DIGBY WELLS
ENVIRONMENTAL

To:	Cassidy Kuiper	**Date:**	July 2022
From:	Digby Wells Environmental	**Proj #:**	AFT7855
RE:	**ESIA Groundwater Responses**		

Dear Cassidy,

AfriTin Mining (Pty) Ltd (hereinafter AfriTin) are planning to construct a bulk sampling processing facility (including a tantalum processing plant and lithium pilot plant) at their Uis Tin Mine, in Namibia. The bulk sampling processing facility is planned to be operational by the end of November 2022 and will require the ESIA (currently being compiled for AfriTin's planned Stage I and II expansion) to be updated to include the additional project infrastructure.

This memorandum provides feedback on groundwater related queries that ECC, the consultants appointed by the client to compile the ESIA for AfriTin.

1. Develop a groundwater management plan, including pumping limitations

A groundwater management plan was developed as part of the hydrogeology assessment (the full details of which are provided in Section 6 of the report). The plan includes the water supply boreholes, their sustainable yield pump rate, operational and maintenance requirements.

The numerical model simulated water supply abstractions for a 24-hour daily rate, which deemed the yields to be sustainable. Site communications confirmed that the water supply abstractions volumes were planned for a 20-hour daily period indicating there would be 4-hours per day to allow the water levels to recover.

Digby Wells and Associates (Pty) Ltd
Company Registration: 1999/005985/07

Turnberry Office Park,
Digby Wells House.
48 Grosvenor Road,
Bryanston,2191

Phone: +27 (0) 11 789 9495
Fax: +27 (0) 11 789 9498
E-mail: info@digbywells.com
Website: www.digbywells.com

Table 1: Water Supply Borehole Management Plan

<table>
<tr><th>Water Supply Borehole</th><th>Surface Elevation (mamsl)</th><th>Operational Times (hours per day)</th><th>Currently Used</th><th>Sustainable Yield Pump Rate (m^3/hr)</th><th>Pump Rate (m^3/d)</th><th>Pump Rate (m^3/month)</th><th>Current Static / Dynamic GWL (mbgl)[1]</th><th>Anticipated Dynamic GWL (mbgl)[2]</th><th>Monitoring Requirements</th><th colspan="2">Operational and Maintenance Requirements</th></tr>
<tr><td>BH1</td><td>829</td><td>19.7</td><td>Yes</td><td>0.4</td><td>7.9</td><td>236</td><td>24.2</td><td>35.0</td><td rowspan="13">Monitor daily abstraction rates and volumes;
Monitor rainfall on site;
Monitor groundwater levels in active abstraction boreholes on a weekly basis;
Monitor groundwater levels in unused boreholes on a quarterly basis; and
Monitor water quality on a quarterly basis.</td><td rowspan="10">4 hours per day have been allocated to allow water levels to recover in the water supply boreholes.

This can be used as a buffer (if needed) to conduct maintenance on boreholes, pumps and/or the reticulation system. Maintenance on the boreholes and/or pumps should be scheduled if there is a drop in the borehole yield or the water levels begin to drop significantly compared with the established trend. Boreholes should be cleaned every 2 years unless the monitoring data indicates a higher frequency is required.

The monitoring data collected must be used to recalibrate the numerical model once every two years to confirm the impact to the resource and allow early detection of any water supply issues.</td><td></td></tr>
<tr><td>BH2</td><td>827</td><td>19.7</td><td>Yes</td><td>0.2</td><td>3.9</td><td>118</td><td>30.0</td><td>42.0</td><td>The efficiency of this borehole has declined since 2018. This borehole must be cleaned and retested to verify if the yield can be improved. This borehole may need to be cleaned on an annual basis to maintain yields based on the observed aquifer test response. Monitoring results will confirm this.
Consider casing this borehole to reduce the risk of collapse.</td></tr>
<tr><td>BH3</td><td>839</td><td>19.7</td><td>No</td><td>0.3</td><td>5.9</td><td>177</td><td>17.1</td><td>28.9</td><td>Consider casing this borehole to reduce the risk of collapse.</td></tr>
<tr><td>BH4</td><td>838</td><td>19.7</td><td>No</td><td>1.0</td><td>19.7</td><td>590</td><td>21.9</td><td>35.2</td><td></td></tr>
<tr><td>BH6</td><td>845</td><td>19.7</td><td>No</td><td>1.0</td><td>19.7</td><td>590</td><td>17.4</td><td>29.3</td><td></td></tr>
<tr><td>BH8</td><td>829</td><td>19.7</td><td>Yes</td><td>8.5</td><td>167.2</td><td>5015</td><td>37.0</td><td>50.0</td><td></td></tr>
<tr><td>BH9</td><td>825</td><td>19.7</td><td>No</td><td>0.9</td><td>17.7</td><td>531</td><td>34.5</td><td>49.8</td><td>Cleaning out of the roots growing into the borehole and casing. This may lead to blocking flow into the borehole, damage the pump or prevent the pump to be extracted from the hole (e.g. for maintenance).
Oxide deposits were observed on the existing pump and the borehole and equipment may need to be cleaned on an annual basis to sustain yields and pump condition. Monitoring results will confirm this.</td></tr>
<tr><td>BH10</td><td>824</td><td>19.7</td><td>Yes</td><td>4.0</td><td>78.7</td><td>2360</td><td>33.6</td><td>44.9</td><td></td></tr>
<tr><td>BH11</td><td>829</td><td>19.7</td><td>No</td><td>1.4</td><td>27.5</td><td>826</td><td>41.3</td><td>54.0</td><td>Consider casing this borehole to reduce the risk of collapse.</td></tr>
<tr><td>BH12</td><td>811</td><td>19.7</td><td>No</td><td>1.0</td><td>19.7</td><td>590</td><td>31.9</td><td>45.4</td><td></td></tr>
<tr><td>A</td><td colspan="8">Estimate yield (6.5 m^3/hr)</td><td colspan="2" rowspan="3">Locate and aquifer test these boreholes as an alternative water supply borehole to supplement the plant during periods of maintenance on the existing boreholes or should the efficiency of the current boreholes reduce.</td></tr>
<tr><td>B</td><td colspan="8">Estimate yield (12.2 m^3/hr)</td></tr>
<tr><td>C</td><td colspan="8">Estimate yield (5.0 m^3/hr)</td></tr>
</table>

1 Current groundwater level (GWL) is based on the static water level at the time of aquifer testing as a worst-case scenario.

2 The anticipated dynamic GWL in the boreholes is calculated based on a comparative drawdown with the aquifer testing data with an additional 5 m added to accommodate potential fluctuations in recharge rates and 4.5 m to accommodate regional drawdown impacts.

2. Develop a contaminant plume model for the site. The flow model should show flow rates and contaminants of concern around key mining infrastructure and into the groundwater regime

2.1. Current Use of the V1 and V2 WRD

AfriTin currently operate a tin-tantalum processing plant at their Uis Mine. The tailings from this processing are placed on the V1 and V2 waste rock dumps (WRD) along with waste rock material extracted from the V1V2 open pit.

To establish the quality of in-situ water infiltrated through the current waste material, water samples were collected from the toe of both waste rock dumps after the heavy rainfall events in February 2022. The location of the V1 and V2 WRD and the collected samples are shown in Figure 1. The water quality results were compared against the IFC effluent discharge limits (2007) and are summarized in Table 2. The results indicate that the water samples are compliant with regards to these limits.

2.2. Planned Use of the V1 and V2 WRD

In addition to the tin-tantalum processing, AfriTin are looking to include a bulk sampling and processing for petalite. This processing will involve milling, froth floatation and dewatering to produce petalite concentrate and tailings. The petalite processing will include the use of sulphuric and hydrofluoric acids as well as NaCl and KCl brines in the floatation circuit. To prevent the potential spillages of the acids, the floatation circuit will be within a well ventilated, enclosed room with a concrete floor. The storage tanks will also have concrete bunds built to regulations and best practice guidelines. The acids are only used in the processing of the petalite.

The tailings material generated from processing the petalite has not been geochemically assessed but based on the XRF results of the DMS floats sample, the tailings materials could comprise of quartz, albite, orthoclase, muscovite, cookeite and clay minerals. These are expected to be non-acid forming minerals. However, the use of acids in the processing could potentially mobilise metals and metalloids. The tailings material will be neutralized and dewatered before being deposited on the V1 and V2 WRD facilities. The water will be recycled back to the plant.

The impact assessment for the contamination plume from the V1 and V2 WRDs is provided in Table 4. The impact assessment methodology is provided in Appendix C of the hydrogeology report.

2.3. Recommendations

AfriTin is currently undertaking geochemical assessment of their mining materials to inform the waste management strategy. It is recommended to characterise the petalite tailings when this processing plant becomes operational, to confirm if there are any contaminants of concern that would need to be monitored for and mitigated to be included in their waste management strategy.

The V1 and V2 WRDs are located on the perimeter of the V1V2 open pit (Figure 1). Should a significant rainfall event occur which would potentially generate seepage, the seepage will be drawn towards the V1V2 open pit which would act as a groundwater sink, given the high evaporation rates of the area. This will assist in managing any potential contamination plumes from the V1 and V2 WRD facilities. Water supply boreholes BH8 and BH11 are located downgradient of the V1 and V2 WRD and the abstraction from these boreholes will draw groundwater to these locations, where not captured by the V1V2 open pit. These two boreholes must also be included into the monitoring network for the V1 and V2 WRD (Table 3). The WRD1 and WRD2 collected points are included in the monitoring plan for the V1 and V2 WRDs, however should any additional runoff / seepage points be identified during storm events, these must be sampled as well.

Table 2: V1 and V2 WRD Water Quality Compared to the IFC Effluent Guidelines

Constituent	Guideline Value	Unit	WRD1 (V1 WRD)	WRD2 (V1 WRD)
Total suspended Solids	50	mg/l	34	5
pH	6 – 9	S.U.	8.04	7.71
COD	150	mg/l	-	-
BOD_5	50	mg/l	-	-
Oil and Grease	10	mg/l	-	-
Arsenic	0.1	mg/l	<0.001	<0.001
Cadmium	0.05	mg/l	<0.001	<0.001
Chromium (VI)	0.1	mg/l	-	-
Copper	0.3	mg/l	0.004	0.007
Cyanide	1	mg/l	-	-
Cyanide Free	0.1	mg/l	-	-
Cyanide WAD	0.5	mg/l	-	-
Iron (total)	2	mg/l	0.394	0.023
Lead	0.2	mg/l	<0.012	<0.012
Mercury	0.002	mg/l	-	-
Nickel	0.5	mg/l	<0.007	<0.007
Phenols	0.5	mg/l	-	-
Zinc	0.5	mg/l	<0.006	<0.006

Table 3: V1 and V2 WRD Monitoring Network

Location	Frequency	Parameters
Pit	When present	pH, electrical conductivity, TDS, TSS, Ca, Mg, Na, K, Alk, Cl, SO_4, Al, As, Cd, Cu, Fe, Pb, Ni, Zn as a minimum
WRD1	After storm events	
WRD2	After storm events	
BH1 (background)	Quarterly	
BH8	Quarterly	
BH11	Quarterly	

Table 4: Contamination Impacts from the V1 and V2 WRD

Dimension	Rating	Motivation	Significance
Activity and Interaction: Disposing of waste rock and tailings on waste rock dumps			
Impact Description: Exposing minerals to oxidising conditions and residual acids from the petalite processing potentially resulting in contamination.			
Prior to Mitigation/Management			
Duration	5	The impact can occur during the project life	Negligible (negative) -10
Extent	1	Limited to isolated parts of the site	
Intensity	1	Minimal to no loss and/or effect to the biological and physical resources	
Probability	4	Probable	
Nature	Negative		
Mitigation/Management Actions			
• Undertake a geochemical assessment of the tailings material when sample material becomes available to determine any contaminants of concern and recommendations to manage these; • Continue sampling the seepage water from the V1 and V2 WRD after rainfall events to assess for any water quality changes; • Include sampling of the pit water, if and when this is present; • Include sampling of BH8 and BH11 water quality on a quarterly basis to establish current quality from which future impacts can be assessed; and • The V1V2 open pit will act as a groundwater sink drawing seepage (when generated during significant rainfall events) towards the pit, limiting the potential for contamination from these facilities to migrate from the site.			
Post-Mitigation			
Duration	5	The impact can occur during the project life	Negligible (negative) -9
Extent	1	Limited to isolated parts of the site	
Intensity	1	Minimal to no loss and/or effect to the biological and physical resources	
Probability	3	Unlikely	
Nature	Negative		

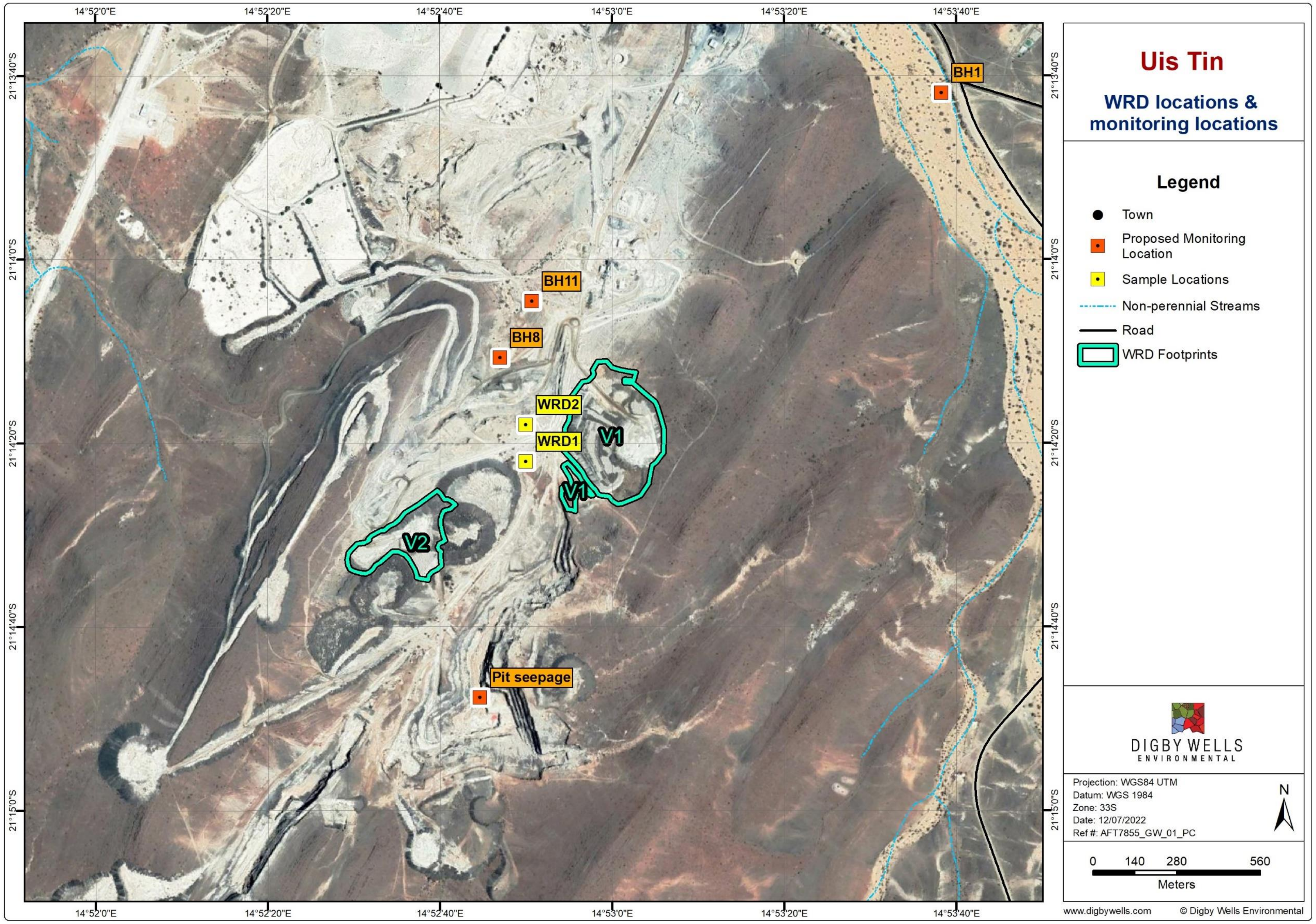

Figure 1: Waste Rock Dump Locations and Sample Locations

3. Sustainable yield per borehole and the area. This should include sustainable use of the aquifer

The sustainable yield for the available water supply boreholes were assessed as part of the recent hydrogeological assessment, the aquifer testing methodology of which can be found in Appendix A.

The sustainable yield per borehole is provided in Table 5 below. These values were simulated as abstraction values for the water supply boreholes for an 18-year Life of Mine period. The resulting drawdown cone will extend ~6.5 km from the mine and will have a drawdown of ~4.5 m in the area of the wellfield. The numerical model results indicate the abstractions will be sustainable, however they will stress the aquifer due to the low recharge potential of the area.

Based on the rainfall data available for the area (from 1979 to present), there are regular peak rainfall events that assist with recharging the aquifer, as was observed in during the first few months of 2022 after a major rainfall event. Groundwater level observations on site showed an increase in groundwater levels in the water supply boreholes of between 0.8 – 8.3 m, in response to the site receiving ~90 mm of rainfall.

Table 5: Sustainable Yield per Borehole

Borehole	Average Sustainable Yield	Borehole	Average Sustainable Yield
BH1	0.4	BH8	8.5
BH2	0.2	BH9	0.9
BH3	0.3	BH10	4.0
BH4	1.0	BH11	1.4
BH6	1.0	BH12	1.0
Total Yield		**18.7**	

4. Alternative water supply options, consideration and assessment

All the available water supply boreholes for the Uis Tin Mine were assessed and will be required to meet the water demand for the Phase 1, Stage II requirements, the following alternative options can be considered:

- AfriTin plan to dewater the K5 pit which contains an estimate volume of 190 634 m^3. The timeframe for this has not been confirmed but it is recommended to plan this as far in advance as possible to reduce discharging the stored water to the environment and accommodate any dilution of the pit water may be required. The pit water has higher concentrations compared to the groundwater aquifer as a result of evaporation, which may limit its use in the plant unless this can be diluted;

- AfriTin could consider establishing a covered water storage area nearby to the plant, with a minimum capacity of 1 week (~2 700 m^3) supply for emergency water supply;
- There are potentially three boreholes located within ~13 m of the mine, which could be located and tested for an additional water supply to the mine and to assist with down time associated with maintenance on the water supply boreholes. The estimate yield from these borehole could provide an additional 23.7 m^3/hr for the project but this would need to be confirmed;
- Should the above borehole not be located, it is recommended that AfriTin establish additional water supply boreholes for emergencies or to allow flexibility on the current water supply network. These should preferably be outside the Uis River Catchment to reduce cumulative drawdown impacts within this catchment;
- Where processes allow for it, water used in the plant should be recovered and reused as much as possible. The reticulation system must be maintained to reduce losses from the system;
- If possible water from the Uis wastewater treatment works could be recovered and used to supplement the water supply for the plant; and
- When possible AfriTin could consider collecting and storing rainwater in non-operational pit areas which could provide a temporary supplement to the plant.

5. Review and update the groundwater status report prepared for Uis Tin Mine in 2019 based on the results from monthly monitoring results between 2019 and 2021 (if required)

The groundwater status report was not available for review.

During the hydrogeological assessment water quality samples were taken from the water supply boreholes between December 2021 and January 2022. These are compared with 2018 water quality data collected during van Wyk's drilling and aquifer testing project.

pH, electrical conductivity and total dissolved solids were used to describe the general condition of the groundwater. The trends for pH (Figure 2) and electrical conductivity and total dissolved solids (Figure 3) indicate that the results for the water supply boreholes are of a similar range to the boreholes tested in 2018.

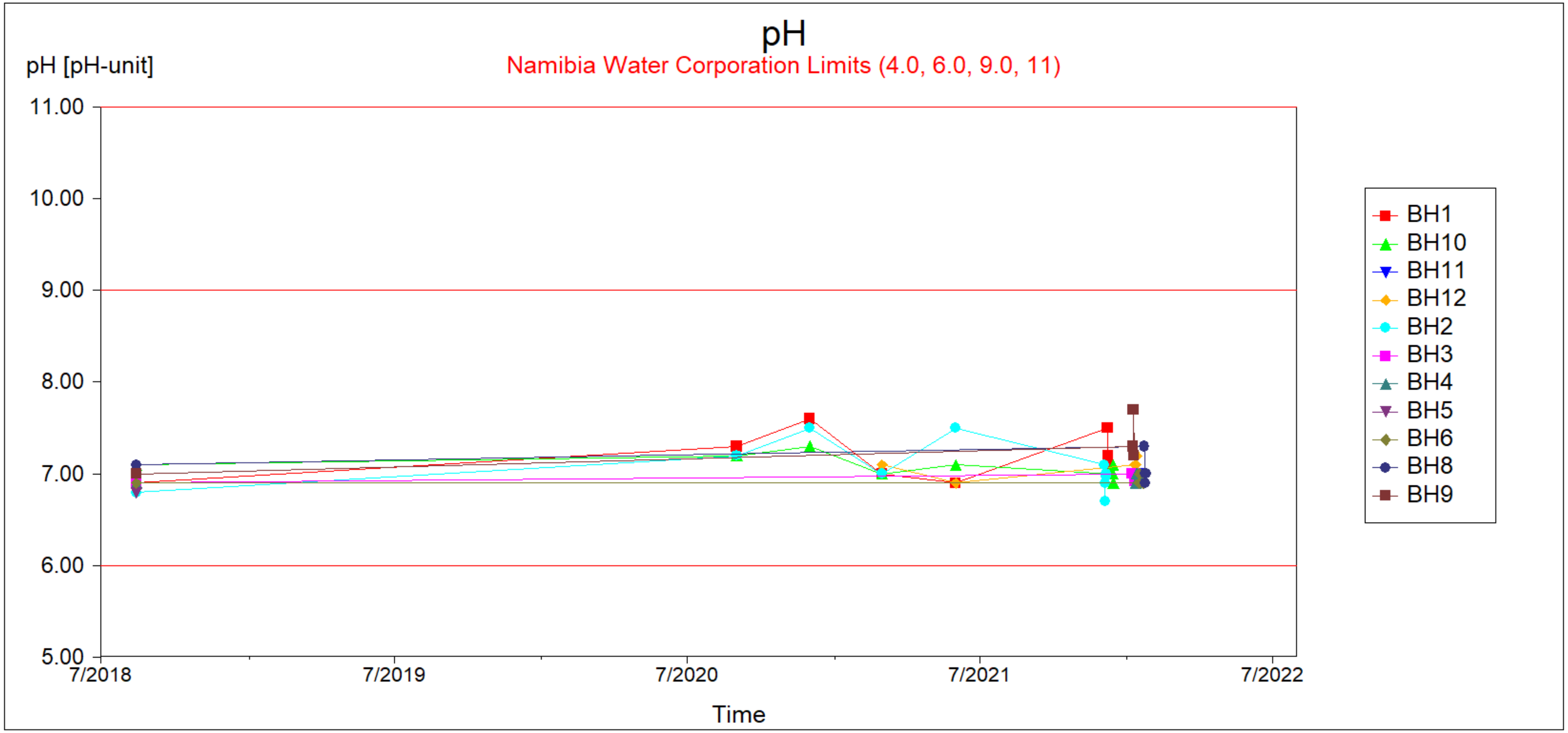

Figure 2: pH Trend

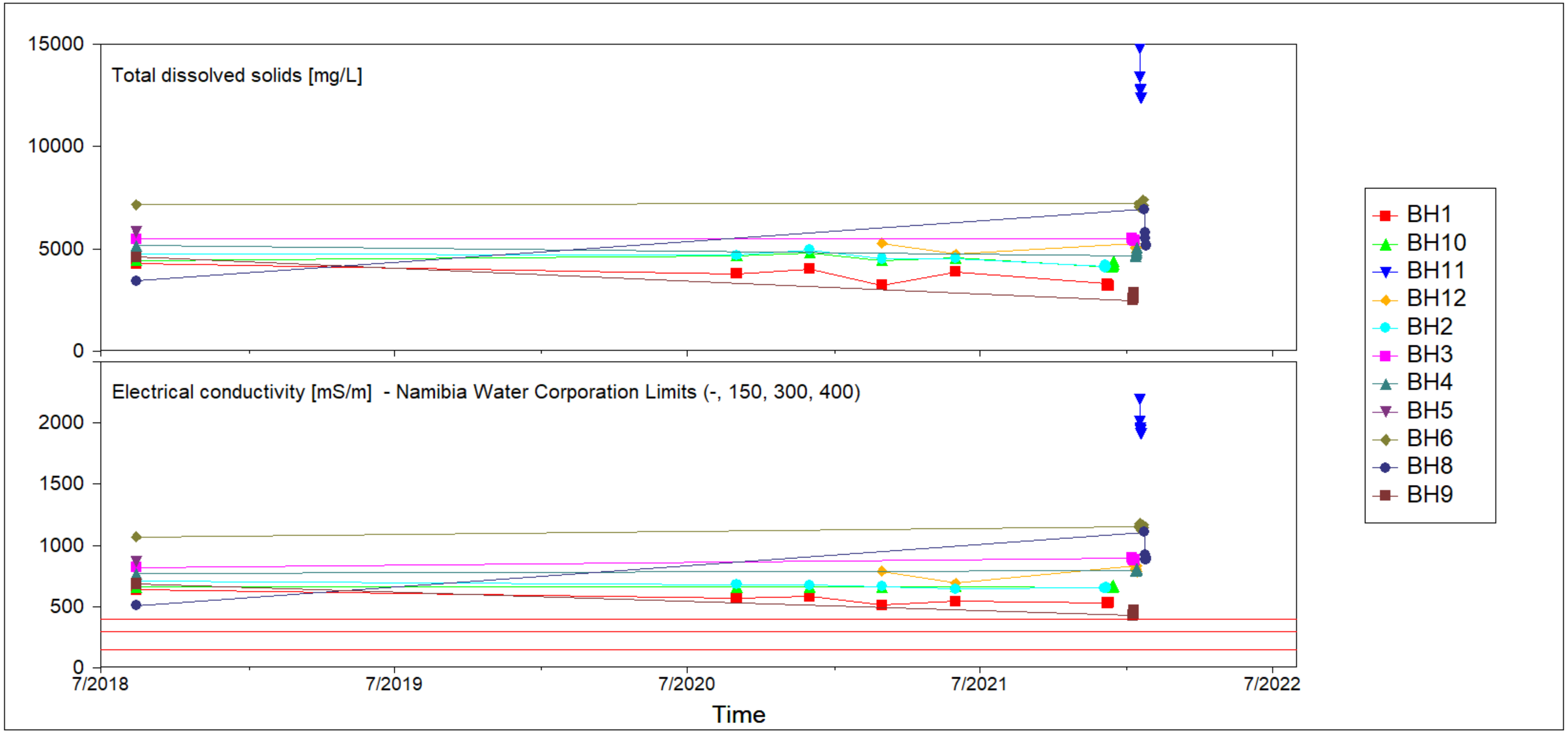

Figure 3: Electrical Conductivity and Total Dissolved Solids Trends

6. Review the feasibility of alternative water supply options as presented in a 2018 report titled: An appraisal of water supply alternatives for the pilot plant by van Wyk)

Eight alternative water supply options were presented in the van Wyk report, which are summarised here in order of feasibility:

- Former IMKOR water supply scheme:
  - IMKOR boreholes located in the southern wellfield area were investigated for water supply as part of the hydrogeological assessment. These boreholes were drilled outside of the alluvial river systems and were not deemed feasible for a sustainable water supply as they were potentially over pumped. Additional boreholes were drilled in the alluvial channels nearby, by van Wyk. These new boreholes can provide a low yield, with a combined of 2.3 m^3/hr according to the current testing and modelling results. The lower yield would make the water supply from these boreholes more sustainable, and these have been included in the current water supply network;
  - The Uis River alluvial aquifer currently supplies the mine, other businesses and the local community. The mine currently has four (4) boreholes in the alluvial aquifer of the Uis River channel which can provide a combined yield of 5.6 m^3/hr. The demand from this catchment is quite high and establishing any additional (new) water supply boreholes in this catchment would have cumulative drawdown impacts on this aquifer which would further stress this aquifer. Developing new boreholes in this wellfield is not recommended, unless replacing non-functioning existing boreholes. Additional boreholes could be placed in adjacent river channels;
- Karibib marbles at Nei-Neis WSS was identified as a feasible option. The marbles are located downstream of the wellfield and the potentially moderate to high yielding marbles could be recharged by the Omaruru River. This target area was assessed during the desktop review phase of the geophysical assessment. One target was identified in this location to intersect the marble schist contact below the alluvial channel, downstream of the NamWater wellfield. Higher priority targets were chosen for the field investigation as the geological map and provided cross-sections indicated that the marble in this area is significantly folded potentially isolating it from the marbles to the east, limiting the recharge to the potential fractures that intersect the Omaruru River. Additional work would be required to determine if this is a feasible option;
- Karibib marbles (near Peak Reservoir) was identified as a feasible option as marbles have the potential to be moderate to high yielding aquifers, if karstic features have developed within the unit. However, the marbles near the peak reservoir are located on a water divide between two (2) catchments which would receive limited recharge

potentially reducing the sustainability of this source for the long term. This could still be considered a feasible option, however, additional work would be required;

- Khai Nuses was identified as a feasible option, located ±4 km north of the mine. The report indicates there is a strong yielding borehole used by the community in the area. This option could have a similar aquifer potential to Uis River but would need to be investigated further. As this wellfield would be in a neighboring river catchment, developing a wellfield here would ease the dewatering effects of the Uis river catchment. This could still be considered a feasible option however additional work would be required;
- Uis water was not deemed a feasible option on the basis of the aquifer being low yielding and not able to meet the demand from the mine. The use of this wellfield was discontinued once Nei-Neis was commissioned. According to the report there is one functioning borehole and reservoir which is used by the community. Additional work would be required to consider this option as feasible for low yielding backup supply;
- Mine Quaries were noted as a feasible standby option, with consultation from the owner of the fishery. As this source is used to provide a livelihood, the volume and duration of use would be limited. The feasibility of using the quarries to recharge the aquifer will be low, given the low rainfall and high evaporation of the project area. As an emergency standby option this would be feasible, however the supply would be temporary and limited and agreements with the fishery owner would need to be in place;
- Compartment C&D in the Omaruru River was not deemed a feasible option for water supply. The motivation for this would be the potential damage to infrastructure during flood periods and the use of this aquifer by NamWater. Development of water supply boreholes within this area would need to consider the requirements of NamWater and drawdown impacts to the wellfield located downstream. This option is not recommended; and
- Surplus capacity from Nei-Neis Scheme of NamWater was not considered a feasible option as the groundwater levels may reach critical levels in future, as the system has previously been severely strained in 1983, 2006 and 2016. This option is not recommended.

As part of the water supply assessment a geophysical survey was undertaken for AfriTin, identifying eight (8) borehole locations that are proposed for further investigation.

It was also recommended to try and locate existing boreholes within the identified regional target areas and determine if these could be used and if so, what their sustainable yields would be. If yields would be sufficient, these could provide an alternative groundwater supply source to the mine.

Drawing large yields of groundwater for prolonged periods may have significant drawdown impacts for the regional aquifers. Alternative water supply options such as piping water from the Orano Desalination plant or directly from the sea should also be considered for the project (as mentioned alternatives in the AfriTin's Phase 1 Potential Regional Groundwater Resources report).

7. Determine the interconnectedness between groundwater and surface water resources

Stable isotopes can be used to determine the origin of groundwater based on their abundance and variations. An isotope assessment was undertaken for samples collected from multiple water supply boreholes, K5 pit water and rainfall sources.

The results indicate that the groundwater samples are meteoric (derived from precipitation or fresh surface water) which have been enriched with heavier isotopes because of evaporation processes. Although all samples indicate the groundwater samples have a meteoric origin, the tritium isotope results indicates that the age of one of the three groundwater samples (BH10) comprises of water with an age closer to 1953, indicating this borehole is not recharged as often or accesses a deeper aquifer of older water and therefore may be less connected to the surface water river channels.

In addition to the isotope assessment, observations made during the 2022 field investigations showed a rise in groundwater levels by between 0.8 – 8.3 m in response to the rainfall events which occurred in January and February.

Although the surface water resource (when available) contributes to the recharge of the groundwater aquifer, the groundwater levels currently occur below the alluvial aquifer of the river channels (or within the fractured aquifer) at the project area, and therefore it is unlikely that the groundwater aquifers will contribute to the baseflow within the river channel. The groundwater resource however does provide a source of water to the K5 pit void.

8. Determine the appropriate recovery period for boreholes after drawdown limits are reached till water levels are recovered

The borehole recover period was not simulated as part of the numerical model simulations. This was completed using an analytical approach. Recovery simulations can be included in future model updates. However, an indication was derived based on the area of influence, aquifer storage and recharge.

The numerical model simulations indicate that when the end of mine is reached and the abstraction requirements cease the drawdown cone will extend ~6.5 km from the mine with a drawdown of ~4.5 m in the wellfield area. The drawdown contours were used to calculate the area for the dewatered extent and the dewatered volume using ArcGIS version 10.8.1. This was used in conjunction with the porosity factor (numerical model) and recharge to calculate that the estimated water level recovery period would be 58 years post closure (Table 6).

Table 6: Analytical Calculation Inputs

Input	Value	Unit
Area of influence	65 075 284	m^2
Dewatered volume	228 472 561	m^3
Porosity[3]	0.01	%
Volume of pore space to be filled	2 284 726	m^3
Recharge	0.61	mm/a
Recharge over area of influence	39 696	m^3/a
Time to Fill area of influence	58	years

9. Recommend strategic measures to be included in an abstraction and groundwater and surface water management plan for Uis Tin Mine

The groundwater management plan for the abstraction boreholes is provided in the hydrogeological report (Section 6 of the Hydrogeology report) and summarised in Section 1 of this memorandum.

It is recommended to include the proposed monitoring locations for the V1 and V2 WRD locations as proposed in Section 2 of this memorandum to monitor the groundwater quality with regards to the disposal of waste and tailings on the V1 and V2 waste rock dumps.

10. Mitigation measures and thresholds of water quality parameters and water levels should be incorporated into the groundwater management plan

The following mitigation measures can be included based on the impact assessments done:

- Water quality thresholds and mitigation measures:
    - The IFC effluent limits are suitable to assess the contamination of the site. The samples collected from the V1 and V2 WRD rainfall runoff are currently compliant with these limits. The pit and proposed groundwater monitoring locations (Section 2) will need to be sampled for assessment against these limits still;
        - Although the major ion chemistry is not included in the IFC effluent limits, the concentrations of the major ions in the groundwater samples are more elevated (in the order of $3x10^2$ to $1.5x10^3$) compared with the major ions in the WRD1 and WRD2 samples (which are in the order of

[3] The analytical calculation assumes the porosity factor for the weathered aquifer is applicable for the dewatered area.

$1x10^1$ to $3x10^2$). These results are considered natural values due to the long residence time of the water within the aquifer. Should any of the IFC effluent limits be exceeded in the V1 and V2 downgradient monitoring boreholes, it is recommended to compare the results to the proposed background monitoring borehole (BH1) for comparison, to verify if the results could be related to naturally occurring conditions;

    - Undertake a geochemical assessment and waste classification of the tailings material when sample material becomes available to determine any contaminants of concern and recommendations to manage these;
    - Continue sampling the seepage water from the V1 and V2 WRD after rainfall events to assess for any water quality changes;
    - Include sampling of the pit water, if and when this is present;
    - Include sampling of BH8 and BH11 water quality on a quarterly basis to establish current quality from which future impacts can be assessed; and
    - The V1V2 open pit will act as a groundwater sink drawing seepage (when generated during significant rainfall events) towards the pit, limiting the potential for contamination from these facilities to migrate from the site.
- Water level threshold and mitigation measures:
    - The anticipated dynamic groundwater level provided in the water supply management plan (Table 1) for each borehole can be used as the threshold limit for the water supply boreholes;
    - Implement best practice and investigate new technologies to use water as efficiently as possible during the LoM;
    - Collect stormwater runoff (when available and where possible);
    - Manage abstraction from the borehole wellfield aligned with a water management plan;
    - Implement regular borehole maintenance to maintain and/or improve individual borehole yields (reduce scaling, fouling, precipitation of oxides and root growth into the boreholes);
    - Drill additional water supply boreholes, or locate existing ones, near the mine, and use these as backup water supply, for instance during borehole maintenance;
    - Continue monitoring the groundwater levels on a weekly basis to monitor any fluctuations, and comparisons of groundwater levels against predicted drawdowns;

- Monitor abstraction rates and volumes from the water supply boreholes on a weekly basis;
- Monitor daily rainfall on-site; and
- Monitor the quality of water abstracted from the water supply boreholes on a quarterly basis to be able to discern changes or fluctuations in quality which may indicate hydrochemical changes of groundwater in the aquifers and/or boreholes.

11. Assumptions for Determining the Impact of the Uis Mine Abstractions

An assumption (below) was included in the hydrogeological report, on which it was requested to expand upon:

- The daily abstractions for third-party groundwater users are unknown and were assumed to be 200 m^3/d for the borehole at the Brandberg Rest Camp (which currently being used to supply large volumes for road construction) and 100 m^3/d for the NamClay borehole. It is understood that the abstraction from the Brandberg Rest Camp is only expected to continue for the next 18 months, however the assumed abstraction values for both third-party boreholes were modelled for the duration of the Life of Mine as a worst-case scenario.

The abstractions for the Brandberg Rest Camp and NamClay were included in the forward, transient numerical model to account for the existing stresses on the aquifer and achieve a representative simulation taking into account groundwater level trends prior to the Phase 1 Stage II water supply abstractions. It must be noted that the predicted impacts were compared to the groundwater levels as they were at the start of 2022, which already account for historical abstraction impacts by third-party users and historical abstraction by the Uis mine.

Including the third-party water supply for the duration of the Phase 1 Stage II life of mine provides a cumulative impact for the area as a worst-case scenario for AfriTin. As the third-party abstractions are not anticipated to take place for the full duration of the Phase 1 Stage II life of mine, the extent of the drawdown cone and drawdown in the aquifer may be less than the predicted outcome in the hydrogeological report.

However, by including the third-party abstractions for the full duration even though the third-party users are not expected to abstract for the full duration, allows some flexibility for changes to occur from these users, should larger abstraction volumes be abstracted again from the third-party users later in the Phase 1 Stage II life of mine. Should these abstractions occur, provided they are not more than the assumed requirements, it would not be expected to impact the water demand for AfriTin as the cumulative abstraction requirements would already accounted for.

Regards,

Megan Edwards

Hydrogeologist

Arjan van ‘t Zelfde

Divisional Manager: Water Geosciences