted by South Africa.

10. SEWERAGE TREATMENT PLANT

The Sewerage Treatment Plant was designed to cater for extensive daily fluctuations, and consists of three parallel treatment trains to cater for the full population of the temporary construction camp and onsite operational facilities. Trickling filter technology was chosen because it constitutes simple but extremely versatile technology, does not require skilled operators and gives a final effluent of high quality that can be discharged back into the environment or re-used as recycled water in the process plant and for dust suppression. Major treatment components in this plant include anaerobic digestion in a septic tank, carbon removal and nitrification in a trickling filter, solids removal by means of a secondary clarifier, and disinfection in a chlorine contact tank. The final effluent produced at the sewage treatment plant, mixed with the cooling water from the processing plant, is disposed into the environment (i.e. used as dust suppression) for mining operations. This water quality has to conform to the amended General Standards water quality requirements as laid down in the Government Gazette R553 dated 5 April 1962 and modified as recommended in Cabinet Decision 461/85, before it is discharged into a watercourse (i.e. environment).

Table 16: Standards as laid out in the Government Gazette Regulation R553 of 5 April 1962, in Section 21(1) and 21(2) of the Water Act (Act No 54 of 1956).

RAW AND FINAL WATER QUALITY AND FLOW			
	Per Train	***Total***	
Plant capacity	200	600	m3/d (max)
No of people	1350	4000	PE
Flow rates:			
Average dry weather flow (ADWF)	8.35	25	m3/h
Peak hydraulic flow (PWWF)	25	75	m3/h
Inflow water quality:			
COD	800		mg/L
BOD	350		mg/L
NH4-N	35		mg/L

Swakop Uranium acknowledges that the performance of the sewage treatment plant varied considerably over the past six months. Usual testing shows that Chemical Oxygen Demand (COD), Ammonia Nitrogen and Total Suspended Solids levels haven't always met the regulatory standards. Swakop Uranium has taken this into consideration and it currently trying to eliminate this problem through:

- Regular inspection and maintenance of the sewage treatment plant.
- Liaise with the expert services from Aqua services in terms of diagnostic testing and plant maintenance

- Improved sampling methodology by incorporating more of the parameters set out to be tested in the permit and procuring chlorine meter to take the chlorine levels on a daily basis.
- De-sludge lift stations to improve STP performance as regards high nutrients, high TSS and biodegradable constituents.
- Provide adequate training from a certified sewage treatment plant entity to the operators and involved parties.

11. STAKEHOLDER ENGAGEMENT, MANAGEMENT & COMMUNICATION

Stakeholder Engagement

Swakop Uranium remains committed to engaging on a regular basis with its internal and external stakeholders through various forums. No complaints were received during the reporting period.

Table 17: List of Stakeholder engaged during the period as well as a brief description of the type of engagement

Name of Organizatio n	Power/Expectations/Interests related to SU
Mine Workers Union BEC	This entity represents employees in the Bargaining Unit and is concerned with the overall well-being of the employees in regards to all matters of the work environment e.g. Safety, Remuneration, Development etc.
Ministry of Mines & Energy	This entity represents the interest of government and monitors the company's mining operations in regards to overall compliances to standard regulations, overall sustainability and other terms of our EPL etc.
Ministry of Environment &Tourism	The Husab mine operates in the Namib Naukluft Park, as such the MET monitors the company's overall compliance to required standards by company's operating in parks in terms of Nature and Conservation etc.
Ministry of Trade & Industrializati on	The Husab mine is Namibia's largest operating mine and this entity is concerned with creating business opportunities especially for SME's resulting from big projects such as Husab
Namibia Radiation Protection Authority	The NRPA's mandate where businesses such as Husab is concerened is to protect human beings (workers and the public) from risks resulting from radiation exposure.

Office of the Governor - Erongo	The Governor is appointed by the President to represent the Office of the President at regional level where government matters are concerned. The expectation from businesses such as Husab is to contribute to prosperity for its host community.
Chamber of Mines Nambia	To protect the interest of its members while promoting sustainable growth of mining and exploration so as to maximise economic gain for the Namibian nation.
Namibia Police	NAMPOL is concerned with the Safety & Security of all the people within the borders of Namibia. The company maintains a friendly relationship with the Nampol Erongo Region and supports the entity's community relations operations.
Nampower	Supply of Power to the Husab Mine
Namwater and ORANO	Supply of Water to the Husab Mine

12. GENERAL SAFETY & SECURITY MANAGEMENT

- All major security fences as well as the stock fences are in place and maintained. These demarcate the security zones which were introduced as per the Security Access Control procedure and the revised Site Radiation Management Plan. FPR & Processing Lab are established Radiation Controlled Areas and the rest of the Mine Site declared as Supervised areas – Public areas are still the Private Vehicle Parking and outside the outer perimeter and main entrance boom gates.
- Details of all employees as well as visitors and contractors are loaded onto the Access Control System database. Authorized access profiles are configured per access card. Electronic access control systems are in place and maintained at the Mining, Ore Processing Plant, FPR, Admin, LDV & HDV Workshops, Ammonia Storage, Husab Village & Processing Lab Pedestrian Access Security Zones.
- CCTV Surveillance and Emergency Call Center is in place and maintained. Ammonia Gas Release, SO2/SO3 Gas releases as well as Radioactive U3O8 spills, Acid burns and general fires are still the most prominent emergency risks. Apart from a site-wide fire detection and prevention system of which alarms are monitored 24/7 at the Security Operations Room, we have trained Emergency Responds Proto-teams as well as Medics on 24/7 shifts. Husab Site has a fully equipped Emergency Clinic that is managed by a qualified Sister. Fully equipped Ambulances, Fire Trucks, a Spill Trailer and a Multi Causality Trailer are in place.
- Vehicle access is controlled with the application and issuing of site discs. Vehicles are required to undergo roadworthy as well as mine readiness inspections before discs are authorized.

- FPR, SX, Ammonia Storage, Bulk Sulphur, TSF and NNNP border, the Husab Village, Admin Blocks, Private vehicle parking, Main Site Entrance and the permanent access road at the B2, are controlled by third party Private Security Service providers.
- Property controls (private and company) are in place as per the Waybill procedure.
- IMS Document re-certification received again. All Medical equipment is calibrated and Ambulances and Site Clinic Certification awarded by the MOH.
- Internal training for Fire Marshalls, Basic Firefighting, SU Emergency SOPs and Work instructions, and general Proto-team refresher training are ongoing.
- Business Continuity and Crisis Management Plans completed and introduced. Mock Drills for all identified scenarios are scheduled and executed as per plan.

13. BIODIVERSITY MANAGEMENT

1. FAUNA & FLORA

An update of the Biodiversity Sensitivity of habitats in the vicinity of Husab Mine took place, after the implementation of a number of monitoring and research projects, as well as recent Impact Assessments, where data become available.

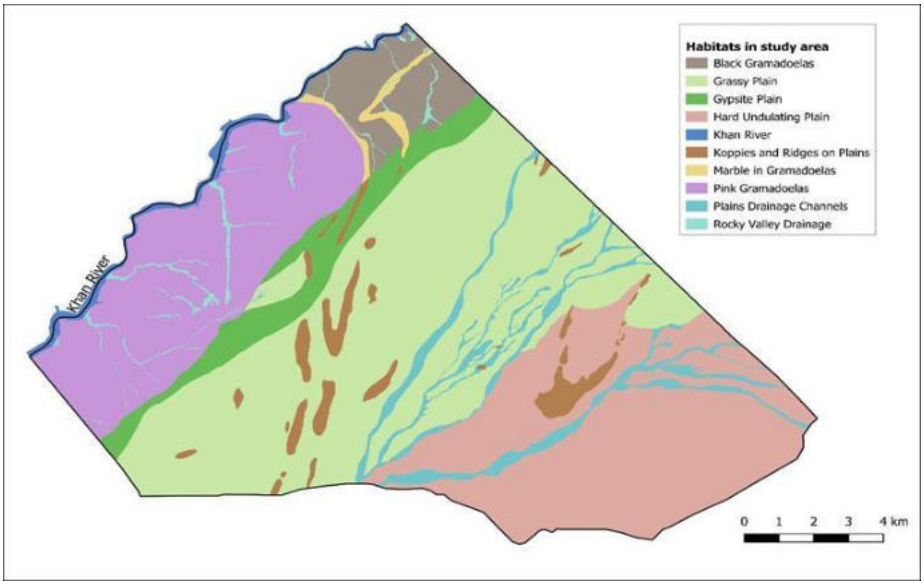


Figure 19. Updated Habitats of the Husab study area

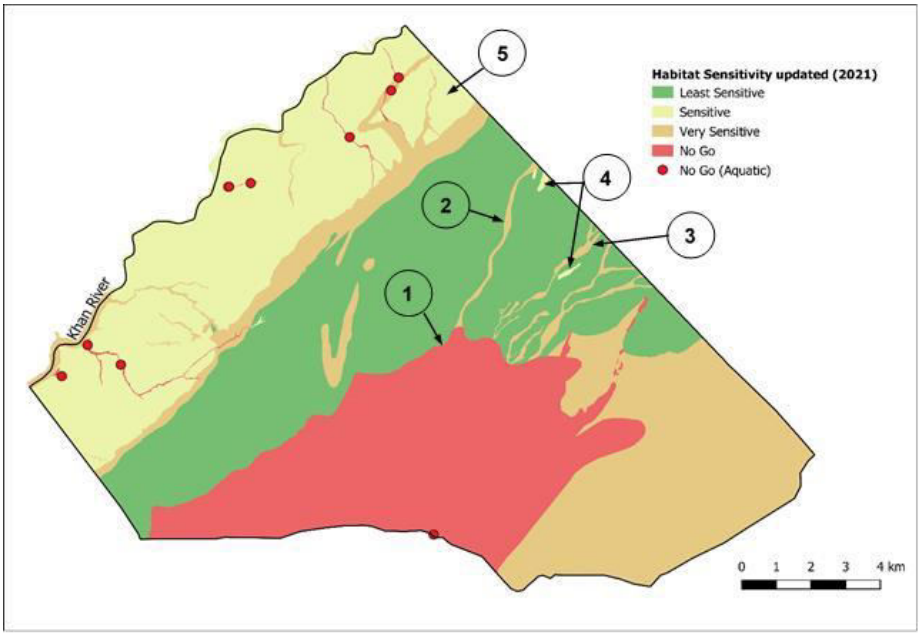


Figure 20: Updated habitat sensitivity map for the Husab Study Area

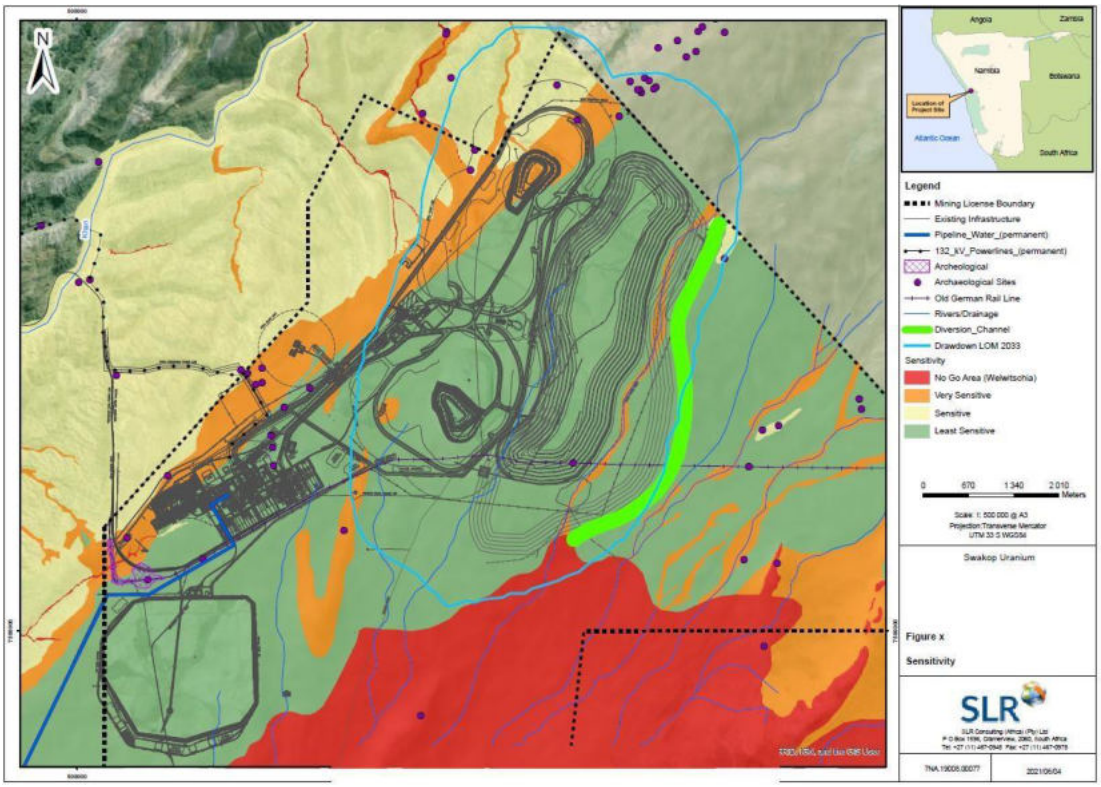


Figure 21: Updated sensitive areas map for the Husab Mine Site

Furthermore, good progress was made during 2021 on the NURMU/SU Long-term ecological monitoring and research framework.

The Monitoring Framework for the Husab Mine contains the outcomes of a five-year period study.

- Welwitschia Health, Riparian vegetation health and Hartmann's mountain zebra movements have been identified for continued monitoring.
- Perennial shrub health and Husab Sand Lizard monitoring to occur should activities/footprint of the mine increase.
- No further monitoring needed for gerbils.

A monitoring protocol has been developed for the Husab Mine to assist with the continued and/or future monitoring.

Status of Post-graduate studies forming part of the NURMU/SU Long-term ecological monitoring and research framework:

- PhD degree: Riparian vegetation health Thesis write-up in progress.
- PhD degree: Welwitschia ecohydrology data collection in progress.
- MSc degree: Husab Sand Lizard habitat preference Thesis write-up is done.

2. SOIL MANAGEMENT

Table 18: Topsoil volume table indicating total volumes accumulated at each topsoil stockpile for the reporting period

Topsoil Stockpile	Volumes (Loose) m³	Topsoil Stockpile	Volumes (Loose) m³
SP1	5467	**SP6**	**89824**
SP2	8904	SP7	5042
SP3	11036	SP8	28291
SP4	170411	SP9	12525
SP5	80899	SP10	17245

Topsoil was added to topsoil stockpile No.6 (SP6) during the reporting period. This is the result of mining stripping activities, with a focus on new mining expansions from both Zone 1 (expansion south/south east) and Zone 2 (expansion south/south west). Additionally, mining have commenced with the expansion of the waste rock dump towards the south.

Figure 22: Indicating Topsoil Stockpiles and their Locations at Husab Mine

14. VISUAL ASPECTS

The visual monitoring was done internally – the burning of blasting waste material, as required by the Explosives Act of Namibia, often causes large volumes of smoke that spreads to a high elevation, which poses as a visual aspect. Further visual aspects include the dust accumulated from the process plant and mining activities that are visible during operation. The strong east weather events experienced on site during the reporting period also cause visual disturbance, however this is due to natural events. No external complaints were received related to visual disturbance(s).

15. NOISE & VIBRATION MANAGEMENT

It can be concluded that the vibrations during the reporting period should not have caused damages to surrounding or third party brick or mortar structures as all the vibrations was recorded and captured below the USBM and OSMRE standard.

The Mineral Resource Management Geotechnical team is responsible to assess pit conditions after every blast and communication is sent out for specific high risk areas (embargos) following the aforementioned pit inspections.

No complaints were received during the reporting period or noted visual damages to structures.

Please refer below for an example of a monitoring event report.

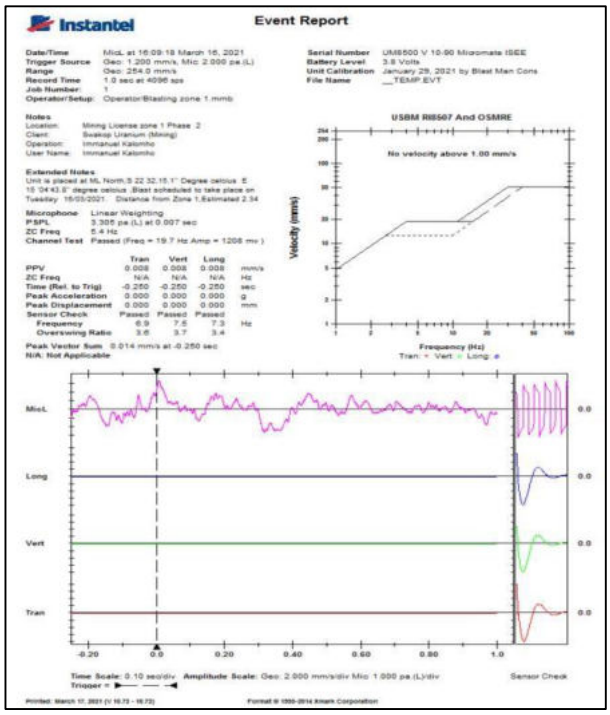


Figure 23: Example of a Noise & Vibration Monitoring blast event

16. SOCIO ECONOMIC ASPECTS

Our Brand Slogan: More than mining and what it means to us

In our quest to become a world-class Namibian uranium producer, we are proud of our continued efforts to improve our social impact output. For the reporting period, we have continued to consult and engage with stakeholders on pertinent issues relating to our social impact. The Office of the Company which is responsible for managing Corporate Social Responsibility also improved its visibility and strengthened it community relations.

Communication/Community Relations

We improved our efficiency in maintaining the Corporate Communication and Swakop Uranium lines of communication as we endeavor to be the preferred link, in terms of information sharing between stakeholders and other business units of the company, such as; Supply Chain Management (Local Procurement) and the Human Resources Department (Recruitment and Bursary) purposes.

17. RADIATION MANAGEMENT

The Radiation Management Plan (RMP) for uranium mining and processing was approved by the National Radiation Protection Authority (NRPA) and has been implemented. The RMP is currently being reviewed and updated to include mine closure and any applicable updates from the September 2019 approved EIA Amendment and EMP amendments.

18. HERITAGE RESOURCE MANAGEMENT

No archaeological audits were conducted during the period under review – due to national Covid-19 restrictions. The Environmental Field Team continue to conduct monthly monitoring at all sites, this includes the fixed view point photography sites. There are 12 dedicated sites for the latter monitoring. Artefacts range from a variety of metal and tin pieces from the old German railway activities. An archaeological audit is planned for the next reporting period.

19. STORM WATER MANAGEMENT

Swakop Uranium is in the process of finalizing the design for the improvement of storm water controls in the Processing Plant and in the Mining area. Both projects are underway with a Capital Application for the Processing area and a project review for the Mining area. Bund integrity especially in the plant area, has been one of the major challenges leading to more spillages however, more inspection to follow in the next reporting period to help lessen even more further spillages from occurring due to the mentioned bund issues.

No issues observed on the storm water controls currently in place. Continuous maintenance is being carried out for existing structures in operations.

20. ROAD-USE MANAGEMENT

Road safety is communicated during induction training and toolbox talks as well as in site bulletins. The permanent speed monitoring stations that were installed during the previous reporting period on the permanent access road are fully operational. These monitors can calculate the average speed that all vehicles were travelling on the main access road. This programme has been extended to the other roads on the mine site.

Speed camera monitoring of vehicle speeds by the onsite Security contractor continued on the access road and on site.

Transgressions for both systems are reported and logged and where required the Employees Relations team is in contact with end users to implement corrective actions with their team members.

21. MINE CLOSURE

Swakop Uranium finalised its first (draft) Husab Mine Rehabilitation, Restoration and Closure Plan (RRCP) in October 2018. During the reporting period SU was busy finalizing Phase 2 of its in depth social component of its closure plan.

The following work will take place during 2022:

1. Closure Costing Liability to be updated.
2. EXCO to approve the Social Action Plans that will be endorsed by the company.
3. First meeting of the Swakop Uranium Closure Committee to take place.
4. The Husab Mine Rehabilitation, Restoration and Closure Plan to be updated, sent for internal and external comment and once approved by EXCO to be submitted to MME and MEFT for final approval.

22. CONCLUSION

During the reporting period the COVID-19 pandemic Did not have much influence on operations as COVID-19 stats have considerably decreased. Strict COVID-19 management controls continued within the company onsite besides lesser restrictions in the country.

After struggling to meet production targets in Q1 and Q2. Low Lights/ challenges which are referred to as areas of concern which need improvement immediately, even though 84 Injury free days were recorded, the Mining department needs to improve on equipment damages.

The main production down times related to water availability still in 2022.

Any potential environmental threats for this period have been indicated in the report. All environmental aspects and potential impacts are monitored continuously through the dedicated compliance and environmental biodiversity and bio-physical monitoring schedules/plans. During the reporting period the main impact focus areas being monitored of concern was the FPR bund issues, monitoring the fluctuations in groundwater rest water levels and water chemistry, increases in noted air quality parameters (reviewing dust suppression controls), Sewerage Treatment Plant Compliance and spillage/effluent management. Swakop Uranium had a decrease in total environmental incidents recorded during the period, which could mean lessons learnt from previous incidents were taken into consideration in order to avoid more incidents from occurring.

Inspection and audits equipped personnel with environmental management tools that are more likely to limit or prevent incidents related to the environment. Spill management procedure is being enforced during inspection and/or findings

The main focus areas for the next reporting period is the following; to focus on building an environmental workshop, expanding the current bio-physical and biodiversity monitoring networks, finalizing the additional groundwater drilling programme, upgrading the stormwater controls for operations, finalizing the Social Engagement Plan/Strategy of the Husab Rehabilitation, Restoration and Mine Closure Plan, and improving awareness and proactive controls on site with regards to spill management and control. Additionally, as per document control requirements, various procedures and work instructions are required to be updated, including the SU Aspect and Impact Register.

Swakop Uranium remains committed to ensuring overall compliance to its approved Environmental Management Plan(s) requirements.